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Contact the editors at arch50@hanleywood.com to request an entry form.

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Lobbying for Architecture

With architects still reeling from the recession, it is critical that they influence policy in their favor. Here's how the profession is navigating the crowded halls of government, in Washington, D.C., and beyond. **EDITED BY ERIC WILLS, WITH TEXT BY ERNEST BECK, JEFFREY LEE, AND BARA VAIDA**

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Detail: The Raif Dinçkök Yalova Cultural Center's metal façade. Emre Arolat Architects uses a material found in the chimneys of local factories.

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 how design affects our society and culture.

And there are constant updates: breaking news, new products, slide shows, and more ...

ON THE COVER

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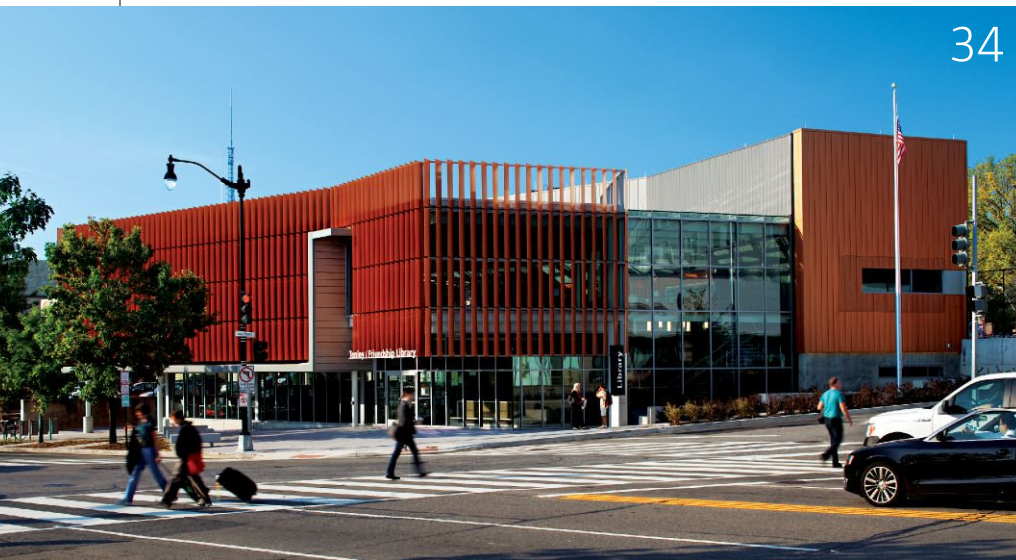
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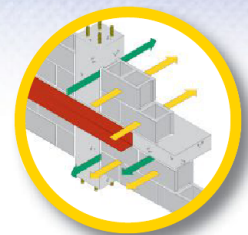


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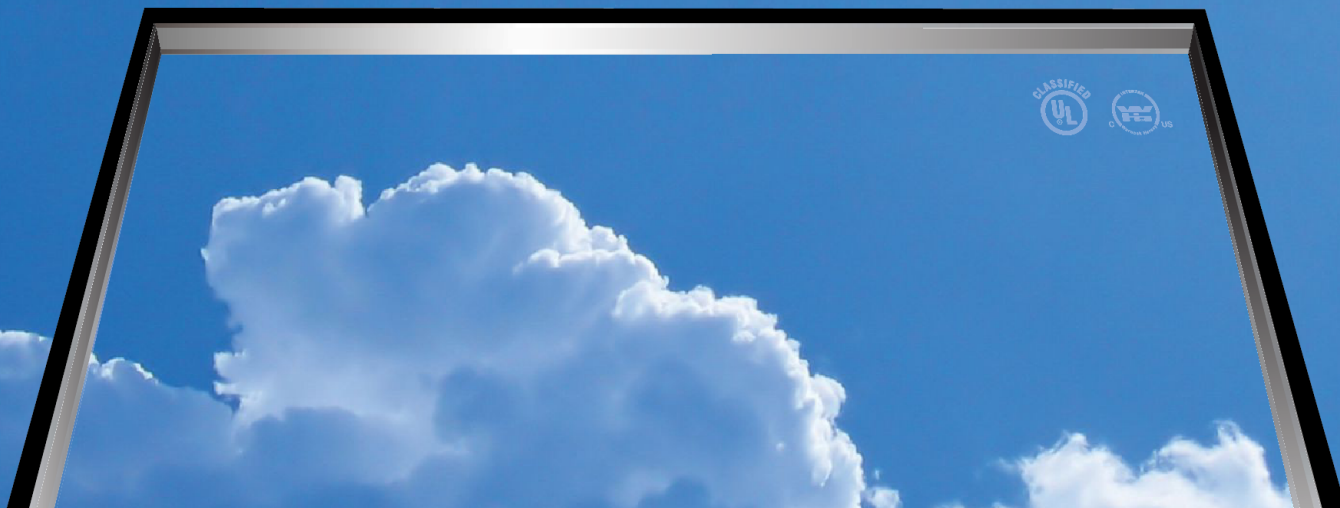
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UNTIL NOW, THE CULTURE WARS HAVE LARGELY OVERLOOKED ARCHITECTURE, WHICH, AFTER ALL, IS A NON-REPRESENTATIONAL ART FORM.

SPIKE EISENHOWER

AN UGLY FIGHT HAS BROKEN OUT in Washington, D.C. Given the acrimonious state of affairs in our nation's capital, that may not seem unusual, or even noteworthy, but in this case Frank Gehry, FAIA, is stuck in the middle of the brawl. In recent weeks, the architect's design for the Dwight D. Eisenhower Memorial (page 18), on a site adjacent to the National Mall, has engendered a violent backlash from political pundits such as George Will and David Frum. Eisenhower's own family has asked for a redesign. Even architect Léon Krier took a hatchet to Gehry's scheme on the *Chicago Tribune* website.

Don't get me wrong: Major public projects deserve careful public scrutiny. A nonprofit called the National Civic Art Society (NCAS) seems to be leading the opposition to Gehry's Eisenhower Memorial scheme. In a 153-page report, NCAS voices legitimate concerns—about the scale, materials, and durability of Gehry's design, for instance, as well as about the selection process, which took the form of a limited request for qualifications instead of an open design competition. These concerns get lost amid the report's partisan and confrontational tone. In a recent post on the ARCHITECT website, critic and museum director Aaron Betsky observes that the debate "has descended into the kind of mindless innuendo and vituperative allegations that now seem endemic to politics." I agree.

Frank Gehry is "unworthy of Eisenhower," according to NCAS, in part because he declined to work on the World Trade Center reconstruction. Unworthy? Are we talking about the same architect? While it's fair to say that different jobs require different talents, and that any design can benefit from review and revision, it's absurd to claim that Gehry—who has won the AIA Gold Medal, the Pritzker Prize, Britain's Royal Gold Medal, Japan's Praemium Imperiale, the Order of Canada, and the National Medal of Arts, and who routinely is described as one of the world's greatest living architects—is categorically "unworthy" of designing a presidential memorial. The assertion is unfair to Gehry and insulting to the architecture profession that broadly supports him.

The NCAS leadership is a coalition of traditionalist architects and political conservatives who want the Eisenhower Memorial to have a classical design. One member of the NCAS board of advisers, art historian and former National Endowment for the Humanities chairman Bruce Cole, writes, "Gehry, whose buildings often look like the wreckage of 747s or drunken skyscrapers, purposely subverts the order and stability of traditional architecture."

Cole is missing the point, and so is NCAS, which partnered with the Institute of Classical Architecture & Art on an alternative design competition for the memorial. They needn't have bothered, if generating a classical scheme was the goal. With a little imagination, they'd see that they already have one. Gehry loves

traditional architecture; he just has a different way of showing it than straight historicists do. For some, the Guggenheim in Bilbao may frighteningly resemble a titanium tidalwave, but those curves have roots in the draperies of medieval sculpture. And the Eisenhower Memorial recalls the agora of ancient Priene, with its colonnade enclosing three sides of a rectangular public space.

The NCAS report also slams Charles Ray, an artist who is advising Gehry on a life-size sculpture inspired by an archival photograph of an adolescent Eisenhower. Ray's work is in the collections of the Museum of Modern Art, the Metropolitan Museum of Art, and the Whitney Museum of American Art; NCAS objects to the depiction of Eisenhower as a youth and maintains that Ray's sculptures "sexualize children and are obscene." While Ray's oeuvre does include nude figures of children, so do most depictions of the Madonna and Child.

In a one-sentence footnote, the NCAS report effectively concedes that the ado about Ray and the statue amounts to nothing: "Despite the involvement of sculptor Charley Ray, Eisenhower will presumably be ... fully clothed." Moreover, as the memorial's opponents habitually fail to mention, the statue of little Ike will be flanked by two positively pharaonic bas-reliefs of the adult Eisenhower, as president and as supreme allied commander in Europe.

I find it hard to sympathize with the group's lament that the selection process was "clearly oriented to favor the sharpest, most jagged of the architectural cutting-edge," not because I oppose Classicism (which I don't), but because the tone of attack is offensive, not persuasive—a counterproductive throwback to the Joe McCarthy school of demagoguery. As Eisenhower said of McCarthy, "I will not get into the gutter with this guy."

Moreover, the group's claims of victimhood ring hollow. NCAS boasts that historicism remains "the norm in American residential architecture." Of the "six existing national presidential monuments and memorials in Washington, D.C., five ... are orderly, decorous, and classical in style, constructed of white marble, and decorated with ornament and figurative sculpture." That's hardly the track record of an underdog in need of affirmative action.

Until now, the culture wars have largely overlooked architecture, which, after all, is a nonrepresentational art form. Politicos find it much easier to pick on visual artists, preferably dead gay ones such as Robert Mapplethorpe and David Wojnarowicz, who cannot defend themselves. So watch out. NCAS's tactics expose architecture as a ripe new target. Gehry, for his part, wisely has remained silent as the grave.

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LETTERS

LESS IS MORE?, November 2011

I saw the Solar Decathlon's award-winning Purdue home [tied for first in the Energy Balance Contest] chosen to grace the cover of ARCHITECT. The choice is a slap in the face to all the other contenders, and to our profession. A strong statement, but a fair one for a home "designed" by engineers that any spec builder could produce with a solar contractor. My irritation should justifiably go to the Department of Energy and Richard King, but I can't fathom why you would pick this over the actual overall winner, Maryland. *Samuel Mortimer, Chattanooga, Tenn.*

ANNUAL DESIGN REVIEW, December 2011

The jurors for the Honorable Mention R-House said that they "appreciated that this project—at a cost of about \$180 per square foot—demonstrates that 21st-century design belongs to lower-income residents, too." Wait a minute! Was that a typo? I am unsure what they meant by "lower income." In Tennessee, the average cost of middle-income housing is about \$90 p.s.f! Why pay more?—consider Tennessee. *Jim Bentley, AIA, Fairfield Glade, Tenn.*

MY GENERATION, February 2012

Editor-in-chief Ned Cramer could not have been more spot-on: The plight of Gen X should be under the topic of diversity. On top of the other social issues, this generation started with hand drawing, and followed the evolution of CAD and BIM while still being responsible for project design and delivery. Those of us who were forward-thinking change-agents served as the "bleeding" edge on the path to integrated project delivery. *Scott Anderson, AIA, Naples, Fla.*

@architectmag

Below are tweets from our Thursday Twitter question on Jan. 26: "What's the best architectural museum exhibit you've ever seen?"

The great model of Lutyens's unbuilt Liverpool cathedral. *Dominic Roberts @stoneroberts*

"Skin+Bones: Parallel Practices in Fashion and Architecture." *Jimmy Stamp @LifeSansBldgs*

The architecture of Disney. Neverland never looked so smart. *Christine Zakrajsek @chrizakrajsek*

"Mies in Berlin." *Clyfford Still Museum @Still_Museum*

The pre-fab exhibit at MoMA back in 2008, with full-scale prototypes to really experience the spatial quality. *NMcClure @apertedesign*

"Unbuilt Washington" at the Building Museum. *Justin Garrett Moore @jgmoore*

→ Want to join the conversation? Go to architectmagazine.com. All letters and comments may be edited for length, content, grammar, and style.

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Adam Mazmanian

After graduating from Johns Hopkins University in 1993, Adam Mazmanian pursued stints as an editorial assistant at *Architectural Record* and a writer at *Library Journal* and the *New York Press* before signing on for the Internet gold rush with About.com. There, he was variously the site's arts and humanities editor and an editorial manager responsible for the website's flagship newsletter and home page. In 2004, he left New York and About.com for Washington, D.C., and SmartBrief, a business-to-business news service where he covers online media, advertising, and technology. He also edits *UN Wire*, a daily roundup of international, development, and United Nations news.

Mazmanian has contributed articles and book reviews to *The Washington Post*, *Newsday*, *Washington City Paper*, and other publications. He is a film critic for *The Washington Times* and a contributor to the hyperlocal neighborhood blog Petworthies (petworthies.com), which covers the D.C. neighborhood of Petworth—where he lives with his wife, Jenny, and his infant son, Nicolas.

→ See Adam Mazmanian's story on cloud-computing research and development on page 38.

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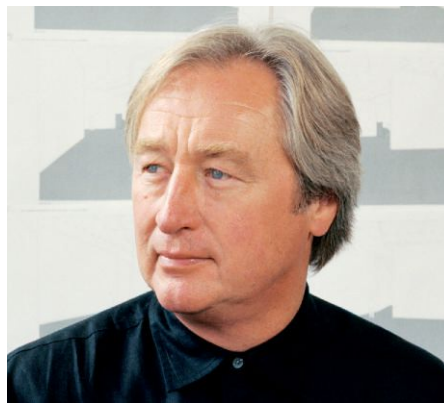
NEWSWIRE

EDITED BY KRISTON CAPPS



CHICAGO TRIBUNE

Wrigley Building to get landmark status, finally
The Commission on Chicago Landmarks unanimously approved a long-overdue recommendation to recognize the city's famous Wrigley Building with landmark status.



ARCHDAILY

Steven Holl Architects to design MFAH addition
The Museum of Fine Arts Houston has chosen Steven Holl, FAIA, to design a new wing, selecting Holl's vision over concepts submitted by Snøhetta and Morphosis.



THE WALL STREET JOURNAL

Costs of World Trade Center rebuilding soar
A new audit of the Port Authority of New York shows that the overall costs of the World Trade Center project have risen from a 2008 estimate of \$11.5 billion to approximately \$14.8 billion.

SHEPLEY BULFINCH OPENS SAN FRANCISCO OFFICE

National architecture firm Shepley Bulfinch, specialists in design for the healthcare industry, will open a new office in San Francisco. The firm has a history of work for West Coast clients that dates to the development of the original Stanford University Campus in 1891. More-recent projects include the design of an academic commons for Occidental College in Los Angeles; three academic buildings for the University of California at Riverside; and the central library for the city of Eugene, Ore. This is the third office for the firm, which was founded in Boston and opened a location in Phoenix in 2009. **ALEX HOYT**

Artek Acquires Tapiovaara Line

For 75 years, the Finnish furniture-manufacturing company Artek has largely been synonymous with the designs of one of its founders, the midcentury modern architect Alvar Aalto. But late last year, with a goal to improve viability, the company broadened its product offerings by acquiring the rights to the entire furniture collection of Ilmari Tapiovaara (1914–1999), a Finnish designer and one of Aalto's contemporaries. Though Artek sells designs by Vitra, Knoll, and other Artek-commissioned designers, in 2010, 60 percent of the revenue generated by the company's Finland-based retail stores, and almost all international sales, came from selling classic Aalto designs—such as his Armchair 401 and Stool 60. **LINDSEY M. ROBERTS**

AIA Elevates 111 to College of Fellows

THE 2012 AIA JURY OF FELLOWS elevated 105 AIA members to the College of Fellows to honor their contributions to the field. In addition, another six international architects received honorary fellowships.

There are just more than 3,000 practitioners who have been granted fellowships and honorary fellowships, a distinction among a field of more than 80,000 AIA members. Architects who have been members of the AIA for at least 10 years are eligible for nomination.

Each category for nomination represents a specific field of architectural endeavor, such as improving living standards through the built environment or advancing the standards of architectural education and training.

Nine AIA institute leaders were elevated to the College of Fellows, and leaders of other organizations were also recognized. Other members were honored for their achievements in the categories of design, practice, literature, alternative

career, preservation, education, urban design, research or service to society. Architects from AIA chapters in Guam and Micronesia and the Virgin Islands were elevated. Twenty of the new Fellows are women.

Six architects from five continents were granted honorary fellowships: Solano Benítez, Paraguay; Richard Francis-Jones, Australia; and Diébédo Francis Kéré, Germany; Pierre-Antoine Gatier, France; Anya van der Merwe, South Africa; and Li Xiaodong, China.

In 2011, the AIA nominated 104 members to the College of Fellows. The 2012 Jury of Fellows comprised Gregory Palermo (chair), FAIA; Jeffrey A. Huberman, FAIA; Leevi Kiil, FAIA; Susan Maxman, FAIA; Craig Rafferty, FAIA; Linda Searl, FAIA; and Raymond Yeh, FAIA.

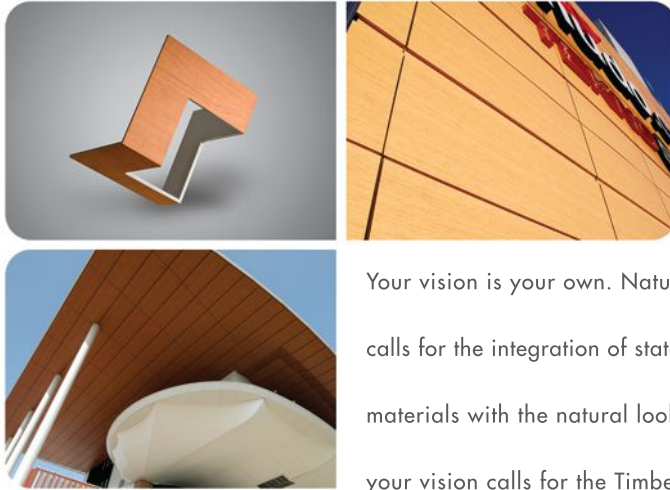
The 2012 Fellows will be presented at a ceremony at the 2012 National AIA Convention and Design Exposition in May in Washington, D.C. **KRISTON CAPPS**

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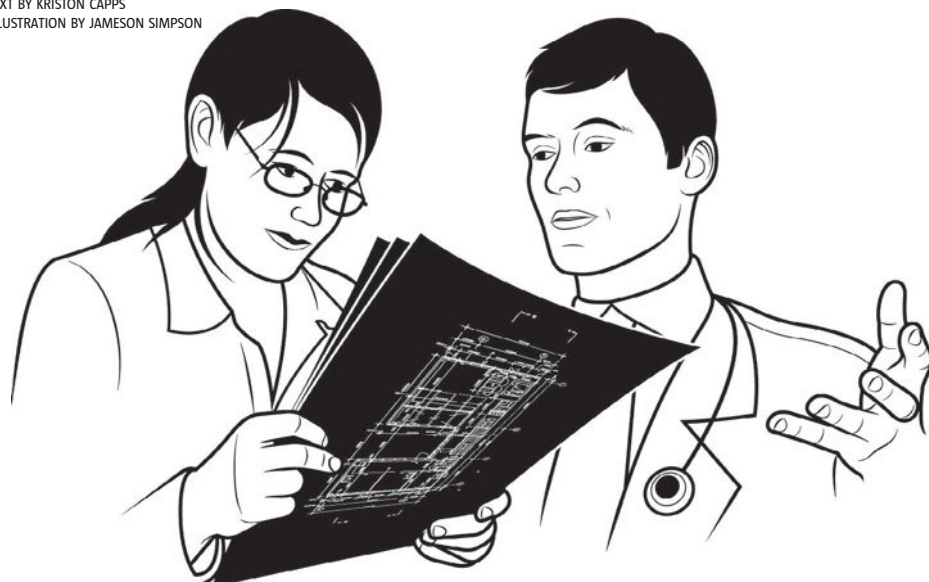
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→ NUMBERS

Healthy Outlook

ARCHITECTS AND HEALTHCARE PROVIDERS AGREE THAT FLEXIBLE DESIGN IS CRUCIAL TO CONTROLLING FUTURE COSTS FOR HEALTHCARE.

TEXT BY KRISTON CAPPS
ILLUSTRATION BY JAMESON SIMPSON



IN THE 2013 BUDGET REQUEST that President Barack Obama released in February, spending on Medicare, Medicaid, and Social Security makes up about 40 percent of spending. With healthcare costs rising and demand for services growing, healthcare providers and building designers alike are looking to design in order to improve efficiency.

They don't always agree on priorities, though, according to a survey of more than 300 respondents performed by Mortenson Construction at the 2011 Healthcare Design Conference in Nashville, Tenn., which was held last fall. For example, architects register much higher enthusiasm for integrated-project-delivery (IPD) and design/build practices than healthcare providers do. Among architects, 83 percent report a growing preference for IPD, compared to 54 percent of healthcare providers.

Nor do respondents necessarily agree among themselves, it would seem. While 70 percent of respondents representing healthcare institutions say that they pursue LEED or other sustainability certifications on new projects, 52 percent of healthcare providers prefer other sustainability rating systems or no ratings at all.

One thing that architects and healthcare agree on is flexible design: 93 percent of architects and 91 percent of healthcare providers name it as a priority. While healthcare providers are tackling the current economic crisis by cutting administrative expenses, the hope is that gains in efficiency will mean that, in the future, they won't have to. □

83%

ARCHITECTS WHO REPORT GROWING PREFERENCE FOR INTEGRATED PROJECT DELIVERY (IPD)

72%

ARCHITECTS WHO REPORT GROWING PREFERENCE FOR DESIGN/BUILD (D/B)

54%

HEALTHCARE PROVIDERS WHO REPORT GROWING PREFERENCE FOR IPD

41%

HEALTHCARE PROVIDERS WHO REPORT GROWING PREFERENCE FOR D/B

93%

ARCHITECTS WHO PLACE HEIGHTENED PRIORITY ON FLEXIBILITY IN HEALTHCARE DESIGN

91%

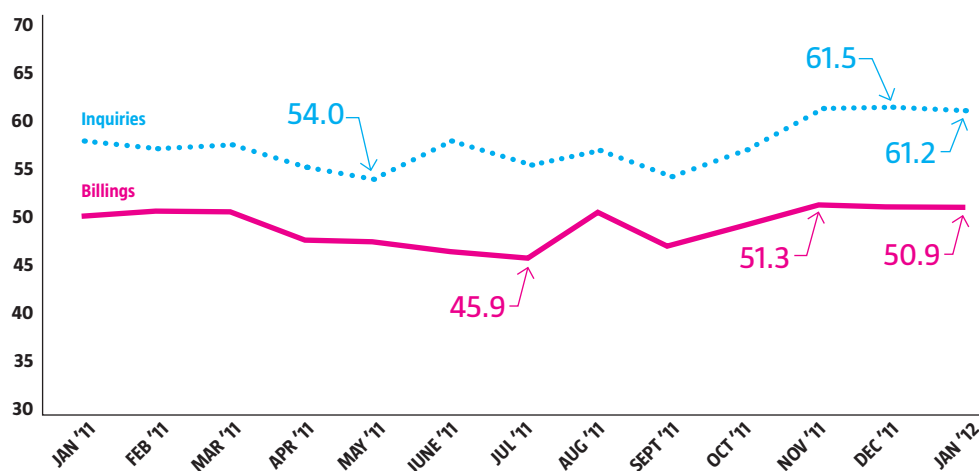
HEALTHCARE PROVIDERS WHO PLACE HEIGHTENED PRIORITY ON FLEXIBILITY IN HEALTHCARE DESIGN

48%

HEALTHCARE PROVIDERS WHO SAY LEED CERTIFICATION IS KEY TO NEW FACILITIES

SOURCE: MORTENSON CONSTRUCTION

BILLINGS AND INQUIRIES INDEXES



JANUARY 2012
ARCHITECTURE
BILLINGS INDEX

↓ 50.9

- ↓ 52.2 commercial
- ↑ 51.1 institutional
- ↑ 46.1 mixed practice
- 52.6 multifamily residential

SOURCE: AIA

On the Boards

TEXT BY KATIE GERFEN



Dwight D. Eisenhower Memorial

GEHRY PARTNERS

Across from the National Air and Space Museum in Washington, D.C., is a four-acre parcel, to be renamed Eisenhower Square, that will host the Dwight D. Eisenhower Memorial. Designed by Los Angeles–based Gehry Partners, which was selected from a pool of four finalists in a GSA Design Excellence Program competition, the scheme calls for the square to be lined on three sides by woven-metal tapestries. The tapestries, which are supported by 80-foot-tall columns, depict the Great Plains and Eisenhower's home in Abilene, Kan. At the center of the square, amid a grove of oak trees, two monumental bas-reliefs depict Eisenhower as the 34th president of the United States and as the supreme commander of the Allied Forces in World War II, respectively; these flank a setback podium featuring a seated life-size statue of the president as a young man in Abilene. A wall behind all three sculptural elements features excerpts from Eisenhower's speeches. The Dwight D. Eisenhower Memorial Commission, which was created by Congress in 1999, projects a 2015 completion date.



Krishna P. Singh Center for Nanotechnology

WEISS/MANFREDI ARCHITECTURE/LANDSCAPE/URBANISM

Located on the eastern edge of the University of Pennsylvania campus in Philadelphia, the center, which opens in 2013, creates needed laboratory space as well as a new public face for the university for visitors arriving from the city center. The 78,000-square-foot structure is sited around a new green space, drawing corollaries to the campus's quads and to the city's public squares. The bulk of the building lies on the northern edge of the site to minimize traffic vibrations that could affect experiments within, though the eastern wing stretches forward to the street. "The building ascends to the cantilevered forum at the urban edge of the site to express the innovative character of the research inside," says Weiss/Manfredi principal Marion Weiss, FAIA. Interior spaces include a 10,000-square-foot clean room, a 6,500-square-foot characterization suite, and 12,000 square feet of laboratory modules, all organized around public spaces that are punctuated by informal gathering areas that "we hope will encourage exchange and discovery outside the limits of the lab," Weiss says.

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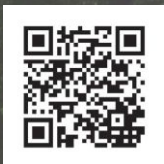


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PHOTO: GREGORY COWLEY

AIA VOICES

PRO BONO PUBLICO | FINDING COMMON GROUND

David Baker, FAIA, has always stayed ahead of the technology curve in his practice and remained firmly rooted in grassroots activism, the interests of community over the individual, and sustainability (even before it was a buzzword). His San Francisco-based firm, David Baker + Partners Architects, has garnered numerous awards, most recently the AIA California Council's 2012 Distinguished Practice Award for sustainable design in affordable housing. "I think we all have to be aware of the larger systems and the larger ecologies," he says, "and that's not about undertaking one-off projects. It's about comprehensive projects and cooperation."

Who would have thought that the minute you put chairs in the middle of New York's Times Square, that it would be popular? San Francisco, where I live, is a very public city and none of us—no matter where we live—are simply going from one private space to another during the course of our days. We live public lives. So, it's natural to engage the public realm as a person as well as an architect.

There are tools embedded in the history of cities for us to make better cities tomorrow. It's a combination of looking at best practices—worldwide—and studying local circumstances. We're becoming more global in our outlook at the same time that each

place is understood to have a specific character. What we were trying to do in this office is apply the same approach to firm culture that we apply to buildings—reexamine the way we talk to each other. Reexamine it in an evocative way.

People tend to commodify the profession—units and square footage—and I like to think that we take an artisanal approach. We try always to keep learning. We're relatively traditional as a practice, but we've always embraced technology. I had the number five serial number for AutoCAD way back in 1982—and as it turns out, our office just got rid of our last copy of AutoCAD since we're all 3D now. It's had an impact on how much we visualize and refine the design before construction.

Our firm has a very active Facebook page—where we put all the stuff we find interesting or are thinking about. It's a way for us to explore things and, in a sense, do it in a public, virtual space.

The fact is that even when architecture is private, it's public—it's not yours. In cities, architects should look beyond the property lines of their own projects. Architects should think like planners and take the lead in the urban landscape. —As told to William Richards **AIA**

➔ To learn more, visit dbarchitect.com.

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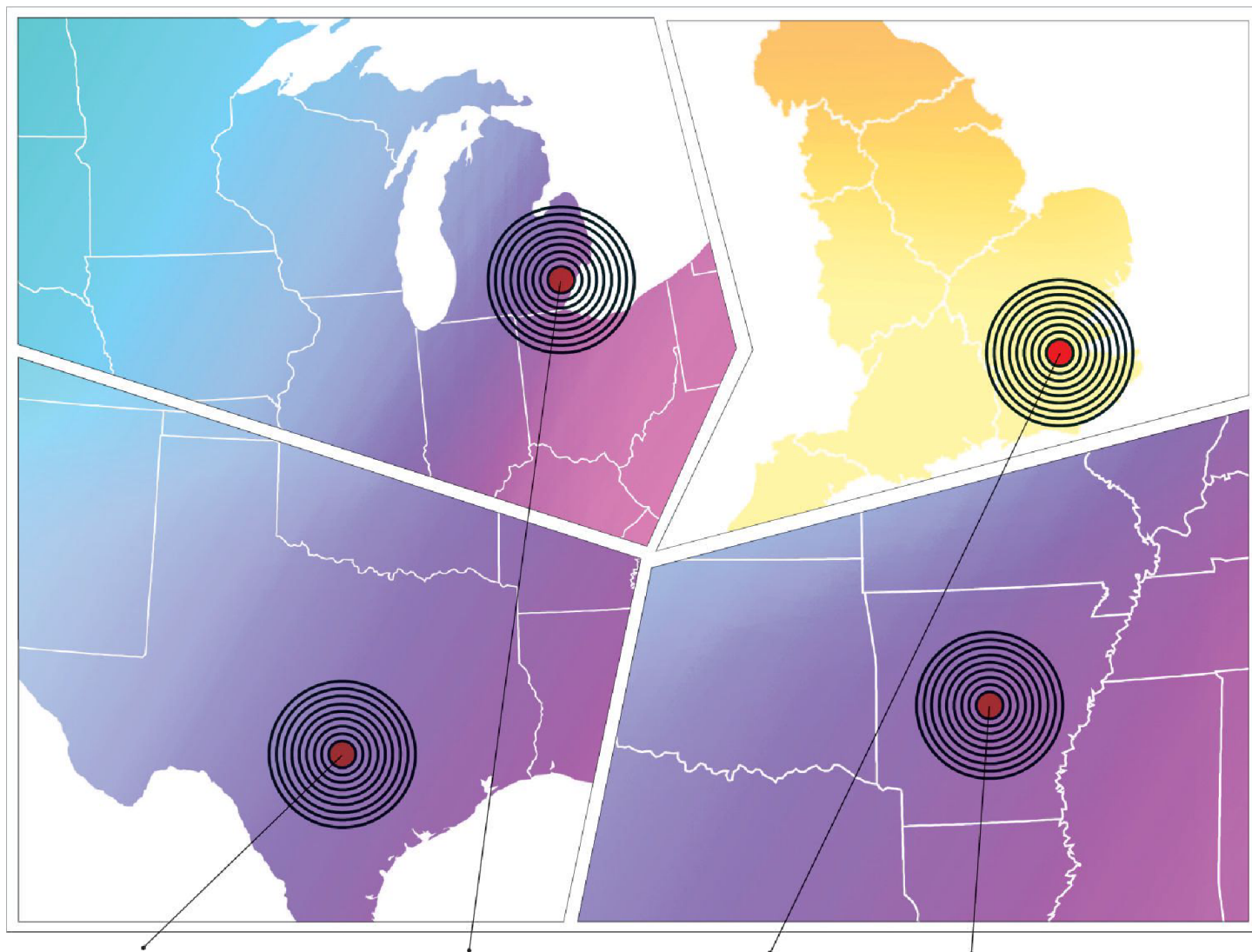
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ACROSS THE INSTITUTE



AUSTIN, TEXAS

Second Act

The Texas Society of Architects relaunched its award winning magazine *Texas Architect* in January, just in time for the publication's 62nd birthday. The move comes after an organization-wide rebranding of its identity and website in 2011 by Herman Dyal, FAIA, principal of Austin-based Dyal and Partners. "The idea was to loosen up the format while also enhancing the interior navigation," says *Texas Architect's* editor Stephen Sharpe, Hon. TSA. "Our readers are visual, so it was critical that we respect their way of receiving information." Published bimonthly, *Texas Architect* first appeared in 1950 as a 24-page pamphlet.

➔ Learn more at texasarchitects.org.

DETROIT

Freeze Frame

Bernard Tschumi, FAIA, famously explored the relationship between architecture, film, and the urban fabric in his 1976 "Screenplays" project. Continuing this line of inquiry, the Society of Architectural Historians has partnered with the Detroit Youth Foundation (DYF) to produce a series of videos at its annual convention this month. The videos are intended to be about more than the city, they're about collective memory. Individual buildings, building complexes, neighborhoods, and landscapes. *Detroit Historical Hotspots* (as the series is called) is part of DYF's ongoing YouthVille Detroit program.

➔ Learn more at youthvilledetroit.org.

LONDON

Make Time for Design

Fancy the Aston Martin? How about the Penguin paperback? Anyone for Archigram? "British Design 1948–2012: Innovation in a Modern Age" at London's Victoria and Albert Museum tracks the country's creative output since the fade of postwar austerity, with an eye toward the tensions that defined the 20th century: history versus modernity and craft versus mass production. The exhibition, which coincides with London's 2012 Olympic games, will be on view until Aug. 12.

➔ Learn more at www.vam.ac.uk.

LITTLE ROCK, ARK.

Bridge Tournament

Commercial retrofits? Sure. Houses? You bet. But how many architects get the chance to design a bridge? Randy Murphy, AIA, of Cromwell Architects, and Bob Dahms, of the U.S. Army Corps of Engineers, tied for first place in an ideas competition to replace Little Rock's Broadway Bridge. Metroplan, the metropolitan planning organization which sponsored the competition, garnered more than 5,500 public votes for 10 final entries. The Arkansas State Highway and Transportation Department is scheduled to begin the \$45 million project next year.

➔ Learn more at metroplan.org.



Material Culture

ILLUSTRATIONS: JUSTIN METZ



How much do you know about the materials that you're using?

BY BILL MILLARD

LOUIS KAHN FAMOUSLY ASKED WHAT A BRICK WANTED, BUT IT MIGHT better serve us if we knew what the brick was in the first place.

The building industry's pivotal role in global greening underscores the need for information transparency. Billions and billions of tons of material in the global economy are tied directly to the manufacturing of building products. Yet the identity of these materials remain a mystery throughout much of the supply chain to most consumers. Reliable data at all levels of production and consumption are essential to improving their performance.

"Materials are not what they used to be," says Michael Bell, a Columbia University architecture professor who chairs the school's Conferences on Architecture, Engineering, and Materials. "Materials in some senses are becoming continuous stratoms of amortized risk."

In other words, the chemical stuff that makes up our physical things is often well-researched in its raw form, but barely

understood in terms of its life span. That fact doesn't bode well for an architect interested in the health, safety, and welfare of society at large—namely, for all architects. As life-cycle thinking becomes more prominent in design, architects need to know more about materials than their strength, appearance, and cost. They need to be aware of the production processes, recycling potential, and associated ecological and environmental hazards that may lurk beneath the surface. Diving to this depth of material culture, so to speak, creates a premium for detailed chemical information.

Popular design and building standards have revealed a certain amount of information already: LEED, the EPA's Design for the Environment program, California's Safer Consumer Products Regulation, the Cradle to Cradle certification of McDonough Braungart Design Chemistry, assorted "red lists" such as that of the Living Building Challenge, and other standards highlight material hazards and viable alternatives. At the same time, the material supply chain has grown unprecedentedly complex.

Innovation in production processes means that novel materials are capable of broader functionality. Zaha Hadid, Hon. FAIA's Phaeno Science Center in Wolfsburg, Germany, for instance, would be inconceivable without Agilia, an extremely fluid concrete that can be poured in a single shot without vibration to smooth it out. If vibration is eliminated from the curing process, it stands that Agilia might have a much broader range of applications. In addition, increased overseas sourcing means less control for American



specifiers, raising serious questions for architects: Are the suppliers compliant with standards? Are they fully aware of what's entered a product upstream? Is the bill of materials (BoM) accurate?

It's also important to be critical of greenwashing. A product may be labeled "VOC-free," but knowing that it contains no volatile organic compounds isn't the same as knowing what it does contain. What do those contents do to bodies and environments? Accidents (lethal and nonlethal) do happen.

With or without advanced chemical training, architects face a bewildering field of overlapping standards, and must navigate a research base that experts describe as vast, uneven, and ever-changing. Structured databases are needed to allow users to evaluate data and make informed choices. Organizations that are creating online tools to help fill this niche include Perkins+Will (P+W), which opened its free Transparency database last November; the Pharos Project, an open-source evaluation system launched in 2006 by the Healthy Building Network; and SciVera, a private business-to-business venture which marshals the expertise of board-certified toxicologists to evaluate research and help all participants in supply chains match value systems with BoM information, even when that information is proprietary.

P+W's Transparency (transparency.perkinswill.com) is the first free database of substances commonly found in building materials which are either known or highly suspected of being detrimental to the health of humans and the environment. P+W contends that it is appropriate to apply the precautionary principle when selecting and specifying products and materials in light of the potential lasting impact of such materials on the users of facilities it designs. Rather than use products which contain these substances, in keeping with the precautionary principle it will seek out alternatives in an effort to counter reported health effects and protect the health of future generations. P+W's Paula Vaughan, AIA, and Diana Davis, AIA,

cite a 2005 Environmental Working Group study, "Body Burden: the Pollution in Newborns," which found that out of 287 foreign substances in umbilical-cord blood from Red Cross samples, 250 were directly tied to building products.

"From a healthcare standpoint," Davis says, "our clients have typically been more focused on what microbes materials encourage and harbor than about the inherent health or toxicity of the product itself. We're just now starting to be able to provide that additional level of sophisticated knowledge about materials."

Perkins+Will's sustainability specialists have developed lists of common asthma triggers, flame retardants, and documented or highly suspect carcinogens. Transparency fills a unique void for architectural practice in between a dearth of centralized information sources specifically for design professionals and the reluctance to "do full scientific research every time we were specifying carpet," Vaughan notes. Davis and Vaughan also endorse the Pharos Project (pharosproject.net), begun by the advocacy group Healthy Building Network in 2000 as a broad collection of related product information congruent with other organizations' research, such as BuildingGreen's GreenSpec environmentally preferable products list. Pharos emerged from the International Living Future Institute's Living Building Challenge, a certification program that centers on materials research, New Urbanist planning principals, biophilic theory (à la E.O. Wilson), and social-justice goals. In terms of materials, Pharos centralizes multiple third-party product-certification systems, compares their levels of analytical rigor, and specifies 16 substances or substance categories that must be addressed for a building to meet its standard.

Pharos compiles one of several so-called "red lists" of harmful materials to be avoided, which tend to overlap and, in aggregate, confuse more than clarify. The Healthy Building Network has one; so does Google; and the U.S. Green Building Council (USGBC) is trying out the idea with its new Pilot Credit 11 on chemical avoidance. What makes Pharos stand out is its red, yellow, and green ratings, which help decode and filter the complications of multiple standards.

There's a language barrier between different parties in the product chain, in other words, but there are also a lot of blind corners. SciVera (scivera.com), a three-year-old Charlottesville, Va.-based company, might have the solution. SciVera is the partnership of urban planner and management consultant Joseph Rinkevich and board-certified toxicologist Thomas Osimitz. Their Web-based SciVera Lens analytic tools have begun attracting attention in design and construction for their ability to provide material information inexpensively and in two scalable ways: SciVera Lens provides a platform to companies for efficient collection of product material and chemical data while also automating the toxicological risk-assessment and reporting process.

Architectural materials and products, Rinkevich says, represent an important growth area for SciVera, which already documents materials in automotive interiors, toys, and electronics, as well as specialty chemicals. The company's expansion into outdoor equipment and household goods is under way. This may seem like a lot to take on, but the materials and chemicals assessed in one domain frequently appear in another, Osimitz says.

The firm has also begun integrating a material-tracking system used in the Chinese toy industry, raising the possibility that the SciVera Lens system could interface with building information



modeling (BIM) systems in the future as well. Both Osimitz and Rinkevich say that such a step is technically feasible.

SciVera can respond to evolving research faster than list-based approaches. “Lists for most part are developed on the basis of science that usually occurred five or 10 years ago,” Osimitz says, “so they are lagging indicators of safety to humans and the environment.” SciVera incorporates red-list information into its software—it’s useful stuff, after all—but tracks potential interactions as well.

“Because we’re primarily a science-based team, as opposed to a data-based team, we have a group of toxicologists that review the current literature and asks, ‘Does a given chemical have the same kind of properties as another chemical that is already on a red or restricted substance list?’” Osimitz asks. “We allow people not just to see the current picture, but to give insight into the likelihood that chemicals not currently on restricted lists could be included on such lists down the road.”

SciVera’s procedures are designed to address two of the pervasive problems with existing chemical-assessment processes: incompatibility and lack of credibility. For data compatibility, SciVera’s Web-based platform enables companies to easily and securely import product and material data for assessment. SciVera ensures credibility by disclosing to its customers all details of each assessment.

But the company’s approach is also well-suited to emerging technologies and newly developed materials, about which there are many proprietary information and intellectual property concerns. SciVera gives suppliers two options: They can either provide full chemical information or, for those who want to keep their cards closer to their vests, they can generate and communicate to their customer (the manufacturer) a Pharos-like red, yellow, or green assessment result.

Less than a mile away from SciVera’s operation, the GreenBlue Institute has been making similar strides. James Ewell, who directs the chemicals program at GreenBlue, a nonprofit co-founded by William McDonough, FAIA, and chemist Michael Braungart, has been managing the organization’s CleanGredients database for preferable ingredients used in chemical-intensive products. He concludes that all of the available hazard-assessment resources available to specifiers are useful, but at the end of the day, environmental risk-and-benefit evaluations require weighing the results and are therefore judgment calls.

“Pharos is nice because right now it’s asking useful questions about other life-cycle metrics that architects are interested in,” says Ewell, who also emphasizes that SciVera’s flexible and scalable products could make it “the Intel Inside [program] of any company wanting to obtain in-depth toxicity information about the materials they are using.”

In the event that material hazards have legal ramifications, plausible deniability isn’t a realistic stance. Being on top of research creates opportunities to take protective measures before regulatory compliance is needed. “If the information’s out there, you need to know about it—and the sooner the better,” Osimitz says.

“Architects are always concerned with liability, and there might be things they’d rather not know,” says Columbia’s Bell. But for any resource that could make plain the properties of building materials, Bell adds, “I would assume architects will flood to a site like that.”

“I’ve found in all the companies we’ve dealt with—and we have been very fortunate to deal with first-rate companies,” Osimitz says, “they realize that lack of knowledge does not mean lack of responsibility. And that quality data are always friendly.” **ATA**

AIA KNOWLEDGE

AGING IN PLACE | SUSTAINING THE GSA'S MODERN SENSIBILITIES



DURING THE MID-20TH CENTURY, ARCHITECTS OFTEN JETTISONED masonry construction, passive climate control, daylighting, and traditional building materials in favor of deep floor plans, curtainwall exteriors, HVAC systems, artificial lighting, and new materials. These changes provided unprecedented design freedom, immediate cost savings, and more thorough environmental controls, but they also vastly increased a building's energy demands, neglected life-cycle costs, incorporated materials prone to obsolescence, and introduced indoor health hazards.

Over the last decade, the General Services Administration (GSA), which owns a vast inventory of midcentury structures and is subject to both federal preservation and sustainability standards, has addressed these concerns. The agency's work will be the subject of "Managing Modern: Balancing Performance and History in an Era of Sustainability," a session at May's AIA National Convention in Washington, D.C. The Saturday-afternoon session will address the GSA's flexible approach to rehabilitation, with a particular focus on maximizing the capacity of its broad building inventory and gaining the LEED Gold status that is now standard for federal construction.

The '50s and '60s also saw a building boom, and today, as the large stock of structures from that boom ages, it is clear that the buildings share particular sustainability and preservation problems. New York's iconic Seagram Building is a textbook example of midcentury architecture's preservation challenge, but other structures, such as single-family homes, face similar issues at a smaller scale. Adapting one of these historic structures to new uses prolongs its life and capitalizes on an existing energy investment. This is good news for modern buildings that have flexible and open floor plans (including the Seagram Building or others like it). More-sculptural examples of Modernism that are less adaptable can face abandonment or demolition if their designed purpose changes.

The buildings of the midcentury depend upon a host of innovative technologies, such as exterior cladding systems. Curtainwalls of the period were often constructed of a steel subframe (with glazing and new types of thin panel cladding), which have corroded, proven insufficiently fire-resistant, and frequently lack adequate thermal breaks.

Historic glazing systems are also prone to failure and often less efficient than current panels. Some thin stone, metal, and precast concrete panels have experienced particular patterns of failure, often due to unanticipated interactions between elements within the overall system. Plus, masterpieces of Modern architecture are not always paragons of air quality—a condition exacerbated by all those sealed curtainwalls and aging HVAC systems.

When off-the-shelf parts or systems fail, they are easily replaced. But when proprietary materials or elements are involved, it raises hard questions for historic preservation and restoration. That one-of-a-kind illuminated ceiling system? It survived the first 40 years of service life just fine, but as it systematically begins to fail, it proves impossible to get replacement parts—forcing total replacement of the system, disposal of useful material, and loss of historic fabric.

"The GSA has taken the lead on greening historic buildings—a real commitment. Recognizing that different strategies are appropriate for different kinds of buildings is incredibly thoughtful," says Jean Carroon, FAIA, principal at Boston's Goody Clancy and chair of the AIA Historic Resources Committee, which is co-sponsoring the session. "They have a very good system of evaluating the contributing features of each of the buildings in their portfolio, and the GSA is an international model for the stewardship of buildings of all periods."

—By Elizabeth Milmarik **AIA**

➔ To learn more about this and other sessions at the 2012 AIA National Convention, visit convention.aia.org.

AIA PERSPECTIVE

WELLNESS, NATURE, AND PLACE-MAKING



PHOTO: WILLIAM STEWART

WE KNOW THAT THE WORLD FOR WHICH WE DESIGN AND BUILD is changing rapidly. But, thinking far into the future is not always a fruitless exercise. Recall the the Pan Am shuttle that takes passengers to the space station in the 1968 film *2001: A Space Odyssey*. Well, commercial flights into space don't seem too ridiculous any more, as government space agencies have ceded a lot of ground to the private sector. Just ask Richard Branson how well things are going.

As architects, we have to dare to imagine the future, because it will be the future that decides the value of what we do today. So how do we build the kind of flexibility needed into stone, metal, and glass, so that it that will bend to tomorrow's needs?

We already know a lot about what we could see in the future: accelerating urbanization, population growth (a staggering 7 billion people globally by 2015), the aging populations of industrialized countries, climate change (or, in Thomas Friedman's words, "climate weirdness"), the increasing expense and scarcity of fossil fuel, globalization, and so on. Every one of these factors is relevant to the direction of future practice. But I'd like to focus on a few current trends that can broaden an understanding of the value that we bring to our clients and the public.

Wellness. Several years ago, the AIA Board of Directors invited Dr. Richard J. Jackson to serve as a public member. The invitation was extended not simply to gain an outside perspective (which is certainly valuable); the co-editor of *Making Healthy Places* was invited because he clearly grasps the connection between health and what we build. Architects understand this connection; but not many physicians do, and such knowledge is even scarcer among the public. As the cost of providing healthcare continues to accelerate, voices such as Jackson's will help bring architects to the table where the


discussion shifts, as it must, from treating illness to keeping people well (and giving them the tools to keep themselves well).

Nature. Increased urbanization could mean diminished understanding of how we are connected to nature. We have a role to play in integrating knowledge of nature into the way that cities are shaped. This goes deeper than providing islands of green spaces: It means working on the whole urban canvas, addressing everything from ozone to stormwater to wastewater. Rising to that challenge means greater collaboration between architects, urban planners, landscape architects, and engineers, each of whom holds a piece of the larger puzzle.

Place-making. Although the public will continue to marvel at and be inspired by singular works of genius, there is a growing hunger for connections, for rootedness, for places that are special and not interchangeable. Architects have always done this, yet I wonder if we are guilty of encouraging the media to discuss "design" as a noun rather than a verb, as a beauty contest rather than a way of thinking that heals the fracturing of human experience. That has to change, and I assure you that the AIA will be leading that change.

There are of course more opportunities to expand our awareness of design's potentially positive impact. Wherever such a discussion leads, by making the effort to look forward—and acting on those insights today—we'll be more likely to be partners with (and not casualties of) the better future that's struggling to be born. **AIA**

Jeff Potter, FAIA, 2012 President

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Cara, 24 years old

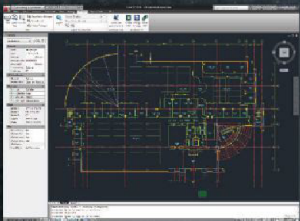
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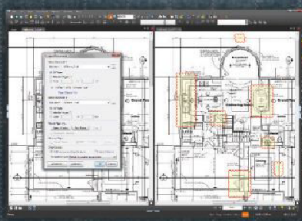
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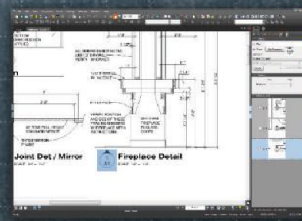
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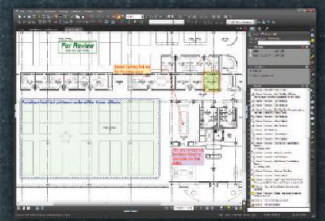
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Delivering IPD

DRAFTING THE LEGAL FRAMEWORK IS ONLY THE FIRST STEP TOWARD INTEGRATED PROJECT DELIVERY. **HOWARD ASHCRAFT** EXPLAINS HOW TO GET IPD PROJECTS OFF ON THE RIGHT FOOT.

INTERVIEW BY ERNEST BECK
PHOTO BY JEFF SINGER





AS BUILDING PROJECTS become increasingly complex, architects, engineers, contractors, and owners have considered integrated project delivery (IPD) as a way to share information, practices, and talent to help deliver a project on time and within budget. The trend has mirrored the emergence of technologies such as BIM as well as an effort to improve efficiencies and meet benchmark sustainability goals. A specialized legal structure is critical to implementing IPD successfully, according to Howard W. Ashcraft Jr., 60, a partner in the San Francisco law firm Hanson Bridgett and head of its construction practice. Ashcraft drafts IPD contracts for projects across the country, whether they cost \$1 million or \$1 billion, and for a wide range of building types. Ashcraft spoke with ARCHITECT about how to craft a legal document for an IPD project—and how to manage the relationships that come with it.

“AT THE START OF A PROJECT, I ALWAYS INTERVIEW THE KEY PARTIES TO FLESH OUT THEIR CONCERNS AND BASIC GOALS. I WANT TO KNOW WHAT SCARES THEM. I PROVIDE INFORMATION ABOUT THE ADVANTAGES AND DISADVANTAGES OF IPD AND TRY TO FIGURE OUT WHAT THEIR COMMON INTERESTS ARE.”

Get engaged.

IPD can connect fragmented design and construction industries. The building process is divided into many responsibilities, and at times, people responsible for different roles—contractors, subcontractors, and design consultants—don’t communicate. “Designers don’t want to cross the line. Contractors will say, ‘I’m not a design person,’” Ashcraft says. At a time when the construction industry is trying to be leaner, new approaches are merited. IPD represents a way to bring different minds to bear on one problem—a virtual organization with a different business and legal structure that engages all the participants. “With IPD, design is an equal partner at the table with the owner and contractor. That wasn’t necessarily the case before,” Ashcraft says.

Don’t be afraid.

“At the start of a project, I always interview the key parties to flesh out their concerns and basic goals. I want to know what scares them,” Ashcraft says. “I provide information about the advantages and disadvantages of IPD and try to figure out what their common interests are.” The next step is a workshop or a boot camp to talk about microstructures—that is, how the design and information will flow. “I develop a business structure that matches this team and their project. We align the goals and terms of a contract with their circumstances.”

Unlearn to learn.

People bring their own experiences and checklists to drafting contracts, but they aren’t always relevant in the context of IPD, Ashcraft says. You can end up negotiating the wrong thing. And you have to define what sort of metrics, subjective and quantitative, will be used. Another thing to deal with is the issue of owner satisfaction: how to get maximum value out of the budget. Any defect in the design can drive up cost, which makes the contract a better ally of the designer. “On my checklist is how to set the target cost and validate that in a way that gives a team putting their profit at risk some comfort,” he says.

Change is possible.

IPD projects can be better planned than traditional ones, but problems can come up, he says. The owner can change his or her mind, or an obstacle may interfere with construction. Construction or design problems that emerge risk a project’s profitability. So remember that IPD can be altered throughout the project’s life span. Even if IPD projects are leaner or BIM-enabled, there is room for improvement. “We always want to ask the question, ‘Can we improve it on the fly as things change and develop?’” Ashcraft asks. “It’s not so much the contract itself that we change but the numbers.”

Stay flexible.

“Never engage in IPD with people who you think are unethical,” Ashcraft says. “Some people are just not amenable to collaborations. They want to take personal advantage of a situation. They can cause damage to a project, and you don’t want them on your team.” The best way to suss out a bad fit is during negotiations over the agreement, before a project commences. Once the project starts, people who don’t work out or can’t perform as expected will nevertheless have to be replaced—every once in a while, someone gets voted off the island. But “you can replace someone, and it won’t jeopardize the entire project,” he says.

Pay out.

“When a project is completed, we have a close-out process,” Ashcraft says. “If it’s a really big project, we conduct an audit to make sure the numbers have lined up correctly. We calculate the bonus, if it came in below cost, and the final profit is paid out to the team. Then we have a big party.”

Not for everybody.

IPD can be applied to any project—but the benefits and gains are not always the same, he says. It’s very popular for large projects such as healthcare facilities and hospitals, due to their multiple systems and rapidly evolving technology. For a parking structure, a pretty straightforward project, design/build will do just fine. “Or with a warehouse. Who cares?” Ashcraft asks. “But when a project requires higher levels of flexibility and certainty, and when it’s more complex and the opportunity for misfortune is higher, then it’s better managed through IPD.” □

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→ TYPOLOGY

Stacked

THE NEXT GENERATION OF LIBRARIES IS MADE FOR THE SPOKES, NOT THE HUB—AND BOOKS ARE ONLY A PART OF THEIR PROGRAMS.

TEXT BY ELIZABETH EVITTS DICKINSON



Surrey City Centre Library • Surrey, British Columbia, Canada • Bing Thom Architects • The \$36 million facility, which serves as a community center for the Vancouver suburb, has served as a performance venue for the Surrey Symphony.

TODAY, A PUBLIC LIBRARY is so much more than a mere repository for a physical collection. The staid institution marked by rows of dark stacks and a bespectacled librarian with a single digit poised mid-shush is being replaced with light-filled, dynamic spaces intended for a multitude of uses. Yes, there are still quiet areas for study and research; yes, there are still stacks of books and periodicals. But there are also coffee shops and cafés, play areas and computer labs, and community rooms for gatherings of all types. The evolution of print into digital media explains part of the library's transformation—but not all of it. Cultural shifts in the way we work, learn, and play are also influencing the library's physical design. As a result, more is being asked of this civic structure.

Take the Surrey City Centre Library designed by Bing Thom Architects that opened last year. Located in a major suburb outside of Vancouver, British Columbia,

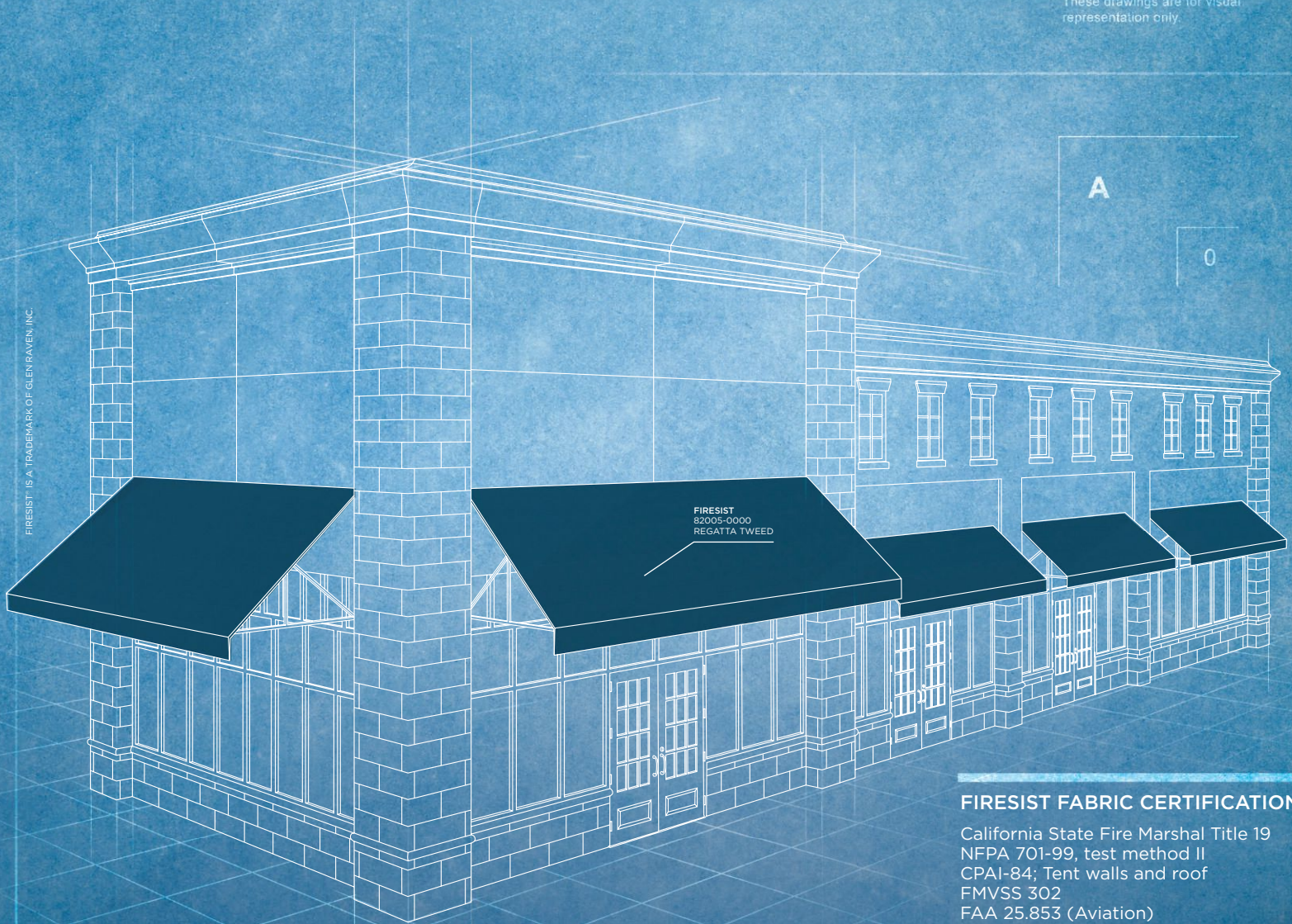
the library is the hub of a new downtown and the first in a series of planned civic buildings, including a new city hall. The library is meant to be a locus for the sprawling suburb and a place for its nearly 500,000 citizens to gather. "They decided the library would be a great institution to show that this is the center of town," says Michael Heeney, a principal and executive director at Bing Thom Architects.

Within its 82,000 square feet, the Surrey City Centre Library boasts a large children's library, more than 80 public computers, Wi-Fi, a coffee shop, and quiet rooms for individual work as well as meeting spaces for larger groups. The building uses the tight urban lot to its benefit, creating different scales of space that move from a grand entrance and reading room capable of



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Tenley-Friendship Library in Washington, D.C.



White Tank Branch Library and Nature Center in Waddell, Ariz.

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hosting large events to rooms with lower-height ceilings for stacks and small, private study rooms. “As more people live downtown in smaller spaces and as real estate gets more expensive, the library is becoming this important space,” Heeney says. “If the library of the ’90s was all about books, the library of today is all about space.”

Bing Thom embraced a novel approach to glean the program for this library. Because the project was funded by government stimulus dollars, it needed to be completed in under 20 months (similar to the ambitious time caps placed on stimulus dollars in the U.S.). The architects couldn’t convene all the usual public meetings, so they took to social media: The designers engaged the public through social media and a blog to ask what people wanted from the library. The blog got up to 6,000 hits per month at the height of the design process, and the responses were illuminating: Some said they worked from home and would use the library as an office. Others home-schooled and needed a place to bring children for quiet study or tutoring. Some asked for flexible furniture. “People were totally into furniture,” Heeney says. (The interior is now outfitted in places with beanbag and hammock chairs and other mobile pieces.)

While the types of activities inside the library may be expanding, the size of the library is not. “The enormous central library is probably a thing of the past,” Heeney says. With a collaborative process of loaning resources between regional libraries, no single library must fulfill every need, he says. Also, smaller libraries embedded in communities are important to creating walkable neighborhoods. “I was talking to an older couple looking to retire, and within a 15-minute walk they wanted a grocery store and a library,” Heeney says.

The library as neighborhood amenity isn’t unique to Canada. For years, Washington, D.C., went without new public libraries. And despite its Ludwig Mies van der Rohe–designed central library, the system did not offer much to recommend itself. But a recent spate of buildings

reflects many of the market forces influencing design.

Opened in January 2011, the Tenley-Friendship Library is a LEED Gold—certified, 21,472-square-foot space sandwiched in a busy commercial strip in Washington, D.C. Because of the small site, Zena K. Howard, AIA, principal at the Freelon Group, said that the firm needed to design a two-story solution with children's programming on the first floor and adult reading rooms above. And because it's located in a neighborhood with lots of children, the architects had to think about parking. Stroller parking, that is. "There are lots of professionals with young children who walk to the nearby Whole Foods or stop and get some coffee and bring it into the library," Howard says. "Double-stroller parking was a huge deal."

Howard agrees that libraries are not increasing in overall size. Rather, they are becoming savvier about how to use space inside and, in particular, how to display books and DVDs. She says that libraries now compete with private-sector businesses such as Barnes & Noble and Starbucks—which changes how a library works. "They are becoming more destination places for people to come and commune and less about going someplace to be isolated," she says.

Individual study rooms for one or two people are another design element being used in today's libraries—a good solution for home-schooled children. The rooms average about 9 by 7 feet, according to Howard, and usually include Wi-Fi and a place to plug in a laptop.

Sustainability is another element driving library design. The 2010 Anacostia Library, another project by the Freelon Group for the District of Columbia Public Library system, recently earned LEED Gold certification. Here, the 22,348-square-foot library is embedded in a community of single-family homes and multifamily apartments. The architects preserved much of the existing landscape while honoring the residential scale of the surrounding neighborhood. The library sits back from the edge of the site, creating a greenspace border, and uses existing oak trees for shading. A bioretention area mitigates water pollution to the Anacostia River. Inside, advances in daylighting, temperature and humidity control, and lighting make for a bright and airy interior without compromising the library collection.

Integrating a library into the natural world was also a primary goal of the White Tank Branch Library and Nature Center in Waddell, Ariz. Located at the entrance of a regional park with 4,000-foot peaks and 25 miles of hiking trails, this may be the only library housing rattlesnakes and Gila monsters along with books and magazines. The 29,000-square-foot structure, designed by DWL Architects + Planners in 2010, is a cost-saving partnership between the Maricopa County Parks and Recreation Department and the county library department.

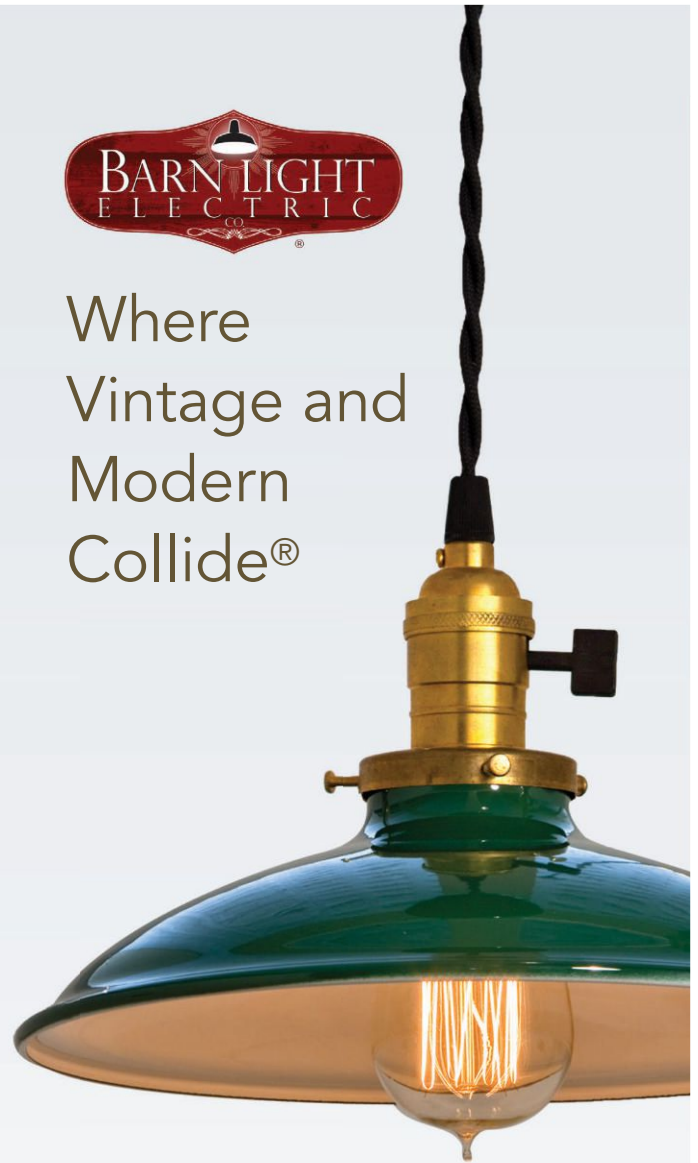
White Tank is also one of the few LEED Platinum libraries in the country—no small feat, considering its location in a desert known for 115 F summer days and breathtaking thunderstorms. The architects stretched the project budget by helping to secure a grant from the U.S. Department of Energy for a solar array on the roof. That, coupled with other energy-saving techniques such as insulation, reflective roofing, light sensors, and shading, reduces energy consumption by 50 percent beyond ASHRAE 90.1-2004—or about \$25,000 a year, according to DWL associate Adam Sprenger, AIA. The architects also salvaged every saguaro cactus on the property (about 50 of them) and kept them in a nursery before replanting them back on the site.

Taking advantage of abundant views of nature was a design priority for White Tank. A large central room with panoramic windows—each bay includes a photosensor for automatic solar shading—looks out on the mountains while private reading niches are tucked into the periphery. "We intentionally brought the stacks down low and spaced them wider because it was more about enjoying nature and less about the collection," Sprenger says.

Library as nature preserve? "The library used to be all about books," Sprenger says. "But it's not anymore." □



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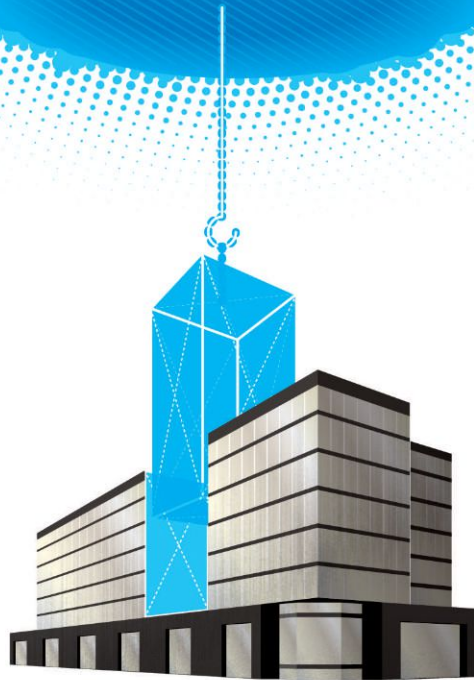
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Climate Change

WHY IS THE LEADING ENTERPRISE SOFTWARE COMPANY FOR DESIGNERS GETTING AHEAD OF ITS CUSTOMERS? BECAUSE IT THINKS IT KNOWS WHERE THEY'RE GOING.



TEXT BY ADAM MAZMANIAN
ILLUSTRATION BY MCKIBILLO

CLOUD COMPUTING IS PRETTY UBIQUITOUS for a technology that's still being touted as the Next Big Thing. Every time you check your account on Gmail, stream a movie over Netflix, or feed your cows on FarmVille, you are tasking cloud-computing infrastructure—essentially using your PC or mobile device as a terminal that is linked to more powerful computers that in turn allow it to access and manipulate data stored remotely.

In theory, cloud computing offers an unbeatable value proposition for businesses that rely on computing technology—access to high-powered processing on a subscription or pay-as-you-go basis, without the bother of maintaining a network of servers and the staff and capital expense that goes with it.

Yet it's not clear what the actual appetite is among small- and medium-sized businesses for investing in cloud-computing infrastructure. At times, it appears to be more resignation than real enthusiasm. A Forrester Research report published last April found that just 36 percent of small- and medium-sized businesses cited “desktop virtualization” as a critical or high priority. But

IBM's 2011 Tech Trends Report registered that 75 percent of its survey group says that within two years their organizations will be designing for the cloud.

Given the mixed signals from industry, marketers of enterprise software have been slow to move to the cloud. But the exceptions test the rule: Autodesk is going all in. And one company that's already there, Google, may be making further inroads into the design community.

Based in San Rafael, Calif., Autodesk produces AutoCAD and a suite of other software programs, products that have become ubiquitous in design environments ranging from architecture and engineering to industrial design and computer animation. Several recent acquisitions, including Pixlr, Instructables, and Horizontal Systems, have focused on expanding Autodesk's online sharing and cloud platforms. Last September, Autodesk announced the launch of Autodesk Cloud, a build-out of its popular software-subscription service. An Autodesk spokesman told Bloomberg that the company expects that “all of our major products will be available in the cloud within the next three years.” Since the service launched in October, 1.6 million new Autodesk Cloud subscribers have signed up.

Still, when Autodesk Cloud was announced, there was speculation that the move was a strategy for riding out the recession—just as Autodesk's core clientele of design and engineering firms had been forced to retrench during the economic downturn. The company had scaled back its research and development (R&D) budget sharply, from \$576.1 million for the fiscal year ending January 2009 to \$457.5 million in 2010. R&D spending rebounded somewhat in fiscal 2011 to \$496.2 million, and R&D spending as a percentage of net revenue remained stable throughout the economic downturn.

Forrester analyst James Staten, however, never saw the cloud as a sign of gloom. In a gushing blog post published the day Autodesk Cloud was released, Staten wrote that cloud-based rendering was itself an innovation that promised to “change the way architects, engineers and designers get their jobs done and

\$95 BILLION

Estimated global spending by small- and medium-sized businesses on cloud computing by 2014

SOURCE: AMI-PARTNERS
2011 SMB CLOUD SERVICES PRACTICE

dramatically improve how they interact with clients.”

Autodesk Cloud offers access to powerful computing infrastructure, says Shanna Tellerman, Autodesk product-line manager for the cloud platform. Instead of doing 3D renderings on their own network, architects can “push that out to the cloud, saving a tremendous amount of time.” The renderings can be pushed out to clients, who can access and edit documents via AutoCAD WS, a free Web-based and mobile application product that comes with 1GB of cloud storage space for non-subscription customers. These extended pieces, Tellerman says, “change the way customers are working and interacting with their network of design professionals.”

These are relatively prosaic business solutions. But listening to Autodesk’s technologists talk about the cloud, one senses that these are just early steps. Words such as “democratization” and “ecosystem” come up frequently. A tool called Autodesk Revit Conceptual Energy Analysis allows for virtual testing of energy optimization using cloud-computing tools, which have access to more than 1.5 million GPS-linked weather datasets from around the world. Another virtual performance tool, Autodesk Inventor optimization, allows designers to simulate how a designed object will perform under a variety of conditions. This means, from a business standpoint, that Autodesk customers will be able to use their cloud space as a repository of design plans, virtually reconciling infrastructure with notes and metadata embedded by users over time. This information can be used for maintenance, rebuilding, retrofitting, and renovation.

While most of the promise of cloud applications to Autodesk’s design software is about design in the digital space, Autodesk’s Gonzalo Martinez brings up the possibility of going from the physical world to the virtual world. Martinez is director of the strategic research office of the CTO at Autodesk. Martinez takes the example of a 30-year-old building for which no blueprints exist, or for which existing blueprints are obsolete due to renovations. With a laser scanner, SLR, or camera phone, a user could potentially take a series of scans or pictures of a building and use those to reconstruct its design plans. With the kind of application Martinez describes, such physical-to-digital virtualizations can be rendered in the cloud and subjected to the same suite of performance and energy tests available to Autodesk subscribers.

Beyond these ambitious conceptual plans, there are other signs that Autodesk is expanding its user base beyond the traditional core of design and engineering professionals. Sketchbook Pro, an Autodesk app for Apple products, targets the consumer market. Ranging from free (for mobile devices) to \$59 (for computers), Sketchbook Pro is one of a suite of Autodesk products for the App Store that has racked up 2.2 million downloads.

This expanding market is ground that is also occupied by Google, a forerunner of cloud-computing technology. Google’s prosumer design tool, SketchUp, boasts about 2 million active, seven-day users, according to SketchUp project manager John Bacus. At \$495, SketchUp Pro costs far less than the enterprise software packages from Autodesk, Adobe, and others. “I think for that reason,” Bacus says, “SketchUp has changed the

usage patterns a bit inside the profession. Rather than have the one guy in the office who uses the \$10,000 package, everyone can have a seat of SketchUp.”

But Google isn’t Autodesk’s problem. “The challenge this year is to help our customers understand what the cloud is—basic-level questions,” Tellerman says. To that end, Autodesk is giving limited cloud access to both subscription and non-subscription customers.

A more substantial hurdle is convincing subscribers that the cloud is safe for data. For large firms that do work for government clients, full adoption could have to wait until the federal government releases cloud-computing security and data-protection guidelines for contractors. IT infrastructure modernization is an Obama administration priority, and the National Institute of Standards and Technology did offer a set of suggested guidelines for cloud computing in January. But until there are hard and fast policies, Tellerman notes, “some kinds of clients are not going to be comfortable publishing sensitive material and data into the cloud.”

Even at the digital frontier, developers are measuring anticipation with caution. At Google, Bacus—who has degrees in architecture and worked on SketchUp with @Last Software before its 2006 acquisition by Google—is not convinced that cloud-based rendering farms are the most practical use of outsourced computing for design. “The most useful cloud-based tool for architects,” he says, “might be Gmail.” □

LISTENING TO AUTODESK’S TECHNOLOGISTS TALK ABOUT THE CLOUD, ONE SENSES THAT THESE ARE JUST EARLY STEPS. WORDS SUCH AS “DEMOCRATIZATION” AND “ECOSYSTEM” COME UP FREQUENTLY.

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Total Cost: \$6.5 million
Completion: 2010

2. JENNIE SMOLY CARUTHERS BIOTECHNOLOGY BUILDING

Architect: Robert A.M. Stern Architects, New York, N.Y.; HDR Architecture, Omaha, Neb.
Total Cost: \$139.5 million
Completion: February 2012

3. THE ONYX

Architect: Harvey M. Hine Architecture+Interiors, Boulder
Total Cost: \$5.4 million
Completion: 2008

MARKET STATS**10.0+**

EXPANSION INDEX VALUE, BOULDER

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

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POPULATION, 2012

SOURCE: CITY OF BOULDER

107,600

PROJECTED METRO POPULATION, 2020

SOURCE: CITY OF BOULDER

2.9%

POPULATION GROWTH, 2000–2010

SOURCE: CITY OF BOULDER

5.8%

COUNTYWIDE UNEMPLOYMENT, DECEMBER 2011

SOURCE: CITY OF BOULDER

696,682 S.F.

OFFICE INVENTORY

SOURCE: CCIM/COSTAR REALTY INFORMATION

7%

OFFICE-SPACE VACANCY RATE, Q4 2011

SOURCE: CCIM/COSTAR REALTY INFORMATION

\$377,200

ESTIMATED MEDIAN HOME VALUE, DECEMBER 2011

SOURCE: ZILLOW

→ **LOCAL MARKET**

Boulder, Colo.



TEXT BY MARGOT CARMICHAEL LESTER AND CLAIRE PARKER

YOU'LL ALWAYS FIND BOULDER on a Best-City-for list. Most recently, it was named #1 Top College Town (by *Livability*) and America's Best Town for Startups (*Bloomberg Businessweek*). That's reason enough for people to flock to the "People's Republic of Boulder." A local legend may explain why they stay.

"There is a myth that when the Arapahoe Indians were driven from the Boulder Valley by white settlers, Chief Niwot put a curse on the valley that would not allow anyone who comes here to leave, ultimately leading to the destruction of the beauty that surrounds this place," reports E.J. Meade, design principal with Arch11, who visited Boulder after college and never left.

Local officials have created many policies to that end—and to varying effect. A rural buffer rings the city, and the entitlement process is described diplomatically as demanding. There is a 35-foot height limit throughout the bulk of the city. This is "detrimental to density, and density is by nature sustainable—it makes mass transit work, it makes neighborhood nodes work, it makes society work," says Christopher Herr, AIA, a principal with local firm Studio H:T. "So Boulder faces a conundrum of regulations that are in opposition to a perceived identity."

Adaptive reuse and urban infill in the downtown area are the main opportunities for development. The Onyx, designed by local firm Harvey M. Hine Architecture+Interiors (HMH), is a three-story, 25,000-square-foot mixed-use building featuring six

residential lofts over street-level commercial space. Sited on the zero-setback 15th Street, it received the 2009 AIA Colorado North Chapter Merit Award for Interiors. Two other downtown projects are in the offing.

While private development slowed during the recession, state and local government projects continued. The city's new Boulder County Regional Fire Training Center features a sloped roof and protective metal skin to block direct sun and harsh winds (the wind load is up to 140 mph in some parts of town). The LEED Gold-certified building earned the 2011 AIA Western Mountain Region Merit Award, 2010 AIA Colorado Citation Award, and 2010 AIA Denver Merit and People's Choice awards.

The University of Colorado's Jennie Smoly Caruthers Biotechnology Building is a 336,850-square-foot magnet for the institution's biotechnology, biochemistry, and chemical engineering programs—and a catalyst for the bioscience sector, which employs more than 36,000 workers and generates more than \$400 million in state taxes.

Where will Boulder be in 10 years? Harvey Hine, AIA, HMH's founding partner, expects it won't look "a whole lot different than it looks now. Most of the design work will be in renovation and not new construction. Some old shopping centers will be redeveloped, hopefully into mixed-use." His partner, Cherie Goff, AIA, is hoping for more density and infill. "I think these are the only long-term ways to address growth without sprawl." □

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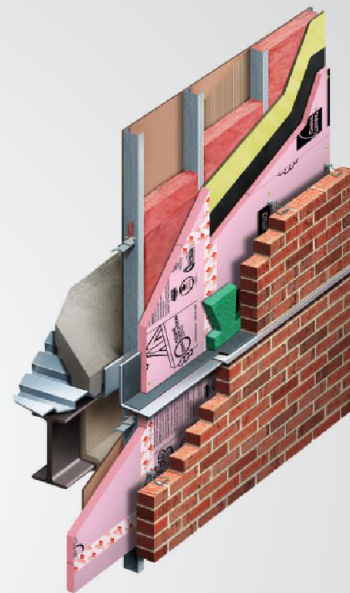


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TECHNOLOGY



→ PRODUCTS

Reclaimed Wood

TEXT BY WANDA LAU
PHOTOS BY NOAH KALINA

Sourced from dismantled barns throughout New England and the Midwest, **Altruwood's Hand-Hewn Beams** have the texture and marks of hand cuts. The timbers come in a range of nominal square and rectangular profiles typically between 6x6 and 14x14, and in lengths between 6' and 26'. Custom sizes may be requested. Hardwoods (sample shown), which are generally darker brown, and softwoods, which are lighter brown, are available; they may be power washed (top half) to showcase their color or left in their original patina (bottom half). The wood may also be borate treated for insects. • altruwood.com • Circle 100

Mushroomwood by **Trestlewood** originates from platforms formerly used in mushroom-growing facilities across the U.S. Typically comprising a mixture of cypress, hemlock, and cedar species, the nominally 1"-thick wood comes in widths of 4", 6", and 8", and lengths from 4' to 16'. The weathered and air-dried wood may also be kiln-dried and fumigated. • trestlewood.com • Circle 101

American Classics, a line of solid-plank, oak flooring by **Viridian Reclaimed Wood**, is recovered from industrial shipping pallets and crates. The domestic hardwood is sourced from the southeastern U.S. and milled in Portland, Ore. Available in red oak, white oak, and rustic oak, the 3/4"-thick planks are 4 1/2" wide and 3' to 8' long. • viridianwood.com • Circle 103

Based in Salem, Ore., **Barnwood Naturals** sources the lumber for its **Charred/Burnt** wood siding from barns and buildings located within a 500-mile radius. After dismantling the structures by hand and documenting their history, the company uses an ancient Japanese technique of charring the wood—typically cedar— to make the siding resistant to fire and pests. • barnwoodnaturals.com • Circle 102

Upcycled from cabinet and door scraps, **Trail Mix** by **Everitt & Schilling Co.** comes in 6", 8", and 10" lengths. The individual pieces within the composite tile are 2" high for installation consistency, and have depths of 3/8", 5/8", or 7/8". One or multiple wood species—oak, maple, walnut, alder, poplar, or hickory—may be used or mixed together within a tile. Trail Mix can be unfinished, satin finished, or painted in Granny Smith green, fire-engine red, white, or a custom color. • eandstile.com • Circle 104

Kirei harvested Douglas fir and hemlock fir from demolished buildings in the Pacific Northwest to create its **Windfall** reclaimed-wood engineered panels. Made from 5/8", 3/4", and 1" wood strips laminated together, the 3/4"-thick interior wall panels come in 27"-by-96" and 48"-by-96" sizes. The wood may be unfinished, finished in a clear coat, or stained and prefinished in anthracite (shown), mocha, ivory, and leather. • kireiusa.com • Circle 105

Centennial Woods's Wyoming Snowfence may be used in many building applications, including siding, flooring, and wainscoting. The vertical 2x6 frames—or "bucks"—and 16'-long, 1x6 face boards from irreparable fences are harvested by hand. Naturally dried over decades of exposure, the lumber comprises a mixture of Douglas fir, ponderosa pine, lodgepole pine, and spruce. It may be partially or completely milled and finished. • centennialwoods.us • Circle 106



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TEXT BY CHARLES LINN, FAIA

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Learning Objectives

1. Describe the economic and environmental effects of sky glow, light pollution, and light trespass.
2. Describe how the codes and standards discussed in the article are addressing excessive illumination by implementing lighting zones.
3. Describe how the Model Lighting Ordinance will affect lighting design and illumination levels.
4. Describe how lighting technologies can affect the illuminance needed to see clearly while maintaining a feeling of safety.

→ CONTINUING EDUCATION

Overexposed

A NEWFOUND APPRECIATION FOR DARK SKIES, A MODEL LIGHTING ORDINANCE, AND LEDS MAY HELP MAINTAIN NIGHT VISION BY REDUCING OUTDOOR ILLUMINATION LEVELS.



IN CITIES AROUND THE WORLD, telling a child, "I used to see stars from my backyard," may soon sound as credible as, "I used to walk 10 miles to school in 6-foot-high snowdrifts uphill in both directions." Sky glow, light pollution, and light trespass are the consequences of development and outgrowth in urban and rural landscapes. The damage isn't merely aesthetic. Research suggests that excess night light can harm nearly everything living under the sun. The offender may be as simple as stadium lights fatally mistaken by fledgling birds for the moon, or the neighbor's porch light that beams into your bedroom, resulting in fatigue and diminished productivity.

The amount of energy and money expended to illuminate what is essentially water vapor and floating particulates in our atmosphere is not trivial. According a 2009 document published by the nonprofit International Dark-Sky Association (IDA), the U.S. expends 22,000 gigawatt-hours of electricity—the equivalent of 3.6 million tons of coal—each year in light pollution. At the rate of 10 cents per kilowatt-hour, this energy translates to \$2.2 billion annually.

Past Practices: The Bad and the Ugly

For decades, charts in outdoor-luminaire catalogs and standards such as ANSI/IESNA RP-8: *Roadway Lighting* dictated exterior lighting design. It seemed like nearly anyone could be a lighting designer—no calculations required. Manufacturers sold a bunch of luminaires

and everything was overlit. Energy was cheap and sky glow was mostly ignored outside the astronomer community, which watched its observatories become decreasingly effective.

In the past half-century, the light source of choice for streets and parking lots was high-intensity discharge (HID) lamps, which included mercury vapor and low-pressure sodium lamps, but mostly the ubiquitous yellow-orange high-pressure sodium (HPS). The prevalence of HPS, possibly the greatest source of light pollution in the U.S., is evident in NASA's aerial photographs, which are both beautiful and lamentable.

It is difficult to design optics that can control stray uplight and glare without significant tradeoffs in luminaire efficiency. Despite their notoriously poor color rendering, HPS lamps are inexpensive, can last up to 24,000 hours, and output a lot of light initially; the output declines as they age. In the last 30 years, the use of metal halide, an HID source that produces whiter light than HPS, has increased, but HPS still dominates.

Millions of HPS drop-lens or "cobra head" streetlight luminaires remain in use today. Because they produce large amounts of high-angle light, they can create a lot of glare. With routine maintenance such as lamp and ballast replacement, they can last for 30 or more years. Because they are still being installed, it will be decades before some are ready for replacement. In the U.S., most roadway lighting, which is owned by municipalities or utility companies, is not subject to energy codes.

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Zoned In: New Codes and Standards

The California Energy Commission's Title 24: *Building Energy Efficiency Standards* contains the most stringent lighting requirements in the nation. Though Title 24 first issued regulations regarding lighting for interior spaces in the early 1990s, it wasn't until the 2005 edition that maximum exterior-lighting power densities were included. It also recognized that overlighting one area makes it difficult to see into surrounding areas, which, as a result, are also overilluminated.

Title 24 introduced the concept of lighting zones to regulate the power density of the exterior lighting allowed in each zone. U.S. Census Bureau maps determined the boundaries for three of the four zones: Zone 1 applies to parks, recreation areas, and wildlife preserves; Zone 2 encompasses rural areas, where low levels of ambient lighting are allowed; and Zone 3 is set aside for urban areas. Zone 4 is reserved for special-use districts, such as a sports complex, which is determined and adopted by local jurisdictions.

But Title 24 "is an energy standard," says Nancy Clanton, president of Clanton & Associates, a lighting-design firm based in Boulder, Colo. "It can't address issues like light pollution and glare."

In 2004, Clanton co-chaired a task force to take on the problem of expanding the lighting zones Title 24 established into the Model Lighting Ordinance (MLO) that would address the issue of light pollution. The joint International Dark-Sky Association/

Sky glow and city lights photographed in a night-pass view of the southeastern U.S. from the International Space Station in 2011. Atlanta is shown at the center; the Florida peninsula appears under clouds on the right.



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technology



Illuminating Engineering Society (IDA/IES) task force included dark-sky advocates, lighting manufacturers, lighting designers, and a city planner.

After years of research, intense negotiations among parties, and public reviews, the IDA and IES boards approved the MLO in June 2011. The writers intended it for use as a zoning overlay ordinance, meaning that its lighting zones could closely follow a municipality's land-use maps. The MLO has five lighting zones: Lighting Zone 0 (LZ-0) is for environmentally sensitive areas that should have no light at all; LZ-1 is for one- and two-family residential neighborhoods and small rural communities where low ambient light is suitable; LZ-2 applies to areas for multifamily and institutional use where moderate ambient light is acceptable; LZ-3 is for commercial areas, where moderately high ambient light levels would be allowed; and LZ-4 is for special culture and entertainment districts, such as New York's Times Square where extensive light is unavoidable.

In municipalities that choose to adopt the MLO, individuals seeking building permits or approvals from the local planning department would have to comply with its guidelines, subject to consequences determined by the particular city. By adopting the MLO, communities that want to be night-sky friendly do not need to hire engineers, planners, and lighting designers to develop regulations for them. The MLO provides regulatory consistency from town to town.

The MLO recommendations are similar to ANSI/ASHRAE/USGBC/IES 189.1P: *Standard for the Design of High Performance Buildings*, but they also cover residential lighting. However, they only cover lighting on private property; the MLO's roadway-lighting section is optional.

The MLO uses "BUG ratings" developed by the IES in TM-15-07: *Luminaire Classification System for Outdoor Luminaires*. Manufacturers derive the Backlight-Uplight-Glare (BUG) ratings for luminaires from their photometric data. Backlight references the light that emanates from the back of the luminaire and often causes light trespass. Uplight—light 90 degrees or above nadir—is generally responsible for sky glow. Glare—visually disabling light that can cause discomfort or be a nuisance—originates from any part of the luminaire, though BUG ratings are primarily concerned with high-angle light projected from the luminaire's front and back.

Luminaire designers use lenses and reflectors to control how the light produced by a fixture is distributed; this distribution, along with the amount of light output, also factors into its BUG rating. The highest number in its BUG rating determines the minimum lighting zone in which the fixture may be used. For example, you can use a fixture with a BUG rating of B2-U2-G4, which puts out low levels of backlight and uplight but the highest level of glare, only in Lighting Zone 4 because of its G4 rating. If its rating had been B1-U1-G2, then the fixture could be used in LZ-2, LZ-3, and LZ-4. Manufacturers are beginning to assign BUG ratings to specification-grade exterior luminaires as a standard practice.

"ON PAPER, THE LOW-GLARE LUMINAIRES ARE LESS EFFICIENT THAN THE GLARE BOMBS. SO THE WORST FIXTURES TEND TO BE VERY POPULAR."

—NANCY CLANTON,
CLANTON & ASSOCIATES

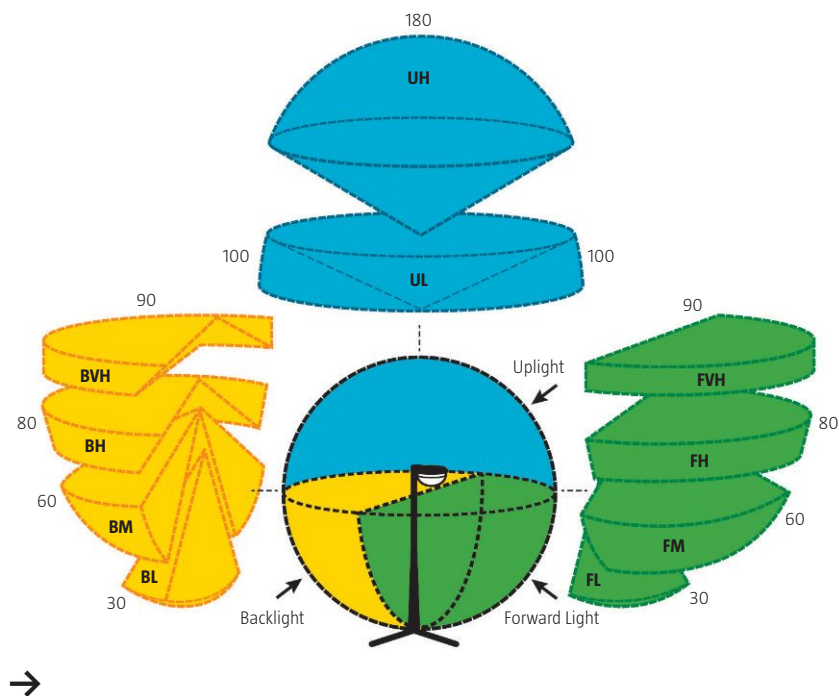
“One of the problems is that, on paper, the low-glare luminaires are less efficient than the glare bombs,” Clanton says. “So the worst fixtures tend to be very popular.” Because glare bombs will likely have poor BUG ratings, their use will be limited in environmentally sensitive areas.

The MLO also distinguishes itself by restricting the total allowable lumens in a given area rather than specifying allowable watts-per-square-foot power densities. Though power densities are generally easier to calculate than lumens, Clanton says, the task force concluded that relying on the use of power densities instead of lumen levels would make it too easy for people to game the system: “Some people would just choose the most efficient source possible, and then we still would not be decreasing the amount of stray light being produced.”

The MLO also has a provision for a curfew. Municipalities that adopt the ordinance can require that lighting be dimmed or turned off after a certain hour.

Jim Benya, principal of Portland, Ore.-based Benya Lighting and co-chair of the IDA/IES task force that authored the MLO, points out another reason the document is significant: “The whole premise is to reduce light pollution, by preventing bad practices—and not by encouraging good practices,” he says. “Good practices are hard to define and encourage. But by preventing bad practices, we can get our arms around the issue.”

BUG rating components



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To minimize light trespass, Tillett Lighting Design kept light levels beyond the Ellen S. Clark Hope Plaza (top) in St. Louis to under 0.2 footcandles. For a private garden (bottom) on Long Island, N.Y., the Landscape Lighting Resource demonstrated the effectiveness of a few well-placed, low-wattage lights.



Less Bright, Better Sight

Reducing allowable lumens and power densities gives lighting designers the chance to reacquaint people with the ambience and calming effects of lower light levels.

The lighting design for the Ellen S. Clark Hope Plaza at the BJC Institute of Health at Washington University School of Medicine in St. Louis, exemplifies the idea. Linnaea Tillett, principal at Tillett Lighting Design in Brooklyn, N.Y., collaborated with artist Maya Lin and landscape architect Michael Van Valkenburgh Associates to design the plaza's centerpiece: an 80-foot-diameter fountain dotted with fiber optics to form a visual representation of a constellation, which is viewable from an adjacent 38-foot platform.

The client's desire to earn LEED credit for light-pollution reduction gave Tillett the freedom to keep lighting levels extremely low. She used 14 34-watt, warm-white metal halide lamps mounted in downward-aimed, sharp-cutoff floodlight fixtures to light just the paths around the fountain. Seven 18-foot-high poles are topped with two floods each. Less than 0.2 footcandles can be measured at the edge of the plaza—a very low level for a public space.

Tillett's observations about the finished project reinforce the idea that overilluminating one area leads to overlighting other areas. The brightly lit Central West End Station of the St. Louis Metrolink adjacent to the space led to designers to question whether their plaza lighting was bright enough. "When the project was finished," Tillett says, "we saw that the boundary that separates lighting that is restorative and a little bit mysterious, from too little lighting—which creates anxiety and fear—is very narrow. If you go on the wrong side of that, you are actually creating a psychological environment in which people are not comfortable."

Still the power of low-light levels should never be underestimated, in the proper setting. A private garden



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lit on Long Island, N.Y., by Janet Lennox Moyer, founder of the Landscape Lighting Resource in Troy, N.Y., shows the tremendous effect that a few very low-wattage incandescent lights and LEDs can have when used in lieu of bright ambient light, which would overwhelm it.

"I never use more than a 37-watt halogen light in my work," Moyer says. "The amount of light we're dealing with is a quarter of a footcandle and if we really go nuts, 5 footcandles." For adjustable fixtures, she eliminates light trespass through shielding and by choosing the appropriate location and aiming angle. Decorative fixtures, meanwhile, must not have any view of the lamp and preferably no lens on the fixtures.

Rethinking the Whole Package

No discussion of outdoor lighting today would be complete without mention of solid-state lighting technology. LEDs will lessen our effect on the night sky and energy use. The light-emitting surface of solid-state lighting chips is much smaller than the arc tube of an HID lamp. It is easier to design fixtures with BUG ratings—which manufacturers are beginning to include on spec-grade LEDs—that direct light where it needs to be, which is not in the sky. Because LEDs don't work with existing HID light fixture lens and reflector designs, luminaire designers are returning to the drawing boards with the MLO's and Standard 189.1P's restrictions in mind.

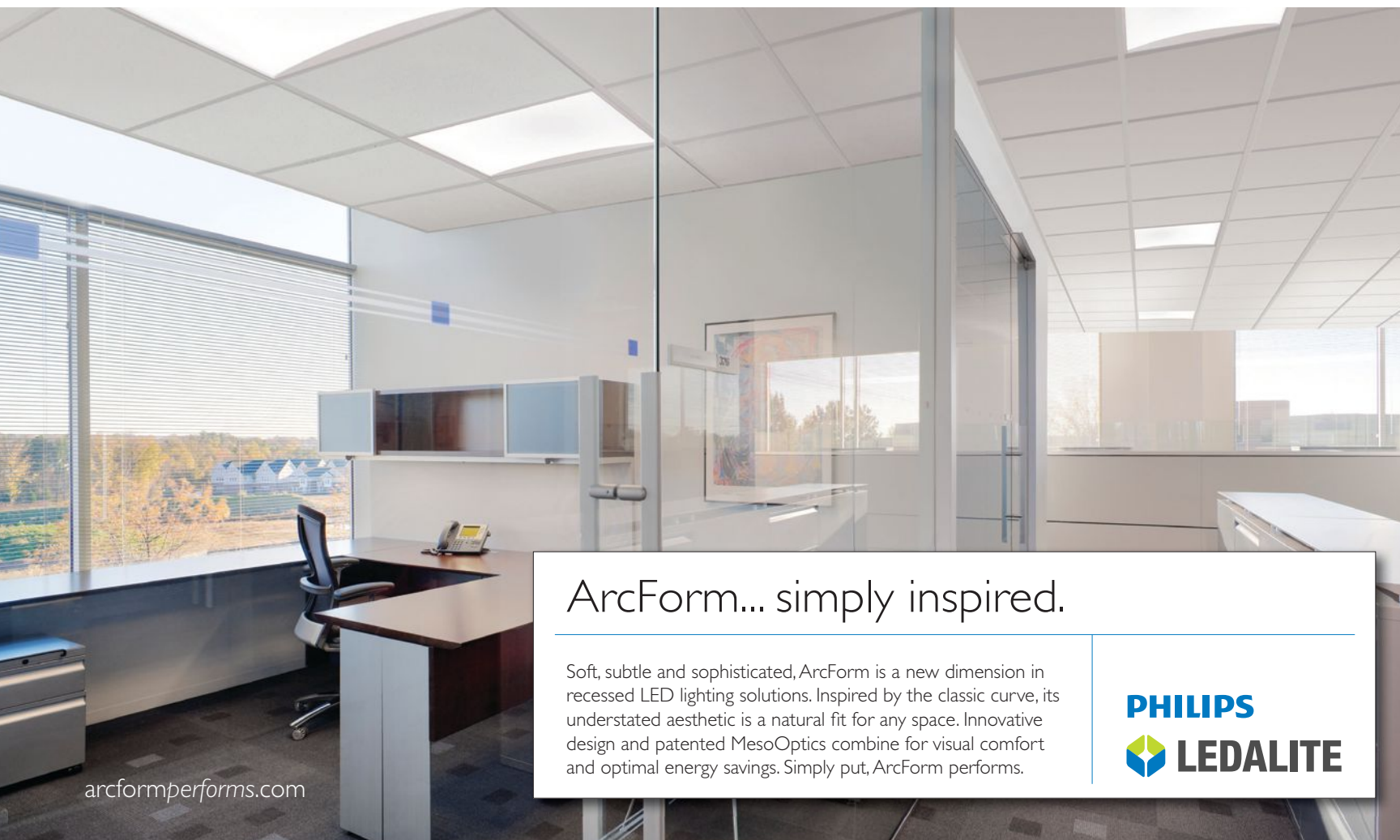
LEDs are much easier to dim than HID lamps. Today, most exterior luminaires are controlled by individual photocells. It is also much easier to put solid-state light fixtures on motion sensors. HID lamps take several minutes to warm up, making motion sensors ineffectual. A control system for a single building—or an energy-management system for an entire city—could quickly dim or turn off a few or even thousands LED fixtures to comply with lighting curfew rules.

A growing body of research supports the notion that less light is needed to see an object clearly when white light is used instead of HPS. Not only does solid-state lighting require less electricity to do the same job as HPS, but the quantity of white light it produces will also be less. "The lower the lighting level, the greater the white-light effect is," Clanton says. "It is a whole new way of thinking. Wattage will decrease, lighting levels will be less, and fewer fixtures will be needed. I think that's the reason cities will start replacing their HPS street lighting very soon."

IDA public affairs director Scott Kardel sums up the potential of the MLO and the switch to LEDs: "Nothing can be done to have a more significant impact to the environment more easily than making these changes." So while 6-foot-high snowdrifts may not be in the offing, the ability for future generations to glimpse the Milky Way from their own backyards may live on. □



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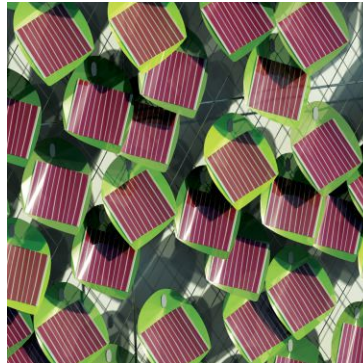
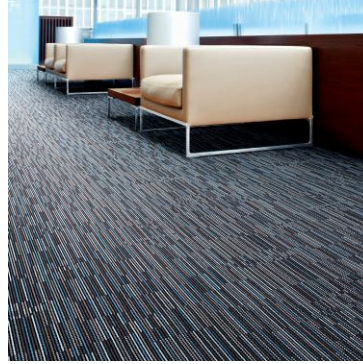
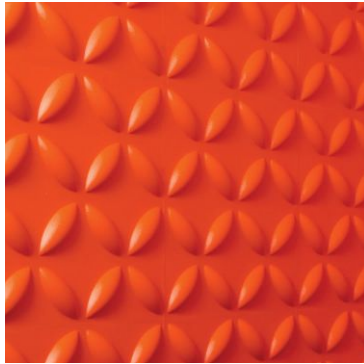
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Editor's Choice



TEXT BY WANDA LAU

Architectural Systems has added **Eco-Dimensions Bamboo Wall Panels** to its collection of wood panels. Made from pressed bamboo pulp, the lightweight panels come in six patterns: Bars, Dunes, Moonscape, Pads, Bloom (shown), and Diamond. Suitable for use on walls and ceilings, the 18"-square, 1/8"-thick panels can be left unfinished or be painted or stained. The water-repellent and sound-absorbent panels have a Class A fire rating and can contribute to LEED credits. • archsystems.com • Circle 100

Duravit's Darling New series comprises 52 furniture components, including a wall-mounted vanity unit (shown). Coated with scratch-resistant, textured varnish, the unit's body and countertop are offered in two colors. The drawer faces have six color options, including spring green (shown). Available in lengths from 50cm to 100cm, heights from 36cm to 55.6cm, and depths of 43cm or 54.5cm, the unit has one or two drawers and cutouts for sinks and pipes. • duravit.com • Circle 103

Desso's Patterns@Play collection features six modular and one broadloom carpet. Designed with large spaces in mind, the patterns can help visually subdivide rooms and define traffic paths. Offered in four to 16 colorways depending on the pattern, the 50cm square carpet tiles come in patterns such as Visions of Shards, Grids, and Dash. The 400cm-wide broadloom carpet Wilton Enigma (shown) has a woven loop-pile construction and comes in eight colors. • desso.com • Circle 101

Brooklyn, N.Y.-based design firm **SMIT** has created **Solar Ivy**, incorporating thin-film photovoltaics that mimic the form of climbing ivy. The system can use organic, amorphous silicon, or CIGS photovoltaics, which deliver up to 0.5W, 0.6W, or 4.0W per leaf, respectively. The density and layout of the leaves—which are mounted to stainless steel mesh anchored into building walls—may be adjusted to preserve building views or control heat gain and loss. • solarivy.com • Circle 104

Briza by **Jaga Climate Systems** is a slim heat exchanger measuring 4.5" in depth. Using the company's Low-H₂O technology, the heat exchanger uses a lower water volume than traditional radiators, resulting in faster heating and cooling and more accurate temperature control. Producing just 30 dBA, the unit comes in white and metallic gray. Wall-mounted models are 25 43/64" high with lengths between 28 1/2" and 60". A slightly smaller built-in model for walls and ceilings is available. • jaga-usa.com • Circle 102

The **Flaxx Chair** by **Martin Mostböck** provides the comfort of a suspended chair on the sturdiness of four legs. Made from 100% recyclable materials, the chair features a seat shell made from natural-fiber mats—mostly flax, a renewable material—held together by a polypropylene adhesive. Flaxx, which is offered in many color and textile options, is 44.6cm wide by 92.6cm high and 57.2cm deep. • martin-mostboeck.com • Circle 105

47.6

The number of inches that bamboo has been observed to grow within 24 hours

SOURCE: THE BOOK OF BAMBOO BY DAVID FARRELLY (SIERRA CLUB BOOKS, 1984)

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U.S. DEPARTMENT OF ENERGY INVESTMENT IN OLED LIGHTING RESEARCH.

SOURCE: U.S. DEPARTMENT OF ENERGY

THE ORGANIC LIGHT-EMITTING DIODE (OLED) is one of the most intriguing and most promising new technologies for electronic displays and lighting out there. OLEDs are like traditional light-emitting diodes, but they incorporate organic electroluminescent compounds that emit light when introduced to an electric current. Originally developed in the 1950s in France, OLEDs are used today in advanced high-contrast displays. Their low energy consumption makes them particularly attractive with today's proliferation of electronic devices.

Although OLEDs are superior to more-conventional technologies such as liquid-crystal displays (LCDs) in terms of contrast ratio and material efficiency, they are typically manufactured by an expensive process involving glass doped with heavy metals. They are fragile and rigid as a result. To solve this problem, researchers from the Department of Materials Science and Engineering at the University of Toronto have developed a new plastic-based manufacturing method for OLEDs. The result is a more cost-effective, efficient, and flexible material.

"For years, the biggest excitement behind OLED technologies has been the potential to effectively produce them on flexible plastic," says University of Toronto professor Zheng-Hong Lu. "This discovery unlocks the full potential of OLEDs, leading the way to energy-efficient, flexible, and impact-resistant displays."

The applicability of OLEDs to large-area panels also makes them well-suited for lighting; several manufacturers have developed OLED light fixtures that emit evenly distributed planes of light without hot spots.

And a multilayered configuration of OLEDs can deliver surprising results in multifunctional technologies. One such application is a switchable OLED panel that doubles as a transparent window. Recently developed by BASF and Philips for use in automobile roofs, the new skylight module allows clear views until illuminated—at which point it emits a homogeneous plane of light. The OLED panel is also a highly energy-efficient light source, as well as one that is less than 2 millimeters thick.

According to Felix Görth, head of Organic Light-Emitting Diodes and Organic Photovoltaics at BASF Future Business, "This combination allows the driver to enjoy a unique open-space feeling during the day and pleasantly suffuses the interior with the warm light of the transparent, highly efficient OLEDs at night." Philips sees potential for OLEDs beyond the automobile application. "This project provides impressive evidence of new possibilities with OLEDs, and illustrates the potential of Philips's Lumiblade OLED technology to help create innovative lighting applications that enhance people's lives," says Dietrich Bertram, Philips's general manager of OLED Lighting.

If this venture is successful, architectural applications are bound to follow. Low-energy illuminating skylights, windows, and doors could be highly practical in some applications, especially given OLEDs' potential long life. Moreover, OLED technology will facilitate a merger of the currently distinct worlds of lighting and electronic displays—enabling future physical environments that are illuminated by information. □

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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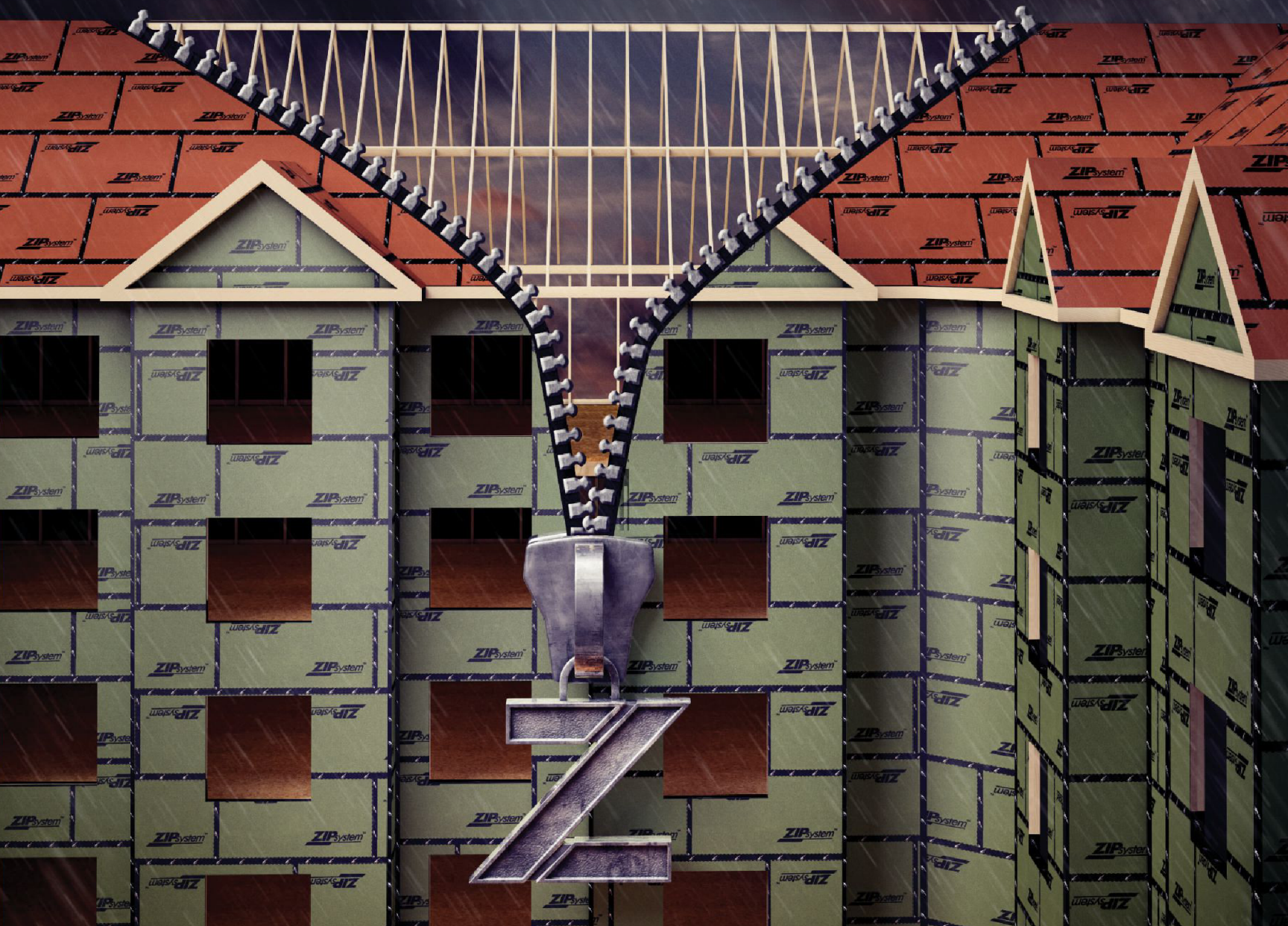
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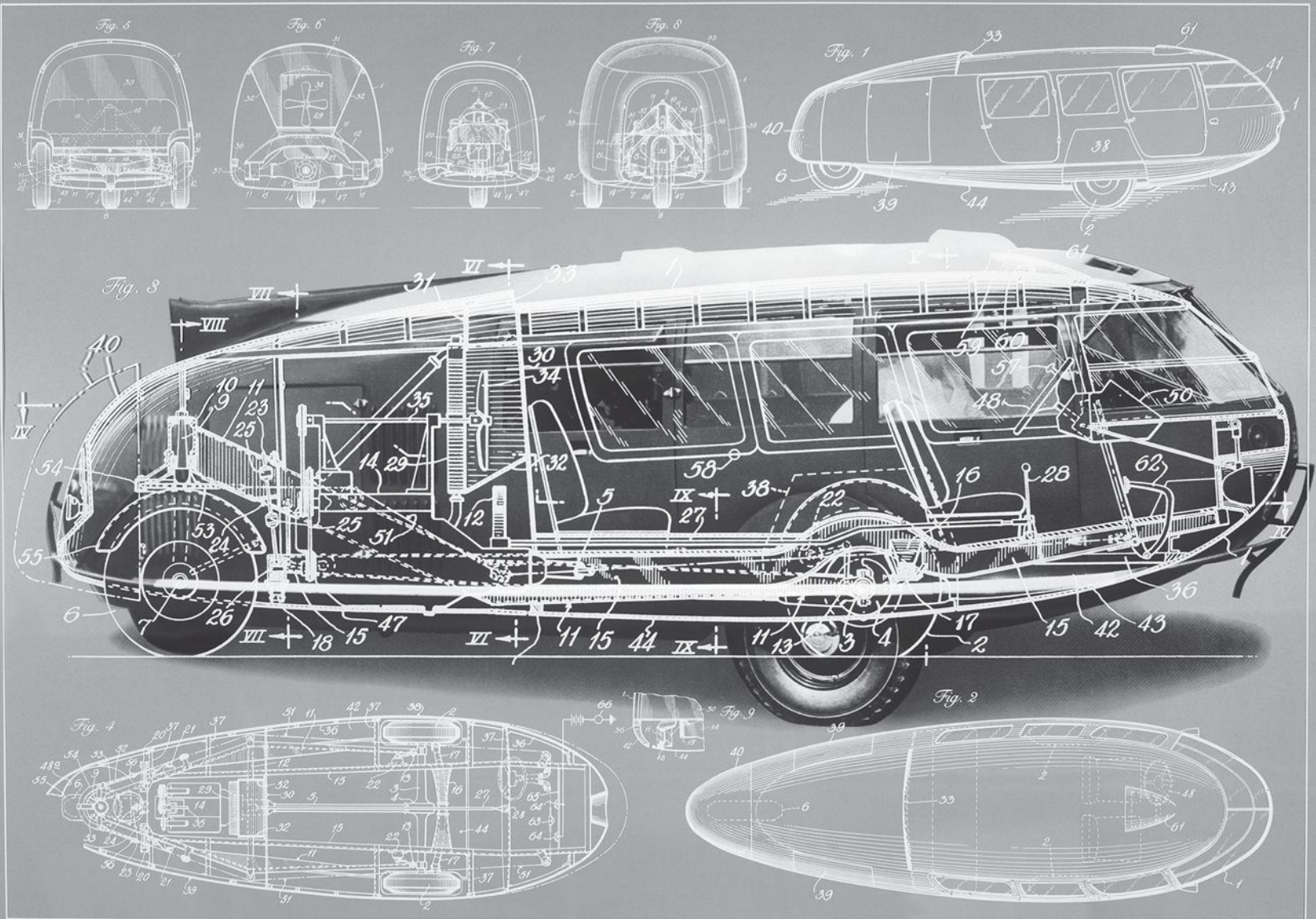


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CULTURE



MOTOR VEHICLE — DYMAXION CAR, United States Patent Office no. 2,101,057, filed October 18, 1933, serial no. 694,068, granted December 7, 1937, inventor: Buckminster Fuller © 1991 *Buckminster Fuller* VII XX

EDITED BY LINDSEY M. ROBERTS

→ EXHIBIT

Though his ideas were considered eccentric during his lifetime, architect and engineer R. Buckminster Fuller has inspired successive generations of idealistic designers with his ethos of social responsibility embodied in technology. **The Utopian Impulse** examines his legacy at the San Francisco Museum of Modern Art, which seems fitting—even though Fuller never lived in that city, it's known for its nonconformists and visionaries. Projects are drawn from his portfolio *Inventions: Twelve Around One* (1981)—including the Geodesic Dome, World Game, and the Dymaxion Car (pictured), a fuel-efficient, three-wheeled vehicle that preceded the Prius by about 60 years. Also included are Fuller-influenced projects for the Bay Area, such as local company North Face's 1975 Oval Intention, which utilized Fuller's concept of "tensegrity" to change modern tent design. March 31 through July 29. • sfmoma.org

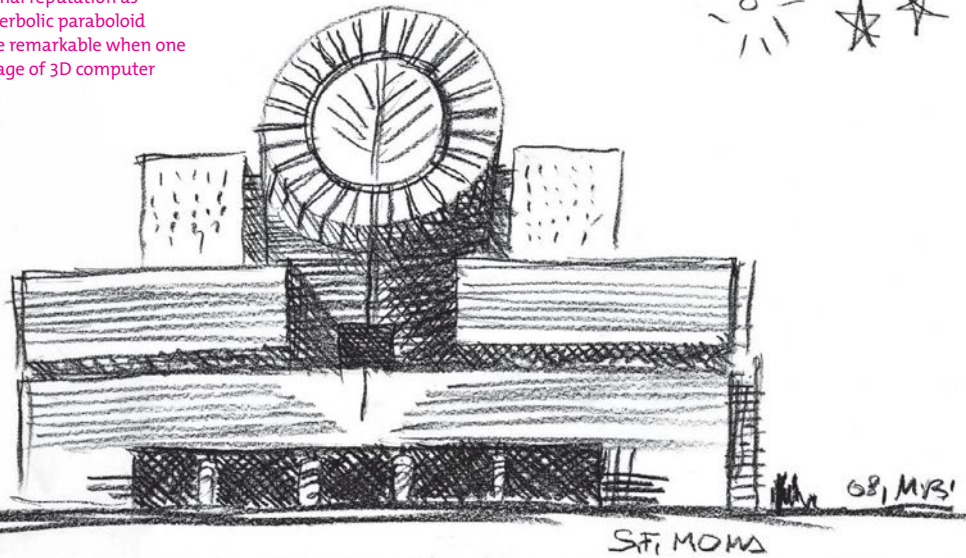


→ EXHIBIT

To put the architecture of Santiago Calatrava into historical context, one must look to the work of another Spanish architect-cum-engineer: **Félix Candela**, the subject of an eponymous retrospective now on view at Columbia University's Wallach Art Gallery. Candela left his homeland following the Spanish Civil War, settled in Mexico, and built an international reputation as the designer of exquisite thin-shell concrete structures. The complex, hyperbolic paraboloid geometries of his Palmira Chapel in Cuernavaca (above) are only the more remarkable when one considers that the building opened in 1959—decades before the wide usage of 3D computer modeling. Through March 31. • columbia.edu/cu/wallach

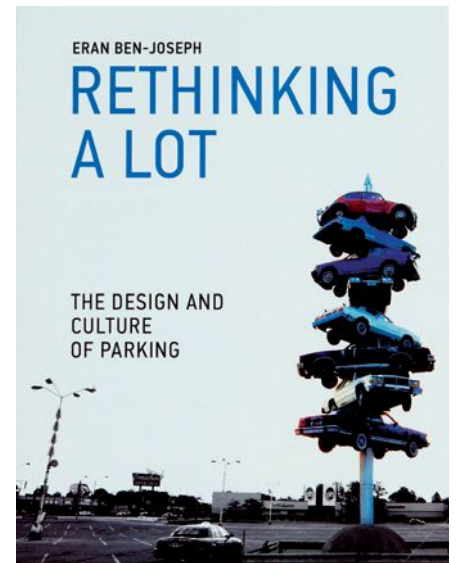
→ APP

The beloved Moleskine notebooks, favorite scrawling pads of Hemingway and Picasso, have gone digital. The company's new iPad app, **The Hand of the Architect**, includes 378 drawings by 110 architects, including Michael Graves and Mario Botta (whose sketch of the San Francisco Museum of Art is shown). The works were compiled by the Italian Environment Foundation to raise funds, app proceeds included, to restore architect Piero Portaluppi's 1935 rationalist Villa Necchi in Milan. Drawings and sketches come accompanied by essays, captions, and biographies of the architects. Even in the age of CAD, some projects still start by hand. • \$18.99; moleskine.com



→ BOOK

Think of parking lots and bland, gray, cracked, paved surfaces normally come to mind. But are there any well-designed ones? This question sparked **ReThinking a Lot: The Design and Culture of Parking**, according to author Eran Ben-Joseph. Enthusiastic candidates were rare until recently, when architects such as Herzog & de Meuron, who designed a striking, loftlike parking garage in Miami last year, began to see the parking lot as a typology ready to be transformed. Ben-Joseph considers the paved lot in the U.S. to be a great leveler, one that does not distinguish between a Chevrolet Volt and a Ford Excursion in terms of physical and environmental footprint—and which now covers more than one-third of the metro areas in some cities. The design of the parking space also can vary, from a drive-through restaurant's concrete island to a stadium's parking complex, and its evolution has influenced the form and function of residences, commercial buildings, and even cities. Get ready for more carchitecture. • \$24.95; The MIT Press, March 2012



PREVIOUS PAGE: COURTESY SFMOMA
CLOCKWISE FROM TOP LEFT: ARMANDO SALAS PORTUGAL; NOAH KALINA; COURTESY BDE



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→ CRIT

Dream Deferred

THE MUSEUM OF MODERN ART'S "FORECLOSED" EXHIBIT IS LONG ON ART AND SHORT ON REALITY.

TEXT BY FELIX SALMON



Studio Gang's proposal for Cicero, Ill., transforms the physical identity of its abandoned industrial sector, whose failure in part preempted the community's housing foreclosures.

THERE'S NO FORECLOSURE CRISIS in Manhattan. Or, for that matter, in the vibrant hearts of Chicago, San Francisco, or Portland, Ore. But head outward from these cities, into the suburban and exurban tracts in which America grew up, and the economic devastation stretches out for mile upon desolate mile of strip malls and abandoned developments.

The housing boom that ended in 2006 saw home prices rise, making the economics of home building much more attractive. The arbitrage was easy, and developers across the country bought into it: buy up cheap suburban and exurban land, build as many huge houses on that land as possible, as quickly as possible, and then sell them at enormous prices to buyers with property-bubble fever. Never mind whether those buyers could actually afford that much house: so long as a bank would lend them the money, profit was assured. And of course the banks would lend anybody money, since they in turn could bundle and sell off their mortgages in the capital markets. But then the capital markets stopped buying (and offering) mortgages, leaving banks with huge amounts of bad debt and home builders with millions of unsold homes.

The message of "Foreclosed: Rehousing the American Dream," a new exhibition at the Museum of Modern Art, is that it didn't need to be this way—and that economic crises can have architectural solutions. But from the start, MoMA pulls its punches: Barry Bergdoll, chief curator of architecture and design for MoMA and the show's curator, concedes in his catalog

introduction that "architects, urban and landscape designers, and infrastructure engineers can do little directly about the problem of foreclosed mortgages and households 'under water' (that being a crisis of the financial architecture of America)."

The disclaimer seeks to excuse the flights of fancy that permeate the show's prescriptions (more on that in a moment). But one driving idea of the show holds firm, Bergdoll's binder notwithstanding: Suburbs are generally an architect-free zone. Insofar as such creatures are spied at all, they're employed to rubber-stamp a builder's plans. Beyond that, they're not wanted. Suburbanites are conservative, wherever they might lie on the political spectrum: There's a good reason why builders have kept on churning out houses which have remained essentially the same for decades, even as they have grown steadily in size.

If the housing crisis taught us anything, it's that we can't go on like this anymore. Today, the average American family spends 52 cents of every earned dollar on housing and transportation, according to the U.S. Department of Housing and Urban Development (HUD). That's a fixable problem, and for "Foreclosed," five different groups came up with conceptual plans for five different suburbs around the country—all of which attempt to create something more sustainable going forward.



Felix Salmon is the finance blogger at Reuters.



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Zago Architecture's vision for the Inland Empire would combine single-family homes with conservation areas to protect suburban typology and sensitive habitat alike.

Of course, for an idea to be sustainable, it also has to be realistic. Much of the MoMA show fails that criterion miserably. Orange, N.J., is not going to build long strings of apartments in the middle of its streets, as suggested by MOS Architects' Michael Meredith, AIA, and Hilary Sample, AIA. Neither is Keizer, Ore., going to bite on huge towers of three-story homes teetering atop each other—complete with indoor waterfalls—as put forward by Amale Andraos and Dan Wood, AIA, of Work AC. And are those elephants that Andrew Zago dropped in the backyards of Rialto, Calif.? Yes, they really are.

So there's an unapologetic strain of art and whimsy here, which makes it difficult to judge the more practical notions—especially as regards the proposed new financial architecture of these suburbs. The Rialto plan, for instance, from Zago Architecture, proposes that in 2009, rather than selling off foreclosed houses one by one, banks would first write down the value of the property they own, and then "engage in a seller-financed transfer of assets to the non-profit Community Development Corporation." In English, this means asking the banks that are taking a huge bath on the project to also make a huge bet that an ambitious suburban nonprofit megaproject would fare much better.

In Cicero, Ill., Studio Gang Architects has come up with another ain't-gonna-happen proposal: houses would be broken up into their constituent parts—bedrooms, kitchens, lawns—which then would be mixed and matched in any number of possible permutations, with some elements owned by individuals and others being communal. "The house is affordable because people can buy only what they need at the time they need it, and then can add or subtract spaces as families grow, shrink, or otherwise change," goes the explanation. Prices would be fixed by a private trust, which would be the only buyer and seller of property; owners, in any case,

would never own the land their units were built on. How would the whole development get financed in the first place? That's far from clear.

Even the most thought-out of the projects, from a financial perspective—Visible Weather's proposal for Temple Terrace, Fla.—assumes that the municipality (which is far from healthy, financially) will be able to borrow hundreds of millions of dollars to build a huge, 225-acre development that includes everything from shops and homes and churches to a brand-new City Hall.

The basic idea is stirring: "Temple Terrace's residents could spend 30 percent of the \$700 million they collectively earn annually and remain within HUD housing-cost guidelines," write Visible Weather's Michael Bell and Eunjeong Seong, "but the disaggregated way in which housing monies are spent means that they are spent on a very low-level commodity."

But there's the rub: If you try to get 10,000 people to live together in a single development, you're cutting against the very impulses that drive people out of the city and into the suburbs in the first place.

There's something almost colonialist about this exhibition: Witness five architectural practices hailing from New York City, Los Angeles, and Chicago parachute into relatively poor suburbs, spend very little time actually talking to the people who live there, and pitch projects that only a city-dweller could love, and that only a socialist state could finance. "City-building does not necessarily have to take the path laid out by the markets," writes co-curator Reinhold Martin, who set the terms of the teams' engagement with *The Buell Hypothesis*—an eclectic text (it is in part a screenplay) that quite explicitly proposes "unapologetically public housing models on government land."

There's lots of talk, here, of "the predatory character of most development" and the like, even as many of the projects propose an ownership system very similar to the venerable New York City co-op. But despite this prejudice against development, the proposals in the show are basically mini-cities, to be developed as single projects at vast expense. There's precious little scope for organic growth in this exhibit: Instead, all residents have to fit into a preconceived plan where the costs are front-loaded and where financing seems to magically appear whenever the municipality wants it. Meanwhile, the existing residents of the suburbs in question, the ones still underwater on their American Dream houses, are barely considered in these plans. The MOS Architects plan for the Orangians in New Jersey for instance, eliminates the very streets along which existing residents drive to and from their homes every day.

Any honest attempt to fix the suburbs has to start with facing up to why so many Americans live in the suburbs in the first place, and who those Americans are. Suburban families are bigger than urban families; they like their space; and they like living in places where they're a good distance from their neighbors and a long way indeed from people of other social classes.

All of the projects in this exhibition, in one way or another, pile Americans on top of each other; squeeze them into homes that are much smaller than those currently found in the suburbs; and extol the wonders of urban mixed-use developments that feature the broadest possible range of owners, renters, and even

businesses. They basically comprise a simple message to suburbanites: We city-dwellers are better at living than you are, and if you want to improve your lifestyle, you're going to have to become much more like us.

It's a message that doesn't really solve the problems of suburbia so much as simply eradicate them by decree. Studio Gang's proposal gleefully attacks Cicero's suburban zoning code, deleting most of it with neat red lines and replacing it with the language of "density," "diversity," and "a variety of living types." Congratulations on reinventing the city. Now, what are we going to do about the suburbs? □

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STUDIO VISIT

Perkins+Will

AGGRESSIVE ACQUISITIONS HAVEN'T CHANGED PERKINS+WILL'S COMMITMENT TO THE SOCIAL GOOD, SAYS PETER BUSBY, WHOSE FIRM PERKINS+WILL ACQUIRED IN 2004.

TEXT BY KRISTON CAPPS
PHOTOS BY JASON FULFORD





Perkins+Will has occupied a concrete building in Yaletown, a warehouse district in Vancouver, British Columbia, Canada, since 2000. Built in the 1940s, the one-time candy factory is a concrete building in a neighborhood marked by brick and heavy timber. "It's got a lot of texture to it," says managing director Peter Busby, Intl. Assoc. AIA.

The Vancouver office employs 88 employees over four floors, including a new basement. Worldwide, Perkins+Will comprises 24 offices and some 1,500 employees. Different offices have different areas of expertise: Vancouver's focus is strong in corporate, civic, and commercial, for example. "Perkins+Will's model is not to push down a culture. Our model is to nurture a culture that's regional," Busby, 59, says. At the same time, he notes, "our offices are not balkanized. We share work, we share opportunities, and we share staff."



Perkins+Will opened an office in London in 2007 that will make it a "significant player in the U.K. architecture scene," Busby says, and expects to open more international offices soon. Despite its size and rapid growth, social responsibility remains one of the firm's core tenets. One percent of Perkins+Will's annual gross proceeds go toward charities and nonprofits. "We don't do casinos," Busby adds.

The Vancouver office is more or less what you'd expect it to be: Some 20 staffers commute by bike (12, no matter the weather conditions). Maybe five of 88 rely on automobiles to get to work. In part, Vancouver's simply a safe city for bikers, but the firm encourages bike ridership through public-transit subsidies and even a fitness allowance for bicycle gear. ("It comes to a significant amount of money," Busby says.) The firm culture skews young. "A lot of young families in the office. At last count there were 40 children under the age of 10," he says. (There are four more on the way.)



Perkins+Will abides by the AIA's 2030 Commitment—a challenge to design "climate-neutral" buildings by 2030 (meaning, buildings whose operation does not emit greenhouse gases). The firm strives to meet the goal at its premises and its projects.

"As an office, we're going curling this afternoon. We also have retreats—summer picnics, winter ski nights," Busby says. "We don't have a sweatshop."



Using intrepid geometry, architect Preston Scott Cohen packed 195,000 square feet of rectangular gallery space onto a 43,600-square-foot plot for the Tel Aviv Museum of Art's Herta and Paul Amir Building.

→ **BEYOND BUILDINGS**

Area Codes

A MORE COMPLEX SCANNER CODE REFLECTS A MORE COMPLICATED APPROACH TO BUILDING INTERIORS.

HOW DO WE RECOGNIZE THINGS? The always erudite and amusing design critic Alice Rawsthorn recently noted in *The New York Times* the move from the Universal Product Code (UPC) to the QR (Quick Response) codes that are now showing up everywhere. Whereas “[e]verything about the those black-and-white lines [on the UPC] screams order, precision and efficiency, she points out, the QRs “look like uncontrollable explosions of toxic bacterial spores.” Not something that I associate with the seduction of commerce.

As Rawsthorn goes on to point out, however, “the chaos is illusory. The exact size and location of each QR square and the spaces between them are chosen with the same specificity as the components of the bar code.” She ends by saying that each era gets the symbol it deserves—so surely the 21st century must value “idiosyncrasy and spontaneity,” at least in appearance.

More and more, information disappears. The QR code, to which we hold up that little black screen of our smartphone, is an obscure portal into a world of information. Our objects and signs are just placeholders, scrim, or frames for knowledge.

What about buildings? Certainly the current trend is toward the same sort of visual complexity and even unintelligibility as is the visual reality of the QR code. After a period of retromodernism that coincided with the reign of the UPC, we are now twisting, turning, folding, and otherwise obfuscating form with abandon. At least, that is the case in the avant-garde, where folded plates, swerves, and blobs have become commonplace. Such shape-shifting is now showing up in more-generic

structures. In Asia, just about every self-respecting skyscraper curves, and some seem to defy gravity. Here in the U.S., the Freedom Tower, nearing completion in New York, promises at least some deflections to the norms of orthogonal Modernism.

When such shapes have justifications, they are usually responses to wind conditions or other peculiarities of loads that are as abstract as the references on UPC or QR codes. But it is not just shape that is becoming more chaotic. Buildings are hiding their contents, and interiors are becoming filled with odd objects. At the building's core, we are finding more and more intersections of floors and spaces that do not stack up neatly like plates.

Instead, knots are appearing, such as in the OMA-designed Seattle Public Library, or, with greater complexity, in the manner of Preston Scott Cohen's Tel Aviv Museum of Art. I predict that, as we mix and match functions, delight in computer-assisted design, and find answers to the complexities of modern life, we will see many more such knotty hearts to answer the tortured façades of our buildings.

I also predict that, if the structures that are on the drawings boards in universities and at the studios of many of our most inventive architects reach the mainstream, our built environment will need some equivalent of a QR reader just to decipher what a building is. That could be good news for critics: a whole new line of work could open up. In reality, however, it is just another manner in which architecture is disappearing, and signs are taking over. Wayfinding will make sense of all. □

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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Here's How It Works:

The AIA has lobbied for countless pieces of legislation that would help the profession. But the organization also lobbies against bills that would hurt architects, including a provision in a recent unemployment bill that threatened the economic stability of small architecture firms already struggling during the recession.

PATH OF LEGISLATION

On Dec. 7, 2009, H.R. 4213, the Unemployment Compensation Extension Act of 2010, is introduced in the House of Representatives. The "tax extenders bill," as it is called, seeks primarily to extend expiring tax cuts and unemployment benefits for millions of Americans.

On Dec. 9, the House passes the bill, sponsored by Rep. Charles Rangel, D-N.Y.

On April 26, 2010, unnamed House staff first share with the AIA preliminary proposals that the House Ways and Means Committee has for attaching a provision to the bill about S corporations. Many small businesses organize as S corps. because of the potential tax benefits for their shareholders, who can include the business' gains and losses on their individual tax returns and easily distribute shares among partners and employees.

The provision would increase the tax burden on S corps. with three or fewer partners by requiring those partners to pay payroll taxes on company income—a move intended to raise approximately \$11 billion in revenue for the government to help offset the cost of extending tax benefits. Because many small architecture firms file taxes as S corps., the provision stands to hurt their bottom lines.



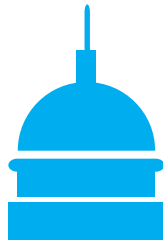
MEDIA CAMPAIGN

The AIA issues a press release on May 21 about its opposition to the S corp. provision. The same day, *The Hill*, a D.C.-based newspaper, publishes a story that quotes AIA vice president Paul Mendelsohn's statement.

"As architects begin to recover from the Great Recession, now is the worst time to raise taxes on a sector of the economy that is a catalyst for job growth. ... Since many of our members work for firms with three or fewer employees, this [tax increase] could force architects to lay off staff or stop hiring new staff to pay for the new tax—even though this provision is in a 'jobs' bill."

AIA vice president Paul Mendelsohn, government and community relations

The AIA embarks on a multifaceted lobbying campaign against the provision



LOBBYING EFFORTS

The Senate passes the bill on March 9 with amendments and sends the legislation back to the House—what's known on the Hill as "ping-ponging."

The House amends the bill to include the S corp. provision (sec. 413) and passes the bill back to the Senate on May 28.

In April and May, AIA members blanket members of Congress with 11,000 emails, letters, and messages opposing the bill.

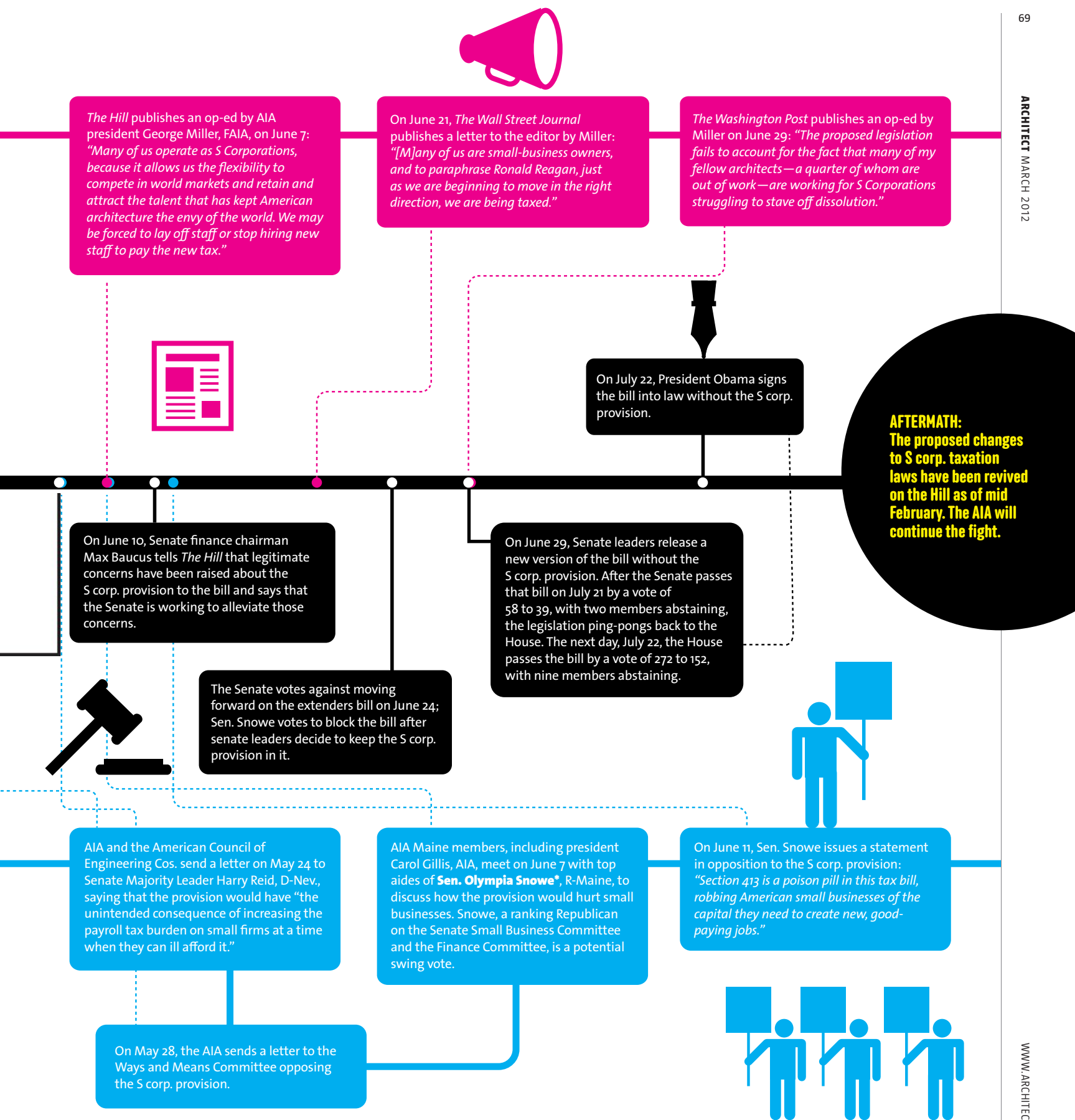
On May 4, the AIA, which has emailed and communicated with other organizations that would be affected by the provision, joins with nearly two dozen such entities, including the Associated Builders and Contractors, and sends a letter to Max Baucus, the Senate's chairman of the committee on finance.

LOBBYING FOR ARCHITECTURE

With architects still reeling from the recession, it is critical that they influence policy in their favor. Here's how the profession is navigating the crowded halls of government, in Washington, D.C., and beyond.

"We understand Members of Congress are actively considering a proposal that would significantly increase payroll taxes paid by S corporation shareholders," the coalition writes. "As trade associations representing hundreds of thousands of employers nationwide, we are writing to express our strong concerns."

From letter to Max Baucus, D-Mont.



HOW TO MAKE FRIENDS AND INFLUENCE POLICY

One of the AIA's most important roles is to persuade lawmakers of architecture's value. ARCHITECT follows the organization's lobbyists into the complex world of government advocacy and learns that architects themselves can make all the difference.

TEXT BY BARA VAIDA

IT'S MID-MORNING on a recent Thursday in February, and Andrew Goldberg, senior director of federal relations for the American Institute of Architects, is walking the halls of the Rayburn House Office Building on Capitol Hill, pinning down congressional staff to talk about pending legislation and tweeting updates to AIA followers. He's also keeping tabs on multiple meetings, including one held by the House Transportation and Infrastructure Committee, which has been drafting a \$260 billion highway spending bill that is expected to eliminate about \$1 billion in preservation, bike, pedestrian, and school transportation-safety programs. Communities have long used money from these programs to help rehabilitate historic structures and design pedestrian paths around schools, encouraging broader economic development and local job growth.

Roxanne Blackwell, director of federal government affairs at the American Society of Landscape Architects (ASLA), is watching a webcast of the committee meeting from her office in D.C.'s Chinatown. Both Goldberg and Blackwell, in conjunction with Transportation for America, a coalition of housing, development, transportation, health, and other organizations, had spent all week leading up to the highway bill vote sending emails and making phone calls to the 59 lawmakers and staff serving on the transportation committee. They have also encouraged their organizations' thousands of members to contact these lawmakers, rallying support for an amendment that would restore the \$1 billion in funding that would benefit architects. At least five ASLA members who have lived in Congressional districts represented by lawmakers on the committee called to express their support for the amendment, Blackwell says.

In the late morning, however, Blackwell and Goldberg learn that their efforts have failed—the committee members defeat the amendment by just two votes. At 3 a.m. the following day, the committee votes to pass the bill without the \$1 billion in funding, setting it up for a possible vote in the House of Representatives in the next several weeks.

Goldberg and Blackwell aren't giving up, however. "These programs are wildly popular in communities," Blackwell says. "Our hope is that we can influence and convince members of the entire House of Representatives that it was a mistake not to include them in the legislation." Adds Goldberg, the amendment "lost by only two votes, which is better than I thought. So we just need to do a bit more work."

For Goldberg, the transportation bill is one of a dozen or so pieces of pending legislation that he's working to help pass, amend, or block, from a House bill that could increase taxes on small businesses to Senate legislation that promotes energy-efficient codes for buildings. "We weren't expecting a lot to happen right now, but all of a sudden,

everything is popping,” he says. “It’s random. Sometimes you go for months working on something and not a lot happens, and then all of a sudden, everything piles up.”

A PROFESSION IN CRISIS

Things are indeed piling up for the profession at the moment, thanks to the flailing economy. According to a study released in January by the Georgetown University Center on Education and the Workforce, the unemployment rate among recent graduates of architecture programs is 13.9 percent, compared to the national average of 8.9 percent for graduates with bachelor’s degrees. The construction industry, which represented about 9 percent of the country’s gross domestic product in 2006—near the height of the real estate boom—has since shrunk to about 5 percent, according to the Bureau of Economic Analysis. Architecture, without question, is in the midst of an epic crisis.

Architects have long had a compelling story to share with lawmakers. They are almost as popular as teachers, according to public polls, and they’ve lobbied for smart development and sustainable-building practices that make communities better places to live. “Architects are natural problem solvers that play such an important role in community planning,” Goldberg says. “So we have to be part of the conversation, because the saying is, if you aren’t at the table [in Washington], then you are the menu.”

Now, because of the current challenges confronting the profession, lobbying has never been more important for architects, or their priorities more closely tied to the overall health of the economy. Indeed, architecture can help generate well-paying U.S.-based jobs: For every \$1 billion invested in the design and construction industry, about 28,400 jobs are created, according to a 2007 George Mason University study.

In early March, about 1,000 architects will come to the nation’s capital as part of the AIA’s annual Grassroots campaign and meet with hundreds of lawmakers to talk about “jobs, jobs, jobs,” says Russell Davidson, AIA, the managing partner at Mt. Kisco, N.Y.-based Kaeyer, Garment & Davidson Architects & Engineers. Davidson is the newly elected national vice president of AIA and a member of the organization’s Board Advocacy Committee.

Moreover, lobbying has assumed new importance because of recent shifts in the marketplace, says Mark Casso, president of the Construction Industry Round Table, a group of about 100 CEOs in the architecture and construction industry. Federal work historically has represented about 20 percent of the design and construction industry market, but following the economic downturn, it has grown to about 35 percent. Because “more of our work is in the public arena,” Casso says, the industry finds itself more and more in the “political arena fighting for dollars like everyone else.”

Yet the industry spends relatively little money on lobbying compared to behemoths such as the healthcare sector, which shelled out \$499.9 million last year, according to the Center for Responsive Politics, a nonprofit campaign finance and lobbying group. By comparison, the construction industry as a whole spent \$48.3 million, and the AIA and the ASLA together spent \$258,540.

“Architects don’t have a seat [at the national policy table] compared to the legal profession or medical profession,” says Dennis Findley, an architect who ran for

Congress in Virginia in 2010. “None of our issues rise to that level,” he says. “But they should.”

Amid this epic moment of crisis and the escalating political battles of an election year, how can architects exert greater influence on Capitol Hill?

THE RISE OF THE ARCHITECTURE LOBBY

A decade ago, the architecture lobby held little sway. In 2002, Rep. Earl Blumenauer, D-Ore., sat down with former Rep. Richard Swett, D-N.H., the only architect elected to Congress in the 20th century. Swett was writing a book, *Leadership by Design*, about the history of architects as community leaders and why they needed to be more involved in public policy. Blumenauer told Swett that “the AIA is very quiet on the Hill. There is no attempt to maximize any proximity. As a sitting member, in seven years, I’ve spoken to the AIA once.”

Today, Blumenauer says, the AIA has become more active and sophisticated with its lobbying. He now speaks at AIA local and state events several times a year, and sees architects engaged more often on Capitol Hill. “The board of the AIA is increasingly made up of people who understand that their intersection with public policy leads to better public policy,” he says. “Their grassroots conferences have become steadily more refined, and their staff and board seem to be markedly strengthened.”

Burdett Loomis, a professor of politics at the University of Kansas and author of *Guide to Interest Groups and Lobbying in the United States*, says that while it is very hard to measure the influence of an organization in Washington, every successful lobby employs certain key tactics. These include hiring internal lobbyists and contract lobbyists to build relationships with lawmakers; engaging individual members to call lawmakers and meet with them in their home districts; working with other groups to create coalitions and political action committees (PACs); and donating to candidates that support a group’s issues.

The AIA now uses all of these tactics, employing seven federal lobbyists on its staff as well as the lobbying firm K&L Gates—one of the largest lobbying firms in Washington—to help it with strategy and connections on the Hill. Michael Evans, who leads the AIA effort for K&L Gates, is a former chief counsel for the Senate Finance Committee and the Senate Committee on Environment and Public Works, two important committees that work on tax and environmental sustainability policies that are vital to AIA’s policy agenda. Seven other lobbyists at K&L Gates also work on AIA issues, according to lobbying documents filed with the Senate.

The AIA’s political action committee, ArchiPAC, donates to lawmakers based on their support for the group’s issues and goals (see page 79). About 1.5 percent of the AIA’s membership donates to the PAC, and that number is growing, according to Goldberg. So far, ArchiPAC has collected \$126,608 in donations for the 2012 election cycle and has given away about \$69,000 to congressional candidates and federal political committees, according to the AIA and federal election records. ASLA, by comparison, does not have a PAC, because the organization wants “to remain nonpartisan and nonpolitical,” Blackwell says.

Both AIA and ASLA encourage members of their organizations to weigh in on public policy matters by sending letters to lawmakers. Each group uses social media and email alerts to keep members apprised of pending

A large, stylized blue graphic of the number \$1.2, representing the seasonally adjusted rate of construction spending in June 2006.

In trillions of dollars, the seasonally adjusted rate of construction spending in June 2006, at the height of the real estate boom, according to the 2010 U.S. Census

A large, stylized blue graphic of the number \$816, representing the seasonally adjusted rate of construction spending in December 2011.

In billions of dollars, the seasonally adjusted rate of construction spending in December 2011

bills in Congress and to help build support for legislation. "Our members are our best lobbyists, not us," Goldberg says. "We guide things and provide information."

The AIA and ASLA also have forged relationships with other sectors of the construction industry. On the Thursday in February after Goldberg and Blackwell monitored the House Transportation and Infrastructure Committee hearing, the two lobbyists also listened in on a briefing hosted by the High-Performance Building Coalition Congressional Caucus, a coalition of 180 associations and corporations in the design and construction industry, including the AIA. Members of the caucus also include BASF, Honeywell, the American Gas Association, the Edison Electric Institute, and the National Association of Realtors.

About 50 congressional staff attended the briefing to hear about proposed policies to make the country's 500,000 federal buildings more energy efficient, including the High-Performance Federal Buildings Act, a bill recently introduced by caucus co-chair Rep. Russ Carnahan, D-Mo. The measure would require federal agencies to consider life-cycle cost analysis for the design, construction, operations, and maintenance of buildings, which would help federal agencies spend funds more efficiently and would also require the employment of architects. "The architects played a key role in helping to build a coalition for my bill," Carnahan says.

Via the building caucus, the AIA and ASLA are invited to a monthly meeting at the D.C. offices of ASHRAE, the society of heating, refrigeration, and air conditioning engineers, which boasts 55,000 members. Every third Thursday of the month, dozens of organizations from the building industry meet to discuss policy and strategies to build support on issues. "We work closely with the AIA to identify topics and to coalesce on topics of mutual interest," says Doug Read, the chief lobbyist at ASHRAE.

In February 2009, for instance, when Congress was considering the \$787 billion stimulus package, billions in school-reconstruction funds were eliminated from legislation that the House passed, putting untold pending construction projects in jeopardy. The AIA helped create an 80-member ad hoc coalition that put pressure on lawmakers to restore the funds for school construction. The final legislation included about \$49 billion for states to allocate to public schools for modernization, renovation, repair, and construction projects. The funding also helped prevent teacher layoffs and program cuts for school-reconstruction work.

In 2010, the AIA joined with other organizations to help pressure the government's Office of Federal Procurement Policy to repeal a mandatory 10 percent withholding fee on architectural and engineering contracts until the construction work is completed—a stipulation included in government contracting regulations for more than two decades.

The AIA has also forged partnerships with the National Association of Home Builders (NAHB), which employs 11 lobbyists and six outside lobbying firms. The association's PAC contributed \$2.1 million to federal candidates in the 2010 election cycle, of which 63 percent went to Republicans and 37 percent to Democrats. Members with the association's 800 state and local chapters are constantly meeting with lawmakers, says Scott Meyer, the assistant vice president of government affairs.

\$21,490,000

Amount of money the American Medical Association spent on lobbying in 2011, according to the nonprofit Center for Responsive Politics

\$211,979

Amount that ArchiPAC, the AIA's PAC, spent during the 2010 election cycle





PHOTO BY LEE SATKOWSKI


THE MAN ON THE HILL

Andrew Goldberg joined the AIA more than a decade ago and is one of seven lobbyists employed by the organization. He studied architecture as an undergraduate at the University of Pennsylvania. "We are not looking for handouts. We are doing what we can to help get the economy moving, and when policies act as roadblocks for the design industries, we push hard to remove those roadblocks," he says. "We don't have the biggest voice in Washington, and we don't have the biggest PAC. What we have is credibility. When we talk, people listen."


LOCAL LEGISLATION

Architects don't just lobby in Washington, D.C. Their efforts improve communities across the United States.

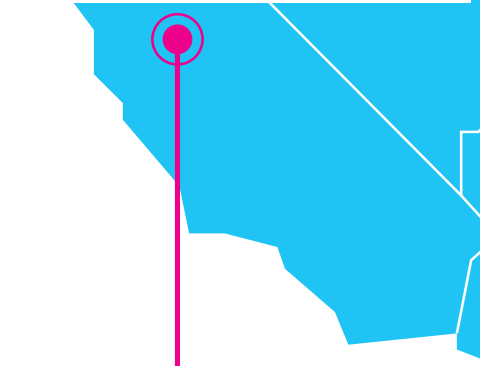
TEXT BY JEFFREY LEE
INFOGRAPHIC BY DAVID FOSTER




PORTLAND, ORE. Scott Rose often hears that running a city is like running a business. But Rose argues that it's more like managing a building project, with a wide range of stakeholders. With 24 years of experience in the building industry, Rose, currently a principal in the Portland office of architecture, engineering, and planning firm DLR Group, says that he's uniquely qualified to be elected the city's next mayor in the May 2012 primary. "A person with an architectural background has the great insight of being able to look at the project and see which stakeholder is missing," he says. If elected, Rose would like to forge business-school district partnerships to offer students educational opportunities and career assistance in growing technical fields. Running for office tends to make candidates more socially conscious, Rose says, a side benefit that has helped influence his practice.



MICHIGAN Benedetto Tiseo, FAIA, president of Livonia, Mich.–based Tiseo Architects and chair of AIA Michigan's Government Affairs Committee, knew he needed to get his fellow AIA members engaged after a 2006 decision by the Michigan Supreme Court increased the statutory period during which plaintiffs could file claims against an architect from two to five years. Because both engineers and surveyors are licensed under the same statute, the architects partnered with a group of organizations called the Architects-Engineers-Surveyors Legislative Committee to amplify their voice. In September 2011, after five years of lobbying, the coalition succeeded in getting the state legislature to pass SB 77, which restored the statute of limitations for malpractice by architects and engineers to two years.



TEXAS If, after decades of turf wars, architects and engineers in Texas had come to resemble the Hatfields and McCoys, both sides finally ended the feud last year, when a battle about whether engineers could provide architectural services reached the state legislature. The Texas Society of Architects (TSA) and its 2011 president, Dan Hart, engaged in months of negotiations with lawmakers and engineering professionals, culminating in a successful resolution: Architects must be involved in designing buildings for human use and occupancy, language now included in the engineer's practice act. While TSA executive vice president James Perry says persistence and calm were key to the negotiations, the association's robust grassroots lobbying efforts and aggressive campaign to educate state representatives about the issue ensured a favorable outcome.



SACRAMENTO, CALIF. When the AIA's Central Valley chapter was asked last year to join Region Builders, a political action committee that includes builders, engineers, developers, and contractors, the chapter's board had one major concern: What happens if the PAC takes a policy position that architects can't support? Region Builders agreed that in such cases it would either find consensus or take no position. Bruce Monighan, AIA, principal of Monighandesign and the chapter's PAC board representative, says that the coalition successfully advocated for lower impact and permit fees in Elk Grove in 2009 and 2011, which spurred Rancho Cordova officials to pursue similar legislation. And now that Sacramento has adopted an online submittal process for building plans, the PAC plans to advocate for it across the entire valley.

1.5%

Percentage of AIA members who contribute to the organization's PAC, ArchiPAC

The AIA's Citizen Architect program recognizes the more than 1,250 members who have joined various organization boards or who have been elected or appointed to local and state government positions.

PENNSYLVANIA When she met with Pennsylvania lawmakers to oppose recent legislation that would have allowed interior designers to become licensed, Paula Maynes, AIA, a managing member and principal at Maynes Associates Architects in Pittsburgh, had a few compelling arguments to make. Licensure is designed to protect the public's health, safety, and welfare. But no evidence exists that designers' work in any way endangers members of the public. Moreover, she argued, buildings are an integrated whole: You can't separate the interior from the shell. Maynes cited as examples the State Capitol in Harrisburg, with its fantastic building shell, rotunda, and murals, all comprising one unified form; and Wright's Fallingwater, famous equally for its interior and exterior. Maynes and fellow AIA members succeeded in keeping the bill from moving out of committee.

NEW YORK CITY Joseph Aliotta, AIA, a principal at Swanke Hayden Connell Architects, once wasted too much time getting projects approved by various New York City agencies with overlapping and conflicting regulations. So Aliotta, the 2012 AIA New York chapter president, joined his colleagues to pressure the city to streamline the approval process. Their lobbying helped persuade the building department to adopt the "Get It Done. Together." program, which enables architects to meet simultaneously with every stakeholder necessary to secure a project's approval. Since May 2011, the program has generated more than 1,400 approved projects and greater than \$1 billion of economic activity, according to the mayor's office. It also led to the creation of the Development Hub, a plan-review center that will allow architects to submit construction plans digitally and resolve issues with city officials virtually.

MONTGOMERY COUNTY, MD. Carl Elefante, FAIA, principal of Washington, D.C.-based Quinn Evans Architects, says that proper planning efforts, incorporating sustainability, affordability, and sprawl repair, are essential to ensure that the future of Montgomery County, Md., remains bright. Several years ago, when the Maryland-National Capital Park and Planning Commission began to overhaul the county's 1,000-page-long zoning code, Elefante and other architects from the AIA Potomac Valley chapter joined the commission's Zoning Advisory Panel to contribute to the revisions. The chapter also hosted a program in February attended by about 50 area architects and planning staff, and asked them to solicit input from colleagues and neighbors. In March, they'll report back with recommendations and participate in the political discussions about the zoning rewrite.

GEORGIA When a staff architect at the Georgia Department of Education needed urgent feedback about a department proposal to adopt standardized school-building plans last July, he called AIA Georgia executive director Marci Reed. She sent the architect an AIA white paper and memo about the drawbacks of such plans, leading the department to drop the idea. AIA Georgia had first established itself as a trusted resource for the department in spring 2011 when there was pressure to increase the use of one of Georgia's largest outputs, timber, in school construction. The AIA chapter agreed to convene an impartial task force to explore the issue, and two members of the board, both with experience in K-12 design, as well as the AIA chapter president, offered their insight and perspective. Though the issue remains undecided (the task force is still pending), the chapter made itself known as an authoritative source.

ALABAMA After a spate of recent natural disasters, architects in many states realized that they needed protection from civil liability as they aided recovery efforts. In 2006, the Alabama Council of the AIA, along with the American Council of Engineering Cos. of Alabama and other organizations, helped persuade the state legislature to pass a Good Samaritan law that provided 30 days of protection after a disaster. But when a string of tornadoes struck Alabama in April 2011, the architects realized that 30 days wasn't enough, says Larry Vinson, the council's executive director. Many of the affected communities remained in recovery mode. The organizations returned to the legislature, which in June extended the protection to 90 days. That allowed AIA-trained architects to perform necessary building-safety assessments before reconstruction work.

FLORIDA The qualification-based selection process for design services on public projects has worked well for decades in Florida, says Vicki Long, Hon. AIA Florida, executive vice president and CEO of AIA Florida. The law, called the Consultants' Competitive Negotiation Act (CCNA), enables public agencies to select the most qualified architect for a project, instead of the lowest bidder. But last year, a bill that would have injected pricing into the act—likely creating bidding wars for projects—came closer than ever to passing when Gov. Rick Scott, R., helped lobby Senate Regulated Industries Committee members to move it forward. As part of a call to action, AIA Florida members virtually shut down the phone lines and inundated inboxes of committee members, Long says. The committee killed the bill. Factual information from constituents, she says, "is the ultimate weapon."

2012 PRIORITIES

The AIA has announced an ambitious four-part legislative agenda for this year. What is the likelihood that these goals gain traction?



Thousands of construction projects are stalled because credit is still frozen

at many financial institutions. The Capital Access for Main Street Act would allow community banks—an important source of funding for small businesses—to write down their debt over a longer period, enabling them to bulk up their finances and increase lending. Introduced in 2010 by representatives from both parties, the bill is regarded as a short-term measure that would make more financing available to jump-start the building industry. Because it wouldn't cost taxpayers anything and isn't considered a bailout, the legislation is receiving considerable attention. "This is not a silver bullet. But it is an easy solution, and it helps more than the design industries," says Andrew Goldberg, the AIA's senior director of federal relations. "If we can get this industry moving we can also move the dial on the national unemployment rate." A modified version of the bill passed the House in 2010 but died in the Senate. Chance of passage? In an average year the odds would be good, but this year the bill will likely "get gummed up in policy fights," Goldberg says. On the positive side, it has one important and elusive commodity: bipartisan support.



The Federal Energy Efficient Commercial Building Tax Deduction

was created in 2005 to encourage building owners, school districts, and state and local governments to retrofit their buildings and save on energy costs. It provides a deduction for energy-saving improvements and has been a lifeline for many architecture firms that are pushing building retrofits to meet sustainability standards. If a building meets the overall requirement of a 50 percent energy savings, the deduction is capped at \$1.80 per square foot (a partial deduction is allowed for energy savings below 50 percent). But owners have complained that the incentive isn't big enough to justify the initial costs; developers contend that an increase in the rate would spur additional work. New proposals would raise the deduction to \$3 per square foot. Chance of passage? "Very, very low because there are costs associated with it," says J.P. Delmore, the NAHB's assistant vice president for government affairs. "Anything that Congress looks at is all dollars and cents."



Reforming the tax code to help small businesses

is part of the sweeping tax debate that is mired in partisan bickering and conflicting agendas. But it is crucial for architecture firms, because an estimated 95 percent employ 50 or fewer people, says the AIA's Goldberg: "One of the challenges we face is getting the point across that any policy changes that affect small businesses have a big impact on the profession because so many are small businesses." Chance of passage? Wrangling over tax reform is intense. The lobbying aim here, however, is not to pinpoint the right tax rate but to educate Congress about how architecture firms operate and what unfairly affects them as small businesses. Architects did recently help kill an S corp. provision in a bill that would have increased the tax burden on small firms (see page 68).



Transportation legislation reform

is another broad effort to spur job growth. Federal laws provide financing to states and localities for transportation and planning programs, which support street design, highway, transit, and bridge projects, among others. The goal is to draft a bill that would ensure continued financing for at least two years; provisions that expand the ability of communities and planning organizations to work with the public; and incentives for states to integrate transportation, housing, and land-use planning across multiple agencies, which would help make communities more livable places. "The more holistic it [design] is, the better off you will be," Goldberg says. And the emphasis on planning "means more opportunities for architects and design professionals to have a role in the process." Chance of success? A transportation bill currently being debated on the Senate floor contains many of these provisions and has some momentum because many unions, business groups, and environmental organizations support the general idea and goals associated with transportation reform. "There has never been a better moment to get the bill done," Goldberg says. But there are also hurdles, especially if the contentious Keystone XL pipeline debate gets lumped into the discussion, which would make passage dicey.

cont. from page 72

"I don't think there is a day where we are not up on Capitol Hill speaking and talking to members in the House and Senate," he says.

The NAHB's biggest policy and political issue is ensuring that Fannie Mae and Freddie Mac still play a key role in spurring home financing. Since the collapse of the housing market, Fannie and Freddie have become a political football, and there has been a push in Congress to eliminate the two quasiprivate companies from the housing market. "We have been doing a good job slowing that down," Meyer says.

Architects have leveraged the NAHB's lobbying muscle by working with them on issues such as sustainability in housing policy and on tax credits for construction of new energy-efficient homes. "We have a strong relationship with architects," says James Tobin, chief lobbyist at the NAHB. "We like to bring architects with us to Hill meetings because we want to show the diversity of industries impacted by energy efficiency. And certainly, architects play a big part of the success of these issues."

Consider also the AIA's work with the Associated General Contractors of America (AGC), which represents 30,000 contracting firms and owns a townhouse on Capitol Hill, where its five in-house lobbyists work full-time. AGC's PAC doled out \$985,249 to federal candidates in 2010, of which 76 percent went to Republicans and 23 percent to Democrats. While AGC doesn't employ any outside lobbying firms, it does bring in several hundred of its members to Washington, D.C., three times a year to lobby and reinforce its advocacy message on the Hill. The organization's local chapters also regularly arrange fly-ins to Washington to meet with lawmakers. AGC's top priority is infrastructure spending, which dovetails nicely with the AIA's priorities. The two organizations also lobby together on workplace safety and sustainable-infrastructure issues.

"We are thrilled to work with the architects because they are a leading indicator for construction, so when we go in and talk to lawmakers with them, they paint a fuller picture of whatever we are advocating for," says Brian Turmail, spokesman for the contractors.

Joel Zingesser, FAIA, vice president of planning and business development for Rockville, Md.-based Grunley Construction Cos., is an AIA member and sits on AGC's executive board. He says that the two organizations work well together on everything from tax issues to sustainable-energy policies. "The AIA coupled with the AGC has a significant voice," Zingesser says.

BOOTS ON THE GROUND

For all the progress that architects have made in refining their efforts on the Hill, one pointed criticism remains: They come to Washington to lobby as citizens far too infrequently. Very few of the AIA's 80,000 members meet regularly with lawmakers in the capital or in their home offices apart from the annual Grassroots campaign, according to interviews with lawmakers for this story. Compare that with the National Association of Home Builders, which is helping to arrange for its 140,000 members to come to D.C. and meet with lawmakers throughout the year.

"The home builders are in my office much more often than the architects, by a wide margin," says Rep. Reid Ribble, R-Wis., who ran a roofing and construction

PHOTO BY LEE SATKOWSKI

THE HIRED GUN

Michael Evans, a partner at Washington, D.C.-based lobbying firm K&L Gates, has worked with the AIA since 2004. He counts among his legislative victories his 2007 showdown with the Senate, which was considering filling the Architect of the Capitol position, which oversees the Capitol building and other Congressional landmarks, with someone who wasn't an architect. "The argument was that this position requires a manager, not a designer," Evans recalls. With Paul Mendelsohn, AIA's vice president of government and community relations, Evans argued that "architects are managers. They pull diverse people together and manage those people and projects." The Senate ultimately hired an architect, Steven Ayers, AIA.



\$550

Estimated amount, in millions of dollars, that the auto industry spent on lobbying during the first nine months of 2008

\$80

Estimated amount, in billions of dollars, of the government's bailout of Chrysler and General Motors in 2008 and 2009

company before his election to Congress. "I'd like to see the architects in here more."

One reason why architects haven't been as engaged in national public policy is that the profession demands long hours. "It takes time to lobby," says Virginia architect Dennis Findley. "I think it's also that architects don't know how politics and Congress works. It's intimidating. But architects, I think, can be very effective as lobbyists."

Rep. Blumenauer, a former Portland, Ore., city commissioner and a strong supporter of the architects' public policy agenda, has another theory. "Part of the problem is the nature of the profession. I have said, and no one has contradicted me, that architects remind me of a bunch of artists who pretend to be small businessmen and businesswomen. They are about design and care about some of the nuts and bolts of politics and legislation, but it's not the first thing on their radar, or their second, or their third thing."

Blumenauer says that he is continually prodding architects to get more involved in public policy. "The design community plays such a critical role in knitting together our infrastructure investments and how we relate to our natural environment," he says. "For every 10,000 architects we can engage and energize, it ratchets up the discourse, the policy level, and the political process."

Blumenauer points to the National Beer Wholesalers Association, which represents a tiny profession—just 3,300 wholesalers—but is highly visible on Capitol Hill and in state and local politics. The beer wholesalers employ six in-house lobbyists and three K Street firms, and spent \$930,000 on lobbying in 2011. Their PAC is the second-largest donor of any industry in the 2012 cycle, contributing \$1.5 million so far to federal candidates. (The largest PAC, the Realtors, have contributed \$1.6 million so far this cycle.)

The beer wholesalers "are very focused, have an agenda, and everyone on Capitol Hill knows what it is," Blumenauer says.

Robert Ivy, the AIA's executive vice president and CEO, responds that his goal is to double the number of member donors to his organization's PAC and to do more to persuade members to engage in politics. "Realistically, we'll never be the Realtors, but we have a highly articulate group of individuals who are passionate about the built environment," he says. Architects have become more engaged in local politics: Currently, at least 1,250 AIA members have joined various organization boards or have been elected or appointed to local and state positions. The AIA has created the Citizen Architect program to recognize their work. Such ongoing local lobbying efforts will translate up to the national level over time, Ivy says.

When Rep. Edwin Perlmutter, D-Colo., served in the Colorado state senate, for instance, architects helped him to pass energy-efficient building legislation. In November 2006, Perlmutter was elected to Congress and has since become a leading advocate for architecture, co-sponsoring the Capital Access for Main Street Act, which would encourage small community banks to provide more loans to small businesses, including architecture firms. "The architects and I have had a mutual-admiration society," Perlmutter says.

As architects descend on the capital for Grassroots, they'll hopefully be building the foundations for similar relationships with other lawmakers. The profession's future may well depend on it. □

Bara Vaida is a Washington, D.C.-based journalist who writes about lobbying, healthcare, and technology policy.

FRIENDS OF ARCHITECTURE

The AIA's political action committee, ArchiPAC, has donated \$69,000 to congressional candidates and political committees so far this year. Here's the list of recipients.



Democratic Senatorial Campaign Committee, Sen. Patty Murray, D-Wash., chair
\$15,000



Rep. Earl Blumenauer, D-Ore.
\$2,000 plus \$1,000 to his PAC, Committee for a Livable Future



Rep. Sandy Levin, D-Mich.
\$2,500



Rep. Nancy Pelosi, D-Calif.
\$2,500



Rep. Suzanne Bonamici, D-Ore.
\$1,000



Rep. Tom Latham, R-Iowa
\$1,000



Rep. Russ Carnahan, D-Mo.
\$3,000



Sen. Diane Feinstein, D-Calif.
\$1,500



Rep. David McKinley, R-W.Va.
\$1,000



Rep. Kevin McCarthy, R-Calif.
\$1,000



Democratic Congressional Campaign Committee, Rep. Steve Israel, D-N.Y., chair
\$5,000



Rep. Edwin Perlmutter, D-Colo.
\$3,000



Rep. Jeb Hensarling, R-Texas
\$1,500



Rep. Bill Pascrell, D-N.J.
\$1,000



National Republican Congressional Committee, Rep. Pete Sessions, R-Texas, chair
\$5,000



TFP-FOJB Committee, Rep. John Boehner's (R-Ohio) PAC
\$2,500



Sen. Robert Menendez, D-N.J.
\$1,500



Sen. Olympia Snowe, R-Maine
\$1,000

When it comes to harnessing the power of synthetic gypsum, I'm a natural.

Steve Ramey, LEED Green Associate
Lafarge Gypsum



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→ DESIGN

PERKINS+WILL

Critics have called him Canada's greenest architect, and as the managing director of the Vancouver, British Columbia, office of international behemoth Perkins+Will, his business card has more letters appended to his name than a can of alphabet soup: C.M., FRAIC, MAIBC, Architect AAA, MOAA, Intl. Assoc. AIA, BCID, LEED AP. With these impressive credentials, Peter Busby, 59, runs his 88-person division of Perkins+Will with a firm design hand and a soft-spoken — even gentle — manner.

A graduate of the University of British Columbia School of Architecture, Busby founded his own firm in Vancouver in 1984 and joined forces with Perkins+Will in 2004. His focus has nearly always been green: Busby was mentored by sustainability guru Ray Cole early in his career,

and he was one of the founders of the Canada Green Building Council, our neighbor to the north's version of the USGBC.

Many of Busby's projects are close to home (two of the three in this portfolio are near his office; the third a short plane ride away, in Calgary), but his long-earned expertise in green design has earned him commissions all over the globe, including master plans for Abu Dhabi, United Arab Emirates. And the scale of his projects is growing as architects and clients become more sophisticated about what's needed to change how the world looks at the built environment. "Sustainability is a neighborhood phenomenon," Busby says. "We're moving from buildings to communities — it's whole-systems thinking." EDWARD KEEGAN, AIA



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92 **ENERGY.ENVIRONMENT.
EXPERIMENTAL LEARNING**

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RESEARCH ON SUSTAINABILITY**





VANDUSEN BOTANICAL GARDEN VISITOR CENTRE

VANCOUVER, BRITISH COLUMBIA, CANADA
PERKINS+WILL

TEXT BY EDWARD KEEGAN, AIA
PHOTOS BY NIC LEHOUX

VANCOUVER'S VANDUSEN BOTANICAL GARDEN is considered young compared to its counterparts in other cities—from 1911 to 1960, the 55-acre property was home to a golf club. The site was then considered for commercial development until the neighbors objected and the VanDusen Botanical Garden Association helped save the property for use as a botanic garden. The gardens opened in 1975; in 2011, Peter Busby, Intl. Assoc. AIA, and his colleagues at Perkins+Will reinvigorated the property with a new \$14.4 million (CAD) visitor center.

Located on the southeastern corner of the property, the 19,000-square-foot building was designed to target the VanDusen leadership's interest in attaining both LEED Platinum certification and meeting the Living Building Challenge (LBC). One reason for the sustainable goals is that the mission of a botanic garden is conservation, explains garden director Harry Jongerden. As such, "the philosophy of the building and a botanic garden is the same," he says.

To realize this vision, Busby designed an organically shaped, dramatic single-story structure that introduces visitors to the naturalistically planted grounds. Curving rammed-earth walls beneath an undulating roof lead visitors from multiple entries through to a central, circular atrium. From this single point under a contemporary oculus, one can step out into the garden or access the building's amenities, which include a store, food services, and educational and rental spaces.

The building's design draws on natural forms with nary a right angle in sight. The typical roof panel is 15 feet





The curvilinear forms of the roof of the VanDusen Botanical Garden Visitor Centre (previous spread) are sheathed in aluminum where not covered by an extensive green roof. A conical skylight (opposite) punches through the roof of the visitor center's lobby, and serves as a solar chimney to generate airflow in the naturally ventilated space. Rammed-earth walls (this image) line the path to the entrance and continue on the interior.

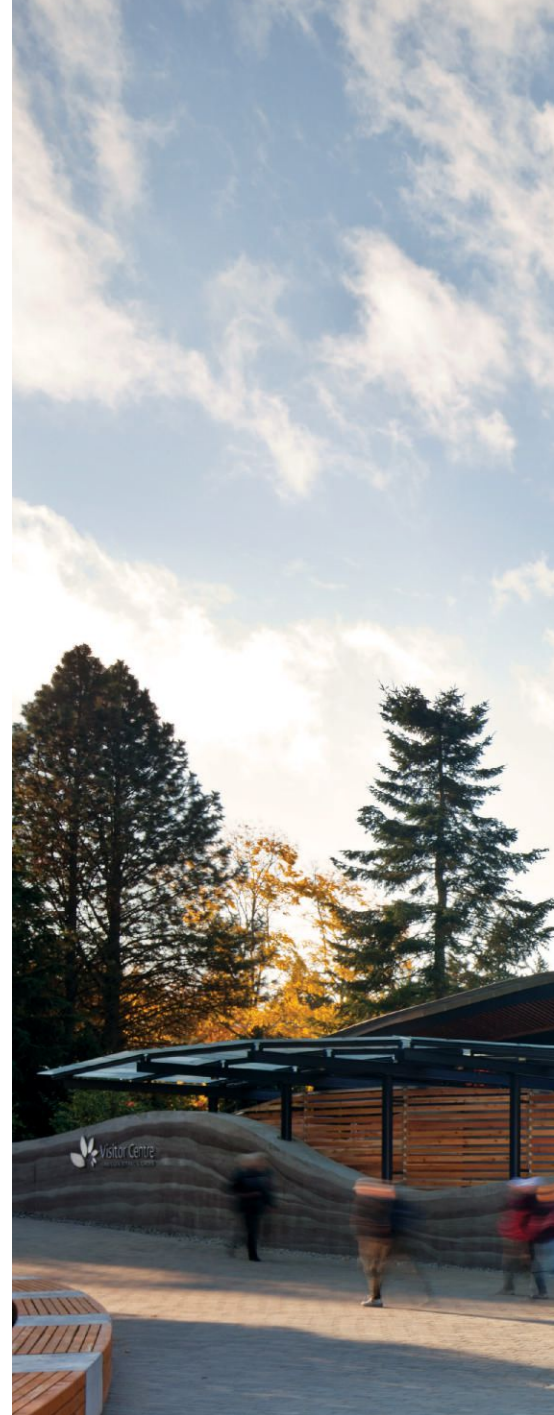
by 65 feet and curves along all three axes—with more than 50 different panels needed to enclose the building. They were first drawn by Perkins+Will using Rhino, then transferred to Revit for working drawings and fabrication. The panels were prefabricated, incorporating everything—structure, sheathing, roofing membrane, as well as rough-ins for fire protection and electrical services. “It’s tricky to bend sprinkler lines,” says Ledorc Construction project manager Rebecca McDiarmid. “We used BIM to sort out the conflicts. There would have been a number of spectacular ‘oops’ if we hadn’t.” The undulating roof required a steel connection detail that would accommodate the many different angles with which the roof panels meet the structural members. “We developed a standard that works with any curve,” Busby says. Construction of the relatively small, single-story building required the use of Vancouver’s largest crane in order to place the roof panels without disturbing the towering trees that surround the building.

The LBC is just that—a challenge. McDiarmid recalls how the hundreds of linear feet of drain tile required for the building had to be produced by hand drilling thousands of holes in high-density polyethylene pipe—a substitute for the LBC-banned PVC. “That’s the kind of thing LBC does to you,” Busby says. “It can drive you crazy.” Other materials were difficult as well. “Subcontractors would pull their LEED files on

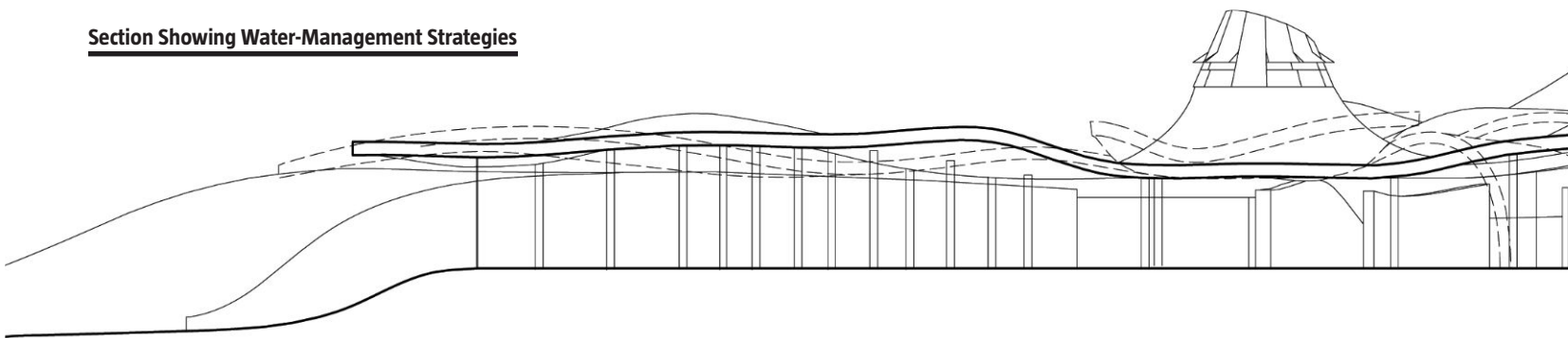
materials,” McDiarmid says, “but that’s not enough.” It was teamwork that made it happen. “The subs really got on board,” Perkins+Will associate principal Jim Huffman says. “The Living Building Challenge is less flexible than LEED. It’s all or nothing.” Silicone was substituted for neoprene in several assemblies to meet challenge requirements, knowledge that was transferred between subcontractors on the project.

VanDusen achieves net-zero energy through a variety of techniques including solar hot water, photovoltaic panels, and geothermal boreholes. Its net-zero water system makes it the first building in more than 45 years in Vancouver to treat blackwater on site, though the city required both water and sewer systems to be connected to the city service. A similar strategy is used at the Perkins+Will-designed Centre for Interactive Research on Sustainability at the University of British Columbia (see page 100) but that building is in a different jurisdiction.

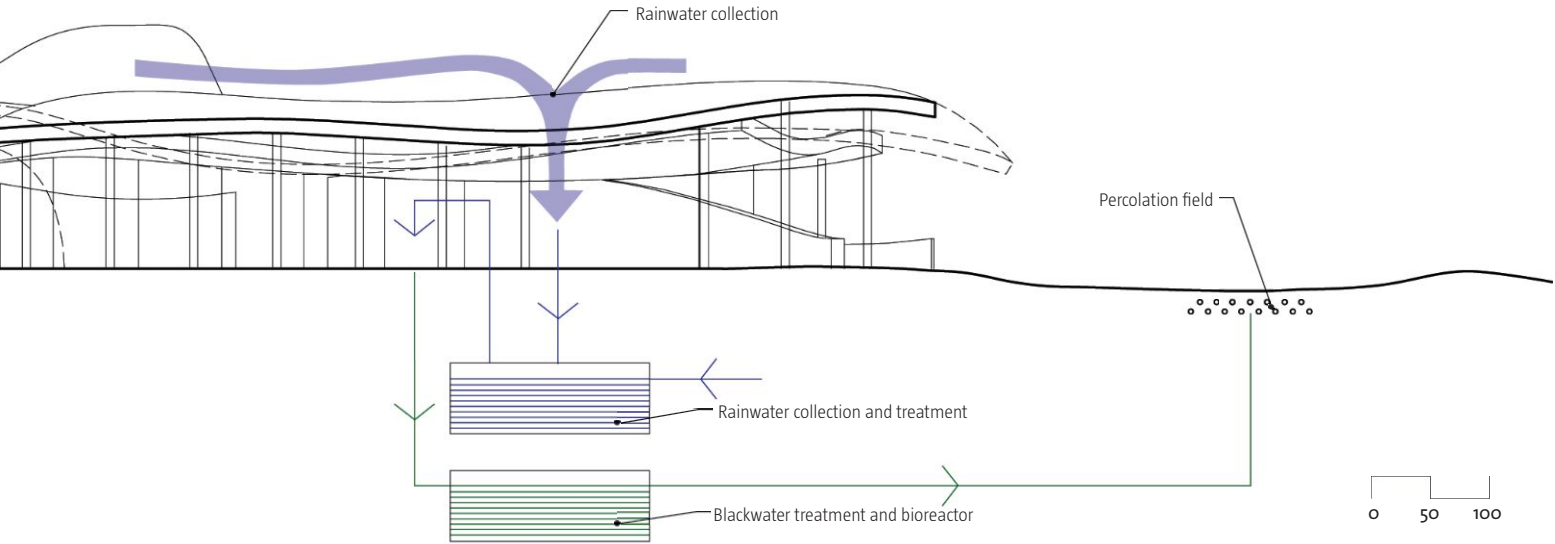
At the north end of the building, mostly hidden from view, is the portion of the building that houses the mechanical room. Here, the roof comes down to grade, serving several useful purposes. It hides the blackwater piping that exits the building to a percolation field. “And it allows critters to get onto the green roof,” Busby says. “It promotes biodiversity. It’s about man and nature coming together.” That’s a theme that remains central to the mission of both the garden and Busby’s work.

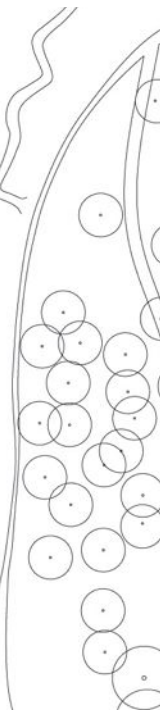


Section Showing Water-Management Strategies



Outlined with a border of gravel to allow drainage, the green roof (opposite) serves as its own ecosystem — playing host to a variety of plant species — and it dips down to grade level to allow access to local fauna. Underneath the canopy (this image), the roof plane is lined in wood beams and supported by wood-clad columns. The use of wood can contribute to the building's goal of meeting the stringent Living Building Challenge because of the material's sequestered carbon.

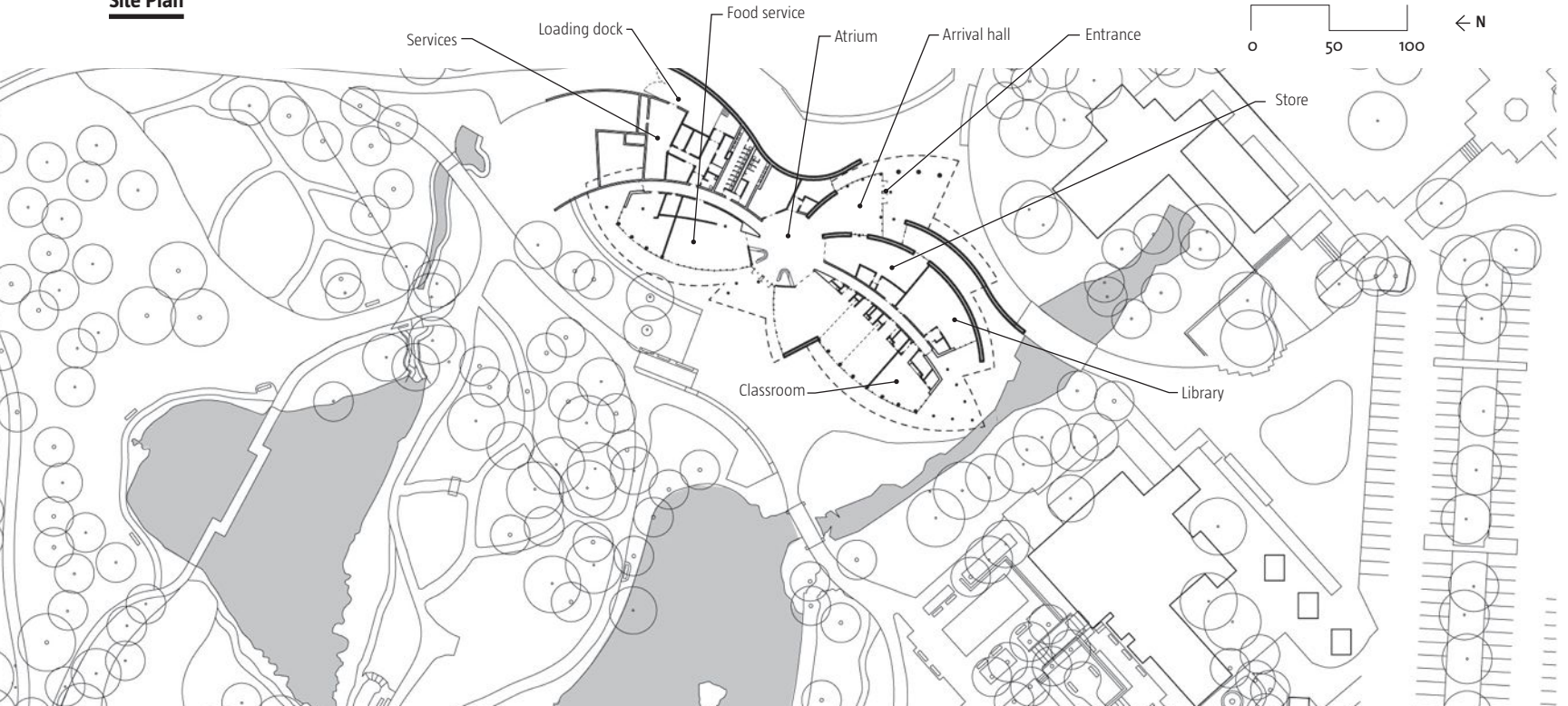


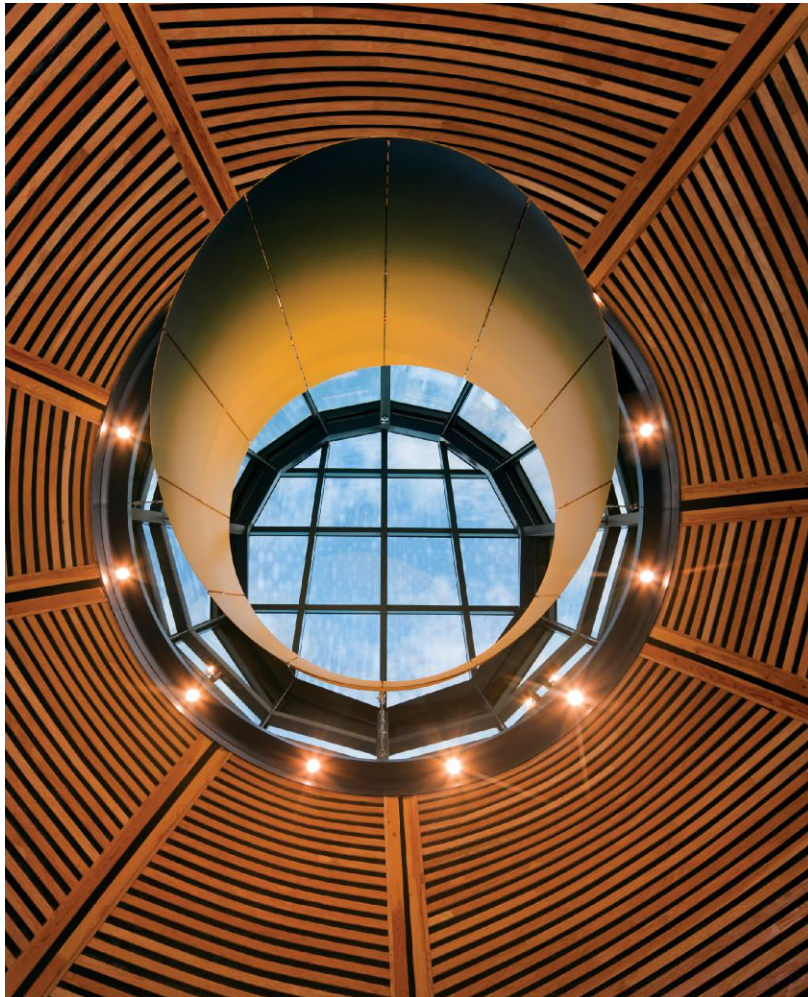
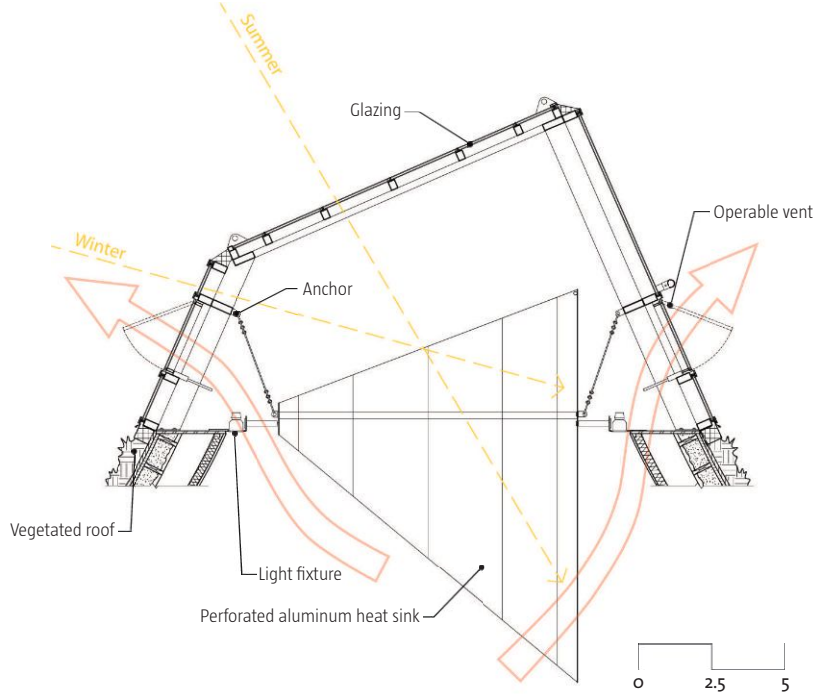


The lobby at the core of the visitors center (opposite) provides a jumping off point where guests can enter into the gardens, or access the building's amenities, which include a shop, café, and flexible education space (this image) that can be configured for seminars or events.



Site Plan



Section Through Oculus**Project Credits**

Project VanDusen Botanical Garden Visitor Centre, Vancouver, British Columbia, Canada

Client Vancouver Board of Parks and Recreation

Architect Perkins+Will, Vancouver, British Columbia, Canada—Peter Busby, Intl. Assoc. AIA (managing director); Robert Drew, Jim Huffman (associate principals); Penny Martyn (senior architect); Aneta Chmiel, Robin Glover, Max Richter (architects); Paul Cowcher, Harley Grusko (intern architects); Chessa Adsit-Morris (sustainability building adviser); Jacqueline Ho, Matthieu Lemay (junior architectural staff); Benjamin Engle-Folchert (model shop manager); Ellen Lee (model maker); Sören Schou (industrial designer)

Structural Engineer Fast + Epp

Mechanical/Electrical Engineer Cobalt Engineering

Civil Engineer R.F. Binnie & Associates

Cost Consultants BTY Group; B.R. Thorson

Envelope Consultant Morrison Herschfield

Acoustic Consultant BKL Consultants

Landscape Architect Sharp & Diamond Landscape Architecture with Cornelia Hahn Oberlander

Commissioning Agent KD Engineering

Lighting Design Total Lighting Solutions

General Contractor Ledcor Construction

Ecology Consultant Raincoast Applied Ecology

Size 19,000 square feet

Cost \$14.4 million (CAD)

Materials and Sources

Adhesives, Coatings, and Sealants Bohle adhesives www.bohleamerica.com

Carpet Bentley Prince Street bentleyprincestreet.com

Concrete Ocean Concrete Supplies oceanconcrete.com

Exterior Wall Systems Whitewater Shotcrete whitewaterconcrete.com;

Sirewall (rammed-earth walls) sirewall.com

Flooring Retroplate System by Advanced Floor Products retroplatesystem.com

Glass PPG Industries ppg.com

Insulation BASF (Walltite Eco) walltite.basf.ca

Lighting-Control Systems Douglas Lighting Controls douglaslightingcontrol.com

Lighting Selux selux.com; Alights alights.com; Philips Ledalite ledalite.com

Millwork Pacific Woodworking pacificwoodworking.com

Photovoltaics or Other Renewables Sunda Solar Tubes sundasolar.com;

Eco Fluid Systems (bioreactor wastewater systems) ecofluid.com;

Sharp (solar panels) sharpusa.com

Roofing Soprema soprema.ca; Zinco Canada zinco.ca

Structural System Clearbrook Iron Works cliron.com

Windows, Curtainwalls, and Doors Columbia Skylights columbiaskylights.com

TOOLBOX

At the center of the VanDusen Botanical Garden Visitor Centre's multipetaled structure is a circular space topped by a daylit oculus. Unlike its better-known predecessor in Rome's Pantheon, this round rooftop opening is protected from the elements, and its diameter varies from about 15 feet at its base to just under 10 feet at its top.

Below the conical skylight that protrudes through the building's green roof is a multihued, powdercoated, perforated aluminum cone that serves as a heat sink. The heat sink's form was "shaped by the sun," Busby says. "The color is darker in the areas that are only hit by the summer sun—since you need to maximize the temperature differential to make the chimney effect work." These darker areas are at the base of the heat sink, and are hit by the rays of the summer sun, increasing the temperature in the oculus to encourage airflow.

On summer days, operable windows in the sides of the skylight open and the heat-sink construct draws warm air through the building and exhausts it out through the vents. To the casual observer, the heat sink appears to be just another sculptural form in a building that's packed with—indeed, composed of—them. But the multivalent device provides both a centerpiece to the visitor center and another place to start a conversation about how to make buildings work better with nature—an essential part of VanDusen's mission and Busby's sophisticated sustainable architecture.



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Energy. Environment. Experiential Learning

CALGARY, ALBERTA, CANADA
PERKINS+WILL

TEXT BY EDWARD KEEGAN, AIA
PHOTOS BY TOM ARBAN

FOR MUCH OF the year, the University of Calgary in Alberta is pretty bleak—the weather cold, the landscape barren, and the campus devoid of much architectural interest. Enter Peter Busby, Intl. Assoc. AIA, and his design for the 264,050-square-foot, \$145.5 million (CAD) Energy, Environment, Experiential Learning (EEEL) center. “We wanted the building to stand out,” says University of Calgary director of campus planning Jonathon Greggs of the five-story structure, which boasts a glass-and-aluminum exterior that gleams in the high-plains sunlight. Busby adds, “We made it shiny and added color. I’ve raised four kids and I know what attracts them.”

The building brings together six different disciplines in one building, three each from the science and engineering departments. Sited near the north edge of the campus, EEEL serves as a new gateway to the university. And while laboratories for chemistry, biology, bioscience, and civil, mechanical, and chemical engineering make up the core of EEEL’s program, its social spaces are the main event.

University planners created a narrative as part of the program statement, stipulating that an inviting stair should connect the first three levels where undergraduates could engage in peer-to-peer learning. Busby, Perkins+Will, and their joint-venture firm, Dialog, embraced that demand, creating a simple atrium plan for the building, centered around a five-story space lined with labs on its north and south sides. The stair connecting the first and second floors stretches the full width of the atrium, narrowing slightly as it continues to the third floor. Students have embraced the stair as a place to study, converse, see, and be seen. The labs that line both sides of the space enjoy maximum glazing so



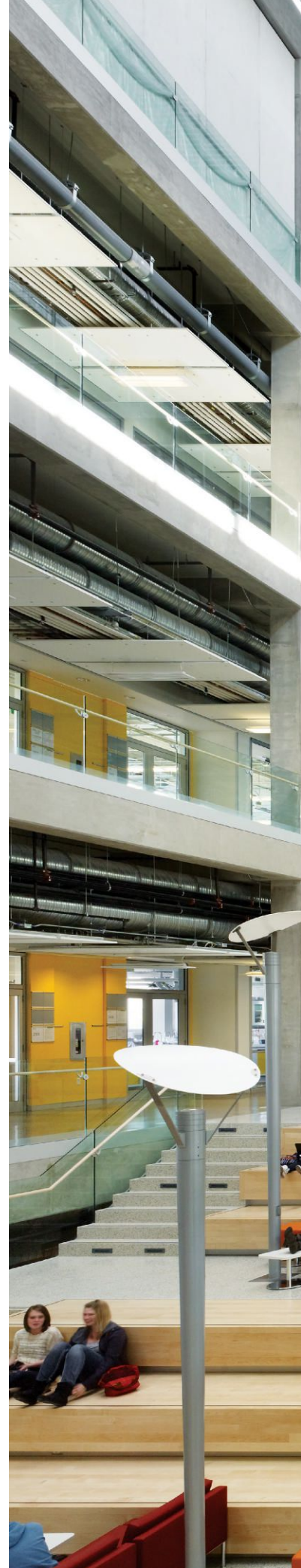
that natural light enters from the north and south, putting the building's occupants on display. "It's opportunistic and serendipitous," Gregg says.

The university called, rather vaguely, for a "sustainable building" that would not compromise the program. Busby and his team targeted a LEED Platinum goal and "we had to be determined," he says. Among the building's environmentally conscious elements: earth tubes that heat and cool the main theater, radiant floor and ceiling systems, and a high-performance envelope with triple glazing. "It's one of the most efficient lab buildings in North America," Busby says. "It already meets the 2030 Challenge." Large touchscreens at the south entrance and on each floor of the building will display the building's energy metrics. Standing in the building on a 12 C (53 F) February day, Gregg noted, "it's probably heating itself today. We're just moving the air around."

The façades are clad in a system of aluminum panels that are modeled differently on each side, expressing the building's environmentalism as part of its "shiny" aesthetic. On the north side, the panels angle up to reflect

the ambient light and to brighten the surface. On the south side, they angle down and reflect direct sunlight onto the adjacent plaza that's mostly shaded by nearby buildings. The east and west panels are canted sideways toward the north, cutting down on reflections while capturing ambient light. Horizontal aluminum fins shade windows on the south side of the building, and these same elements are used diagonally across glazing on the east and west sides of the building, introducing another geometry into the façade while effectively shading with the least obstruction to the windows. Bright-green solar shutters on the north and south façades add color to the building while denoting double-height spaces within; motors move those on the south façade to block the sun.

It's still in its first academic year of occupancy, but EEEEL seems to be meeting expectations. "Many students are saying, 'I want to learn my stuff here,'" project manager-designer Rick Piccolo says. But Busby is more interested in the longer-term effects on the community. "You're training the occupants to behave better," he says. "It's a culture shift that happens over time."



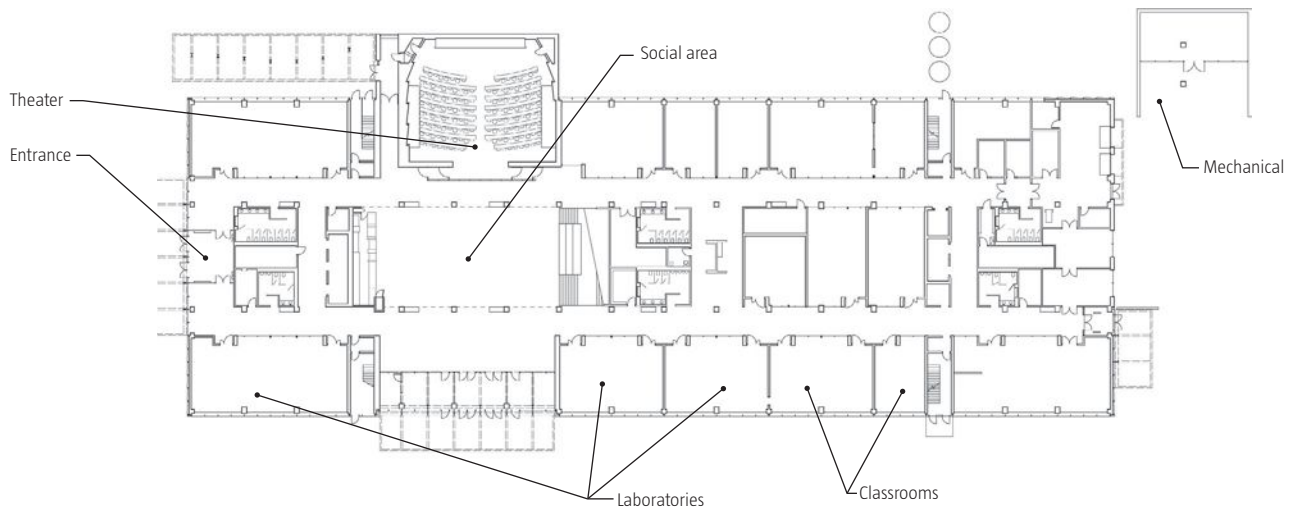


EEEL is clad in four profiles of aluminum panels (previous spread) that were fabricated by an auto-body shop when the custom profiles moved beyond the capacity of the curtainwall manufacturer's facilities. Inside, the building is programmed around a five-story atrium with a monumental staircase that serves as a social gathering space for the students (this image). Glazed walls allow students sitting on the stairs to see into the laboratories and classrooms on the upper floors (opposite) and out to the street beyond. The building "is the size of a football field, but you can stand anywhere and see outside," project manager-designer Rick Piccolo says.



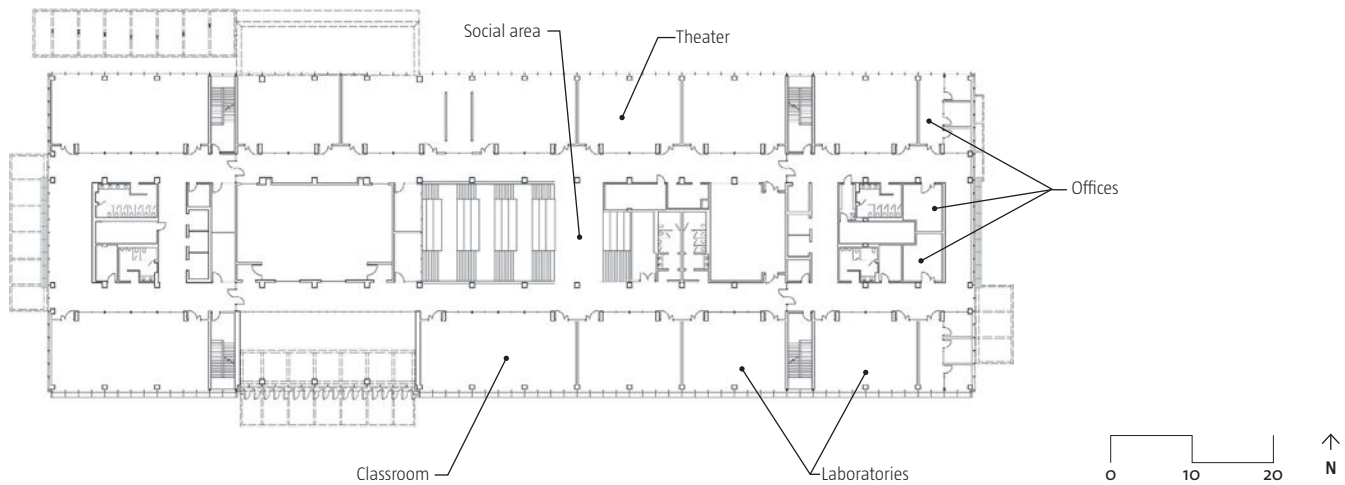
Wherever possible, circulation corridors are fitted out with seating and study areas (this image), turning the building's public spaces into social hubs for the students. Laboratory spaces spanning six disciplines (opposite top) are flooded with natural light, and glazed walls in the classrooms (opposite bottom) allow views of the building's shading system, including diagonal aluminum fins on the east and west façades.

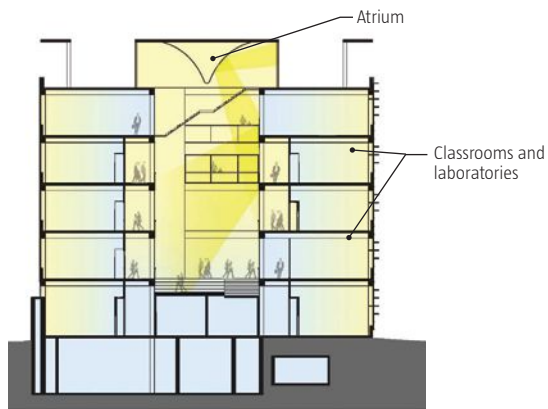
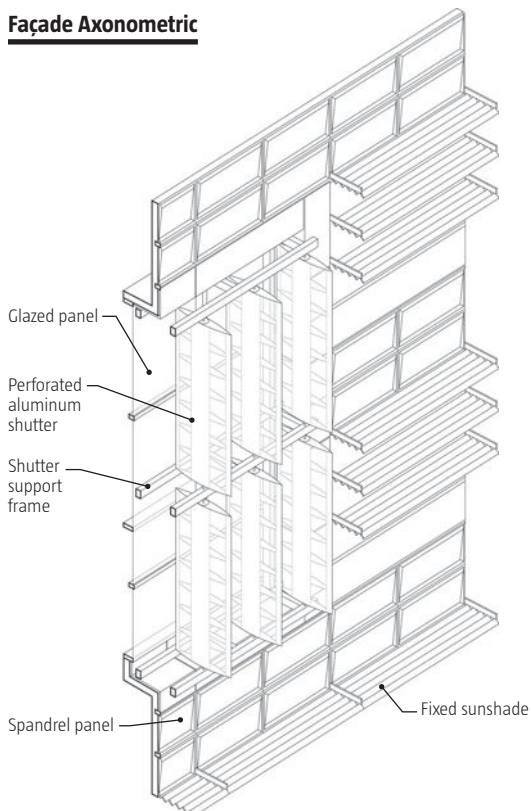
First-Floor Plan





Representative Upper-Level Floor Plan



West–East Section**North–South Section Through Atrium****North–South Section****Façade Axonometric****Project Credits**

Project Energy.Environment.Experiential Learning, Calgary, Alberta, Canada

Client The University of Calgary

Architect and Interior Designer Perkins+Will, Vancouver, British Columbia, Canada—Peter Busby, Intl. Assoc. AIA (managing director); Rick Piccolo, (project manager-designer); Eric Stedman (associate); Patrick Schilling, Aneta Chmiel (architects); Alex McCumber (intern architect); Soren Schou (industrial designer); Michael Driedger (sustainability building adviser).

Joint-Venture Architect Dialog, Calgary, Alberta, Canada—Ken Johnson (associate); Robert Veniere, Robert Jim, Jim Goodwin, Kate Jones, Peter Atkinson (project team); Madeleine Schmidts (interior designer)

Mechanical Engineer Dialog—Tim McGinn

Structural Engineer Dialog—Norm Webster, Dwain Babiak RJC, Ralph Hildenbrandt, Ryan Wilmer

Electrical Engineer SMP—Kamal Parmar

Civil Engineer Aecom—Bob Vanduijvenbooden

Project Manager Duke Projects—Gary Duke, Bill Evans

Construction Manager and General Contractor EllisDon Corp.—Douglas Smith, Wayne Tritthardt

Landscape Architect O2 Planning + Design—Doug Olsen, Michael Magnan

Building Envelope Anton Vlooswyk Building Envelope Engineering

Code Consultant Sereca Fire Consulting—Keith Calder

Acoustic Consultant FFA Consultants in Acoustics and Noise Control

Quantity Surveyor Spiegel Skillen + Associates

Size 264,050 square feet

Cost \$145.5 million (CAD, construction cost)

Materials and Sources

Building-Management Systems and Services Siemens
siemens.com

Ceilings Armstrong armstrong.com/commceilingsna

Concrete EllisDon Corp. ellisdon.com

Curtainwall Contract Glaziers contractglaziers.com

Flooring Concrete topping

Glass Trulite pdglass.com

HVAC Trotter & Morton trotterandmorton.com

Lighting-Control Systems Siemens siemens.com

Masonry and Stone Thibeault Masonry

Metal Ital Steel

Plumbing and Water System Trotter & Morton
trotterandmorton.com

Roofing Western Weather Protectors

Structural System Cast-in-place concrete, steel frame at roof penthouses and canopies

Windows, Curtainwalls, and Doors Contract Glaziers

contractglaziers.com; Schüco schueco.com; Alumaticor alumaticor.com



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Architect: Crosson Clarke Carnachan
Architects (Auckland) Ltd.

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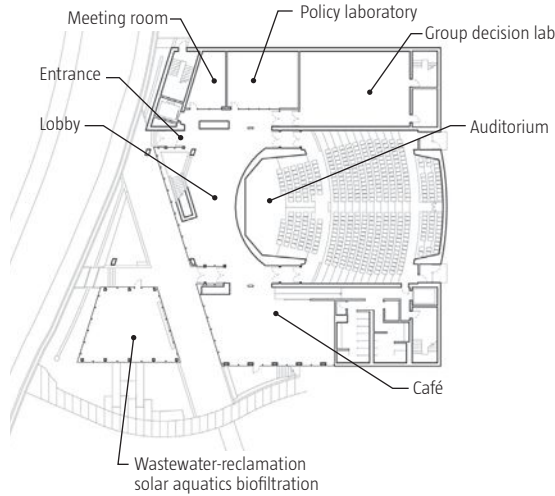
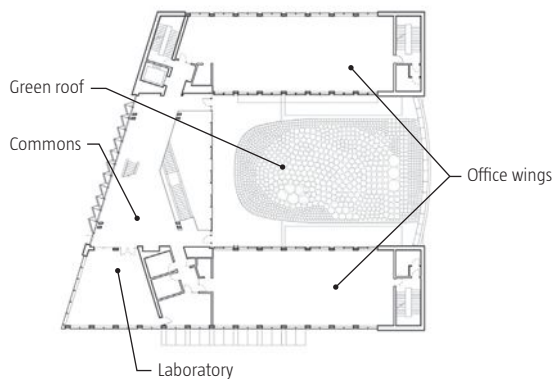
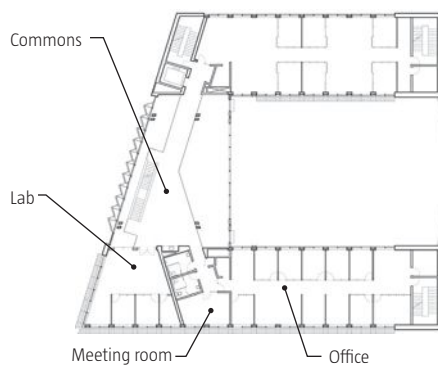
VANCOUVER, BRITISH COLUMBIA, CANADA
PERKINS+WILL

TEXT BY EDWARD KEEGAN, AIA
PHOTOS BY MARTIN TESSLER

THE UNIVERSITY OF BRITISH COLUMBIA (UBC) sits atop a hill at the westernmost tip of Vancouver. The campus's natural beauty is an inspiration, even while its built surroundings fall well short of the mark. But Perkins+Will's new Centre for Interactive Research on Sustainability (CIRS), which opened last August, tries to narrow that gap.

The 61,085-square-foot, \$23 million (CAD) structure sits on an infill site just west of the campus's Main Mall, edging a new landscaped "Sustainability Street" cross-axis. Inside are offices for various academic departments devoted to the study of sustainable principles, in the built environment and otherwise. UBC Sustainability Initiative executive director John Robinson (whose office is in CIRS) was the key partner in developing the plans for the center. He's also a professor at the school's Institute for Resources, Environment & Sustainability, as well as a professor in the department of geography. When a client has that broad of a portfolio, good things can happen.

There's hardly a feature of the building—or its operation—that isn't in some ways experimental. CIRS expects to achieve LEED-NC Platinum status while striving for the much more difficult Living Building Challenge (only three buildings have, as yet, been awarded this honor). In addition to following the high standards of both Canada Green Building Council and the International Living Future Institute, the team developed its own agenda for making the building as "regenerative" as possible. "The building was designed to be 'net-positive' in seven different ways—four environmental and three human," Robinson says. These are: net-positive energy; structural carbon neutrality;

First-Floor Plan**Second-Floor Plan****Third- and Fourth-Floor Plan**

operational carbon; net-zero water; turning passive occupants into active inhabitants; promoting health and productivity; and promoting happiness. “We won’t do it if it doesn’t empower or motivate,” Robinson says. Perkins+Will managing director Peter Busby, Intl. Assoc. AIA, boils his architectural response down to three elements: “It’s all about air quality, light, and wood.”

Organized on a courtyard plan that is open at the east end, the building features a 450-seat auditorium filling its center on the ground level. Upper floors overlook a green roof atop the auditorium space. The west side of the building is inflected to fill the site with a series of sawtooth vegetated screens, and an existing path is maintained to create a covered accessible entrance while separating the wastewater-reclamation area.

The four-story structure is framed in wood (with a concrete foundation and basement), not just for its aesthetic but also to help the building be net-positive for carbon. The wood sequesters 600 tons of carbon compared to the 525 tons of carbon needed to create the building and its finishes. But there is one particular wood that may actually keep CIRS from fully meeting the Living Building Challenge: Busby and Robinson decided to use so-called “denim wood” on the exposed structural decking. A product of forests that have been infested with pine beetles, the wood has a bluish tone—and a nice irregular finish left by the parasites. It’s not FSC certified since the forests can’t be replanted immediately, but “we’re using it before it decays,” Robinson says, which would release the sequestered carbon back into the environment.

The wood structure is exposed on the interior, and its expression continues with exterior panels made of a three-ply, cross-laminated cedar. Busby notes that the wood structural members are bolted together—so the structure could, in theory, be dismantled and reused.

Natural daylight pours through every space in the building, even the fire stairs. The lecture hall is daylight too, an unusual design feature that Busby tries to use in many of his buildings. As part of CIRS’s research initiative, UBC’s psychology department is studying the effects of daylight on the hall’s occupants. Offices are located in the north and south wings of the building, linked by the full-height Commons at the west. Office windows are shaded by a screen that incorporates photovoltaics while the west façade’s glazing is screened using a vegetative wall with deciduous vines that allow the winter sun to enter the building’s common spaces while shading them during the summer months. Interior partitions on the upper floors are from a Haworth system. They’re movable and are already being used in several configurations.

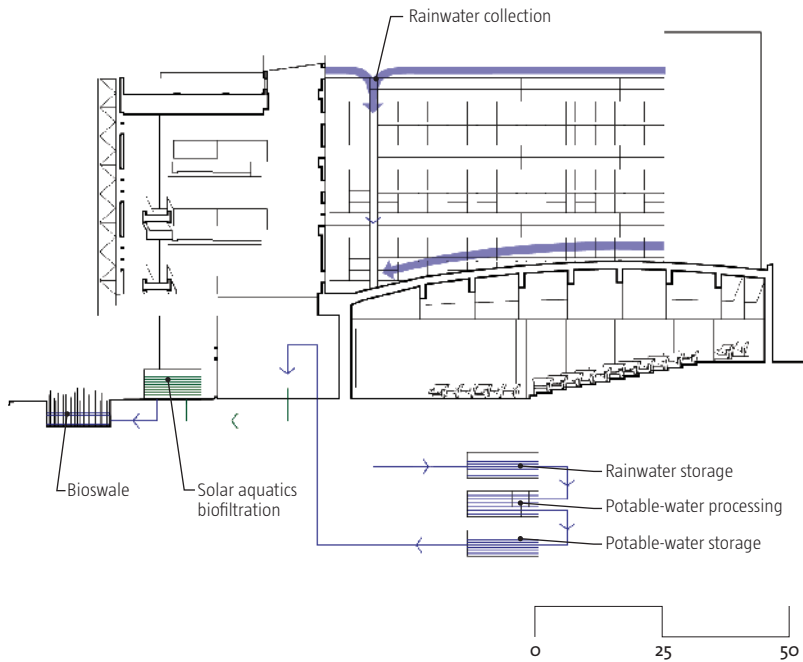
CIRS wears its sustainable initiatives proudly, but it’s hardly an “edgy” building, despite its experimental processes. “John Robinson thought the building would have to be green and curvy,” Perkins+Will principal Martin Nielsen says, but Busby notes that that wasn’t the way to go. “It needs to be plug and play.” This allows for future study of building systems and deployment that can be implemented farther afield as the campus’s larger sustainable initiatives become a reality. And the leadership of CIRS shows no interest in slowing down.

CIRS’s southwest corner features a glass-enclosed water treatment plant and bioswale (previous spread). Inside, the full-height Commons is clad in wood, flooded by natural light, and topped by a photovoltaic array (opposite bottom), with landings (right) that have break-out meeting spaces and staircases to the upper-level offices (opposite top).

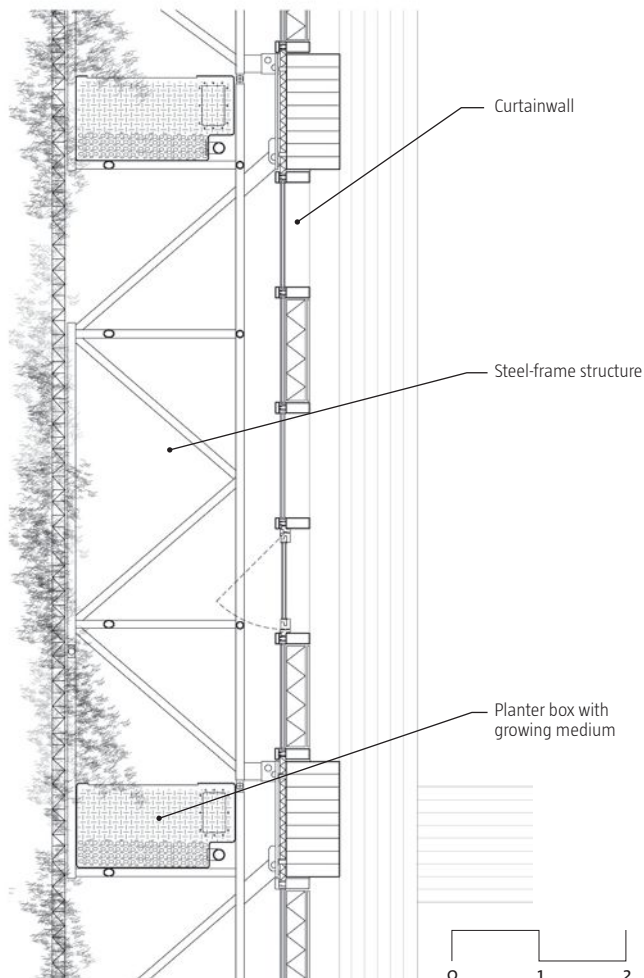




Water Systems



Living Solar Screen Section



TOOLBOX: NET-ZERO WATER SYSTEM

The key to CIRS's net-zero water strategy lies in a ground-floor wastewater-treatment plant that's clearly visible to building visitors and passers-by from the general public. Located on the southwest corner of the building, the plant is glazed on three sides—part of CIRS's mission to expose as much of its workings as possible.

Rainwater is collected and treated for potable use within the building. All wastewater moves through a solar aquatics biofiltration system before being fed back into the building for toilet flushing and landscape irrigation. The system's 10,000-liter-per-day wastewater system capacity is far greater than the 7,473 liters of treated wastewater used per day by the building operations. The treated water that is not used is currently fed back to the sewer line (health concerns by the approving authority prevent UBC from releasing treated blackwater back into the ground). But the excess capacity (and the funneling of extra potable water to the rest of campus) speaks to a larger goal that UBC Sustainability Initiative executive director John Robinson has for the university—net-zero water for the entire campus. It's not such a reach considering British Columbia's climate. There are 5 billion liters of rainwater that fall on the UBC campus each year and, on average, the campus uses only 3.89 billion liters of water in that same time period. "We can get 100 percent of our water from the rain," Robinson says.

Robinson notes how unusual it is for CIRS to put wastewater treatment on display. "People don't want to think of wastewater," Robinson says, "but this treatment plant smells like a greenhouse." It looks like a greenhouse, too—since the various treatment tanks use plants to aid the biofiltration process throughout the year. "The water is cleaner when it leaves the facility than when it enters as rain," Robinson says. "That's net-positive in both water and quality."

Project Credits

Project The Centre for Interactive Research on Sustainability, Vancouver, British Columbia, Canada

Client The University of British Columbia

Architect Perkins+Will, Vancouver, British Columbia, Canada—Peter Busby, Intl. Assoc. AIA (managing director); Blair McCarray, Martin Nielsen, Z Smith, AIA (principals); Maginnis Cocivera, Sebastien Garon (architects); Brian Gasmena, Jörk Grävenstein, Horace Lai (intern architects)

Mechanical Engineer Fast + Epp

Structural and Electrical Engineer Stantec

Civil Engineer Core Group Consultants

Geotechnical Engineer Trow Associates

Construction Manager Heatherbrae Construction

Landscape Architect PWL Partnership

Building Code LMDG Building Code Consultants

Acoustics Consultant BKL Consultants

Building Envelope Morrison Hershfield

Water Consultants Eco-Tek Ecological Technologies, NovaTec Consultants

Size 61,085 square feet

Cost \$23 million (CAD)

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Windows, Curtainwalls, and Doors Kawneer kawneer.com

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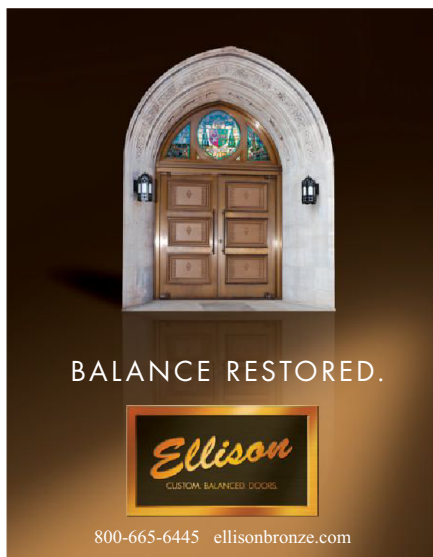
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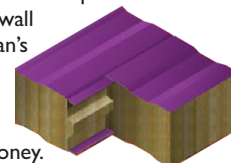


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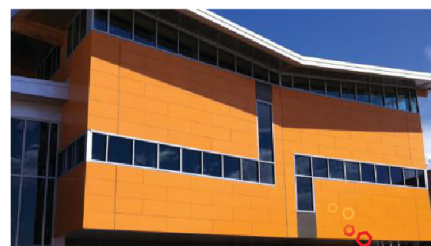
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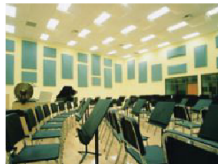
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New technologies are revolutionizing the process and product of architecture. To celebrate advances in building technology, ARCHITECT magazine announces the sixth-annual R+D Awards. The awards honor innovative materials and systems at every scale—from HVAC and structural systems to curtainwall and ceiling-panel assemblies to discrete building materials such as wood composites and textiles.

CATEGORIES

The awards will be judged in three categories, reflecting different stages of the research and development process:

- **Prototype**—Products, materials, and systems that are in the prototyping and testing phase
- **Production**—Products, materials, and systems that are currently available for use
- **Application**—Products, materials, and systems as used in a single architectural project or group of related architectural projects

The jury will consider new materials, products, and systems as well as unconventional uses of existing materials, products, and systems. Entries will be judged for their potential or documented innovation in fabrication, assembly, installation, and performance. All entries will be judged according to their potential to advance the aesthetic, environmental, social, and technological value of architecture.

ELIGIBILITY

The awards are equally open to architects, designers of all disciplines, engineers, manufacturers, researchers, and students.

PUBLICATION

The winning entries will appear in the July 2012 issue of ARCHITECT, both in print and online.

DEADLINE

Friday, April 13, 2012 regular submission deadline (postmark)

Wednesday, April 18, 2012 late submission deadline (postmark; additional fee is required)

FEES

First entry: \$175 first entry

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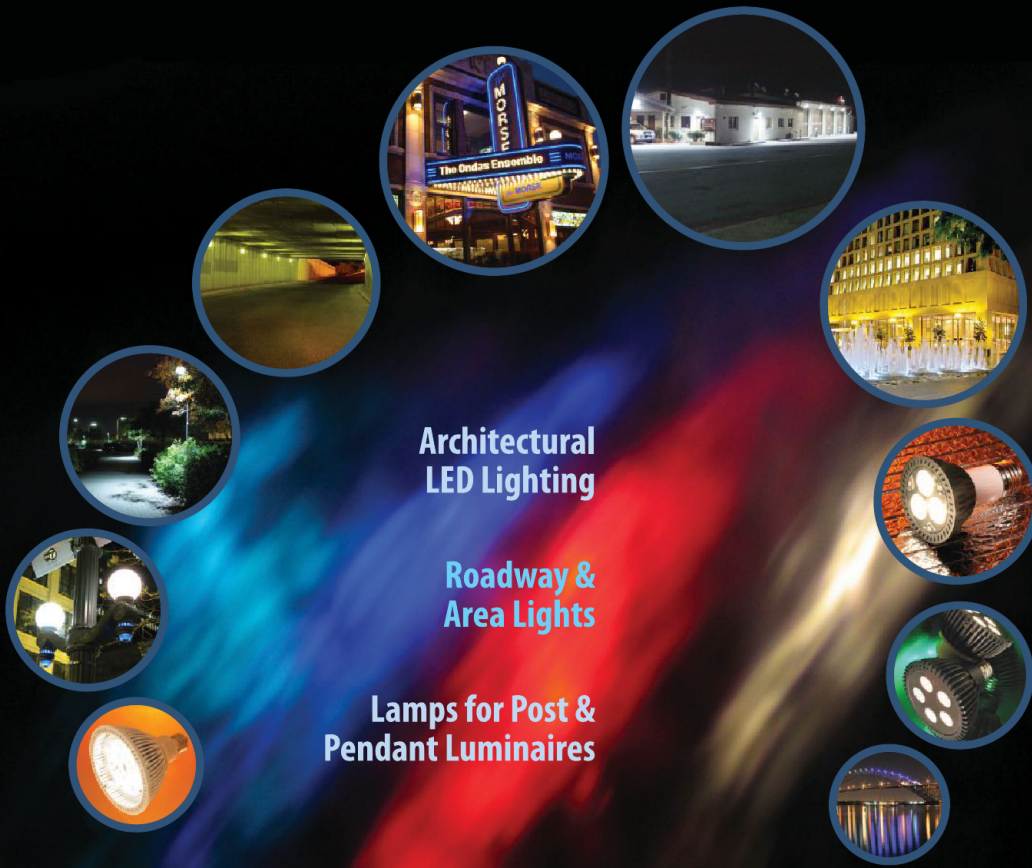
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the complex is revealed a little at a time.

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The complex serves as a retreat where midcareer artists—painters, poets, actors, musicians, and others—are accepted for three-week residencies with leaders in their fields. The center's administration reports that participants regularly cite the architectural setting as a positive influence on their work. □



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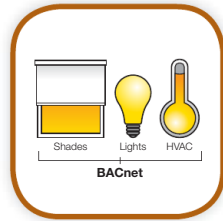
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