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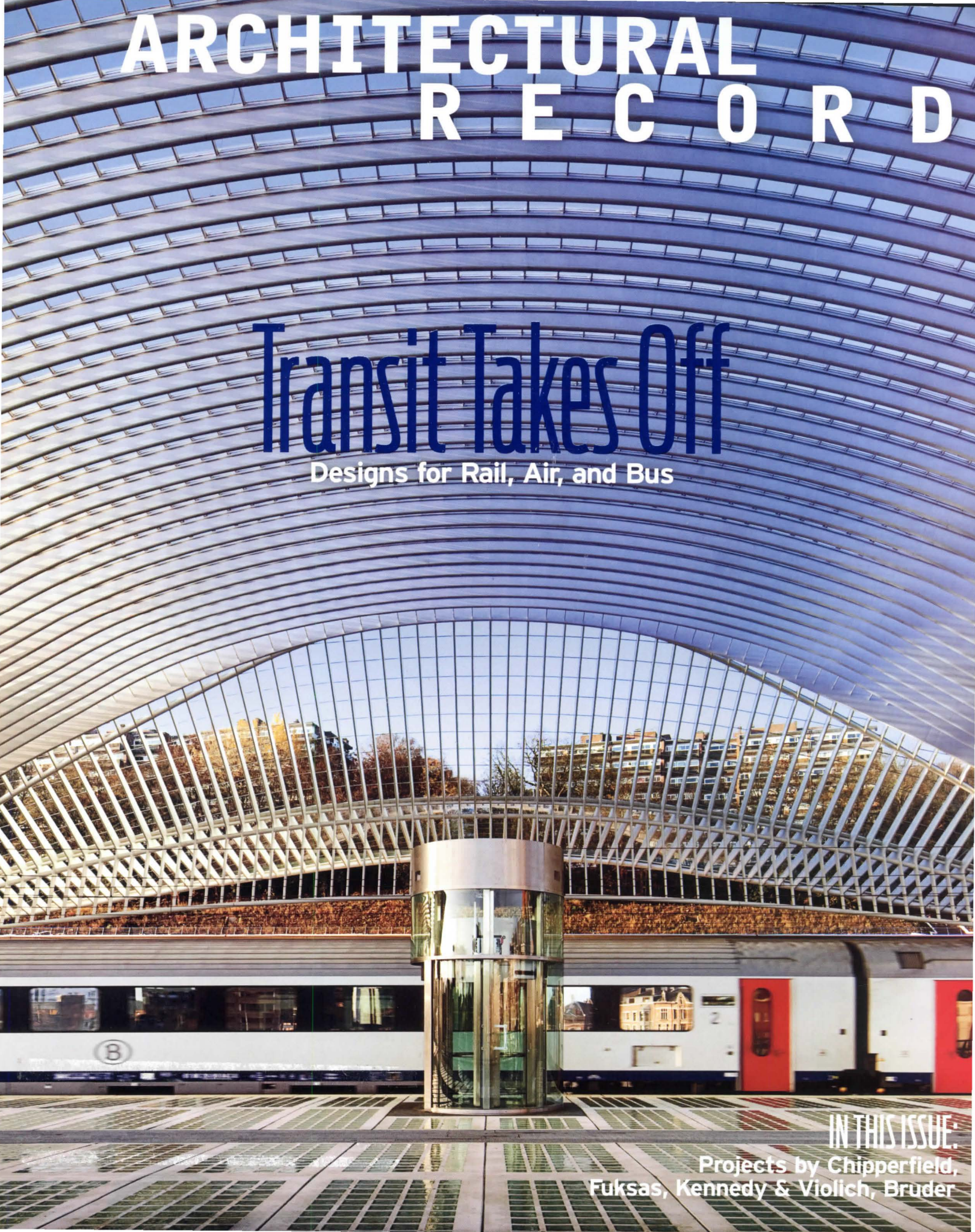

Transit Takes Off

Designs for Rail, Air, and Bus

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Projects by Chipperfield, Fuksas, Kennedy & Violich, Bruder

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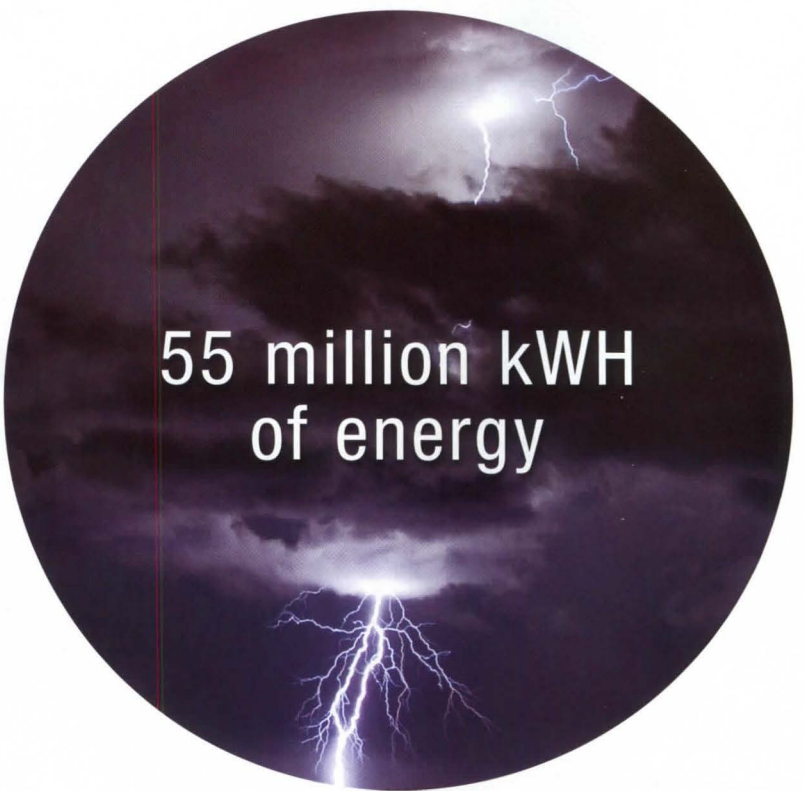
ceiling tile recycling saves



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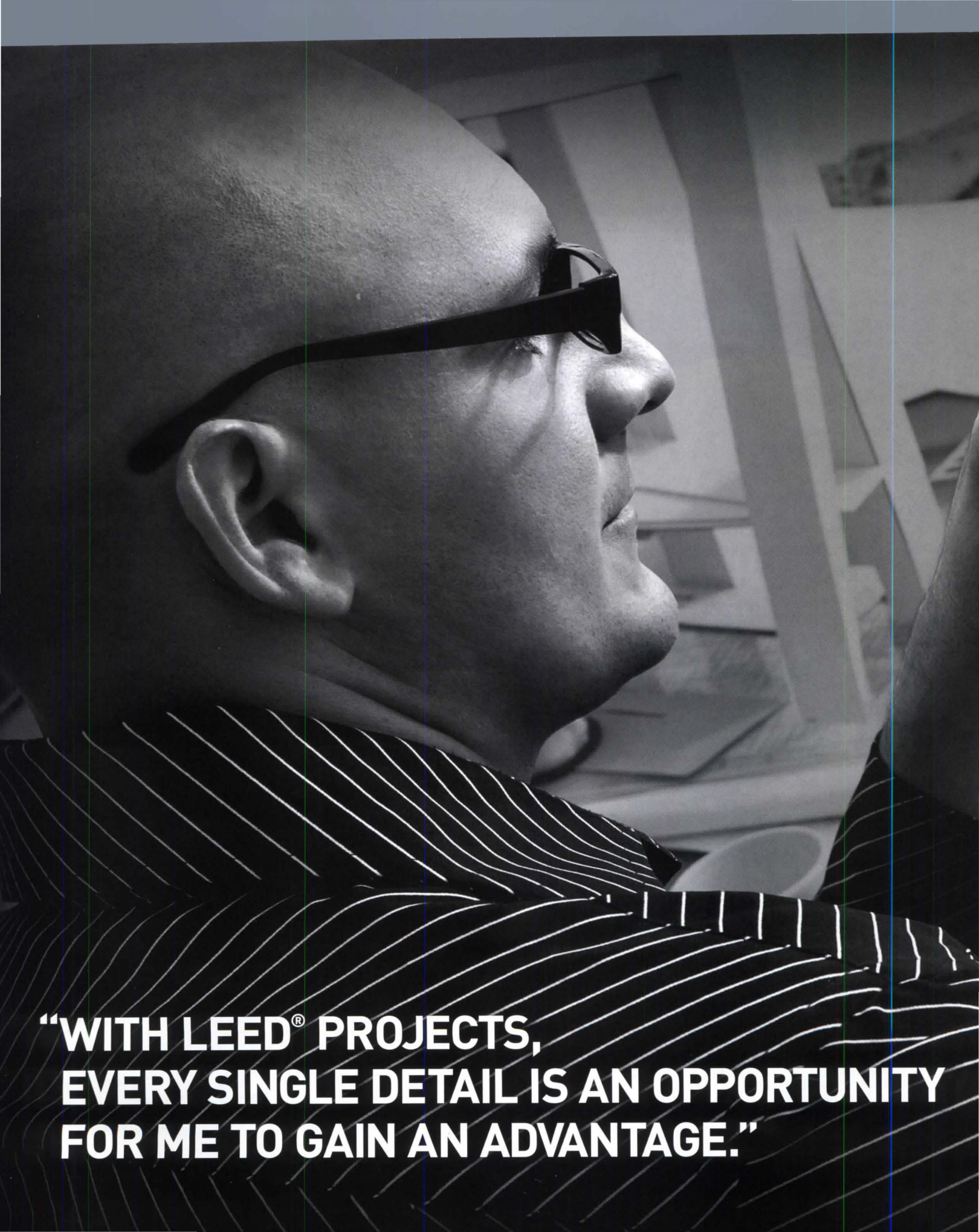
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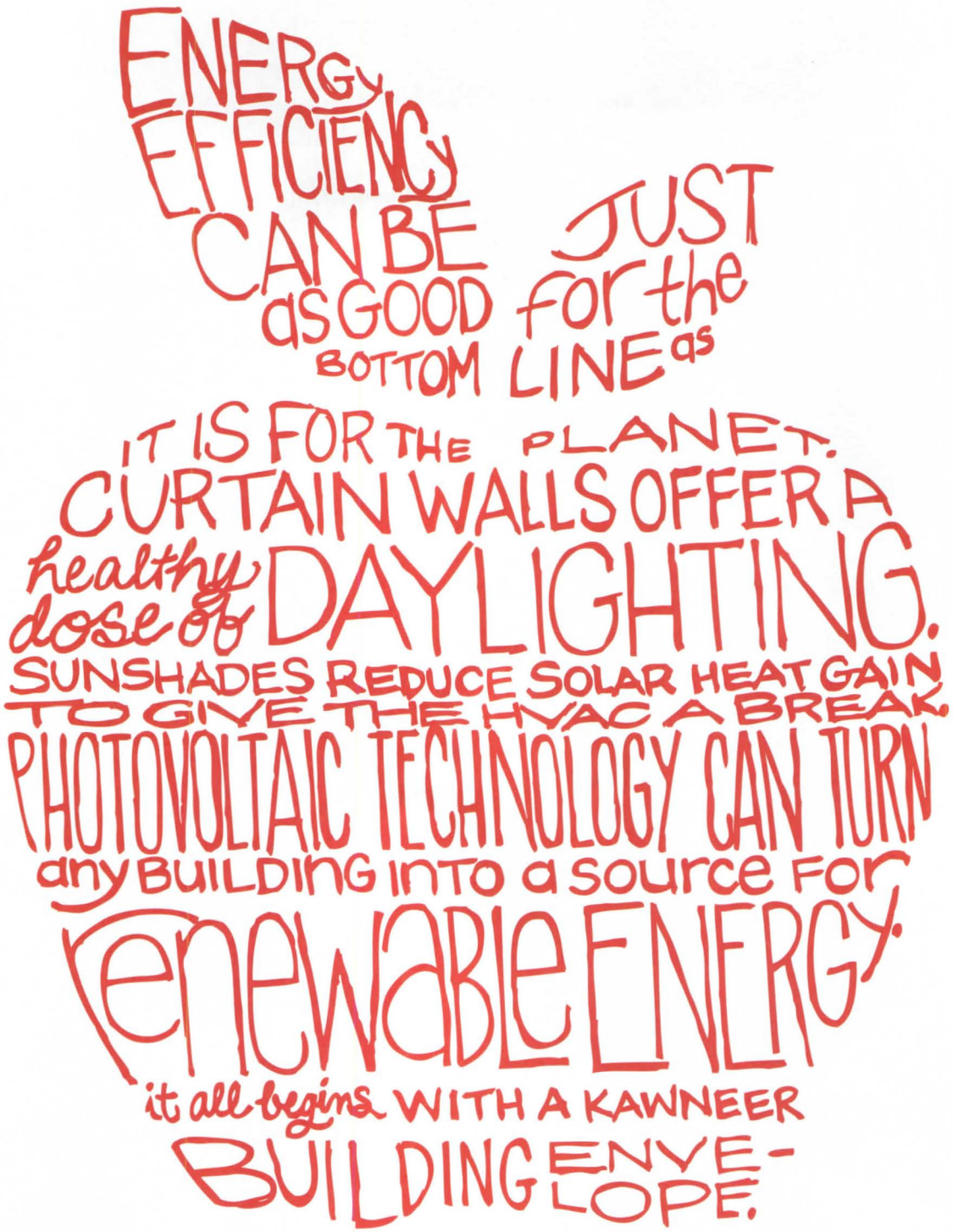

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NEWS

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2. **Dri-Design Wall Panel System, by Dri-Design,** page 52.
3. **DRY tiles, by Brix,** page 54.

ON THE COVER: Liège-Guillemins TGV Railway Station, Belgium, by Santiago Calatrava. Photograph © James Ewing.

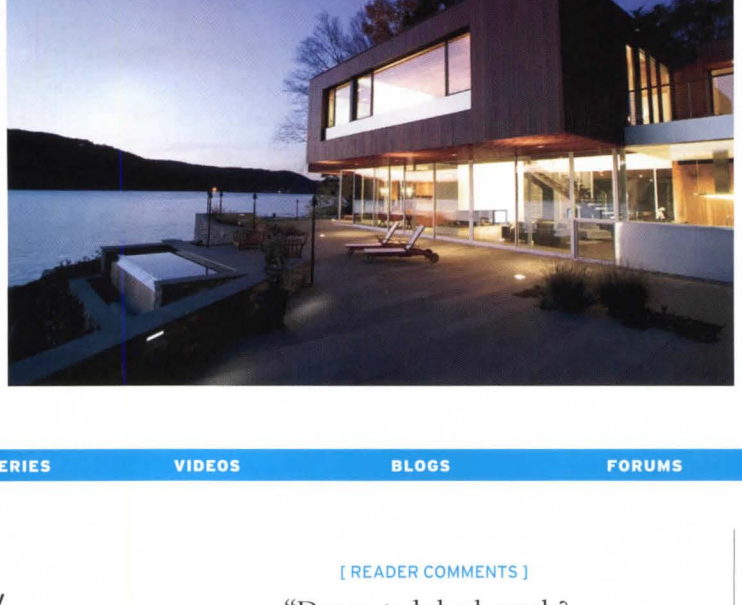
PHOTOGRAPHY: © MORENO MAGGI (1)

Expanded coverage of Projects, Building Types Studies, and Web-only features can be found at **architecturalrecord.com.**

THIS MONTH ON architecturalrecord.com

03.2010

New this month, our **Recession & Recovery** section features Web-exclusive special reports on design and the economy. We check in with architects **laid off** one year ago, examine unorthodox as well as traditional **marketing strategies**, supply **daily news** updates, and more.



[HOUSE OF THE MONTH]

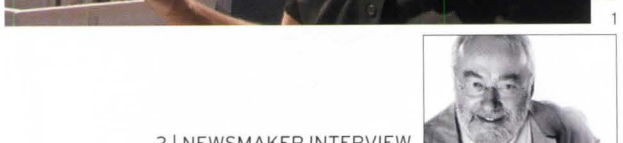
Brooklyn firm Della Valle Bernheimer creates a treehouselike lake retreat in New Fairfield, Connecticut, that offers communion with the outdoors through a series of interlocking volumes – glassy expanses below, with a cedar- and copper-clad upper story.

ONLINE EXCLUSIVES

GALLERIES | VIDEOS | BLOGS | FORUMS | RESOURCES

1 | RECORD TV

Jeanne Gang, FAIA, and developer and architect James Lowenberg show us Aqua, Studio Gang's recently completed residential high-rise in Chicago.



1

2 | NEWSMAKER INTERVIEW

Read an expanded interview with IDEO cofounder and new director of the Cooper-Hewitt, Bill Moggridge.

2

[READER COMMENTS]

"Decorated shed much? What's wrong with a facade disguising two warehouses? The loss of mystery. That's what. You're confronted by this beautifully curvilinear (and expensive) facade; yet you go inside to find your conventional box. Nothing new or architecturally inspirational imo. It would've been interesting to find the facade interacting with its interior as much as it interacts with its exterior or context."

— Anonymous,
on news story: "Design Museum by Ron Arad Opening in Israel"

3 | RECESSION & RECOVERY

In conjunction with our print story on unconventional marketing tactics (page 46), read interviews with Eugene Kohn of KPF, as well as architects at Olson Kundig and SHoP about well-known firms bringing in new projects.

3

EXPANDED COVERAGE

BUILDING TYPES STUDY

Take a video tour of the Downtown Tempe Transportation Center.

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View additional work by Davison Architecture and Zero Energy Design.

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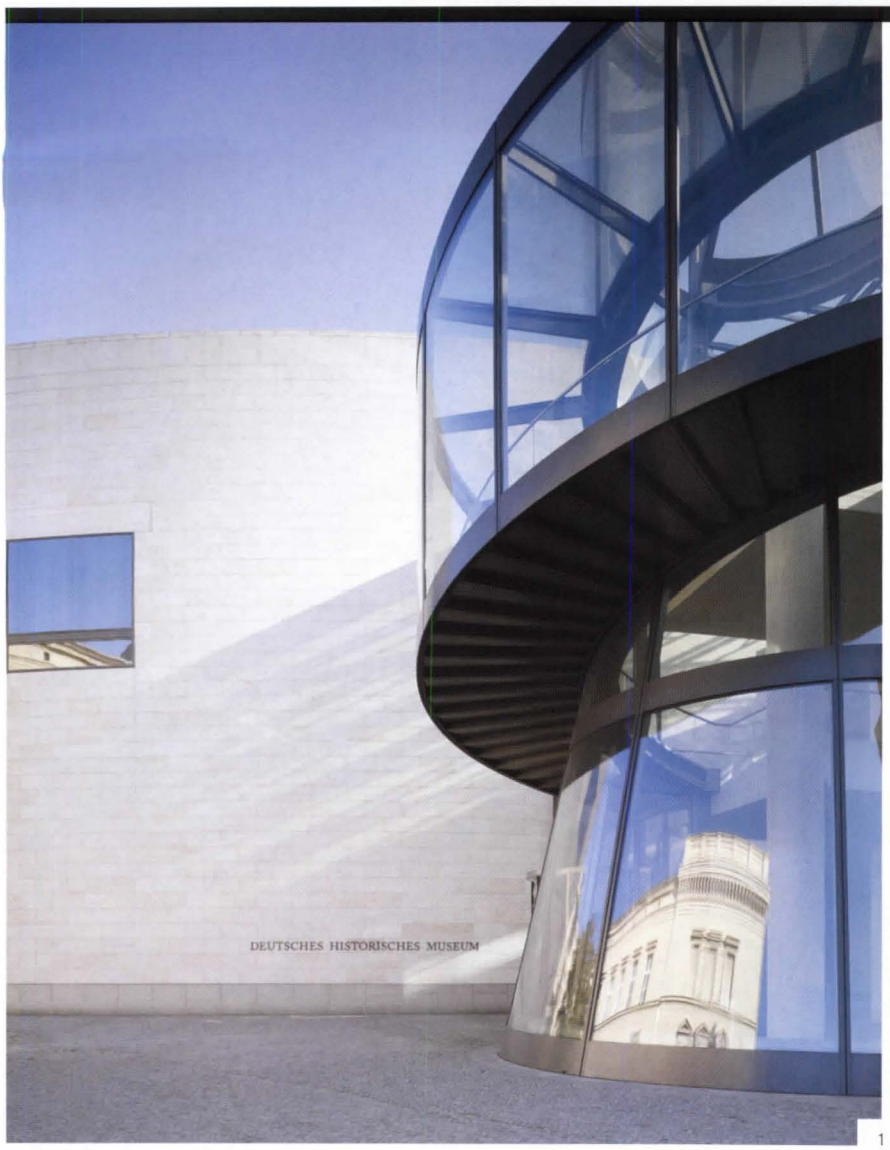

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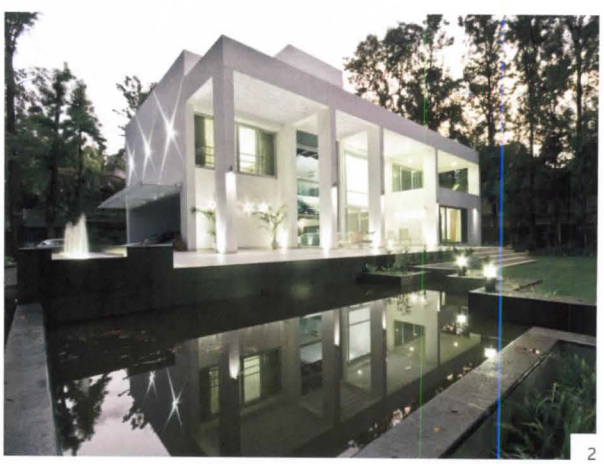
1. I.M. Pei's Deutsches Historisches Museum in Berlin. Photo submitted by Rick Jannack.

READER'S GALLERY

Every month, our online readers vote for their favorite images from our Web galleries. The top three photos appear on this page. To vote for photos and to share your own, visit **architecturalrecord.com** and click on Community.



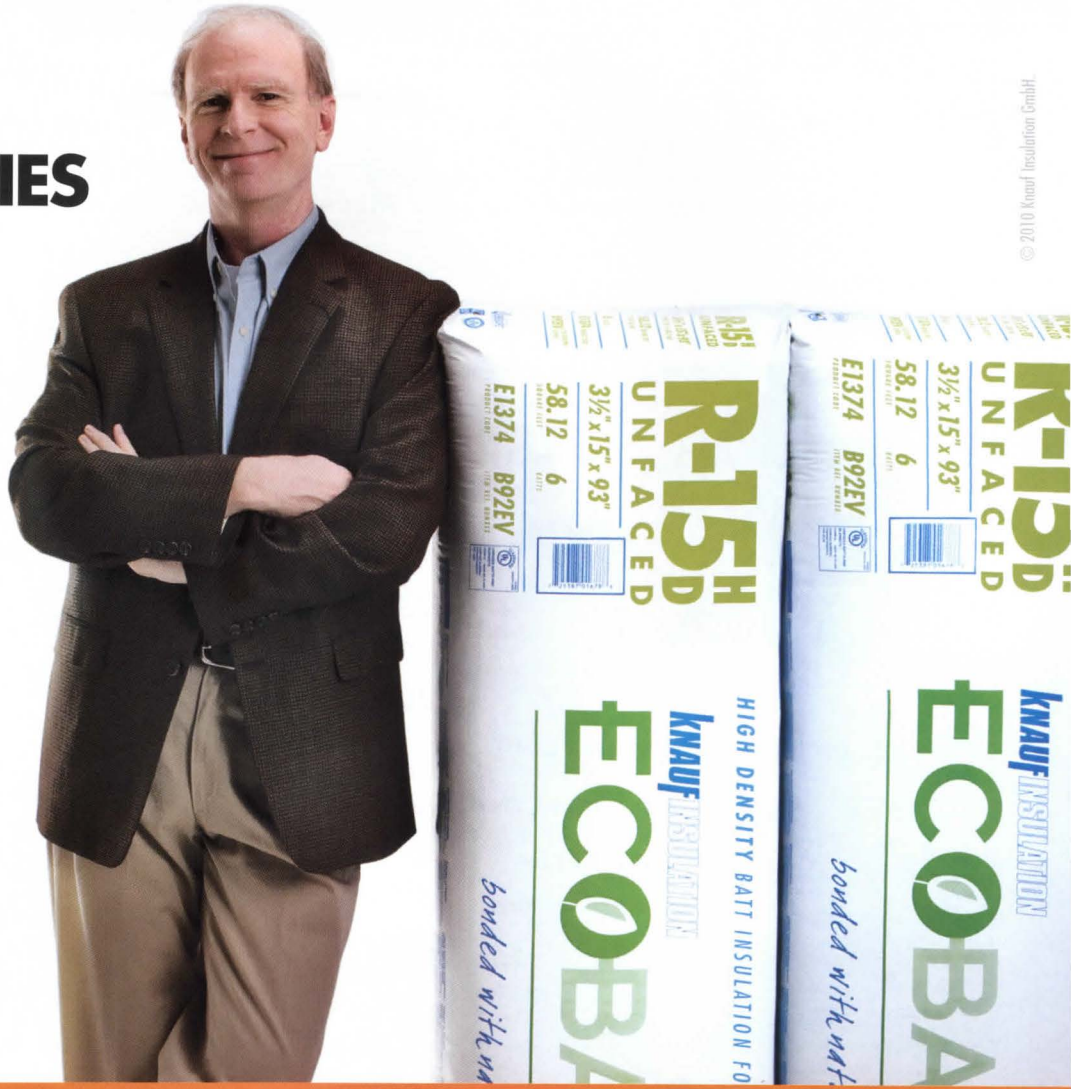
2

2. A residential project in Pune, India, by Chaney Architects.Photo submitted by "ca."

3

3. A guest house in Bar Harbor, Maine, by A4 Architects. Photo submitted by "augusto."

NATURAL ALLIES



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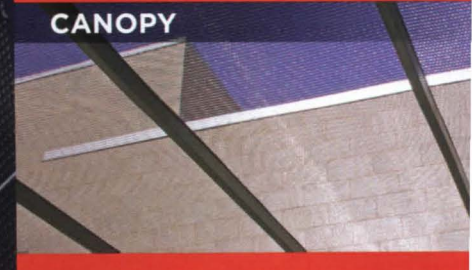

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Emerald City

Shattering the Myths of Sustainability

BY ROBERT IVY, FAIA

IT MIGHT BE COUNTERINTUITIVE TO MOST Americans, but cities offer the most viable models of sustainability. That assertion runs counter to our cultural history. Since the Romantic period of the late 18th and early 19th centuries, we have vilified urban life and been enamored, like Henry David Thoreau, of living close to nature. The results of our hunger sprawl around us. Today, rather than finding ourselves freed to commune with the out-of-doors, we have become shackled to the automobile, a situation in which it takes an SUV to get from Walden Pond to the marketplace for a gallon of milk. So says David Owens in his seminal new book, *Green Metropolis*, to be read by anyone concerned with the true meaning of sustainability.

In chapter after chapter, Owens punctures our myths surrounding the green movement with laser-guided precision in the hopes of clearing the air. His method is provocative, setting us up with teasers such as the following: "Most of the products, technologies, and practices popularly touted as sustainable are not sustainable at all." Then he tells us, dispassionately, why.

His underlying message is that we accept popular notions without critically examining them. Lacking the scientific or factual basis of our beliefs, we subscribe to worthwhile ideas like sustainability with the herd mentality, swallowing whatever we read and obsessing about details while ignoring the big picture. Instead, he suggests, the truth should be derived from facts, not mere emotions.

Back to the gallon of milk. With straightforward language and clarity of argument, a reportorial style rather than philosophical argument, Owens reminds us how much more efficient urban living can be. Rather than driving and expending petroleum-based fuel to reach the strip mall, the city dweller can often simply walk downstairs, or perhaps just down the block for the same purchase. The difference between a short walk and a long drive can be a major savings in energy usage and carbon footprint. And herein lies one of his major messages: In cities, large savings can occur regardless of the motivation of the citizen. It might seem unfair, but you don't have to care to live more responsibly; the framework of urban life inevitably results in a more sustainable environment.

His points can be summarized as follows: In a world of finite resources, in which the actual number of human beings is increasing, our stewardship is best exercised by minimizing our footprint on the land. In other words, density offers the best solution for habitation. The density of cities, and the interdependencies they provide, point to the best solutions, rather than (sorry architects) designs for the most sustainable individual buildings, changes to energy recovery systems, or advances to the automobile – topics we expend a great deal of energy on ourselves. (If anything, he encourages less automobile usage, period, with greater reliance on mass transit or foot traffic.)

Repeatedly, he returns to New York City, that maligned metropolis, as the best lesson of a sustainable city in the United States. Among Gotham's lessons are its verticality and consequent density, together with a blend of residential and commercial venues, which, he suggests, encourage successful public transit, among other benefits. Neither Boulder, Colorado, nor Portland, Oregon, both darlings of the planning movement, can compare with New York's successes with subways, buses, or foot traffic.

Despite having moved away from the city streets to a bucolic village in rural Connecticut, Owens nostalgically yearns for the city's dividends. New York teaches us to "live smaller." For decades, Americans have idealized larger and larger houses, which he advises us to abandon in favor of less space. New York teaches us to "live closer," reducing our needs for cars, streets, and for the infrastructure that underlies the roadways, and the extras that accompany suburban living, such as lawn-care products.

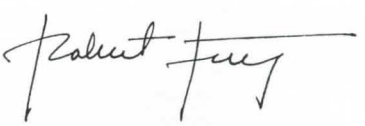
Owens sets himself as something of a contemporary iconoclast, praising clogged streets, for example, that inhibit the flow of traffic, which ultimately works to sustainability's advantage. (Have you thought such good thoughts when stuck in a midtown jumble?) He champions the power of the human leg, citing its ability to improve our overall health and, in well-designed cities, to take us where we need to go.

With fearlessness, he knocks some favored icons. Massive Central Park may have its advantages, but people don't walk through it to reach the east or west side of Manhattan; instead, people tend to walk where the action occurs, along the perimeters, where shops and enhanced sense of security prove more inviting passage. Better to sprinkle more approachable parkland throughout the urban fabric.

Ratings systems, such as LEED, have a "fundamental weakness," he thinks, as a "values-laden incentive system" that promotes individual buildings, particularly those produced by high-end developers. No suggested system is offered as an alternative, nor does he fully deny the obvious values of either Central Park or rating projects; he simply points out what he sees as their limitations.

In addition to promoting density, he finds other areas that hold the keys to the future of our cities outside the traditional design disciplines. Although designers might like to feel at the fulcrum of urban redevelopment, he cites our collective need to return to "concerns like education, culture, crime, street noise, bad smells, resources for the elderly, and the availability of recreational activities." Addressing those messy, hard-to-achieve social and cultural issues may be the best means to urban health, and ultimately, to sustainability.

Green Metropolis says that we have to take certain values, such as the architecture of increasingly energy-efficient buildings, for granted, expanding our focus to the larger framework that presents the complete picture. At the same time, with irreverent lucidity, he forces us to abandon unfounded beliefs, allowing the sustainability movement to evolve and mature, one realization and one city at a time.



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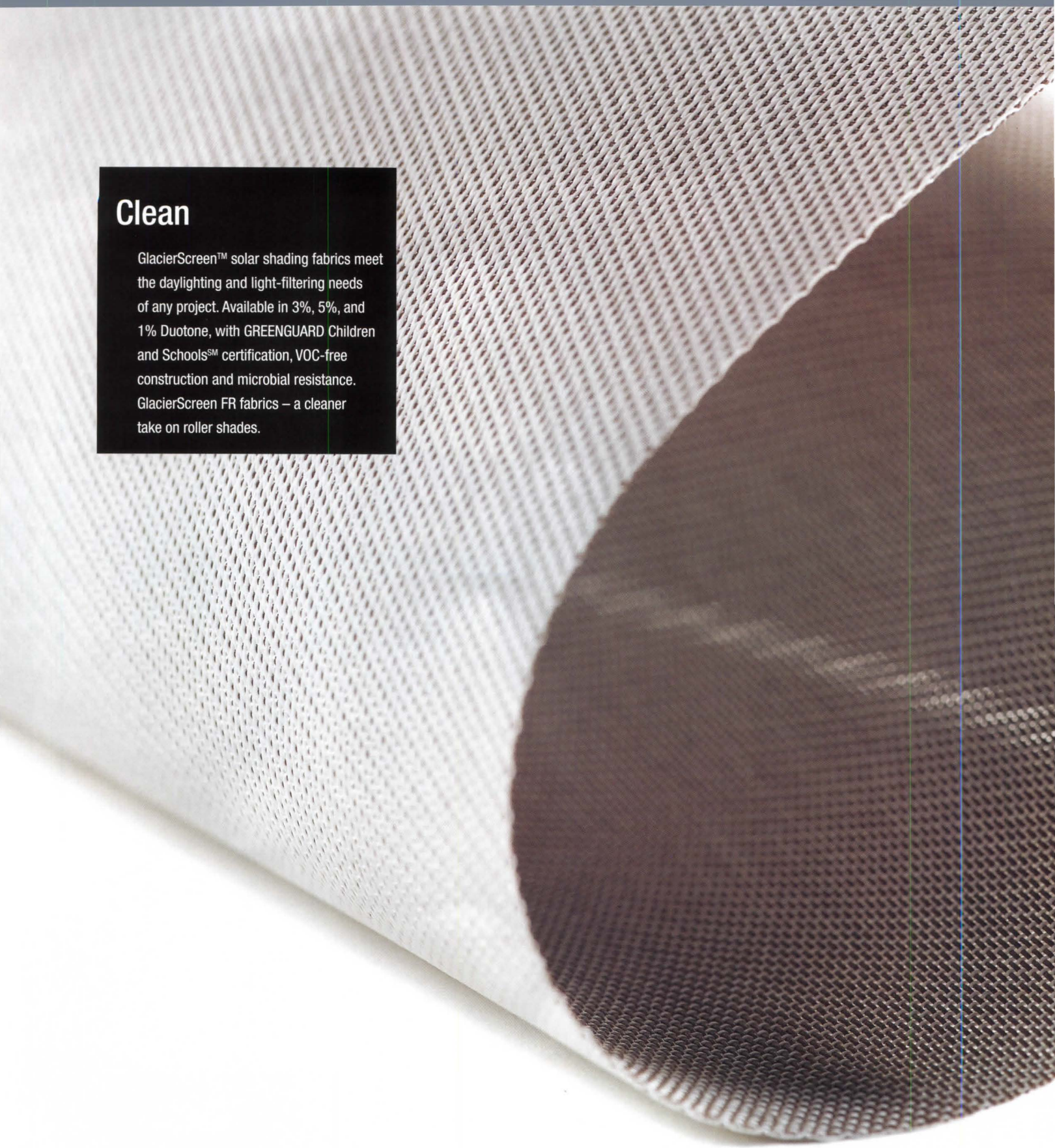
CIRCLE 14



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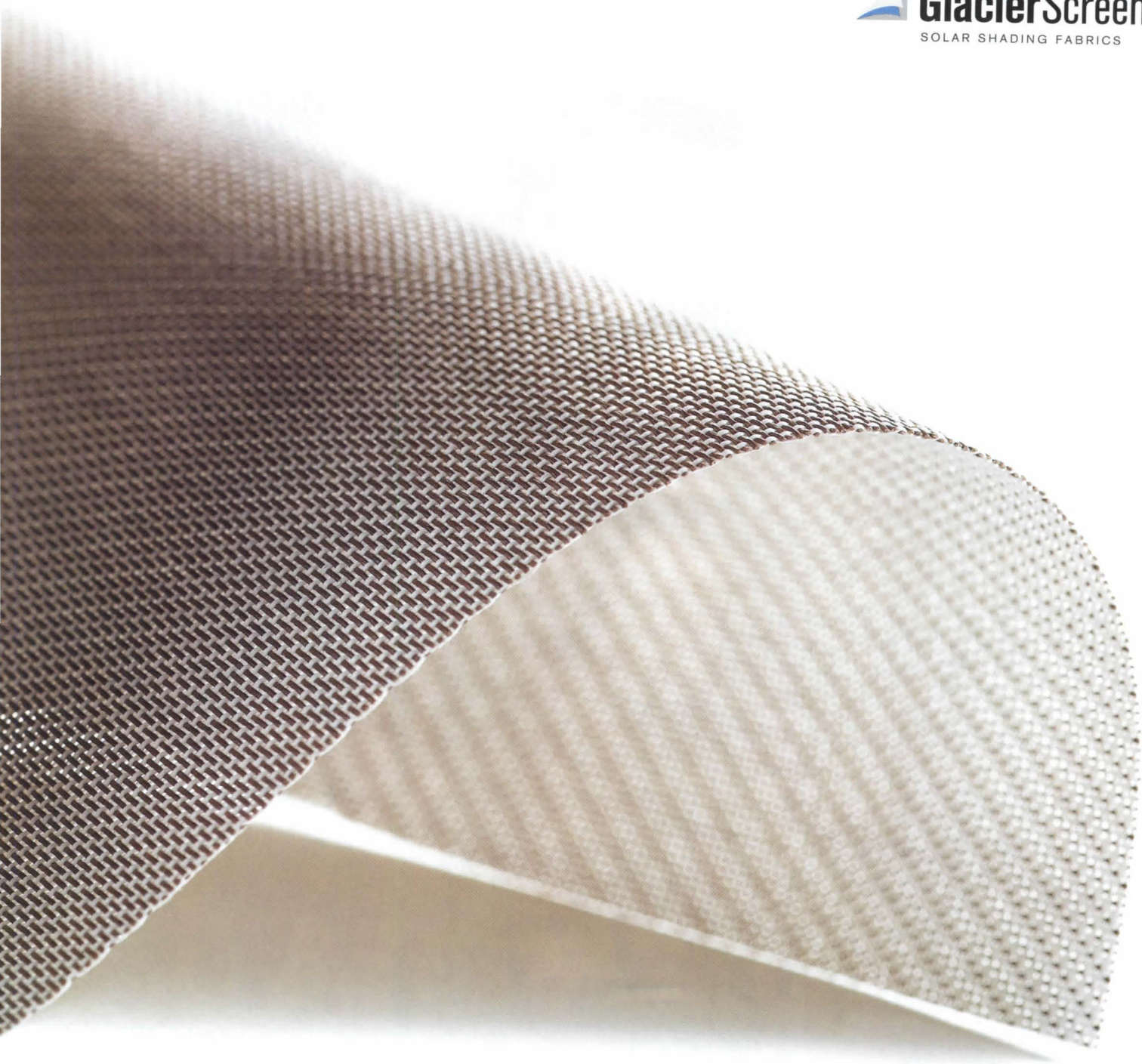

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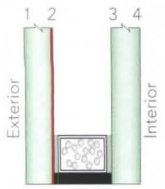

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1

[GRAND OPENING]

SANAA's built landscape

STUDENTS AND FACULTY AT the Ecole Polytechnique Fédérale (EPFL) in Lausanne, Switzerland, began hiking the internal topography of the new Rolex Learning Center when it opened on February 22. Designed by SANAA, the Japanese firm headed by Kazuyo Sejima and Ryue Nishizawa, the 398,000-square-foot library and campus hub presents visitors with a concrete floor that slopes and swells like the surrounding Swiss landscape. People with mobility problems or those just feeling tired can take specially designed "inclined elevators," glass boxes adapted from standard lift design.

The architects' goal was to create one fluid space where students and researchers from the school's various disciplines can mingle in an environment with almost no traditional partitions. Instead of using steps, stairs, or walls, SANAA separated different functional areas by placing them in floor valleys or tucked between the five outdoor "patios" cut within the building's rectangular footprint. These ovoid patios, which are surrounded by glazing, provide a variety of landscaped places and bring daylight into all parts of the one-story facility. "During the competition, we studied many schemes – such as stacking the programs or scattering them in separate buildings," recalls Yumiko Yamada, the project architect for SANAA. "But we decided that a one-room space was the best response to the client's brief," explains Yamada.

SANAA worked with engineer Matsuro Sasaki to design the building's concrete floor as a set of shells supported by 11 arches stayed by underground cables. The arches range in length from 98 to 295 feet. Workers poured the concrete for two straight weeks into 4,000 digitally modeled wooden frameworks, using a global-positioning system for accuracy.

The learning center brings together a 500,000-volume, open-stack library; a 600-seat auditorium; places to study; and facilities for dining and socializing. A public-private partnership involving the country's federal government and corporate sponsors such as Rolex, Credit Suisse, Nestlé, Novartis, and others provided funding for the project. *Clifford A. Pearson*

1. **The architects cut a series of curvilinear "patios" into the building.**

2. **Eleven arches help support the building's concrete-shell structure.**

2

[IN PROGRESS]

A Long-Awaited Ground Breaking for Hadid's Broad Museum

ROUGHLY A YEAR behind its original schedule, the Zaha Hadid–designed Eli and Edythe Broad Art Museum will break ground on March 16 at Michigan State University (MSU) in East Lansing. When finished in 2012, it will be the second Hadid-designed building in the U.S., after the Lois & Richard Rosenthal Center for Contemporary Art (2003) in Cincinnati.

The construction delay stemmed from the need to work out the practical implications of Hadid's unusual, louvered glass-and-metal skin for the 46,000-square-foot Broad Museum, according to Linda Stanford, MSU's associate provost. The university has been working with Hadid's office, as well as a local firm, Integrated Design Solutions, to conceive a structural plan and decide on acceptable and cost-efficient materials.

Hadid's scheme features an angular, low-slung horizontal building and outdoor sculpture garden. In an e-mail exchange with RECORD, the London-based architect described the structure as a "sharp, directed body composed of sections of directional pleats that reflect the unique topography and circulation of the site." The building will have "an ever-changing appearance while a person moves past it," she says. The three-level museum will be the most avant-garde structure on MSU's campus, which dates to the mid-19th century and includes a range of architectural styles.

Hadid's concept has raised eyebrows in the local architectural community and rekindled the long-running debate over the relationship between form and function in museum architecture. For her part, Hadid says "museum design should provide variety in terms of curatorial experience," adding that "the concept of a 'square box' does not offer the curator any real opportunities to vary the interior conditions." *John Gallagher*

IMAGES: © HISAO SUZUKI (1, 2); COURTESY ZAHA HADID ARCHITECTS (BOTTOM)

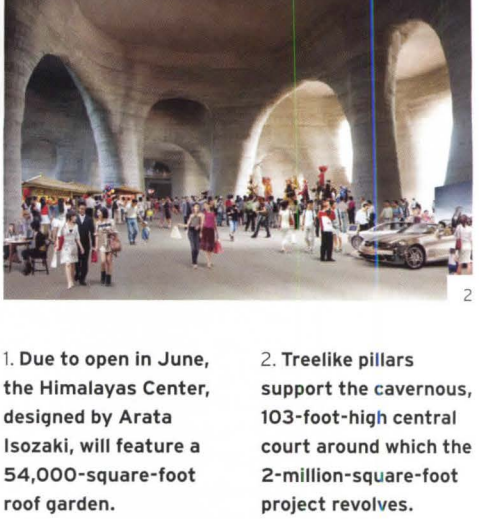
INSIDE THE NEWS

ON THE WEB

Daily updates and expanded stories are available online at architecturalrecord.com/news.

[EMERGING MARKETS]

A New Genre Rises in Shanghai



1. **Due to open in June, the Himalayas Center, designed by Arata Isozaki, will feature a 54,000-square-foot roof garden.**

2. **Treelike pillars support the cavernous, 103-foot-high central court around which the 2-million-square-foot project revolves.**

DEVELOPER DAI ZHI KANG, chairman and C.E.O. of the Shanghai Zendai Group, is a small, gentle man with a supersize vision – to create a world-class multicultural center for art and commerce in his hometown's Pudong district.

"In China, art is mixed with daily life," explains Zhi Kang. "I want to interpret this tradition into a new aesthetic for Chinese architecture." So rather than erect a stand-alone museum, a concept he deems foreign in China (therefore not likely to be embraced by locals or investors), he worked closely with Japanese architect Arata Isozaki to develop a contemporary hybrid that would fuse cultural and commercial venues.

According to Zhi Kang, Isozaki really grasped his idea, interpreting the country's traditions in a modern way. The architect, who has been working steadily in China over the past 10 years, took his cues from nature and the rhythms of a Chinese village – incorporating feng shui throughout his design. The structure reflects the imagery in Chinese poetry and ink paintings and the natural landscape. Amorphous concrete pillars mimic trees and form an open, 103-foot-high central court around which activities will flow. And a 54,000-square-foot roof garden will bridge box-shaped retail and hospitality wings.

Dubbed the Himalayas Center for its linking of lofty ideals with more grounded pursuits, the nearly 2-million-square-foot project – under construction since 2006 – is about to be realized. A gradual rollout is scheduled to begin with the June 2010 launch of two hotels, the Zendai Hotel Yin and Zendai Art Hotel, shortly after the opening of the nearby Shanghai Expo. Conceived by the interior design team at KCA International, these hospitality venues will showcase Zhi Kang's private collection of Chinese art and artifacts that date back 1,100 years.

The remainder of the complex will open later in the year: the Himalayas Art Museum, intended to rival such institutions as New York's Guggenheim; a shopping mall, which will feature the goods of both established and emerging designers, with an additional gallery space for local artists; and the DaGuan Theater, a 1,650-seat film and performance space slated to become the official home of the Shanghai International Film Festival in 2011. *Linda C. Lentz*

[COMPETITION]

New Prize Will Recognize Best Drawing of Historic Site

ARCHITECTURAL RECORD ANNOUNCES the launch of the Leicester B. Holland Prize, an annual competition that recognizes the best single-sheet measured drawing of a historic building, site, or structure prepared to the standards of the Historic American Buildings Survey (HABS), Historic American Engineering Record (HAER), or Historic American Landscapes Survey (HALS) of the National Park Service (NPS).

The prize honors Leicester B. Holland (1882–1952), FAIA, chairman of the AIA's Committee on Historic Buildings, head of the Fine Arts Division of the Library of Congress, and cofounder of the HABS program in the 1930s. It is supported by the Paul Rudolph Trust, the Center for Architecture, Design & Engineering in the Library of Congress, and ARCHITECTURAL RECORD, and is administered by the NPS.

RECORD will publish the winning drawing, and the winner will receive a $1,000 cash prize. Merit awards will also be given. The entry deadline is June 30, 2010. Visit www.nps.gov/history/hdp/jobs/index.htm for more information.

ON THE BOARDS

Markthal Rotterdam

LOCATION **Rotterdam** ARCHITECT **MVRDV**

Construction recently began on this massive shopping mall in the city center. Located on the current site of an open-air market, the new structure will feature an "arch" of 228 apartments that will form a large hall containing shops and restaurants and 1,200 parking spaces. The building will have more than one million square feet of floor space.

One New Change

LOCATION **London** ARCHITECT **Jean Nouvel**

Work is progressing on this 560,000-square-foot building, which will contain retail and office space. Its relatively low height responds to planning restrictions that bar interference with sight lines surrounding St. Paul's Cathedral. Similarly, its fritted-glass curtain wall diminishes the reflectivity that authorities feared would distract from the famous church. One New Change is expected to open this fall.

Ferrari World

LOCATION **Abu Dhabi** ARCHITECT **Benoy**

Slated to be the world's largest indoor theme park, the sprawling complex is designed to contain "high-octane" attractions, such as a 197-foot-high free-fall ride and the world's fastest roller coaster. Developed by Aldar Properties, the building is being constructed near the Yas Marina Circuit, home to the new Abu Dhabi Grand Prix.

IMAGES: COURTESY SHANGHAI ZENDAI GROUP (1,2); MVRDV (CENTER TOP);

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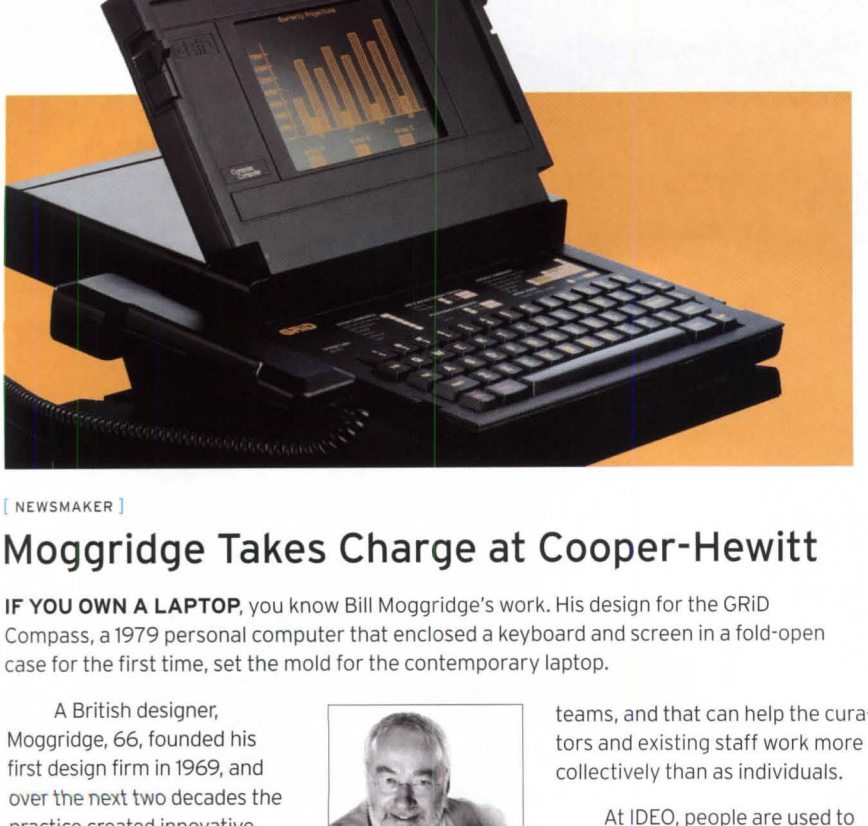
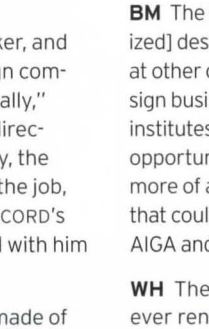


[NEWSMAKER]

Moggridge Takes Charge at Cooper-Hewitt

IF YOU OWN A LAPTOP, you know Bill Moggridge's work. His design for the GRiD Compass, a 1979 personal computer that enclosed a keyboard and screen in a fold-open case for the first time, set the mold for the contemporary laptop.



A British designer, Moggridge, 66, founded his first design firm in 1969, and over the next two decades the practice created innovative forms for many high-tech products. In 1991, he partnered with David Kelley Design and Matrix Product Design to found IDEO, a leading global design and management consultancy. Since 2000, Moggridge has written and lectured extensively, seeing himself as more of a design apologist than a practitioner, a shift that led him to throw his hat into the ring for the directorship of the Smithsonian Institution's Cooper-Hewitt, National Design Museum in the summer of 2009.

"We were looking for a thinker, and someone very known to the design community nationally and internationally," says the Cooper-Hewitt's acting director, Caroline Baumann. In January, the museum selected Moggridge for the job, which he assumes this month. RECORD's Web editor, William Hanley, talked with him about the post.

William Hanley Much has been made of your considerable design and business experience, but lack of museum experience. Is your appointment meant to "shake up" the Cooper-Hewitt as some have claimed?

Bill Moggridge I think we're building from strength really. Shaking up is going to happen indirectly, but I think it's more of just expanding. I've always been interested in developing the power of interdisciplinary teams, and that can help the curators and existing staff work more collectively than as individuals.

At IDEO, people are used to the idea of a designer working with a business man, an anthropologist, a graphic communicator, whatever. In the creative process, they find that together they have more power from the shared mind than they have individually. And once they've got a concept, they can go back and do their individual bits.

WH What appealed to you about the Cooper-Hewitt directorship?

BM The Cooper-Hewitt is the only [nonspecialized] design organization in the U.S. If you look at other countries, they have design councils, design business associations, and design research institutes, as well as design museums. The opportunity to make the Cooper-Hewitt much more of a national organization – something that could serve as an umbrella connecting the AIGA and the AIA and so on – is very exciting.

WH The museum will close for its largest-ever renovation from spring 2011 through 2013. How do you plan to guide it through that period?

BM People in the design community are aware of the museum, but a lot of other people outside of New York don't know about it. When we have this black period, it's a very good opportunity for expanding our public reach on a national scale – with both traveling exhibitions and our Web presence.

[GOVERNMENT]

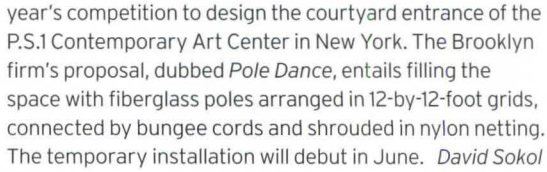
AIA Members Lobby Congress

FEBRUARY 4 WAS CAPITOL HILL day for AIA executives, board members, and component leaders. This year, the goal of the annual lobbying effort was to demand that Congress take up an agenda that would, among other things, free up credit, expand tax incentives that encourage energy-efficient construction, and provide relief for small businesses. The excursion was part of Grassroots 2010, the AIA's yearly leadership conference.

Setting the stage for the visits with lawmakers were rousing speeches by Representatives Kathy Castor (D-Florida) and Ed Perlmutter (D-Colorado), along with Adolpho Carrion, Jr., director of President Obama's White House Office of Urban Affairs. All three reminded architects of the power of advocacy, and admonished them to take seriously their influence in job-creating legislation. "Through your innovative ideas," said Castor, "this is the way we put people to work." The lobbyists-for-a-day were asked to focus their discussions on several key areas, including:

- Helping communities rebuild using Community Development Block Grants (CDBG), which facilitate design and construction work.
- Passing two laws that would create jobs by funding sustainability-related construction: the *Expanding Building Efficiency Incentives Act*, which includes a tax deduction for green commercial buildings; and the *21st Century Green High Performing Schools Act*, which would provide billions of dollars for the modernization of K-12 schools.
- Supporting the *Small Business Financing and Investment Act*, which would make available $44 billion in Small Business Administration loans. It is estimated that these would create or save approximately 1.3 million jobs.
- Taking steps to loosen lending by banks. AIA members were asked to drive home the point that tight credit for commercial building has halted hundreds of projects.

Carrion reminded participants that President Obama's agenda and architects' work are similar in that they both aspire to improve the human condition. "We share the burden that you carry," Carrion said. *Charles Linn, FAIA*

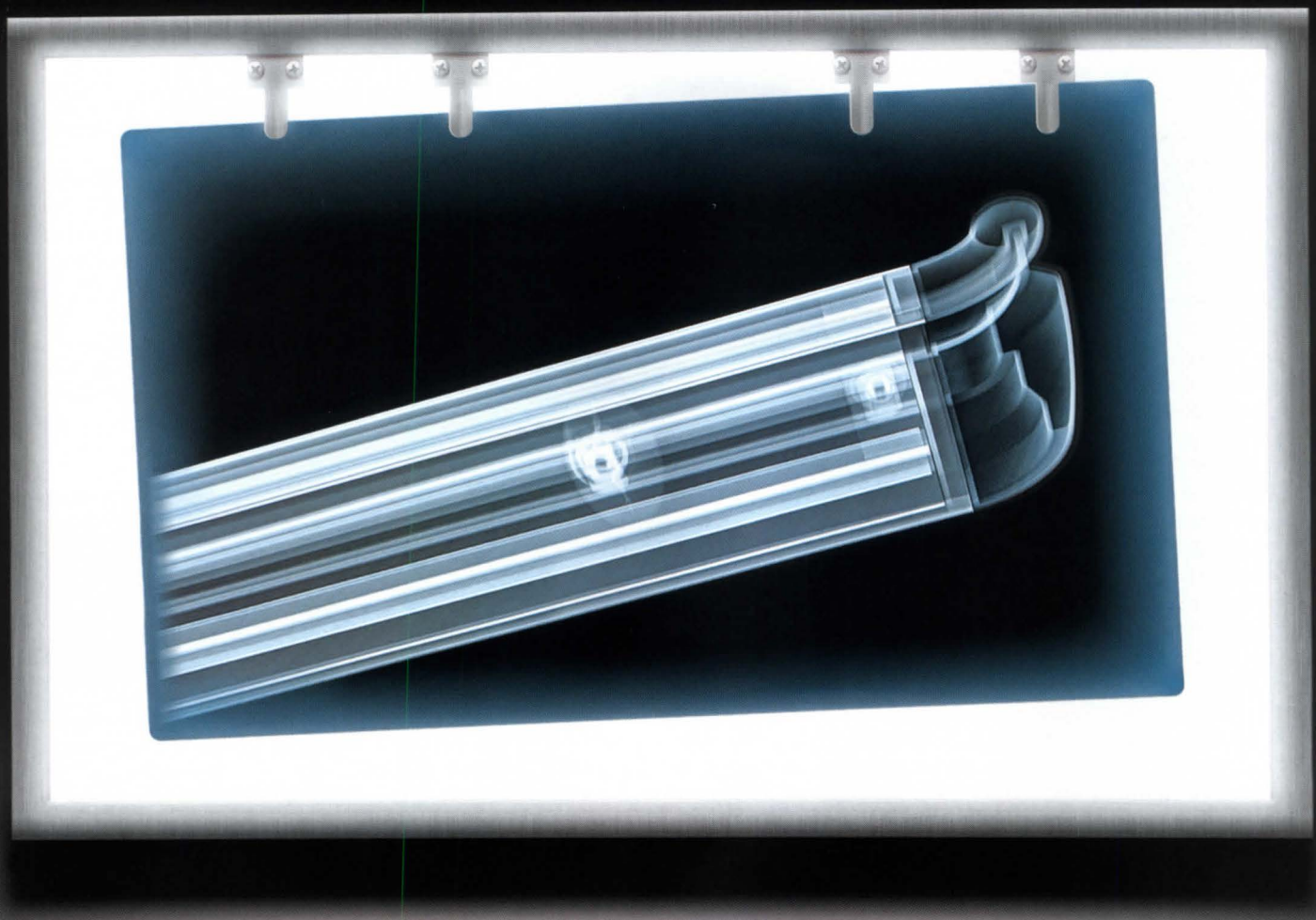


[JUST ANNOUNCED]

Pole Dance Coming to P.S.1

SOLID OBJECTS IDENBURG LIU, or SO-IL, has won this year's competition to design the courtyard entrance of the P.S.1 Contemporary Art Center in New York. The Brooklyn firm's proposal, dubbed *Pole Dance*, entails filling the space with fiberglass poles arranged in 12-by-12-foot grids, connected by bungee cords and shrouded in nylon netting. The temporary installation will debut in June. *David Sokol*

IMAGES: © DON EDGE (TOP); IDEO/NICOLAS ZURCHER (MIDDLE); COURTESY SO-IL (BOTTOM)



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CIRCLE 17

[FIRM CLOSURE]

A Once-Eminent Firm Meets a Bitter End

THE LEGACY FIRM OF FAMED midcentury Modernist Minoru Yamasaki has closed its doors amid a sea of recriminations and debts.

Yamasaki Associates, based in Troy, Michigan, was shuttered on December 31. It laid off its remaining full- and part-time staff – about 10 employees – and left behind a welter of lawsuits and unpaid claims. The owner, businessman Ted Ayoub, a nonarchitect who had bought the firm in 2007, is reportedly traveling in the Middle East and has not been available for comment. It remains unclear whether he will try to reestablish the practice in another location.

Among the companies suing the firm is Syska Hennessy Group of New York, which filed suit in March 2008 seeking $1.9 million for subcontracted work for the Landmark Convention Center in Doha, Qatar. Yamasaki was disputing the claim at the time it shut down. Additionally, the Michigan Unemployment Insurance Agency filed suit last fall against the Yamasaki firm for not paying unemployment-insurance taxes.

Born in Seattle, the late Minoru Yamasaki founded his firm in Detroit in the 1950s, and he soon became one of the world's most sought-after designers. He designed the World Trade Center towers (pictured) in New York, which welcomed its first tenants in 1970, as well as many prominent buildings in the Middle East, including the Dhahran International Airport, completed in 1961 in Saudi Arabia. His output covered a vast range of building types, from a temple in Japan to an office skyscraper in Detroit. Yamasaki died in 1986, and for almost a quarter-century, his former partners carried on.

"It's sad that the Yama name ends up like this," said Anthony Gholz, Jr., vice president of DiClemente Siegel Design in Southfield, Michigan, which was owed money by Yamasaki for subcontracted work. "It's just not the way a firm should end." *John Gallagher*

[COMPETITION WINNER]

"Urban Umbrella" Could Soon Surround N.Y.C. Sites

NEW YORK CITY construction sites may soon look more appealing.

Unhappy with the current appearance of sidewalk sheds, which provide protection from falling debris, New York's Department of Buildings partnered with the AIA, Alliance for Downtown New York, New York Building Congress, Illuminating Engineering Society New York Chapter, Association for a Better New York, and other organizations to host urbanSHED, an international competition for a better design. On January 21, Mayor Michael Bloomberg announced the winner: Young-Hwan Choi, a University of Pennsylvania architecture student. Choi worked with engineer Sarrah Kahn and architect Andrés Cortés, the principals of Agencie Group, and a team of several assistants. Their scheme beat out 163 entries from 28 countries.

Called "Urban Umbrella," the winning proposal (left) features a metal structure with curved arms that support the roof while creating an arcadelike quality below. Integrated LEDs provide illumination at night. The structure is topped by translucent fiberglass panels, which could be customized with different colors and art.

A full-scale prototype will be built at a construction site in Lower Manhattan. The city won't force contractors to use the new shed design, but it hopes many will. Currently, there are about 6,000 construction sheds installed in New York, covering more than a million linear feet of sidewalk. *Tim McKeough*

[OBITUARIES]

In Memory

NORVAL WHITE, 83
Preservationist Pioneer

Architect Norval White died on December 26 of a heart attack at his home in Roques, France. He was 83.

Educated at MIT, Princeton, and the Fontainbleau Schools, White, a native New Yorker, fought unsuccessfully to save the original Pennsylvania Station, a Beaux-Arts creation from McKim, Mead & White that was razed in 1963. He later went on to cowrite the *AIA Guide to New York City*, a block-by-block directory of landmarks, avant-garde architecture, and any structure with a good back story across the five boroughs. First published in 1968, the guide's fifth edition is due this summer from Oxford University Press. *C.J. Hughes*

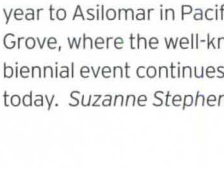
JAN GLEASON, 61
Nonprofit Firm Leader

Jan Gleason, FAIA, a Seattle architect who called herself a "social worker in three dimensions," died on January 6.

Gleason received a degree in social science from Cornell University and her M.Arch. from the University of Washington. Her entire career was based on creating innovative sustainable buildings for nonprofit organizations. In 1982, she founded Gleason & Associates and later merged it with Environmental Works, which remains one of the nation's few nonprofit architectural firms.

Gleason specialized in affordable housing, medical clinics, and community centers and was involved in the design of more than 50 child-care centers. In 2002, she coauthored the design manual *Making a Place for Children*. *David Hill*

GEORGE BISSELL, 82
Noted California Architect



George Bissell, FAIA, of Newport Beach, who, in 2000, received the AIA California Council Lifetime Achievement Award, died January 2 from lymphoma.

A 1953 graduate of the University of Southern California School of Architecture, Bissell won over 60 design awards during his five decades of practice. In 1978, he founded the Monterey Design Conference, holding the first symposium at his office under the aegis of the Orange County AIA, of which he was president. The large attendance led to moving the conference the following year to Asilomar in Pacific Grove, where the well-known biennial event continues today. *Suzanne Stephens*

IMAGES: © WIKIPEDIA (TOP LEFT AND RIGHT); URBANSHED INTERNATIONAL DESIGN COMPETITION

positions, he encouraged architects to donate money. His group, which is opening an office in Port-Au-Prince on March 1, had raised $750,000 by mid-February.

The U.S. Green Building Council also has

Foundation, a charity that

citizens. *C.J. Hughes*

The January 12 earthquake that struck Haiti resonated among African-American practitioners, some of whom are of Haitian descent. In January, the National Organization of Minority Architects and its nonprofit arm, The NOMA Foundation, launched Service in Solidarity in response to the earthquake. **Visit us online to read more about this initiative.**

IMAGE: © ANDRÉS DUANY

If you could design your dream window, what would it be?

Putting the Spotlight on Russia's Best Buildings

Moscow's Hermitage Plaza (right), designed by Sergy Kiselev & Partners and developed by Forum, has received the fourth annual Russian Building Award. The $50,000 prize was bestowed last October at the conclusion of the country's yearly Building Festival.

Sponsored by RusResorts, the award goes to the best Russian building completed in the past seven years. To be eligible, the building must have been in use for at least the past year.

"The purpose of the award is not just to find architectural beauty. It is also to encourage buildings that work for customers and property owners, make residents and tenants happy, and that function well in the context of the city," explains Peter Kudryavtsev, C.E.O. of the Building Media Company and editor in chief of the magazine *Building ARX*. "We are raising the bar for excellence in all Russian architecture."

The five award finalists were The Red Guest House, by Totan Kuzembaev; Peter Fomenko's Workshop, by Sergey Gnedovsky; Copper House, by Sergei Skuratov Architects; and two projects by Project Meganom – Molochnyi Dom and Mercury Theatre. *Charles Linn, FAIA*

Pei Nabs RIBA Gold Medal

I.M. PEI HAS WON the 2010 Royal Institute of British Architects Gold Medal, the U.K.'s highest honor. The award is given annually to an individual or group whose body of work has made an international impact. The recipient is approved by Queen Elizabeth. Previous winners include Le Corbusier (1953), Frank Gehry (2000), and Archigram (2002). *Jenna M. McKnight*

Gehry Quits Jerusalem Project

FRANK GEHRY, FAIA, has stepped down as lead architect of the Museum of Tolerance in Jerusalem after the project's backer, the L.A.-based Simon Wiesenthal Center, decided to halve the building's size and cost (the 230,000-square-foot project was expected to run upward of $200 million). "We scaled it down to what is doable," said Rabbi Marvin Hier, the organization's dean and founder. An Israeli architect, to be selected by competition, will be announced this spring. *Esther Hecht*

PHOTOGRAPHY: COURTESY FORUM PROPERTIES (LEFT); RIBA (RIGHT); SOM (OPPOSITE)

Shifting Perspectives in Boston

LAST SEPTEMBER, ARCHITECTS Kim Poliquin and Dunja Vujinic launched SHIFTboston, an international competition that asked designers to submit their most provocative visions for Boston. "We wanted to gather ideas, whether feasible or not, and start a dialogue between designers, academia, business, government, and the scientific community," Poliquin says. The competition drew over 140 entries; the winner, announced at a January 14 forum, was Sapir Ng and Andrzej Zarzycki for their scheme "TUTS: Tremont Underground Theater Space." Visit us online to read more. *Ted Smalley Bowen*

Construction Spending Slump to Persist

DESPITE NOTING THAT the "long-awaited recovery seems to be under way," the AIA's recent Consensus Construction Forecast offers little reason for optimism in 2010. The semiannual report predicts that nonresidential construction activity will fall 13.4 percent this year, with commercial and industrial activity declining about 20 percent. The study does anticipate advances next year. "We'll finally see something modestly in the black in 2011," says AIA Chief Economist Kermit Baker. (Check out our special recession coverage on page 43.) *Christopher Hosford*

Saudi Arabia Terminal Receives 25-Year Award

Hajj Terminal, designed by the Chicago and New York offices of Skidmore, Owings & Merrill, has received the AIA's Twenty-Five Year Award for 2010. The original design team included architects Gordon Bunshaft and Gordon Wildermuth and structural engineer Fazlur Khan.

Completed in 1981, the open-air terminal is part of King Abdul Aziz International Airport in Jeddah, Saudi Arabia. Each year during Hajj, it accommodates an influx of Muslim pilgrims en route to the holy city of Mecca. The tented structure covers 120 acres and can shelter up to 80,000 people. Look for more coverage in a future issue of RECORD. *J.M.M.*

Billing Index Drops

The Architectural Billings Index dropped to 42.5 in January, down nearly three points from December's seasonally adjusted score of 45.4. The index has not climbed above 50 for two years (a score above 50 indicates a billings increase, and below 50, a decrease). The January inquiries score was 52.5.

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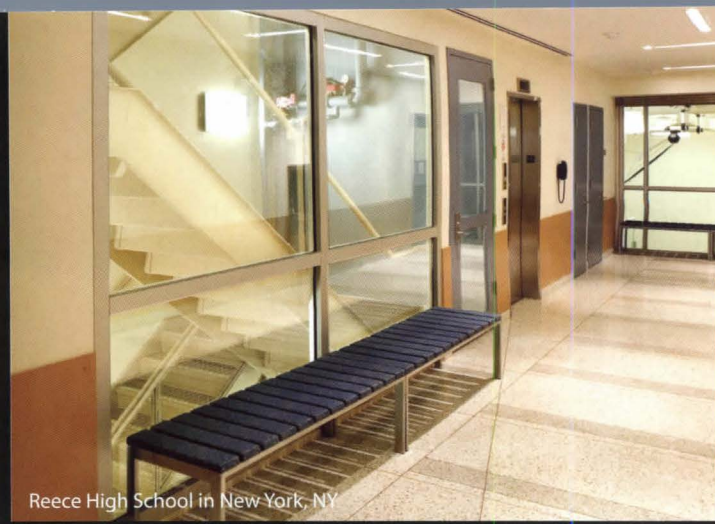
CSU Fullerton Rec Center in Fullerton, CA



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The emerging architect

FOR DOMINIQUE DAVISON, AIA, AND RYAN WARMAN, AIA, principals of four-person firm Davison Architecture + Urban Design (DA+UD), living in Kansas City, Missouri, a city that has more linear miles of highway per capita than any other U.S. city, is being in the right place at the right time. Warman has lived in the region his whole life, so roots are deep, but Davison moved there 12 years ago with her husband (also an architect) from New Haven, Connecticut. "There is an enormous opportunity to reenvision the downtowns of both Kansas City, Kansas, and Kansas City, Missouri," says Davison. "What we do as architects and urban designers can make much more of an impact here than in other, already densely built cities." Warman agrees. "The inner core has a wonderful history and beautiful historic buildings and homes. If we could get more businesses and families into the core, it would really be a catalyst for the city."

Davison and Warman aren't just talking among themselves about the area's sprawl problems. While their five-year-old firm continues to work steadily – with a handful of completed projects, including houses, a park, a church, and a preschool, and more on the boards or under construction – the two architects are deeply involved in engaging the community on the issues. They've joined forces with the Kansas City Design Center and the AIA Kansas City to organize a series of lectures to get people talking about ecological urbanism. "It's a way to raise awareness about how urban design impacts ecology," says Davison. "We have to. It's not a choice anymore."

It's that serious take on urban issues that led Davison to set out on her own after four years working for Pelli Clarke Pelli. "The dream was always to have my own boutique firm that was sustainably oriented," she says. Indeed, DA+UD offers sustainability consultancy services as well as design. Her love and knowledge of her adopted home drives her work, as well as her sense of the part she could play in its improvement. "The region has a nostalgia and allure to it that attracted me immediately," she says. "And there is a tension and pull toward contemporary culture fueled by new architecture, and a burgeoning art

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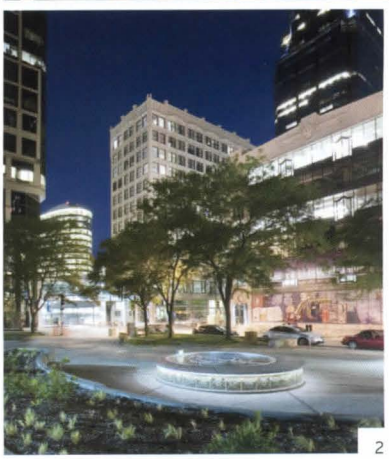

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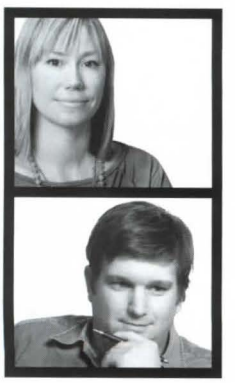
1. **The Serra Residence, in Kansas City, Missouri, is a remodel and addition that connects the house to the backyard.**

2. **Partnering with artist Laura DeAngelis to redesign this Kansas City, Missouri, park, the architects created landscape elements that invited interaction.**

3. **This house design calls for operable sunscreens and a green roof deck.**

design

Davison Architecture + Urban Design



PRINCIPALS: Dominique Davison, AIA; Ryan Warman, AIA

LOCATION: Kansas City, Mo.

FOUNDED: 2005

DESIGN STAFF: 4

EDUCATION: Davison: Yale University, M.Arch., 2000; University of California, Berkeley, B.Arch., 1996; Warman: University of Kansas, M.Arch., 2002; Kansas State University, B.Arch., 1997

KEY PROJECTS: Williams York Residence, Leawood, Kans., 2010; Serra Residence, Kansas City, Mo., 2009; Oppenstein Park, Kansas City, Mo., 2008

KEY CURRENT PROJECTS: Walden Residence, Kansas City, Mo., 2011; Cowden Residence, Prairie Village, Kans., 2011; The Ridge at Lake Quivira, Kansas City, Kans., 2012

WEB SITE: davisonarch.com

View additional images online.

scene." Davison is an artist herself, and a classically trained cellist. "It was music or architecture for me," she says. For Warman, who joined the firm as principal in 2009 to "broaden the expertise of the firm, especially in the realms of building and detailing," architecture or furniture design were the career possibilities, and he still builds when he can.

But there's not much cello playing or furniture building for the duo these days. Davison lectures at the University of Kansas's School of Architecture, and DA+UD has a full plate of projects. The firm is currently working on designing a 52-unit, energy-efficient, environmentally appropriate community near Lake Quivira in Kansas. Davison says she finds few differences between designing public spaces and residential work. "With a park, you may be expanding your user group," she says, "but you're still trying to create flexible, inviting space that people will use." Davison and Warman see it as their great opportunity ("We don't look at it like a job," says Warman) to shape their region, be it with residences or public space. "The vision has been there, and the technology is now catching up," says Davison. "We want to be in the forefront." *Ingrid Spencer*

work

Zero Energy Design (ZED)

PRINCIPALS: Emile Chin-Dickey; Jordan Goldman; Stephanie Horowitz, AIA; Adam Prince; Ben Uyeda; David Wax

LOCATION: Boston

FOUNDED: 2005

STAFF: 6

KEY PROJECTS: Truro Residence, Truro, Mass., 2008; English Residence, Orleans, Mass., 2009; Glanville Residence, Newton, Mass., 2009; Massachusetts Clean Energy Center, Boston, 2010

KEY CURRENT PROJECTS: Little Compton Passive House, Little Compton, R.I., 2010; Achermann/Friedman Residence, Portola Valley, Calif., 2010; TechVille, Lagos, Nigeria, 2012

WEB SITE: zeroenergy.com

AS CLASSMATES AT CORNELL, Zero Energy Design (ZED) partners Emile Chin-Dickey, Jordan Goldman, Stephanie Horowitz, Ben Uyeda, and David Wax coordinated the work of 70 students for the school's 2005 Solar Decathlon entry. "We were the only student-run team in the competition, and we were multidisciplinary," Uyeda says. These entrepreneurs, engineers, and architects had competing agendas, "but we agreed there was room for improvement in building a sustainable, reproducible house in suburban America." Wax, who at the time was an M.B.A. student heading the Cornell team's business arm, says, "The competition allowed us to incubate and operate a business for two years in a safe academic environment."

Today, Wax is C.E.O. – and at 32, the oldest member – of Boston-based ZED. Horowitz and Uyeda, who is also principal of open-source Web resource Free Green [Record, November 2008, page 66] lead the firm's design work. Chin-Dickey and Goldman oversee engineering efforts, while Adam Prince, who joined the firm more recently, tackles business development.

When ZED first hung its shingle, the partners still planned to translate their second-place Solar Decathlon entry into a salable product. But over time, Wax adds, "We realized that the modular-housing market is crowded, and raising money gives away your company." So, defying its own expectations, ZED transitioned into custom green-home construction and renovation. The projects that have since resulted range from Modern buildings on Cape Cod and Dominica to the renovation of architect James H. Ritchie's Craftsman home and neo-Traditional-style new construction. All combine Chin-Dickey's and Goldman's exacting energy models with the design skills of Horowitz and Uyeda. And Uyeda credits Wax for persuading homeowners to embrace sustainability: "The question isn't the total sticker price, but the difference in the cost of ownership," Uyeda recounts. "You don't tell someone something will cost $10,000 more; you say, 'We'll increase your mortgage payment by $50 but lower your monthly utility bill by $100.' "

Besides staying aesthetically nimble, recently the ZED team have had to put their heads together again, this time to respond to the recession. Their answer: pitching energy-modeling services to other architects and builders. Offering ZED as a consulting resource "allows us to continue to have work when other people don't," Wax says. And rather than pine for a traditional studio setup, Uyeda says ZED's dexterity has set him free. "My reach as an architect wouldn't be nearly as great if I didn't have Jordan's calculations or Dave's marketing ideas." *David Sokol*

1

1. **The Truro Residence is a Modern beach house perched atop a coastal bank overlooking Cape Cod Bay. The roof holds 11.6 kilowatts of photovoltaics.**

2.,3. **From the kitchen, the living area is a tapered volume that expands out to capture the 180-degree ocean view.**

2

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CIRCLE 24

Critical Discourse

Hearts of the City: The Selected Writing of Herbert Muschamp. *Knopf, 2009, 912 pages, $50.*

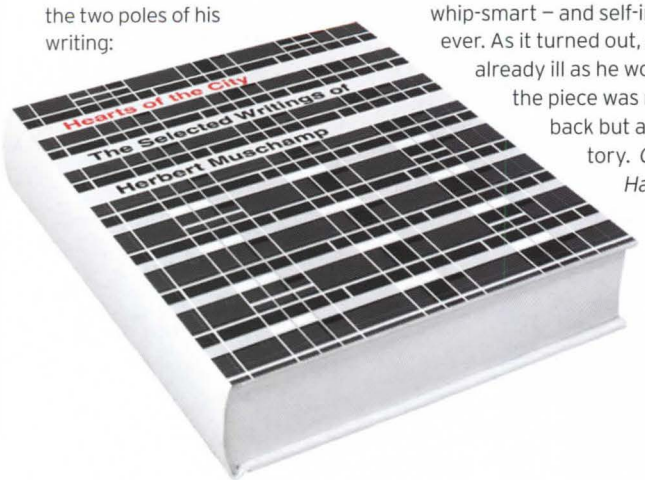
Herbert Muschamp was the confessional poet of architecture critics. His intensely personal and – at their best – genuinely lyrical essays in *The New Republic*, *Artforum*, and finally, *The New York Times*, where he held the critic's chair from 1992 to 2004, were a consistent reminder that whatever else architecture may be, it is at heart an artistic endeavor.

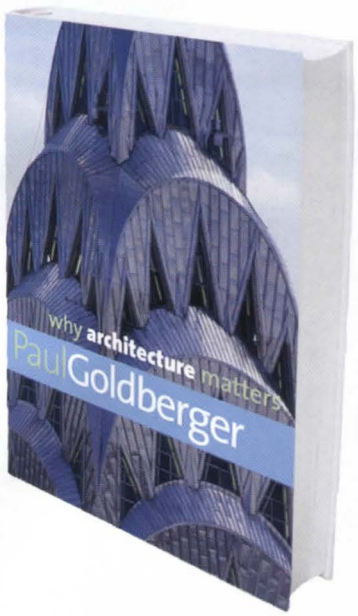
As this new collection makes clear, it's in that "whatever else" category that Muschamp, who died of lung cancer in 2007 at age 59, patently struggled. If architecture is art, it is also politics, real estate, and engineering. Expecting Muschamp to write powerfully about those subjects – or planning, for that matter, or sustainability – was not just a fruitless but a ridiculous hope.

Toward the end of the 1990s, as architecture began to attract broad public attention, Muschamp's approach seemed apt. His rapturous praise for Frank Gehry's Guggenheim Museum in Bilbao captured not only the importance of the building but the larger sense that architecture mattered again. In those years, Muschamp struggled to reconcile the two poles of his writing: a fidelity to reason on the one hand and an interest in the power of desire on the other. Over time, the balance tipped toward desire. At the end of a 1997 piece analyzing proposals for an addition to the Museum of Modern Art, Muschamp couldn't resist adding that the museum is "one of the world's great spots for dating."

Still, it wasn't until the attack on the World Trade Center that his blind spots as a critic began noticeably to hamper his influence. His unwillingness to dig into the political and planning details of the Ground Zero rebuilding process meant that his coverage of the biggest architectural story New York had ever seen skipped mostly along the surface.

In the years that followed, Muschamp's writing drifted toward self-parody. He contributed short pieces on design and fashion to *The New York Times Magazine* and worked on a book, parts of which are excerpted here. (It's a memoir, naturally.) Occasionally, he'd emerge with a piece of real criticism, such as the long 2006 essay on Edward Durell Stone's Gallery of Modern Art that extended Muschamp's career-long effort to explore links between homosexuality and the cosmopolitan city. It was as if the old Herbert had suddenly returned, the prose as whip-smart – and self-indulgent – as ever. As it turned out, since he was already ill as he worked on it, the piece was not a comeback but a valedictory. *Christopher Hawthorne*

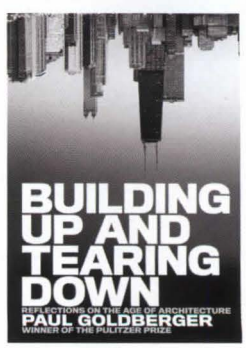




Why Architecture Matters, *by Paul Goldberger. Yale University Press, 2009, 273 pages, $26.*

Building Up and Tearing Down: Reflections on the Age of Architecture, *by Paul Goldberger. Monacelli, 2009, 320 pages, $35.*

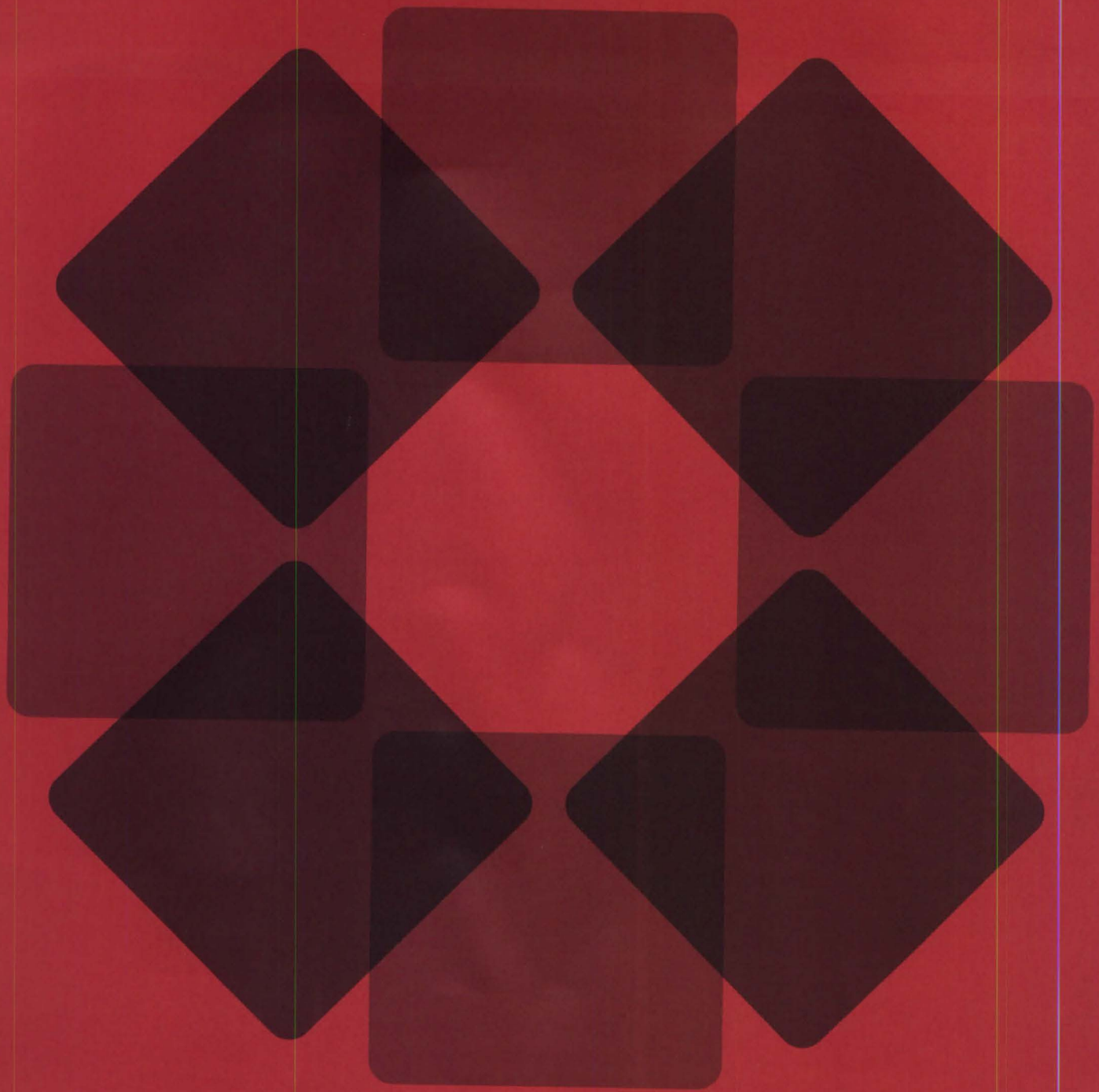
For Paul Goldberger, who spent 30 years as architecture critic for *The New York Times* and is now with *The New Yorker*, well-designed buildings evoke visceral responses much as do Picasso's *Guernica* or Rembrandt's self-portraits. For Goldberger, that's why architecture matters, and it's very subjective. In fact, this book might more accurately have been titled *Why Architecture Matters to Me*, especially since Blair Kamin's 2003 book by the same name answered the question in more objective terms.



That said, Goldberger's accessible meditation on the art of building reveals a critic for whom masterpieces are less important than city and street. A champion of moderation in all things (even in his censure), Goldberger loves a building that is subtle and sensitive to its surroundings. As he takes us through the history of architecture, we learn that "great spaces – like the Unity Temple by Frank Lloyd Wright or Sir John Soane's breakfast room or Mies van der Rohe's Farnsworth House or Borromini's Sant'Ivo Church – make you feel something in the pit of your stomach. It is a sense of awe and contentment, somehow joined, and you feel as if you had been jolted into a higher level of perception than you normally have." This is why architecture matters to Goldberger. You might ask: Aesthetics aside, what about sustainability or the urgent need for affordable housing? Goldberger indicates an awareness of these issues in his introduction.

If *Why Architecture Matters* recounts Goldberger's very individual experience, *Building Up and Tearing Down*, a collection of his *New Yorker* pieces, focuses more broadly on the political, financial, and sociological factors to which architecture is tethered, and how these shape our buildings and cities. Thus, his essay "Down at the Mall," about the National World War II Memorial, is not just about the site's poor design but about how Washington power brokers shaped the city's allegiance to Classicism. His essay "Casino Royale," about Las Vegas's late-1990s boom, focuses on America's bourgeois yearning and the eight-lane Vegas Strip as an example of accidental-yet-exemplary urbanism.

Whether writing about Koolhaas's Seattle Central Library or Gehry's inability to build appropriately in New York City, Goldberger gives us examples of how a building can tie together a place and, ultimately, its people. That is why architecture should matter to everyone. *Brian James Barr*



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Searching for Signs of Recovery

While some areas of the economy are experiencing an upswing, architects likely won't see a boost until next year.

BY REENA JANA

FOR ARCHITECTS STANDING VIGIL FOR A SIGN that the Great Recession might be easing in 2010, macroeconomic conditions indicate it may be so, but that they must be patient. U.S. real GDP rose 5.7 percent in the fourth quarter of 2009, and the unemployment rate declined to 9.7 percent in January. But despite such positive signs, economists who follow patterns in construction predict that the architecture industry might not see a boost until 2011. Why? Tight credit, high unemployment, drastic decreases in tax revenue, and overbuilding are among the reasons. "The tough environment for construction that was present in 2009 will be with us in 2010 as well, even with the pickup in economic growth," says Robert Murray, vice president of economic affairs at McGraw-Hill Construction [RECORD's parent company]. While the forecasts are grim, economists and architects alike are seeing smart firms move into markets they might not have been so enthusiastic about before.

MARKET OVERVIEW

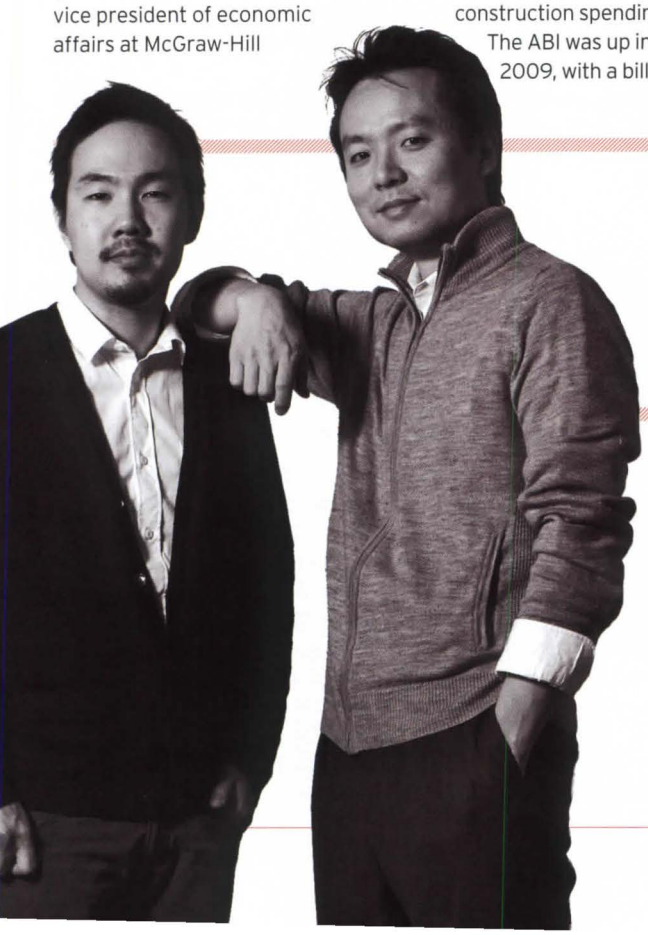
Just how bad is it? Evidence can be found in the AIA's Architecture Billings Index, which reflects a nine- to 12-month lag between when an architect bills for a project and when construction spending begins. The ABI was up in December 2009, with a billings score of 43.4, compared to 34.1 in December 2008. But the index has fallen below 50 for 23 straight months; anything above 50 indicates an increase in billings, and below 50, a decrease.

Many building sectors are still projected to see declines in 2010. McGraw-Hill Construction forecasts that total square footage for institutional buildings, including healthcare and educational projects, will fall 2 percent in 2010, to 386 million square feet (msf). The commercial sector will drop 7 percent, to 297 msf. At first glance, the residential market seems to be a bright spot. McGraw-Hill estimates that the total residential market (single- and multifamily) will grow 24 percent in 2010, to 700,000 units. Any growth in any sector is welcome, but in 2009 the residential market was so far down, it almost had to rebound to keep up with the smallest demand.

Expanded coverage online includes additional "Where Are They Now?" profiles and interviews with architects from KPF, Olson Kundig, and SHoP. Visit us at architecturalrecord.com.

WHAT'S TO BLAME

One factor possibly contributing to the recovery delay: strict lending policies by banks in the postrecession landscape. In a survey of senior loan officers at 55 domestic banks



RECESSION REPORT +1

WHERE ARE THEY NOW? BY JENNA M. MCKNIGHT

One year ago, ARCHITECTURAL RECORD profiled design professionals we had met at AIA New York's Center for Architecture during a "Not Business As Usual" forum – one in a series of events geared toward helping architects during the recession. Some were young firm owners trying to get their footing; others were unemployed designers desperate to find work. We recently followed up with our interviewees to see how they have fared in the past year.

SANG HWA LEE AND JEEYONG AN

BACKGROUND **Founded Ginseng Chicken, a design firm, in 2008**

STATUS **Moved to a new office; working on competitions, small projects**

Exposure is vital for a young studio, as Lee and An know well. As a way to gain visibility and develop their design philosophy, they've entered roughly 20 competitions since founding their Manhattan-based firm at the height of the recession. "There was no hesitation. We did as many as we could," An says. Their efforts paid off: In January, they won third place in a Korean competition and received a $30,000 prize. Moreover, Lee and An are teaching a graduate design studio at Columbia University and chipping away at a few small commissions. Their ambitions are global in scope. This spring, they plan to travel to Korea and China to drum up work.

CONSTRUCTION MARKETS EBB AND FLOW

With only a few exceptions, major construction markets in the U.S. will contin to slide this year, as overbuilding, tight credit, unemployment, and decreasing t revenues hold back the recovery. Historically, developer-driven commercial wo – offices, hotels, and retail – is much larger in volume than institutional work. A the graph (opposite) shows, it is also subject to wilder boom-bust cycles, droppir faster and recovering more quickly. For 2010, McGraw-Hill Construction expec the number of construction starts measured in millions of square feet to be dow 5 percent for stores, 7 percent for office buildings, and 16 percent for hotels. I contrast, institutional work tends to be more stable. Educational buildings will b down 7 percent next year, thanks to falling tax revenues, but the number of start for health-care construction is expected to be up 3 percent. The multifamily hous ing market could make a slight 12 percent rebound this year, but that's not much t write home about. In 2009, only 129,000 units were started, the smallest numbe to begin construction in one year since the 1940s. – *Charles Linn, FAIA*

and 23 branches and agencies of foreign banks conducted by the Federal Reserve and released in February, none of the respondents said that lending conditions for commercial real estate, for example, have eased. Nearly 73 percent of those polled said their credit standards have remained unchanged, and 27.3 percent have actually tightened their requirements for loans in the commercial real estate sector. In addition, 140 U.S. banks closed in 2009, contracting the nation's financing resources.

"We're still talking about very different lending conditions" compared to prerecession times, says Murray. He points to large, high-profile projects that have been either scaled back drastically or held up due to tight credit. Examples he cites are the Atlantic Yards development in Brooklyn, whose Frank Gehry design was scrapped, and Santiago Calatrava's Chicago Spire, now on hold.

Another problem hurting architects is that overall national unemployment remains high – 9.7 percent as of January – and this translates into less need for construction in the nonresidential sector. "Historically, the architecture industry does not pick up after a recession until jobs are created. [The rate of job creation] is reflective of businesses' needs for new offices," as well as retail, hotel, and restaurant facilities, says Kermit Baker, chief economist of the AIA.

Plus, the high unemployment rates mean less tax revenue, which funds the construction of schools, government buildings, and infrastructure. Already for the fiscal year 2010, 41 states have identified midyear budget gaps, reports the Center on Budget and Policy Priorities, a nonprofit, nonpartisan research organization. These gaps total $36 billion.

Of course, a major problem is that the massive amounts of commercial, single-, and multifamily space built on spec during the boom must be absorbed before demand for new design work reappears.

EFFECT ON FIRMS

The lending dilemma has affected the architecture industry directly, too. The lack of work and tight credit have made it difficult for even venerable firms to hold open their doors. Boston-based Cubellis, for example, closed at the end of 2009, after Sovereign Bank denied a line of credit necessary to pay the salaries of the company's 170 employees. Yamasaki Associates, based in Troy, Michigan, closed in early January, after it was unable to pay employees and suppliers in recent months.

According to the U.S. Labor Department, the number of technical and nontechnical staff employed in the architecture and engineering services industry in 2009 was 1.346 million, down from 1.445 million in 2008 – a 9.3 percent drop. In January, this sector shed an additional 7,700 jobs.

Some architecture firms are still planning layoffs in the year ahead. The Massachusetts-based consultancy ZweigWhite conducted an online survey of firm leaders in which 35 percent of respondents said they are considering staff cuts in 2010, on top of layoffs conducted in 2009.

Some firms have managed to weather the storm. Jeanne Gang, principal of Studio Gang Architects in Chicago, says her firm has stayed resilient by building a varied portfolio and adding smaller projects that she might not have accepted in the past. "We have avoided layoffs mainly due to being diversified typologically and geographically," says Gang. "During this time, the project types have shifted. We are seeing fewer domestic condominium projects and more institutional and public projects get started."

AREAS OF PROMISE

Overall, economists see areas of hope. Surprisingly, high-end single-

PORTRAIT PHOTOGRAPHY: © DANIELLE AUSTEN

CHARLTON HUTTON, JENNIFER GRAHAM, AND KRISTEN MUCCI

BACKGROUND **Launched LMNOP, a nonprofit professional development organization, in February 2009**

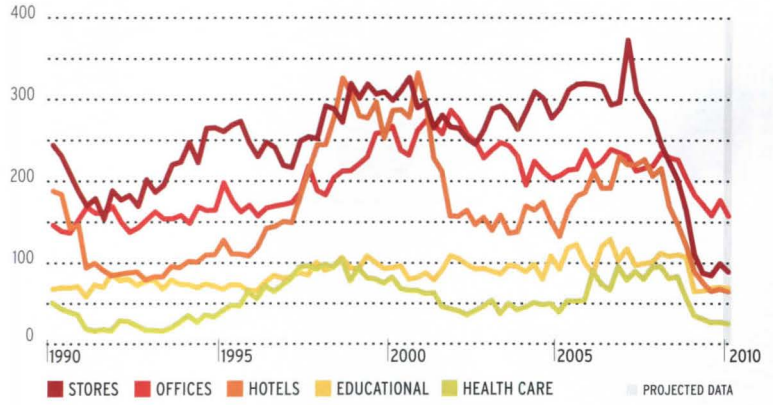
STATUS **Group now has 200 members; offering 12 workshops in 2010**

After getting laid off from Mancini Duffy in December 2008, Jennifer Graham felt disappointed and a bit panicky. But those emotions swiftly gave way to optimism. "I was so excited for new opportunities," she says. Given her thick rolodex and tenacious spirit, she was confident she'd find a new job. "I have a business approach to everything I do," she says.

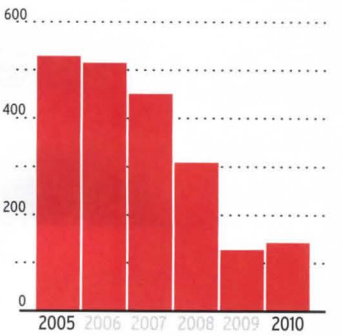
The following month, Graham attended a "Not Business As Usual" event at New York's Center for Architecture, where she volunteered to mentor out-of-work designers. She thought she could offer some sage advice: She has 25 years of experience in the design industry and an M.B.A. from New York University. Plus, she's a single mother of twin girls.

Her mentoring idea quickly morphed into a larger initiative. With the support of fellow designers, including Charlton Hutton and Kristen Mucci,

Construction Start Statistics (IN MILLIONS OF SQUARE FEET)



Multifamily Housing
(THOUSANDS OF DWELLING UNIT STARTS)



SOURCE: MCGRAW-HILL CONSTRUCTION

family housing could be a promising sector. Some clients who have the money are still spending it, according to Kurt Lavenson, principal of Lavenson Design in Oakland, California, which focuses on this market. He says clients are starting to revive projects that were put on hold when the recession began, because bidding is competitive. "In residential construction, labor costs have dropped," he explains. "Contractors are interested in anything they could be building or working on, making it enticing to build."

McGraw-Hill Construction estimates that in 2010, single-family housing starts could rise 28 percent, to approximately 555,000 units, from 2009. But that is still 18 percent lower than the number of units built in 2008, and 66 percent below the all-time high of 2006. Mortgage rates are currently very low, points out Murray. Also, the tax credit for first-time home buyers was set to expire last November, and that may be responsible for a bounce in the number of homes sold that month. The credit has been extended to April 30, 2010.

Perhaps more notably, multifamily housing is projected to rise 12 percent, to 145,000 units, the first increase in this market since 2005. But architects in this market must not expect to do large projects. "Forget about high-rise condos," cautions Murray. "Overall, smaller-scale, 'garden-style' buildings – in other words, the lower end – hold some promise." He adds that secondary markets might fare better this year than metropolitan areas.

Another area of hope for 2010 is the public sector, partly due to the funds provided by the American Recovery and Reinvestment Act (ARRA) of 2009. Baker estimates that the ARRA has about $30 billion to $35 billion earmarked for residential and nonresidential construction for 2009 to 2011. "That's an optimistic estimate," he says. "It's not enough to do much, but enough for some firms to feel the difference."

Rob Tibbetts, vice president and marketing director in HOK's San Francisco office, says it has focused on government work since the downturn began, precisely because of the possibility of receiving stimulus funding. "Probably half of what we're submitting now are federal projects," he says. "Before, we'd submit for federal projects about once every five years."

Tibbetts adds that HOK is currently competing for some public-sector work on the state level, too – including three California court projects. It's a wise new direction, says McGraw-Hill Construction's Murray, who points out that courthouse building, at both the state and federal level, saw a 26 percent increase in millions of square feet, to 10.3 msf, in 2009. "Courthouse projects have seen a 77 percent increase in dollar terms, to $4.2 billion last year," says Murray.

What seems as consistent as the economists' discouraging data is the trend of firms pursuing less glamorous, more practical, or simply smaller projects from those in pre-recession years. "Architects seem to be going in counterintuitive marketing directions. We're saying, 'Buy much less of our services,' " says Carl Stein, principal of Elemental Architecture in New York. "But that's a reflection of our reality." ■

Reena Jana writes about design and business. Her work has appeared in BusinessWeek, Wired, *and* The New York Times.

who also had been laid off from Mancini Duffy, Graham founded LMNOP, which stands for Leadership, Mentoring, Networking, Opportunity for A+D Professionals.

The group hosted its first workshop, "The Job Search Checklist," at the Urban Office, a product showroom, on February 17, 2009. It drew more than a dozen attendees. Other events followed, including four meet-and-greets, three fund-raisers, and 12 workshops on topics such as Revit and digital networking. Then, last summer, the group launched a Web site (www.lmnopnyc.org). "It's been insane," says Graham. "The first six months, we didn't know how to keep up with ourselves."

Early on, the organization received a lot of encouragement from the AIA and International Interior Design Association, adds Mucci, who now serves as LMNOP's director of administration. "It was an overwhelming amount of support," she says, "and it was all by word of mouth." LMNOP also has gotten a vital boost from manufacturers, who loan out their offices and showrooms for events. Moreover, LMNOP members can use copy and fax machines for free in selected showrooms around the city. "We encourage people to look for jobs outside of their home," Graham says. "Get out."

Today, LMNOP has 24 people on the leadership team and approximately 200 members, ranging from recent graduates to architects with more than two decades of experience. Currently, there is no membership fee.

In 2010, the group intends to offer six training sessions geared toward "people in transition," along with six workshops for established professionals. It also hopes to bring its professional-development workshops to small and midsize firms on limited budgets. Mucci says she has been impressed with how eager people are to help one another. "That's what I enjoy most about architecture and design," she explains. "It's a community, it's a family."

Indeed, it is. Last March, Graham started a new job at M Moser, a global interiors firm with a New York City office. Months later, she helped Hutton get a full-time position there. "Jennifer opened the door for me," he says. "I'm definitely fortunate to be where I am now." Moreover, Mucci is doing consulting work for M Moser while she continues to look for a permanent job.

When asked what sort of advice she would offer job hunters, Graham's answer isn't surprising. "Your relationships are going to get you the position. If you really love the industry and can't find a job, keep volunteering, keep connected," she says. "If you don't have a network, build one."

Putting Yourself Out There

Three recent projects attract clients by offering design services in unconventional locations.

BY WILLIAM BOSTWICK

DESIGN.STARTS.HERE LOOKED LIKE ANY other architecture studio: whiteboards covering the walls, a gaggle of stylish stacking chairs, and what one designer called "a really great conference table." But there was one big difference: You could see it.

While most architecture offices sit high above the fray behind tastefully marked doors, Design.Starts.Here was out in the open, occupying a glass-walled storefront on a busy intersection in New York City's West Village. The designers behind the temporary office decided to go where the work is, offering new kinds of projects to new kinds of customers: cheap, quick designs targeted at middle-class homeowners. And they're not alone. Around the country, nimble architects are marketing to the masses – saving their bottom lines, but shaking the foundation of an already rattled industry.

"It was a hard year," says Edward Gavagan of PraxisNYC, one of the designers behind Design.Starts.Here. "Our bread and butter was high-end residential design, and we got hit bad." But after Gavagan's friend Poonam Khanna of Re:Design Architecture + Interiors saw a temporary "pop-up" store – an outpost of mega-retailer Target open for the holiday shopping season – and Gavagan met someone with an unused storefront, they called their friends at Basil Walter Architects and 3-By Architecture and decided to try a new strategy.

Design.Starts.Here opened in early December with little fanfare, says Gavagan. "We just had a sandwich board that said 'free design consultations.' " But sure enough, "People would poke their heads in, say, 'I'll be right back!' Run home, take some pictures, and come back saying, 'Help! I hate my kitchen.' " For just over a week, Design.Starts.Here offered free consultations and sketches as well as a menu of fixed-fee, basic services, from a $250 one-hour, on-site consultation to a $10,000 preconstruction package, including site visits, plans, and preliminary budgets. Keeping services clear and transparent drew in everyone from the 13-year-old girl who wanted to redecorate her bedroom to a Long Island woman trying to decide what to do with her living room. These were people, the designers stressed, who never would have hired an architect had they not seen the storefront.

Since he began offering consultations at a farmer's market, John Morefield's atypical tactics have brought clients – and criticism.

"Architecture seems unattainable," says Khanna. "We wanted to make it less intimidating." Of course, by convincing a new audience they need architects, Khanna and her coworkers were creating customers. But they balked at calling the pop-up store a business-generator. "That truly wasn't the idea," Khanna said. "Fundamentally, it was an educational tool."

Working out of their own storefront just outside of Detroit

RECESSION REPORT +1

MICHAEL MURNO

BACKGROUND **Laid off in December 2008**

STATUS **Job hunting; launched his own practice**

"It hasn't been a picnic," says Murno, who has sent out nearly 100 resumes in the past year. "I know I've got another 20 years left in me. The only trouble is, people are looking for young people." Determined to keep working, Murno recently took on a commission – designing an addition for a Brooklyn private school – and is now taking steps to establish his own practice. He has come to understand how difficult it is to run a firm. "I've got my consultants paid up-to-date," he says, "but I haven't taken a dime out for myself." Murno hopes that young architects appreciate the benefits that come with being on a company's payroll. "A job is a privilege, not a right."

LAUREN LUCCHESI

BACKGROUND **Laid off in January 2009**

STATUS **Working at small interior design firm**

After losing her job, Lucchesi, a 30-year-old interior designer, began contemplating other career options. Then she went to a University of Tennessee alumni event. "I ran into a few people, started networking. Things kind of clicked," she explains. Lucchesi ended up connecting with a fellow UT graduate who owns PLAN, a boutique interior design firm in Manhattan. He offered her a job, and she started in May. "I absolutely love it," Lucchesi says, adding that the five-person firm has an interesting mix of high-end residential and nonprofit clients. Given the brutal job market, she feels blessed to have a full-time position that she enjoys. "I'm blowing kisses to the sky every day."

PHOTOGRAPHY © MICHAEL HANSON (TOP)

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CIRCLE 26

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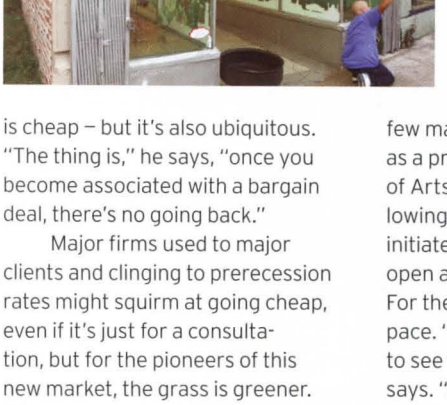
on Hamtramck, Michigan's main drag, Design99's Mitch Cope and Gina Reichert had a similarly high-minded agenda. "Our plan was to reeducate people on why they need architects," Cope says. The couple left their jobs – he as a curator, she as an architect with Gensler – and started offering $99 consultations to their neighbors. "Detroit needs a lot of design help – it's all old housing stock, but people are trying to rethink how they're living." One customer, for example, was moving out of Detroit and into Hamtramck with his schizophrenic brother. He was trying to renovate his new house so that both of them could live safely and comfortably together. "He would never in a million years have hired a designer if he hadn't come across us," Cope says. Not only did Design99 take on the renovation, the client has since hired them again to design a garden.

"If you walk down the street and ask everyone you see, 'Do you need help with your home?' Somebody's going to say yes. And those people will be jobs," says John Morefield. After getting laid off twice in one year, Morefield set up a booth in a Seattle farmer's market advertising design advice for five cents. It made him the poster child for marketing architecture to the middle-class masses, but it also made him a target.

Many accused Morefield of misrepresenting himself as a licensed architect – he is currently going through the registration process, though he works with a registered architect and is legally able to practice residential design in Washington without an architecture license. More damning critics, though, argue that Morefield and designers like him are cheapening the profession.

Morefield is quick to point out that he doesn't offer discount services. After the initial five-cent conversation, he says, "I charge legitimate rates. You can't get a house designed for a pocket full of nickels." But nor can you open up a new market of customers with an unaffordable product. Architecture has been elitist for too long, he says. Maybe it should get cheaper: "Middle America deserves good design too."

"You can see this play out in the fashion industry," says Rob Walker, who writes the "Consumed" column on marketing for *The New York Times Magazine*. He cites couture label Comme des Garçons's collaboration on a line with budget retailer H&M, and Calvin Klein's licensing program that sells its name to other manufacturers. Once exclusive, now the Calvin Klein label is cheap – but it's also ubiquitous. "The thing is," he says, "once you become associated with a bargain deal, there's no going back."



ABOVE: **Design.Starts.Here took a cue from major retail chains with its "pop-up" store.**

LEFT: **Design99 opened its storefront on the main shopping street in Hamtramck, Michigan, near Detroit.**

Major firms used to major clients and clinging to prerecession rates might squirm at going cheap, even if it's just for a consultation, but for the pioneers of this new market, the grass is greener. "I've been employed since the day I set up the booth," Morefield says. Overrun with work, Cope and Reichert recently closed the Design99 storefront to focus on a few major home renovations as well as a project with the Detroit Institute of Arts. Design.Starts.Here is following up on a number of projects initiated in December and hopes to open another "pop-up" store soon. For them, it's a welcome change of pace. "As an architect, you don't get to see that many people," Khanna says. "And a stream of 100 percent happy people walking out the door ... well, that's even rarer."

William Bostwick is a Brooklyn-based editor and writer.

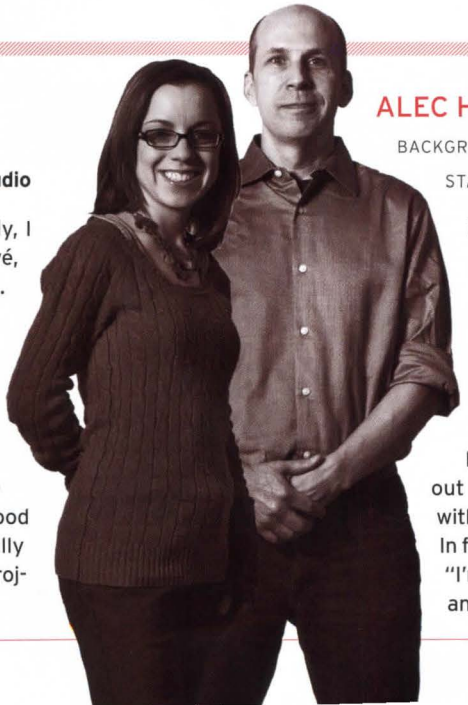
RECESSION REPORT

MEGAN BOVÉ

BACKGROUND **Laid off in July 2008**

STATUS **Working at USGBC; started her own studio**

"It's actually been quite a year. To put it bluntly, I refused to give in to feeling negative," says Bové, who formerly worked at a New York City firm. Indeed, the young interior designer has kept busy and upbeat. She started volunteering for the Long Island chapter of the U.S. Green Building Council, which led to a part-time job. She became LEED certified last June. And she started her own company, Esotico Designs. "It means exotic in Italian, and I'm Italian," she explains. Bové lives with her parents in her childhood home. "I'm using this as an opportunity to really build myself," she says. Her first independent project: redesigning her parents' living room.



ALEC HEEHS

BACKGROUND **Out of work since fall 2008**

STATUS **Doing Web design, carpentry, building surveys**

Unlike some of his friends who have "bolted" from the architecture profession, Heehs is doing whatever he can to stay involved and pay his bills. He recently completed a survey of a 309-year-old Pennsylvania home and will submit a proposal for renovation. He's employing his carpentry skills and built two wooden decks. And he's designing Web sites, including one for an architect-turned-jewelry maker (www.globalcoolo.com). Heehs has been forced to make lifestyle adjustments: He rented out his Manhattan co-op, for instance, and is now staying with a friend. But he's determined to stick with architecture. In fact, he's in the midst of the ARE and has two exams to go. "I'm going to get more accreditation, keep a good attitude, and keep networking," he says.

PHOTOGRAPHY: COURTESY DESIGN.STARTS.HERE (TOP);

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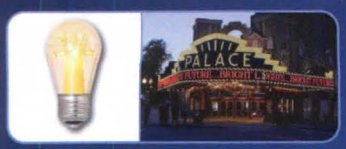
THINK

INSTALLATIONS

LED BULBS



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Tortilla Jo's, Anaheim, CA

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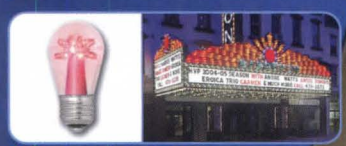

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Tough but flexible skins

The latest cladding products must not only protect, but adapt to, the architect's design.

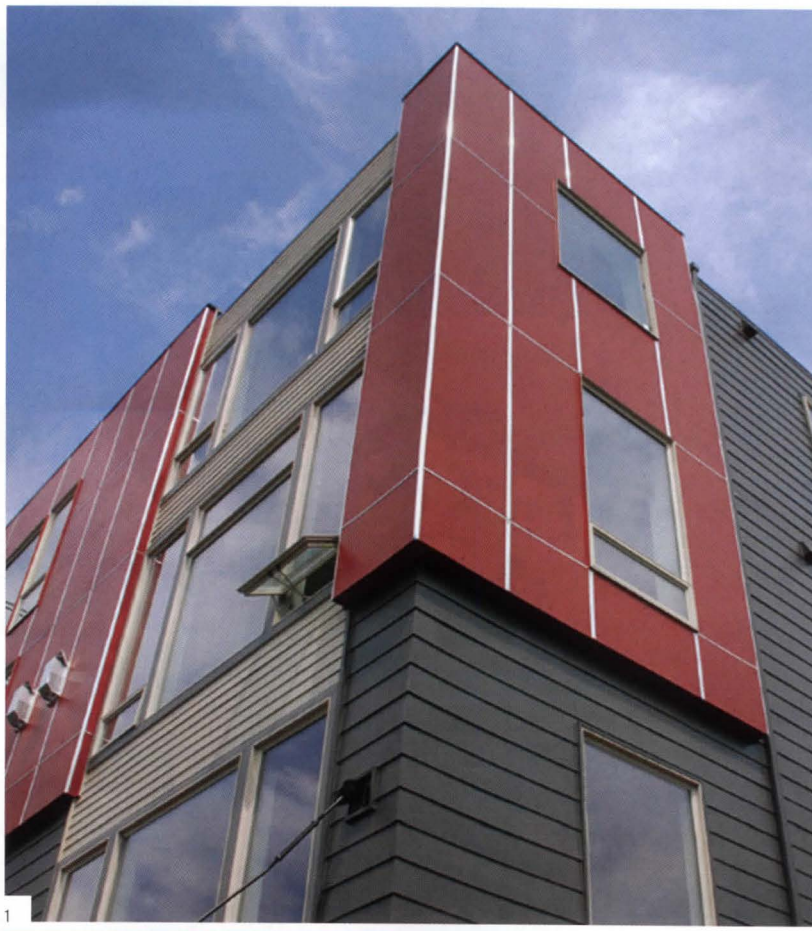
BY RITA CATINELLA ORRELL

JAMES HARDIE BUILDING Products launched a commercial division at the beginning of last year to offer architects and builders working on multifamily and light commercial projects a new range of siding and panel solutions. The Reveal panel, one of the division's new product lines, is the first U.S.-manufactured, commercial fiber-cement panelized design that can compete with everything from expensive imported panels to stucco and EIFS, even to vinyl siding products.

"We've been selling fiber cement in the U.S. for the past 20 years, and we are on our seventh generation of product," says Martin Whitehead, director of multifamily market development for James Hardie. "On both the ingredient and the manufacturing-process areas we've been able to make thicker fiber-cement products that have all the durability and performance that we want." Made from wood pulp, sand, cement, and water typically extracted and processed near each manufacturing facility, Reveal is 40 percent thicker than residential fiber-cement panels. Unlike metal panels manufactured to a standardized grid, Reveal gives architects more creative freedom to express designs. "We have a series of trims that we are able to manufacture in 12-foot lengths. In that case, you can get the durability of fiber cement but the workability and light weight of other trim products," explains Whitehead.

Andrew Raymundo, principal architect of RSS Architecture in San Carlos, California, is specifying Reveal panels and trim on two projects, a multifamily siding rehab for 29 buildings in Cupertino and for the facade of a new recreation/leasing center in San Bruno. For Raymundo, Reveal serves as a substitute for cement plaster. "The real benefit that I see is how quickly it can be applied to the building," he says, adding that it also offers a new aesthetic. "It's not the typical type of siding solution that's been redone over and over again." Raymundo's only concern is the additional cost involved in cutting the standard 4-foot-by-8-foot panel down to a smaller size and adding more trims. According to the manufacturer, pricing for Reveal panels is comparable to EIFS and more than three times cheaper than other premium fiber cement facades.

Although Raymundo was originally reluctant to work with cement-based siding products, the material is now a part of his palette. "I've broadened my whole view about how it is I specify and use materials." Whitehead has been pleasantly surprised by the amount of interest Reveal has generated. "I feel we've got the tiger by the tail with this thing." James Hardie Commercial, Mission Viejo, Calif. jameshardiecommercial.com **CIRCLE 200**



1

2

3

1. **Reveal panels (shown here in red, above Artisan lap siding, also from James Hardie) helped create a Modern look for this office building for Knoll Development in Seattle.**

2. **The siding is 40 percent thicker than residential fiber-cement panels.**

3. **Reveal trims by Fry Reglet come in seven profiles (four shown) and two finishes.**

PRODUCT FOCUS CLADDING

1 | product **Custom Metal Woven Panels**
manufacturer **GKD-USA**
gkdmetalfabrics.com

Shoma Development Corp. and Miami-based Zyscovich Architects produced a geometric pattern on the facade of a parking garage in Doral, Florida, through the application of 104 panels of a custom varied weave of GKD's metal woven panels. The hurricane-proof, rectangular-shaped panels vary in width and density, which was critical for forming the pattern. **CIRCLE 201**

1

2 | product **Rheinzink Flat Lock Tiles**
manufacturer **Rheinzink America**
rheinzink.com

In a multiphased expansion of the Navy Federal Credit Union's Pensacola, Florida, campus, three buildings and a parking deck/energy plant have achieved LEED Gold status. Approximately 134,000 square feet of Rheinzink flat-lock tile finished in graphite gray were used on two buildings and the parking deck (a fourth building is to come). The panels, chosen for their recycled content, durability, and self-healing nature, interact with and complement a masonry facade. **CIRCLE 202**

2

3

3 | product **Perforated Metal**
manufacturer **McNichols Co.**
mcnichols.com

Over 95,000 square feet of ⅛"-thick, perforated anodized aluminum panels in a 3"-round pattern were used to wrap the facade and interior atrium of the new Tampa Museum of Art. The exterior perforated-metal panels were installed in two layers, with the holes of one layer set slightly off-center from the other, creating a wavy moiré pattern during the day. LEDs placed between the panels create a mural for artistic displays at night. **CIRCLE 203**

4

4 | product **Ecolite Panels**
manufacturer **Ecolite Concrete USA**
ecoliteusa.com

For the first time last October, Ecolite concrete wall panels were utilized in a cladding application for the California State University San Marcos campus. For the university's new parking garage, 4,642 square feet of Ecolite double-sided wall panels were specified. **CIRCLE 204**

5

5 | product **Dri-Design Wall Panel System**
manufacturer **Dri-Design**
dri-design.com

For the Beth Tfiloh Lower School in Baltimore, approximately 8,500 square feet of Dri-Design panels – an affordable dry-joint, pressure-equalized rain-screen system – were finished in three colors and installed in a checkerboard pattern to help create an inviting new space for recently relocated students. **CIRCLE 205**

PRODUCTS IN BRIEF CERSAIE REVIEW

The more than 1,000 exhibitors at Bologna's 2009 tile show emphasized their products' green attributes, along with bold color and surprising patterns. BY JOANN GONCHAR, AIA

1

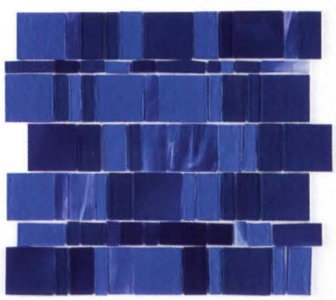
1 | product **Tegolasolare**
manufacturer **Area Industrie Ceramiche**
areaindustrie.it

The Tegolasolare roofing system from Area combines traditional clay tiles with photovoltaic (PV) technology. Each 1'6"-square tile incorporates a four-cell PV panel. About 400 square feet of roof area is required to generate 3 kw of electricity. **CIRCLE 206**

2

2 | product **Gocce d'Aqua**
manufacturer **Cottoveneto**
cottoveneto.it

Cottoveneto's Gocce d'Aqua line features interlocking tiles in fluid and geometric shapes. The mosaic pieces are made in a range of colors in glass as well as stone. **CIRCLE 207**



3

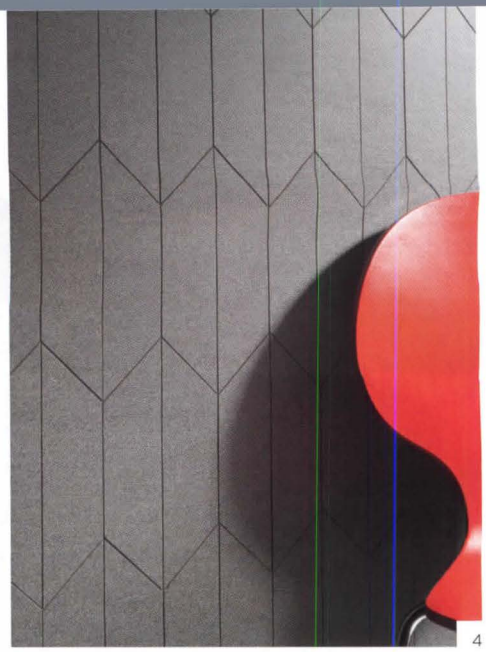
3 | product **Liberty**
manufacturer **Trend**
trend-vi.com

Trend has increased the post-consumer recycled content of its Liberty tiles up to 75 percent from 50 percent since the product was first introduced in 2007. The hand-cut glass tesserae are intended to simulate the play of light on the stained-glass windows in Gothic cathedrals. The manufacturer offers the 10 3/10" x 1 3/16" modules in twelve standard color ways, but custom color combinations are also available. **CIRCLE 208**

6

6 | product **DRY**
manufacturer **Brix**
brixweb.com

The incised lines on the surface of DRY were inspired by the random pattern of cracks that form on aging painted or plastered walls and in dried earth. Created by Belgian architect Vincent Van Duysen, DRY's lobed form of three merged hexagons allows the tiles to be assembled in a variety of configurations. The approximately 12"-square tiles, which can be used on floors or walls, are manufactured in white and lava (shown). **CIRCLE 211**



4

4 | product **Mauk**
manufacturer **Lea Ceramiche**
cermichelea.it

Mauk builds on Lea's Slimtech full-body porcelain-tile line with three new shapes – a rhombus, a triangle, and a trapezoid. The shapes can each be used alone or combined to create Escher-like effects. The 1/8"-thick tiles are both light and strong and are suitable for indoor flooring and wall cladding. **CIRCLE 209**

5

5 | product **AIR**
manufacturer **Ceramiche Supergres**
supergres.com

AIR porcelain-stoneware tiles from Supergres are made with 20 percent post-consumer glass reclaimed from TV cathode-ray tubes. The tiles are available in ivory, light gray, dark gray, and black, in square and rectangular configurations. **CIRCLE 210**

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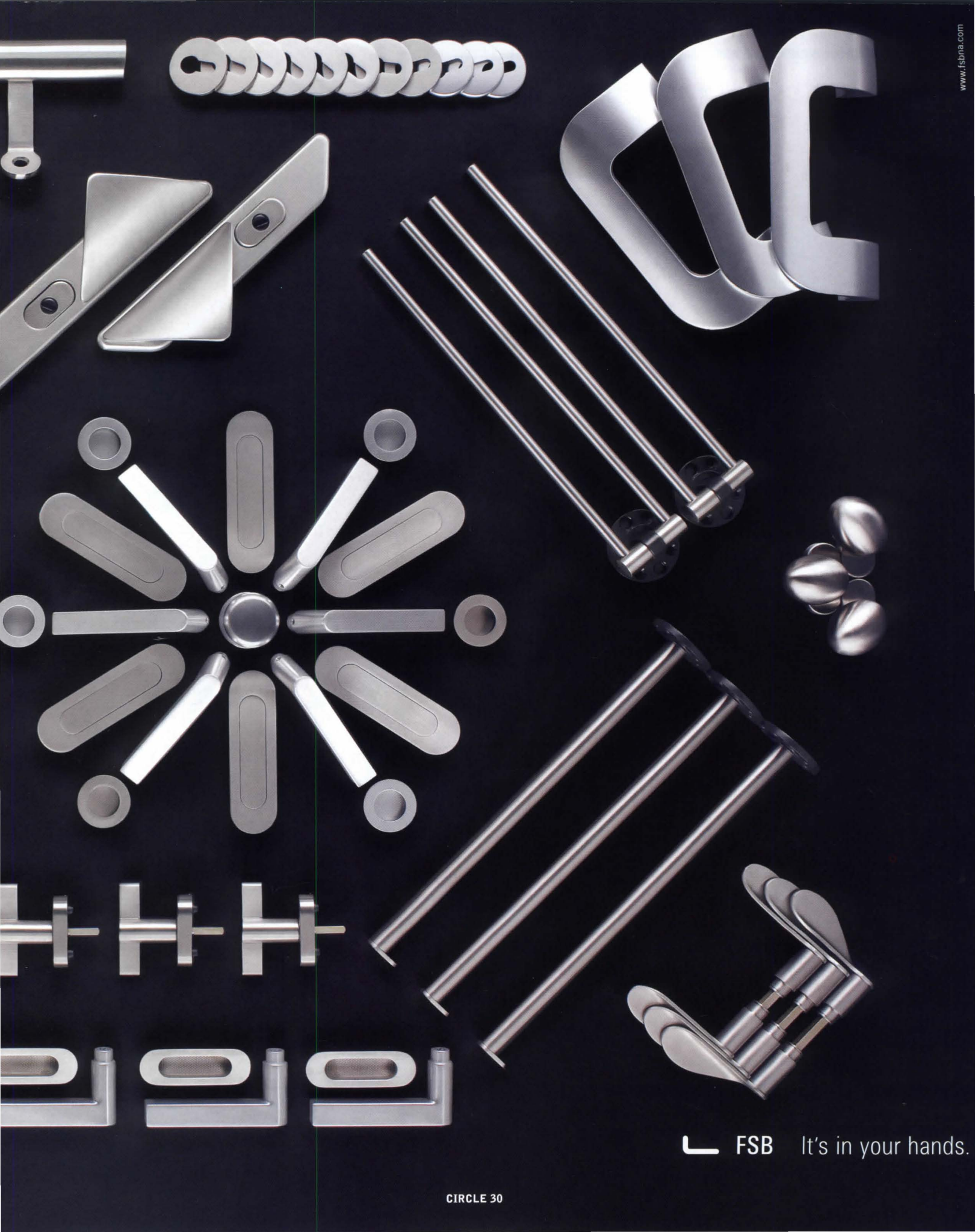


CIRCLE 30

renewal

David Chipperfield Architects with Julian Harrap brings Berlin's Neues Museum to life.

BY SUZANNE STEPHENS

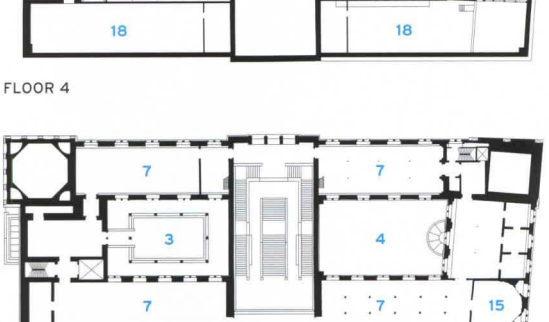
UNTIL THE NEUES MUSEUM RE-opened last fall in Berlin, few visitors knew about this quietly palatial edifice built between 1843 and 1859. Located to the north of Karl Friedrich Schinkel's magnificent Neoclassical Altes Museum (1824–30) on Museum Island, a UNESCO World Heritage Site, this conventionally dignified four-story museum was designed by Friedrich August Stüler, one of Schinkel's leading pupils, to didactically display archaeological finds of the prehistoric, ancient Egyptian, and Classical eras. Stüler had a good client: Frederick William IV, who took over the Prussian kingdom in 1840, also studied architecture with Schinkel, as Joseph Rykwert recounts in *Neues Museum Berlin: David Chipperfield Architects in Collaboration with Julian Harrap* (2009). It was the king's idea to devote a part of an island surrounded by the Spree River in central Berlin to a monumental architectural ensemble that attested to Germany's intellectual and artistic stature.

Unfortunately, the Neues Museum was heavily bombed in World War II and halfheartedly repaired by the East German government before the country's reunification in 1990. After decades of disuse, it is now conserved, rehabilitated, reconstructed, and remodeled by Chipperfield, with Harrap as the restoration architect. Since its October 2009 opening, the Neues has been drawing crowds to the cluster of five 19th-century museums on the island, including the Bode, the Pergamon, the Alte Nationalgalerie (Old National

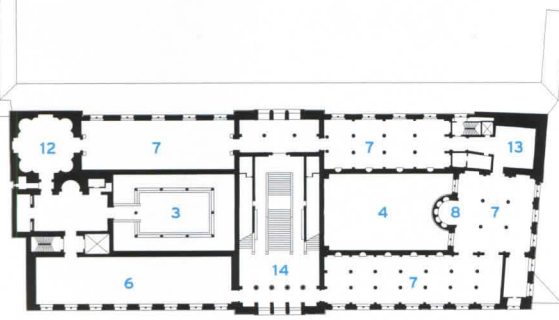
PHOTOGRAPHY: © STAATLICHE MUSEEN ZU BERLIN(SMB)/ACHIM KLEUKER (THIS PAGE)

The astringently linear Neoclassical entrance facade of the Neues has been restored along with its Doric colonnade.

DRAWINGS

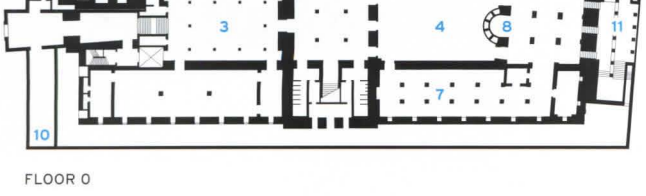


FLOOR 4



FLOOR 3

FLOOR 2



FLOOR 1

FLOOR 0

1 Vestibule
2 Cloakroom
3 Egyptian Courtyard
4 Greek Courtyard
5 West entrance
6 Shop
7 Gallery
8 Apse
9 Mechanical
10 Link to visitors' center
11 Link to Altes
12 North Dome room
13 South Dome room
14 Stair hall
15 Star room
16 Administration
17 Personnel
18 Technical
19 Café

SECTION A-A

SECTION B-B

SECTION C-C

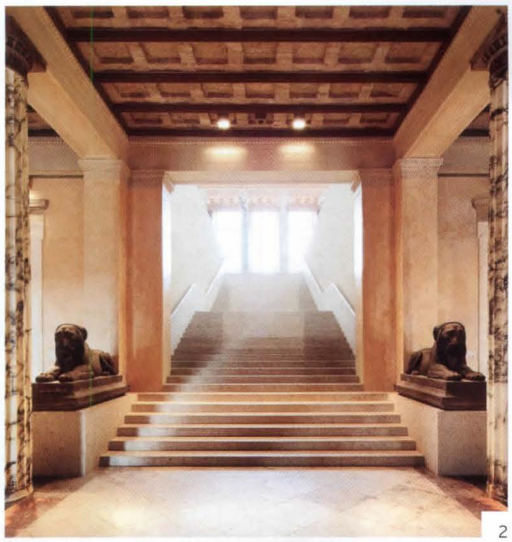
1

2

1. A model shows Schinkel's Altes Museum in the foreground with the Neues behind it, along with the new visitors' center on the west.

2. The Neues's west facade includes a rebuilt wing at its north end.

1



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5

4 3

Gallery), and Schinkel's Altes. In 2013, a Chipperfield-designed visitors' center, the James Simon Center, will open to the west of the Neues as part of the architect's master plan.

Chipperfield and Harrap's accomplishment with the Neues is prodigious. Their approach, like that of the 1964 International Charter of Conservation and Restoration of Monuments (aka the Venice Charter) calls for exposing changes that have occurred through time, rather than returning a building to its original condition, often as a facsimile. Scores of architects and consultants have labored on the $255 million project since 1997, when Chipperfield won the commission, after a drawn-out competition process that began in 1993. The result is a stunningly haunting setting that brings to the foreground fragile traces of history in the palimpsest of its walls, ceilings, floors, and columns. The ensemble offers a richly layered and sometimes coolly austere backdrop for Berlin State Museums' Egyptian Museum and Papyrus Collection, the Museum of Pre- and Early History, and artifacts from the Collection of Classical Antiquities that the building houses. With one or two cavils (more about these later), the restoration/modeling and installation design reflect the influence of the pathbreaking direction set forth by Franco Albini and Carlo Scarpa in their postwar museum renovations in Italy, such as Scarpa's Castelvecchio in Verona (1964).

The Neues and its contents suffered a number of changes since it first opened, including a gallery modernization in the 1920s (which featured hung ceilings) and, more traumatically, the Allied bombings in 1943 and 1945. The war destruction left the stair hall as one big hole and the northwest wing and domed southeast corner a shambles. In the postwar years, repairs and shoring up of the structure kept the unused ruin intact.

In working with the approximately 220,660-square-foot palatial block, where galleries are organized around two courtyards flanking the monumental stair hall at the center (which Chipperfield rebuilt), the architects didn't want to draw a hard line between what Chipperfield did

1. **The concrete structure inserted into the Egyptian Courtyard allows views from the main level to the sarcophagi below.**

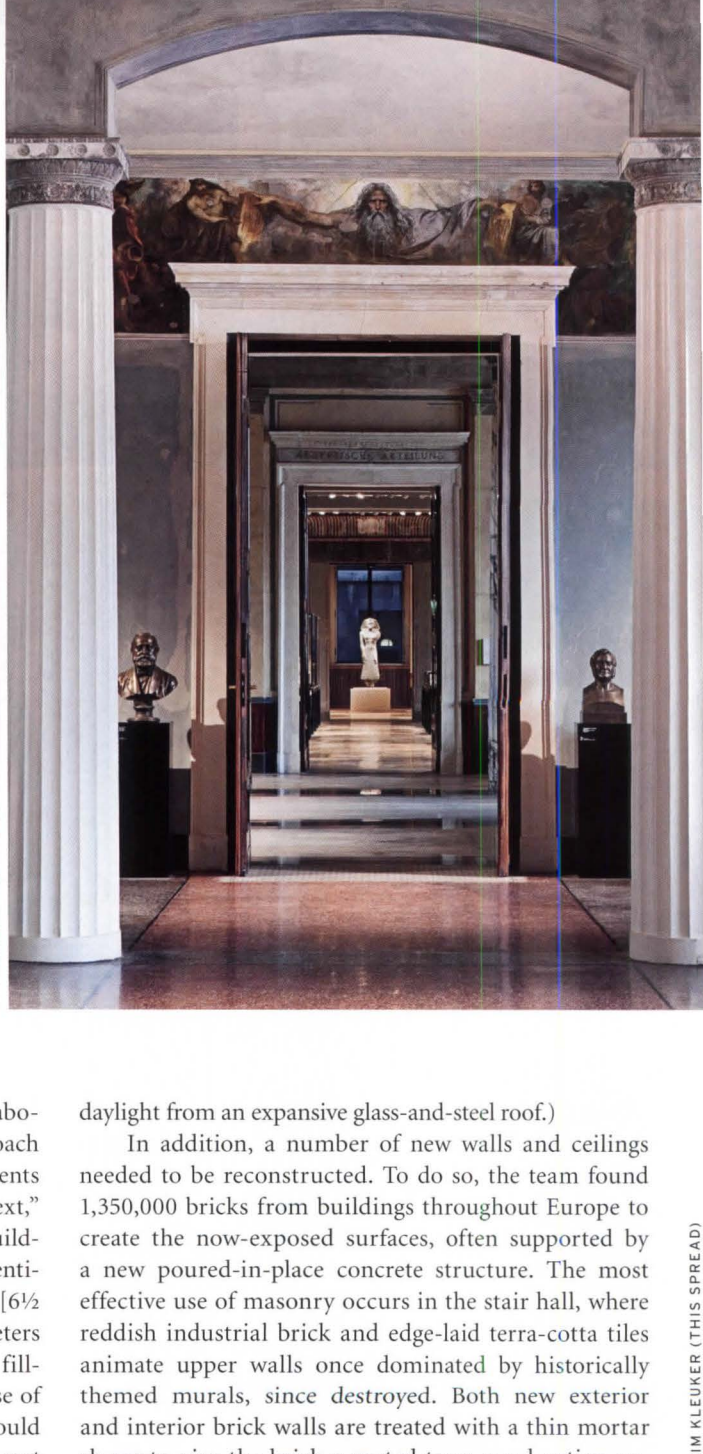
2. **The main entrance's vestibule opens onto the newly built grand stair.**

3. **On the second-level stair hall, sandblasted concrete walls define the staircases to the third level.**

4. **A new gallery in the north wing of the second level is forested with vitrines designed by Michele de Lucchi.**

5. **Egyptian-style wallpaper panels were restored in a main-level gallery.**

SPK/UTE ZCHARTNT (5)



1. **A first-level gallery in the southwest wing has a shallow vaulted ceiling formed of clay pots. Glass-and-bronze vitrines contrast with roughly rendered columns.**

2. **The enfilade of main-level galleries extending from the south to the north along the east wall creates a dramatic series of portals in different architectural styles.**

with the new and Harrap with the old. Their collaboration demonstrates they could work out an approach that incorporates a certain philosophy about fragments ("They needed to be put back in a meaningful context," says Chipperfield), and about gaps in the original building fabric ("We realized when a gap is about 10 centimeters [4 inches], it's quite easy. When it's 2 meters [6½ feet], it's a bit more difficult; and when it's 20 meters [65½ feet], it's something completely different"). In filling in the gaps, Chipperfield sought to retain a sense of unity by introducing a concrete aggregate that would both identify and link the new interventions. This precast concrete, formed of white cement, sand, and Saxonian marble chips, provides the dominant material for galleries in the northwest wing, the main stair hall and its enclosing walls, and the post-and-lintel platform structure inserted in the Egyptian Courtyard. (The Greek Courtyard, on the eastern side of the museum, has been left pretty much intact, although like the Egyptian Courtyard, it receives daylight from an expansive glass-and-steel roof.)

In addition, a number of new walls and ceilings needed to be reconstructed. To do so, the team found 1,350,000 bricks from buildings throughout Europe to create the now-exposed surfaces, often supported by a new poured-in-place concrete structure. The most effective use of masonry occurs in the stair hall, where reddish industrial brick and edge-laid terra-cotta tiles animate upper walls once dominated by historically themed murals, since destroyed. Both new exterior and interior brick walls are treated with a thin mortar slurry to give the brick a muted tone, a coloration approach found elsewhere in variegated wall finishes that highlight differences in the ages of the surfaces. An impressive display of the recycled brick occurs in the rebuilt southeast dome, where beehive corbeling surrounds majestic Roman statues. Topped by a lantern of sandblasted glass and metal, the space in the daytime seems suffused with the eerie half-light of the interior of

Schinkel's nearby Neue Wacht (Royal Guard House).

Elsewhere, Chipperfield and Harrap have re-created the shallow, lightweight domes made of clay pots that Stüler had introduced to lighten the load on the foundations resting on marshy soil. Harrap, who is incidentally the restoration architect for Sir John Soane's Museum in London, notes that when Schinkel traveled to England in 1826, he took Stüler along. The two visited Soane's house-museum and his Bank of England, where they were particularly taken with the hollow clay pots Soane used for his lightweight vaults. Years later, Stüler put them to use in the Neues. But since many of the clay pots were missing by the time Chipperfield and Harrap arrived on the scene, they had to find a company that would produce 40,000 in order to rebuild the domes, which, now exposed, enliven a number of galleries. In addition to the domes, Chipperfield and Harrap restored the cast- and wrought-iron bowstring trusses in second- and third-floor galleries. These are yet again examples of Stüler's interest in the new technologies of the 19th century, as Kenneth Frampton points out in an essay in *Neues Museum Berlin*.

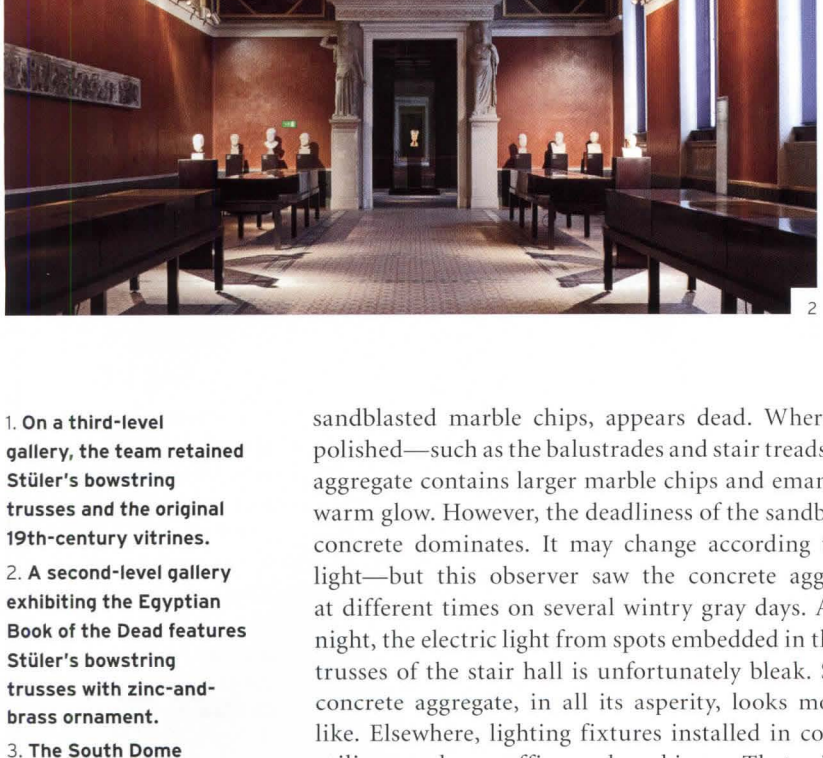
"We had a rule at the outset," says Chipperfield. "No false walls, no ducts, no false ceilings." Naturally, there are exceptions: "If a new room needed a roof and ceiling, then services could be inserted in them. But if the historic ceiling remained, the team found another way to solve the air handling and electricity." The insertions are subtle, and like the overall approach, differ thoughtfully and dramatically from room to room.

Chipperfield's architecture in Germany, as shown by his austerely elegant Modern Literature Museum in Marbach [RECORD, February 2007, page 102], reveals an affinity for the principles of the Romantic Classical masters Friedrich Gilly, Leo von Klenze, and, of course, Schinkel. In Marbach, Chipperfield also used precast concrete, but with an aggregate formed of limestone, instead of marble. Oddly, the Neues concrete, with its

3. **The second-level gallery along the southwest wall features marble columns with Ionic capitals and a new, flat concrete ceiling.**

4. **A bronze-and-glass-balustraded bridge links a second-level gallery on the north to the platform in the center of the Egyptian Courtyard.**

1



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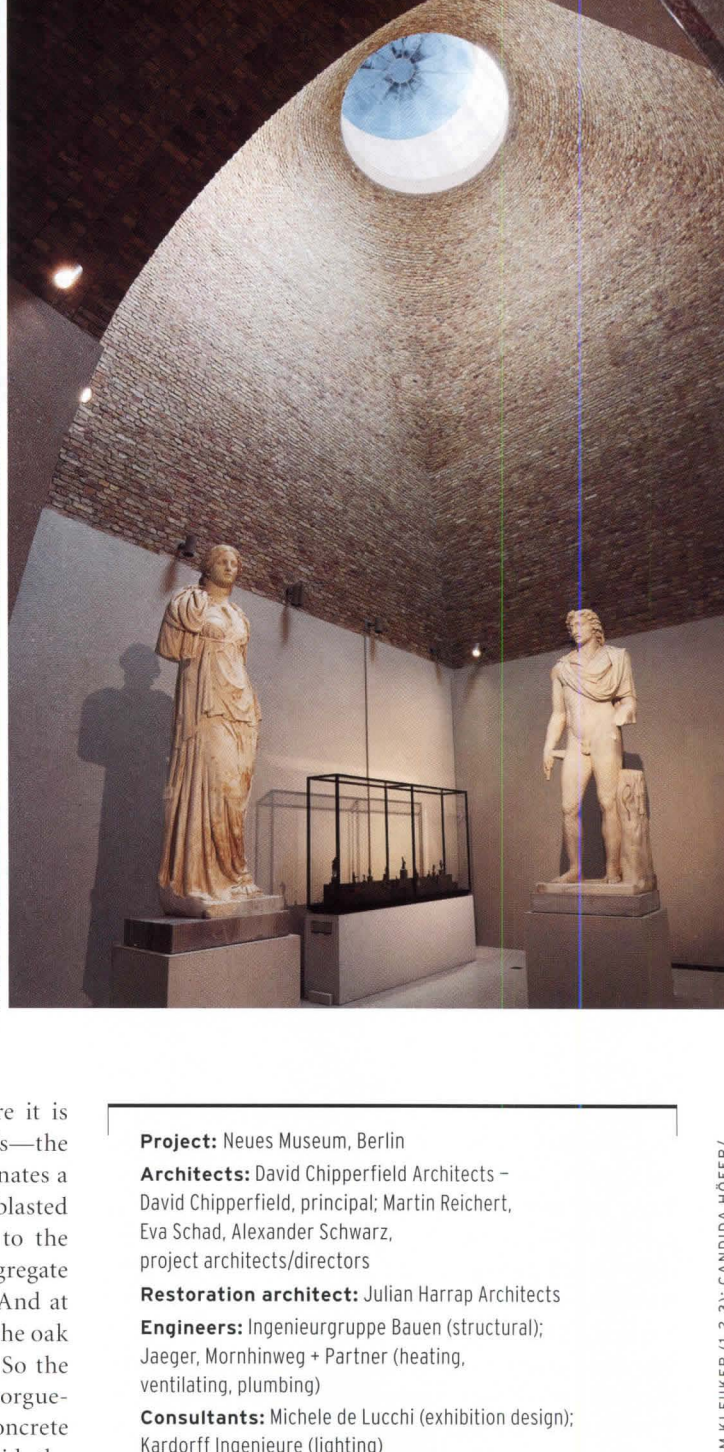


1. **On a third-level gallery, the team retained Stüler's bowstring trusses and the original 19th-century vitrines.**

2. **A second-level gallery exhibiting the Egyptian Book of the Dead features Stüler's bowstring trusses with zinc-and-brass ornament.**

3. **The South Dome room on the second level is a beehive dome of recycled brick.**

OPPOSITE: **Queen Nefertiti's bust (1351 B.C.) is the only object on display in the coffered North Dome room on the second level.**

sandblasted marble chips, appears dead. Where it is polished—such as the balustrades and stair treads—the aggregate contains larger marble chips and emanates a warm glow. However, the deadliness of the sandblasted concrete dominates. It may change according to the light—but this observer saw the concrete aggregate at different times on several wintry gray days. And at night, the electric light from spots embedded in the oak trusses of the stair hall is unfortunately bleak. So the concrete aggregate, in all its asperity, looks morgue-like. Elsewhere, lighting fixtures installed in concrete ceilings evoke an office-park ambience. That said, the lighting, particularly in Michele de Lucchi's bronze vitrines, generally works to great effect.

All in all, the contrast between the new (austere, sometimes too cold) and the old (intellectual, romantic, richly layered with history) at least allows you to know what came before and what did not. But it is the old that grabs you. ■

Project: Neues Museum, Berlin

Architects: David Chipperfield Architects – David Chipperfield, principal; Martin Reichert, Eva Schad, Alexander Schwarz, project architects/directors

Restoration architect: Julian Harrap Architects

Engineers: Ingenieurgruppe Bauen (structural); Jaeger, Mornhinweg + Partner (heating, ventilating, plumbing)

Consultants: Michele de Lucchi (exhibition design); Kardorff Ingenieure (lighting)

SOURCES

Precast-concrete elements: Dressler Fertigteilwerk

Plaster: Tubag

Glazing: Raico; Schüco

Lighting: Erco; Interferenz; RSL; Se'lux

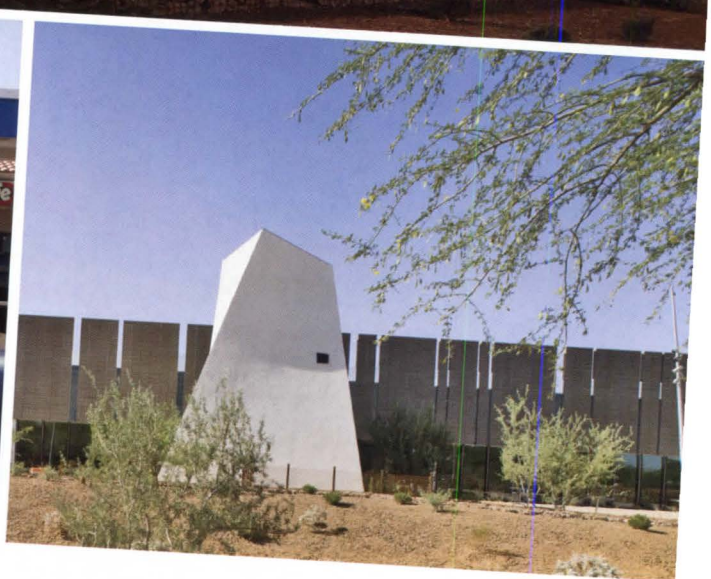
PHOTOGRAPHY: © SIMON KLEIKER (1, 2); CANDIDA HÖFER/

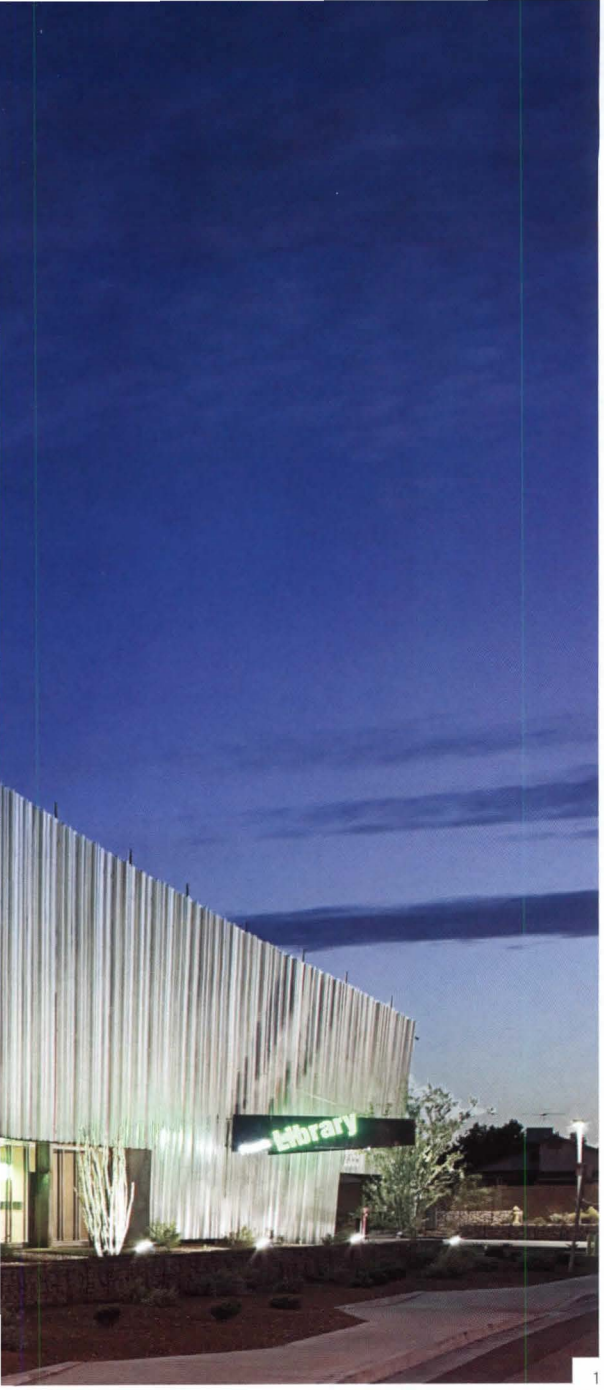
1. From the east, the library announces itself with a tilting "scrim" rising as high as 56 feet. The architects used the kind of reflective paint found on highway signs for the giant letters.

2. South of the library, the context includes a car wash and a fast-food restaurant.

3. A story tower anchors a garden outside the library.

4. The folded-metal entry canopy on the north facade acts as a foil to the orthogonal mass of the cinder-block building.





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PHOTOGRAPHY: © BILL TIMMERMAN

cowboy modernism

Will Bruder draws from the Wild West and the car wash to design an up-to-date library.

BY CLIFFORD A. PEARSON

IN PHOENIX, SPRAWL CREATES cultural, economic, and architectural mash-ups both weird and wonderful. Time and space collapse in the so-called Valley of the Sun, opening up views of Jiffy Lubes framed by rugged mountains, foreclosed houses next to a new boutique hotel, and Tod Williams Billie Tsien's Phoenix Art Museum just blocks away from a mock-Aztec restaurant offering "Mex & Match" menu items. This is where the frontier meets the strip mall. Will Bruder, who moved here from Milwaukee more than 35 years ago, knows and loves this place. His work—from the Deer Valley Rock Art Center [RECORD, October 1995, page 64] to the Central Library and Loloma 5 condominiums [RECORD, July 2005, page 132]—mines the area's geological, archaeological, and stylistic heritage, then transforms these sources into buildings that glorify the act of construction, whether humble or lavish. Without ever being literal, his designs put you in touch with desert ravines, Hohokam ruins, and the spirit of Frank Lloyd Wright.

Approaching Bruder's new Agave Library in an outlying part of town, you drive past a car wash and a Blimpie before reaching what seems to be a tilting, curving billboard with giant letters sliding off to one side. Made of vertical strips of galvanized-steel hat channels attached to steel I-columns and tube beams, the freestanding structure serves as a false front announcing the library. Leaving narrow spaces between the steel

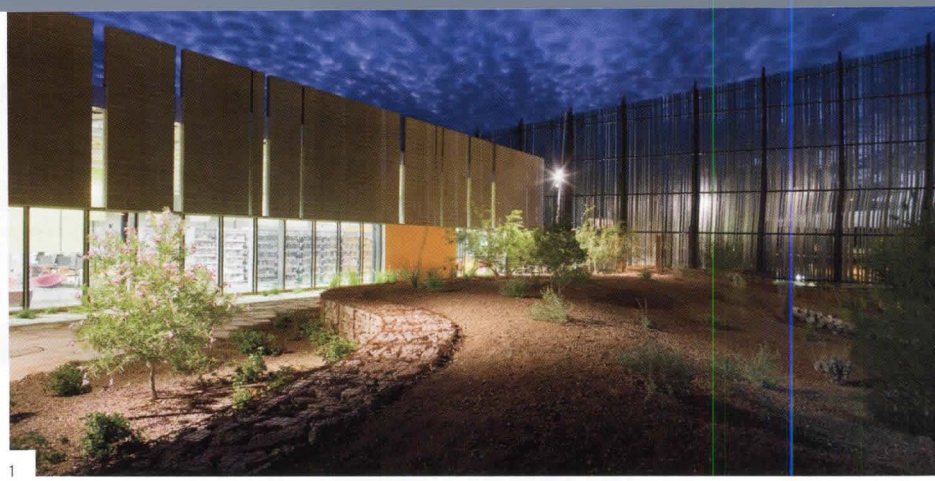
channels and using reflective film for the letters spelling out *agave*, the architect made sure the supersize "scrim" (56 feet at its highest point) plays with shadow and light during the day and catches headlights at night. "It's a cowboy front with a scale and presence big enough to signify the civic role of a library," says Bruder, referring to 19th-century Western buildings that used false fronts to seem grander than they really were. The next moment, he's talking about the library's scrim as a drive-in movie screen, adding another layer of cultural reference to the mix.

Working with a tight, $6.65 million budget for the 25,400-square-foot branch library, Bruder tucked an inexpensive masonry box behind the swaggering street facade. What at first seems to be dumb cinder-block construction, however, turns out to be a tutorial in using standard concrete-masonry units (all 8 by 16 inches) in subtle and unorthodox ways. For example, he angled (or "wobbled," in Bruder lingo) some blocks slightly out of alignment, so they create vertical strips that catch shadows and add texture to the facade. At the four corners of the building, he stacked the blocks so they form a mitered edge running straight up in a crisp line.

Most important, he used the posttensioned, stacked-bond blocks to choreograph a lively dance between solid and transparent elements—a duet that informs both the interiors and the exteriors. Visitors enter the library on the north (not the east, where the false front merely catches their attention). Mostly opaque, the entry facade contrasts the sandblasted concrete blocks with vertical slits of glazing irregularly spaced along the lower 8 feet of the building. Once inside, visitors notice that the south wall offers an inverse composition—with concrete block and glass slits resting above an 8-foot-high band of glazing. Because the interior is mostly one large, open space, the play of one side off the other, and shade off of light, animates everything. And the sight of heavy concrete block seemingly floating above glass (but in fact supported by slender steel-pipe columns) adds a welcome element of surprise.

"I like to reinvent the ordinary," says Bruder about his use of materials such as cinder block. "It's also a matter of being local and creating buildings that people want to touch."

Inside the library, Bruder used low, perforated-steel partitions and bookshelves to create separate areas while maintaining views through the 24-foot-high space. In a few places, he dropped the ceiling a couple of feet and inserted skylights to give the areas below a different ambience. To separate a computer-training lab from the rest of the library, he hung from the ceiling translucent-orange strips of the plastic used in refrigerated-meat warehouses. Colorful carpet tiles on troweled-concrete floors form "area rugs" in certain places,



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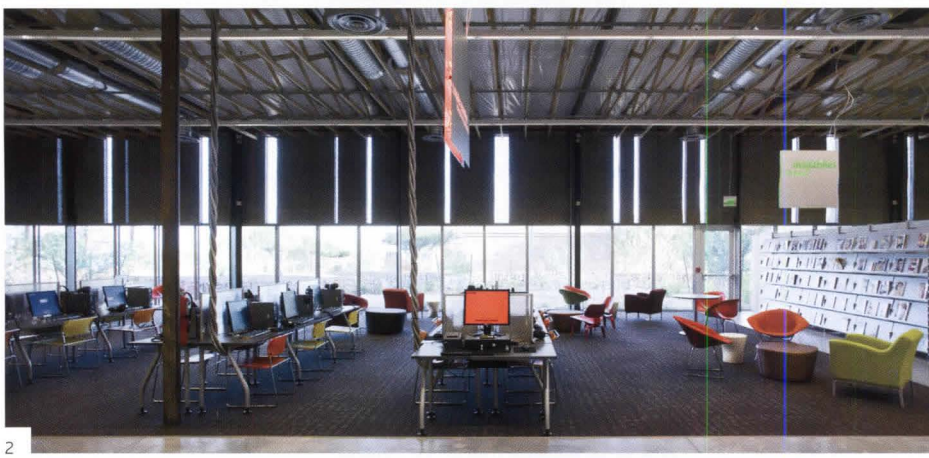

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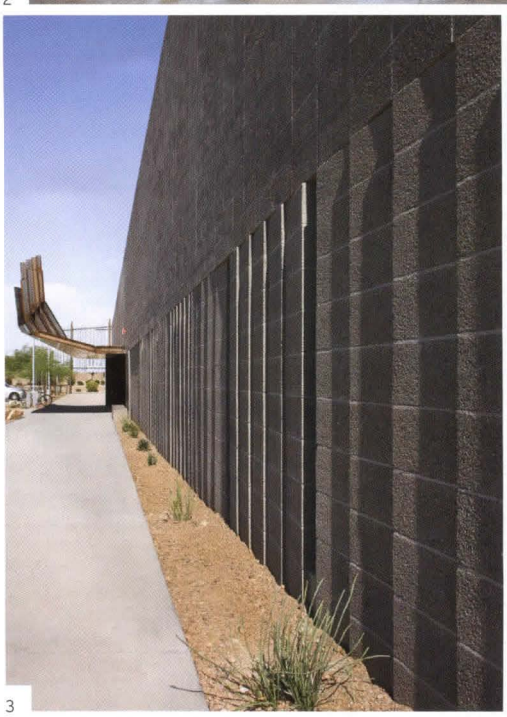

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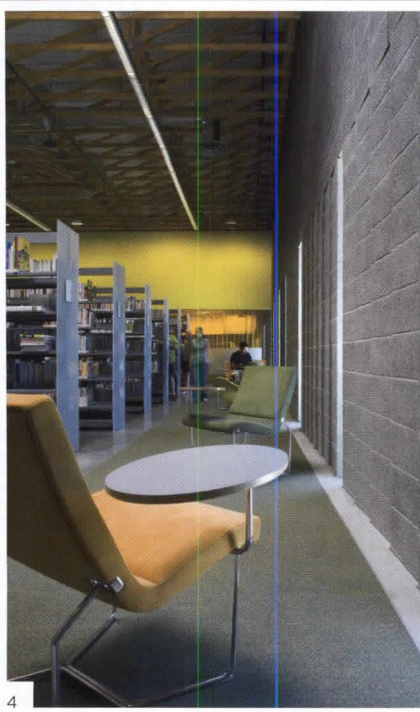


4

1. **Christine Ten Eyck landscaped the garden with low gabion walls and native species.**

2. **By putting masonry above glass, Bruder created an element of surprise on the south wall of the main library space.**

3. **Angled cinder blocks catch shadows and light on the north facade.**

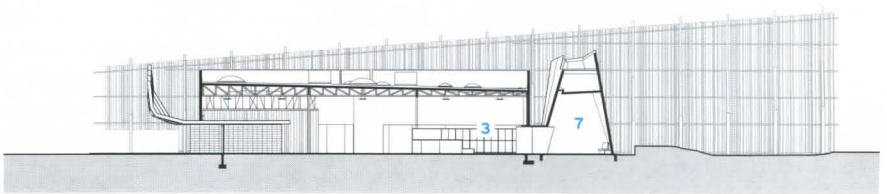
4. **Glazed vertical slits help define a protected reading area.**

5. **Materials such as troweled-concrete, wooden trusses, and concrete masonry units form a neutral envelope for splashier interior elements such as colorful bookshelves, curving counters, translucent plastic curtains, and a suspended white sculpture by Kendall Buster above the service counter.**

5

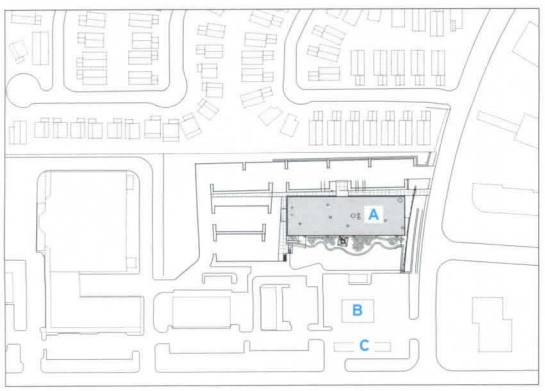
DRAWINGS

1 Service desk
2 Lounge
3 Children
4 Meeting
5 Staff lounge
6 Staff
7 Story tower
8 Computer training lab
9 Nonfiction
10 Teens

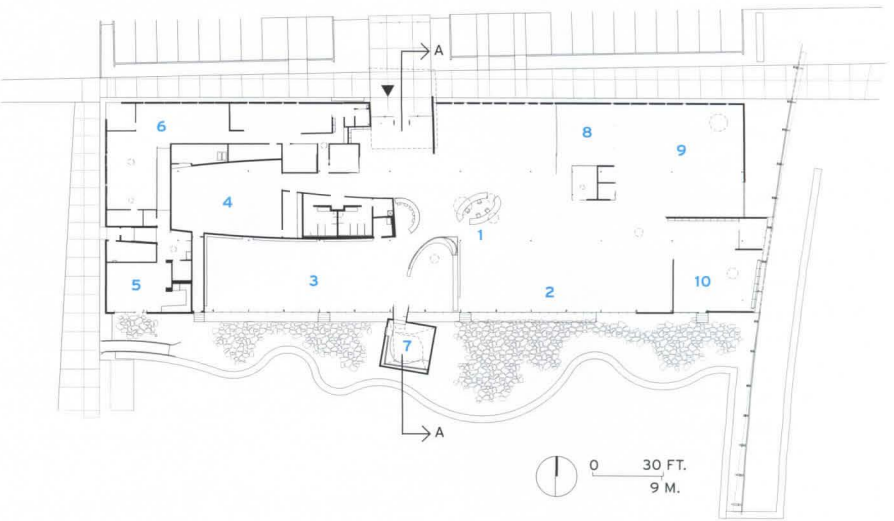


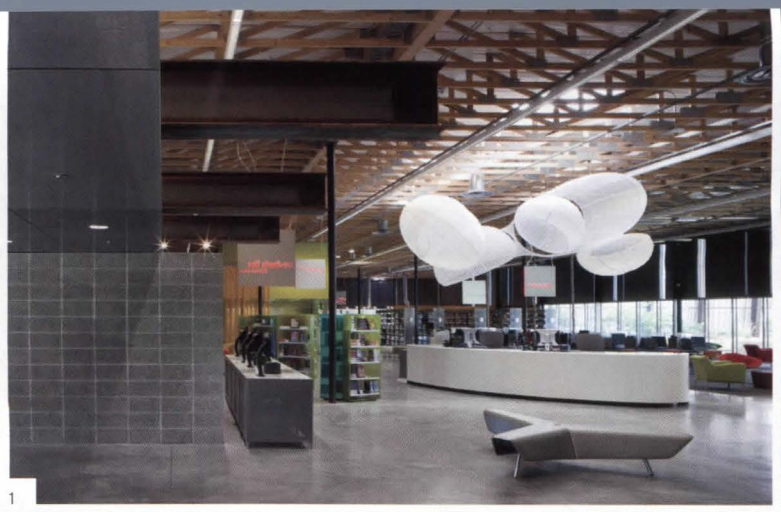
SECTION A-A

0 20 FT.
6 M.



A Library
B Fast food restaurant
C Car wash





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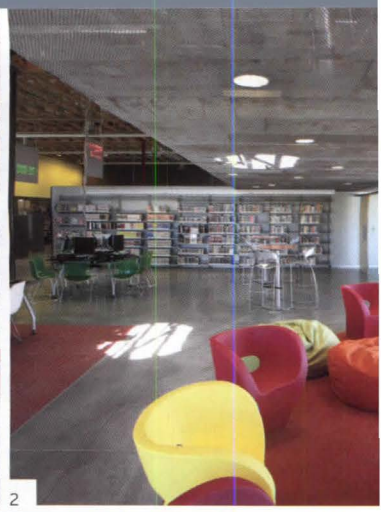

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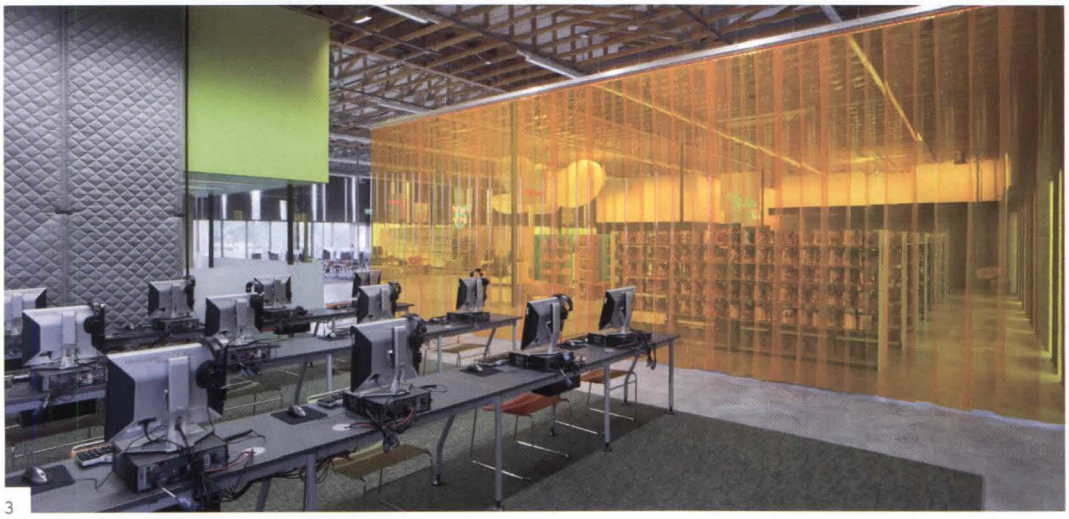

3

4

1. **Steel beams supporting the entry canopy project into the main library space.**

2. **Bruder dropped the ceiling height and added colorful floor tiles in certain places to help define these areas without using partitions.**

3. **A curtain made of the same plastic found in refrigerated warehouses separates the computer training lab from the rest of the library.**

4. **Waxed-steel panels give the restroom area its own identity.**

OPPOSITE: **A torqued and tilted tower with a skylight and two small windows serves as an engaging place for story reading. When the suspended lights were being installed, the architects decided to hang them at different heights to further the room's off-kilter effect.**

serving as another way of identifying spaces without resorting to partitions. Maintaining views through the building not only makes it easy for visitors to navigate the interiors, but allows the city to staff the library with just one person at a centrally located service desk and another roaming about. Exposed gang-nail timber trusses running from one end of the building to the other also reinforce the sense of one big communal space. And as Bruder notes, they act as "a poor man's wood ceiling."

The cinder-block walls and sealed-concrete floors establish a low-key envelope within which Bruder added a few splashes of electric color—in particular, lime green paint on the gypsum-board walls of a study block, the translucent-orange-plastic curtain of the computer lab, and candy-colored furniture scattered about.

While the mostly solid north facade blocks views of and sounds from the parking lot, the south elevation opens onto a garden landscaped by Christine Ten Eyck and separated from the adjacent property by a low, winding gabion wall. Here, Bruder placed a torqued and tilted, steel-framed story tower that can be entered directly from the library but has its own off-kilter identity. A skylight at the top and two windows cut into the stucco walls at different heights and angles direct shafts of daylight into the small space and are best appreciated while sitting on the floor.

Context means different things to different architects. In an anything-goes kind of place like suburban Phoenix, context is particularly hard to pin down, let alone respond to in an intelligent way. So a modest-size project, such as Agave Library, that both fits in and stands out among strip shopping centers, saguaro cacti, and jagged-edged mountains makes a proud statement about the role of architecture in the modern Southwest. ■

Project: Agave Library, Phoenix, Arizona

Architects: Will Bruder + Partners – Will Bruder, AIA, lead design architect; Richard Jensen, AIA, project manager; Chris Balzano, Dominique Price, project architects; Marjorie Fichthorn Whitton, interior designer; Ben Nesbeitt, Rob Gaspard, Joaquin Roesch, design team

Engineers: Rudow + Berry (structural); Ideas for the Built Environment (mechanical); McKay Conant Hoover (acoustical)

Consultants: Ten Eyck (landscape); Roger Smith (lighting)

General contractor: Hardison/Downey Construction

SOURCES

Masonry: Integra Wall Systems

Glass: PPG (Solexia)

Carpet: Shaw Contract; Durkan Modular; Interface; C&A

Interior ambient lights: Zumtobel; Elliptipar; Delray; Bega

FUKSAS | MAINZ MARKTHÄUSER

market value

Massimiliano Fuksas's fearless design turns imitation goods into hot property.

BY JOSEPHINE MINUTILLO

PLENTY OF BAD BUILDINGS HIDE behind their facades. Like an amateur stage design where a paper-thin painted streetscape creates the illusion of a grand setting, a promising building exterior can often veil quite ordinary or unpleasant spaces. Sometimes, however, the opposite is true. For a new building on a historic market square in Mainz, Germany, a false front conceals a bold design. The illusionist in this case, Massimiliano Fuksas, is not necessarily the perpetrator of the deception.

The Roman architect has wrestled with the complexities of designing under the burden of history before, but the Mainz project presented him with an unusual challenge—how to merge a completely contemporary design with a historic facade (or series of facades). As it turned out, the existing facade, however charming, was a fraud. Destroyed along with 80 percent of Mainz's architecture during air raids in 1945, the buildings in question were hastily rebuilt in 1955 with a simple facade, only to be "retrofitted" with a facsimile of the original—itself an 1890s replacement of Gothic architecture—beginning in 1979. For better or worse, thorny questions about reconstruction are being addressed in cities across Germany with different results (see article on Berlin's Neues Museum on page 58).

PHOTOGRAPHY: © MORENO MAGGI

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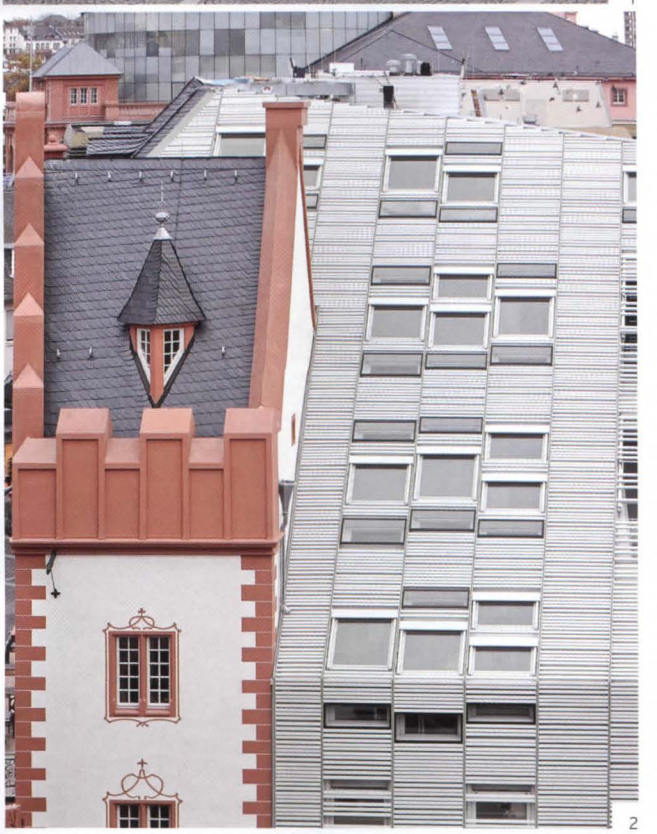

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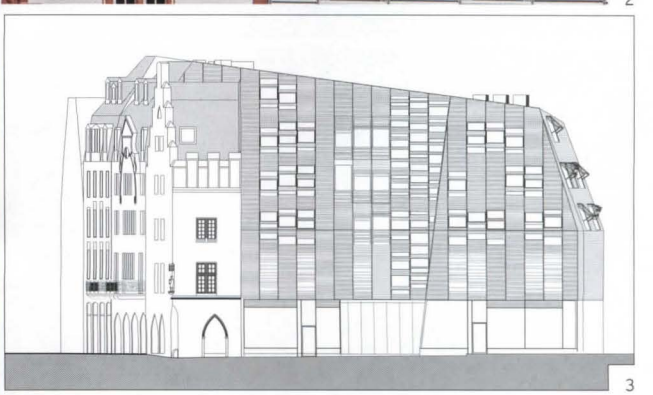
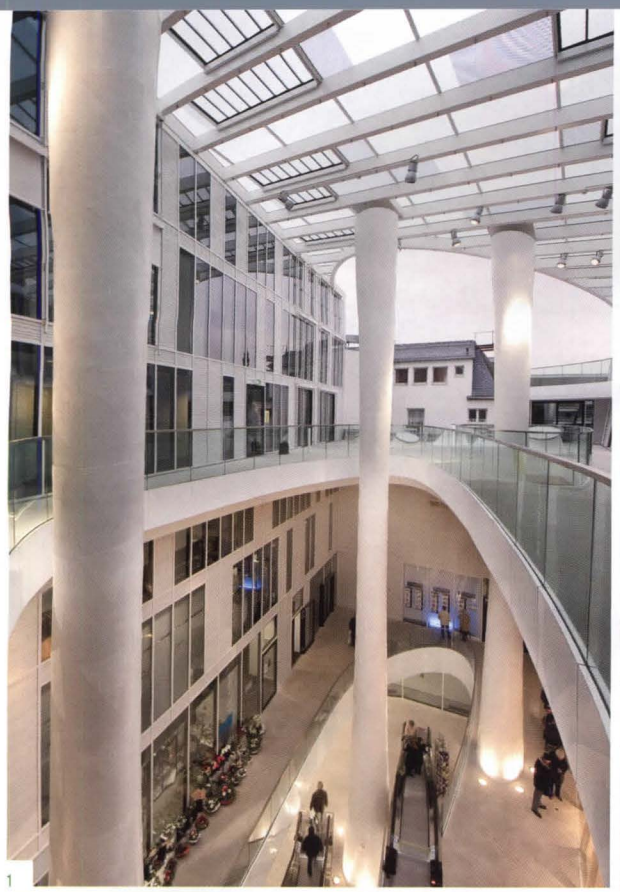


3

LEFT: **The Markthäuser sits across from the 1,000-year-old Mainz Cathedral on a prominent square in the town's historic center. Most of the square's remaining buildings retain the simple facades of their postwar construction.**

1. **Fuksas's bold design is not visible from the square, where facsimiles of the site's historic facades, first erected in 1979, were once again completely reconstructed.**

2.,3. **Fuksas was inspired by the steep roof lines of traditional buildings, like those he reconstructed. Merging old and new geometries, the building's variously sloped surfaces result in a scale that is consistent with the existing urban fabric.**



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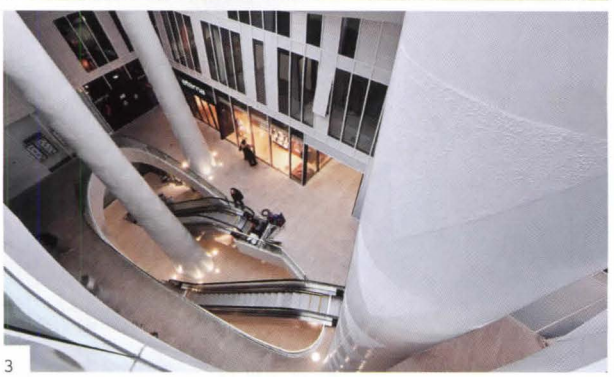


3

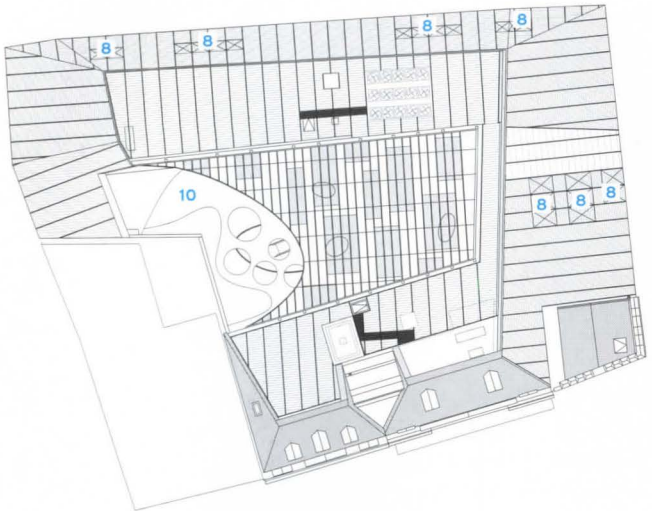
1. **An atrium occupies the building's core but feels more like exterior space due to the large openings at the roof and ground-floor entrances. Fuksas inserted three soaring columns as a sculptural element to draw shoppers' attention upward.**

2. **The self-supporting, glass-fiber-reinforced-plastic pillars pass through two large openings in the patio slab above the atrium.**

3. **Atrium walls are clad with the same white ceramic bars that cover the exterior.**

RIGHT: **Escalators access the basement level, where additional shops are located.**

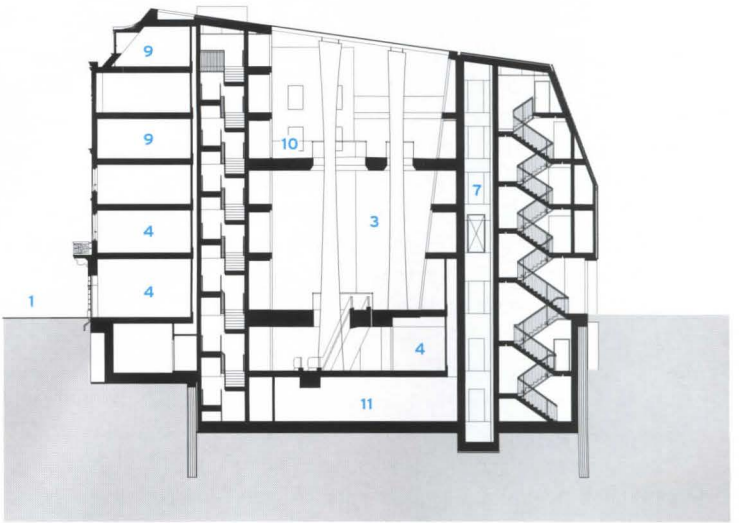
DRAWINGS



ROOF

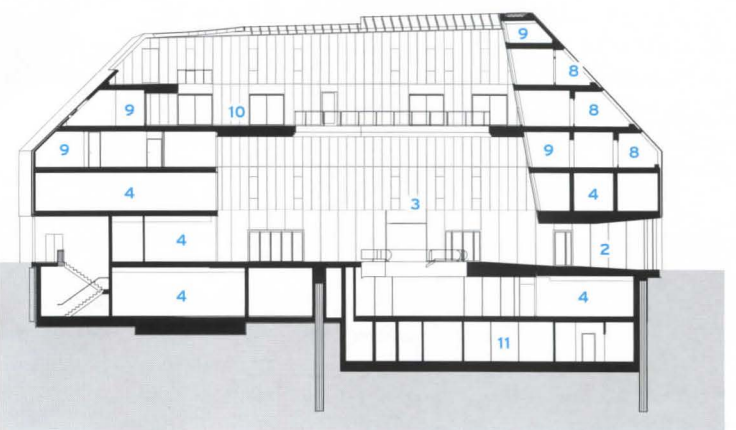
4TH FLOOR

FIRST FLOOR



SECTION A-A

0 10 FT.
3 M.



SECTION B-B

0 10 FT.
3 M.

1 Main square
2 Entrance
3 Atrium
4 Store
5 Restaurant
6 Bathroom
7 Elevator
8 Terrace
9 Apartment
10 Patio
11 Mechanical

Following a 2003 competition win, Fuksas was charged with designing a mixed-use development behind this new "old" facade. The buildings that had stood there—housing a rundown cinema and apartments—were to be demolished to make room for the new shopping center and housing complex.

But salvaging the facade while razing the rest of the building proved impossible, and further complicated a preservation case that was already on shaky ground. It was just as conceivable then to design an entirely new building, facade and all. The town opted instead for what could be considered an extreme measure. It would rebuild the rebuilt, though never landmarked, facade.

On this go-around, preservationists sought to create an even more authentic facsimile of the original facade. Stone window mullions were added on the upper floors, a doorway arch on the first floor, and a fresco bearing the family crest of the first market owner on the stepped gable portion of the facade. While those efforts were under way, Fuksas's studio ensured that interior floors matched up more precisely with the facade than in the 1979 version, but the architects focused on the rest of the building facing the narrow, winding streets behind the square. (Mainz is one of the few rebuilt German cities to maintain its medieval grid.)

"I wanted to keep the skyline of the city with the roof, but I didn't want to do a vernacular roof—not at all," says Fuksas. Though the new, singular building is bigger overall than the series of smaller buildings that were torn down, Fuksas retained a similar scale. "Without the right proportions, it would feel fake."

The sloping, folding roof wraps the building like clothing over a body. Fuksas employed a similar strategy with other recent projects, including the Milan Trade Fair [RECORD, August 2005, page 92] and the Zenith Concert Hall near Strasbourg [RECORD, August 2008, page 98], but maintains that his is not an exploration of surface or skin, but rather of materials—glass in Milan, textile in Strasbourg, and now ceramic, or terra-cotta, in Mainz. "I've always been inspired by *Arte Povera* and using materials in different and interesting ways," says the architect.

Thousands of 2-inch-wide, painted white ceramic bars clad the upper portion of Fuksas's facades. (The ground level features glass storefronts.) The bars are rhythmically arranged on an aluminum framework, with large gaps that reveal the substructure beneath, containing openable windows and insulated metal panels. Boxy windows are also randomly inserted between bars. The varying degrees of opacity and transparency, coupled with the cadenced spacing of the bars, create a striking overall effect. "It was crucial that we used ceramic," says project manager Jan Horst. "The imperfections in the enamel make each bar unique and create delicate light reflections." Several sections of the ceramic-clad framework mechanically fold open to reveal terraces embedded within the sloping roof.

Fuksas carried the ceramic cladding over to the walls of the main interior space, a multilevel atrium, at the building's core. Entered from the market square or one of two side streets, the atrium is exposed to the elements, with natural light, wind, and sometimes rain sneaking through from the partially open roof. Within the atrium, three soaring columns emphasize the entirety of the space, which spans from the basement to the glass roof and beyond.

Retail spaces occupy the first two levels and the basement, which is accessed by escalators at the center of the atrium. Sandwiched between those shops and the 19 apartments of the upper floors are several offices. Two large openings in the slab of the fourth-level patio allow residents views to the shopping center below. It is both a private building with a very public space, and a public building with very private space.

While Fuksas's studio challenged itself with the complicated roof geometries and a slanting atrium wall, the awkward apartment interiors resulting from the meeting of the pitched roofs and small windows of the "old" facade with the new was beyond its control.

As bold as Fuksas's design is, it also embodies a certain amount of restraint compared with some of the architect's other projects—including his cloudlike congress center in Rome's modern EUR district, currently under construction. "I'm not afraid of context," Fuksas asserts. "But I don't think you can build in the center of a city without paying attention to what is already there. I tried to find an expression of a building that is contemporary but is looking in some way at the past." Perhaps, instead of re-creating what was, this approach will suffice to heal the scars of history for future architectural projects in Germany. ■

Project: Mainz Markthäuser 11-13, Mainz, Germany

Architect: Studio Fuksas – Massimiliano Fuksas, principal; Jan Horst, project manager

Consultants: Knippers Helbig (facade); Baucon (structure); Mainz Mechanical Services (mechanical); HL-PP Consult (building services); IBB Lorenz (fire safety); Bechtold (electrical)

SOURCES

Exterior cladding: NBK Ceramic

Glass: Guardian

Windows: Schüco (aluminum); Velux (wood)

Interior ambient lighting: Zumtobel

Elevators: Zehner Aufzüge

1

2

3

LEFT: **A glass roof covers most of the atrium while keeping it partially exposed to the elements. Operable glass louvers were inserted within some of the glazing to aid the flow of smoke in case of fire.**

1. **Upper-level apartments open out to the patio above the atrium, offering residents views into the shopping center below.**

2.,3. **For apartment interiors on the top floor, the architects had to try to ease the tough transition from the pitched roofs and small windows of the "old" facade fronting the market square to a steeply sloping roof with random window patterns.**

The architects designed one building instead of two in order to express the connection between the couple's hobbies. Two walls and 60 feet keep the programs separate.

PHOTOGRAPHY: © BRUCE T. MARTIN, EXCEPT AS NOTED

joint venture

Kennedy & Violich brings together a husband and wife's diverse interests under one roof.

BY BETH BROOME

COMBINING A HORSE BARN AND welding studio in one small building is hardly a run-of-the-mill commission. But projects with unlikely programmatic marriages are not new to the parties involved in creating this wood-framed workshop-cum-stable in Massachusetts.

Ten years ago, Boston-based Kennedy & Violich Architecture designed a house addition for a couple with grown children on their wooded property northwest of the city [Record Houses, April 2000, page 94]. Reflecting both the husband's and wife's separate and shared interests, the architects pulled off the feat of fluidly inserting a 48-foot-long swimming pool in the middle of the living room and private art gallery. Once settled into their new home, the clients again approached the architects, this time with a request to replace a structure on their property that housed both the wife's horses and the husband's metal shop. The outbuilding was ailing and, over time, had become too cramped for both uses, which raised questions about comfort and safety.

The husband, who sculpts as a hobby, requested a new, larger studio and workshop where he could conceive and build his artworks. He

needed a protected outdoor work area with a gantry where he could off-load materials regardless of weather conditions. After years of keeping horses in makeshift accommodations, the wife desired an equestrian typology, something that "really felt like a barn," she says. Additionally, the clients asked for flexibility: that the building be easily converted into a house should needs change in the future.

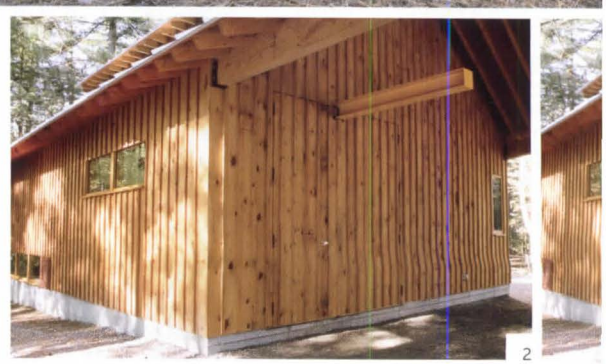
"We treated this project as a shed," says firm principal Frano Violich, FAIA. "We kept the materials as raw and simple as possible. It is a working space. We did not want to take it to a revered level." In this vein, the architects designed the building as one long, gabled volume, cranked at its center. In juxtaposition to the neighboring house, which has an origamilike roof plane that folds up in places to admit indirect light, the barn's simple gable has more to do with capturing additional space. A clerestory runs along the roof's east side and continues on the canopy over the loading court, adding dimension to the gable and admitting light into both the interior and exterior work areas.

The building skin consists of a conventional pine board-and-batten cladding system, but the architects played with the treatment a bit. They removed the battens on the unheated horse barn, allowing for daylighting and ventilation and causing it to glow at night. "It's beautiful," says one of the clients. "I can see it from my home, and it twinkles." The architects also applied a natural pigment on the north side of the batten, resulting in a subtle red flash when viewed from an angle. Concealed doors incorporated into the facades render the elevations clean planes, despite the number of large apertures dictated by the programs.

Though the clients wanted to save the old structure's concrete basement walls, they were damaged during excavation, so the team poured a completely new basement. From the outside, the building appears to be a simple, one-level barn. Inside, it is a dynamic three-story space, with a wood shop and loading area on the main floor; a small, loftlike studio above; and a large metal shop below. Despite the fact that the building is timber-framed (with the exception of two steel columns to support the gantry), no special fireproofing was required—all welding is done in the concrete well below grade.

The rippling metal ribbon that clads the eastern interior wall and continues up to the roof beams is the result of the husband's desire to collaborate with the construction team, and represents the intersection of building and sculpture. The fanciful topography he designed serves as a calling card for this temple to metalwork. Made of standard metal flashing, the piece also captures the architects' spirit. "We like to use materials for purposes other than their original intents," says Violich. The installation's *function transcends* visual interest: It reflects light, and the voids between the slats provide sound absorption.

The barn and workshop meet at the crank, where



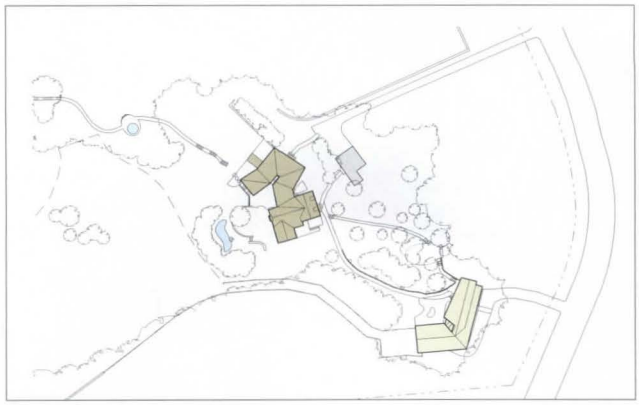
1. **A generously sized loading court enables the owner to work outside and hoist materials with a 2-ton gantry crane even in inclement weather.**

2.,3. **True to the vernacular, the barn is clad with a simple pine board-and-batten system. The system continues on doors, making the apertures almost disappear on the facades.**

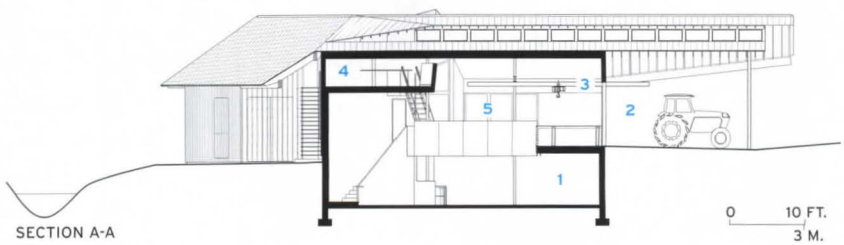
1

3

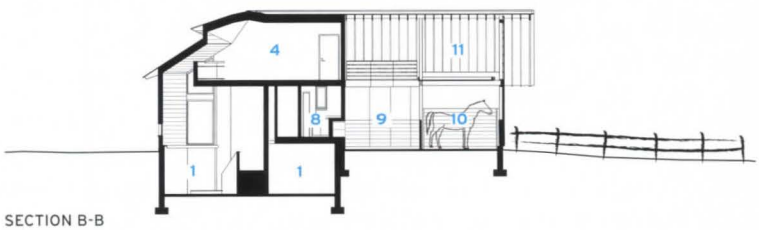
PHOTOGRAPHY: COURTESY KENNEDY & VIOLICH (2,3)



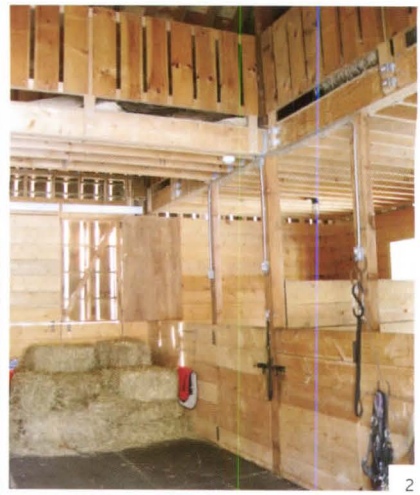
1 Metal shop
2 Loading court
3 Gantry
4 Drawing loft
5 Wood shop
6 Storage
7 Bathroom
8 Tack room
9 Stable
10 Horse stall
11 Hayloft
12 Open to metal shop below



SECTION A-A



SECTION B-B



1. **The sculptor collaborated with the building team on the wall installation, made of simple metal flashing. His grandfather's anvil below adds a nice counterpoint.**

2. **The two stalls have a secure place to cross-tie the horses inside for veterinary visits and grooming. The hayloft is accessed by a bridge from the second floor.**

3. **A woodworking area occupies the first level of the workshop and connects to the small drawing loft above by way of an off-the-shelf aluminum ship ladder. T5 fluorescents march across the sloping ceiling and atop the rafters, beyond which the clerestory can be seen.**

OPPOSITE: **The concrete well of the basement-level metal shop provides a safe place for welding. The interior incorporates many simple materials, such as the peg board on the walls.**

there is a tack room, as well as a bathroom squeezed into an acutely angled pocket space. This interstitial area also leads to a stair down to the building's back, and to the hay loft, which is reached by crossing a narrow bridge above the two horse stalls below. The wife counseled Kennedy & Violich on horse-barn requirements: stall dimension, access points for hay delivery and manure removal, accommodations for cross-tying horses for grooming and veterinary treatment, the relationship of the building to the paddock, and connections to the field beyond.

With this little barn in the woods, Kennedy & Violich has found a common language for meeting the needs of and physically expressing the two clients' divergent interests. In so doing, the team, rather than emphasizing the tension between the programs, has revealed less evident connections and has demonstrated how a requirement for one can feed a solution for the other. And isn't it these very same principles that lie at the core of any good relationship? ■

Project: Sculpture Studio and Barn, Massachusetts

Architects: Kennedy & Violich Architecture – J. Frano Violich, FAIA, principal in charge; Sheila Kennedy, AIA, consulting principal on design; Veit Kugel, project architect; Senan Choe, architectural intern

Engineers: Ibrahim & Ibrahim (m/e/p); Richmond So (structural); Stamski and McNary (civil)

General contractor: Kistler & Knapp Builders

SOURCES

Roofing: Galvalume

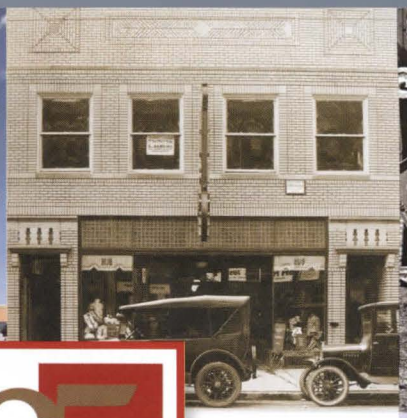
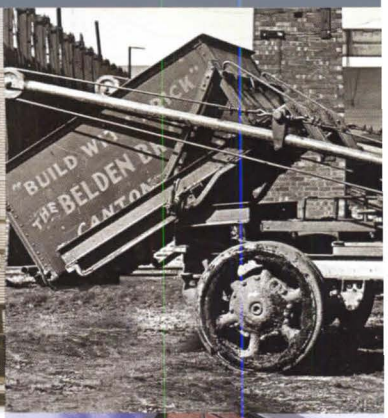
Skylights: Wasco

Hardware: Schlage; Hafele

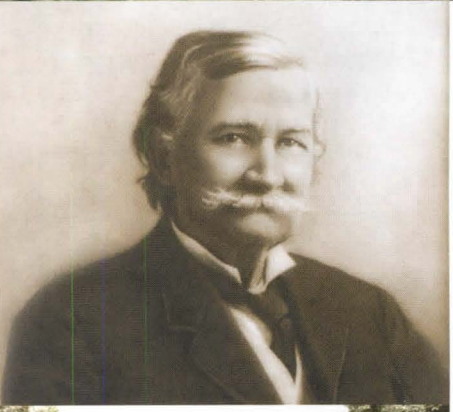
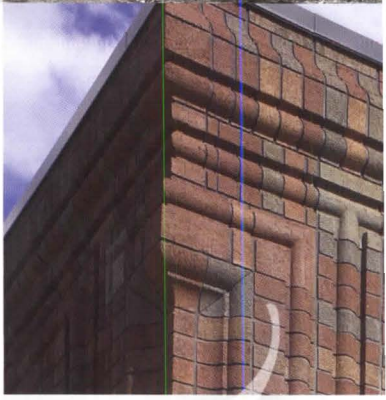
Lighting: Lithonia (T5 fluorescents)

Plumbing fixtures: Kohler



125 YEARS
1885-2010

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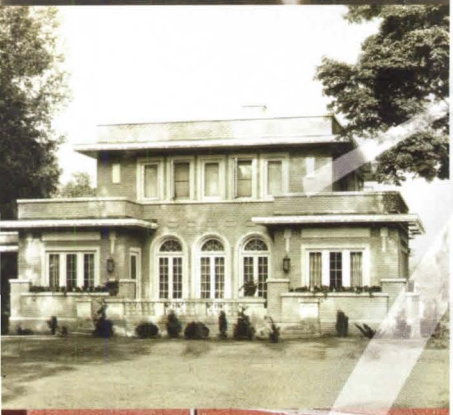

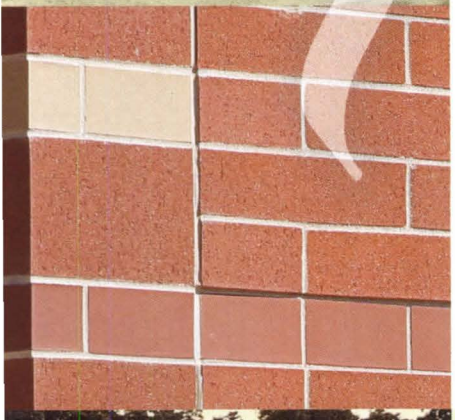

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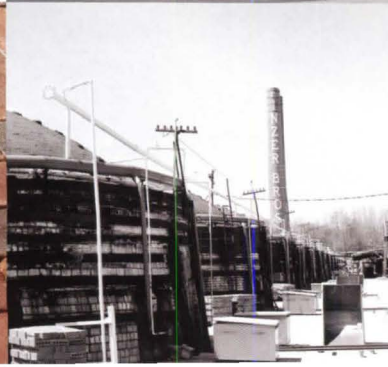
CIRCLE 31



高雄「海洋文化及流行音樂中心」國際競圖

Kaohsiung Maritime Cultural & Popular Music Center International Competition

The Invitation

To create Kaohsiung as a maritime capital, Kaohsiung City Government sincerely invites architects from all over the world to participate in the international competition of Maritime Cultural & Popular Music Center. The objective of the project is to lead Kaohsiung City becoming the gate to maritime cultural nation, Taiwan!

The site is located at No.11~15 wharf of Port of Kaohsiung with approximately 11.89 hectares measure. The periphery of the site faces the Fishermen's Wharf to the west, Xinguang Wharf to the south and is connected to the riverside facilities of Love River to the north. The site encompassing the adjoining belts of Love River and waters of Port of Kaohsiung will fully demonstrate its international characteristics. The center will comprise of a large exhibit & performance area, some small exhibit & performance areas, an outdoor exhibit & performance area, a pop music exhibit area, a maritime cultural exhibit center, a ferry terminal & passenger service center, a pop music industry center (incubation center), a music art & maritime technology commercial area, scenic landmark, and administration area.

Facility planning shall follow the essence of pop music and lay stress on commercial and entertainment functions. Aside from having the functions of pop music exhibition and performance, it should also possess the functions of close linkage with the industrial chain and talent cultivation for the pop music industry for the purpose of creating and shaping the blue ocean of aesthetics economy and pop industry of southern Taiwan.

With the international competition, we hope to highlight the development of land and port of Kaohsiung and integrate the local features of southern Taiwan in order to create a landmark masterpiece for the city, and introduce a new diversified lifestyle of maritime culture and pop music for Kaohsiung citizens. We cordially invite your participation!

· Total Construction Budget

NT$4,395,000,000. (Approximately US$137,000,000)

· Service Fee

The service fee for this project is a fixed fee in the total amount of NT$416,000,000. (Approximately US$13,000,000)

· Qualifications for Participation: (for stage one)

1. Any licensed architect of the R.O.C. (Taiwan) is qualified to tender.
2. Any licensed architect (or Consultant / Corporation) of foreign country is qualified to tender.
3. Joint tender is available for licensed architects of the R.O.C. (Taiwan) and licensed architects (or Consultants / Corporations) of foreign countries.

For more information, please visit our website or check our tender notice.

· Timetable

Stage One Material Submission Deadline	2010/06/03
Stage One Jury Session	2010/06/09 ~ 2010/06/10
Stage Two Material Submission Deadline	2010/09/09
Stage Two Jury Session	2010/09/29 ~ 2010/09/30

· For further information, please visit

www.KPop.com.tw

(The official launch date shall be decided later on.)

· Host Organization

Construction Office, Public Works Bureau,
Kaohsiung City Government, Taiwan, R.O.C.

· Coordinator

Mr. Lee
Construction Office, Public Works *Bureau, Kaohsiung* City Government
TEL: 886-7-336-8333 Ext. 2313 FAX: 886-7-331-4261
Email: coea2@kcg.gov.tw
Or
Barry Cheng, Barry Cheng Architect
TEL: 886-4-2326-1799 FAX: 886-4-2326-5212
Email: barry-cheng@umail.hinet.net

CIRCLE 32

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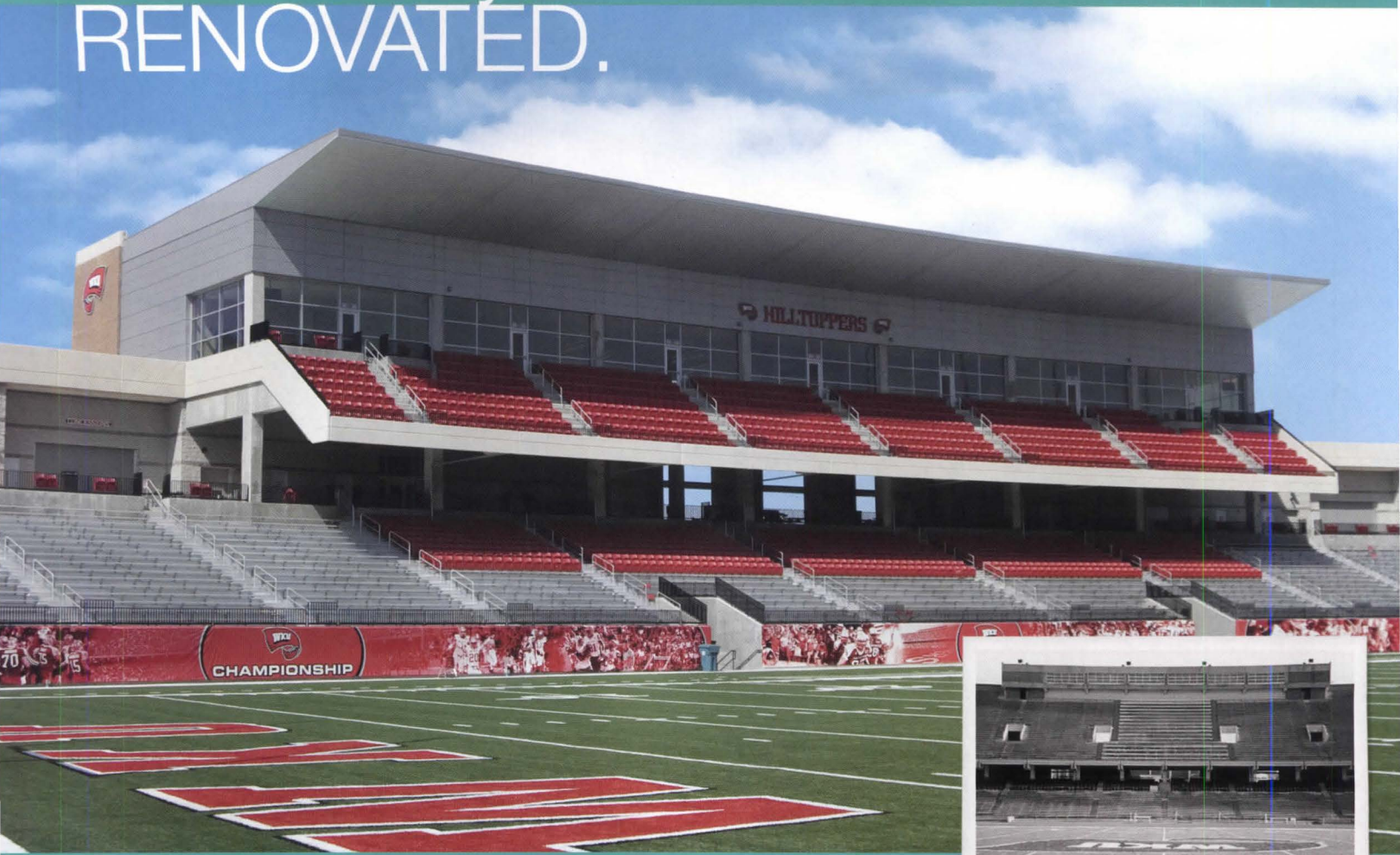

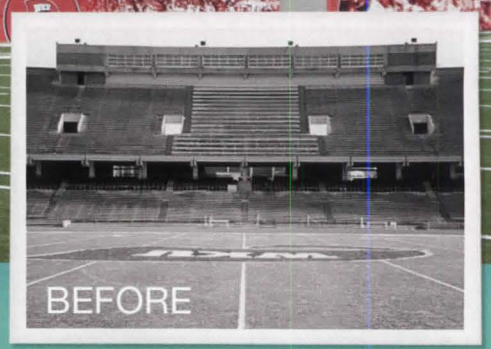

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CIRCLE 62

Liège-Guillemins TGV Railway Station

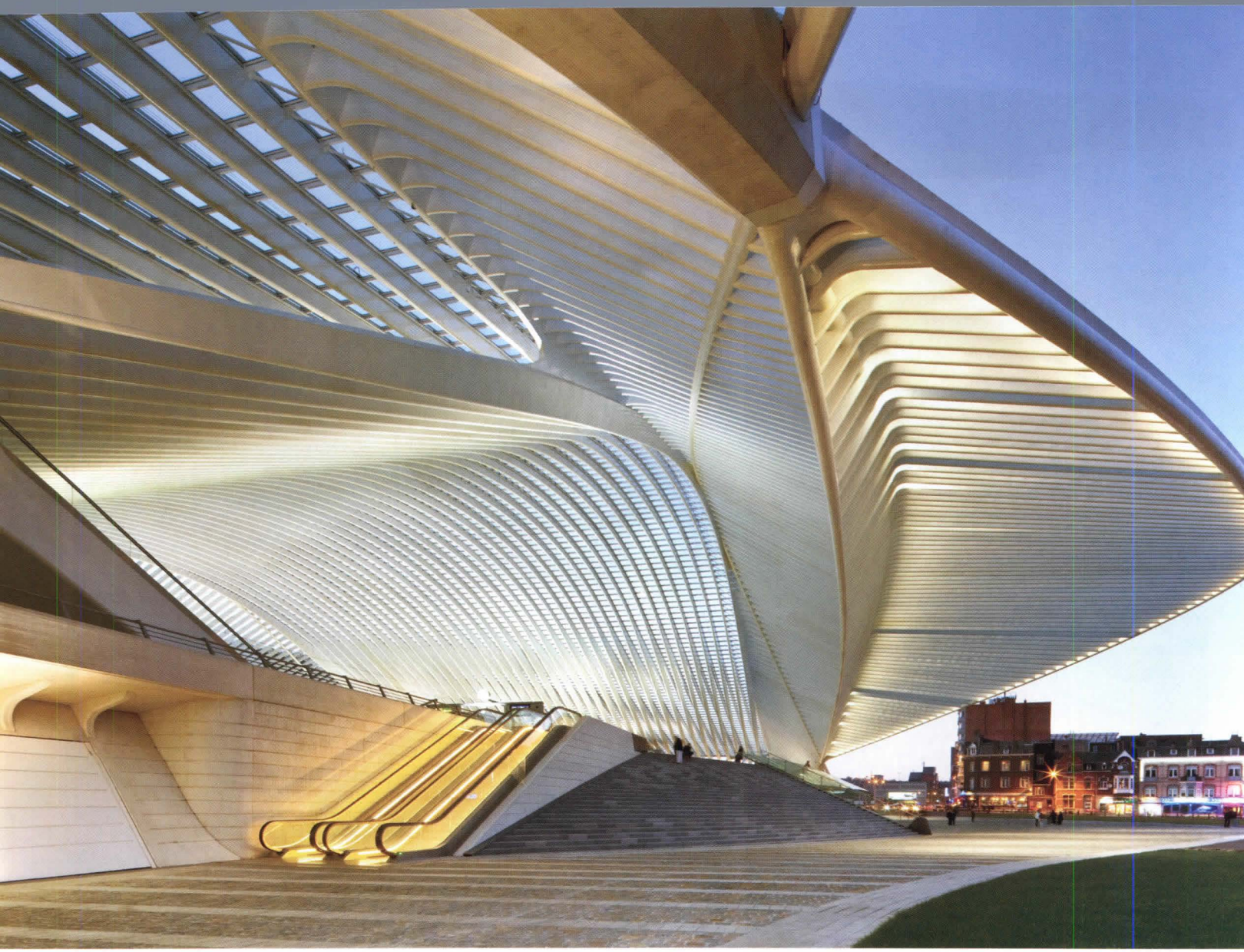
LIÈGE, BELGIUM

Santiago Calatrava's out-of-this-world high-speed-train station puts an ancient city back on the map.

By Josephine Minutillo

LIÈGE HAS A LONG AND STORIED HISTORY. For centuries, the bustling town, thought to be the birthplace of Charlemagne, was a cultural, religious, and commercial crossroads. Located in present-day Belgium's French-speaking Walloon region, Liège's recent past is less illustrious, since the metal and coal-mining industries that sustained it in modern times have slowly disappeared.

The city was ripe for a makeover. By the early 1990s, discussions were under way to build a high-speed-railway station to spark renewed interest in the medieval metropolis and capitalize on its strategic position between major cities in Germany, France, and the Netherlands. From a short list of likely as well as surprising architects – from Nicholas Grimshaw to Aldo Rossi – Santiago Calatrava was selected in 1997 to design the new landmark.



Program

The new station would replace an unremarkable 1950s building that occupied a much smaller lot on the same site and accommodate new tracks for high-speed train travel, which railway authorities throughout Europe have in recent years endeavored to make as seamless as possible between countries. The transition to the new station would also have to be seamless, as the old one continued to operate while construction proceeded.

Calatrava was up for the challenge, having already completed a number of bridges and transportation facilities, including railway stations in Zurich and Lyon. "Building in the horizontal is much more difficult than building vertically," says the Spanish architect and engineer. "People think a station is just a roof, but it is much more complicated than that."

Solution

Nevertheless, the roof of the Liège-Guillemins station is as spectacular as they come. Rising 115 feet above the five platforms and nine tracks, the steel-and-glass assembly ushers in a new era of rail travel, achieving an openness and transparency about which designers of Victorian-era stations could only dream.

The vaulted structure was built in sections, each literally pushed forward as it was completed using a construction technique developed to reduce disturbance to the active train traffic below.

In total, the 39 "ribs" span 518 feet to cover the full length of an arriving train. Narrow canopies extend south like fingers past the main roof to shelter extra passengers during peak travel times, when the number of cars on a train almost doubles.

Calatrava's facadeless structure offers clear views of the city spread out before the platforms, which are raised about 15 feet above the ground. Ten circular shops animate the concourse level at grade. The slab between the two levels is supported by concrete arches – cast on-site – separated by glass block.

For all its exuberance, Calatrava's design is highly rational and legible, an absolute necessity for orienting arriving passengers. Auxiliary spaces include offices, parking, and bike and luggage storage. A small bridge traverses the motorway behind the station;

ABOVE: **The sweeping contours of the Liège-Guillemins Station contrast sharply with the surrounding neighborhood's low brick buildings.**

1. **A vast plaza, as yet undeveloped, extends past the stark white structure. A small bridge, also part of Calatrava's design, is seen in the distance.**

2. **The structure's main vault rises 115 feet over the tracks.**

3. **The massive roof shelters five platforms.**

1

2

Architect: Santiago Calatrava – Santiago Calatrava, FAIA, principal

Client: SNCB Holding - Infrabel (owner); Euro Liège TGV (management)

Engineers: Santiago Calatrava; Bureau d'étude Greisch

Consultants: Aartill (lighting); ATS Scala (acoustics); Gemmo (m/e/p); Semaco (construction supervision)

Size:
527,000 square feet (including tracks)

Cost: $430 million (building and railway infrastructure)

Completion date:
September 2009

SOURCES

Steel structure: Emesa

Concrete structure: Galère-Duchêne-Wust-CFC

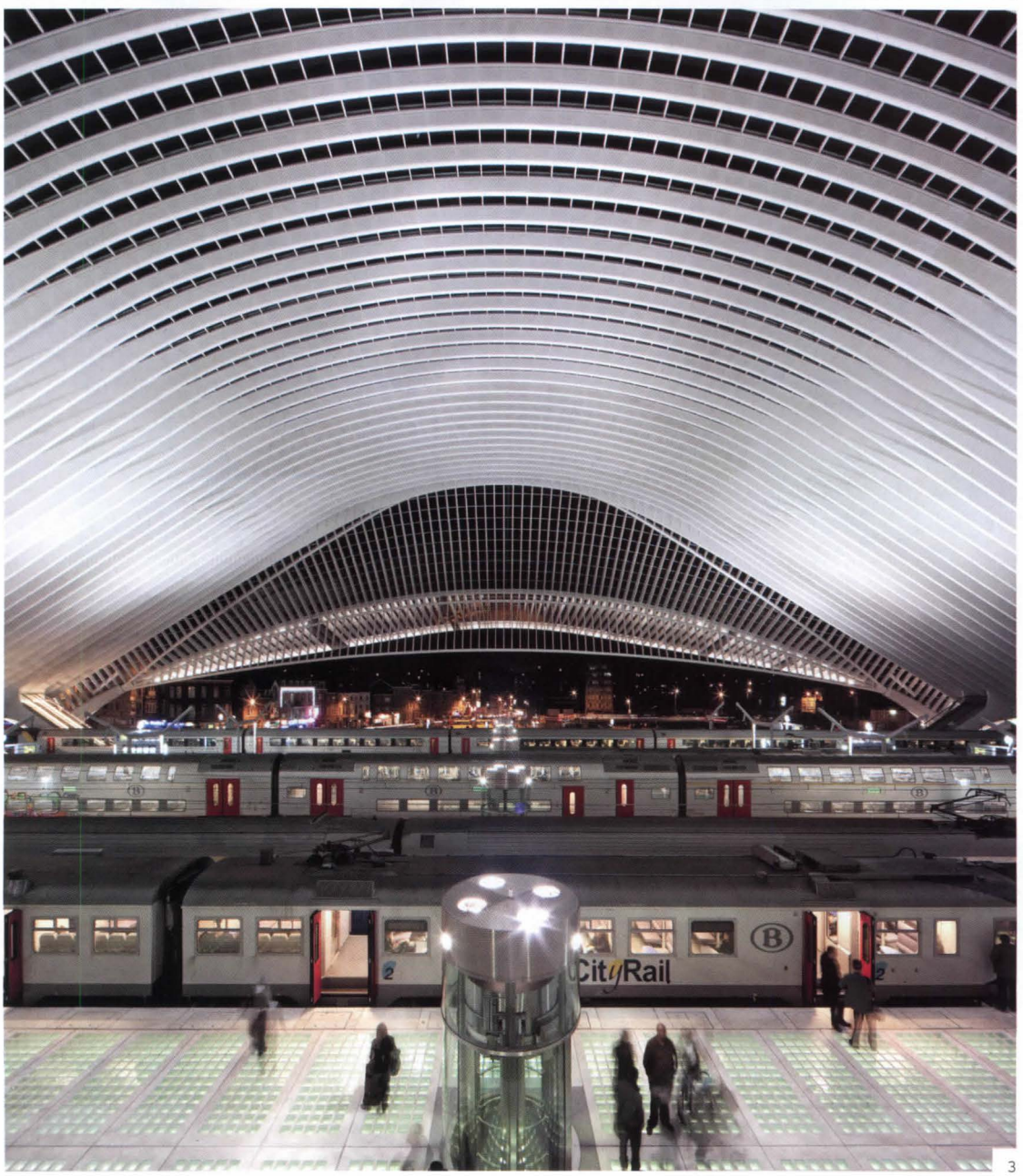
Glazing: Portal Glazing Systems (vault, platform shelters); Belgo Metal (awnings)

Architectural finishes: Cit Blaton

Elevators, escalators: Schindler

Glass block: Saint Gobain (platforms)

Stone: Carrières de Sprimont et de Chanxhe (concourse, travel center, shop floors, counters); Carrières de la Pierre bleue belge (platforms, footbridges)



3

PHOTOGRAPHY: © JAMES EWING (1,2); RALPH RICHTER (OPPOSITE PAGE, 3)

1

that area's higher elevation is accessed from a mezzanine level above the platforms.

Commentary

All of Calatrava's work celebrates movement, but none more fittingly than the Liège-Guillemins station. The soaring ribs of its massive roof and the repetitive arches of its auxiliary spaces' long, arcaded sections are as dizzying as the state-of-the-art trains that dart across its tracks. Nothing about the lofty structure, which appears to change shape at every angle, is static. To visitors arriving by train, the gleaming white edifice is a glowing beacon against a gray backdrop. Seen from the hilly parkland behind the station, its roof resembles the shell of a turtle – that slowest of slow creatures – transformed into an aerodynamic armature to keep pace with the locomotive traffic that roars past it.

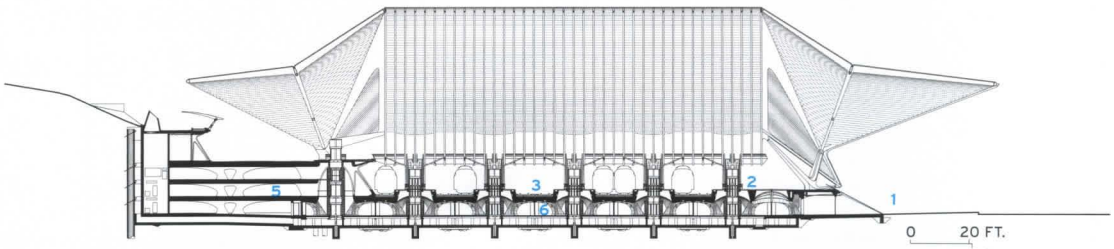
While the structure's scale and color may overwhelm the low, dark brick buildings immediately surrounding it – as if a space-age circus troupe pitched its tent in a picturesque old town – that disparity may be abated if Calatrava's master plan for a new boulevard extending east beyond the station to the Meuse River materializes. Unfortunately, for now the large, empty plaza that sits out front serves as a makeshift parking lot.

As security concerns make air travel increasingly tedious and cause more flight delays, investment in rail travel would seem a safe bet. Countries within the European Union have committed heavily to creating a high-speed-rail network that swiftly transports passengers between city centers. Americans can take a page from their book as our own government doles out stimulus funds. While ambitious ground-transportation projects like San Francisco's Transbay Transit Terminal seem to be moving forward, the exact fate of others, including New York's proposed Moynihan Station (to replace the deplored Penn Station) and Calatrava's own World Trade Center Transportation Hub in downtown Manhattan, remain up in the air. ■

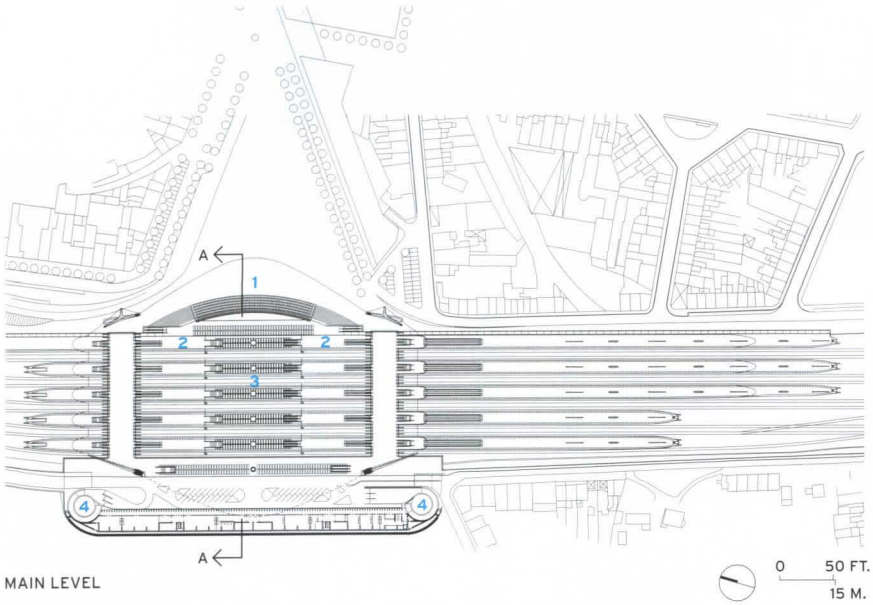
PHOTOGRAPHY: © JAMES EWING (1,2); RALPH RICHTER (3,4)

MAIN ELEVATION

1 Main entrance
2 Platform
3 Tracks
4 Parking ramp
5 Parking
6 Retail



SECTION A-A



MAIN LEVEL

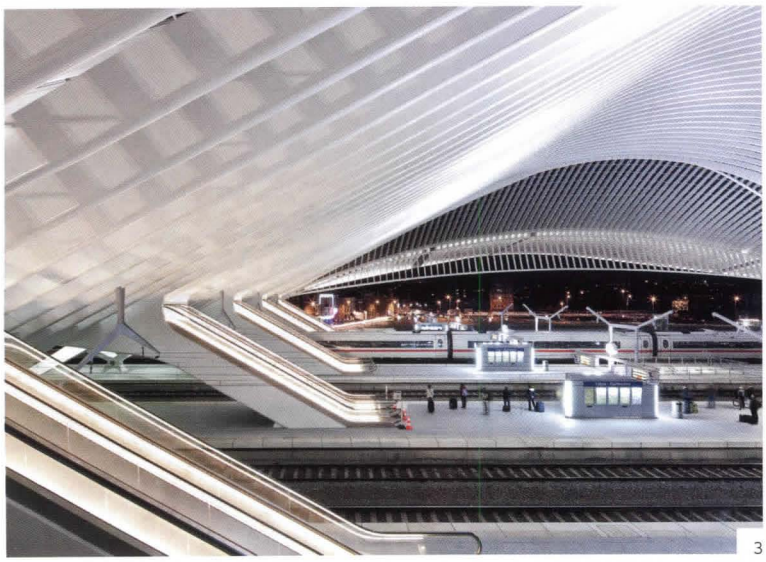
1. **The facadeless structure frames the city laid out before it.**

2. **Concrete arches were cast on-site.**

3. **Escalators on the platforms lead to a mezzanine that accesses the hilly parkland behind the station.**

4. **Below the platform level, at grade, are 10 podlike shops whose storefront design was strictly controlled.**

2



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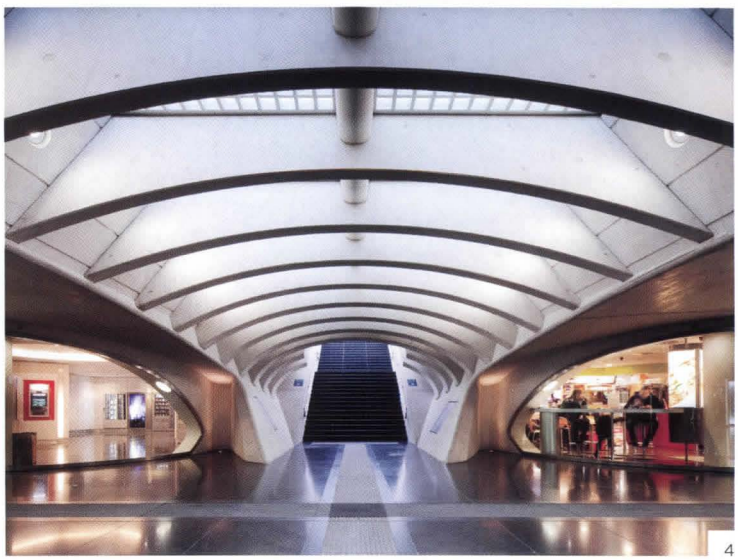

4

Tempe Transportation Center

TEMPE, ARIZONA

An urban landmark by Otak and Architekton plays a vital role in a sprawling city's transit revolution.

By Jenna M. McKnight

Architects: Otak – Gary Hartnett, AIA, principal; Dennis Haden, AIA, Ron Dean, design architects; Michael Nielson, project architect; Architekton – John Kane, FAIA, design principal; Douglas Brown, AIA, technical principal; Joseph Salvatore, AIA, principal in charge; Nick Nevels, project architect

Architect of record: Otak

Client: City of Tempe

Engineers: M. Baker Corp. (civil); BDA Engineers (structural); LSW (m/e/p)

Consultants: Knipp Associates (interior design); A Dye Design (landscape); Natural Logic (LEED); Akali (lighting)

General contractor: Adolfson & Peterson Construction

Size: 40,300 square feet

Cost: $18.1 million

Completion date: December 2008

SOURCES

Steel: W&W Architectural Metals

Curtain wall: Elward Construction, Arcadia

Motorized shade system: Progressive Commercial Interiors; Nysan Solar Controls

Metal mesh: Cascade Coil Drapery; Magnum Companies

Masonry: Roma Masonry; Master Block

Green roof system: Progressive Roofing; Sarnafil

Ceilings: *Armstrong;* Barrett-Homes

WITH ITS EXPANSIVE FOOTPRINT and vast web of highways, the Phoenix metropolitan area is nearly impossible to navigate without a car. That could eventually change. In December 2008, residents in the Valley of the Sun celebrated the inauguration of a 20-mile starter line for a new light-rail system. The festivities included the opening of the Tempe Transportation Center, the first facility of its kind in Arizona.

Designed by Otak and Architekton, the 40,300-square-foot building offers various services for rail and bus riders, cyclists, and pedestrians. Moreover, with its LEED Platinum certification pending, the mixed-use facility is an exemplar of sustainable design.

Program

Located only blocks away from Arizona State University's football stadium, the transportation center replaced a surface parking lot in downtown Tempe. (Tempe is one of roughly two dozen municipalities surrounding Phoenix proper.) Initially, the brief called for a large bus plaza and a 5,000-square-foot building with restrooms and a ticket counter. The program evolved, however, as the light-rail project gained momentum and the surrounding district saw a burst of construction activity.

Ultimately, the architects were charged with conceiving a bus plaza and a multistory building containing offices for the city's transit division, leasable commercial space, a community room, and an indoor bike garage with shower facilities. "This place was an opportunity to show people that we can have alternatives to the car," explains Bonnie Richardson, AIA, principal planner and architect for the City of Tempe's transportation department. After teaming up for an RFQ, Otak and Architekton won the commission in 2004 and worked in tandem on the design.

1

Solution

Figuring out how to accommodate a steady stream of buses – approximately 300 a day – in a relatively tight space was "the first piece of the puzzle," explains Ron Dean, an architect with Otak. The design team stretched a 52-foot-wide, curved driveway, lined by 13 bus shelters, across nearly the entire width of the 2.7-acre, triangular site. To the north is the light-rail stop, where a train arrives every 10 minutes during peak hours.

Edging the western portion of the site is a three-story, steel-framed box that reaches toward the street and houses most of the center's programmatic elements. Its design is sensible and straightforward. Tucked farther back, however, is a 2,400-square-foot wing that was envisioned as "an expressive,

2

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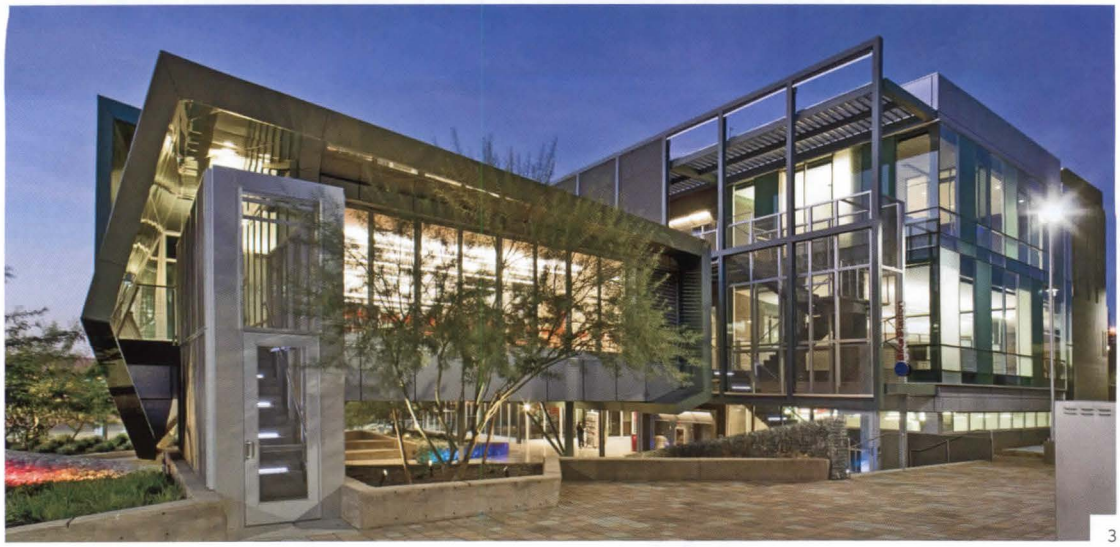
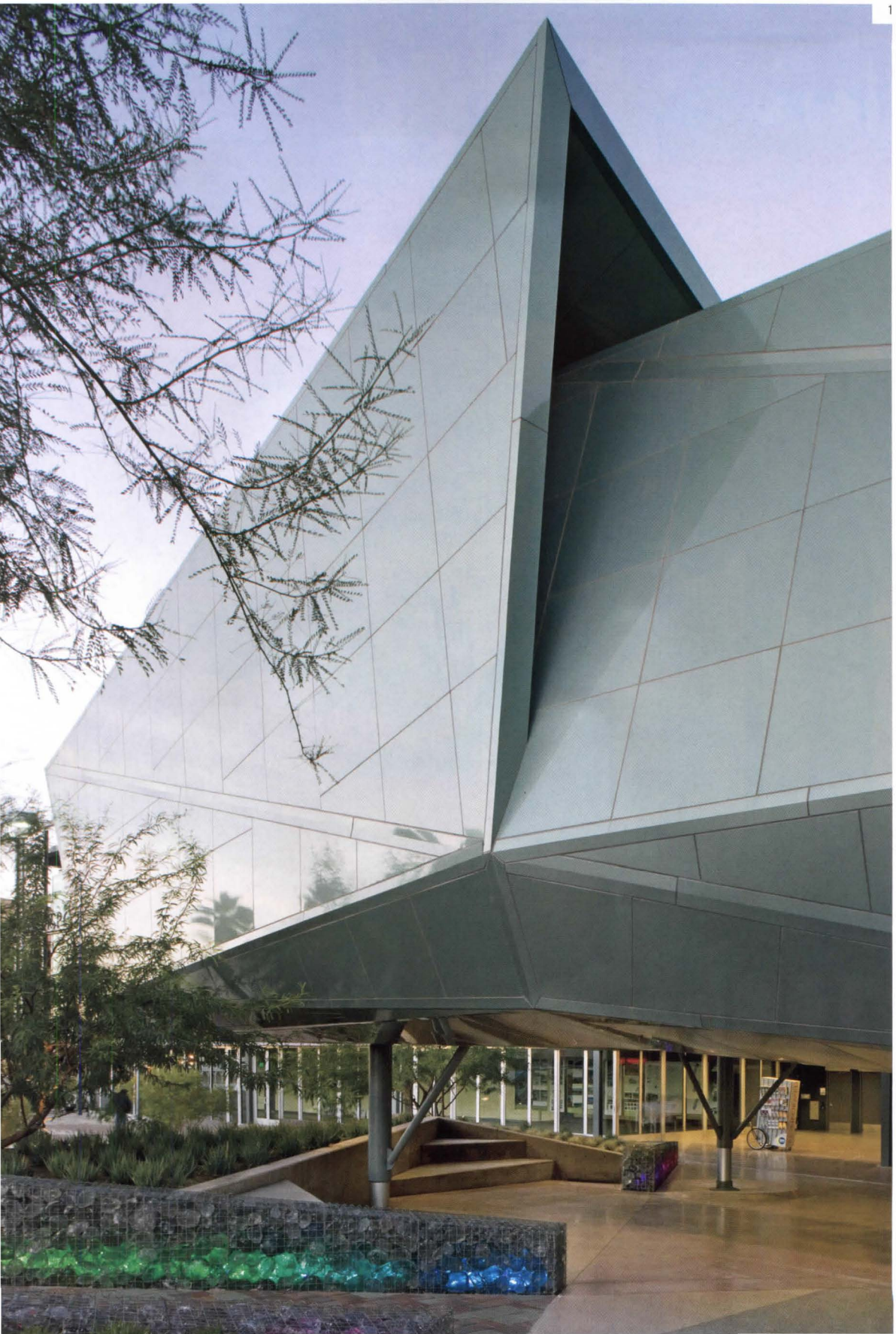


3

1. **A fabric canopy shades the light-rail stop.**

2. **A mostly glass box pushes south toward the street, while concrete masonry on the west side refers to a neighboring police station. Behind the center is Hayden Butte, a popular hiking spot.**

3. **On the north, a staircase leads to the community-room wing, envisioned as a sculptural counterpart to the main building.**

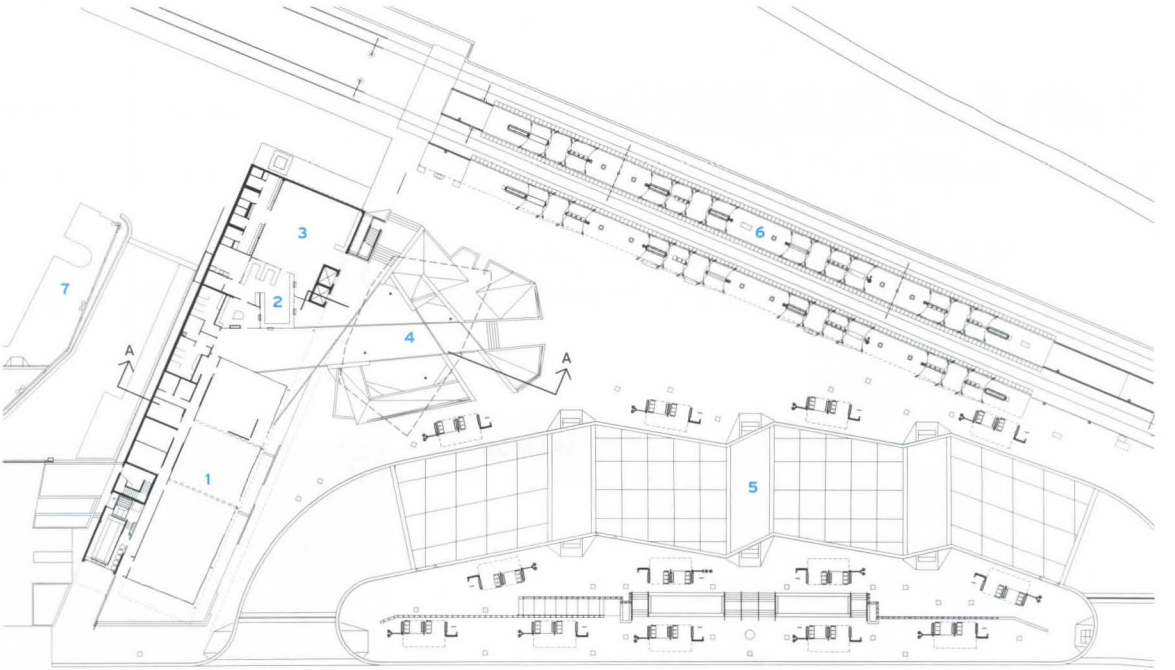


1. **The wing's faceted roof is made of pearlescent aluminum-composite panels supported by a steel frame.**

2. **Gabion walls filled with glass slag and LEDs enliven the ground-level plaza.**

3. **Colorful furnishings and angled dropped-ceiling panels animate the office areas. The east side of the building offers views of the bus terminal and, beyond it, Sun Devil Stadium.**

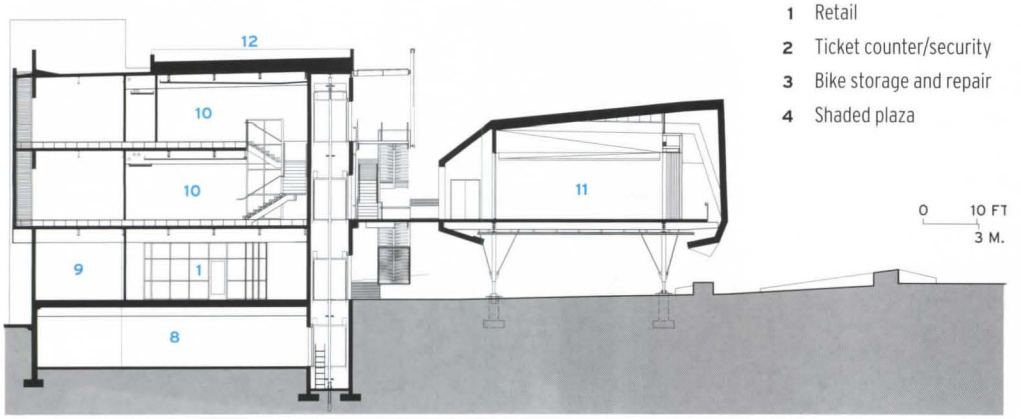
4. **In addition to solar panels, the roof features an 8,040-square-foot planted area with four native species.**



GROUND FLOOR

0 30 FT.
9 M.

1 Retail
2 Ticket counter/security
3 Bike storage and repair
4 Shaded plaza
5 Bus terminal
6 Light-rail station
7 Police station
8 Mechanical
9 Services
10 Offices
11 Community room
12 Green roof



0 10 FT
3 M.

SECTION A-A

4

sculptural counterpoint," describes John Kane, FAIA, Architekton design principal. Its faceted roof is made of pearlescent aluminum-composite panels that appear gold in the morning and sage green in the afternoon.

This elevated wing, which contains the community room, rests on pilotis, forming a ground-level plaza with seating, landscaped beds, and gabion walls filled with glass slag and multicolored LEDs. At night, the walls, designed by artist Lorna Jordan, glow brightly and enliven the center. During the day, the deeply shaded plaza provides refuge from the scorching summer heat.

The sun is always a vital concern in Phoenix. In the case of the transit building, the architects couldn't employ the optimal east–west orientation due to the bus plaza. And so, "every facade we considered, we were thinking about how to mitigate solar exposure," says Dean. They clad most of the rectilinear volume in low-E, insulated glass and used various shading strategies. On the east, for instance, 18 motorized screens, each approximately 10 by 17 feet, are programmed to deploy at dawn and retract at noon. On the west, where the building core is located, the architects opted for an opaque facade with slit windows. Here, a ribbed concrete-masonry skin not only refers to the adjacent building (a police station) but also "provides a thermal break," Kane explains.

The interior design feels modern and fresh. The finishes and furnishings were chosen for their ecofriendly attributes, from bamboo office doors to countertops made of recycled paper. Thanks to ample glazing and a fairly narrow floor plate, "You don't have to turn on the lights" during the day, Kane says, adding that the facility is projected to consume about 50 percent less energy than a comparable building. Other sustainable features include an underfloor air-distribution system, a graywater-recycling system, and a green roof.

Commentary

It's exciting to see a project like this get built in the valley. Unfortunately, the recession has pummeled Phoenix, and the transit center's retail shell sits vacant, as does its leasable office space. Still, one can easily see the potential.

Economics aside, Otak and Architekton have succeeded in creating a dynamic and inviting transportation hub that seems to operate smoothly. Phoenix has a long way to go before being recognized as a green city, but projects like this suggest it's on the right track. ■

Fairbanks International Airport

FAIRBANKS, ALASKA

Bettisworth North channels Alaska's frontier spirit with an elegantly rustic terminal building.

By Weld Royal

Architect: Bettisworth North – Charles Bettisworth, AIA, principal in charge; Larry Kollmeyer, AIA, project manager; Thane Magelky, Christoph Falk, Chuck Karl, design team

Associate architect: Landrum & Brown

Client: The State of Alaska Department of Transportation and Public Facilities

Engineers: Dowl HKM (civil); BBFM (structural); Design Alaska (m/e/p)

Consultants: Earthscape (landscape); NBBJ Group (lighting); Greenbusch Group (acoustical); URS Corporation (airport systems); Studio SC (signage/wayfinding); Margaret Mazurkiewicz (interior designer)

Size: 84,000 square feet (new); 59,000 square feet (renovation)

Cost: $71.8 million

Completion date: December 2009

SOURCES

Curtain wall: Overgaard Ltd.

Roofing: Firestone (elastomeric)

Glazing: Sanxin Facade Technology, Vanceva by Saflex (exterior)

Wood panels: Parklex

Automated entrances: Besam

Wood doors: VT Industries

Special surfacing: Corian

Baggage-handling systems: Logan Teleflex

IN THE 1950s, officials in Fairbanks, Alaska, erected a small terminal by a landing strip in a magnificent location – to its southeast rose the great Alaska Range capped by Mount McKinley, and to its northwest, the Tanana River plateau and a boreal forest of birch and spruce.

The airport started off serving bush pilots flying to remote communities. It was remodeled and expanded on separate occasions in the 1960s, '70s, and '80s into a sprawling, 143,000-square-foot facility that failed to keep pace with the needs of its travelers. Locals said it looked like a bunker. By 2003, the lines of summer travelers waiting to clear security at the airport were almost as legendary as the display of its collection of dead trophy animals. Approximately 800,000 travelers used the airport annually. It handled national and international airlines, hosted rental-car companies, and had a customs and border control area. Over the next two decades, forecasts predicted passenger traffic increasing to 920,000.

Airport officials realized they would have to make changes to handle that growth. There were new federal requirements for security screening and equipment, and the airport needed upgrades to meet seismic standards. (A major fault line runs through Fairbanks.)

Program

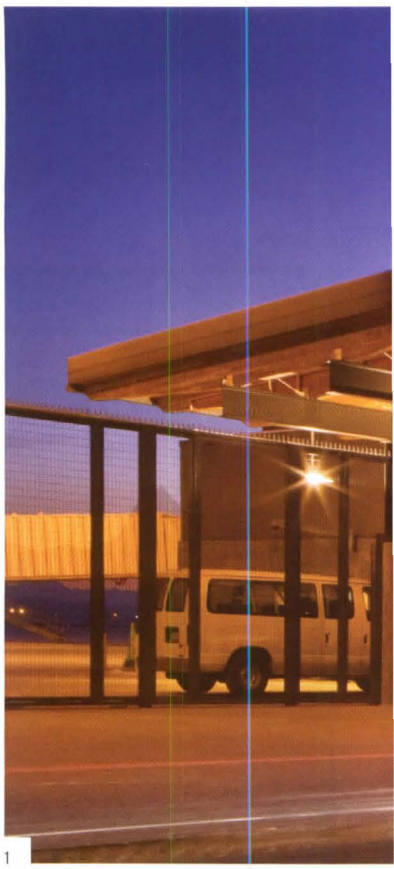
The State of Alaska Department of Transportation and Public Facilities commissioned Bettisworth North of Fairbanks to draw up a comprehensive terminal-area development plan.

The plan's $71 million construction budget would result in an 84,000-square-foot addition, a 59,000-square-foot renovation of the existing terminal, and demolition of the remaining structure. It would include an entry hall, an arrival-and-departure concourse and lounges, separate spaces for baggage screening and customs and border control, as well as a boarding area for passengers using small planes.

Charles Bettisworth, founder of Bettisworth North, grew up in Fairbanks, and calls it a "rustic frontier." Prospectors first discovered gold in its creeks more than a century ago, and abandoned mining equipment is rusting away in its hills. The town thrived during World War II and housed construction workers for the Alaska Highway, and much later for the Trans Alaska Pipeline. Today, it is home to durable, boxy, low-rise structures built to accommodate the region's short construction season and huge temperature swings – from minus 50 degrees Fahrenheit during winter to highs in the 90s on long summer days.

Solution

Bettisworth's architectural solution provides a refreshing contrast to the local built environment. The design of the addition and renovation employs common local construction materials – concrete, metal, wood, and stone – and interprets them in a contemporary but suitable form. "People come to Fairbanks for frontier," Bettisworth says, "not De Stijl."



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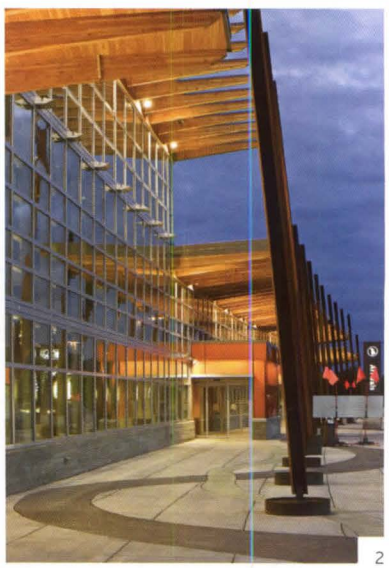

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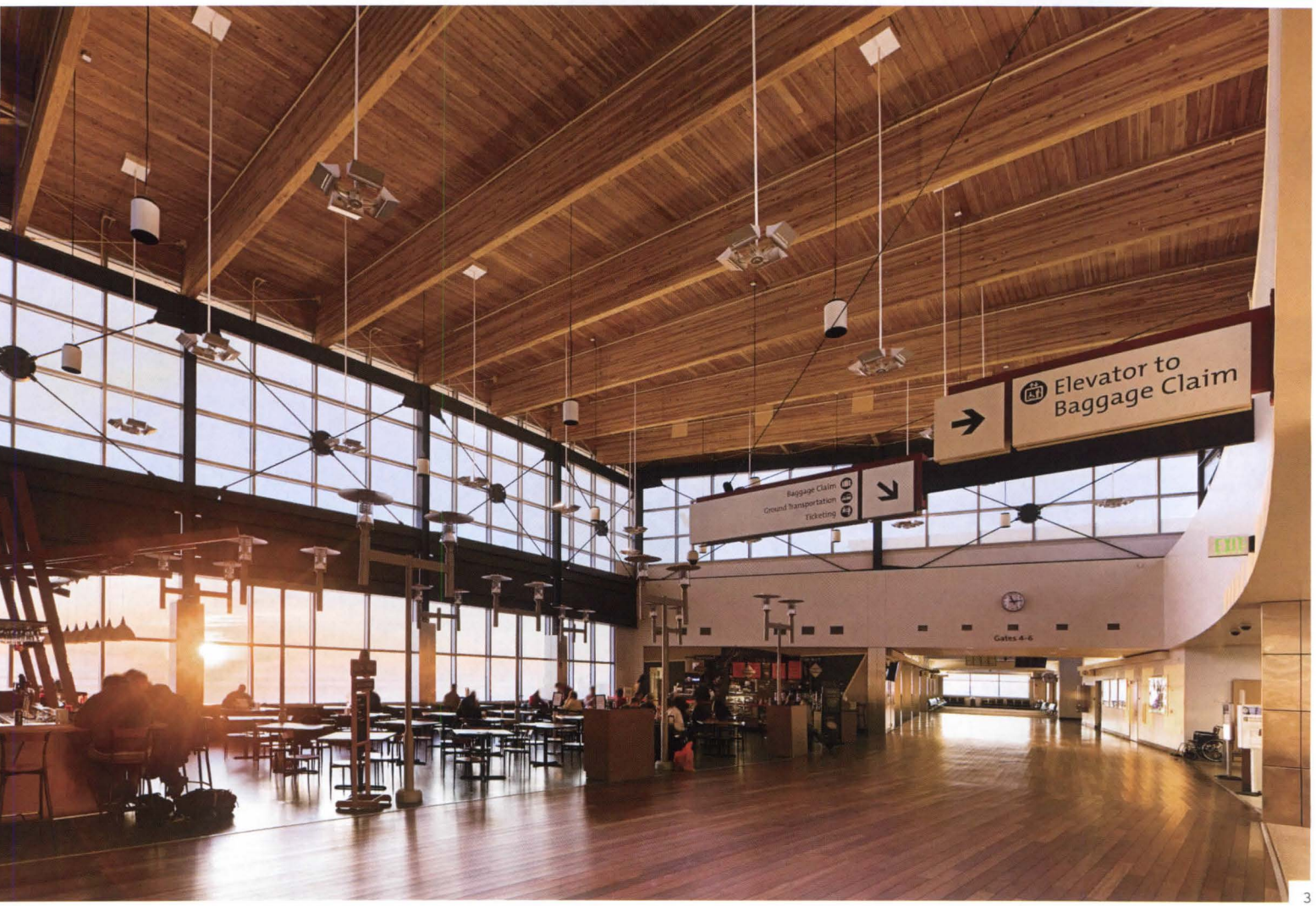
1. **An axial circulation path runs along the front of Fairbanks International Airport's new terminal building, which employs heavy timber construction.**

2. **The airport's face to those arriving by road is a glass-paneled curtain wall marked by four orange vestibules.**

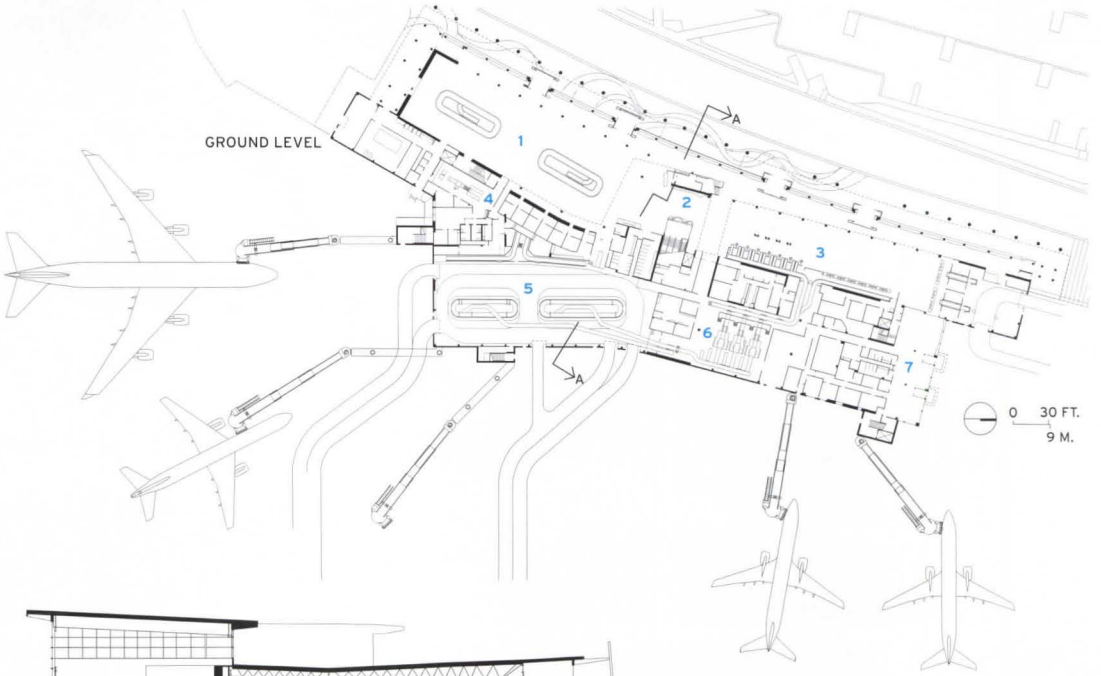
3. **Twilight casts a soft glow upon the woody interior during winter's short days.**


Elevator to
Baggage Claim
Baggage Claim
Ground Transportation
Ticketing
Gates 4-6
EXIT

3

DRAWINGS

1 Baggage claim
2 Greeter lobby
3 Ticketing
4 Customs and border control
5 Baggage handling
6 Baggage screening
7 Boarding lounge
8 Concessions
9 Concourse
10 Security queue
11 Circulation spine



SECTION A-A

LEFT: **The Alaska Range provides a spectacular backdrop for the building, seen here from the rear.**

The airport's face to those arriving by road is a glass-paneled curtain wall marked by four vestibules in orange glass. Their permanent lighting gives off a firelike glow against the darkness, which by December descends on Fairbanks for all but a few hours.

Mechanical relics of abandoned mines provide inspiration for the entry hall. A series of nonstructural steel columns set up a nice vertical rhythm against the long horizontal structure. Their rusty patina is repeated inside the entry lobby. Metal sheets sprayed with an acid solution take on the color of worn leather and clad prominent interior wall spaces.

Visitors move through the lobby on an axial circulation path that extends like a spine along the front of the building and passes ticketing areas, rental-car booths, and baggage claim. "In the original terminal, people had no space to walk, but whether or not to build the spine was one of the biggest design decisions," says Bettisworth.

The simple parti is bordered by exposed steel pillars wrapped in concrete planks. The planks were formed using a mold based on local spruce, giving the space a woody feeling. The path's ceiling is heavy timber construction and glulam beams. The use of wood is repeated in paneling and ceilings throughout the terminal – conveying warmth and connecting travelers to Alaska's great forests and a prevalent local construction material.

The transition of finishes and materials from the first-floor entry hall to the second-floor concourse is meant to convey to departing travelers the idea that they are leaving a pioneer town for a more refined destination, and just the opposite for those arriving. The materials on the concourse are the same as the entry hall, but more polished. Its floor is covered in rich cherry wood; its wall panels are stainless steel. The volume of the concession area, with 22-foot-high ceilings, is double that of the concourse's lounges. A glass-paneled expanse looks out to the Alaska Range. "When the sun shines, it's magnetic," says Bettisworth.

Commentary

Alaska is feeling the impact of global warming, including loss of sea ice, increased flooding, and softening permafrost. Most forms of energy are more expensive in the state than in other parts of the country. Despite this, the LEED-certified buildings in Alaska number fewer than a dozen. Bettisworth says that though the terminal is cooled using ground-source heat pumps during warm months, and much of the stainless steel for the project came from a local fabricator, when the project was first developed there wasn't interest in pursuing the certification.

A LEED certification for the airport, an iconic and heavily used structure, would have sent a message to other builders about the promise and possibility of sustainable design in Alaska. ■

Weld Royal is a freelance writer based in Alaska.

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CIRCLE 33

Continuing Education

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/AIA Continuing Education article. To earn one AIA learning unit, including one hour of health, safety, and welfare (HSW) credit, turn to page 111 and follow the instructions. Other opportunities to receive AIA/CES credit begin on page 113.

Learning Objectives

1. Explain the traditional role of building-control systems and how they are expanding to address new demands.
2. Describe how sensor data can be visualized in architecture.
3. Explain the advantages to both centralizing and decentralizing sensor technology.
4. Identify future trends for building controls and sensing networks.

PHOTOGRAPHY: © CARLO RATTI ASSOCIATI (1,2); MAX TOMASINELLI (3)

1

Control Freaks

Pervasive sensing and interactive building controls stand to radically reshape the human response to architecture, the city, and even the air we breathe. Call them the *new controls*.

By Russell Fortmeyer

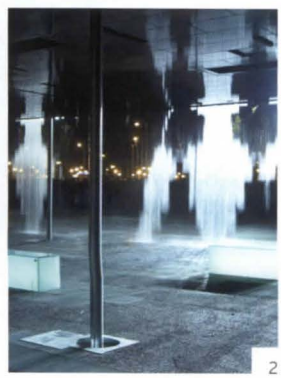
THERE ARE 2,500 NOZZLES along the perimeter of the Digital Water Pavilion in Zaragoza, Spain. The nozzles contain solenoid valves and diffusers and sit at the edge of the pavilion's flat roof, greeting visitors with a liquid curtain. When you approach the pavilion, known as the DWP, a motion sensor in the roof detects your body and signals a processor in a digital control system to alter the solenoid valves at the individual jets of water that your body will displace as you walk through the curtain, just enough so you don't get wet. It's the type of architecture often produced for expos, such as the 2008 International Expo in Zaragoza, for which this was built, and it remains wildly popular with some visitors, even in its second incarnation as a café.

To the DWP's architect, Carlo Ratti, this water choreography represents nothing short of the next revolution in architecture – sensing. For Ratti, architecture cannot merely represent the machine or, in the case of the DWP, fluidity; it must either behave like a machine or become liquid. It's as if the glass on Mies van der Rohe's Barcelona Pavilion were dissolved into water and reimagined by some hyperkinetic gamers.

A typical Ratti project embraces the language of the digital age: interactivity, responsiveness, on-demand, pervasiveness, ubiquity, configurability. The DWP's water curtain not only parts for you, it can also be programmed to display an infinite number of patterns and images just by stopping and starting individual valves (the roof also raises and lowers to the ground, but that's another story). Ratti infuses these ideas into all of his projects. He recently proposed using Wi-Fi signals to track human occupancy of buildings to better tune mechanical systems toward providing more efficient heating and cooling. This last project is part of Ratti's work as director of the SENSEable City Laboratory at the Massachusetts Institute of Technology (MIT), but also informs his architectural practice, the Turin, Italy, and Boston–based Carlo Ratti Associati. Ratti's lab at MIT developed the DWP with the school's Design Lab and Smart Cities research group, directed by William J. Mitchell. "For architects, the only way to innovate will be to understand the basics of sensing," Ratti says.

If you haven't noticed, building-control systems are experiencing a bit of a fetish phase right now. For at least the past 100 years, architects and engineers may have conspired to button up architecture, to design tightly controlled spaces according to precise specifications. But presently, we seem to be launching into a loose era of "new controls" prompted by a proliferation of pervasive sensing technologies designed to simplify building performance down to a set of occupant-driven demand-and-response mechanisms. Most of this terrain falls under the sustainable design movement, which has encouraged high-performance buildings with more controls and fine-tuning of systems in pursuit of energy efficiency, indoor environmental quality, and resource conservation. Once unconventional, such systems for opening windows, dimming lights, or lowering the blinds through the Building Management System (BMS) are now off-the-shelf products. Ratti's DWP may take this controls technology to extremes, but in service to a fuller set of architectural possibilities. Expos and fairs have historically given architecture an arena for the exploration of ideas that eventually become part of the larger industry. The DWP may be relatively frivolous, but it doesn't take much to imagine how such technology could be deployed to make buildings respond quickly to climate conditions or occupancy patterns – two concerns that inform much of the controls industry.

Projects like the DWP take preprogrammed logic and respond to local events, with limited control by occupants. That is more or less how most BMS systems continue to operate, but a shift from the building scale to that of the individual is a key aspect of the new controls. Architects like Jennifer Magnolfi are interested in finding more of a middle ground. Her work as a senior designer



2

3

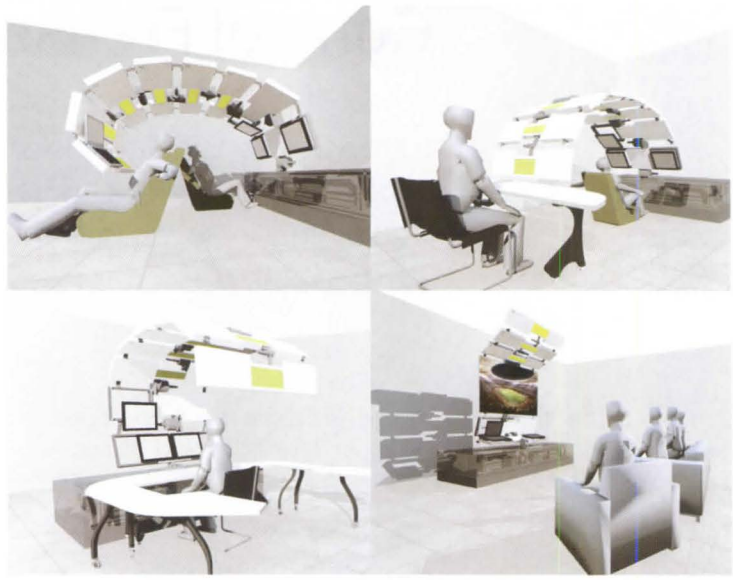
1. **Preprogrammed patterns in the water are part of the pavilion's advanced controls system.**

2. **Recycled water is pumped from underground cisterns to pipes and nozzles in the roof of the Digital Water Pavilion in Zaragoza, Spain.**

3. **Carlo Ratti, pictured, describes the pavilion as fluid, both literally and as a "reconfigurable, responsive building," unlike static buildings designed to appear fluid.**

Clemson University researchers have designed various configurations of their "Animated Work Environment," such as composing and presenting, or gaming and lounging.

1 Halogen presentation lights
2 Motor
3 Proximity sensors
4 Adjustable screen
5 Projector screen
6 Web cam



for Herman Miller's Architecture and Building Technology Systems group led to her collaboration on the book *Always Building: The Programmable Environment* (2008), which lays out the company's vision of an interactive workplace. To that end, Herman Miller recently introduced Convia, a system incorporating addressable lighting control and plug-load-demand management, among other things, as a first step in creating adaptable work environments where single-use spaces become obsolete. "If a room can expand and contract with ceilings that can become adaptive meeting spaces, it begins to shift the economic equation of managing space from a cost-per-square-foot basis to cost per time of use," Magnolfi says. "The investment in that space is that much more valuable because it addresses many more needs." From a building owner's perspective, it could translate to potentially constructing a smaller building.

Other manufacturers, such as Allsteel, offer workstations with integrated technology. Some companies, like Australia's UCI, offer task-air delivery in workstation partitions. But few major furniture companies have identified integrated control systems as a key priority, which suggests the market has yet to fully develop.

While not everyone shares his opinion, Magnolfi, an avid iPhone user, sees a general relaxing of privacy concerns, as people expand their presence into the digital realm. As sensing technologies become more refined in the workplace, it will become easier for building owners to precisely track occupancy levels, she says, leading to better space-utilization planning by architects during early design phases. But that is only part of the equation. Honeywell, one of the building-control industry's heavyweights, can already track occupancy levels in buildings using conventional security cameras. Commonly called "blob detection," Honeywell's EBI control system can discern individual bodies by scanning camera footage, thereby approximating occupancy levels with 92 percent accuracy. The data are then used to manage heating and cooling demands in occupied spaces. With such developments, buildings can become hyperactive sensory domains, with ever-shifting landscapes of comfort conditions and fluctuating services.

One of Keith Evan Green's research interests is the Animated Work Environment, or AWE, a system that suggests a way forward for the kinds of technologies Herman Miller is pursuing. Green directs Clemson University's Intelligent Materials and Systems group, in South Carolina, a collaboration between the school of architecture and programs in electrical, computer, and materials engineering. Instead of static furnishings, he envisions a desk of dynamic panels embedded with screens and contact sensors supporting control mechanisms to respond to your whims based on movement and control. A chair laden with pressure sensors could detect slouching and adjust your desk panels as needed. "We don't want to create an automated work space that takes away the authority of the individual," Green says. "It's a cognitive model."

Few topics have traditionally been as dull in architecture as building controls. Recent talk of controls generally concerned the incompatibility of systems between manufacturers. BMS systems were developed on a proprietary basis and rarely

Convia offers an energy-management platform that integrates lighting, switches, occupancy sensors, timers, and other devices. Energy-consumption data from the components and zones are gathered and displayed on monitors for easy analysis, as shown here in the U.S. Green Building Council (USGBC) offices.

PHOTOGRAPHY: © COURTESY IMSA OF CLEMSON UNIVERSITY (TOP LEFT); USGBC (BOTTOM)

The strange disappearance of 300 chairs in just six minutes.

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1

2

1.,2. **Every 15 minutes, the Living Light pavilion's LED lighting system goes dark and regenerates patterns based on Seoul's air quality.**

3. **Living Light's control system depends on two external digital inputs – a Web site that tracks air quality and SMS text messages from people accessing the site.**

3

"talked" to one another, let alone to marginal control systems like those for lighting, security, and access. Without belaboring the mind-numbing details of how this technology has developed incrementally, this situation has quite recently changed. Building Automation Controls networks, or BACnet, is the standard around which most of the industry has converged toward a common digital infrastructure, or backbone, that reduces each control point, sensor, or device to an IP address. As the books by MIT's Mitchell suggest, buildings are Web sites, and vice versa. A compelling vision for new buildings, perhaps, but most existing buildings are often saddled with undermaintained proprietary systems. Volker Hartkopf, the director of the Center for Building Performance and Diagnostics at Pittsburgh's Carnegie Mellon University, argues these legacy systems may be our biggest challenge. "Unless we come up with robust systems that can be deployed again and again," Hartkopf says, likening buildings to automobiles, "we won't make any progress." Even many of the new Web-based systems have closed programming logics that will make expandability and adaptability difficult in the future. Regardless, some architects have forged ahead with the building-as-Web-site concept, finding innovative ways to make the new controls part of a comprehensive data-visualization strategy.

New York–based architects David Benjamin and Soo-in Yang use controls and wireless sensors in most of their projects. "The standards and protocols for ownership, storage, and transfer of data are going to be established soon, with or without architects," Benjamin says. "It's important for us to know a little bit about it." The architects direct the Living Architecture Lab at Columbia University and run a design practice called The Living. For their Living Light project in Seoul, South Korea, they created a translucent acrylic canopy based on a map of the city's neighborhoods and illuminated with strips of LEDs along the edges. The canopy's lighting-control system connects to a server that is fed data from the Web site of the city's air-quality monitoring system, collecting real-time data against the previous day's data. If air quality improves, the corresponding neighborhood panel lights up. When pedestrians request an SMS text from the Web site for the air quality of a particular neighborhood, the lights on the corresponding panel blink. In effect, Benjamin and Yang created an architectural surface layered with interactive meaning.

Visualizing the data generated by sensing and control systems, another hallmark of the new controls, is fast becoming a cottage industry in the sustainable-design realm. "Connecting everything to a common network, exchanging and transmitting data is worthless unless you can translate it into information you can act upon," says Terry Hoffmann, director of building-automation-systems marketing at Johnson Controls. Hoffmann thinks applications – what we do with this information – is the next logical challenge for industry to tackle. A seemingly limitless number of companies, including many start-ups and unlikely players like Google, have rushed into the building-dashboard arena, offering Web-based interfaces for building-management systems. The standard offering reports real-time energy consumption and that dubious holy grail, carbon footprint reduction, but some include

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CIRCLE 35

1

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1.,2. **Johnson Controls' wireless Metasys building-management system represents the industry's shift to more controls and devices, more widely dispersed throughout buildings. With each control component recognized as an IP address, facility managers can access data on any Web-enabled device, such as an iPhone or laptop.**

water consumption, lighting levels, or humidity.

For example, Automated Logic offers the WebCTRL system to control building mechanical systems and to act as a front end for an entire building-automation system that might include fire systems, security, and lighting. The system has always provided performance data such as humidity and CO_2 levels, and temperature, but it never put the data in the context of how a person might actually feel in the space, or what we call comfort. So, the company recently launched an Environmental Index (EI) tool that functions with WebCTRL and provides facility managers with a 100-point rating for gauging occupant comfort. "The system uses the temperature, humidity, and CO_2 sensors you already have in your building, so its simplicity is a major advantage," says mechanical engineer Steve Tom, Automated Logic's director of technical information. Other companies, such as Ambient Devices and Shaspa, are pursuing making such data more readily accessible to occupants. Ambient's Orb can be programmed to glow based on electrical-grid demand or to indicate pollen counts in the air, among other inputs.

More controls and sensors, however, will require more commissioning and maintenance to ensure that when an orb glows green, it glows accurately. For example, if you wanted to test for CO_2 levels in a space, which is an indication of air quality (the more CO_2 you have, the more fresh air you need to provide as an offset), you would place one sensor in the room's return-air duct. But in a large, open office, this could be misleading. What's more, if that sensor were not calibrated correctly, you could get false readings that could lead to increased fan use and wasted energy. But having a commissioning agent calibrate every sensor in your building each year can be costly, so it rarely happens. In addition, adding this sensor to every return-air duct could amount to thousands of dollars in costs.

The University of Pennsylvania skirted this issue by installing a new air-monitoring system, Aircuity's OptiNet, in its animal-research laboratories. The system consists of tubes that take small samples of air from discrete locations and transfer the air back to a central sensor suite where it is sampled for CO_2, CO, particulates, TVOCs, temperature, and relative humidity. Having one sensor unit eliminates the need to have each of these sensor types deployed separately in each space, as in a conventional system. Aircuity replaces the sensor with factory-calibrated sensors every six months. With such assurances of accuracy, the facility managers at Penn can now reduce airflow rates with the Variable Air Volume systems in the laboratories with less risk, thereby realizing significant savings from reduced fan energy. Joe Monahan, Penn's principal planning engineer, says the system had a two-year payback and reduced energy consumption in the labs by 40 percent. The university is now rolling it out to more buildings. "This is an active approach to controlling mechanical systems, rather than the old passive approach that set air-change minimums," Monahan says. As Penn monitors the system, it can more fully understand how much air is actually needed for its labs. From this, it could establish some diversity factors to traditional design air-change rates – such as, for example, 80 percent of given rates – that would

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4

3. **Controllers in Siemens's Apogee wireless system rely on mesh networks to avoid interference.**

4. **Building Dashboard's Web interface makes energy-consumption reporting more userfriendly.**

PHOTOGRAPHY: COURTESY JOHNSON CONTROLS (1,2); SIEMENS (3); BUILDING DASHBOARD (4)

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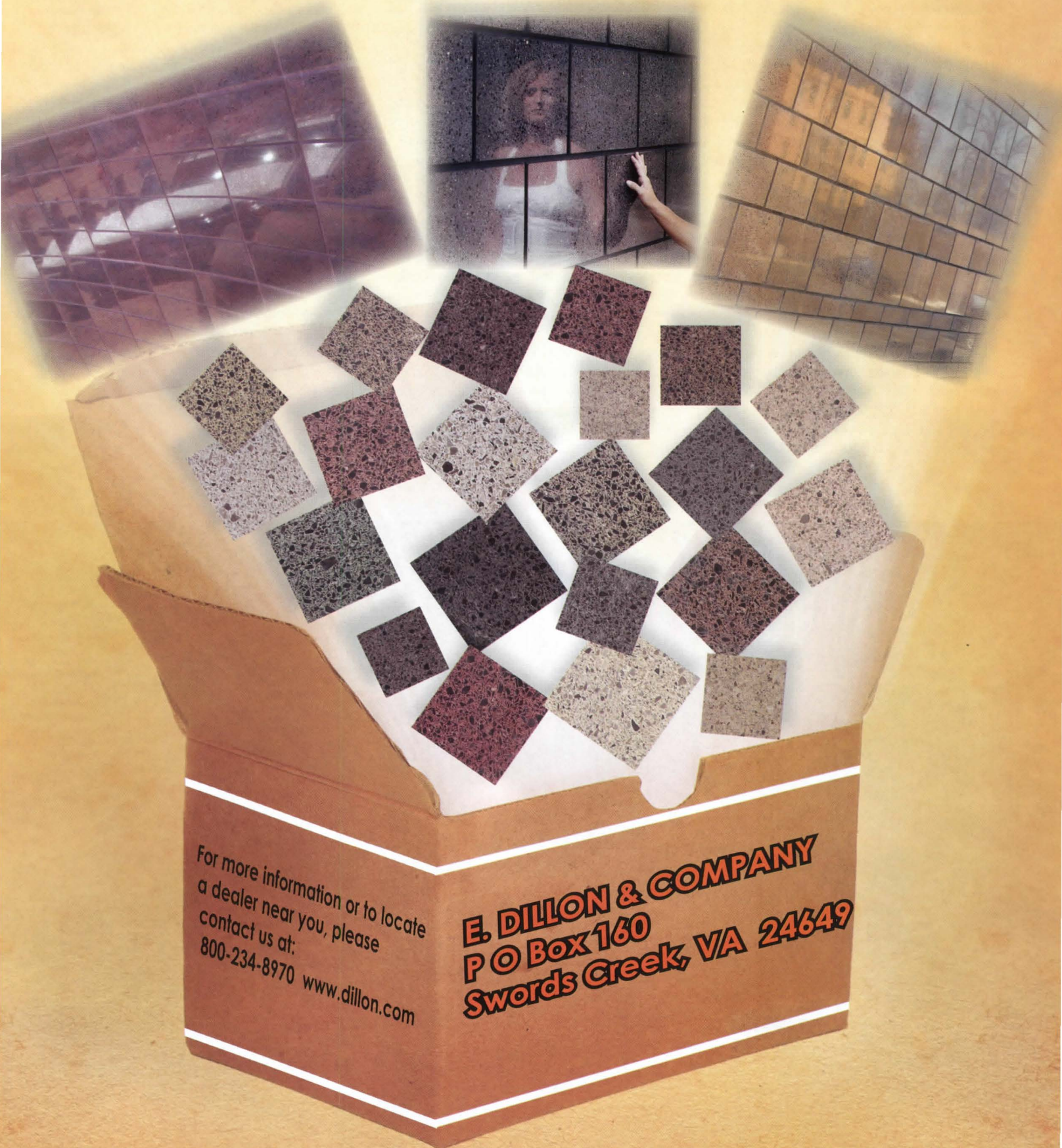

CIRCLE 36

allow it to install smaller systems and realize first-cost savings.

Contrary to the impulse toward centralization, there is an opposite tendency in the industry toward encouraging batteryless microsensors blanketed across buildings and connected wirelessly using the emerging Zigbee wireless standard. Osman Ahmed, a senior principal engineer with Siemens Building Technologies, believes the new controls will be a single control – Micro-Electro Mechanical Systems (MEMS) – that will contain up to five sensor channels and be so small as to be almost invisible. Embedded MEMS in drywall could sense for temperature, humidity, and VOC levels and wirelessly transmit the data to a nearby control device. Although it's not yet commercially available for the company's APOGEE wireless system, Siemens has developed a sensor that can measure mean radiant temperature and is so small it could be embedded in a pane of glass. "You could change the properties of your glass with an applied voltage based on whether you wanted more or less solar gain," Ahmed says.

Ahmed describes MEMS as being like a peanut-butter-and-jelly sandwich. Silicon wafers act as bread to sandwich layers of materials that react only to certain other materials, such as CO_2, for example. As a molecule of CO_2 passes through the jelly layer in an absorption process, it changes the voltage of the MEMS just enough to register and be transmitted to the larger control device, where it's amplified into a more readable set of data. The CO_2 molecule is then released again on the other side of the jelly, which is important, since it ensures the jelly will not become bloated with CO_2 molecules and desensitized, Ahmed says. Because they are so small, such devices can generate their own electricity through slight vibrations in duct work or the building in general. Ahmed says this approach to sensing could improve accuracy overall, since the devices will eventually be so cheap that buildings will contain hundreds, if not thousands, of control points that can then be measured and compared to one another. Anomalies would be singled out quickly, and those sensors could be deleted from the network. Ahmed estimates such technologies will reach the market in three to five years, assuming a manufacturing base for such specialized components develops.

> "We need the mind of the architect to reflect and ponder what we want this technology to be."

If the industry can seem fragmented in its development of these systems, it may have to do with the frontier mentality that has swept in as prices of Web-based technologies have fallen and controls infrastructure has become more consolidated. Before experimental systems like those of Ratti or The Living become everyday projects, industry sources agree they need to offer more assurance that the systems can be maintained, secured, and open enough to be useful. Conversely, if architects ignore such developments, they risk marginalizing architecture's role in the digital world. "We're cultivating new generations of people who are going to be very savvy about hacking things," says Clemson's Green. "Technology is such a part of our lives and we need the mind of the architect to reflect and ponder what we want this to be." ■

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310EDIT

1 **High-performance green buildings have traditionally used building-management systems to achieve everything but which?**
- A individual occupant tracking
- B indoor environmental quality
- C energy efficiency
- D resource conservation

2 **How can monitoring occupancy levels throughout a building improve building design and operation?**
- A mechanical systems can respond to actual demands, rather than programmed set points
- B allows architects to understand how spaces are used
- C both A and B
- D none of the above

3 **The development of BACnet has fostered what?**
- A manufacturers to offer proprietary control systems that cannot interact with those of competitors
- B controls and sensors to connect through a single digital infrastructure
- C standard, interchangeable building-management systems
- D LED lighting systems

4 **Most building-management-system dashboards provide which?**
- A energy-consumption data
- B ambient air temperature
- C humidity level
- D all of the above

5 **Aircuity's OptiNet system measures what?**
- A carbon monoxide
- B temperature
- C TVOCs
- D all of the above

6 **Measuring CO_2 levels in a space allows you to do what?**
- A control the fresh-air levels delivered by the mechanical system
- B calculate your building's carbon footprint
- C eliminate the need for air-conditioning systems
- D eliminate the risk of sick-building syndrome

7 **Annual commissioning of building-control systems guarantees what?**
- A proper operation of all mechanical equipment
- B occupant satisfaction with indoor environmental quality
- C significant carbon-emissions reductions for the building's systems
- D none of the above

8 **Why are Micro-Electro Mechanical Systems (MEMS) considered promising?**
- A they rely on pneumatic controls, rather than electric
- B they can be invisibly embedded in almost any material
- C each individual MEMS could contain hundreds of sensor channels
- D they eliminate the need for all other control devices

9 **What do MEMS measure to provide sensing detection?**
- A minute voltage fluctuations between silicon layers
- B the distance between layers of silicon
- C the proximity of other MEMS devices
- D indoor and outdoor CO_2 levels

10 **The accuracy of sensors depends on which?**
- A quality control in manufacturing
- B regular on-site commissioning and tuning
- C proper installation and programming
- D all of the above

Program title
"Control Freaks," ARCHITECTURAL RECORD 03/10, page 102.

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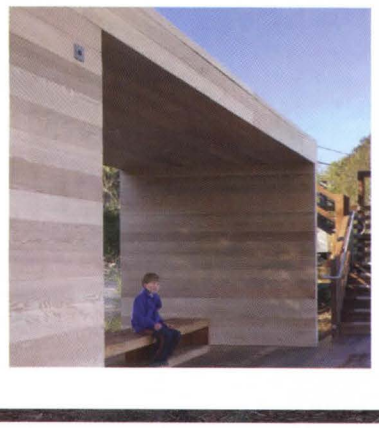

Marin County Day School
Architect - Mark Cavagnero Associates
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Getting to Green: Life Cycle Analysis plus Forest Certification Give Western Redcedar High Marks in Sustainability

Architects seek wood that lightens a project's environmental footprint.

Photo courtesy of Mary Wong & Don Logan Architects

Western redcedar is one of the most prominent materials in the Orange Memorial Park, a San Francisco recreation center where sustainability was a key goal.

Provided by Western Red Cedar Lumber Association

Over the past decade there has been a dramatic upswing in the number of companies that want to build reputations as good corporate citizens. Natural, organic, and sustainable are all highly desirable characteristics in the wide world of products. According to a 2009 study by accounting and consulting firm Deloitte Touche, 95 percent of shoppers would buy green provided they had the right information on an otherwise satisfactory item. But with the plethora of environmental claims by companies seeking to advance their products, "green," "eco friendly," "sustainable," and the like are terms that have become confusing at best, meaningless at worst. In order to keep from drowning in greenwash, the market has demanded greater transparency and verifiable evidence of sustainable performance all along the supply chain.

This article will discuss how architects can be reasonably assured that products, particularly wood products, are maximally sustainable. Life Cycle Analysis (LCA) and forest certification will be discussed in terms of their place on an architect's sustainability agenda, and an LCA of western redcedar will be presented to demonstrate the level of research involved, along with results that can be expected from the life cycle approach.

CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Getting to Green: Life Cycle Analysis plus Forest Certification Give Western Redcedar High Marks in Sustainability**. To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit and sustainable design, answer the questions on page 117, then follow the reporting instructions or go to **ce.architecturalrecord.com** and follow the reporting instructions.

Learning Objectives
After reading this article, you should be able to:

- Discuss two main items essential to specifying sustainable wood products
- Describe the contribution of a life cycle analysis to green building
- Articulate the environmental benefits of western redcedar
- Compare western redcedar to other building materials in terms of sustainability

FOREST CERTIFICATION

That wood is good is virtually a foregone conclusion. For thousands of years, wood has been used as a building material and the fact is, untreated wood has huge environmental benefits over other building products. It is completely biodegradable, works as an effective insulator, and is 100 percent renewable. Wood uses less energy to process than steel, concrete and aluminum. Wood products make up 47 percent of all raw material manufactured in the United States, but their share of manufacturing energy consumption is only 4 percent. Steel requires 21 times the energy to produce and releases more than 15 times the sulfur dioxide when compared to wood. Or,

as Pritzker Prize winner Glenn Murcutt, one of Australia's most notable architects and May '09 AIA Gold Medalist put it, "One of the few sustainable materials is timber (wood). Steel and aluminum require more energy to produce. They should be used sparingly."

Environmental Impact	Wood	Steel	Concrete
Total Energy Use	Lowest	140% more	70% more
Greenhouse Gases	Lowest	45% more	81% more
Air Pollution	Lowest	42% more	67% more
Water Pollution	Lowest	1900% more	90% more
Solid Waste	Lowest	36% more	96% more
Ecological Resource Use	Lowest	16% more	97% more

Source: Athena Institute, www.athenasmi.org

To ensure sustainability, wood products from certified forests should be specified, which admittedly is often a difficult and confusing task. According to MetaFore, a non-profit organization specializing in working with businesses to implement innovations relating to evaluating, selecting and manufacturing environmentally preferable wood and paper products, there are several certification systems relevant to the North American marketplace:

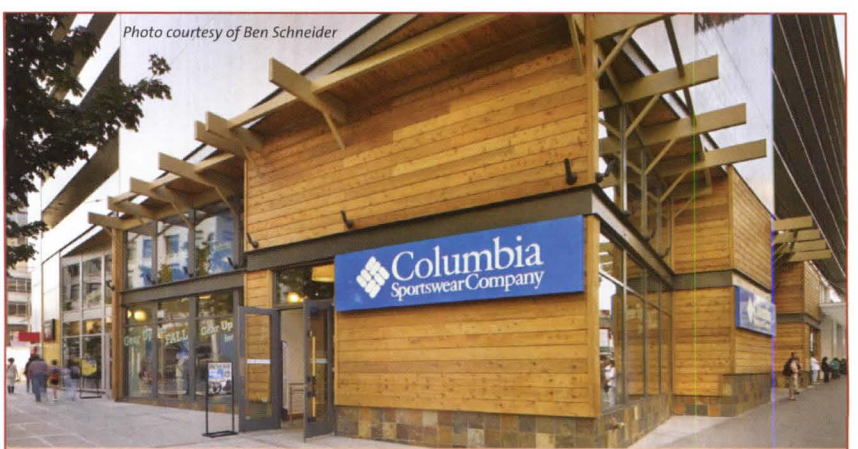
- The American Tree Farm System (ATFS) covers small, private, non-industrial landowners, typically family forest landowners. ATFS certifies contiguous parcels from 10 to 20,000 acres and was endorsed by PEFC in August of 2008.
- The Programme for the Endorsement of Forest Certification Schemes is a mutual recognition framework for national forest certification standards.
- The Canadian Standards Association is a national standard for sustainable forest management and tracking and labeling certified material. It covers operations in Canada. It is endorsed by PEFC.
- The Forest Stewardship Council is an international system covering forest management practices and the tracking and labeling of certified products and paper products with recycled content.
- The Sustainable Forestry Initiative® Program is a sustainable forest management standard targeting large industrial operations in Canada and the United States. It is endorsed by PEFC.

Additionally, forest certification systems are emerging in Asia, Australia and South America. In developing countries in these areas, many forest managers lack the capacity to undergo a certification audit and maintain operations to a certification standard, and are working toward certifying operations in a gradual approach.

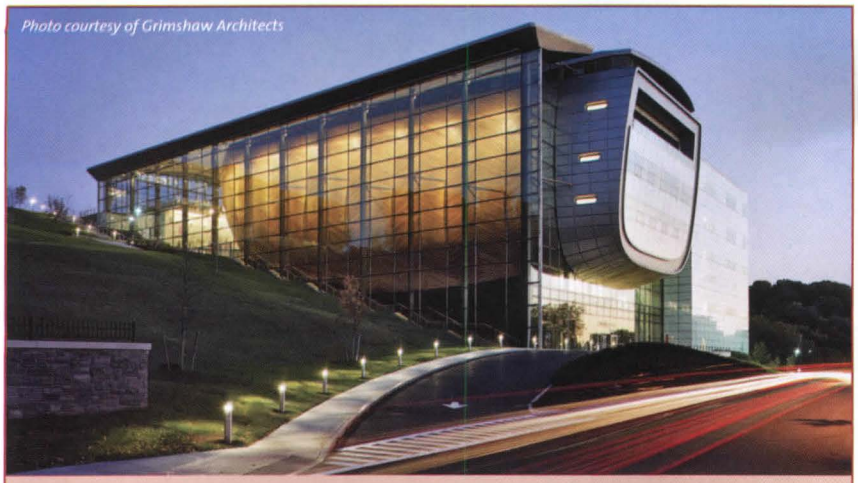
While certification is intended to enhance forest management practices around the world, most certified forestry operations are located in Europe and North America. A 2006 independent analysis by the UK government of the above-mentioned certification systems (except for ATFS) indicated that these systems do indeed harvest wood sustainably and legally. Jack Draper, Managing Director of the Western Red Cedar Lumber Association, advises architects interested in specifying certified wood products to obtain lumber from one of the respected certifying bodies. "With 90 percent of the world's forests uncertified, what's important is making sure your forest product is independently certified," he says. "We're strong supporters of third party certification — and some certification is far better than no certification at all."

Architects are increasingly making the effort to specify certified wood, and it's showing up on many award-winning projects. The Queens Botanical Garden's Visitors' Center, New York City's first public LEED® Platinum-certified building, incorporated FSC-certified western redcedar. Designed by New York City-based BKSK architects as a nexus of botanical and cultural exploration for one of the most ethnically diverse neighborhoods in Queens County, the center was envisioned as an extension of the garden's mission to demonstrate environmental stewardship while celebrating the connections between people and plants. The Center is composed of a forecourt and dramatic roof canopy, a central reception and administration building clad in western redcedar, and an auditorium space tucked into the landscape itself, sheltered by a sloping green roof. BKSK chose western redcedar for both performance and aesthetic characteristics: durable and stable, cedar will naturally weather over time, reflecting the passage of seasons in the surrounding garden landscape.

Western redcedar from sustainably managed forests in British Columbia was used by Grimshaw Architects in designing the Experimental Media and Performing Arts Center at Rensselaer Polytechnic Institute in Troy, New York. The center is a laboratory for both performing arts and science and provides state-of-the-art immersive environments for the senses of seeing and hearing including a concert hall, a theater, three performance studios and recording and editing facilities. The concert hall is the centerpiece of the building and is contained inside an enormous three-dimensionally curved wooden "hull," clad entirely in western redcedar tongue-and-groove planks, selected for superior technical



Knotty western redcedar siding is featured on Columbia Sportswear retail outlets.



Western redcedar from sustainably managed British Columbian forests was part of the environmental profile at RPI's the Experimental Media and Performing Arts Center.

performance characteristics in addition to esthetic qualities. The hull was subjected to a stringent series of flame spread tests and the cedar was judged to inherently conform to the Class B rating required, including the applied finish which met with the architect's demanding and diverse requirements.

LIFE CYCLE ANALYSIS: THE BASICS

Getting to green can be perplexing, especially as manufacturers may only promote certain attributes of their products, keeping mum on their more questionable environmental impacts. Advertising may tout the fact that a product may be biodegradable or contain recycled content, for example, while its high degree of embodied energy or emissions goes unmentioned. In view of the challenges involved in getting to the truth about a product's true environmental picture, many companies have enlisted the support of the Life Cycle Analysis (LCA) to back up their sustainability claims. Also known as life cycle assessment, ecobalance, and cradle-to-grave analysis, the LCA is a decision making tool. It acknowledges that all phases of a product's life, from cradle to grave, have an impact on the environment and these impacts can be quantified and compared. The LCA assesses those impacts from the time materials are extracted through manufacture, transportation, storage, use, recovery, reuse and disposal.

The1970s global modeling studies and energy audits that sought to evaluate resource cost and environmental implications of different patterns of actions were the forerunners of life cycle assessments and analysis. The LCA approach really took shape in the 1980s, though for many years was mainly popular in Europe. Now the LCA is gaining traction in North America as companies look to give teeth to their environmental claims or pinpoint where in the cradle-to-grave process their environmental liabilities are most prevalent. In many industries, LCAs are becoming crucial to the support of ecolabelling, as awarding authorities must rely on a scientific method of evaluating the manufacturing processes involved, the energy consumption in manufacture and use, and the amount and type of waste generated.

Generally speaking, there are four stages of an LCA:

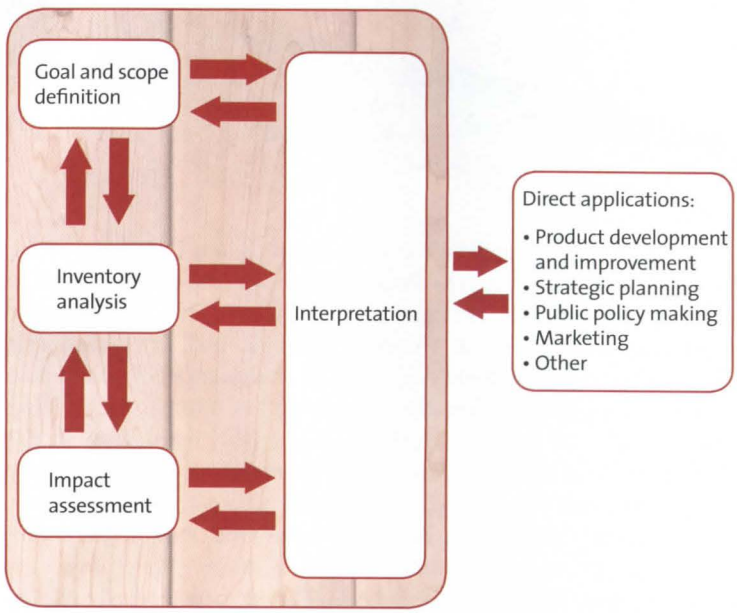
Goal and Scope Definition. Goals, system boundaries and intended uses are established.

Life Cycle Inventory. A data-based quantification of energy and raw material requirements, air emissions, waterborne effluents, solid waste and other environmental releases through the life of a product or process.

Life Cycle Impact Assessment. An evaluation of the effects of the environmental information collected in the inventory. A full impact assessment addresses ecological and human health, as well as the range of social, cultural and economic effects.

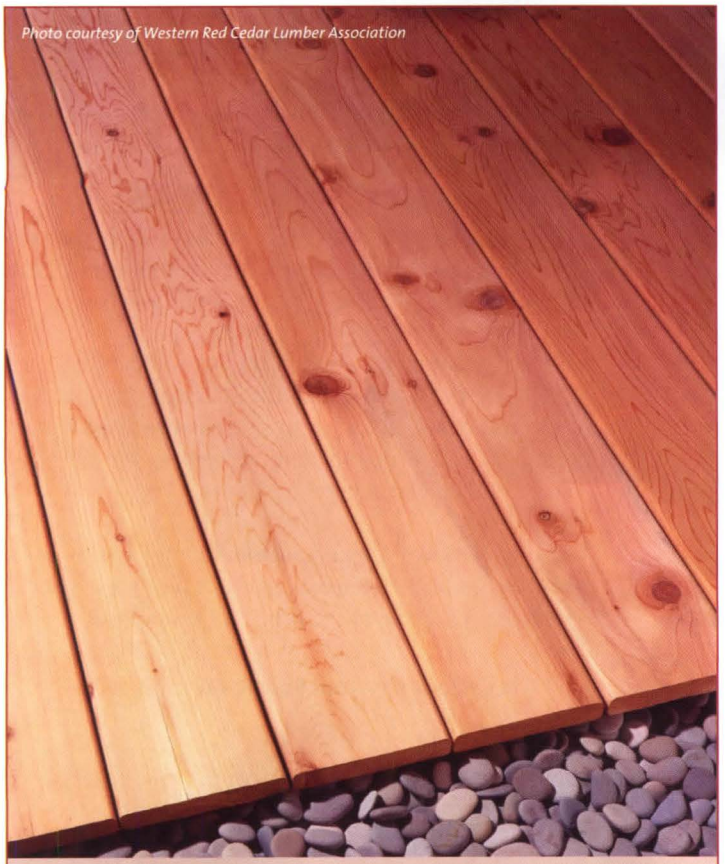
Life Cycle Improvement Analysis. Identification of areas where environmental impacts can be reduced or mitigated within the life cycle of the product or processes.

Life Cycle Assesment Framework



LCA versus Prescriptive Standards

People make environmental decisions all the time…paper towels over cloth…plastic bags over paper. Many are intuitive decisions. So it is with the building industry in looking for guidance to achieve green standards. However, many green standards in use — bamboo floors, bike racks, steel framing vs. wood framing, for example — are just as intuitively based, without regard for their total energy implications or greenhouse gas emission. Because it is a protocol-based scientific methodology that measures energy, raw material and other manufacturing inputs as well as wastes, emissions, use and disposal, the LCA is a more comprehensive approach to indicating a product's green quotient.



Western redcedar is carbon neutral.

In a 2008 report entitled "Green Building Programs in the United States: A Review of Recent Changes Related to Designation of Environmentally Preferable Materials," Dr. Jim Bowyer and Alison Lindburg of Dovetail Partners, Inc., concluded that "critical issues related to designation of environmentally preferable construction materials remain unaddressed in most green building programs." The authors went on to say that "variability in the standards is causing confusion, and proliferation of scientifically unsubstantiated prescriptive standards is occurring as new programs are developed and existing programs are revised. Despite the strong adoption rate for green building programs, there is much room for improvement and work needs to be done to reach the goal of ensuring that programs truly result in improved environmental performance. To this end, expanded adoption of life cycle assessment for identification of environmentally preferable materials is essential."

Wayne Trusty, President of the Athena Institute, a non-profit organization that seeks to improve the sustainability of the built environment through better information and tools, adds: "Prescriptive standards are attribute oriented. To assume that something like rapid renewables are green just because they grow quickly, without considering factors like water, energy or fertilizer usage is misleading. It's presumptuous to think that rapid renewables are automatically better or to make them part of an environmental code. The LCA, as opposed to prescriptive standards, gets at the full range of a product's implications, and that is important information."

LCA Concerns

LCAs are recognized around the world as one of the most effective analytic tools for estimating the sustainability profile of a product or service. But not all LCAs are created equal. There are several areas that architects will want to pay particular attention to in determining the credibility of an LCA.

Data. An LCA is heavily data dependent and in the end will be only as valid as its input. Obviously, data should be as accurate and up to date as possible. While this can be particularly challenging as new processes, manufacturing methods and materials are being introduced constantly, using old data will invalidate the quantitative analysis and inaccurately reflect the product's environmental profile. In some instances data will be hard to obtain, particularly pproprietary or commercially-sensitive raw data or information indicating that a company's product is in any way inferior to a competitor's product.

Interpretation. Challenges increase in this second stage, life cycle assessment, as it involves interpretation of the data, and that requires value judgments to be made. Difficult decisions are routine here — is heavy energy demand less burdensome than heavy water use, for instance, or how utilizing non-renewable mineral resources like oil or gas stand up to the production of softwoods for paper. Skeptics also voice the concern that while an LCA may be able to characterize the effect of a product on global warming, it is less clear when it comes to what the effect will be on human health or the integrity of ecosystems.

LCAs are recognized around the world as one of the most effective analytic tools for estimating the sustainability profile of a product or service.

Comparisons. In comparing the life cycle analyses of two different products if the same level of data, both quantity and quality, are not available for both products, the findings will be flawed. Comparisons are rarely easy because of the different assumptions that are required — even evaluating two same-size items that were identically distributed and recycled, though seemingly simple, will require a number of assumptions. For example, something as apparently straightforward as assessing the impacts of truck transportation to deliver a product will necessitate judgments about the truck's size, condition, route, and speed, any of which might have significant bearing on the outcome of the analysis. When it comes to making life cycle comparisons of different products, considerably more and greater judgments and assumptions will be called into play.

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Program title: **"Getting to Green: Life Cycle Analysis plus Forest Certification Give Western Redcedar High Marks in Sustainability" (03/10, page 113).** AIA/CES Credit: This article will earn you one AIA/CES LU hour of health, safety, and welfare/sustainable design (HSW/SD) credit. (Valid for credit through March 2012). **Directions:** Refer to the Learning Objectives for this program. Select one answer for each question in the exam and fill in the box by the appropriate letter. A minimum score of 80% is required to earn credit. **To take this test online and avoid handling charge, go to ce.architecturalrecord.com**

1. Wood products make up 47 percent of all raw material manufactured in the United States, but their share of manufacturing energy consumption is:
- ❑ **a.** 4 percent.
- ❑ **b.** 12 percent.
- ❑ **c.** 25 percent.
- ❑ **d.** 57 percent.

2. What percentage of the world's forests is uncertified?
- ❑ **a.** 10 percent.
- ❑ **b.** 20 percent.
- ❑ **c.** 50 percent.
- ❑ **d.** 90 percent.

3. The main standard for LCAs is:
- ❑ **a.** prescriptive.
- ❑ **b.** FSC-certified.
- ❑ **c.** ISO 14044.
- ❑ **d.** LEED designated.

4. A *bona fide* green wood product will have:
- ❑ **a.** FSC certification.
- ❑ **b.** a favorable life cycle analysis.
- ❑ **c.** a favorable life cycle analysis and forest certification.
- ❑ **d.** a favorable life cycle analysis and SFI certification.

5. Western redcedar received top marks in how many of seven LCA categories?
- ❑ **a.** 7
- ❑ **b.** 5
- ❑ **c.** 3
- ❑ **d.** 2

6. Western redcedar's performance in the smog and eutrophication categories can be traced to:
- ❑ **a.** the natural characteristics of the wood.
- ❑ **b.** the tannins in the wood.
- ❑ **c.** weathering.
- ❑ **d.** paint.

7. Total life energy of western redcedar can be improved by:
- ❑ **a.** altering end-of-life practices away from landfill.
- ❑ **b.** the use of natural stains.
- ❑ **c.** capturing energy of wood waste.
- ❑ **d.** the use of water-borne coatings.

8. In the western redcedar-worst-case comparison to the WPC best-case, the LCA found that:
- ❑ **a.** the WPC outperformed western redcedar.
- ❑ **b.** western rededar outperformed the WPC.
- ❑ **c.** the two materials performed equally well.
- ❑ **d.** this type of comparison was not made.

9. In the base case, which material was the worst performer in the LCA?
- ❑ **a.** cement
- ❑ **b.** WPC
- ❑ **c.** western redcedar
- ❑ **d.** brick

10. The second worst performer in the LCA was:
- ❑ **a.** brick.
- ❑ **b.** fiber cement.
- ❑ **c.** WPC.
- ❑ **d.** western redcedar.

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Material resources used: This article addresses issues concerning health and safety and sustainable design.

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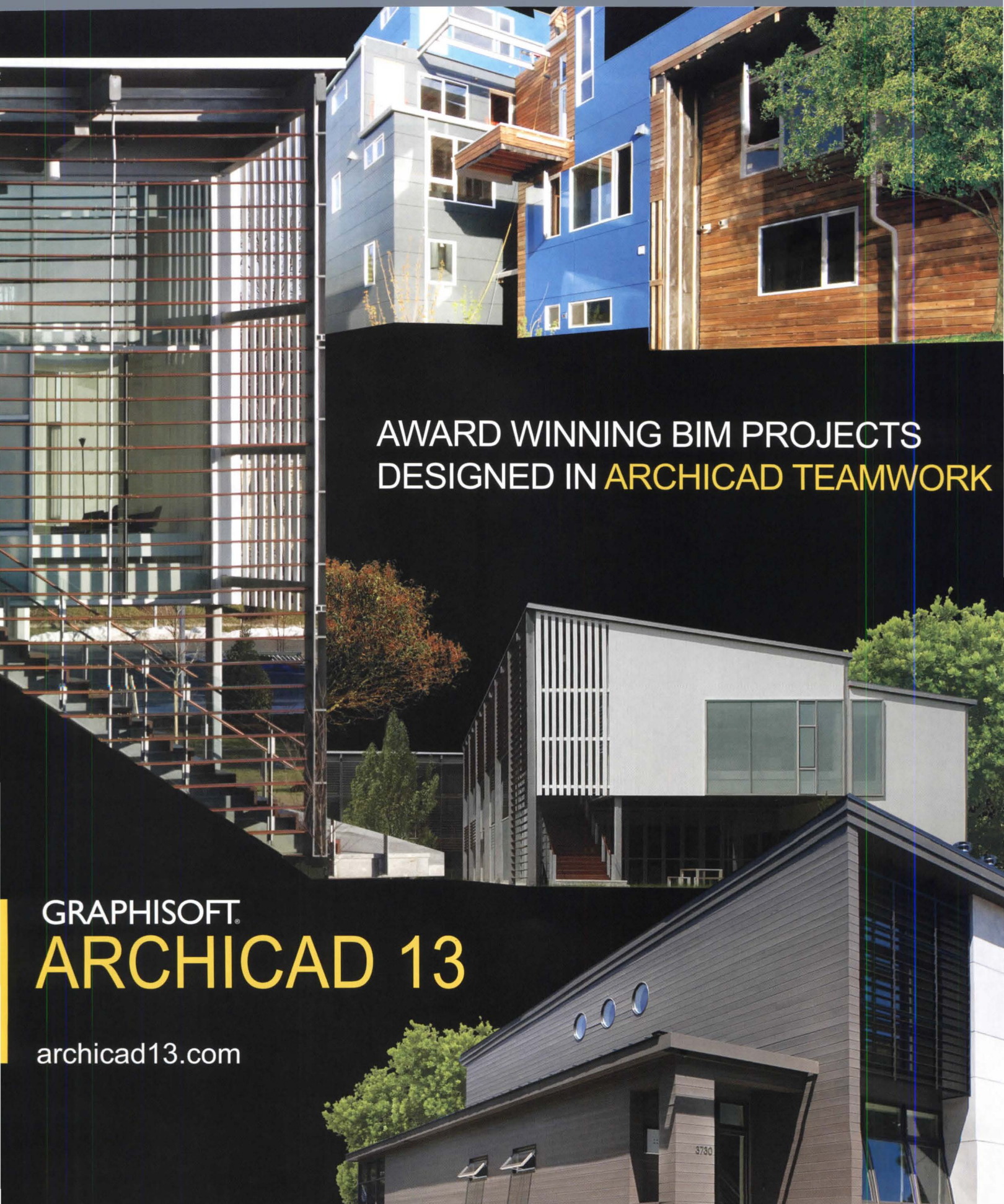

1: The Urban Trees project designed by b9 Architects is a winner of an AIA Seattle "Future Shack" award. (Image Courtesy of b9 Architects) | 2: The new headquarters of

EARN ONE AIA/CES LEARNING UNIT

Open BIM: Interdisciplinary Collaboration Strategies for a Plural World

Using advanced tools to manage a collaborative, interdisciplinary workflow process without limiting your choice of the electronic design and communication tools used

Provided by GRAPHISOFT
By Peter J. Arsenault, FAIA, NCARB, LEED-AP

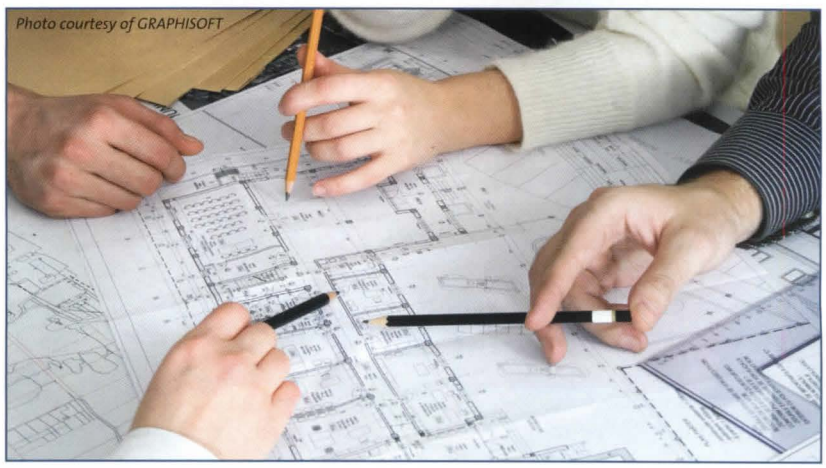
Photo courtesy of GRAPHISOFT

Managing collaboration and coordination between multiple parties is a necessary requirement for every design and construction project. In recent years, traditional architecture, engineering and construction (AEC) procedures have been evolving toward more integrated and cooperative process workflows to result in mutual advantages and a better-built environment. A mission critical challenge of 21st Century architectural practice, though, is to address the plurality of choices in light of the increasing collaboration of parties while integrating the many forms of electronic information and design tools in a manner that is largely transparent and efficiently accessible to all parties involved.

BUILDING INFORMATION MODELING (BIM) AND INTEGRATED PROJECT DELIVERY (IPD)

The AEC response to this plurality of choices in collaboration and information management has manifested itself at two different levels. First an increasing use of Building Information Modeling (BIM) as a way to electronically capture three-dimensional building information opens brand new ways for the different professionals to share and coordinate information throughout the entire design and construction process. Second a growing trend toward greater collaboration among designers, contractors, and owners through Integrated Project Delivery (IPD) introduces new responsibilities for all parties involving them much earlier in the project. From a management standpoint, it is clearly important to be able to first differentiate what comprises these two different AEC trends and second to manage the integration of the appropriate elements of each into your work.

BIM Overview

The National Institute of Building Sciences (NIBS) through its Building Smart Alliance program, has developed this working definition:

"BIM is a digital representation of physical and functional characteristics of a facility and a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life cycle; defined as existing from earliest conception to demolition."

This definition embodies several important shifts in thinking compared to the traditional preparation of drawings and specifications.

First, BIM goes beyond just the physical information contained in a drawing but also includes the functional information of the various parts and pieces of a building or facility. So, in addition to traditional building component information such as size, materials, and finish, other useful information can be captured related to things like cost, scheduling, maintenance, and warranty. This is done by treating each element in a building as an electronic "object" that has all of this other relevant information embedded in or linked to it.

Secondly, this definition makes the electronic building model a "shared resource." Architects and engineers, obviously, have always produced drawings and specifications with the intent of sharing them for the construction and, as appropriate, the maintenance and operation of a building. But the intent here is to

CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Open BIM: Interdisciplinary Collaboration Strategies for a Plural World.** To earn one AIA/CES Learning Unit, answer the questions on page 123, then follow the reporting instructions or go to **ce.architecturalrecord.com** and follow the reporting instructions.

Learning Objectives
After reading this article, you should be able to:

- Define and differentiate between Integrated Project Delivery (IPD) and Building Information Modeling (BIM).
- Explore the relevance of IPD and BIM to each other and to your own architectural work.
- Analyze the basic elements of intelligent model based collaboration between architects and engineers
- Identify the advantages of an open model standard based work flow process that can integrate all participants

Source: ACCIONA I+D+I
Photo courtesy of GRAPHISOFT

New Leon Airport Terminal: The construction team used an integrated system to link all departments allowing them to work interactively on a single project file and share progress in real time

make the BIM model something more — namely a common decision making resource continuously available to everyone involved in the building or facility.

Third, is the intent to make the BIM database and process a long term "living tool." That means it is ideally available and kept current with input from multiple people from the earliest design concept, through full documentation, into construction, during the building operation and ultimately used to "de-construct" or demolish the building.

The beneficiaries of the above definition can be a large group of people over the life of the building. This group could include owners, planners, realtors, appraisers, mortgage bankers, designers, engineers, estimators, specification writers, safety inspectors, occupational health specialists, environmentalists, contractors, lawyers, contract officers, sub-contractors, fabricators, code officials, operators, facilities managers, maintenance personnel, risk managers, renovators, first responders, demolition/deconstruction contractors and perhaps even others. Each of these people has their own view or use for the information in a BIM model. Some contribute information to the model, some simply read and use information from it, while some may do both.

For all of this information to be truly useful to the most people it must be readily accessible and available to each person and be able to address the different needs of each. NIBS points out that to the owner it means that "all of the collective information about how a facility was intended to perform, the incorporated pieces and parts, its operational requirements, its planned and actual performance, its occupants, etc. are securely available for use and analysis throughout the life of the facility." To project design and construction team members it means that "facility information and the basis for contractually exchanging it are transparently and consistently defined. It also means that required information can move quickly from one party to the next and from one application to another without requiring manual interpretation, re-keying, or risk of misinterpretation." To all participants in the facility life cycle it "provides the opportunity to use computer-based applications to view data in three-dimensional pictures, to view performance tables in easy-to-understand visual diagrams, to discover problems and conflicts while designs are still conceptual instead of waiting until they are discovered during physical construction, to predict a lifetime of utility consumption for each of several design and engineering options in order to select the most desirable one long before the facility details are specified and built, and a host of other highly desirable opportunities. In short, it provides the opportunity to

Urban Trees Mixed-use Development Project

Images courtesy of b9 architects inc, Photography: Andrew von Leeuwen

The Urban Trees project designed by b9 architects is a winner of an AIA Seattle "Future Shack" award.

b9 architects have transformed a blighted Seattle lot into an award-winning commercial/residential complex featuring flexible "live-work" units, green design, and a plaza on which pedestrians and cars can coexist. Bradley Khouri of b9 architects designed the 11-unit project to create a vibrant community enriched by commercial businesses such as the restaurant/bar on the corner.

Designed with BIM software, Urban Trees is a winner of an AIA Seattle "Future Shack" award recognizing progressive solutions for urban living. Five of the 11 Urban Trees residences are live-work units. The first floors are retail spaces opening onto the sidewalk, and the upper three floors serve as family living spaces in a variety of configurations. In the back, homes open into a courtyard and a woonerf, a plaza shared by pedestrians and cars (a concept borrowed from the Dutch).

BIM was instrumental in helping b9 save time and money, more easily manage a complex design project, maximize sustainability, and win over key stakeholders. "BIM helped us execute at every step, including orienting Urban Trees' windows and courtyard to optimize solar energy, producing special faux-watercolor renderings, and supplying all the necessary visualizations to expedite the public review."

Khouri added that it would have cost his firm $3,000 each to create water-color style renderings like the ones he produced digitally plus $1,500 to commission solar studies he also performed in the BIM model. Urban Trees buildings are made from sustainable materials, including facade panels of seasoned fir boards reclaimed from old buildings, floors made of recycled pallets, and concrete courtyard pavers recovered from a car dealer's surplus. As befits its name, the project provides and preserves cherry, linden, maple and black hawthorn trees on the site.

design in 'virtual' space before committing limited resources to the creation, care and feeding of a facility that will exist for perhaps fifty years or longer."

The ability for BIM to meet all of these various needs is not limited because of any lack of information. Generally the needed information is currently readily available. However, the rules and protocols for how to exchange and manage that information are not completely agreed upon yet, which is one of the reasons that the National BIM Standard is needed and welcomed.

IPD Overview

Integrated Project Delivery (IPD) has occasionally been misunderstood to simply mean that everyone on a design team works on the same BIM model. While that is one piece of the story, IPD is really much more than that. In 2007, the AIA IPD Guide stated that "IPD is a project delivery approach that integrates people, systems, business structures and practices into a process that collaboratively harnesses the talents and insights of all participants to optimize project results, increase value to the owner, reduce waste, and maximize efficiency through all phases of design, fabrication, and construction." In version 2 of the AIA/AIACC Integrated Project Delivery Guide, (anticipated in 2010) the updated working definition that is proposed is, "IPD is a project delivery method distinguished by a contractual agreement between a minimum of the owner, design professional, and builder where risk and reward are shared and stakeholder success is dependent on project success."

More than just sharing of information then, IPD is emerging as a completely different business and contractual model where the major stakeholders share the risks and rewards of a building or facility project, financial and otherwise. In fact, there are two versions of AIA Contract Documents that are now available for IPD projects. The "Transitional" contracts provide for collaboration between the architect, contractor, and owner in an arrangement modeled after existing construction manager agreements. These include:

- A295™–2008 General Conditions of the Contract for Integrated Project Delivery
- B195™–2008 Standard Form of Agreement Between Owner and Architect for Integrated Project Delivery
- A195™–2008 Standard Form of Agreement Between Owner and Contractor for Integrated Project Delivery
- GMP (Guaranteed Maximum Price) Amendment to A195-2008

For those collaborations that are ready to fully integrate and skip past the Transitional phase, a Single Purpose Entity Agreement may be the way to go. AIA Document C195™–"2008 Standard Form of Single Purpose Entity Agreement for Integrated Project Delivery" has been published for that purpose. This agreement allows for a complete sharing of risk and reward whereby, owners, architects, and constructors / builders agree to work together from the beginning under one master agreement to carry out the project with mutually agreed-upon goals and target costs. It typically also includes liability waivers among key participants to recognize, manage, and limit the risks of working together.

International Fund for Animal Welfare (IFAW) Headquarters

The new headquarters of the International Fund for Animal Welfare (IFAW) designed by DesignLAB architects is a COTE Top Ten Award winner.

This 54,000 square foot global headquarters building on Massachusetts's Cape Cod was designed by Boston-based DesignLAB architects. A worldwide organization devoted to protecting wildlife, the IFAW sought a sustainable building that maximizes the organization's global advocacy, strategic planning and communications.

DesignLAB utilized a Building Information Model (BIM) to design a headquarters that facilitates open communication, collaboration and interaction. Using BIM and a collaborative process helped to accelerate the schedule of the project and ensure accuracy with early building estimates. The project manager, contractor and architect/engineering team formed an early partnership to fast-track the process and control cost. A 3D BIM process that integrated delivery system approvals, pricing, and early release packages enabled the team to condense what would have been a 37-month design and construction process into 26 months.

The technology also helped the team raise the project's LEED rating. While the design initially aimed for LEED Certified or possibly Silver status, the project team continuously monitored project costs, procurement, and materials use throughout the construction process. As the project neared completion, the team realized it had achieved more LEED points than previously expected. When presenting this information to IFAW, they identified several areas where small additional expenditures or efforts would put the project over the Gold threshold.

"We used BIM for the design of the IFAW headquarters in part because our structural engineer partner on the project already used BIM for all of its designs, and working with one BIM model facilitated work between our two firms," said architect Sam Batchelor of DesignLAB. "The ability for both architects and engineers to access the same product database and to collaborate on the 3D model saved time and money, a bonus for the client." The building was picked as one of the United States' top 10 best examples of sustainable architecture and green design by the AIA Committee on the Environment (COTE). The COTE Award is the AIA's top green award, honoring projects that demonstrate a thoroughly integrated approach to architecture, natural systems and technology. In addition to the COTE award, the IFAW headquarters received the AIA award for interior architecture and three additional awards from the Boston Society of Architects, including an honor award for design, an interior architecture award and a sustainability award.

The Ross Street House in Madison, Wisconsin

Rendering Courtesy Richard Wittschiebe Hand (RWH) Architects

The Ross Street House in Madison, Wisconsin designed by Carol Richard of Richard Wittschiebe Hand (RWH) Architects achieved LEED for Homes Platinum level.

The Ross Street House in Madison, Wisconsin, was designed by (and is the new home of) Carol Richard of Atlanta-based Richard Wittschiebe Hand (RWH) Architects. The 2,700 square foot 3-level residence achieved 102 out of a possible 136 LEED certification points, and is one of only about 200 LEED Platinum homes nationwide.

Richard's sustainable design features include large south facing windows with sunscreens, permeable paving, tankless water heaters, solar panels, a variety of recycled and regional materials, an energy efficient furnace, and rainwater collection system for irrigation. BIM played a particularly important role in helping Richards capture as much of the winter southern sun as possible while providing shade in summer. Using the BIM model, she created a controlled "light box" to determine sunlight patterns and design louvers that would allow the sun to penetrate the home between October and February, while shading the windows between May and August.

Being a good neighbor was also an important design goal. The house sits on a small lot among a mix of postwar Cape Cod style homes and a few 1960's modern homes. The architect and her husband wanted to maintain the scale of the neighborhood and utilize its familiar materials. Richards used BIM to model the adjacent houses to see how well her design fit into the neighborhood.

As a lover of modern design, she felt it equally important to create a space that reflected her own design sensibilities, and which would feel comfortable in scale. "With BIM we were able to design and view all elements of the project inside and out and share it with our integrated design team to spot and solve problems up front rather than discovering them when it was too late," said Richard. "When we decided to move to Madison, we were determined to create a new livable and efficient home for ourselves. We are interested in the environment and want to be good neighbors to the people who live on our street and to the world in which we live. Being able to model your design, site, environment and green strategies all within a single BIM model made attaining this goal much easier."

Beyond the contract itself, various other AIA publications go on to list the principles and characteristics that support a mature IPD business relationship including:

- Mutual respect and trust as the basis for the relationship
- Mutual benefit and reward shared for the successful outcome of the project
- Early involvement of all key participants
- Early goal definition, jointly developed and validated
- Collaborative innovation, decision making, and appropriate responsible control between the key participants
- Intensified early planning
- Open communication within the entire project team
- Appropriate use of technology, including BIM, used by multiple parties
- Agreement on the team leadership, organization and roles
- Agreement on the overall design and delivery process

In addition to the above, it is often desirable for IPD projects to include "lean" principles of design, construction, and operations, the co-location of project teams (i.e., everyone in one real or virtual "Big Room") and transparent project financial information (open books).

It is worth pointing out that some licensing and business laws in various states will have very direct impacts or limitations on how IPD is practiced in those states. Therefore, it is critical to have appropriate legal advice before entering into any such collaborative arrangement or agreement. Of particular relevance is the principle of "responsible control" by a licensed architect or engineer which needs to be maintained throughout the design and construction process.

THE CONNECTION BETWEEN IPD AND BIM

It is not surprising that IPD has emerged as a significant current trend during the time of increasing BIM usage. BIM does indeed provide a needed and very appropriate foundational technology to support the multi-faceted collaboration of IPD. Meanwhile, the people engaging in IPD and fully collaborating are defining their needs and pushing the development of BIM to reach levels of ever greater usefulness. The connection, then, becomes one of strong interdependence between the parties or team members in their IPD business relationship and the technological tools of BIM where the day-to-day work of that relationship is carried out. IPD and BIM support each other, but they do not supplant or replace each other. It is also worth recognizing that either one can be carried out without the other, although it is just as easy to imagine that, in light of the information above, those scenarios are less than ideal and over time could be less common.

Firms that choose to pursue projects using IPD and BIM need to recognize that such a decision does not eliminate the basics of good management and design. Joining forces with others means that clear lines of communication and management must be agreed upon to keep the relationship healthy and whole. And using a computer with sophisticated software doesn't mean design decision making is made by a machine. More than ever, the human element and the skills of the architect are needed to orchestrate, oversee, and manage the workflow process.

Continues at ce.architecturalrecord.com.

Peter J. Arsenault, FAIA, NCARB, LEED-AP *is an architect and green building consultant based in Upstate New York focused on sustainable design and practice solutions nationwide.*

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Program title: **"Open BIM: Interdisciplinary Collaboration Strategies for a Plural World" (03/10, page 119)**. AIA/CES Credit: This article will earn you one AIA/CES Learning Unit (Valid for credit through March 2012). **Directions:** Refer to the Learning Objectives for this program. Select one answer for each question in the exam and fill in the box by the appropriate letter. A minimum score of 80% is required to earn credit. **To take this test online and avoid handling charge, go to ce.architecturalrecord.com**

1. A BIM model is defined to be available and kept current:
- ❑ **a.** during the design and construction of a building.
- ❑ **b.** during the operation of a building.
- ❑ **c.** during the demolition of a building.
- ❑ **d.** All of the above

2. A Single Purpose Entity IPD Agreement allows for the following between an owner, architect, and builder:
- ❑ **a.** Shared risk and reward
- ❑ **b.** Mutually agreed upon project goals
- ❑ **c.** Target Costs
- ❑ **d.** Low-Effort

3. Using BIM and IPD together can result in all of the following except:
- ❑ **a.** a need to establish clear lines of communication.
- ❑ **b.** less need to design since the computer can do it.
- ❑ **c.** a need to focus on good project management.
- ❑ **d.** a focus on a healthy and whole relationship.

4. The term interoperability means:
- ❑ **a.** the ability to freely interact with different types and brands of software used by different people over the life of the facility.
- ❑ **b.** the ability to design areas normally handled by the rest of the project team.
- ❑ **c.** the ability to use the BIM model over the life cycle of the building.
- ❑ **d.** the ability to share BIM objects online.

5. Industry Foundation Classes (IFCs) are proprietary communication software for collaborating on BIM models.
- ❑ **a.** True
- ❑ **b.** False

6. Project Managers can use the BIM process to enforce the roles and responsibilities of the team members by:
- ❑ **a.** assigning everyone the right to change and edit anything in the BIM model.
- ❑ **b.** preventing changes from being made to the BIM model once the design is done.
- ❑ **c.** limiting the addition of content to the BIM model to specific team members.
- ❑ **d.** None of the above

7. BIM and IPD allow for earlier analysis of cost estimates and energy use.
- ❑ **a.** True
- ❑ **b.** False

8. The decision to employ an active BIM Server/Computer client approach can produce the following benefits:
- ❑ **a.** greater speed of information transfer and model updating
- ❑ **b.** increased flexibility due to the ability to edit elements "on the fly"
- ❑ **c.** improved data safety using an intelligent server that can screen for corrupt files
- ❑ **d.** All of the above

9. The concept of Dynamic Workflow means:
- ❑ **a.** the budget and scope of the project are always changing.
- ❑ **b.** each team member can be working in parallel on various projects and adjustments can be made "on the fly."
- ❑ **c.** the people on the project change roles or leave the firm.
- ❑ **d.** computer programs are updated regularly.

10. In order to achieve the greatest accessibility for remote working relationships with individual or solo team members a firm should:
- ❑ **a.** maintain multiple offices.
- ❑ **b.** enter more design competitions together.
- ❑ **c.** select BIM Server software that allows working connections via the Internet.
- ❑ **d.** have everyone use the same software program.

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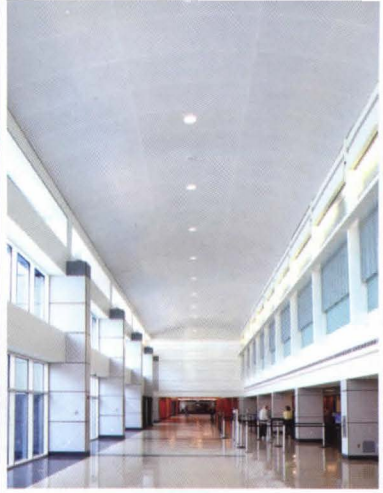
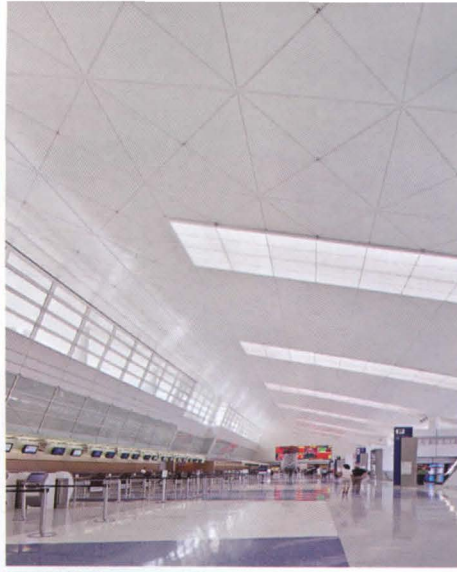












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CIRCLE 41

ARCHITECTURAL RECORD

Record Interiors 2010

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All submissions should be electronic* in one of the following configurations and accompanied by an official entry form that is available by visiting **architecturalrecord.com/call4entries**

- A CD or DVD containing the writable PDF "Call for Entries" form completely filled out; and a good-quality, low-resolution project PDF that provides at least 10 full-page images, plans, drawings, elevations, and explanatory text.
- A CD or DVD containing the writable PDF entry form; at least 10 good-quality 8-by-10-inch (screen-resolution) 72 dpi images, plans, drawings, and elevations as JPEG files; and explanatory text as a Microsoft® Word document.

* Please include one printout of the "Call for Entries" form with the disc. Be sure also to include the project's date of completion. Do not send binders or hard copies of the project presentations. No materials will be returned.

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QUESTIONS:

E-mail questions to: **linda_lentz@mcgraw-hill.com**

New and Upcoming Exhibitions

Cars, Culture, and the City
New York City
March 17–August 1, 2010
New York City's paradoxical relationship with the car will be explored in this exhibition of rarely seen drawings, models, historic photographs, films, advertisements, architectural schemes, and more to reveal the surprisingly important role the city played in jump-starting the automobile industry. At the Museum of the City of New York. For more information, visit www.mcny.org.

Ongoing Exhibitions

The Great White Whale Is Black
New York City
Through March 13, 2010
Through a selection of work spanning the past five decades, the Irwin S. Chanin School of Architecture Professor and painter/architect Tony Candido presents his visionary idea of the interplay between humanity and the contemporary environment and what this tells us about the future of architecture. At The Cooper Union. For more information, visit www.cooper.edu.

Back on the Map
New York City
Through March 31, 2010
Revisiting the New York State Pavilion at the 1964/65 World's Fair, this exhibition explores the spectacle that embodied the technological prowess of the period as well historical and pop-culture references that would later define Postmodernism. Visit www.aiany.org.

Design USA: Contemporary Innovation
New York City
Through April 4, 2010
This exhibition celebrates the winners honored during the first 10 years of the National Design Awards, including works of fashion, technology, graphics, architecture, landscape, and product design. Following the exhibition, students will have two workshop options: "Chair Design" or "Graphic Identity." Visit www.cooperhewitt.org.

SNØHETTA
New York City
Through April 13, 2010
The innovative and award-winning Norwegian firm Snøhetta will be featured in this multifaceted exhibition. *SNØHETTA architecture – landscape – interior* offers insight into the design and construction of the firm's most important works, including the celebrated Bibliotheca Alexandrina in Alexandria, Egypt; the recently completed Norwegian National Opera and Ballet in Oslo; and the planned National September 11 Memorial Museum Pavilion in New York City. Visit www.scandinaviahouse.org.

Spatial City: An Architecture of Idealism
Milwaukee
Through April 18, 2010
Spatial City brings together an international, multigenerational array of artists – with an emphasis on artists living in France – whose work contends with utopian thinking and the idealism and cynicism it inspires. Visit http://arts.uwm.edu.

John Portman: Art & Architecture
Atlanta
Through April 18, 2010
Featuring 15 completed and current architectural projects by Atlanta-based architect John Portman, this exhibition explores five decades of national and international developments, including the Hyatt Regency Atlanta (1967), which is

globally renowned as the first Modern atrium hotel. Visit www.high.org.

Contemplating the Void: Interventions in the Guggenheim Museum
New York City
Through April 28, 2010
For its 50th anniversary, the Frank Lloyd Wright–designed Guggenheim Museum invited more than 200 artists, architects, and designers to imagine their dream interventions for this exhibition. For more information, visit www.guggenheim.org.

Spitzer School of Architecture Exhibition
New York City
Through April 30, 2010
This extensive exhibition designed by Professor Jose Oubrerie, with construction and installation by his students, includes original models, drawings, photographs, and videos of two of Oubrerie's projects. Visit www.ccny.cuny.edu.

House of Cars: Innovation and the Parking Garage
Washington, D.C.
Through July 11, 2010
For more than 100 years, the parking garage has provided design and engineering solutions to the parking problem; this is the first major exhibition to explore the history of this familiar structure and to open conversations about innovative designs and parking solutions for the future. Call 202/272-2448 or visit www.nbm.org.

Lectures, Conferences, and Symposia

Frank Lloyd Wright Preservation Trust Architecture Fantasy Camp
Chicago
March 5–8, 2010
In this chance-of-a-lifetime workshop experience, participants from around the world work with accomplished architects to plan and design a structure of their own. No architecture experience is necessary, as the skilled designers will help participants create a new addition to their home, remodel their kitchen, and design a picturesque dream home. Visit www.gowright.org.

SmartGeometry 2010 Conference
Barcelona
March 23–24, 2010
This event is focused on innovative design tools, technologies, and methodologies that allow and encourage new forms of architectural and structural expression. With the theme "Working Prototypes," the conference includes an interactive "shop talk" day, a hands-on workshop, and a symposium with presentations by preeminent authorities. For more information, visit www.smartgeometryconference.com/2010.

Architects and Clients: Building Images of Home
Pittsburgh
March 26, 2010
Learn about three images of home from Pittsburgh-area architects as they discuss their live-work rehab on Penn Avenue in Friendship and the transformation of a Squirrel Hill Victorian into a LEED-certified home, and present innovative home ideas. At the Carnegie Museum of Art. For more information, visit www.cmoa.org.

Global Construction Technologies and Building Materials
Doha, Qatar
March 28–29, 2010
This second annual conference aims to add to the key operational aspects of building materials and construction technologies, putting forward new and emerging trends. It will feature international case studies on iconic buildings and structures, such as Tornado/QIPCO Tower, Dubai Towers, Ocean Financial Centre, and Masdar City Centre. Visit www.marcusevans.com.

Residential Design and Construction
Boston
April 14–15, 2010
This premier convention and trade show features workshops and professional development opportunities, covering topics such as sustainable design, alternative energy, smart business practices, interior design, home renovation, and smart growth/smart development. For more information, visit www.rdcboston.com.

Coverings 2010
Orlando
April 27–30, 2010
Coverings is the premier international trade fair and expo dedicated exclusively to showcasing the newest in ceramic tile and natural stone. Architects and designers will have access to informative, accredited seminars, and live demonstration sessions. Visit www.coverings.com.

Sustainable Schools
Washington, D.C.
April 29, 2010
Schools house the nation's most precious resource, yet many expose children to off-gassing toxins, are built in far-flung locations, and lack sunlight, which can create vitamin D deficiencies. This lecture will explain why a greener-built

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school means a brighter future for us all. For more information, visit www.nbm.org.

Glenn Murcutt International Architecture Master Class
Sydney
July 11–25, 2010
This intensive, two-week design-studio program involves a group-design project and culminates with a design presentation by participants and a critique by Australia's best-known architect, Glenn Murcutt. The annual master class has created an active, international alumni network that includes practicing architects, academics, postgraduates, and senior students. For more information, visit www.ozetecture.org.

Competitions

Temporary Outdoor Gallery Space Ideas Competition
Registration deadline: March 26, 2010
TOGS was created in order to challenge the visual and conceptual boundaries of the outdoor gallery space and to transform the open-air art-fair experience into one that not only showcases fine art, but also introduces the element of architecture to the public. Following TOGS 1 and 2, TOGS 3 will continue to generate innovative proposals for a temporary outdoor structure that will function simultaneously as an exhibition space and as an architectural exhibition. For more information, visit www.artallianceaustin.org.

Deborah J. Norden Fund Travel/Study Grants
Application deadline: March 29, 2010
Established in 1995 in memory of architect and arts administrator Deborah Norden, this competition awards a total of up to $5,000 in travel/study grants to students and recent graduates in the fields of architecture, architectural history, and urban studies. Visit http://archleague.org.

Personal Infrastructures – 2010 SMIBE Short Film Competition
Submission deadline: March 31, 2010
Entrants to this competition are asked to answer the question: "What are issues that we should be addressing in our built world?" Submissions must take the form of a video under three minutes in length. Visit www.smibe.org.

Radical Innovation in Hospitality
Submission Deadline: April 1, 2010
This competition seeks to discover, identify, and explore radically innovative concepts – including those already open to the public, in development, or on the drawing boards – and provide a platform

DATES & EVENTS

for new ideas and innovation in hospitality. Visit www.radicalinnovationinhospitality.com.

Atlantic City Boardwalk Holocaust Memorial Design Competition
Submission deadline: April 1, 2010
This is a two-stage international design competition to choose a winning proposal to build a fitting and compelling memorial to the Holocaust. Entry is anonymous and open to professionals and students in architecture, design, and the visual arts. Visit www.acbhm.org.

Art in Architecture Juried Competition
Registration deadline: April 1, 2010
The goal of this competition is to find images of architecture as a repository for art, revealing how art is expressed in architecture, and how art and architecture affect each other. In focusing on the capacity of art and architecture to be transcendent, the resulting exhibition will add special voice to the current debate between the "container" and the "contents" that has been taking place across the globe. Visit www.somersetart.org.

Retrospective of Courthouse Design
Submission Deadline: April 15, 2010
Chronicling the major courthouse trends and related architectural innovations of the past decade, this competition seeks design examples of various court jurisdictions, including federal courts, state courts, and courts of local municipalities. For more information, visit www.ncsc.org.

Tiananmen Square Landscape Architecture Competition
Deadline: June 1, 2010
This competition aims to generate debate and ideas for redesigning part of the most important urban space in the history of Chinese civilization. The intention is to set a new course for Eastern landscape architecture, helping in the development of an ecologically and culturally distinctive design tradition. Visit www.gardenvisit.com.

Western Red Cedar Architectural Design Awards
Deadline July 30, 2010
The Western Red Cedar Architectural Design Awards recognize innovative design using Western Red Cedar. Winners will be chosen by a panel of notable architects, and the results announced at the Greenbuild Expo in Chicago. Visit www.construction.com/community/WRCLA/default.asp.

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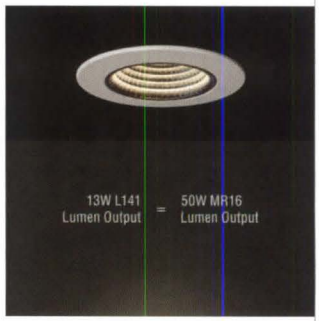

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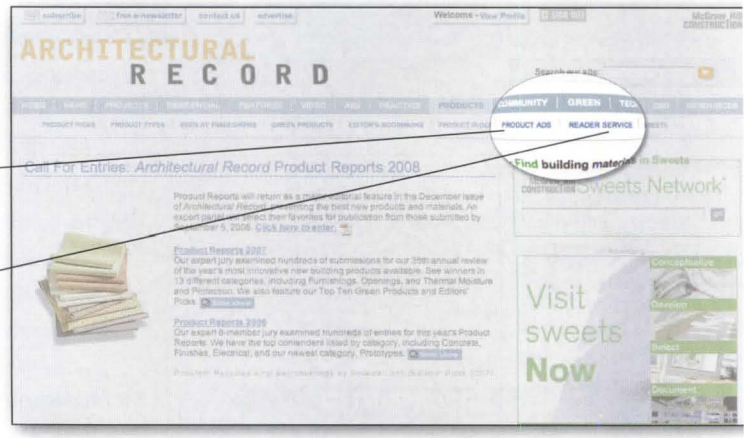

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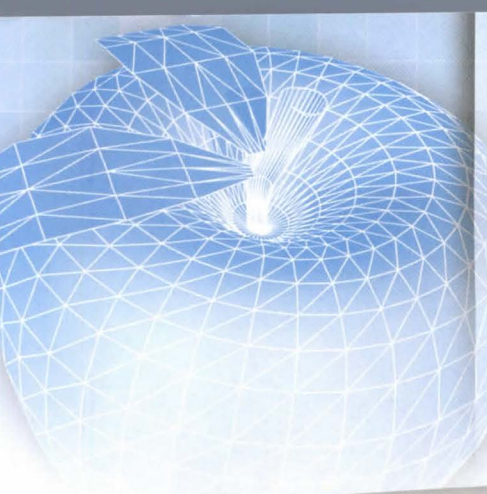

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PROJECT **Bicycle Transit Center**
LOCATION **Washington, D.C.**
ARCHITECT **KGP Design Studio**

FEW UTILITARIAN OBJECTS match the bicycle, with its triangulated frame and rim-and-spoke wheels, for structural elegance. This efficiency provided the inspiration for a recently opened bicycle transit center (BTC) in Washington, D.C. In the middle of a traffic island just outside the west portico of Union Station, three arched steel tubes stabilized by transverse tension rods support a narrow, 127-foot-long glass enclosure. The BTC, built by the District Department of Transportation as part of a citywide program to make D.C. more cycling friendly, contains 150 bicycle-parking spaces available for rent by the month or the year, a changing room, and a small shop offering repair services and cycling accessories.

In addition to borrowing the structural logic of the bicycle, the approximately $2.4 million, 1,750-square-foot pavilion seems to take formal cues from cycling-related equipment: Its shell-like skin mimics the aerodynamic shape of a bicycle helmet. The BTC's "minimal structure and sleek glazing" is also intended to act as a foil to Daniel Burnham's monumental Beaux-Arts station (1908), explains Don Paine, principal of KGP Design Studio, the project's architect. "We didn't want to compete with the massive granite-clad portico," he adds.

To help control the environment inside the BTC, designers specified low-E glazing with a horizontal frit. The eastern facade, which is often shielded from direct sun by the station portico, has one layer of frit, while the more exposed western elevation has the pattern on both inner and outer panes along with a set of fixed shading louvers.

In order to maximize natural convection, the building has vents – automated for the shop and manually controlled in the rest of the space – along with fans. In addition, the retail area has a mechanical cooling and heating system that kicks in on especially hot or cold days. These strategies help maintain comfortable interior temperatures without expending huge amounts of energy, making the BTC just as green as its patrons' mode of transportation.
Joann Gonchar, AIA

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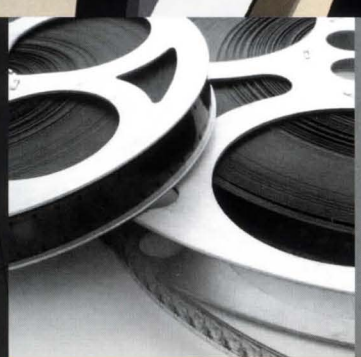

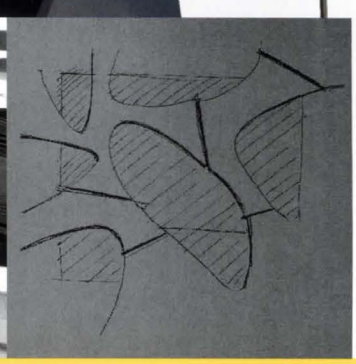

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