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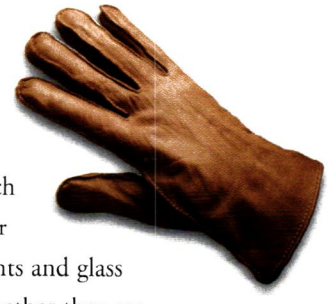

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INSIDE OUT

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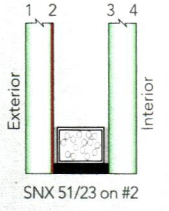

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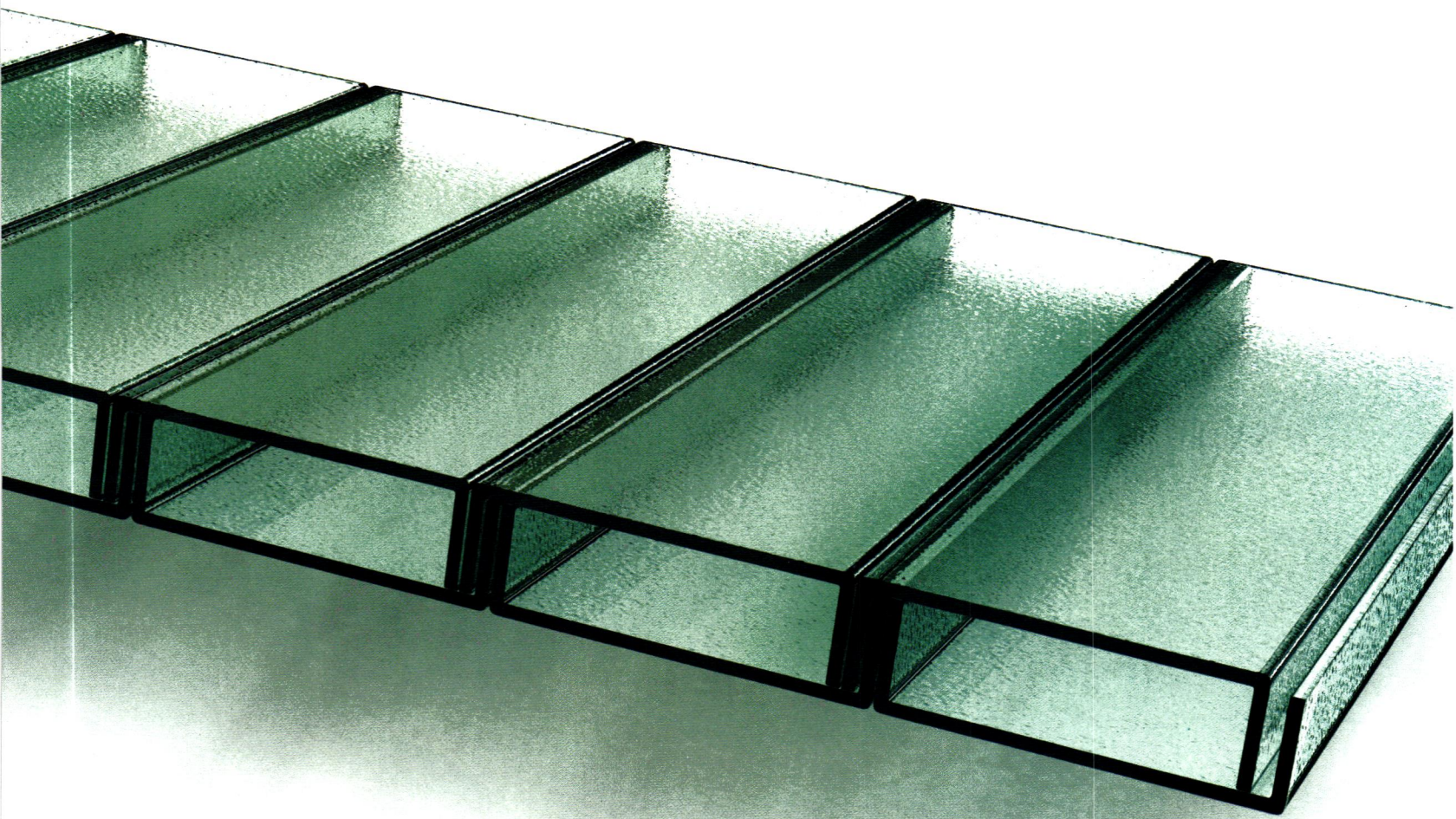

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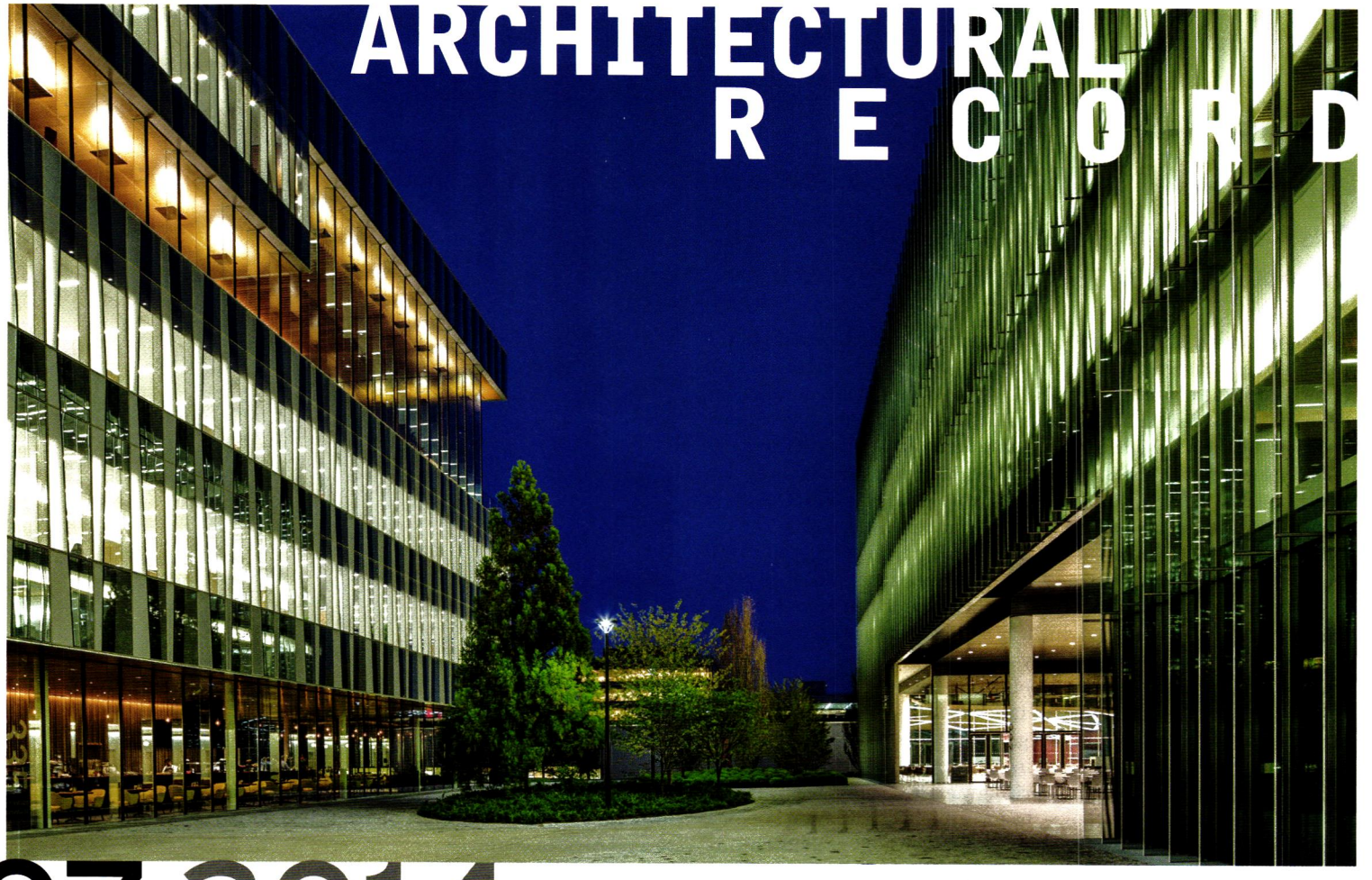

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ON THE COVER: GL EVENTS HEADQUARTERS, BY STUDIO ODILE DECQ. PHOTO BY ROLAND HALBE

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Modernism in the Rearview Mirror

This Venice Biennale just looks back, without an eye to the future.

VENICE IS a city that resists the contemporary. New architecture tends to be discreetly inserted behind the facades of historic structures, as in recent interventions designed by Tadao Ando or Annabelle Selldorf. So the contrast between the historic city and the contemporary architecture that typically fills the Venice Architecture Biennale is particularly acute.

This year, however, the Biennale, called *Fundamentals*, is looking back, not forward, if only back over 100 years (page 40). With Dutch architect Rem Koolhaas as ringmaster, the main theme is *Absorbing Modernity: 1914–2014*. His brief to each of the 65 participating countries was to create an exhibition that reflected the impact of modernity on the century since World War I upended the old order. In more ways than one, it's a retro concept, which, as one of his former acolytes remarked, "only Rem could get away with."

Architecture is at an impasse, Koolhaas believes: modernism has long been exhausted as a source for innovative design yet continues to put its deadening generic stamp on global culture.

But to see the national pavilions in the Biennale is to see that modern architecture has been surprisingly elastic, subverted by local conditions, culture, and, of course, by tortured histories. Even Koolhaas admits he didn't entirely expect the varied dimensions of modernism that are on display in dozens of the national pavilions in Venice. "They are similar but absolutely different," he said. "Seeing the intensity of the effects of history was surprising. It is an endless chain of trauma, destruction, war, and poverty. You see that turmoil is a natural state."

In various Biennale exhibitions, we are confronted by how European and other countries took up the modernist agenda after World War II to create vast expanses of social housing and infrastructure in bombed-out cities and in those rapidly expanding through migration.

Social programs were highly charged with politics. In the Chilean pavilion, which won the Silver Lion, we learn that the ubiquitous prefab concrete wall panel used to build cheap housing became a powerful symbol for Socialist president Salvador Allende, who signed a panel while the cement was still wet; it was proudly placed at the entrance to the factory that produced it. After he was deposed in a military coup in 1973, the murderous dictator who succeeded him, Augusto Pinochet, altered the symbolism by removing Allende's signature on the panel and installing an altarpiece on it, with the Virgin and Child.

The Nordic pavilion (the stunning 1962 building by Sverre Fehn) showcases the good intentions of Norway, Sweden, and Finland in seeking to aid the development of three postcolonial African nations in the 1960s and 1970s, in part through planning and the design of schools, clinics, and infrastructure. But there were unexpected consequences. "Development aid has done more harm than good," says one Kenyan commentator in a filmed interview in the pavilion, while another says in despair, "The Norwegians should come back, but they are not coming back."

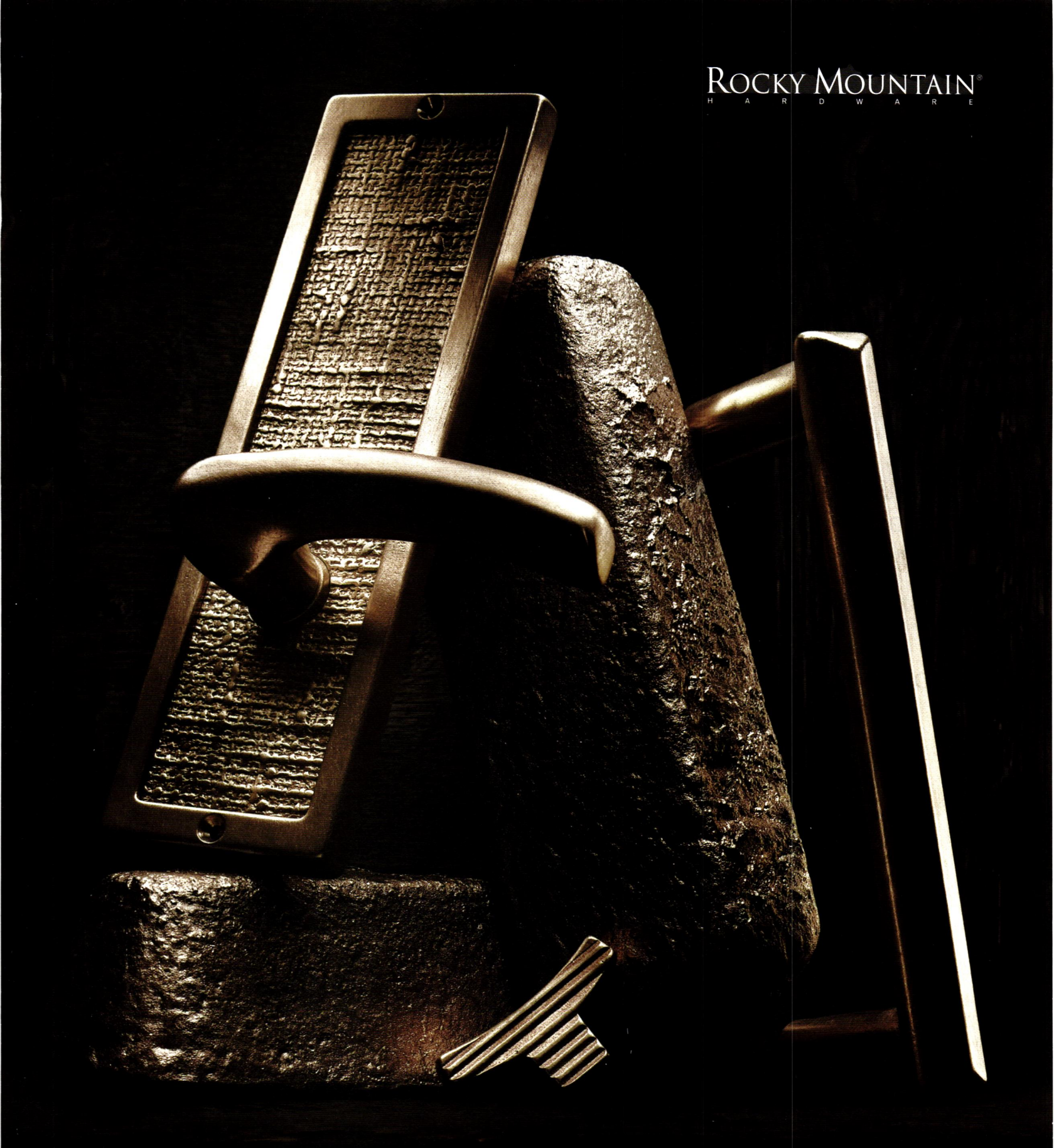
The Korean pavilion won the Golden Lion for its ambitious efforts at illuminating architecture and planning on both sides of the DMZ since the end of the Korean War. Its organizers attempted to enlist North Korea's cooperation in the exhibition; in the end, they did not succeed, but there are fascinating insights into North Korea nonetheless—including its role in the creation of gigantic civic monuments in several African countries.

As with the Korean pavilion, many exhibitions are based on copious research—some of it well interpreted and much of it not—and expressed through a variety of media, including old architecture magazines and the powerful use of film. Koolhaas, who worked in both film and journalism before he became an architect, clearly encouraged this: on view are old newsreels, documentaries, and clips from feature films. The work of Jean-Luc Godard (*Two or Three Things I Know About Her*) and Stanley Kubrick (*A Clockwork Orange*) are featured in the French and British pavilions respectively. Film clips are prominent in Koolhaas's own central show, called *Elements of Architecture*, in the Central Pavilion, and in the wonderfully meandering Italian exhibition, *Monditalia*, in the Arsenale. There are many moments of unexpected wit—the Russian pavilion is a terrific satire of real estate development and design in both the Soviet and current eras. Koolhaas wants the Biennale, open through November 23, to be a box office success, popular with the public as well as with architects and their fans.

But where does it leave the world of contemporary architecture? Koolhaas writes in the forward to the catalogue: "The market economy has eroded the moral status of architecture. It has divorced architects from the public and pushed them into the arms of the private sector." The idealism with which some contemporary architects are trying to engage in the public realm or with social and political issues is absent from this Biennale. We are left with a deeply pessimistic view as we reflect on the recent past or the problems of the present. A promising vision for the future? Don't look for it here. ■

Cathleen McGuigan

Cathleen McGuigan, Editor in Chief



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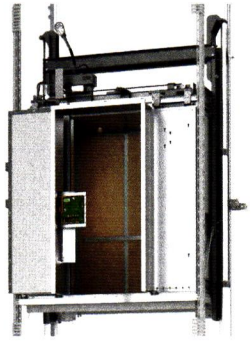

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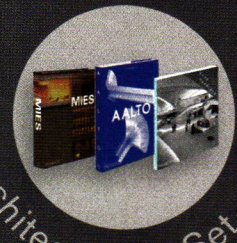

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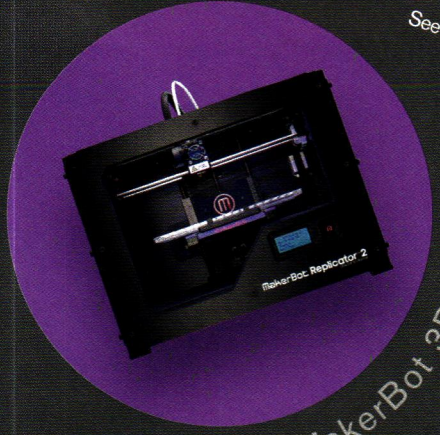

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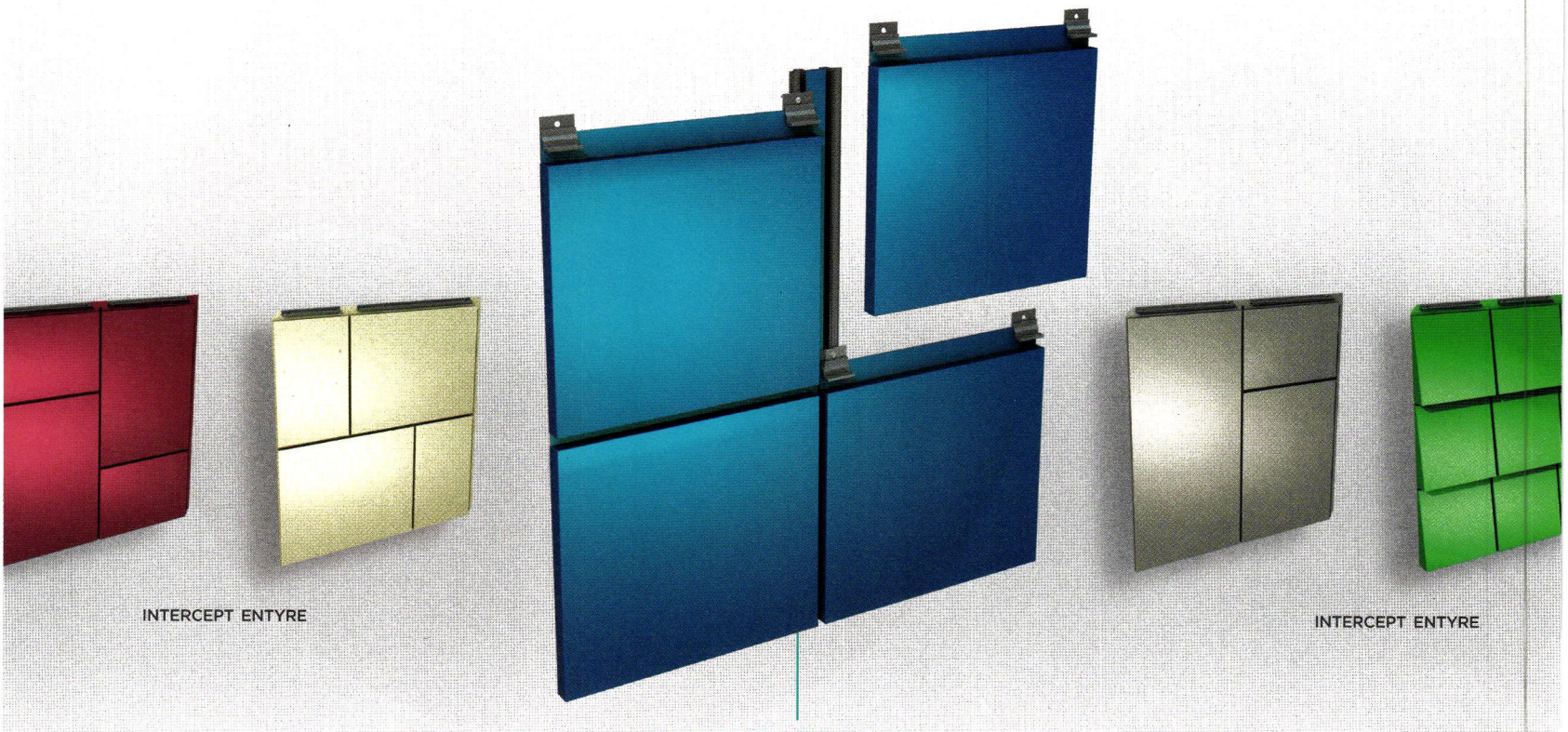

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CIRCLE 29

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perspective

When I met President Obama [at the Imperial Palace in Tokyo in April], he said when he was younger, he wanted to be an architect. I said it was not too late. In a few years, he would have plenty of time.

– *Shigeru Ban, in his remarks upon receiving the Pritzker Prize at the Rijksmuseum in Amsterdam*

Along the Huangpu: the Future of Shanghai

BY CLARE JACOBSON

A view from the Huangpu River toward construction of Skidmore, Owings & Merrill's White Magnolia Plaza in the North Bund.

PHOTOGRAPHY: © SOM

THINK OF SHANGHAI and you might picture a cluster of iconic buildings on the Huangpu River. You may think of the Bund, that famous curve of concession-era buildings on the west bank of the river (the area called Puxi). Or you might envision Lujiazui, the financial district that collects Shanghai's most dazzling skyscrapers on the Huangpu's east side (Pudong). As the Pearl of the Orient continues to expand, areas up- and downstream of these central landmarks have filled with large construction sites. High-profile firms—including Foster + Partners; Skidmore, Owings & Merrill (SOM); David Chipperfield Architects (DCA); and Arquitectonica—are involved in projects on a grand scale.

While China's economy has slowed, affecting residential construction most directly, these long-term mixed-use projects continue to progress. A tour north to south along the river passes several of these sites, each vying to become the new face of Shanghai.

Starting at Puxi's North Bund (clever marketing folks have designated a North Bund, South Bund, and West Bund, which is actually south of the South Bund), SOM is building White Magnolia Plaza, a 4.3 million-square-foot project on a 14-acre site behind the Shanghai International Cruise Terminal. Two towers dominate the mixed-use complex. One has already reached its full height of 563 feet and will be home to Shanghai's first W Hotel (the round building above, second tower from left), slated to open in June 2015. The taller office tower (at center above) is expected to top out this September. At 66 stories and 1,048 feet, it will dominate its relatively low-rise neighborhood.

Across the river in Lujiazui, Gensler's Shanghai Tower—the last of three supertall towers at the center of Shanghai's new business district—is finishing up. The spiraling tower, with offices and a hotel above a retail base, topped out last August. Its glass cladding should be completed in October, and its official opening is scheduled for the middle of next year. At 2,074 feet, it will be not only the tallest of the trio in Pudong but also the tallest building in China when it opens.

In the Bund proper, there are few changes to the now-classic buildings except for their rotating cast of tenants—high-end shops, restaurants, and bars. But just behind them, a historic block of buildings is being transformed into the Rockbund Project. DCA and Arquitectonica have been working on the million-square-foot project since 2006. DCA is restoring and converting 12 colonial buildings dating from 1897 to 1933 into offices, hotels, retail, apartments, and a museum; eight have

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been completed. It is adding 11 stories of new construction to a three-story building to create Rockbund 6, which will offer retail and office space. Arquitectonica is constructing five new infill buildings for the block, which respect the massing, materials, and color of their neighbors. Both Arquitectonica and DCA expect to complete their work in 2016.

At the southern end of the Bund, near Shanghai's original walled city, Foster + Partners and Heatherwick Studio are building the Bund Finance Center. The multi-use project will include offices, a hotel, retail, and a cultural center. Two 590-foot towers anchor the south end of the 4.5 million-square-foot site, and a collection of smaller towers with varying heights will form a mini-city along the waterfront. The superstructures of the towers have been completed, and cladding is about to begin. The Bund Finance Center should open next year.

Farther south, the creation of Expo 2010 opened up 1,305 acres formerly occupied by a shipyard, factories, and residences for redevelopment on both sides of the Huangpu. In Pudong, five permanent Expo structures have reopened—four as cultural buildings and one as a mall, a given for shopping-crazy Shanghai.

here, and designers involved include NEXT Architects (for State Grid Corporation of China) and Arquitectonica (for China CITIC Bank).

At Expo's Puxi site, the most active redevelopment is taking place in the Urban Best Practices Area (UBPA), which showcased international cities during the world's fair. The UBPA has retained its Expo name and many of its structures. The Rhône-Alpes and Hamburg pavilions have reopened with offices, restaurants, and shops; other city pavilions are being refurbished. A Starbucks has taken over the site of the Odense (Denmark) pavilion. Factories that had been remodeled into case study pavilions are being adapted again, into a large shopping destination.

From here the Huangpu travels to the newly named West Bund. The 4,300-acre site is being positioned as a media, culture, and entertainment district that acknowledges its previous life as an airport and industrial zone. The new development meets the Huangpu along Longyao Riverfront Square, Shanghai's best waterside park since the 2010 renovation of the Bund Promenade. Two museums incorporating industrial remnants in their designs opened this year. The 355,000-square-foot Long Museum West Bund by Atelier Deshaus reuses coal-conveying platforms, while the 97,000-square-foot Yuz Museum reuses a massive airplane hangar (Sou Fujimoto Architects worked on the museum's schematic design, but has removed its name from the project). In March, CMC Capital Partners, DreamWorks Animation SKG, and Hong Kong Lan Kwai Fong Group unveiled a master plan by Benoy for the West Bund's centerpiece—the DreamCenter. At 5 million square feet, its 12 office, culture, and lifestyle buildings include new headquarters for Oriental DreamWorks (a joint venture between Hollywood's DreamWorks Animation and three Chinese partners) and the Dream Dome, a performance hall in a former cement factory. Several firms, including Kohn Pedersen Fox and 3XN, are working on parts of the complex.

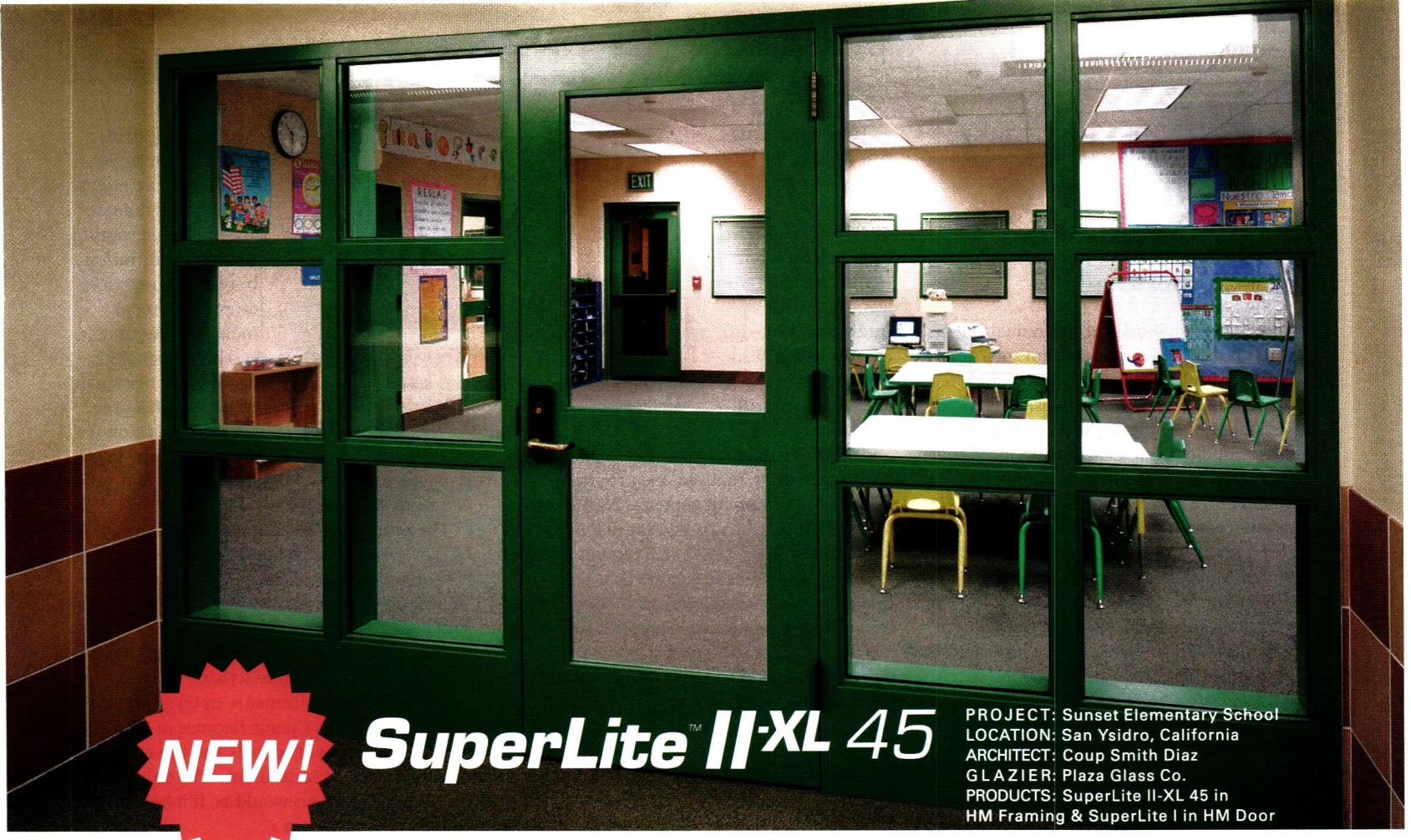
As Shanghai grows, it will continue to place value on its central river.

All national pavilions near these anchors—except for the still-open Saudi Arabia pavilion—have been cleared to allow for new development. First in the ground was John Portman & Associates' complex of four hotels. The 3 million-square-foot project is currently on hold, waiting to resolve investment issues, but Portman's Shanghai office expects to finish it by 2017. The construction on an adjacent site has raced ahead of it, with half a dozen office towers aboveground and one already up to 27 stories. Several of China's top-grossing state-owned enterprises are building headquarters

Buildings by KPF, part of the proposed DreamCenter in the West Bund (inset). A view of Shanghai's Huangpu River (above, on left), Suzhou Creek (on right), and the Rockbund Project (center-right).

With so many large-scale projects on the boards and aboveground, it is difficult to predict what is next for Shanghai on the Huangpu. New development at the Far North Bund? Or maybe the South Southwest Bund? As Shanghai grows, it will need to move farther from its iconic center. But as these projects suggest, it will continue to place value on its central river. ■

PHOTOGRAPHY: COURTESY KOHN PEDERSEN FOX (TOP); © CHRISTIAN RICHTERS (BOTTOM)



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CIRCLE 16

NCARB Supports Path to Faster Licensure

BY LAMAR ANDERSON

LICENSURE AT or shortly after graduation—a luxury known to lawyers, accountants, and massage therapists—has long eluded architects who practice in the United States. But in May, the National Council of Architectural Registration Boards (NCARB) announced that its board of directors supports the creation of an alternative—and optional—path to licensure that would permit candidates to be licensed upon graduation from an accredited program. The board's approval is an initial step in laying the groundwork for a path that could potentially shave years off the licensure process and help young designers ascend to the ranks (and, crucially, salaries) of full-fledged architects faster. According to NCARB's most recent data, 2012's class of licensees took an average of eight years to complete the Intern Development Program (IDP) and Architect Registration Examination (ARE)—not including school.

The new alternative would allow academic institutions to roll internships and the ARE into their curricula. Students who want to pursue the traditional route of education followed by internship and the exam will still have that option, and schools would not have to offer an all-in-one program.

At NCARB's annual meeting last year, the former chair of its Intern Think Tank, architect R. Corey Clayborne (at left, above), and intern Michael Archer (on right) discussed the future of the Intern Development Program.

The announcement comes as NCARB wraps up the first year of a three-year-licensure task force. In October NCARB will put out a request for interest to identify schools that want to design a licensure-at-graduation curriculum, followed by a request for proposals in January.

The task force will not dictate what a curriculum would look like. "That would be up to the individual school," says Michael Armstrong, chief executive officer of NCARB. "Our only criteria will be compliance with the three elements: an NAAB-accredited degree, IDP compliance, and ARE passage," Armstrong adds, referring to the National Architectural Accrediting Board.

In the University of Minnesota College of Design's graduate architecture program, a new concentration in research practices offers one model. Including the time getting a bachelor's degree and a graduate professional degree, the concentration is designed to shepherd students through school, internship, and exams in seven years.

The program gains some of its efficiency by partnering with local firms in a research consortium and helping students to reconcile their project work with the IDP requirements, says Renée Cheng, associate dean for research at the college and director of the concentration. It's unlikely that a one-size-fits-all approach to licensure upon graduation will emerge, notes Cheng, because of the range of academic styles at schools and the opportunities available at local firms. "I'm only positive on what this would be if it begins to spread," says Cheng. ■

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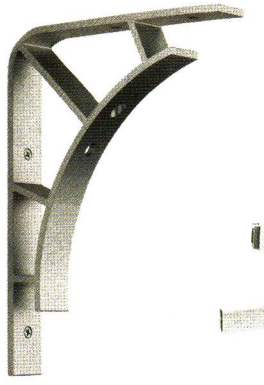

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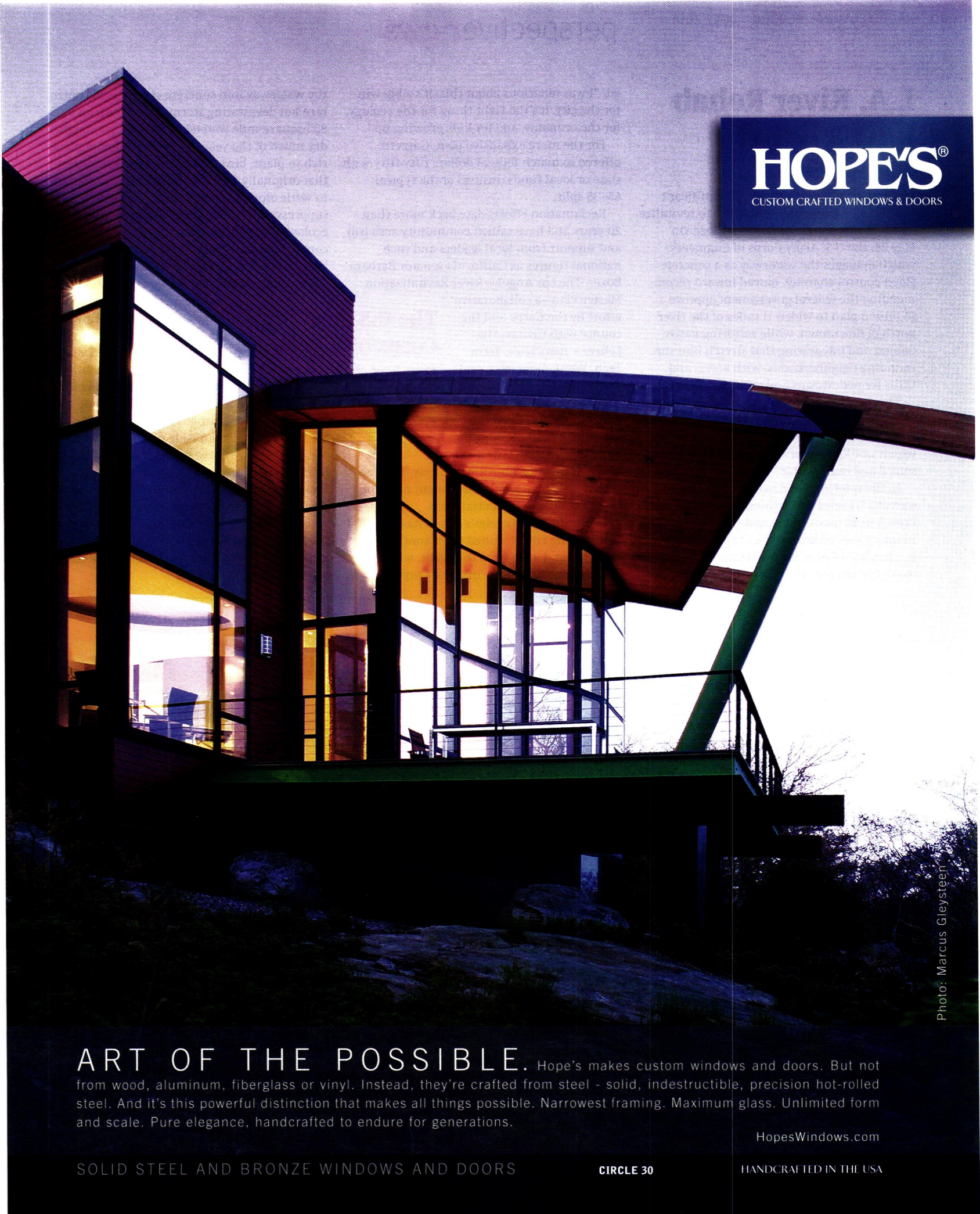

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CIRCLE 30

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L.A. River Rehab Gets a Boost

BY SARAH AMELAR

LOS ANGELES recently cleared a significant hurdle in its long-range ambitions to revitalize the once-moribund Los Angeles River. On May 28, the U.S. Army Corps of Engineers, which manages the waterway as a concrete flood-control channel, moved toward recommending the federal government approve a $1 billion plan to widen 11 miles of the river north of downtown, while restoring native habitat and integrating that stretch into surrounding neighborhoods, with access and trails for pedestrians and cyclists.

This breakthrough came barely a month after the Corps confirmed its earlier intent to support an alternative $453 million proposal, which would have left steep river banks unresolved and inaccessible.

In the interim, Los Angles Mayor Eric Garcetti traveled to Washington, D.C., to meet President Barack Obama and other key leaders. In interviews following the Corps' decision, he thanked Obama for providing "the space to make our case on its merits." The mayor added, "I was tenacious about this. It's a big win for the city. It's the right thing for the ecology, for the economy, and for kids growing up."

For the more expansive plan, Garcetti offered to match federal dollars fifty-fifty with state or local funds, instead of the typical 65–35 split.

Reclamation efforts date back more than 20 years and have rallied community activism and support from local leaders and such national figures as California senator Barbara Boxer. The Los Angeles River Revitalization Master Plan—a collaborative effort by the Corps and the county with Civitas, Mia Lehrer + Associates, Tetra Tech, Wenk Associates, and the Robert Group—was completed in 2007, and, last year, the Corps issued the Alternative with Restoration Benefits and Opportunities for Revitalization (or ARBOR) Study. The current 11-mile plan would implement many of those documents' essential ideas.

The U.S. Army Corps of Engineers moves to recommend a $1 billion plan for the river.

Ironically, Los Angeles's loss of its once-vital 51-mile-long river resulted from another federal project dating from the 1930s, when the U.S. government authorized the Corps to force the waterway into concrete channels to control rare but devastating storm flows. With an 835-square-mile watershed, the river, though dry much of the year, had fed an alluvial plain rich in plant, bird, and aquatic life—resources that originally attracted native Tongva people to settle along its banks. Later, aggressive suppression of this natural feature ravaged the ecology and cleaved the city with an ugly concrete gash instead of connecting its neighborhoods with riparian amenities.

Pending congressional approval, the revitalization project is expected to take about a decade, draw an estimated $5 billon in investments within 15 years, and generate 18,000 jobs. Kayaking, fishing, and bicycling have already made inroads here, and small bankside parks and wetlands have gradually taken form. But this latest project represents a more profound and overarching vision. The time has come "to do something big here," said Garcetti. "It can't be just another pocket park, though they're great, or a small bike path extension. It has to be a fundamental rethinking of the city, from the spine up." ■

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[OBITUARY]

Massimo Vignelli: 1931–2014

BY LAURA MIRVISS

From left (above): Lella Vignelli, Richard Meier, and Massimo Vignelli in 1990.

MASSIMO VIGNELLI, one of the leading graphic artists of his generation, whose designs are among some of the most recognized logos and branding materials of the second half of the 20th century, died on May 27 after a long illness. He was 83.

Vignelli applied his strict minimalist aesthetic to some of America's most iconic brands, designing the austere American Airlines logo, consisting of sans-serif A's, introduced in 1967 and used until last year; Bloomingdale's signature brown bag; and the controversial and doggedly Modernist New York subway map, introduced in 1972 and used until the late 1970s.

With a diverse body of work ranging from the interior of Saint Peter's Church in Manhattan to furniture for Knoll, Vignelli worked with dozens of notable architects, designing everything from their monographs to their websites, stationery, and business cards. He also designed numerous publications, often free of charge. Vignelli twice oversaw the redesign of ARCHITECTURAL RECORD, in 1982 and 1991. He also served as a design consultant to RECORD from June 1982 through December 1989, and again from March 1991 through December 1996.

"As far as I'm concerned, there's no better graphic designer in the world," says Richard Meier, who knew Vignelli for decades and worked for years in the same office building as Vignelli on 10th Avenue in New York. "He made graphic design an art." The two collaborated on numerous projects, with Vignelli designing all of Meier's books as well as his website and office publicity materials. "There were a lot of people doing graphic design, but not like Massimo," Meier says. "Massimo has always been the reason I've done so many books. He has an incredible eye, not just for graphics but for architecture, for everything. He was extremely perceptive."

A revered figure in the international design community, Vignelli often freely gave his time and resources, touching the lives of the next generation of designers. He worked as an architectural draftsman as a teenager and met his wife and longtime collaborator, Lella, when he went on to study architecture at the University of Venice. In the mid-1960s, the couple left Italy for America and, in 1971, started a joint design firm, Vignelli Associates, in New York.

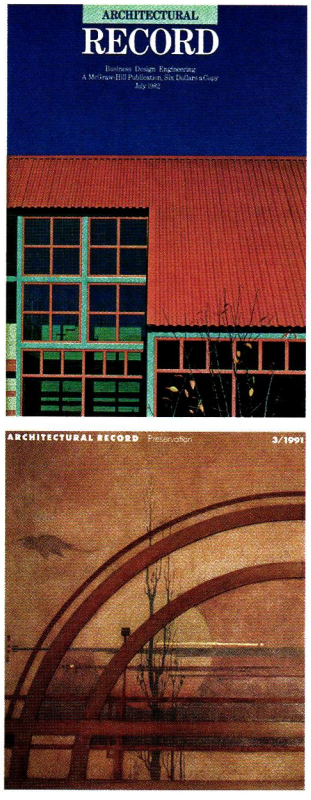
Paola Antonelli, MoMA's senior curator of Architecture and Design, says the couple mentored her for decades, taking a fellow Italian under their wing when she moved to New York and joined the museum in 1994. "We've known each other forever. They were always very protective," Antonelli says. "New York was not the easiest place back then, and they helped me figure out how to move, what to do, where to eat. The relationship goes beyond professional. It was a family feeling."

In 2004, Antonelli helped MoMA acquire her favorite Vignelli project, the New York subway map and associated memorabilia including the New York subway guide, the New York Metropolitan Transit Authority subway transportation graphic program, and three New York subway signs (which were designed in collaboration with Dutch graphic designer Bob Noorda). "I'm so proud that it's two Italians who gave New York such a big piece of its identity," she says. "They really designed the world around us."

Architect Peter Eisenman says he is indebted to Vignelli for designing nearly every issue of *Oppositions*, an architectural journal produced by the Institute for Architecture and Urban Studies from 1973 to 1984. Eisenman says he designed the first issue of *Oppositions* himself in 1973 but quickly realized he needed outside assistance. "I had designed not only a cover but the inside layout, everything. We hadn't gone to Massimo for the first issue, but when the dummy came back, it looked terrible. I called Massimo up and I said, 'We can't afford to pay you, but we need somebody to design our new magazine.'"

Vignelli asked Eisenman to come to his office, and he spent the day laying out the entire magazine. "I wanted to have a gray cover, but Massimo told us that the cover needed to be a bold color—red-orange. He told us, 'Twenty years from now, you'll want it to stand out, because all the issues will be there on a bookshelf,'" recalls Eisenman, who was the executive director of the institute (which closed in 1985).

"We realized that this guy was an amazing friend and character who loved doing this and never charged us a penny," says the architect. "It was a fun thing to watch him work. No one could do what Massimo did." Over the next 11 years, Vignelli designed more than 25 issues of *Oppositions* free of charge.



Massimo Vignelli's July 1982 (top) and March 1991 (above) covers for ARCHITECTURAL RECORD.

Mildred Schmertz, the editor in chief of ARCHITECTURAL RECORD from 1985 to 1990, encouraged the magazine to hire Vignelli after meeting him at the Aspen Design Conference in the early 1980s. "He got hired and had a contract—he was to come up with a new typography, a new format, a whole new design system," says Schmertz. "For the first few issues, he was to participate with the art department in laying out actual stories.

"But when the contract was over, he kept coming because he got a tremendous kick out of designing. He'd call me up and find out when we were laying out the magazine, and he'd show up and take a hand in it," says Schmertz. "I think he thought it was an opportunity to do great work, and he didn't give a damn if he got paid or not." ■

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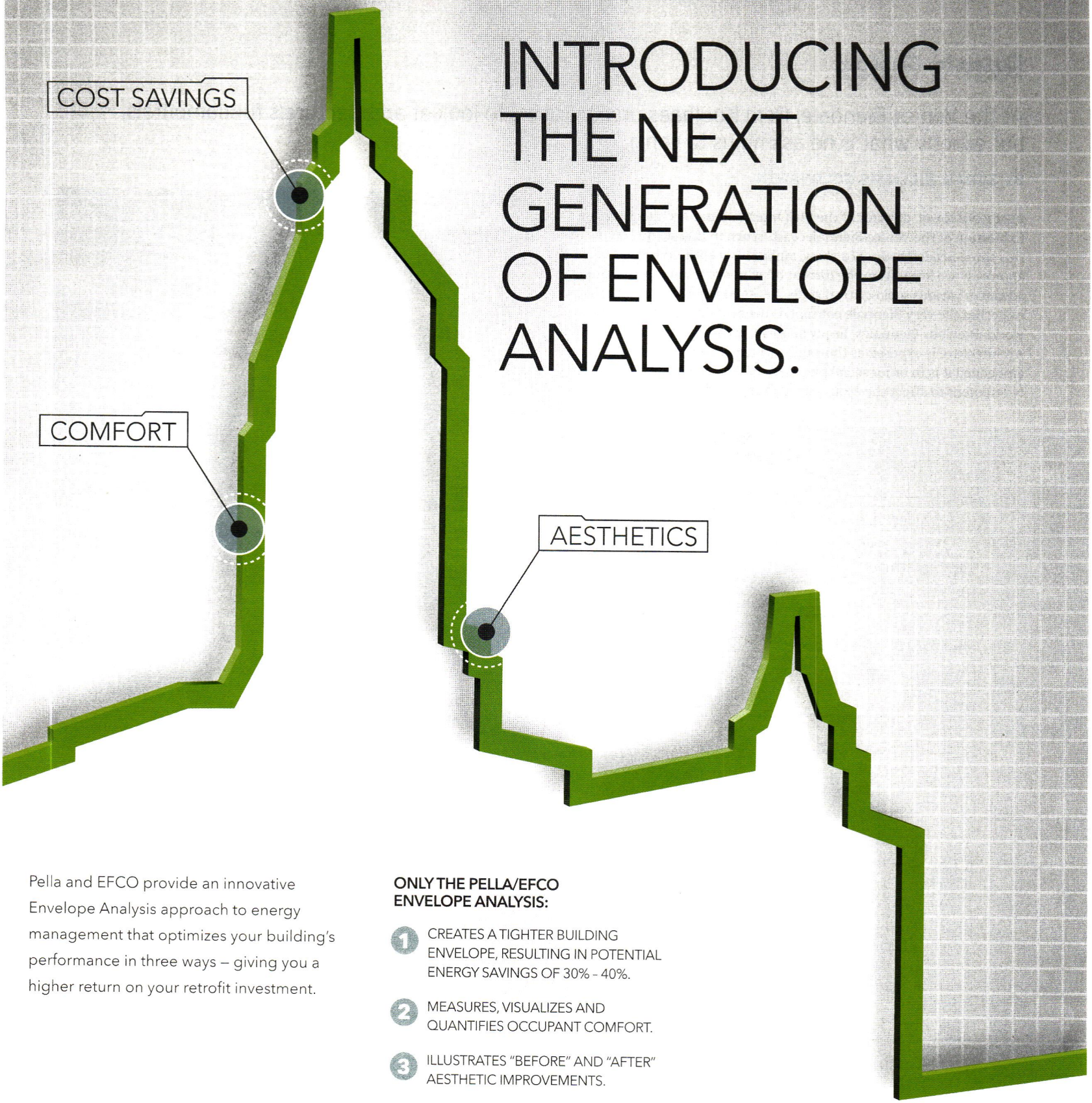
PHOTOGRAPHY: COURTESY RICHARD MEIER & PARTNERS ARCHITECTS (FAR LEFT)



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Rem's Rules

At the Venice Biennale, Rem Koolhaas urges visitors to look at architecture's fundamentals, but exactly what is he asking us to consider?

BY SARAH WILLIAMS GOLDHAGEN

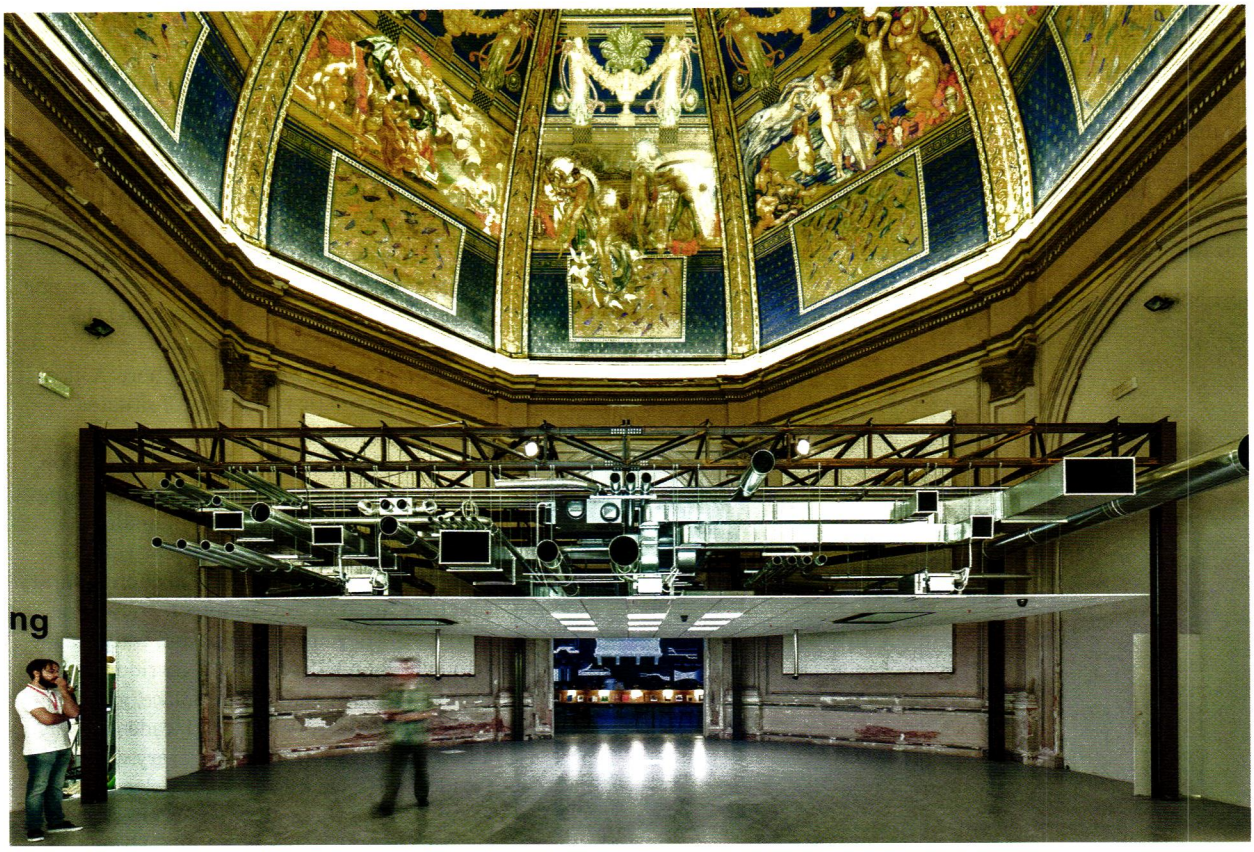
REM KOOLHAAS, director of the 14th International Architecture Exhibition of the Venice Biennale, casts scorn in myriad directions in this three-headed hydra of a show, ambitiously entitled *Fundamentals*. His approach, we learn from the torrent of print drenching the pavilions, advances various socio-critical goals. National identity, a notion that underlies the very Biennale concept, is deemed obsolete in a globalized world. Previous Biennales, heavy on form, are implicitly condemned. Architecture is exposed as thoroughly constrained by how inextricably embedded it is in other social phenomena. Architects are declared largely impotent to affect the economic, political, and social forces shaping buildings. "We may posture as geniuses," Koolhaas writes, "but we play our assigned role in the uberscript of modernization."

ELEMENTS OF ARCHITECTURE

In the Central Pavilion in Venice's Giardini, Rem Koolhaas and his curatorial team have broken down architecture into 15 basic "elements." They range from Door (left) to Facade (top) to Toilet (above). The idiosyncratic selection of objects spans centuries and draws from far-flung cultures to present what the exhibition purports to be architecture's common denominators.

The 2014 Biennale, which opened last month and runs through November 23, has three parts. For the national pavilions—clustered primarily in Venice's Giardini, a Napoleon-era public garden, and Arsenale, a former shipyard of the Venetian Navy—Koolhaas instructed curators to investigate how the countries they represent have dealt with modernization under the umbrella title *Absorbing Modernity: 1914–2014*. In a second section, also in the Arsenale, *Monditalia* curators developed an achronological multimedia extravaganza highlighting Italian architecture's cross-fertilization with other forms of cultural expression in a display of architec-

PHOTOGRAPHY: © THOMAS MAYER (LEFT); IWAN BAAN (BOTTOM RIGHT); LEONARDO FINOTTI (TOP RIGHT)



The Ceiling display (left) in *Elements of Architecture* pairs the dome in the Biennale's Central Pavilion, painted in 1909 by Galileo Chini and newly restored, with its contemporary counterpart, the dropped ceiling. The Wall section of the show (below) begins with a 17th-century stone wall and ends with a kinetic design by Berlin firm Barkow Leibenger.

tural, artistic, and intellectual oddities and glories from Ticino to Sicily.

For the third section, exhibited in the Central Pavilion among the national presentations, Koolhaas collaborated with students and faculty from the Harvard Graduate School of Design as well as other institutions and industry experts, presenting what they deem the 15 *Elements of Architecture*. Each, we learn, will be the subject of its own book. Thus Koolhaas, his research office AMO, and the Harvard team position their 15 new books as superceding Vitruvius's five and Alberti's 10. So you don't miss the point, copies of these and other canonical treatises greet you as you enter the show.

The Venice Biennale has typically showcased projects and installations that curators select for formal elegance, technological innovation, or both. At worst, it serves as architecture's Fashion Week, an uncanny carnival of decontextualization crammed with preciously made models, artful photographs, and installations by big-name stars of the show. Form *über alles*.

Koolhaas is correct in pointing out that this elides and mischaracterizes critical issues in contemporary practice: it belies architecture's invariably collaborative nature; it ignores the multiple ways in which design is constrained by economic, political, and social contexts; it glosses over the irrelevance of nationalistic preening in an ever-more-networked, globalized world. What's important, Koolhaas insists, is not architects but *architecture*.

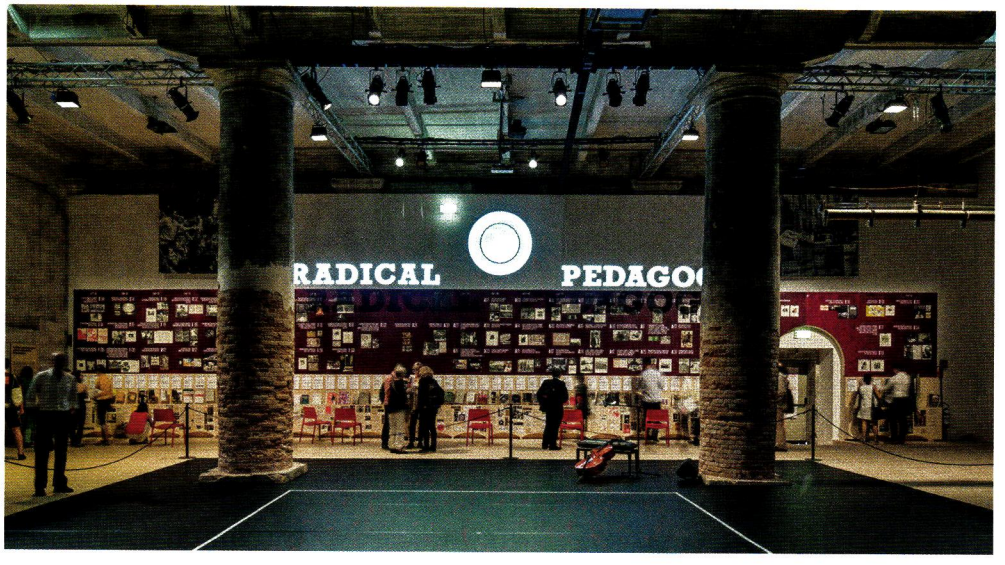
True enough. But when you entitle the most lavishly funded and heavily curated architecture exhibition in the world *Fundamentals*, expectations get raised. What's fundamental about how countries have "absorbed" modernity? Why 15 "elements" of architecture, not 11, or 20? What is Koolhaas trying to say? Should we listen?

In the national pavilions, most curators' answers to Koolhaas's question—how, since 1914, did their country deal with modernization?—deviate from his nostalgia-saturated,

PHOTOGRAPHY: © SERGIO PIRRONE (TOP); IWAN BAAN (BOTTOM)

simpleminded presumption: that the hand-in-hand spread of modernization and modernism has "flattened" and homogenized the built world, replacing local cultures and national identities with "the almost universal adoption of a single modern language," by which Koolhaas means modernism. The American pavilion, which promulgates a poorly conceptualized and Koolhaas-saturated agenda centered on the dual themes of office collaboration and American imperialistic hegemony, proves the exception rather than the rule.

Many curators of the national pavilions, individually and collectively, offer a different, far richer story, revealing that modernism was never a single unitary "international" style but always a situated practice whereby clients and architects assimilated modernization's materials, urban forms, social practices, and symbols to local cultures, economic and social circumstances, and political realities. Thus the curators of the Dominican Republic's pavilion recount a fascinating episode in which Rafael Trujillo, the country's dictator, tried and failed to haul the country into the West with a single ambitious project, an expo fairgrounds of 75 buildings constructed in Santo Domingo from 1955–56. In Brazil, by contrast, modernization was always tethered to modernist buildings, which continue to symbolize Brazilian national identity. In the Korean pavilion, the curators contrast North with South, exploring political ideology's entanglement with architectural style and introducing some little known projects (such as those by Kim Swoo-geun) along the way. Curators of the sand-covered Moroccan pavilion imagine the Sahara as the site of a developed society, exhibiting some of the most visually arresting, if unrealizable, projects in the show. Ireland's pavilion, beautifully conceived and executed, showcases five major infrastructure projects that advanced the country's economic development.



MONDITALIA The second main exhibition in this year's Biennale is a "scan" of Italian cultural, political, and economic life in a sprawling series of works. The show, titled *Monditalia*, opens with a grand entrance made from illuminated crystal (top), and includes views of Italian architecture as well as art, film, dance performances, and other programming. One part of the wide-ranging exhibition, the *Radical Pedagogy* wall (above), an installation by Beatriz Colomina with a group of students from the Princeton University's School of Architecture, surveys the work of activist designers and thinkers in Italy, in the second half of the 20th century primarily.

And on and on. No flattening here. A glorious, polychromatic polyphony of situated modernism reigns.

The Central Pavilion's *Elements* exhibition more closely hews to Koolhaas's programmatic agenda. And that's when the Biennale gets disturbing. Fifteen things, we learn, are elemental—*and* fundamental!—to contemporary practice, "used by any architect, anywhere, anytime." They are: ceiling, roof, wall, facade, window, door, balcony, floor, corridor, stair, ramp, escalator, elevator, fireplace, and toilet.

Reread that list. Walls *and* facades? Surely a facade *is* a wall, though not every wall is a facade. Stairs *and* escalators *and* elevators *and* ramps? Aren't these all what architects call "vertical circulation"? Balconies? Fireplaces?

Elements aggressively forces upon its puzzled viewers grab bags of artifacts, chintzy party favors at the architecture world's most expensive fair. By what logic did Koolhaas and his collaborators determine the architectural elements of today? Keeping their eyes on the curatorial ball, surely they tried to make a cool-looking show. In some cases, they did, as in the visually and experientially arresting *Facade* installation (organized by Alejandro Zaera-Polo), with 12 closely spaced walls incorporating a variety of technologies and materials. As for underlying selection principles, Koolhaas clarifies: the elements they chose loom large for *him*. "Without my parents' balcony," he explains, "I would not be here."

Now put the incoherence of the *Elements* exhibition together with Koolhaas's stated agenda for the *Absorbing Modernity* theme, and his underlying message emerges. Nothing in architecture is elemental, nothing fundamental. History is all we have. We and our buildings are all thoroughly mediated, social constructs.

Thus the Biennale regurgitates the most vapid strain of postmodern cultural theory, which continues to permeate academic architecture and commands a powerful insurgency into architectural practice through Koolhaas and his legions of acolytes. The rest of the world—including most of the academy—has, wisely, long since moved on. In this delusional postmodern world, essences are mirages, no

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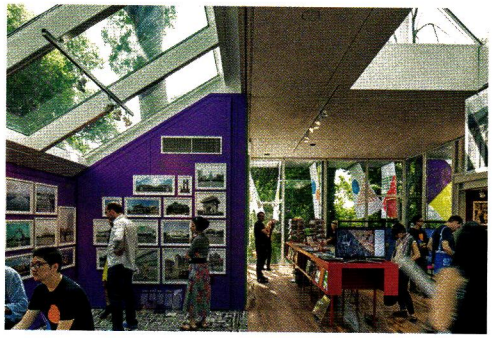
principle is grounded. That's why Koolhaas and most of his collaborators refuse to actually *curate*. They flagrantly refuse to select objects according to considered criteria; indeed, they abdicate their responsibility to take a position on much of anything. The result, which *Fundamentals* cloaks in its barrage of typescript and objects, is intellectually vacuous and deeply cynical.

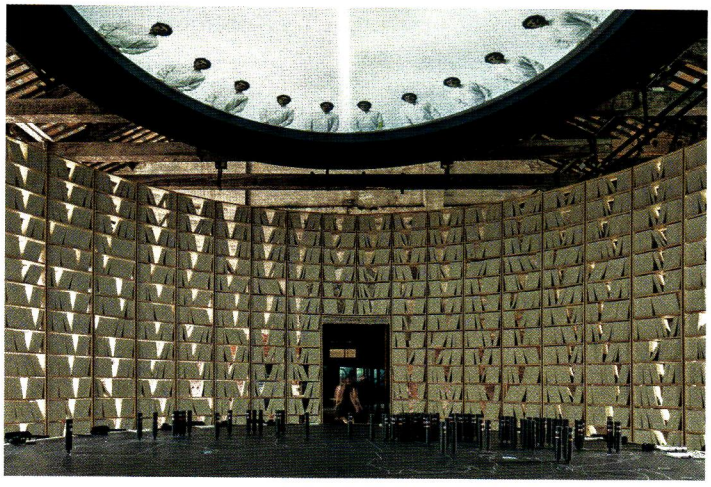
Return again to the *Elements* list, but, this time, consider what's missing. Why might Koolhaas and his collaborators include corridors, which many buildings lack, or fireplaces, which are almost obsolete, while excluding, for instance, light? Or axis, or space, or structure, or systems?

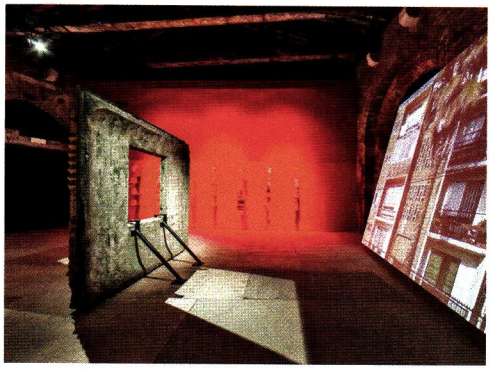
A simple answer is that the latter represent abstract concepts, not objects, and, in the end, at the Venice Biennale, objects must be displayed. But the real reason is more troubling: the exhibition eschews form and design as they are understood by actual people. Light gets shaped through form. Without bodies, climate control makes no sense. Axes, space, views, and boundaries only exist in the space between people and designed forms.

The fundamental elements of architecture are not five or 10 or 15 cherry-picked objects but cognitive constructs that rely on users—feeling, thinking, seeing human beings—as they respond to built forms. But the centrality of design and aesthetics to people's experience of the built world is precisely what Koolhaas and his collaborators wish to deny.

Some valuable (and a lot of sloppily executed and conceived) historical research has emerged from Koolhaas's provocative challenge. And what of the directions the Biennale suggests for contemporary practice? Let's hope most people either ignore or reject Koolhaas's anachronistic, contemptuous agenda, and that architects go back to the fundamental, elemental task of design. ■







NATIONAL PAVILIONS Rem Koolhaas asked each of the curators of the national pavilions to take on the theme *Absorbing Modernity: 1914-2014*. Korea (top, left and right) won the Golden Lion for its show focusing on modernism in both the north and the south. Morocco (above, left) presents speculative projects for desert habitation. In the Bahrain pavilion (above) a circle of bookshelves surrounds a round table showing a map of the Arab world as it was shaped over 100 years. Chile's pavilion (left) won the Silver Lion for its exploration of how precast-concrete panels shaped social projects. And the United States (below) pairs its own archive with a working design studio to show how office culture became and remains among the country's chief exports.

PHOTOGRAPHY: © LEONARDO FINOTTI (TOP, LEFT, AND SECOND ROW, RIGHT); IWAN BAAN (TOP, RIGHT, AND BOTTOM); SERIGO PIRRONE (SECOND ROW, LEFT, AND CENTER)

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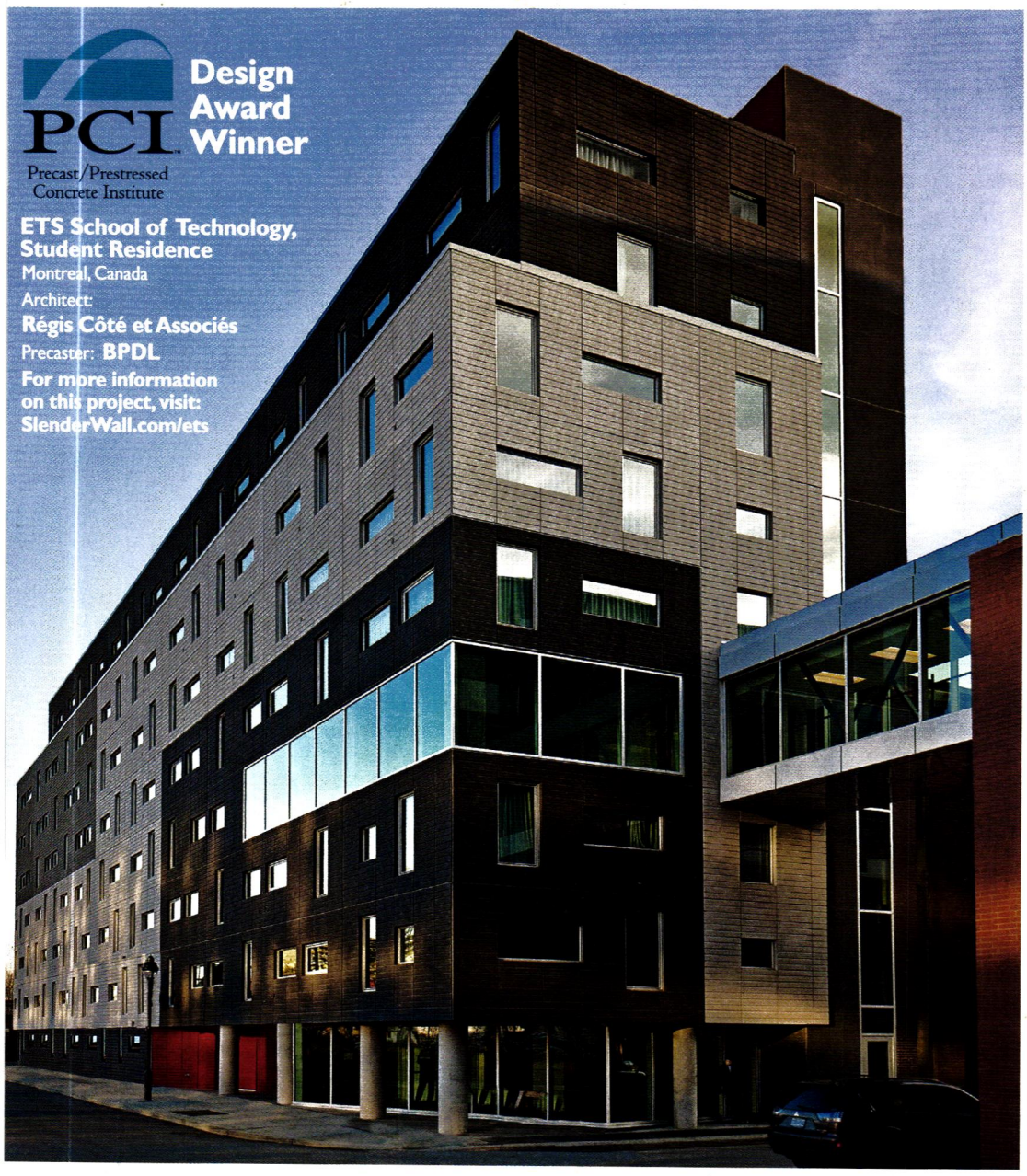

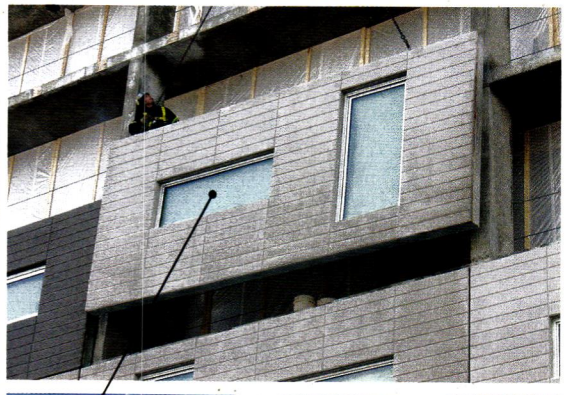

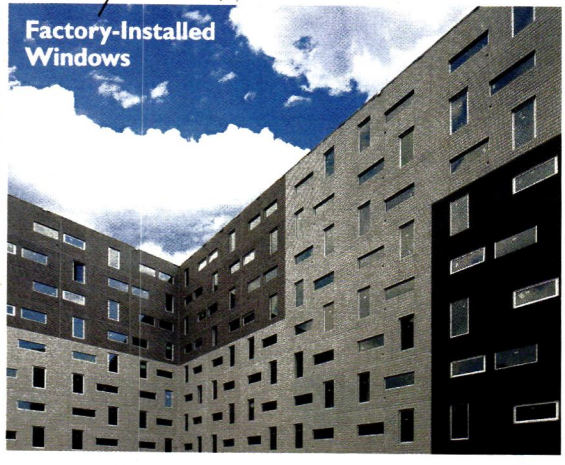

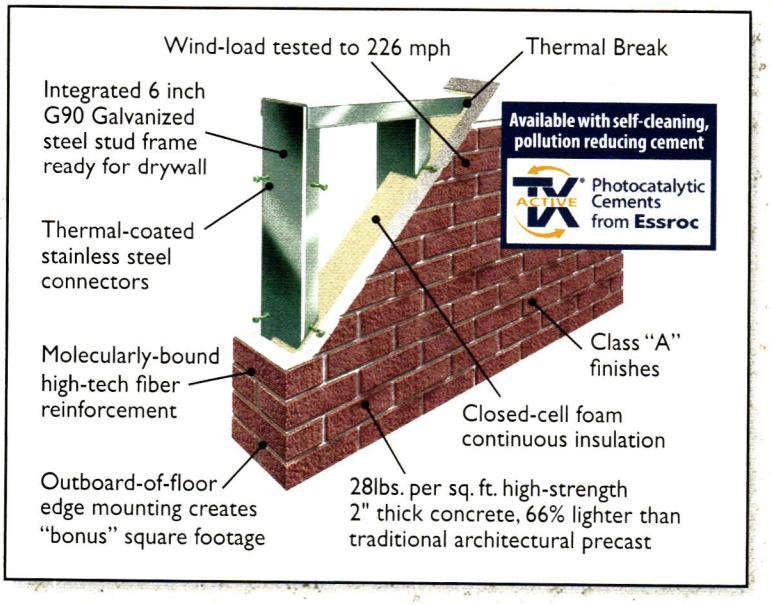

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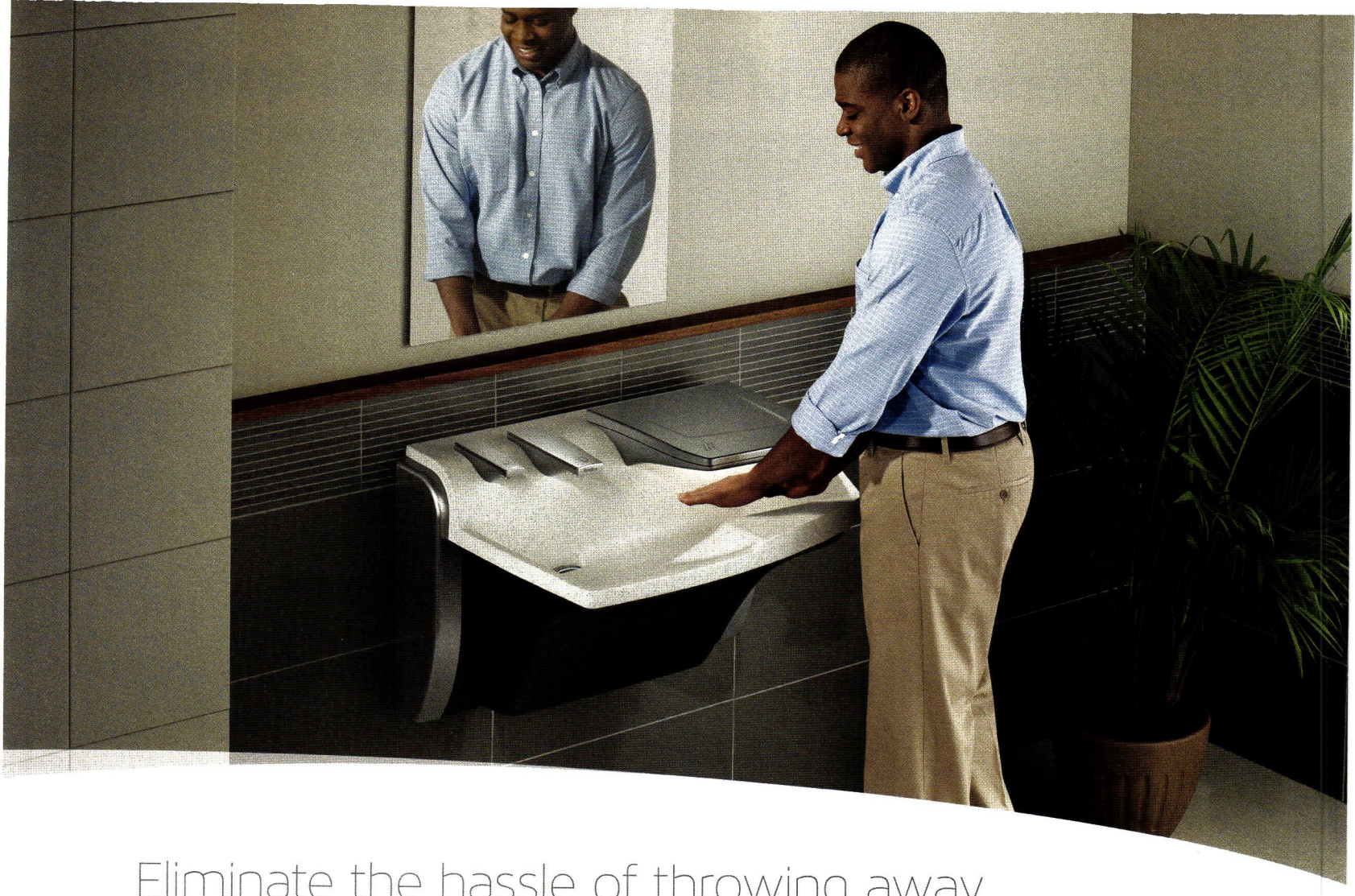

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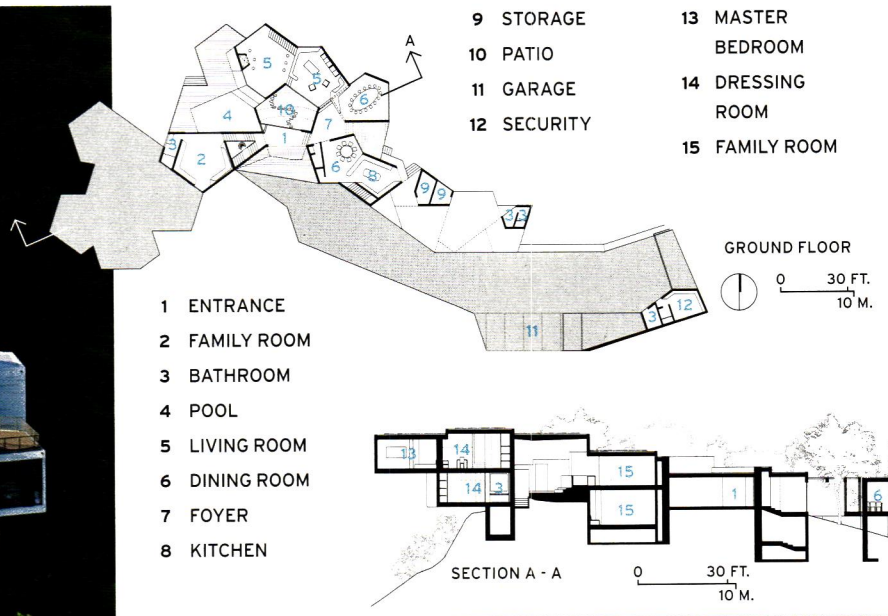
TATIANA BILBAO ENCLOSES EACH PROGRAMMATIC AREA OF CASA VENTURA IN CONNECTED PENTAGONAL VOLUMES THAT SIT HIGH ABOVE MONTERREY, MEXICO. **BY LAMAR ANDERSON**



The board-formed concrete volumes follow the topography of the hillside (above). Some window walls frame courtyards built around existing trees (right). The architects arranged bedrooms around a skylit spiral stair (bottom).

THE MOUNTAINS outside Monterrey, Mexico, offer city views and forested vistas, but the terrain ruled out the one thing that the clients, a couple with six children, had their hearts set on: a house all on one level. There was no way to build a single-story structure without excavating deep into the hillside or doing some daredevil cantilevering. "But we wanted to work with this idea of making it flow the way a house with one floor does," says Tatiana Bilbao, principal of her Mexico City–based architecture firm.

How exactly do you get a multilevel house to sprawl? The architects laid out the rooms of the 10,800-square-foot, two-story board-formed concrete structure as a series—well, really a clump—of articulated pentagons that hew to the hillside, each one spilling into the next or stepping down to meet the change in grade. The effect is at once geometric and organic, as though a modern bungalow had implanted itself on the mountain and replicated until it formed a small colony in concrete and glass. Allotting each room five walls instead of four allowed the architects to fine-tune the angles to follow the landscape. "When you have five sides, you have more room to play," says Bilbao.

The designers threaded the living and dining areas around several existing trees on the hilly site, building teak-planked terraces around the trunks and leaving a central patio open in the middle of the plan. At least one wall of every room features floor-to-ceiling windows. "We placed the windows to have every room frame a different view," says Bilbao. "Some of them go directly to the forest, some directly to the city."

In the western wing of the house, the private living quarters—two levels of bedrooms and dressing rooms, along with a studio and library—spiral around a skylit stair. As on the main floor, the circulation follows the topography: on the first level, for instance, each child's bedroom is slightly lower than the next, separated by a few steps.

The architects left the concrete structure exposed on both the exterior and interior. They warmed up the living spaces with square-tiled oak floors—another geometric flourish—and generally limited themselves to a straightforward palette of concrete, wood, and glass. By choosing such simple surfaces, they instilled a sense of calm in this jigsaw puzzle of a house. ■

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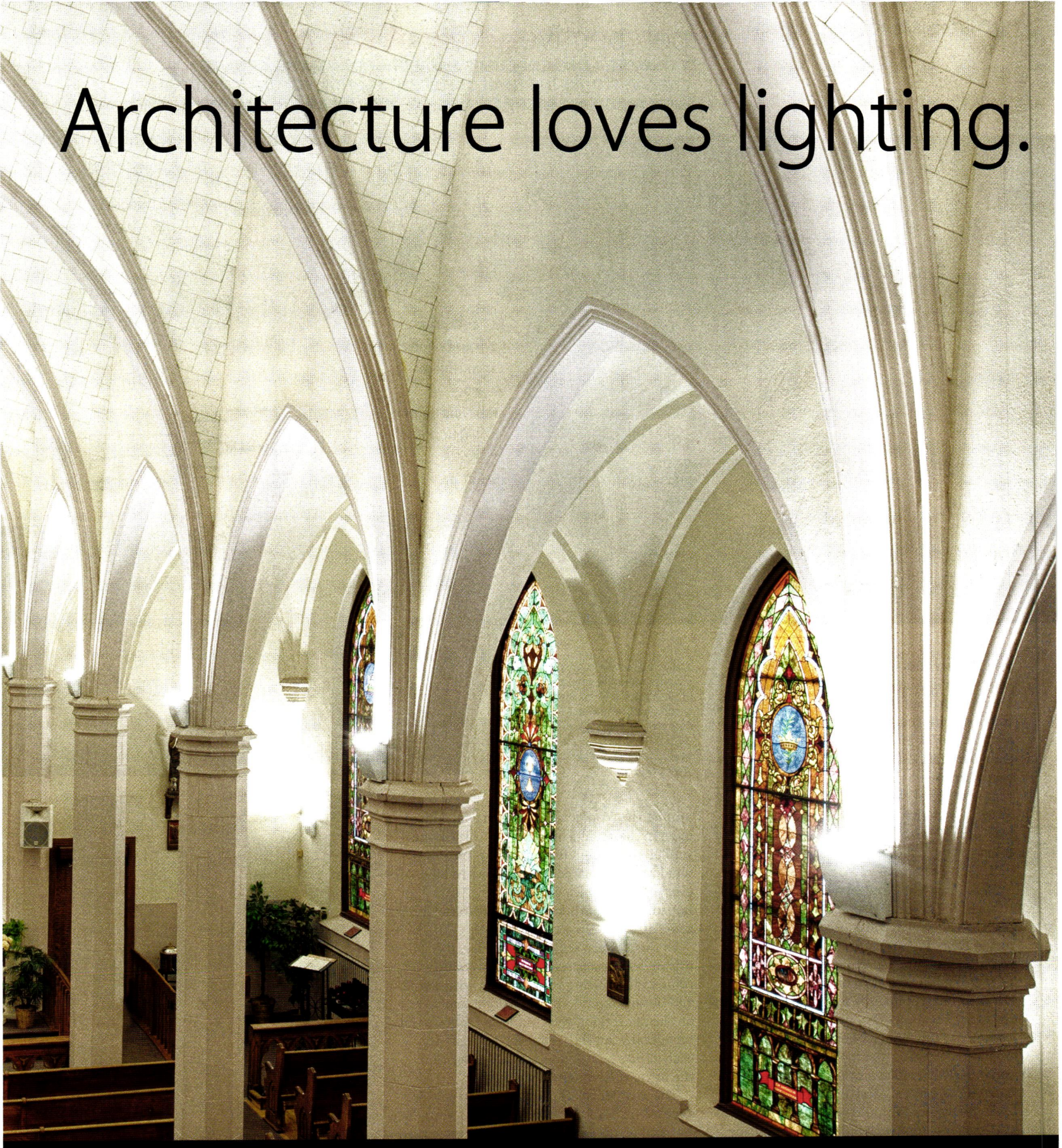

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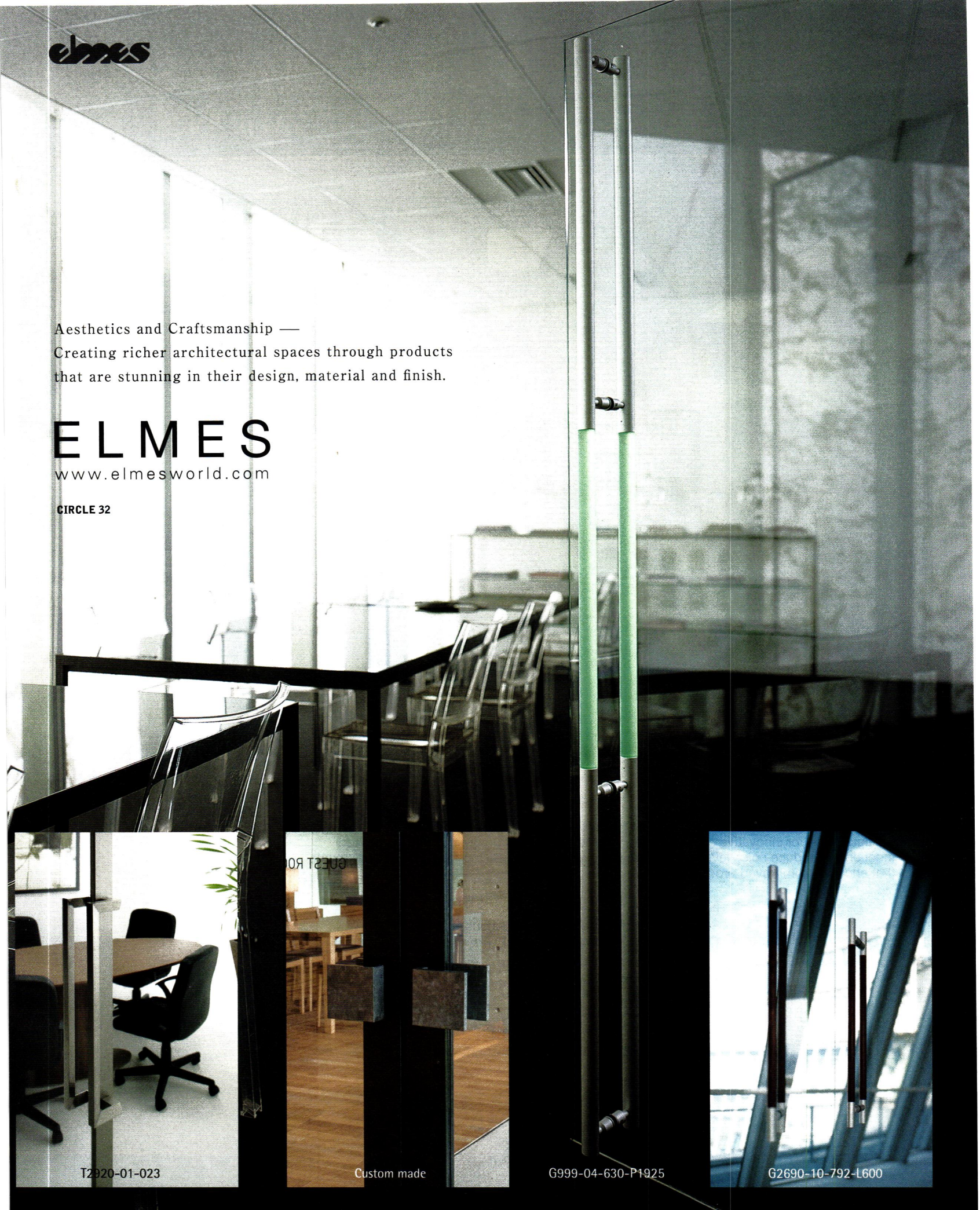
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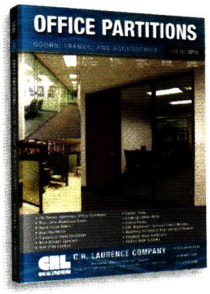

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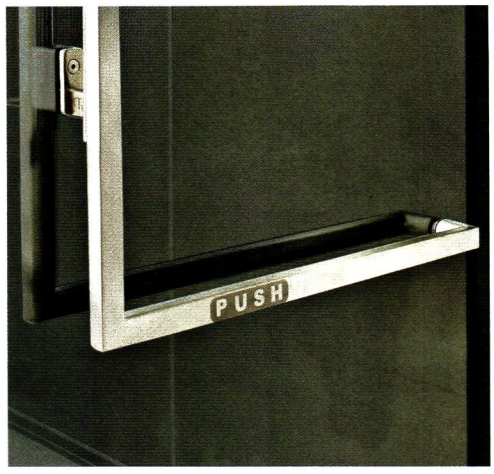
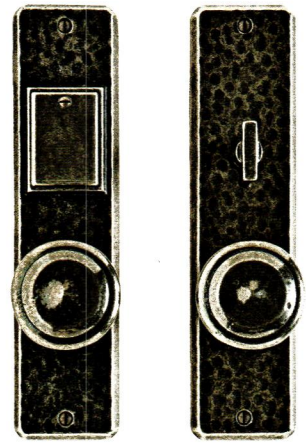
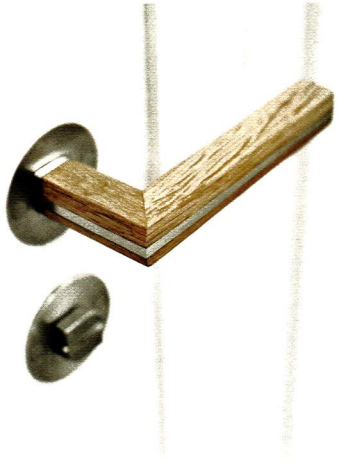






MR Series Lock Indicator

PDQ pdqlocks.com

Clearly displaying what position a door lock is in can add a layer of both security and privacy. These new mortise-lock status indicators read "Occupied/Vacant" or "Locked/Unlocked" and feature a clean stainless-steel design appropriate for a variety of settings, from dormitories and laboratories to offices and restrooms. The unit can be specified for use with key- or thumb-turn-operated deadbolts. CIRCLE 200

Two by Piet Boon

Formani bridgeportworldwide.com

Designer hardware from Dutch company Formani is now available in the U.S. through Bridgeport Worldwide. Among some of its eye-catching door handles are Piet Boon's Two, which marries hard and curved edges in an L-shaped lever rendered in stainless steel or a combination of stainless steel and solid oak (shown). Formani's other offerings include door locks, casement-window fasteners, and bathroom hardware. CIRCLE 205

Designer Series

CRL-Blumcraft crlaurence.com

The typical panic-bar handle—used for quickly activating the latch—has been updated to complement modern glass entrances. The Designer Series version is a long and lean tubular steel bar with a brushed or polished finish. The bar is curved on the door-facing side to fit comfortably as the user grips it, while its crisp edges face outward. CIRCLE 201

Powered by Pent

Group Dekko dekko.com

Demonstrating that power strips need not be an eyesore, Group Dekko's new Powered by Pent series is an easy-to-install, sleek, block-shaped unit housing electrical and data access points. The outlets can be installed on work surfaces, case goods, and soft seating. They can be specified with ports that deliver 2.1 amps for rapid charging of electronic devices, and with or without a monochromatic satin metal trim. CIRCLE 204

Hammered Collection

Rocky Mountain Hardware rockymountainhardware.com

Just as its name suggests, the Hammered Collection features a dappled-metal texture that references old-world blacksmithing and craftsmanship. The line's knobs, levers, and escutcheons are cast from hand-carved molds and are offered in 10 finishes such as dark lustre and white bronze brushed, as well as custom ones. CIRCLE 202

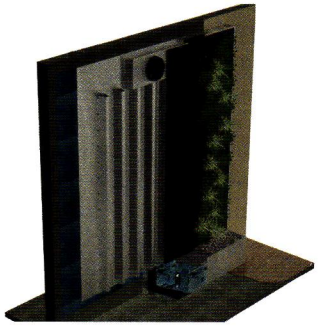
IN120 WiFi Lock

Assa Abloy Americas intelligentopenings.com

Access control goes high-tech with this WiFi-enabled device. Featuring a streamlined design to suit any aesthetic, the IN120 lock works on 802.11b/g/n infrastructures, future-proofing it for use with upgraded networks and also reducing the cost and complication of installation compared to that of wired systems. Taking security to the next level, the device logs up to 10,000 event transactions and remains operable regardless of network status. CIRCLE 203

For more information, circle item numbers on Reader Service Card or go to architecturalrecord.com/products.

BEAUTY



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ARCHITECT:
DIAMOND & SCHMITT INC.

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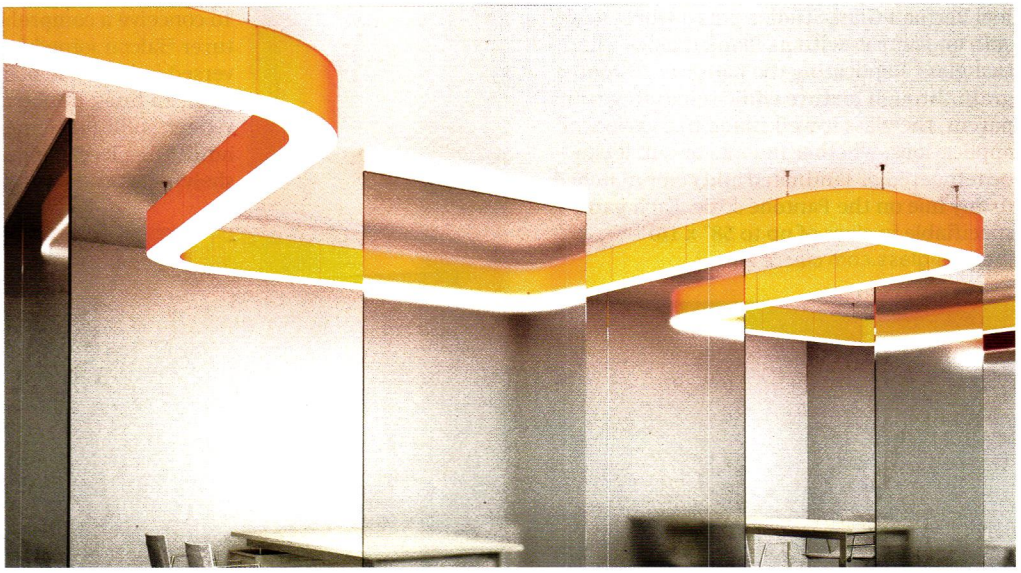
products **briefs**

TRADE-FAIR SEASON HAS USHERED IN SLEEK CONTRACT FURNISHINGS, SOME DESIGNED BY CELEBRATED ARCHITECTS. **BY SHEILA KIM**

Vessel

In his second collaboration with 3M Architectural Markets, designer Todd Bracher has created the elegant Vessel collection of pendants and sconces. The fixture, made of a solid cylinder of quartz, is offered in three sizes and six hues, and directs a single LED source through to the other end to project precise yet soft circles of light onto tabletops or walls. Two color temperatures are available. 3m.com **CIRCLE 206**



LA2 Connected

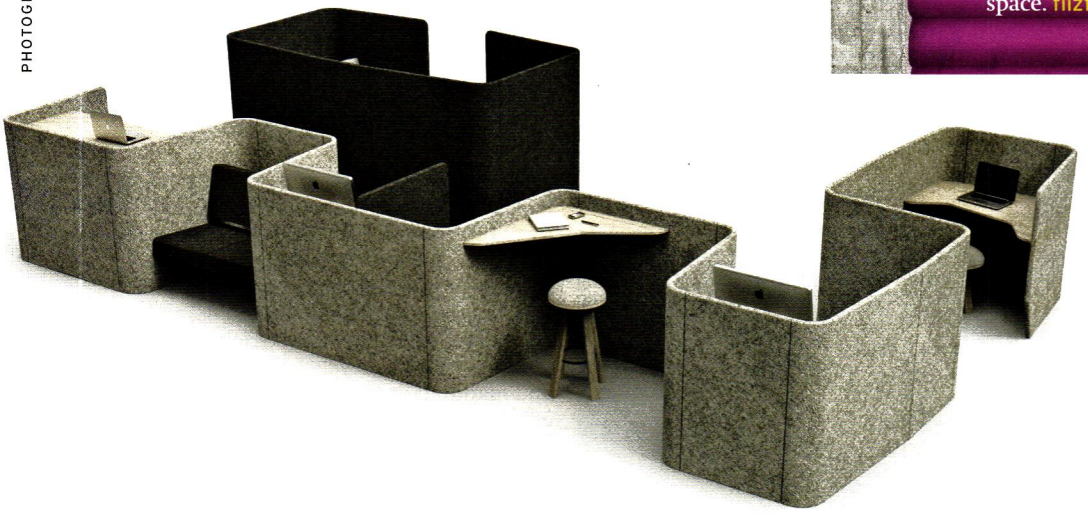
From sinuous paths and interlocking rings to geometric grids and honeycombs, designers and architects can create extensive light installations using the LA2 Connected LED system (above), launched by 3form company LightArt. The customizable line is a kit of parts that attach via concealed connectors for a seamless look. The system is available in more than 1,000 color options. 3-form.com **CIRCLE 207**

Light Play

The play of light on and through interior elements—from window blinds to moldings—inspired the Light Play carpet collection by Robert A.M. Stern Architects. Created for Bentley, it includes two patterns: Melrose Dusk (shown), in 24" squares or 18" x 36" planks, features ombré effects in two directions, while SoHo Dawn, in the square format only, alternates dark and light stripes. Both are composed of 6,6 nylon. bentleymills.com **CIRCLE 210**

Architecture Research Office Collection

Filzfelt and New York–based firm Architecture Research Office have introduced a range of acoustic felt products. ARO Plank (shown) is a wall-panel system of bolster-like modules in curved, faceted, or flat formats. Also for walls, ARO Shingle is fitted with overlapping trapezoids. ARO Baffle addresses ceiling-based acoustics, while ARO Array is a hanging panel that divides space. filzfelt.com **CIRCLE 208**



BuzziVille

Today's offices and education facilities need to be able to adapt quickly and effortlessly. BuzziVille (left) by BuzziSpace is an expandable modular system that makes this possible. Tall walls constructed of the company's proprietary eco-felt, an acoustic material, can be hooked together to form workstations as well as meeting booths and privacy nooks. The tabletops hang from the walls like shelves. buzzispace.com **CIRCLE 209**

PHOTOGRAPHY: © RICHARD BARNES (CENTER, RIGHT)

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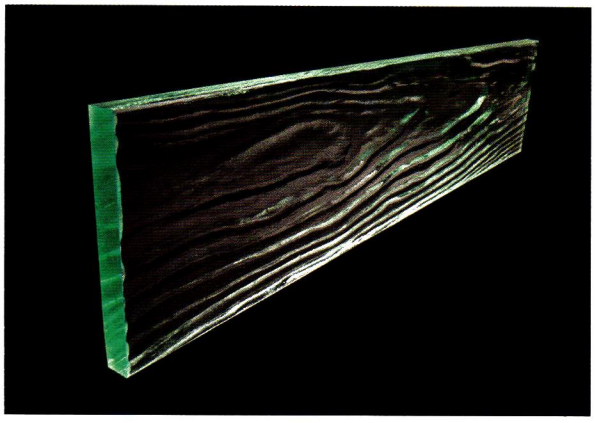
Plank

Joel Berman Glass Studios puts a whole new spin on *faux bois* with its Plank (below) kiln-cast glass. Replicating the patterns of wood grain through texture while remaining transparent, the glass is well suited to a variety of applications, whether indoors or out. It can be tempered or laminated and color-matched to any hue on the Pantone scale. Each panel is specifiable in sizes of up to 58" x 110". jbermanglass.com CIRCLE 211

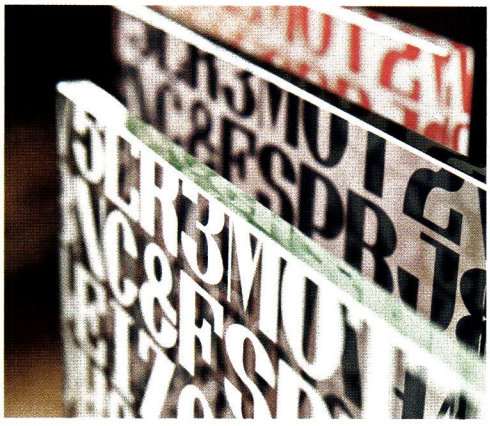


Lex

To conceive a comprehensive modern office-furniture line, manufacturer Halcon joined forces with Studios Architecture, a firm well versed in high-end office design. Dubbed Lex, the collection is defined by clean lines, unobtrusive hardware, and finishes such as wood veneer, solid surfacing, marble, glass, and polished or satin aluminum. The pieces range from meeting tables and benching to desks, shelving, and storage pedestals. halconfurniture.com CIRCLE 212

Alexander Girard Collection

Over his career, architect-turned-textile-designer Alexander Girard created hundreds of graphic works that are today regarded as art. Skyline Design has translated some of his iconic patterns into glass. The collection consists of 10 styles—including Alphabet (right), which highlights Girard's best-known typographic design—that are either etched or digitally printed on sheets of up to 72" x 144". skydesign.com CIRCLE 215



New Vintage Collection

Mohawk Group's New Vintage Collection is a plank-style carpet series that uses neutral or saturated monochromatic palettes to reproduce antique rug patterns, mimicking worn surfaces where traces of the past are visible. The tiles measure 12" x 36" and are composed of DuraColor nylon fiber, which is made with 30% recycled content and offers colorfastness. Moreover, the product's EcoFlex ICT backing is constructed of 35% preconsumer recycled content. mohawkgroup.com CIRCLE 214

Human Nature

With biophilia still proving to be a popular concept in design, a new carpet-tile collection from Interface takes both visual and tactile cues from the natural world. Aptly named Human Nature (above), the line draws on pebbled garden paths, grassy fields, and weathered wood. It is earth friendly too, constructed of 100% recycled-content nylon yarn and manufactured in energy- and water-efficient factories. Five patterns are offered. interface.com CIRCLE 213

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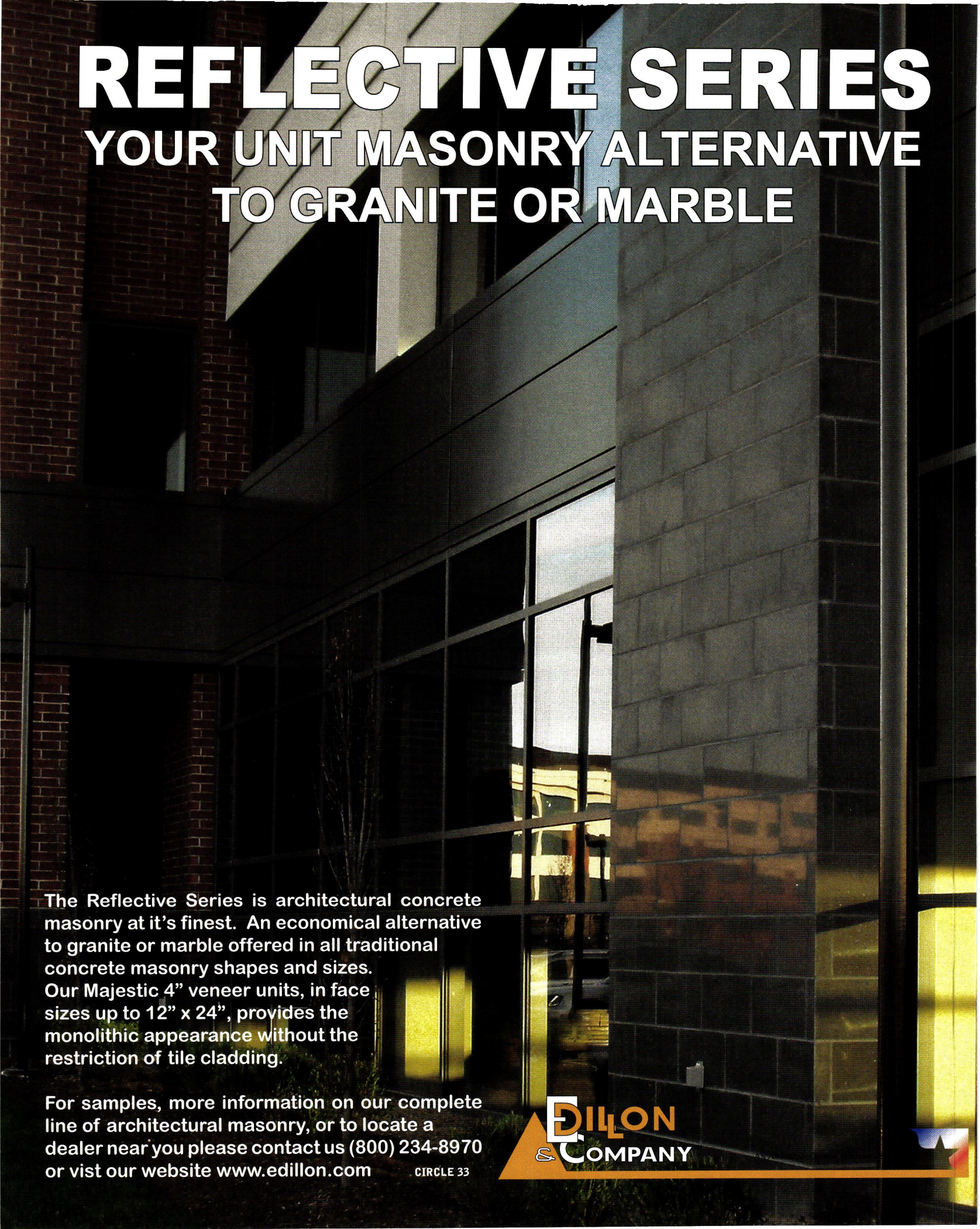
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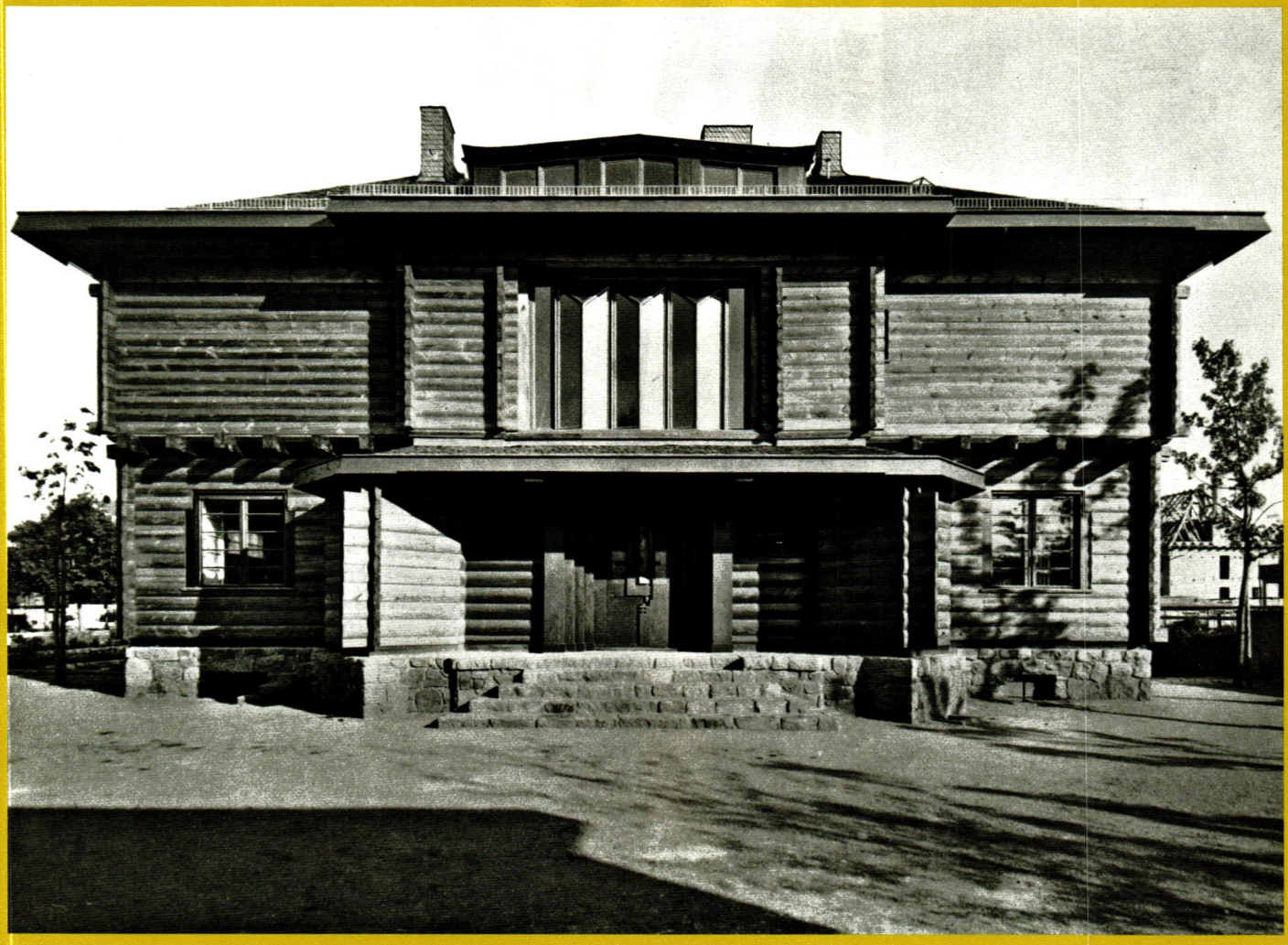

CLUE: THE ARCHITECT OF THIS WOOD HOUSE BECAME MORE FAMOUS FOR THE INFLUENTIAL DESIGN SCHOOL HE FOUNDED JUST BEFORE THE BUILDING ABOVE WAS FINISHED.

The answer to the June issue's Guess the Architect is Le Corbusier, who designed the Unité d'Habitation in Marseille, France, in 1947–52 as social housing for those displaced by the war. For more details, including the winner, go to archrecord.com.

By entering, you have a chance to win an iPad mini.
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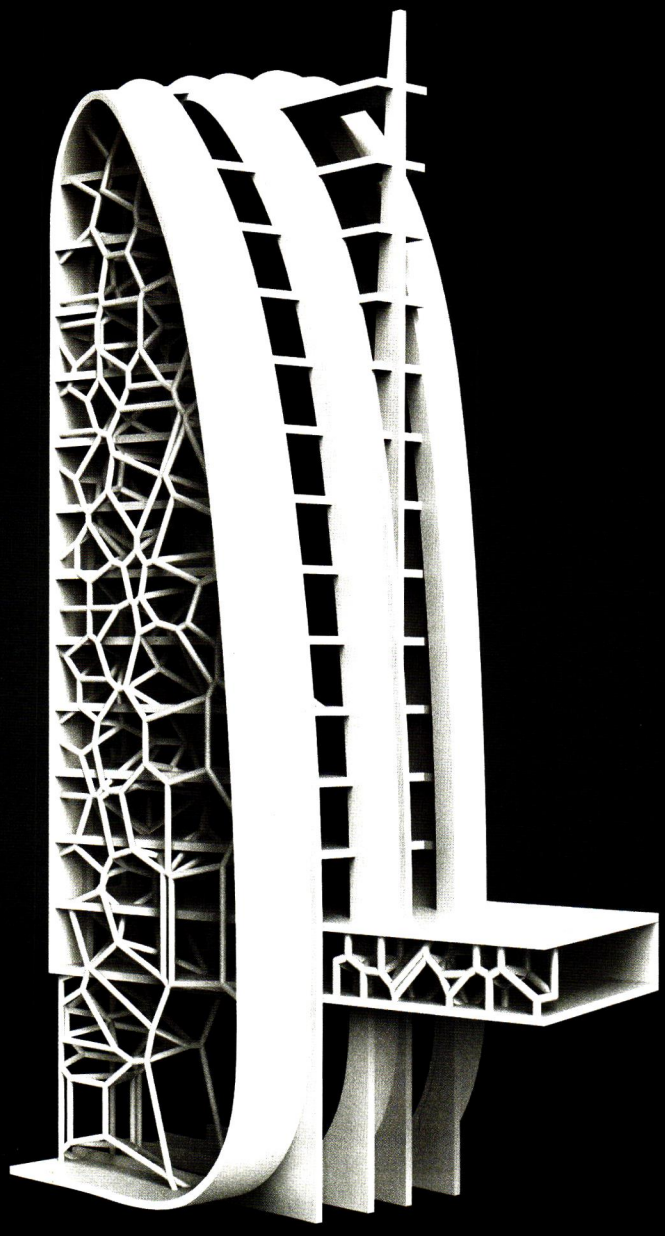

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Architect: sba Architects

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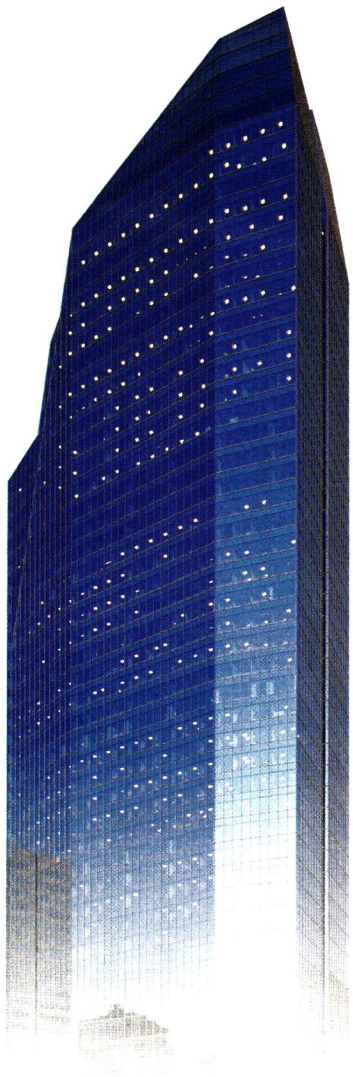

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CIRCLE 48

The New Office Building

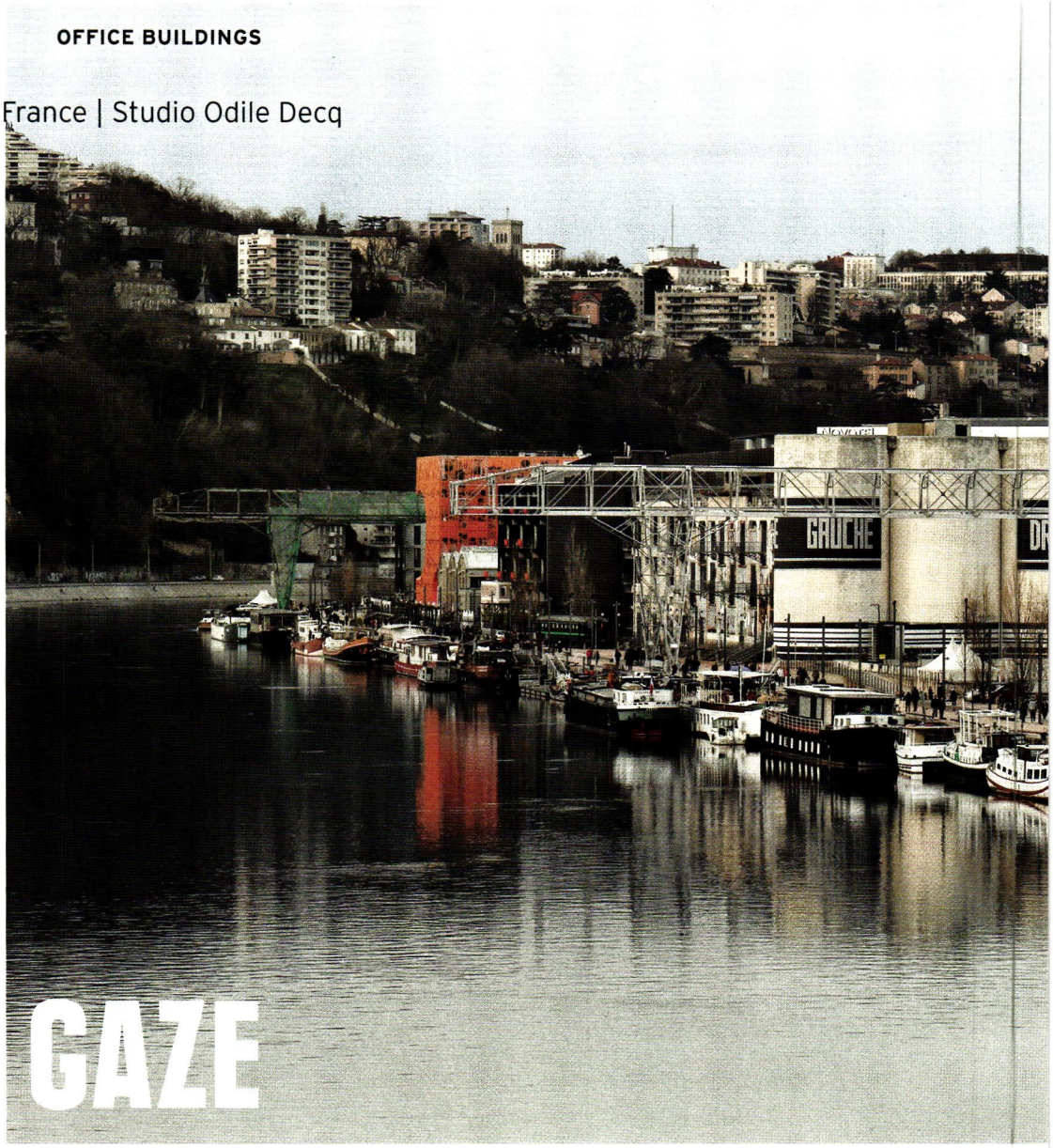
66 GL Events Headquarters
Studio Odile Decq
72 2226 Building
Baumschlager Eberle
78 Novartis Campus
Weiss/Manfredi
Maki and Associates
Rafael Viñoly Architects
Vittorio Lampugnani

MAD MEN–LIKE WORK environments with corner suites, private offices, and internal secretarial pools seem relics of the past. More and more, new and established businesses need flexible spaces that can rapidly adapt to evolving work styles. Open plans that encourage spontaneous interaction and collaborative decision-making are key. The following projects, including five buildings on one large corporate campus, exemplify this new direction and demonstrate the inventiveness of leading architects in addressing the design challenges of the dynamic 21st-century office.

GL EVENTS HEADQUARTERS BY STUDIO ODILE DECQ

PHOTOGRAPHY: © ROLAND HALBE

GL Events Headquarters | Lyon, France | Studio Odile Decq



A STEELY GAZE

Odile Decq draws from Lyon's industrial context to project the waterfront's new identity.

BY CHRIS FOGES

PHOTOGRAPHY BY ROLAND HALBE

From Oslo and Lisbon to Hamburg and Amsterdam, the last 20 years have seen many of Europe's redundant urban dockyards transformed into architectural zoos, peppered with signature structures by top-tier architects, often with greater regard for novelty than for the particularities of history or place. In Lyon—France's affluent second city—derelict wharves on a narrow peninsula between the Rhône and Saône rivers are rapidly metamorphosing into a residential, cultural, and business district called Confluence. Among the renovated warehouses at its southern tip, new offices in eye-watering colors and a self-consciously iconic museum vie for attention.

The latest addition is a headquarters building for GL Events, designed by Studio Odile Decq. The Paris-based architect won a competition for a speculative office building on the site, which was acquired by the global event-staging and venue-management company early in the design-development process. Sheathed in a crisp glass skin imprinted with smudgy black-and-white photographs by artist Felice Varini, it comprises two rectangular blocks stacked so that they sit almost at right angles in plan. A two-story lower volume housing exhibition space presents its long side to the Saône. Above, four stories of offices for 300 staff members cantilever 80 feet over a riverside walkway.

With its decorative envelope and gravity-defying form, GL Events might at first glance appear to share the exhibitionist tendencies of its newer neighbors, which include the zesty Orange Cube by Jakob + MacFarlane and the Musée des Confluences by Coop Himmelb(l)au, but a closer look reveals a building attuned to its setting. Reasoning that the presence of a new structure erases an existing view, Varini photographed the site from all four sides and applied the ghostly prospect of roads, railway lines, and bridges to the facades. Likewise, the heroic projection is a conscious echo of the gantry cranes that still dot the quayside, and the nonorthogonal arrangement of the two volumes in plan—they are at 86 rather than 90 degrees—also draws on the character of the place. "We didn't want the

building to appear completely static," says project leader Peter Baalman. "When you walk in a harbor, cranes are always moving. The play of volumes reflects that."

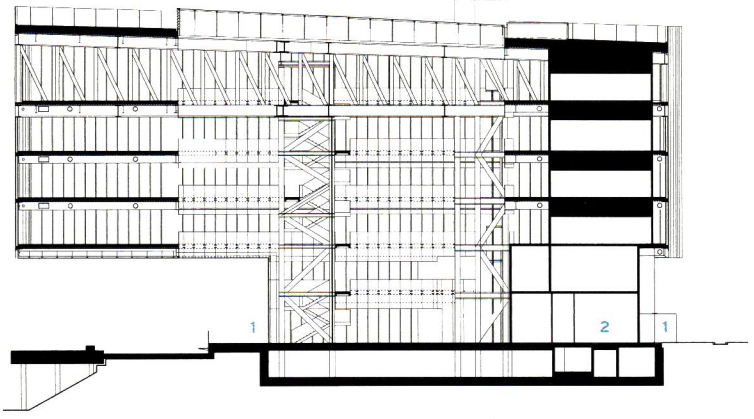
Once inside the building you find its debt to the imagery of industry unmistakable. Beyond the double-height foyer, a 90-foot-high atrium rises through the middle of the plan, overlooked by glass-balustraded offices. This lofty space is dominated by three exposed steel pylons incorporating stairs and elevators, from which aerial walkways extend to the offices. Crowning the close-spaced and heavily cross-braced towers is a dense matrix of superscaled steelwork: 16-foot-deep trusses diagonally span the atrium and gird the perimeter, acting as a giant box beam from which the floors below are suspended.

You can't go by first impressions: the great weight of steel overhead is immediately evident, but at its edges the building appears to rest on nothing more substantial than glass. Ascending to the upper floors provides further disconcerting experiences; it takes a moment to process the scene from a fourth-floor walkway, for example, where an oblique view through a glazed panel in the bottom of the cantilevered volume seems to show the river flowing beneath three tiers of open-plan workspace. At the top, where glass-walled directors' offices are inserted into the interstices between steel members, the scale of the structure makes the occupants seem like Lilliputians.

Though this results in an unorthodox office building, the design has a rational basis, since the cantilever provides more usable floor space than could otherwise be achieved on the plot. The plan and section are also closely tailored to the client's requirements, notably in allowing managers to take in at a glance what is happening throughout the building. This was complicated by fire regulations that usually preclude offices' opening directly onto atria, but the architects were able negotiate a workable combination of measures, including discreet glass skirts on each floor edge that limit the spread of smoke. "That is characteristic of many of our projects," says Baalman. "The concepts look simple, but technically they are very sophisticated."

Further evidence of this refinement is found in the facade. In winter the gap between the double-glazed inner skin and outer rainscreen is used to warm incoming air, while in summer the large-scale images laminated into the glass rainscreen help to alleviate glare.

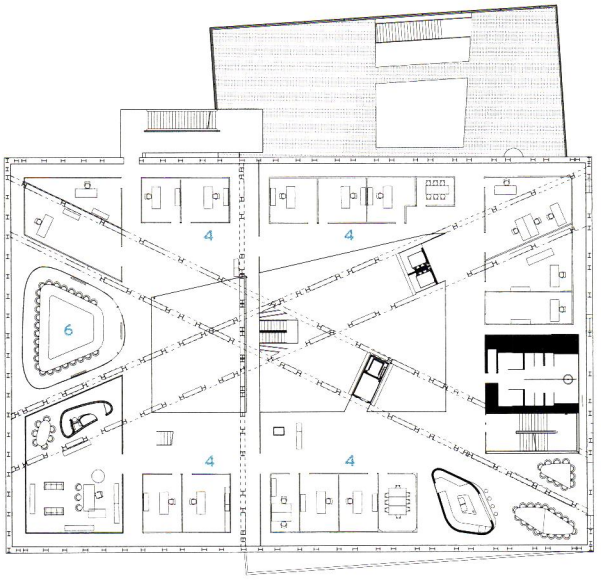
CITY VIEW
Located on the bank of the Saône River, the building is covered with photographic abstractions of the immediate surroundings created by artist Felice Varini. Next door is the green Euronews Headquarters by Jakob + MacFarlane; nearby is their Orange Cube. Floors suspended from the steel trusses at the top are laterally stabilized by a concrete core at the southeast corner.



SECTION A - A

0 30 FT. 10 M.

HANGING TOUGH Cantilevered to the east, the spaces within the four-story portion are enclosed by spider glass layered with Varini's photographic images on the ethyl vinyl acetate (EVA) layer. Temporary exhibition space on the ground floor is served by a secondary riverside entrance. A glazed panel in the red soffit of the cantilevered volume admits views upwards into the atrium (opposite).



FOURTH FLOOR

1 ENTRANCE
2 LOBBY
3 PUBLIC SPACE
4 OFFICES
5 TERRACE
6 MEETING ROOM

credits

ARCHITECT: Studio Odile Decq – Odile Decq, design director, project principal and manager; Peter Baalman, lead project designer; Mathieu Roguet, project assistant

ENGINEERS: BATISERF (structural); AXESS (m/e/p)

CONSULTANTS: Studio Odile Decq (lighting); DAP (acoustical)

CLIENT: GL Events

OWNER: SCI Polygone Confluence

SIZE: 89,300 square feet

CONSTRUCTION COST: $33 million

COMPLETION DATE: January 2014

SOURCES

CURTAIN WALL: AGC

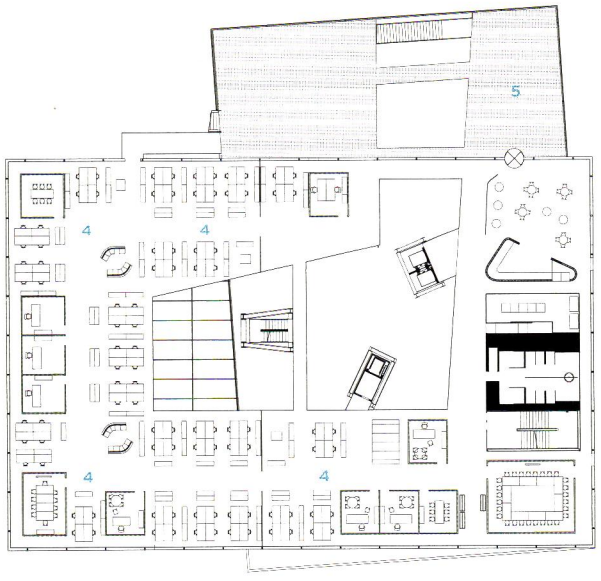
LIGHTING: Luceplan Petale and Javelot Macro by Odile Decq

FURNISHINGS: Vitra

PAINTS: Plasdox (interior); GUITTET (exterior); Cimentol (ground)

FACADE ARTWORK: Felice Varini

ELEVATORS/ESCALATORS: ThyssenKrupp



FIRST FLOOR

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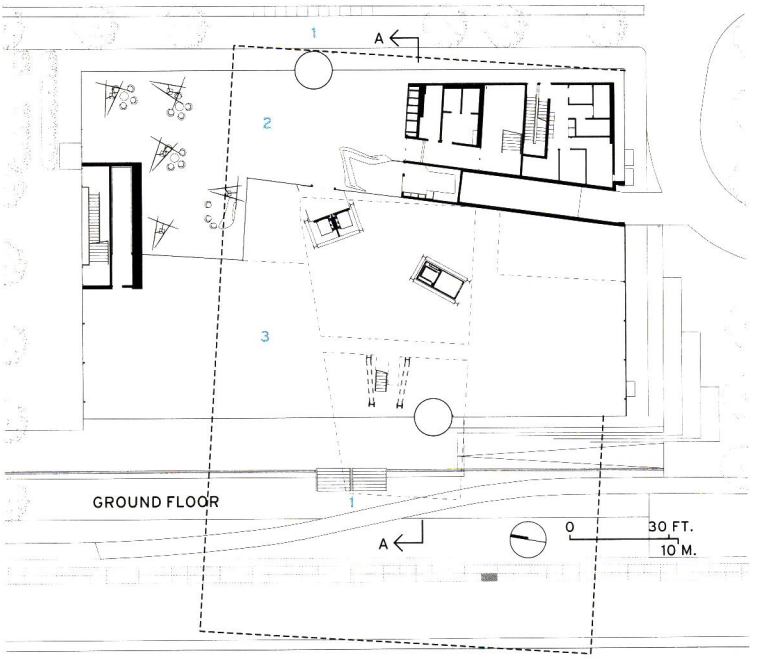
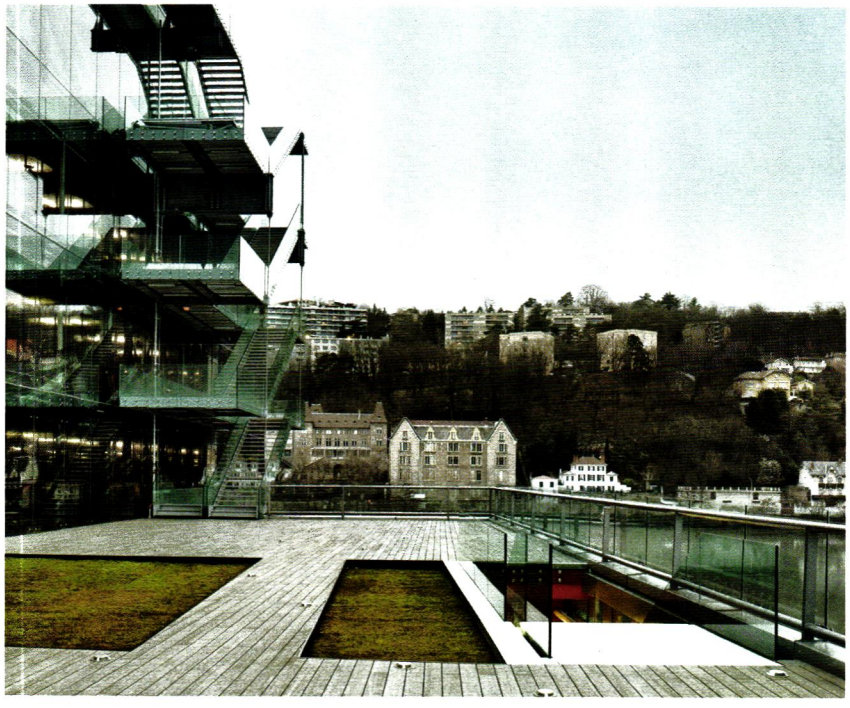


GROUND FLOOR

GAUCHE

PIRANESI CALLING
The concentration of vertical structure in the atrium helps facilitate views through the building (opposite), as does the transparency of fully glazed meeting rooms on the open-plan office floors. Less formal meeting areas include the double-height foyer on the ground floor, which features furniture and lighting designed by Odile Decq (right). Two roof terraces linked by external stairs provide additional social space (below).



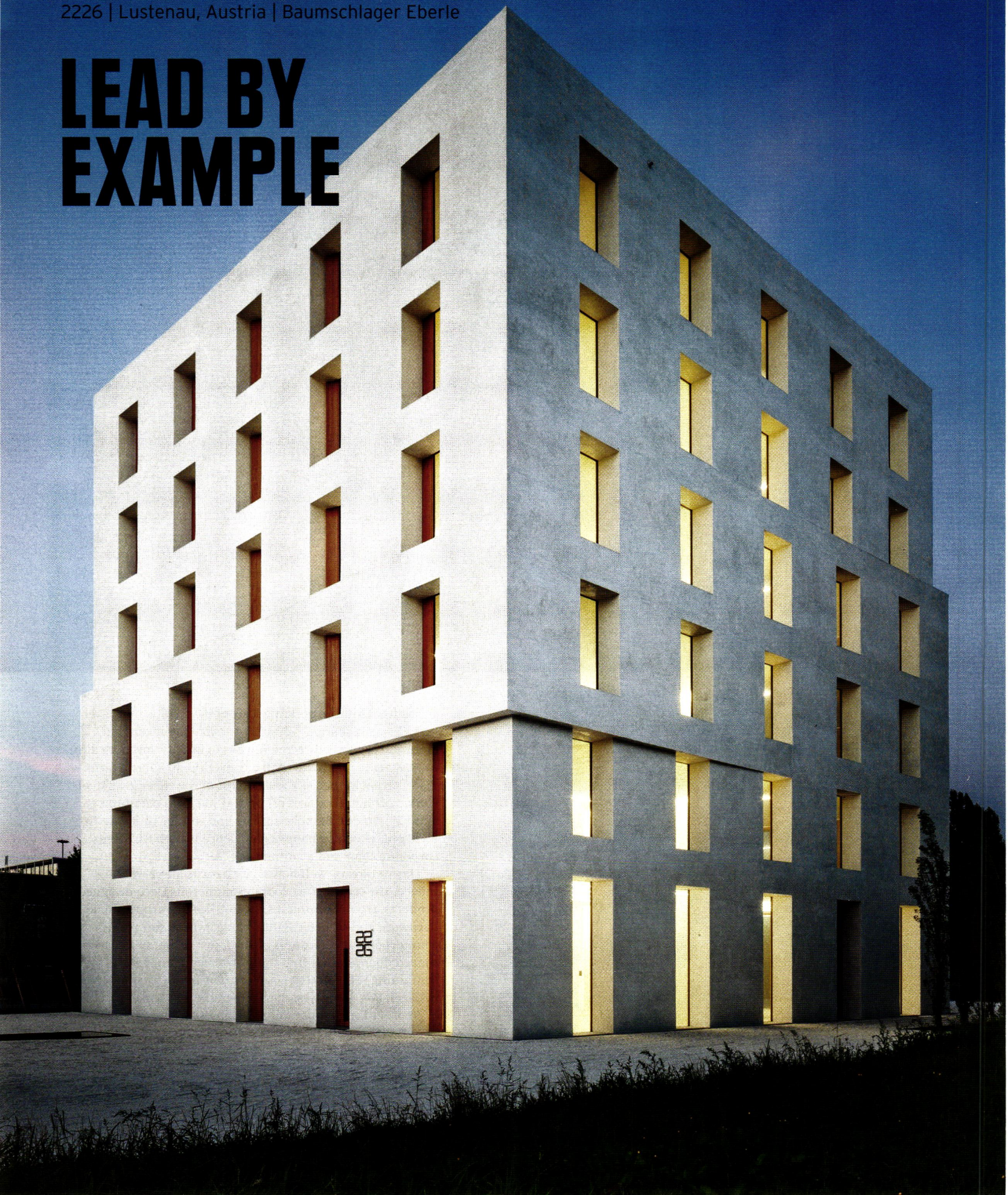
From within the building, this photographic interlayer acts like a diaphanous veil; it is possible to see out, but attention is subtly directed inward to an interior more akin to a sybaritic nightclub than a conventional cubicle farm. Black carpet amplifies the darkness of the silver-gray steelwork. Soft light bounces off crystalline glass partitions and balustrades. Bespoke seating and storage units are in vivid red, which by happy coincidence is both GL Events' corporate color and a hallmark of Decq's work.

The architects' well-honed aesthetic is all-pervasive—indeed, the scheme incorporates numerous Decq-designed products, from aluminum stair profiles to purpose-made hardware and amoebic light fittings, whose soft forms counterpoint the hardness of steel, just as the spiky javelin-shaped door-handles find their obverse in amorphous blobs containing refreshment counters. The building slips easily between two identities, the somber and the sensuous.

Another kind of mutability is represented in the photographic facades' record of the neighborhood at a particular moment in time. As the surroundings are further overwritten by new development—a process already under way—the connection of Decq's building to its place will perhaps seem stronger still. ■

2226 | Lustenau, Austria | Baumschlager Eberle

LEAD BY EXAMPLE



Baumschlager Eberle designs an elegant, efficient home for its own firm.

BY MARY PEPCHINSKI

PHOTOGRAPHY BY EDUARD HUEBER + INES LEONG/ARCHPHOTO

Can an office building, using only heat generated by occupants, their equipment, and lighting—and using only operable panels for cooling—maintain year-round indoor comfort? This proposition has long intrigued Dietmar Eberle, architect, sustainable-building pioneer, and professor at the ETH Zürich.

Designed by Eberle's firm Baumschlager Eberle and completed in 2013, the office building dubbed 2226 tests the proposition. Located in Lustenau, a small city in Voralberg, Austria's westernmost state, the six-story white cube is gently articulated by a slight outward rotation of the northeast corner's top four stories and the modest inward shift of the northwest corner's top two floors. Deep-set vertical windows emphasize its height. Situated in an industrial park at the edge of the city, 2226 is a striking presence. "We had to do something for the place," Eberle observes, "and give it a sense of identity."

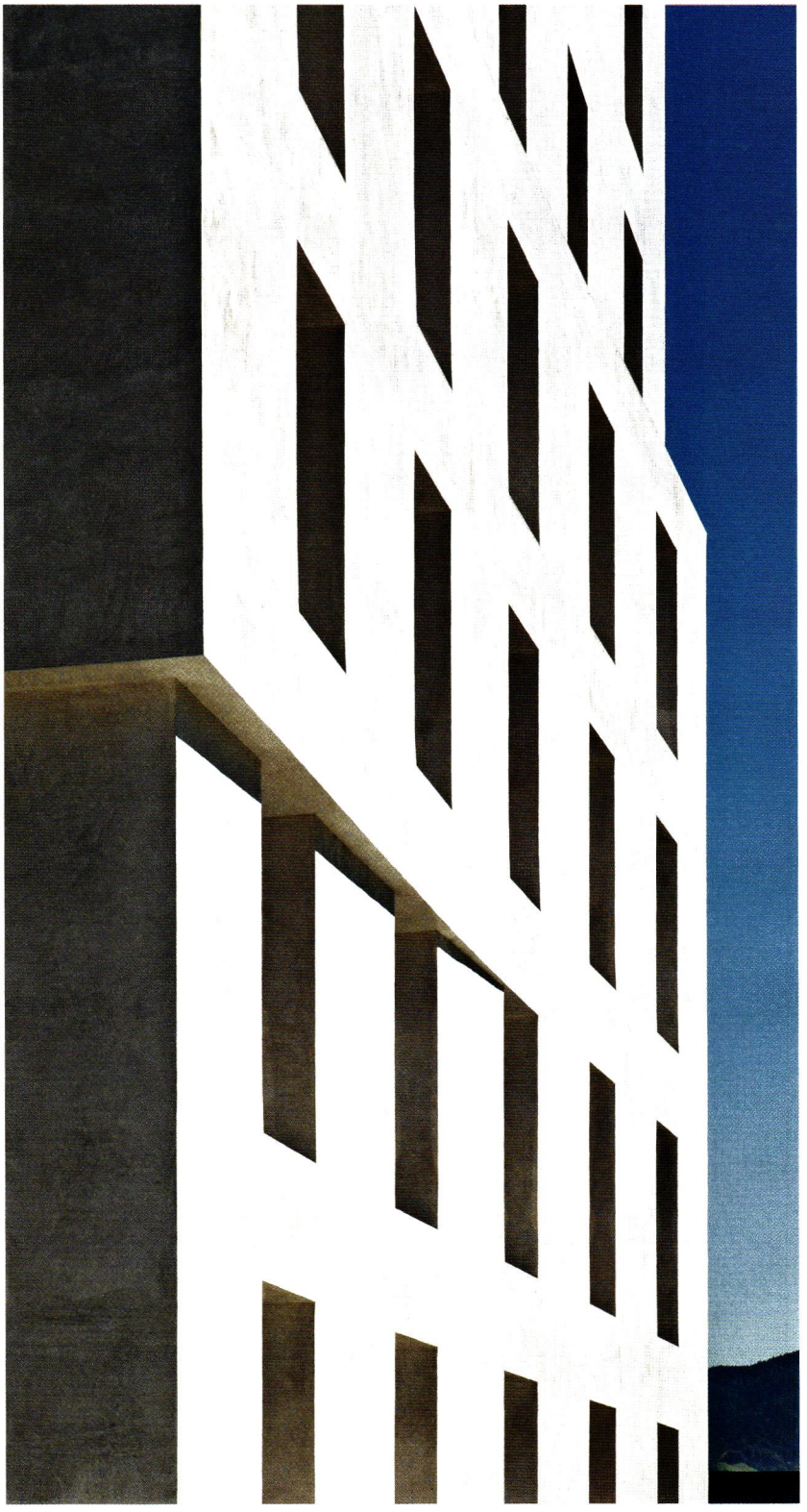
The building's numerical name refers to 22 to 26 degrees Celsius (72 to 79 degrees Fahrenheit), a widely accepted measure of interior comfort. The structure maintains an average temperature of 23 degrees Celsius year-round without heating or air-conditioning systems. It is unique, Eberle emphasizes, and he does "not know of any other attempts, precedents, or similar contemporary buildings with this theme."

Hailing from Voralberg, Eberle established his first office there almost three decades ago. Baumschlager Eberle's energy-efficient buildings first appeared in the 1990s, displaying transparent, intelligent facades. Although the firm has designed massive structures and explored building automation and passive strategies, 2226 marks a new direction.

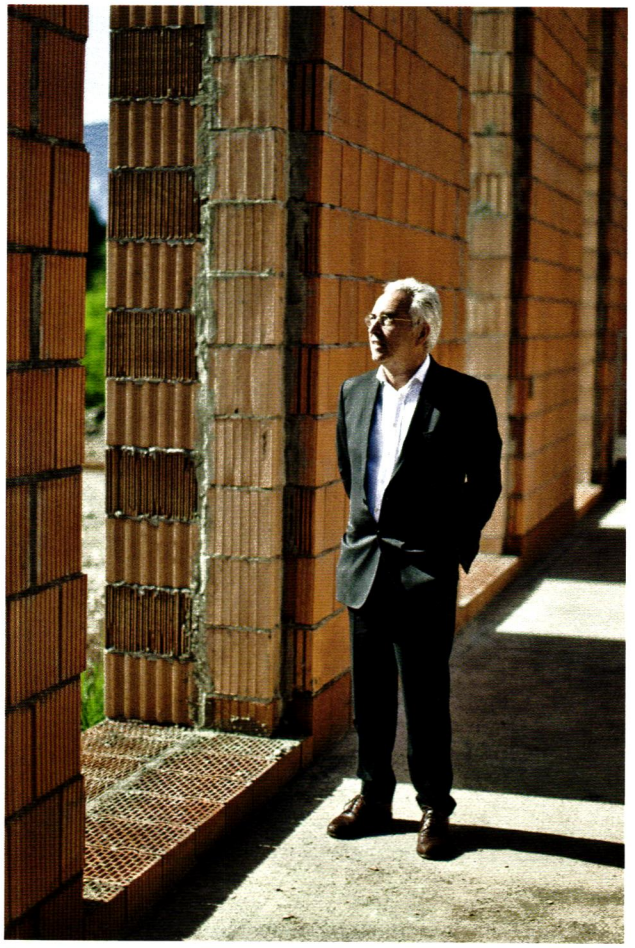
On a recent visit, during a rainstorm that followed a heat wave, 2226's indoor air was fresh and pleasing. Occupants report that the interiors remained surprisingly comfortable in winter ("We thought we would need electrical heaters," one joked). The interiors are bright and elegant, with fine lime plaster on the walls, oiled silver fir window frames, and light-toned, float-finished polished-concrete floors. Baumschlager Eberle's employees work on the second and third floors, while other companies, such as architect Antonella Rupp and furniture manufacturer USM, are renting the top floors.

The square floor plan repeats on each of the six levels. Vertical-circulation and service areas are arranged in a pinwheel shape, dividing floors into four loftlike rooms, each with a double exposure. A café is on the ground floor.

But 2226's signature feature is its elegantly proportioned, starkly simple, and finely detailed facade. Employing a construction method that is typical of Voralberg and the surrounding region, it consists of a double withe of two different structural terra-cotta blocks (the inner is load bearing, the outer a special insulating block) finished with lime plaster on the interior and exterior. Deeply recessed triple-glazed windows occupy 24 percent of the facade, which is three feet thick.



DOUBLE DUTY The building facade is finished in white lime plaster (above). Architect and professor Dietmar Eberle has long been intrigued by passive design. His 2226 office building features a double-withe terra-cotta facade consisting of a load-bearing inner layer and an insulating outer layer, visible during construction (opposite).



credits

ARCHITECT: Baumschlager Eberle – Dietmar Eberle, project principal and manager; Jürgen Stoppel, lead project designer; Hugo Herrera Pianno and Markus Altmann, project team

ENGINEERS: Mader & Flatz Ziviltechniker (structural); GRAF Elektronik (electric)

CONSULTANTS: Lars Junghans (energy); Peter Stefan Widerin (BUS control)

GENERAL CONTRACTOR: Rhomberg Bau

CLIENT: AD Vermietung OG

SIZE: 34,500 square feet

CONSTRUCTION COST: $4 million

COMPLETION DATE: April 2013

SOURCES

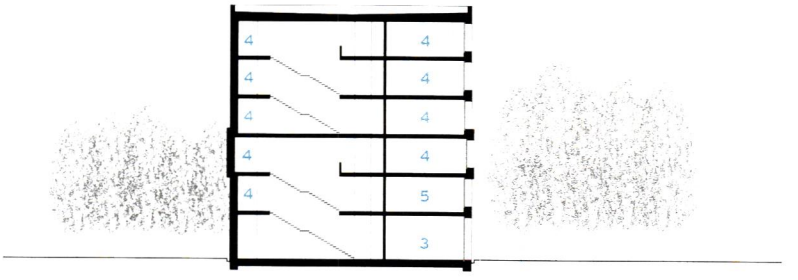
MASONRY: Rhoberg Bau

WOOD: SIGG

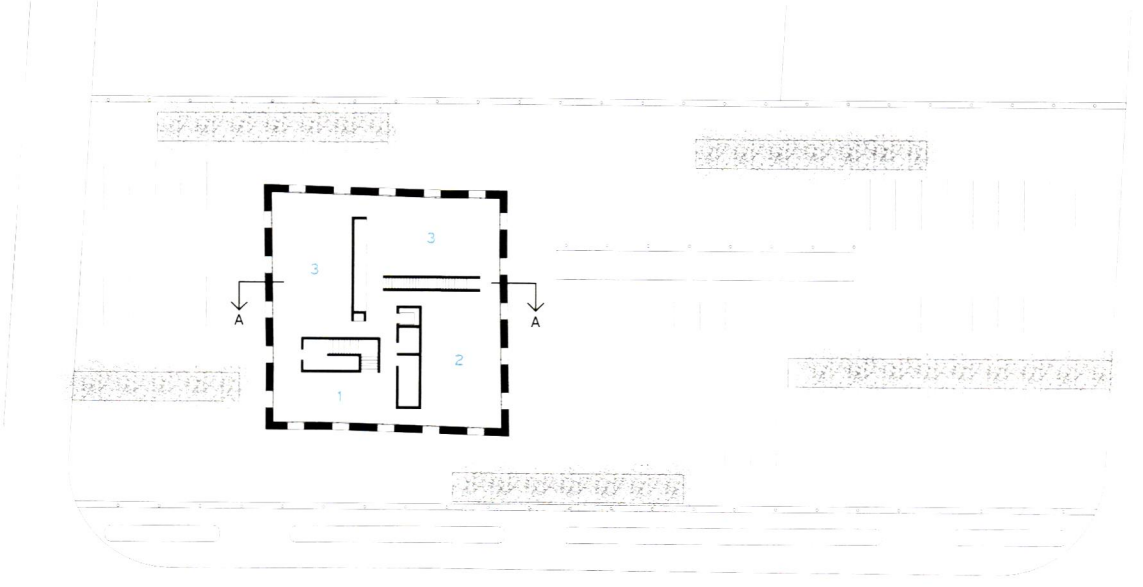
GLAZING: Glas Marte

PLASTER WALL COVERINGS: Kratzer

LIGHTING: Zumtobel; Ingo Maurer



SECTION A - A



GROUND FLOOR

1 LOBBY
2 LOUNGE
3 EXHIBITION HALL
4 STUDIO
5 MEETING ROOM

PHOTOGRAPHY: © DARKO TODOROVIC (THIS PAGE)

ROOM WITH A VIEW Each loftlike room features a double exposure (top and above). Because there is no mechanical ventilation, panels on the sides of the windows open for fresh air.

During the winter (January temperatures in Voralberg average 24 degrees Fahrenheit), the well-insulated, extremely airtight facade stores 22 percent of the heat gains from occupants, computers, lighting, and appliances. The interior walls and slabs hold onto 78 percent. These surfaces radiate heat throughout the day. The facade has a very low heat transfer and maintains a satisfying indoor climate throughout the night during the coldest months.

During the summer (July averages 74 degrees Fahrenheit), the panels open at night for passive cooling. Sensors close the panels when the indoor temperature is adequate. The facade's low heat transfer retains the cold air and ensures comfortable conditions during working hours. Other passive features include deep-set windows that occupy a small percentage of the facade and are shaded by it in summer; the office floors' 10-foot-high clearances, which increase the average cubic space per occupant and reduce CO_2 concentrations; and the vertical panels, in a shape that was selected because it optimizes airflow into the rooms.

A software-driven system operates the window panels and records building performance data. Values for brightness, temperature, humidity, and CO_2 levels appear on a tablet-sized screen installed on the rear wall of each room. Sensors located above each screen record these variables, and a rooftop sensor tracks the outdoor temperature. Occupants can monitor the air quality, and a KNX BUS system (a building-management system used in Europe) collects data on a central facility server and controls the panels.

Because scant information exists about the thermal behavior of large buildings and how thermal inertia impacts a

BREAK TIME In addition to a lobby and exhibition space, the ground floor houses a brightly colored café with light fixtures by Ingo Maurer (left). Vertical circulation throughout the building's six levels (below) divides each floor into a pinwheel-shaped scheme.

building's temperature over long periods, 2226's design relied on input from Lars Junghans, an engineer from the University of Michigan specializing in building optimization and automation. He created simulations to calculate the building's heat losses, gains, and storage capacity during a 12-month cycle and developed the software for it. According to Junghans, 2226 "performs better than expected. The only unusual issue was the relatively low CO_2 concentration in the building because of the lime plaster surfaces."

For now, the air remains fresh because the slowly drying lime plaster absorbs CO_2. When hardened, this process ceases, yet the plaster will regulate indoor humidity and inhibit mold. (On the exterior, the lime plaster, mixed with hemp, acts as a fungicide and will not crack with temperature changes.)

Like any prototype, 2226 has revealed shortcomings and produced unexpected results. Whereas the bulky facade conserves energy, it also reduces the amount of rentable square footage. And the expense incurred from using quality materials and skilled labor, although offset by the lack of mechanicals, renders the final cost of construction comparable to that of a conventional building. The building's performance will be evaluated this summer.

Why aren't more architects doing this? According to Eberle, clients are averse to unconventional ideas about energy-efficient buildings. (He is an investor on this project.) Building research has largely ignored the potential of both thermal inertia and how big buildings store and radiate heat, crucial information for this concept. One also senses that the unique reservoir of skilled labor and traditional materials available in Voralberg certainly lent inspiration to making this prototype.

Meanwhile, Dietmar Eberle continues to explore the possibilities of a building without mechanical systems—in a university tower in Luxembourg, to open this autumn, and in two apartment blocks in Voralberg modeled on 2226, currently in planning. "As a proposition," he muses, "this can work throughout the world." ■

Berlin-based Mary Pepchinski is a writer, architect, and professor of architecture at the University of Applied Sciences in Dresden, Germany.

Garden State

Novartis reshapes its New Jersey campus with innovative architecture in a sprawling parklike setting.

IN AN ONGOING process begun more than a decade ago, pharmaceuticals giant Novartis has been transforming its suburban East Hanover, New Jersey, campus with pioneering workspace and landscape design that accommodates flexibility and invites interaction among its staff by encouraging them to leave their desks.

The largest of Novartis's many worldwide locations—which include Cambridge, Massachusetts, and Shanghai, China—the 230-acre East Hanover campus is home to 6,000 employees, with room to accommodate up to 9,000. In developing a scheme in which buildings are grouped in three "villages" around a central park, master planner Vittorio Lampugnani has adapted ideas he first implemented on a smaller scale for a more urban context at the company's global headquarters in Basel. "My main job is to be a defender of public space," Lampugnani explains.

There are 35 buildings currently, including older ones that were among the earliest structures on the campus, established in 1949 by Sandoz (now a division of Novartis) with a heavy manufacturing presence that no longer exists on the site. The ground floors of each building have been converted to public space for all employees. These areas feature day care, fitness, and conference centers, and, more often than not, restaurants that spill out to the surrounding landscape.

Landscape architect Michael Van Valkenburgh worked with Lampugnani and the individual building architects—for both existing buildings and the new facilities highlighted on the following pages—on the interface between building envelopes and the grounds. His office also looked at strategies to incorporate parking (the company runs a shuttle bus to discourage vehicular traffic on campus) and improve pedestrian circulation and outdoor gathering spaces.

Novartis's recent expansion—which adds 1.2 million square feet of new facilities—includes three state-of-the-art buildings for the company's global oncology department in the campus's East Village, by Weiss/Manfredi, Maki and Associates, and Rafael Viñoly Architects. Each represents some of the finest work by these firms, made possible by Novartis's dedication to good design. Additional new structures include a delightfully unconventional garage by Lampugnani and a soaring visitor center (pictured below), also by Weiss/Manfredi.

With this phase complete, and as Novartis shifts its focus from new buildings to converting older ones, the company has engaged Paris-based landscape architect Michel Desvigne with Inessa Hansch to execute the long-term transformation of the campus, with an emphasis on enhancing the 56-acre central park into an amenity worthy of envy (as well as outdoor workspace complete with Wi-Fi) within the pastoral landscape.

PHOTOGRAPHY: © ALBERT VECERKA/ESTO

NEW WAVE A recently completed Visitor Reception Center by Weiss/Manfredi is a dynamic introduction to Novartis's evolving workplace.

Visitor Reception Center | East Hanover, New Jersey | Weiss/Manfredi

GRAND ENTRANCE

Marion Weiss and Michael Manfredi create an uplifting gateway for a corporate campus.

BY SUZANNE STEPHENS

Novartis sorely needed a better place to greet visitors to its 230-acre campus in East Hanover, New Jersey. The existing structure wasn't welcoming and didn't accommodate a flow of people, much less offer a pleasant place to sit and wait, says the company's head engineer, Randy Dias. With a light, airy, curvilinear design, the New York architects Weiss/Manfredi sought to provide an effortless way to bring visitors in from the campus parking lot, register, and board a small shuttle to their desired destinations—"a sort of Möbius strip in its movement strategy," says principal Marion Weiss.

Weiss, with her partner, Michael Manfredi, designed the 3,350-square-foot building as a sinuously sculptural one-story space that seems to spring from the berms in the landscape in which it is nestled. Its roof—a split-winged canopy—pays homage to Eero Saarinen's TWA Terminal at New York's JFK airport, and similarly looks as if it could soar away. The building's subterranean portions have their own precedents, ones that appear in much of Weiss/Manfredi's work, such as its Museum of the Earth in Ithaca, New York (2003), the pavilion at Seattle's Olympic Sculpture Park (2007), and, more recently, the Brooklyn Botanic Garden Visitor Center in New York (2012). While earlier forms resembled angular tectonic plates erupting from the ground (Ithaca and Seattle), later ones feature a serpentine curve topped by a grassy roof (Brooklyn) or this winglike apparition perching on a berm.

SOARING WELCOME A folded ceiling of the wing-shaped canopy that shelters the visitor reception center softly bounces light, prompting the architects to refer to it as a "celestial soffit" (opposite). The steel-framed pavilion emerges from earth berms and concrete retaining walls and is enclosed by structural glazing to expand the views (below).

Working closely with Novartis's landscape architect, Michael Van Valkenburgh, the firm sought to create a noteworthy gateway building "by joining earth and sky," in the words of Manfredi. The concrete retaining walls of the berms continue indoors, where they are surfaced in cementitious plaster. Explaining how the team arrived at an avian shape for the canopy, Manfredi says, "The desire for long spans and cantilevers led us to create a diagonal fold in the roof to express the structural dynamics of the pavilion." The canopy's beams taper as the roof extends out and upward beyond the perimeter walls, terminating in a bladelike ¾-inch-deep edge. Inside, where beams meet the columns along the ceiling's off-center fold, the architects encased the junctures in large pleats of white gypsum board; the billowing effect enhances the play of light above, as does the white epoxy terrazzo floor below.

To gain as much light and view as possible for the interior, Weiss/Manfredi enclosed the perimeter walls in self-supporting glass—with five lites for a 2¾-inch thickness. Since the canopy shields much of the glass, which also has an energy-efficient coating, there is little need to worry about sun load. Along with other sustainable measures, such as a solar panel array on an extension to the south, the architects were able to qualify for a LEED Gold rating for the structure.

Although small in size, the visitor center brings together a number of ingenious design strategies and advances the evolution of Weiss/Manfredi's earthbound work. In addition, the pavilion signifies the pharmaceutical company's optimism about its stature in a global economy and about architecture's place within Novartis's corporate culture. ■

SITE PLAN

1 ENTRY/ RECEPTION
2 WAITING AREA
3 OFFICE
4 BREAK ROOM
5 BATHROOM
6 PV CANOPY

credits

ARCHITECT: Weiss/Manfredi Architecture/Landscape/Urbanism – Marion Weiss, Michael Manfredi, design partners; Christopher Ballentine, project manager; Matthew Ferraro, Justin Kwok, project architects; Johnny Lin, Andrew Ruggles, core team members

ENGINEERS: Severud Associates (structural); Cosentini Associates (m/e/p/fp/security)

CONSULTANTS: Heintges & Associates (curtain wall); RELAB (renewable energy); Brandston Partnership (lighting)

CONSTRUCTION MANAGER: Sordoni Construction Company

CLIENT: Novartis Pharmaceuticals Corporation

SIZE: 3,350 square feet

CONSTRUCTION COST: withheld

COMPLETION DATE: January 2013

SOURCES

CURTAIN WALL: Seele

GLASS: Sedak, AGC Interpane Glas Industrie

EPOXY TERRAZZO FLOOR: D. Magnan & Co.

STANDING SEAM METAL ROOF: Custom Exterior Systems

PHOTOGRAPHY: © ALBERT VECERKA/ESTO (OPPOSITE); TIM KLEIN

Building 335 | East Hanover, New Jersey | Weiss/Manfredi

LIGHTNESS OF BUILDING The south end shows the top half suspended over the lower portions to create a surreal, hovering effect.

PATTERN PLAY

Weiss/Manfredi breaks into the box, ingeniously chiseling out a variety of spaces for a new office building.

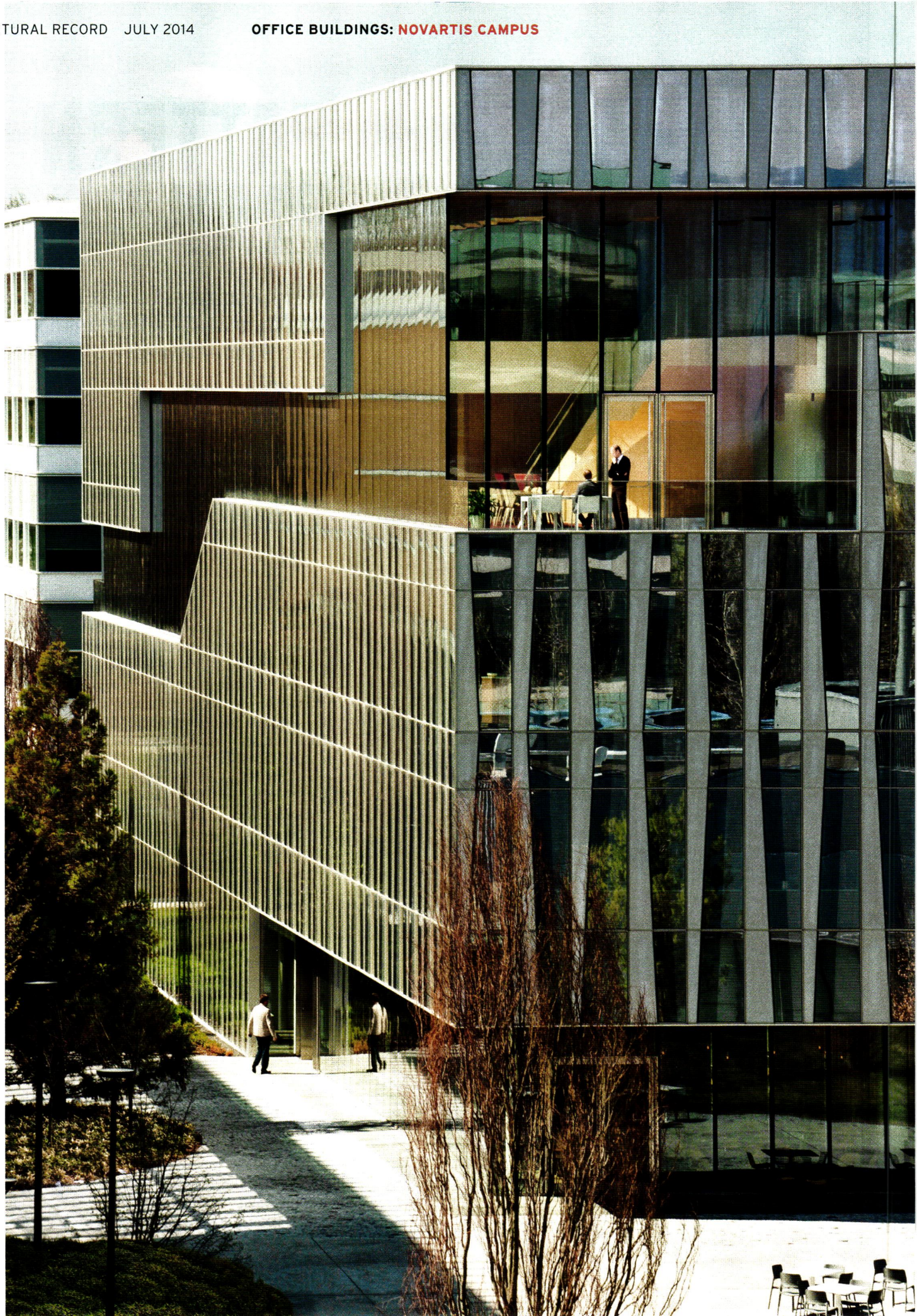
BY SUZANNE STEPHENS

PHOTOGRAPHY BY PAUL WARCHOL

Surprising what you can do with a box. In designing Novartis's corporate global oncology offices on its East Hanover, New Jersey, campus, New York architects Weiss/Manfredi took the master plan's rectilinear form, 275 feet long, 100 feet wide and 75 feet high, and began carving up spaces inside and out. Each of the four elevations varies from the other by virtue of voids surgically cut into the glazed volume: one shelters a grand entrance stair on the northwest corner; one major incision creates an outdoor balcony on the fourth floor at the north end; another does the same for the third level at the south end; while yet a third balcony appears on the west side at the second level. Expanses of clear glass seemingly set in shallow relief within the patterned curtain wall express the program where the run of stairs connect the levels within, including double-height communal spaces known as "living rooms."

The living rooms not only give the corporate office spaces a more residential quality but help Novartis in its mission to generate a more "collaborative" work environment. Its program called for a range of flexible areas with open-office workstations, conference rooms, smaller "enclave" rooms, and casual meeting areas for the 350 employees. Novartis's head engineer, Randy Dias, explains that management was well aware that many in its corporate culture were used to having private offices before the pharmaceutical company started overhauling its 230-acre campus. But in keeping with the present tempo, the company felt the need to facilitate more spontaneous interaction and permit teams to assemble and disassemble every few months as activities change. In response to the brief, Weiss/Manfredi came up with the idea of adding the double-height living rooms. "These communal spaces are meant to be cozy counterpoints to the open-office plans," says principal Marion Weiss. "They become informal town halls that offer a sense of inclusiveness."

The architects connected the five floors of the 140,000-square-foot building with wide stadium steps and bench seating that lead directly to the spacious living rooms. "We like the whole concept of the communicating stair," says Dias, who notes that when Novartis was selecting architects,



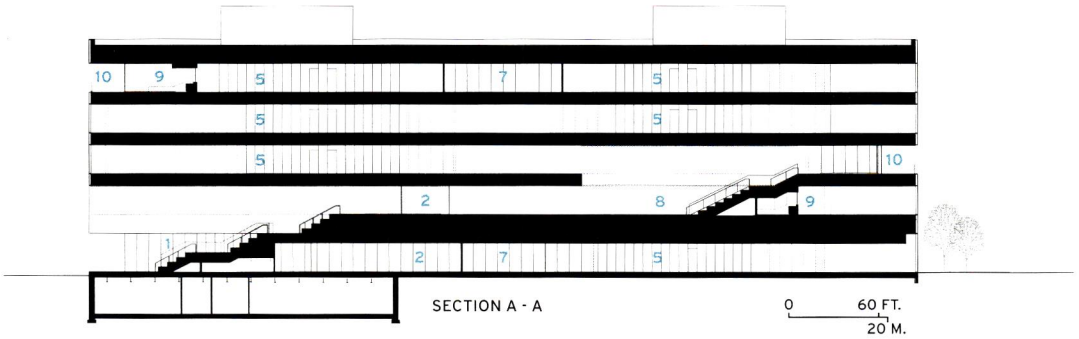
it visited Weiss/Manfredi's Diana Center at Barnard College in New York, where communal spaces cascade down the interior of the multiuse arts building, in parallel with zigzagging stairways. At Novartis, the architects organically integrated steps and sitting areas. "We carved out an ascending spiral in one continuous sweep," says principal Michael Manfredi about the three flights of stairs that climb the levels along the building's perimeter walls, linking to the three double-height gathering spaces.

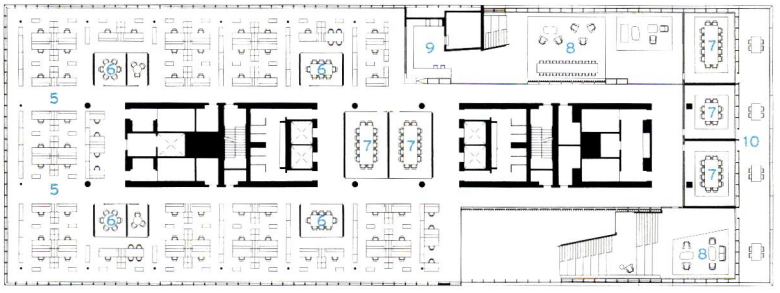
In counterpoint to this vertical spiral are the single-story workstations, small "enclave" spaces, and conference rooms, all arranged in and around the central elevator core. "We could have put the core against the perimeter wall, but instead we decided to center it," says Weiss. "The core became the dictator." Structural bays, 24 by 30 feet, with an 8-foot module for workstations and a 4-foot one for the curtain wall, impart the clarity and coherence of a Miesian open plan. The core structure also means that workstations are no more than 30 feet from exterior walls, giving occupants daylight and views. Sixteen-inch raised floors allow the workstations to be flexibly configured, contain a sound masking system, and provide air distribution in a ductless pressurized manner that enhances energy efficiency. "Novartis wanted us to meet Basel's energy standards, matching those of its headquarters," says project manager Clifton Balch.

To encourage more spontaneous interaction among campus employees, the architects installed a handsomely tailored restaurant on the main floor. The bronze pleated panels on the core walls, along with oak ceilings and the earth-toned custom-designed carpets, make you think of a comfortably modern inn. Other features, such as white oak paneling and ceiling slats in the common areas and the red wing chairs designed by Weiss (and now produced by Vitra) in the living rooms, add to the gestalt.

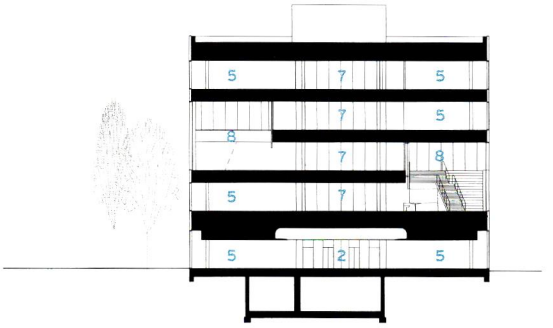
The exterior glazing picks up the residential theme—if in a very abstract manner: "We wanted a soft, inviting curtain wall, which would be another riff on the theme of domesticity," explains Weiss. The architects brought together three kinds of glass for the curtain wall—acid-etched, reflective, and fritted—to form a subtly quirky pattern of slightly bent vertical striations that admit different levels

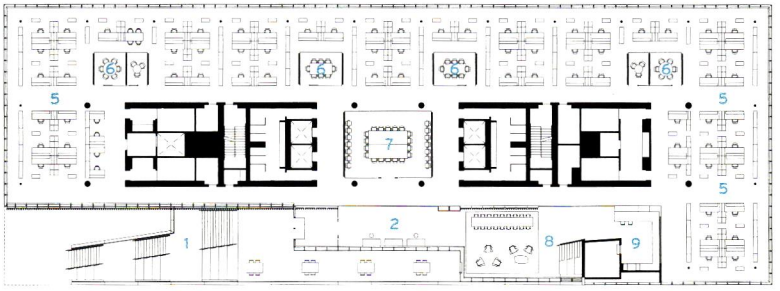
REVEALING ELEVATIONS
On the east facade (opposite), an entrance is carved out of one corner; the interior stair to a double-height living room on the fourth floor's northeast corner is indicated by clear glass set in shallow relief in back of the striated glass curtain wall. At the main entrance on the northwest corner (above), a stair ascends on the west side to the second-level lobby living room.





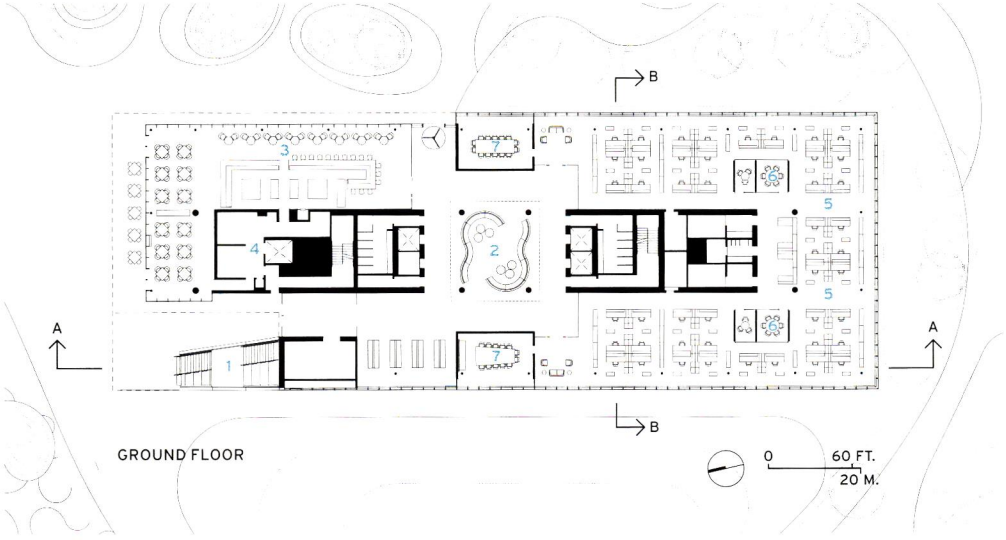
THIRD FLOOR





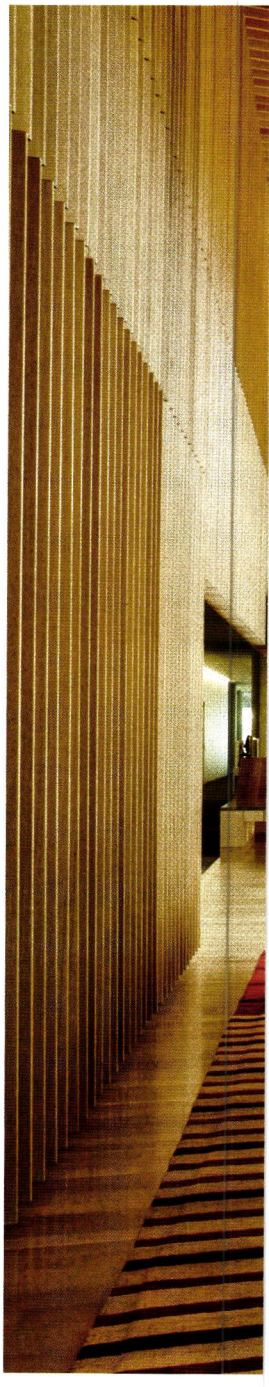
SECOND FLOOR

1 ENTRY STAIR
2 LOBBY
3 RESTAURANT
4 KITCHEN
5 OPEN OFFICE
6 ENCLAVE
7 CONFERENCE ROOM
8 LIVING ROOM
9 PANTRY
10 BALCONY



GROUND FLOOR

SPLIT LEVEL
The double-height living room (opposite), such as this one on the second and third floors, features chairs Marion Weiss designed, which Vitra is producing. The office level above is one of two hung from the roof's plate girders.



of light. "We were interested in playfulness and uncertainty, as if we were drawing tree branches on the facade," says Manfredi. The ethereal effect required numerous drawing studies and mock-ups owing to its complex geometry. Fortunately, the craftsmanship rose to the levels of the intention "to trick the eye" in Manfredi's words—referring, among other things, to the omission of spandrels and other ways of calling out the individual floor plates on the exterior.

Adding to the ambiguity and surreal quality of the curtain wall is the actual structure itself. The architects designed the steel-framed building so that the top half is suspended from the 100-foot-long plate girders that cantilever 30 feet on each side of the roof. Meanwhile, the lower floors follow more conventional perimeter-column and core construction. A void expressed at the third level indicates the split between the top-down and bottom-up structural systems and creates a sense of the upper mass hovering above the lower one.

Because of the placement of the buildings in the master plan, you can apprehend the subtleties of the curtain wall and detailing on all four sides, a benefit obviously more available to an exurban site than the tighter one of an urban situation. And the small plazas and parks in this setting soften the architecture's forthright presence. Yet the office building doesn't try to brazenly stand out. Instead, it complements its neighbors quite judiciously, while maintaining its own elegant identity and strong personality. ■

MULTIPLE VISTAS
A conference room on the third floor (top, left) has views of the bamboo-screened garage designed by Vittorio Lampugnani. The restaurant (left) looks east to a plaza and Rafael Viñoly's building. Above, on the third and fourth floors, a living room and stadium steps take in more of this panorama (opposite).

credits

ARCHITECT: Weiss/Manfredi Architecture/ Landscape/Urbanism – Marion Weiss and Michael A. Manfredi, design partners; Clifton Balch, project manager; Joseph Chase, Matthew G. Ferraro, project architects; Joseph Vessell, core team member

ENGINEERS: Severud Associates (structural); Cosentini Associates (m/e/p/fp/ security)

CONSULTANTS: Heintges & Associates (curtain wall); Brandston Partnership (lighting); Shen Milsom & Wilke (AV/acoustics)

CONSTRUCTION MANAGER: Turner Construction

CLIENT: Novartis Pharmaceuticals Corporation

SIZE: 140,000 square feet

CONSTRUCTION COST: withheld

COMPLETION DATE: December 2012

SOURCES

CURTAIN WALL: Permasteelisa North America

GLASS: AGC Interpane Glas Industrie, Sevasa

BRONZE PANEL WALL: Linel Architectural Glass and Metal Solutions

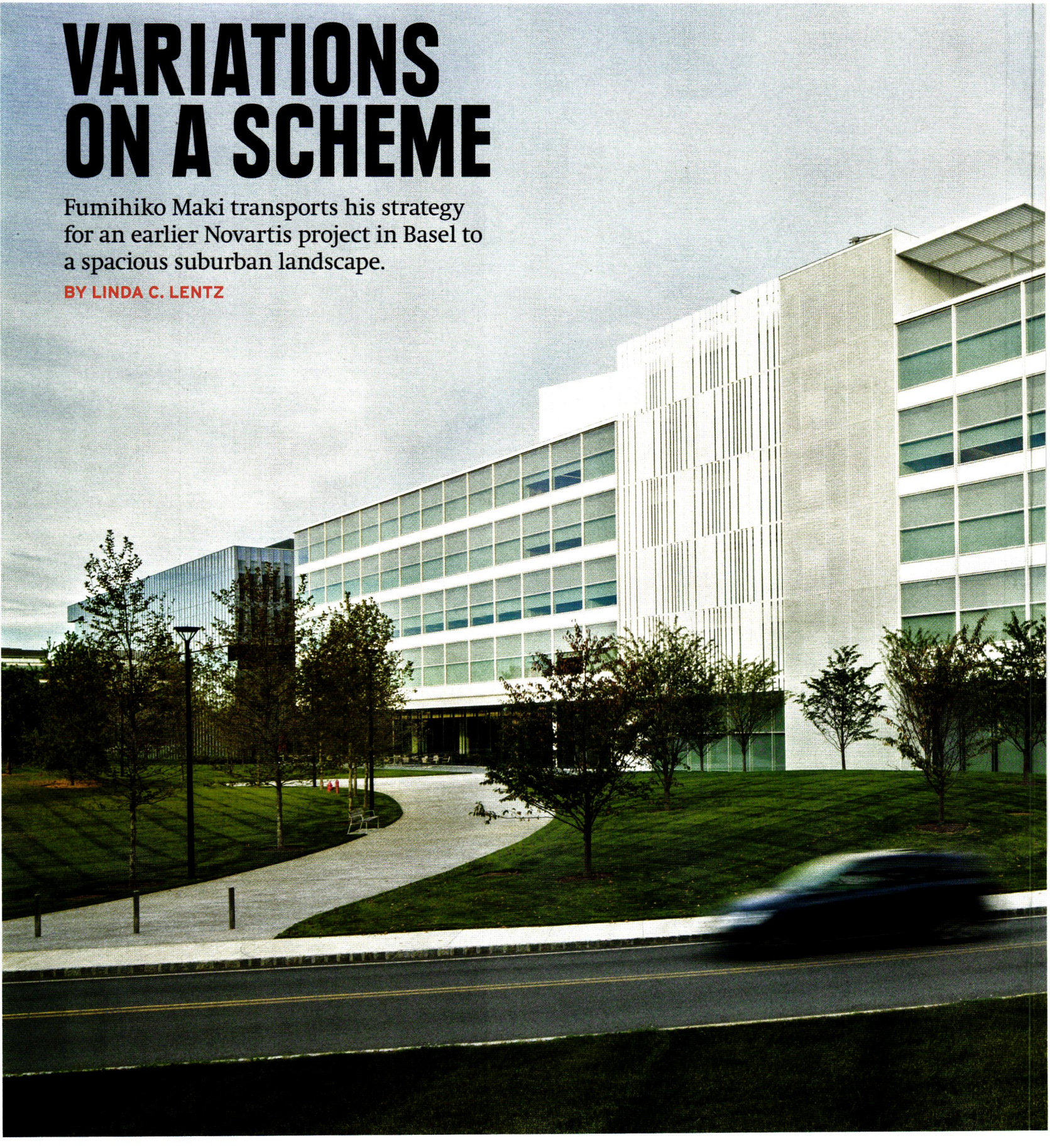
CUSTOM WORKSTATIONS: Unifor

Building 345 | East Hanover, New Jersey | Maki and Associates

VARIATIONS ON A SCHEME

Fumihiko Maki transports his strategy for an earlier Novartis project in Basel to a spacious suburban landscape.

BY LINDA C. LENTZ



PHOTOGRAPHY: © TIM KLEIN

SUN SCREEN South of the Weiss/Manfredi building, Maki and Associates' new project for Novartis has a ribbonlike facade in three types of glass panels, aluminum louvers, and glass block for daylight and solar control. A louvered awning at the top shades a roof deck.

Occupying a site that borders the southeastern edge of the campus, Building 345 by Maki and Associates reflects the pragmatic nature of the pharmaceutical corporation's primary business with a clean, minimalist materiality. A subtle striped facade made of four varieties of glass—a deliberate move to protect its occupants from the sun's glare—might seem rigid and austere beside its more flamboyant neighbors designed by Weiss/Manfredi, Rafael Viñoly, and Vittorio Lampugnani. Yet within the pristine cladding, the architects crafted a warm interior that embraces the landscape—both literally and figuratively.

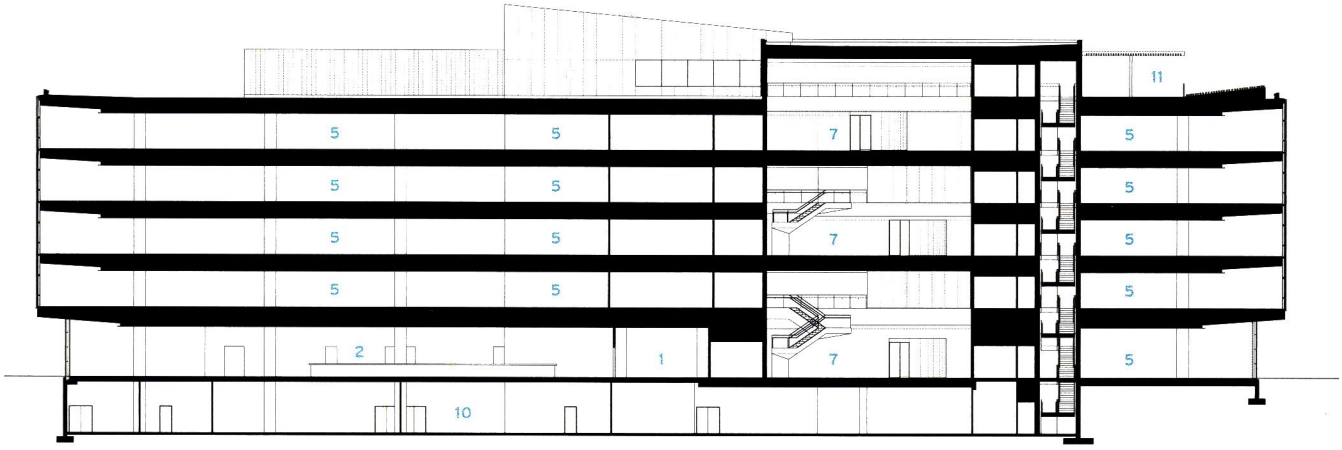
Principal Fumihiko Maki's approach to the Novartis program clearly references the Square 3 building he designed for the company's Basel headquarters (RECORD, August 2011, page 82). Completed in 2009, that generously glazed five-story flat-slab structure opens onto a small grassy plaza and features two catty-cornered cores to establish the desired open workplace and views out to the city and campus. A series of sinuous stairways at either end of the building encourages movement and conversation between floors.

The suburban-U.S. location required a much larger building than the Swiss project, however—a footprint, at 99 by 335 feet, four times the size. The goal, says Maki's international projects director Gary Kamemoto, was to create flexible offices for about 440 employees of the company's global oncology group, as well as two company-wide amenities: a conference center and an Asian bistro. The challenge, he adds, was to respond to the client's request for an unobstructed, free-flowing work environment in such a large area.

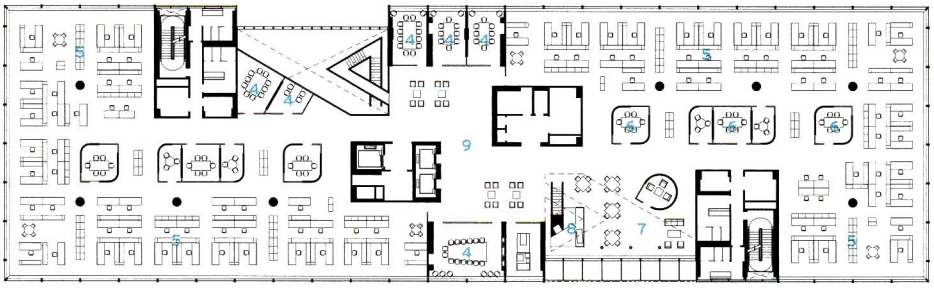
The architects collaborated with New York–based structural engineer Leslie E. Robertson Associates to devise a six-story, 183,000-square-foot, post-tensioned-concrete structure with no perimeter columns. The resulting slabs cantilever 30 feet from the outermost columns, which allows the occupants unimpeded panoramas of the parklike surroundings. Four offset cores arranged in pairs on diagonal axes—two are at the center and the others are on opposite elevations—anchor the building and provide the necessary openness throughout the rectilinear floor plate.

"Among the plan's key concepts are spaces we call 'community parks,'" says Kamemoto, explaining that the architects based their model on Lampugnani's master plan for the campus, which will eventually have three distinct "villages" of office buildings encircling a central park. Similarly, rising from the southern half of the ground floor inside, these double-height communal areas are surrounded by L-shaped "neighborhoods" of open-plan workstations where Novartis project teams work in units of 10 to 20 people. Adjacent to the cores, the "community parks" include café-like seating, an island pantry, and internal stairs that link the floors, as in Basel, for staff collaboration and physical activity.

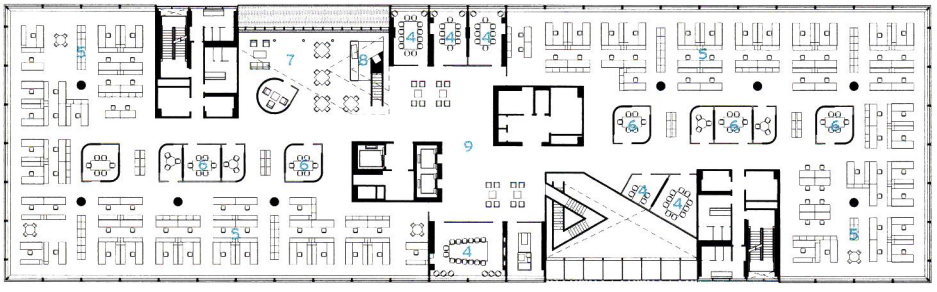
In section, the north and south halves of the second through fifth floors are identical in plan, though a raised floor—with pressurized in-floor heating and cooling systems that have moveable vents—frees management to rearrange the modular workstations as needed. Outfitted with grassy green carpeting, maple, and "teakwood"-stone surfaces, and cane accent furnishings—to further the outdoor theme—each side has its own community park, three neighborhoods, and a series of private spaces, including glazed conference



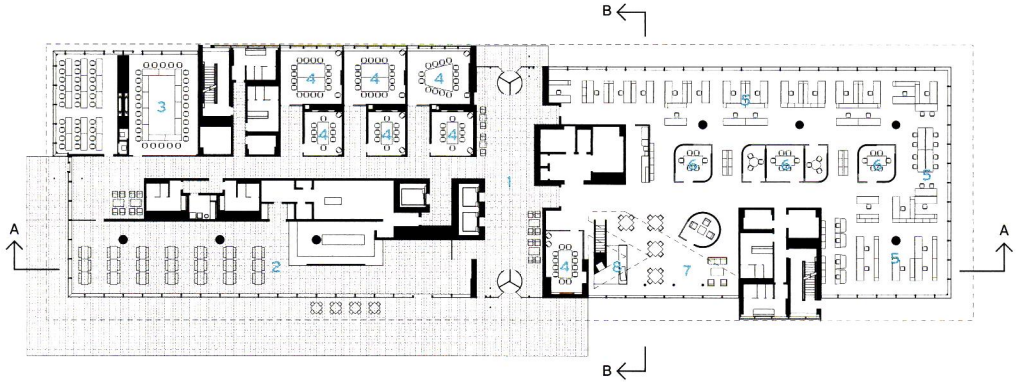
SECTION A - A



THIRD FLOOR

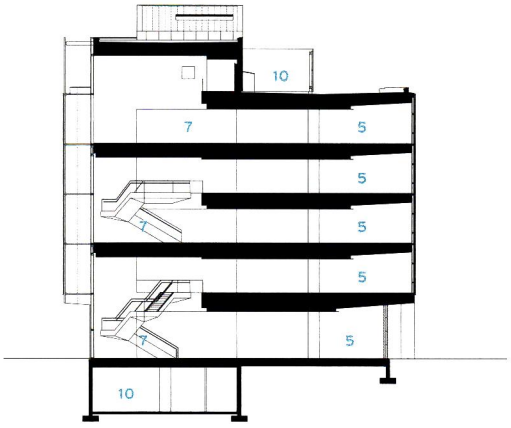


SECOND FLOOR



GROUND FLOOR

0 50 FT. 15 M.



SECTION B - B

0 50 FT. 15 M.

1 ENTRANCE LOBBY
2 ASIAN BISTRO
3 TRAINING ROOM
4 CONFERENCE ROOM
5 OPEN OFFICE
6 ENCLAVE ROOMS
7 COMMUNITY ROOMS
8 PANTRY
9 ELEVATOR LOBBY
10 MECHANICAL AREA
11 ROOF DECK

INSIDE OUT Inspired by the surrounding trees and landscape, the architects designed the building to integrate these elements with the architecture and interior design. Large panels of glass allow the Asian bistro (right) to visually spill out onto the grounds, while the offices, carpeted in a grassy green hue, revolve around atrium-like "community parks" (below) with café seating and views of the campus.

rooms and acoustically insulated bubblelike enclaves for personal calls and small groups. The second set of cores houses egress stairs and lavatories, both faced with a milky glass block on the exterior wall to brighten such typically dark zones.

As in Maki's building for the Swiss campus, the curtain wall maximizes daylight and dissolves the boundary between indoors and out. "When we first visited the site, we were impressed with the abundant growth of 70-foot oak trees at the south end of the campus," says Kamemoto. Striving to integrate this landscape into the building, the architects hung 14-foot-wide double-glazed panels from the roof to minimize the use of mullions. These are layered in ribbons of crystallized (white), low-iron (clear), and 45-percent ceramic-frit glass above the first floor for solar protection and energy savings. The glass block interrupts the ribbon pattern, as do expanses of vertical glass panels—shielded by aluminum louvers on the building's southwest side—that line the "community parks" on the upper floors.

Maki's meticulous attention to detail continues at the ground level, where a tall base of transparent glass appears to lift the building and connects Michael Van Valkenburgh's undulating landscape with the offices and public areas inside: a bento box–inspired Asian bistro, Venetian-plaster-coated conference facilities, and an elegant lobby that slices across the building to ease access from either side.

Expanding on many of the thoughtful design tactics the firm developed for its Novartis project in Basel, Maki and Associates brings a keen sense of place and a grand scale to the company's evolving New Jersey campus—and nothing gets lost in translation. ■

PHOTOGRAPHY: © PAÚL RIVERA (BOTTOM); MILKBOX NY (TOP)

credits

ARCHITECT: Maki and Associates – Fumihiko Maki, principal; Gary Kamemoto, director

ARCHITECT OF RECORD: Gensler

ENGINEERS: Leslie E. Robertson Associates (structural); Cosentini Associates (m/e/p/fp)

LANDSCAPE ARCHITECT: Michael Van Valkenburgh Associates

CLIENT: Novartis Pharmaceuticals Corporation

CONSULTANTS: R.A. Heintges & Associates (facade engineering); Horton Lees Brogden (lighting design)

GENERAL CONTRACTOR: Turner Construction

SIZE: 183,000 square feet

PROJECT COST: withheld

COMPLETION DATE: March 2013

SOURCES

FACADE: Interpane, Pittsburgh Corning, Nippon Electric Glass

MOTORIZED SHADES: MechoSystems

ACOUSTICAL CEILING: Armstrong

CARPET: Interface, Vorwerk

WORKSTATIONS: Knoll

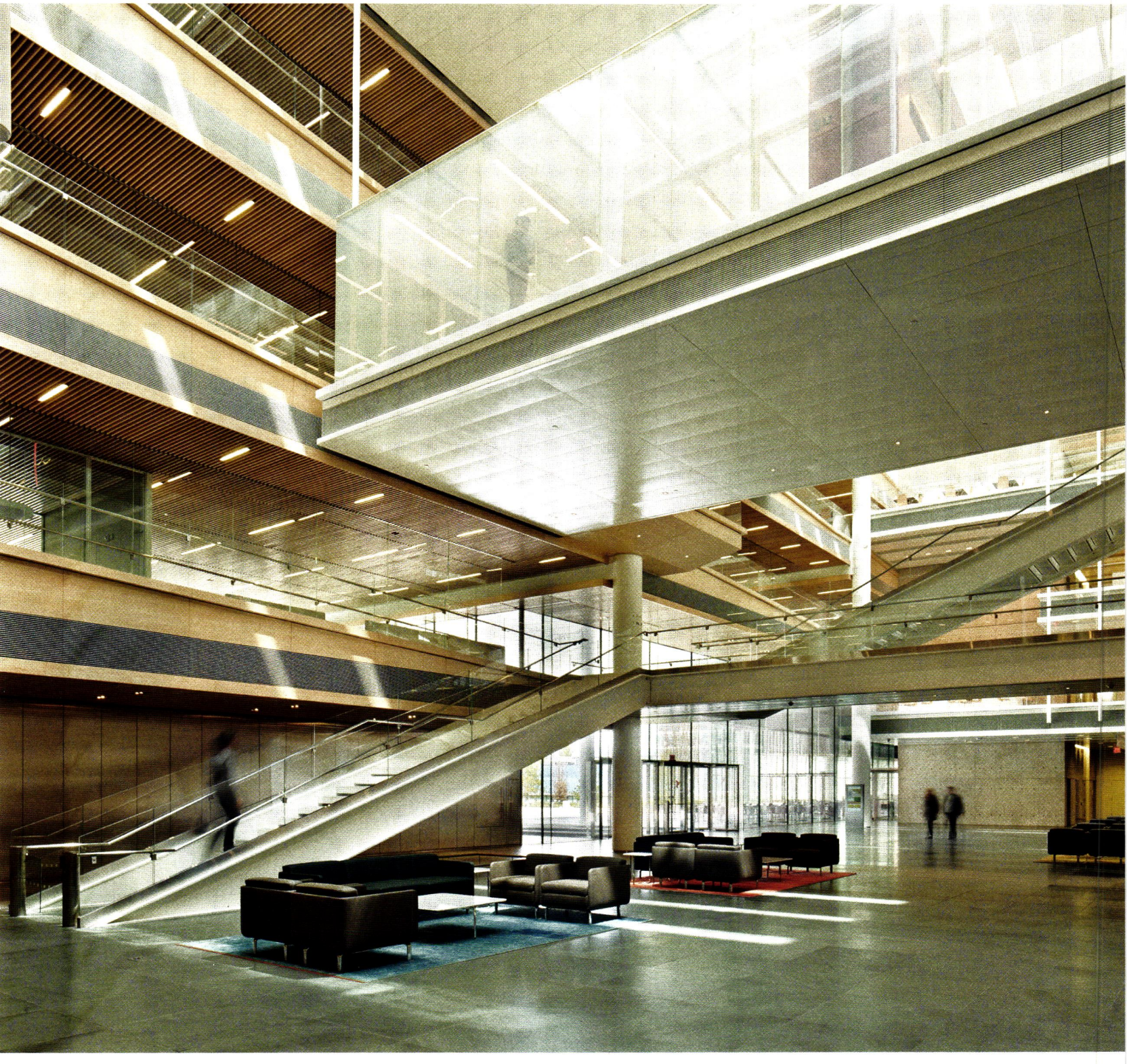
Building 337 | East Hanover, New Jersey | Rafael Viñoly Architects

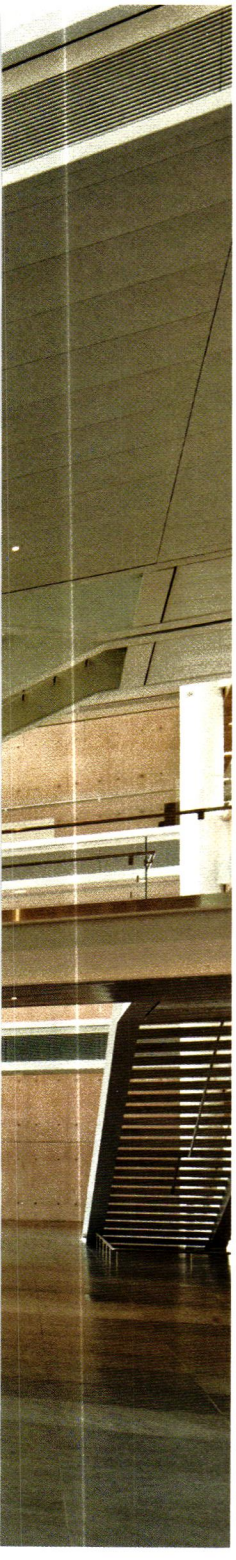
CORPORATE TRANSPARENCY

Rafael Viñoly reimagines the glass office building with a continuous workspace that wraps around a central atrium.

BY JOSEPHINE MINUTILLO

A GOOD READ The sloping floor is legible from the completely glazed exterior, whose fritted, 2-foot-deep glass fins serve as an external shading device and transfer wind loads.





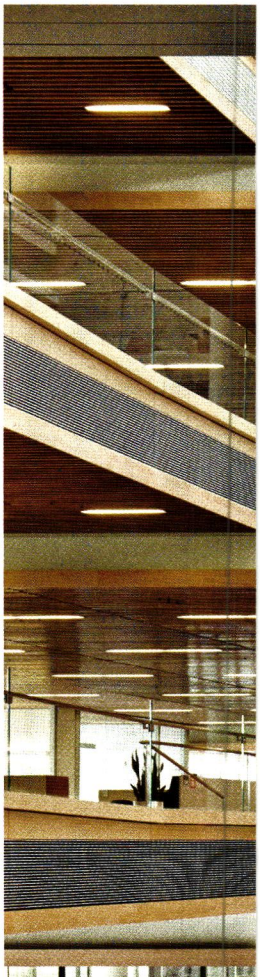
To visit Building 337 on the Novartis campus in East Hanover, New Jersey, is to walk through it with awe, something akin to what visitors to Frank Lloyd Wright's Larkin Building must have felt a century ago. Just as Wright transformed the workspace with that long-demolished Buffalo, New York, icon, architect Rafael Viñoly has reimagined what has since become the ubiquitous glass-box office building with a light-filled, spatially innovative, and flawlessly executed structure whose spiraling interior invokes another Wright masterpiece, the Guggenheim Museum.

But the initial design was straightforward. "The concept is both extraordinarily simple and extraordinarily powerful," explains project director David Rolland, a partner at Viñoly's New York–based firm. Responding to the need to create highly flexible and reconfigurable office space that accommodates work groups expanding and contracting over time, the architects did away with what Viñoly calls the "tyranny of the floor plate." Instead, they conceived of the space as one long, continuous strip that hugs the perimeter of the building as it ascends from the ground to the roof, its striking pitch legible from outside the transparent form that contains it.

Though not quite a ramp, the spiral rises through five levels within the 75-foot-tall structure thanks to a generous 167-foot-by-333-foot footprint. The project would not have been possible in an urban location, since a smaller site would not have allowed for the gentle slope needed to wrap the workplace as a continuous floor. The walkway-cum-workspace—which culminates in two rooftop gardens at opposite corners of the building—invites occupants to climb on foot to their

SWEEPING SPACES
A large conference room in the center of the atrium is suspended from the roof structure by steel rods (opposite). A casual eatery on the ground floor looks out to a plaza and features a slanting geometrical ceiling (below).

PHOTOGRAPHY: © BRUCE DAMONTE, EXCEPT AS NOTED

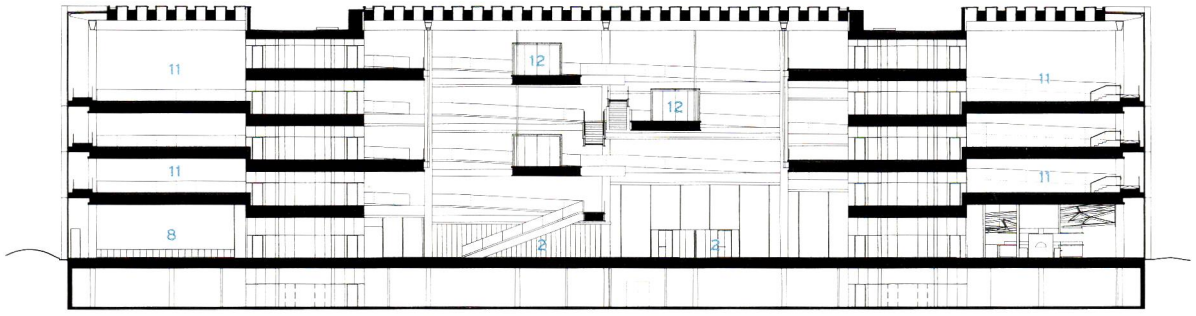


workstations. Should one choose to take the elevator, buttons call out "neighborhoods" rather than floor numbers. Composed of 55-square-foot modules, for which the architects designed over 50 configurations of workstations and freestanding demountable conference rooms, each neighborhood is separated by three steps, and accompanied by an ADA-compliant ramp. Maple lines the floors and ceilings, adding warmth to work areas within an open structure dominated by clear glass, painted steel, and exposed concrete. While private offices were eliminated, individual workstations—developed in collaboration with Vitra—are luxurious by contemporary standards.

The largest of three recently completed office buildings for Novartis's oncology department on the campus's East Village Promenade (and connected to its two neighbors via the basement), the 286,000-square-foot structure accommodates 800 workstations for the development team. To facilitate the collaborative nature of that endeavor, three large conference rooms span the center of the building's atrium and are offset from each other at various levels. Suspended from solid steel rods hung from the roof structure, each is subdivided into a small and a large meeting room for up to 12 and 20 people respectively, and features electric privacy glass that switches from transparent to opaque when in use. The ground level includes a 300-person conference center flanked by smaller video conference rooms and pre-function spaces. At the opposite end of the floor, adjacent to the building entrance, is a casual employee restaurant with a slanting geometric ceiling—the building's one whimsical gesture.

Though it may appear that glass fins running along the height of the building are strictly an embellishment of the facade, in fact, the 2-foot-deep panels contain a subtle frit pattern and serve as an external shading device. Placed perpendicularly to the triple-glazed panels of the exterior walls, the fins are installed without steel mullions, their structural glass able to transfer lateral wind loads.

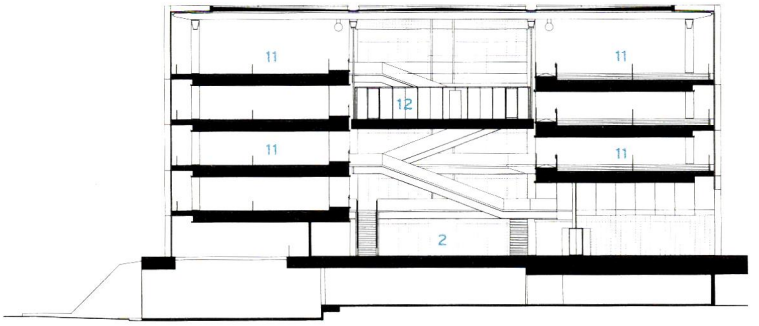
OUT OF OFFICE In lieu of private offices, areas dubbed "neighborhoods" within the open office feature workstations, which the architects developed in collaboration with Vitra (opposite). Maple floors and ceilings add warmth to the painted steel and exposed concrete (above).



SECTION A - A

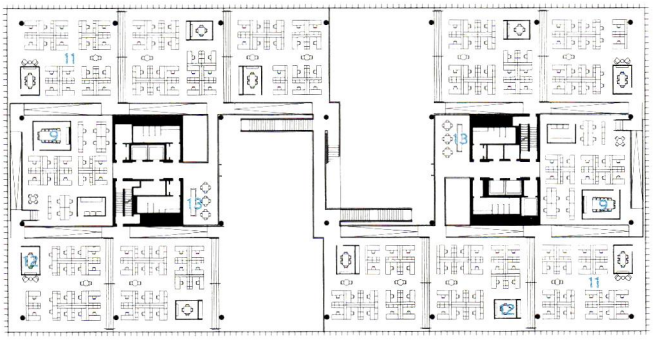
0 30 FT. 9 M.

FIFTH FLOOR



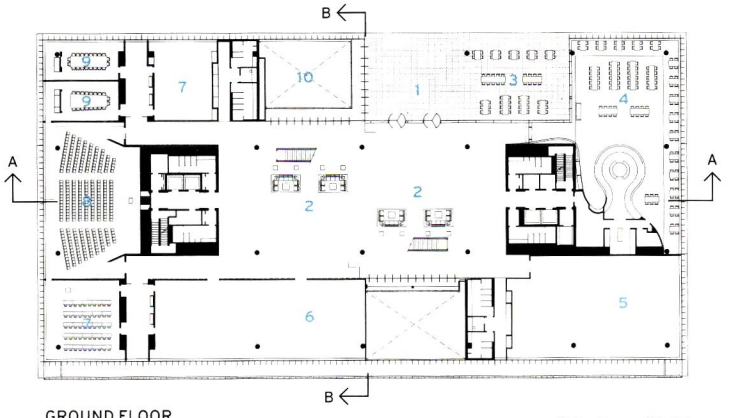
SECTION B - B

0 30 FT. 9 M.



SECOND FLOOR

1 ENTRANCE
2 LOBBY
3 EXTERIOR PLAZA
4 RESTAURANT
5 FUTURE EXPANSION
6 CONFERENCE PRE-FUNCTION SPACE
7 TRAINING
8 CONFERENCE ROOM
9 VIDEO CONFERENCE
10 SMOKE PURGE SPACE
11 OPEN WORKSPACE
12 MEETING
13 PANTRY
14 OPEN ATRIUM
15 COFFEE BAR/LOUNGE
16 EXTERIOR TERRACE



GROUND FLOOR

0 30 FT. 9 M.

credits

ARCHITECT: Rafael Viñoly Architects

ENGINEERS: Thornton Tomasetti (structural); Cosentini Associates (m/e/p); Yoshinori Nito Engineering and Design (structural steel and glass)

CONSULTANTS: One Lux Studio (lighting); RELAB (photovoltaic); Cerami & Associates (acoustics)

GENERAL CONTRACTOR: Turner Construction Corporation

CLIENT: Novartis Pharmaceuticals Corporation

SIZE: 286,000 square feet

COMPLETION DATE: June 2013

SOURCES

CURTAIN WALL AND SKYLIGHTS: Saint-Gobain

STRUCTURAL GLASS FINS: Beijing Northglass Safety Glass

SKYLIGHTS: Saint-Gobain

REVOLVING DOORS: Blasi

ELEVATORS: Otis

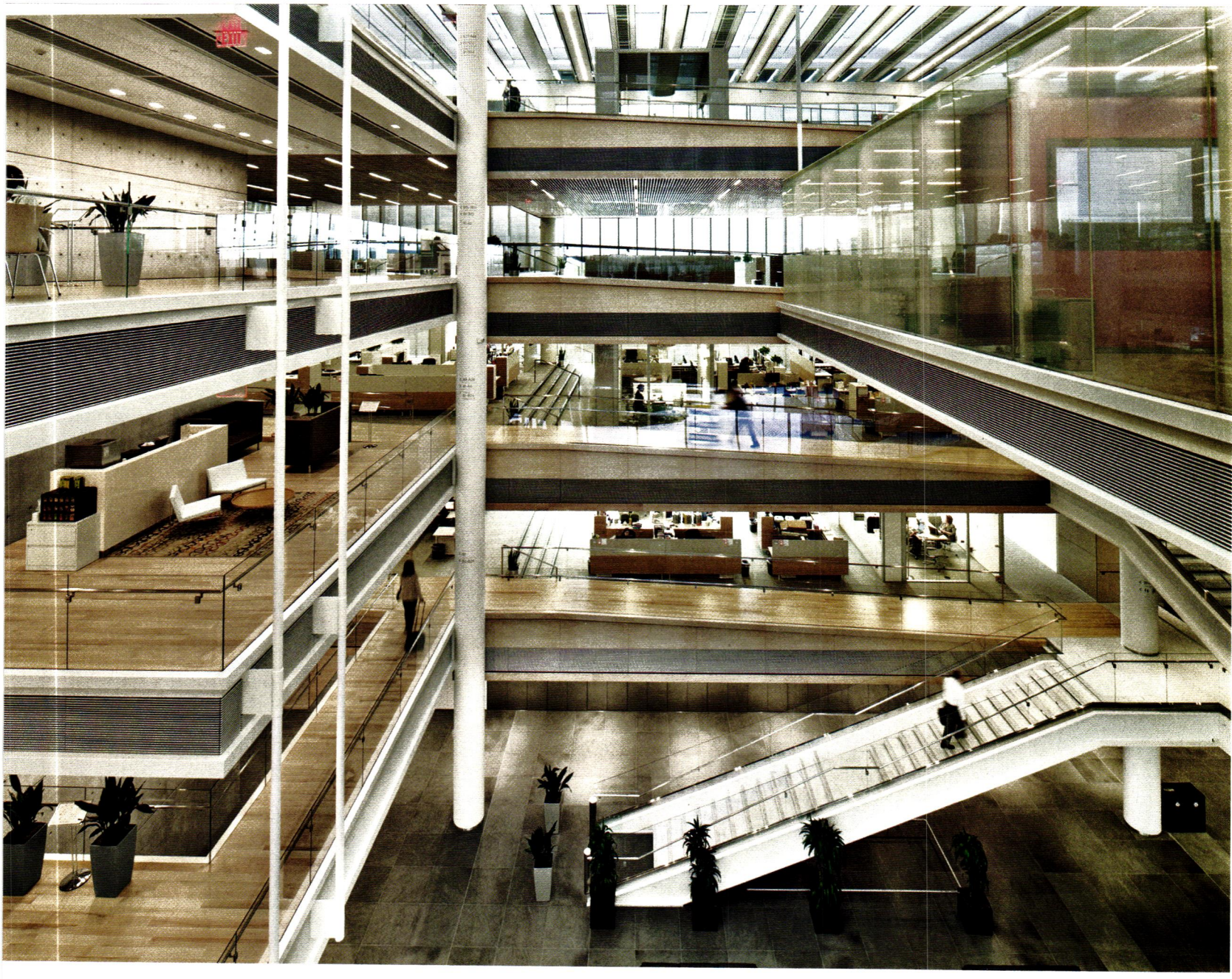
ELECTRIFIED GLASS: Pulp Studio

ACOUSTICAL CEILINGS: Armstrong

DEMOUNTABLE MEETING ROOMS: Adotta

OFFICE FURNITURE: Vitra

RECEPTION FURNITURE: Bernhardt



By turning the corner at the roof rather than abruptly ending there, the glass facade takes on the appearance of blurring into infinity.

The interiors have an infinite feeling as well. Triple-glazed skylights span the entire roof, bringing daylight deep into the building's open core and allowing views up to the sky from ground level. A photovoltaic array on the roof provides 8.22 percent of the building's energy. Chilled beams provide heating and cooling, and air is distributed laterally through the skylight support steel.

Impeccably constructed and beautifully furnished, this building seems to be one in which no expense was spared—though not in an ostentatious way. According to Rolland, however, employing a simple palette and limiting finishes kept costs reasonable. He also points to Novartis's intelligent management of the process. For example, the client built a full-scale facade mock-up right after schematic design rather than during the construction phase, so adjustments could be made before bidding to avoid change orders.

Viñoly has taken a lot of flak for his recent London office tower, dubbed the Walkie Talkie: the building generated enough glare and heat from the sun bouncing off its curved facade to melt the plastic parts and paintwork of cars parked nearby. But Building 337 seems to be beyond reproach. The architects credit Novartis as an extremely enlightened client that understands the design process, challenges the architect, and reaps the rewards of design innovation. The result is one of their best buildings. In Viñoly's words, "It is the very rare example of a pure design idea making it to reality uncompromised." ■

UPWARD SPIRAL
A floor rises continuously on a subtle slope from the ground level as it wraps around the skylit central atrium, creating an open daylight-filled space for 800 workstations.

PHOTOGRAPHY: © TIM KLEIN

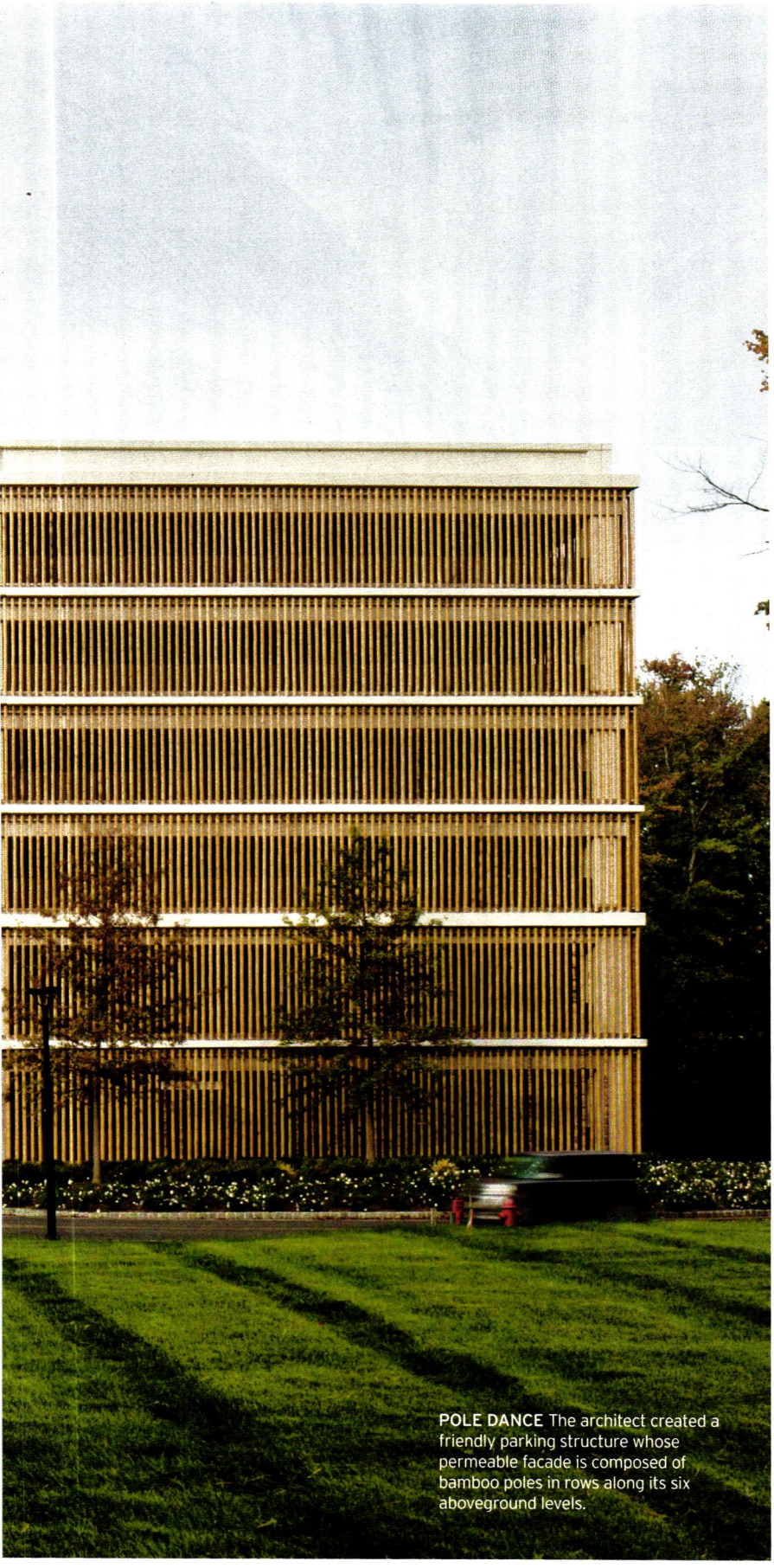
Building 347 Parking Garage | East Hanover, New Jersey | Vittorio Lampugnani

PARK AND RECREATION

Vittorio Lampugnani uses an unlikely material to create an atypical garage with a built-in fitness facility.

BY JOSEPHINE MINUTILLO

PHOTOGRAPHY BY TIM KLEIN



POLE DANCE The architect created a friendly parking structure whose permeable facade is composed of bamboo poles in rows along its six aboveground levels.

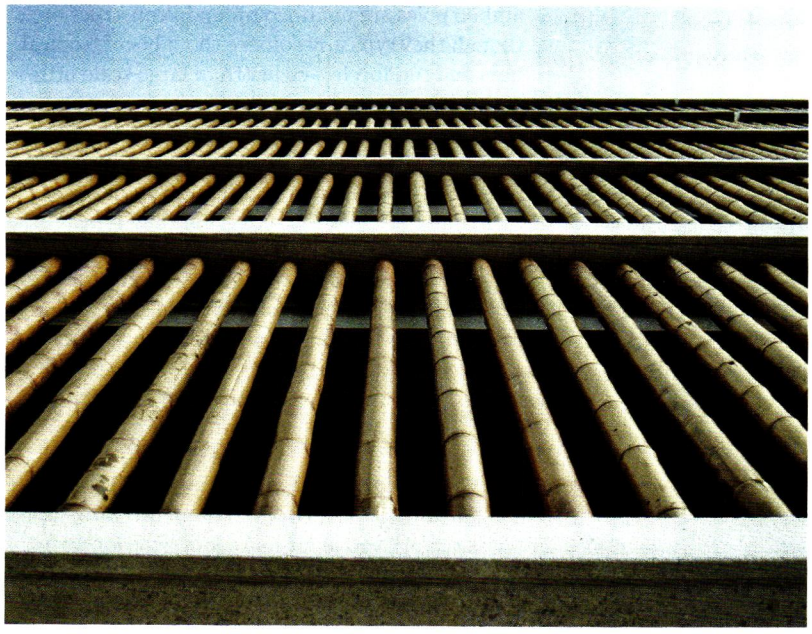
Bamboo poles are not uncommon in construction, though they typically conjure thoughts of tropical huts and tiki torches rather than large-scale utilitarian structures. Architect Vittorio Lampugnani envisioned something quite different, however, seeing incredible promise in the sturdy, inexpensive material to bring warmth to an often overlooked, and more often unattractive, building type. When asked by Novartis to design a parking garage for its East Hanover, New Jersey, campus—his first—he came up with another first: he sheathed the six-story, 633,000-square-foot structure with precisely aligned rows of the woody stalks.

In embarking on the design process, the Milan- and Zurich-based Lampugnani looked at the history of parking garages and the earliest examples of multistory car lots he found, dating from 1918. With few exceptions, not much has changed over the last century. While Herzog & de Meuron's 1111 Lincoln Road parking structure in Miami (RECORD, June 2010, page 134) was innovative for its lack of exterior walls, Lampugnani wanted a real facade. As master planner of both the East Hanover and Basel campuses of Novartis, he, more than anyone, realized the need for the garage to look friendly and inviting from both near and far. It also needed to fit in with adjacent buildings and the overall design of the landscape and public spaces.

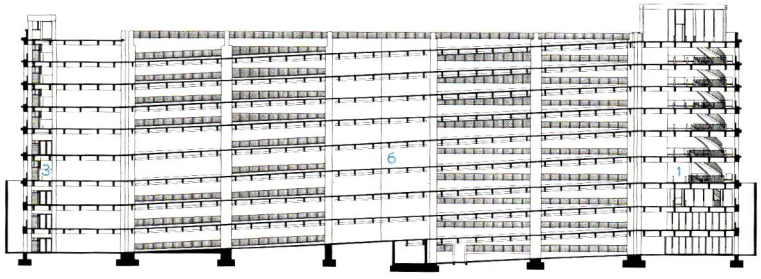
The clients themselves were not completely sold on the idea at first, and their engineers said it would not work because it had never been done. Lampugnani describes their initial reaction to the bamboo as "surprise," but they became convinced after a full-scale mock-up of the facade was built. The bamboo exterior had no precedent, and strict building codes made the process "completely new and challenging," according to the architect. Though the permeable walls are clearly not load-bearing, they still required a high fire rating. Several coatings were tested on the bamboo before achieving approval.

The 9-foot-4-inch-tall bamboo poles are affixed to the precast-concrete structure with custom curved brackets on steel bars. Nine-inch-wide openings between them cast a playful shadow and allow enough natural ventilation to eliminate the need for a cumbersome mechanical system. Every building on the Novartis campus features a ground-floor amenity for its employees, and the garage is no exception. Contained within a narrow strip along the building's western edge is a two-story employee fitness center, placed in the parking structure the way a valuable piece of furniture is placed in a house. Though Lampugnani says he worked within a tight budget, he was able to convince Novartis – "by insisting a lot," he says—to add one other flourish to the building. A striking eye-shaped poured-in-place concrete staircase that invites users to ascend and descend the levels on foot rather than use the elevator. "You put money where it is important," explains Lampugnani, who notes that the stair ended up requiring more design work rather than added construction cost.

Though Lampugnani was able to see past the traditional uses of bamboo at the outset of the project, he too remained uncertain about what the final results would yield. "You never fully imagine the spatial impact of a building—even with renderings—until it is built," he admits. "This turned out to be a not-unpleasant surprise." ■



GEOMETRY LESSON The precisely aligned bamboo stalks are spaced 9 inches apart and affixed to the precast-concrete structure with custom curved metal brackets on steel bars (left). The striking eye-shaped poured-in-place concrete staircase invites users to ascend and descend the various levels on foot (above).



SECTION B - B

PARTIAL SECTION A - A

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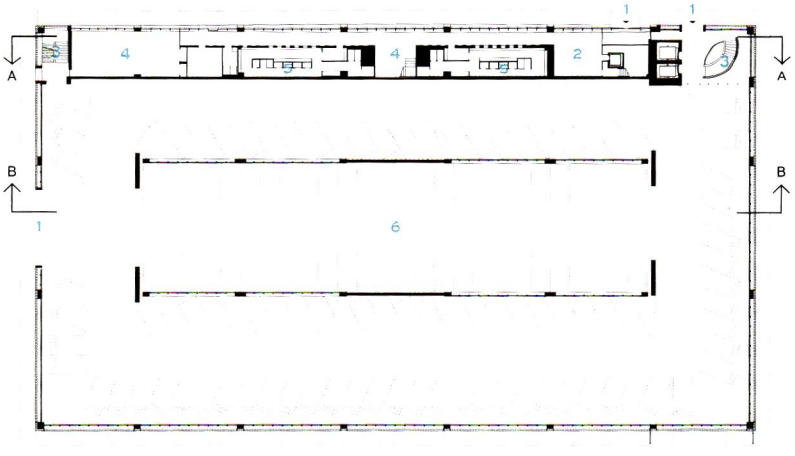


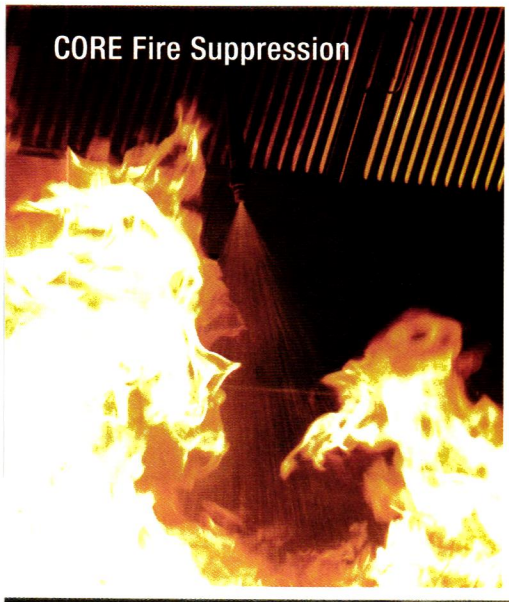
GROUND FLOOR

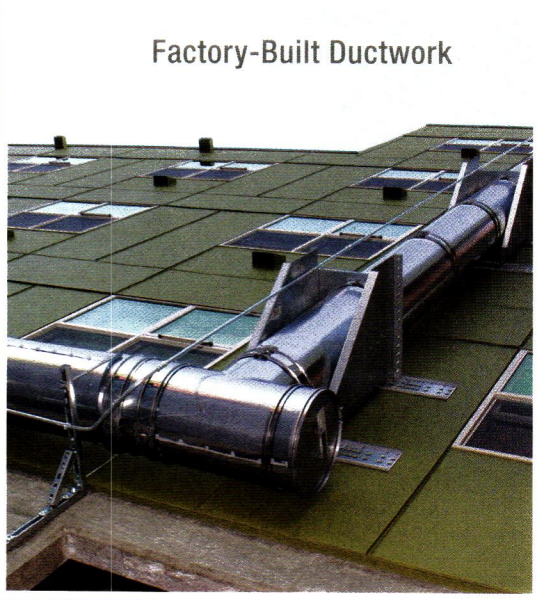
0 50 FT. 15 M.

1 ENTRY
2 LOBBY
3 STAIR
4 FITNESS CENTER
5 LOCKER ROOM
6 PARKING

credits

ARCHITECT: Vittorio Lampugnani Studio di Architettura
ARCHITECT OF RECORD: Tim Haahs & Associates
CONSULTANTS: Harton Lees Brogden Lighting Design (lighting)
GENERAL CONTRACTOR: Turner Construction Company
CLIENT: Novartis Pharmaceuticals Corporation
SIZE: 633,000 square feet





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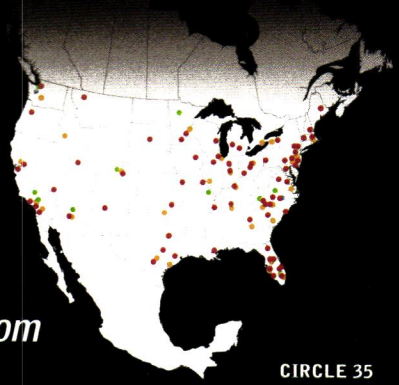

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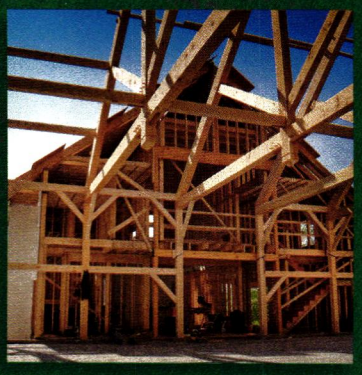

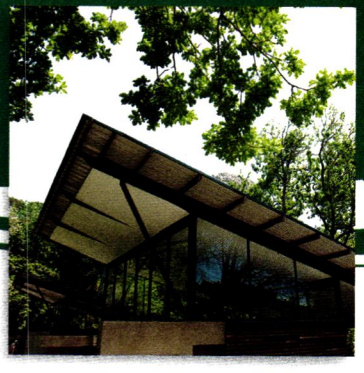

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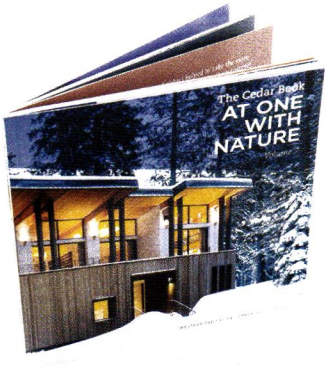

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CIRCLE 22

Wood Work

LONG ONE OF the most universally applied construction materials, wood established itself as so indispensable to the built world that it began to be overlooked, practically invisible. In recent years, technical advances have given birth to a wide range of process innovations, such as CNC milling and off-site assembly, as well as engineered-wood products with enhanced performance properties. These developments have prompted designers to take a new interest in the material, exploring not only its aesthetic appeal but also its structural potential and environmental value. On the following pages, a sampling of projects—from a seven-story office building that employs traditional wood joinery (this page) to a new model for ultra-energy-efficient housing—highlight surprising new uses of this age-old material.

TAMEDIA HEADQUARTERS EXPANSION, ZURICH, SHIGERU BAN ARCHITECTS, PAGE 110.

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Learning Objectives

1 Outline the environmental benefits of building with wood.

2 Describe the structural and fire-resistive properties of light-frame and solid-panel wood construction.

3 Describe the structural strategies that design teams are deploying in order to use wood in taller buildings and to create longer spans.

4 Discuss the code-compliance issues that relate to using wood in unconventional building applications.

AIA/CES Course #K1407A

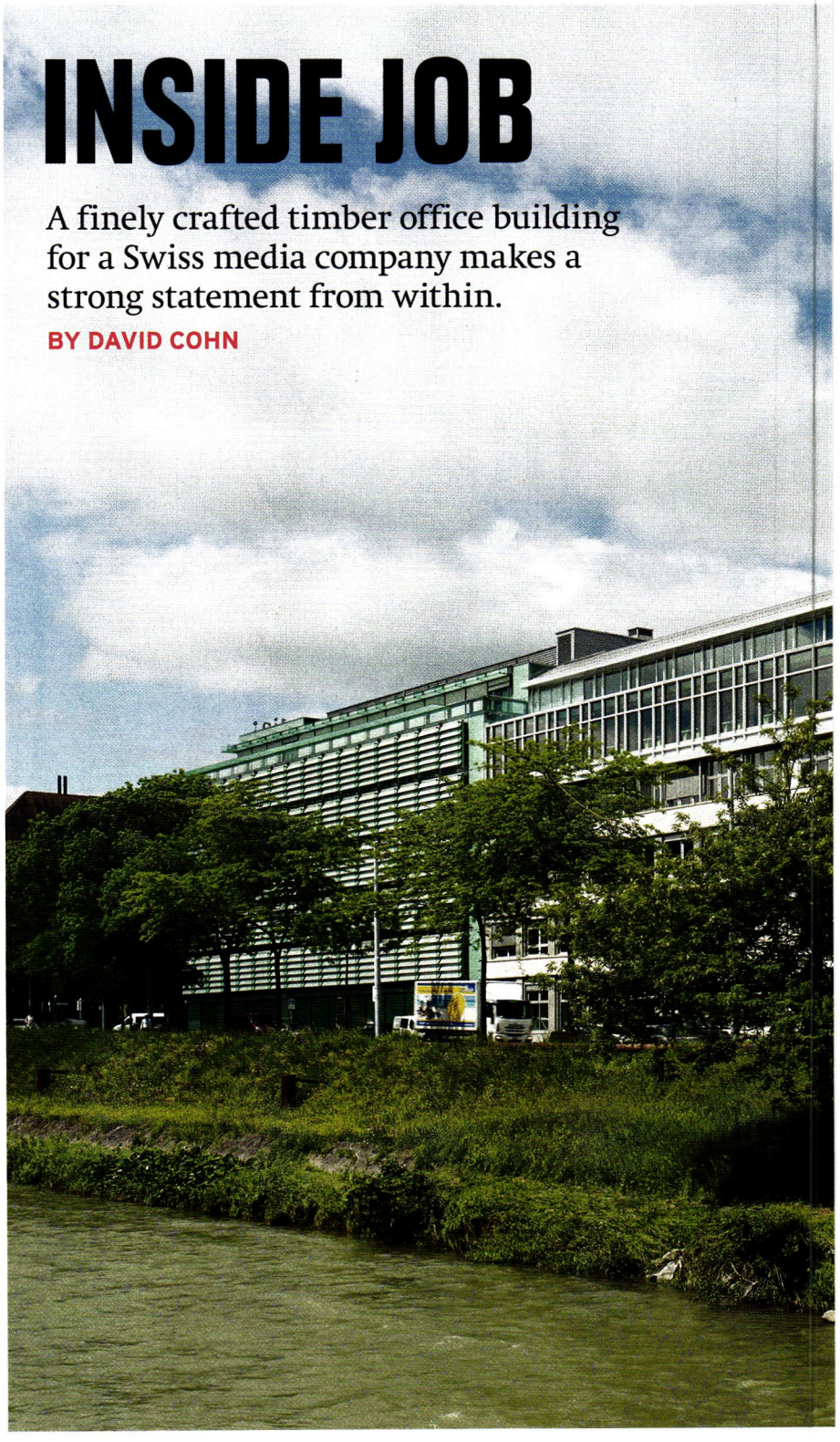
FOR CEU CREDIT, READ THE "BUILDING WITH WOOD" SECTION (PAGES 110–138) AND TAKE THE QUIZ AT CE.CONSTRUCTION.COM, OR USE OUR ARCHITECTURAL RECORD CONTINUING-EDUCATION APP, AVAILABLE IN THE ITUNES STORE.

Tamedia Headquarters Expansion | Zurich | Shigeru Ban Architects

INSIDE JOB

A finely crafted timber office building for a Swiss media company makes a strong statement from within.

BY DAVID COHN



When asked to design a rather conventional office building for the headquarters complex of the newspaper group Tamedia, in central Zurich, Japanese architect Shigeru Ban decided to support his entire seven-story structure with an exposed timber frame. Workers fitted the laminated Austrian-spruce components together without any metal connectors whatsoever, hammering the rounded ends of the beams into place on the columns with large soft-headed mallets.

Tamedia turned to Ban, this year's Pritzker Prize winner, after giving up the battle to build a 10-story tower by the Swiss firm Bearth & Deplazes. The publishing company abandoned the scheme after it provoked fierce opposition for the shadow it would cast over the leafy banks of the River Sihl, which flows right by the site at the edge of the central business district. "Regulations are quite tough when it comes to the outside form of a building," says Christoph Zimmer, who oversaw the project as part of his responsibilities as Tamedia's head of corporate communications. "This leads to a pretty uniform cityscape." The building's distinction would have to come from within.

Outside, Ban's glazed volume continues the modest profile of Tamedia's existing buildings on the river, including a former printing plant next door, to which he added two new floors. But for the inside of the 109,000-square-foot structure, he opted to capitalize on the Swiss tradition in wood building: it was the best way to meet the client's request for a relaxed, domestic atmosphere, according to project architect Kazuhiro Asami. The open office floors combine the untreated timber structure with woven sisal carpeting and a few glass partitions.

In truth, Ban treats the wood more like a high-tech material than the stuff of traditional craft, though there is a resemblance to classical Japanese carpentry. Fabricated in a shop using computer-controlled laser cutters, the structural elements include doubled crossbeams with rounded ends, oval spacer beams that run perpendicular to them, and columns, each a single piece 17 inches square that rises the full height of the building (more than 65 feet). In certain respects these components recall the custom structural elements of Renzo Piano and Richard Rogers's Pompidou Center in Paris, where Ban set up a temporary office while designing the museum's annex in Metz (RECORD, July 2010, page 82).

The key to the structural design—and its most Pompidou-like detail—is the joint where these three elements come together. The oval spacer beams fit through oval holes in the ends of the crossbeams, fixing them to either side of each column. The oval shape is crucial, because it produces a rigid "grip" joint rather than a weaker pin joint that a circular connector would create, according to Asami. A hidden beech plywood infill element fits into the rounded ends of the beams, addressing stresses that the spruce couldn't meet on its own. Ban developed this novel structural system with the

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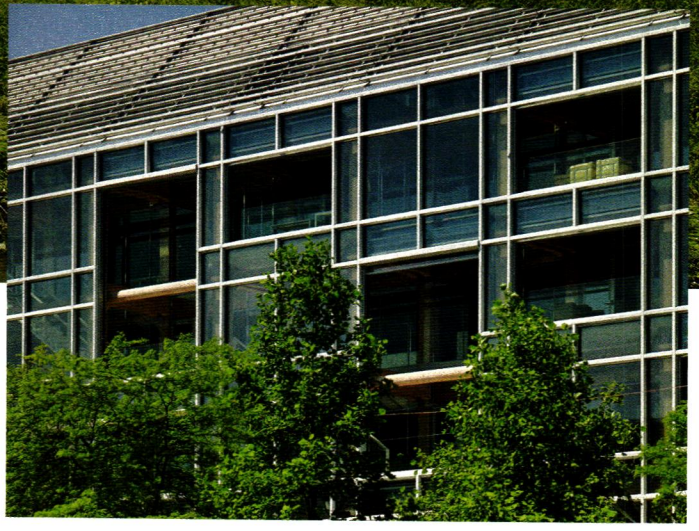
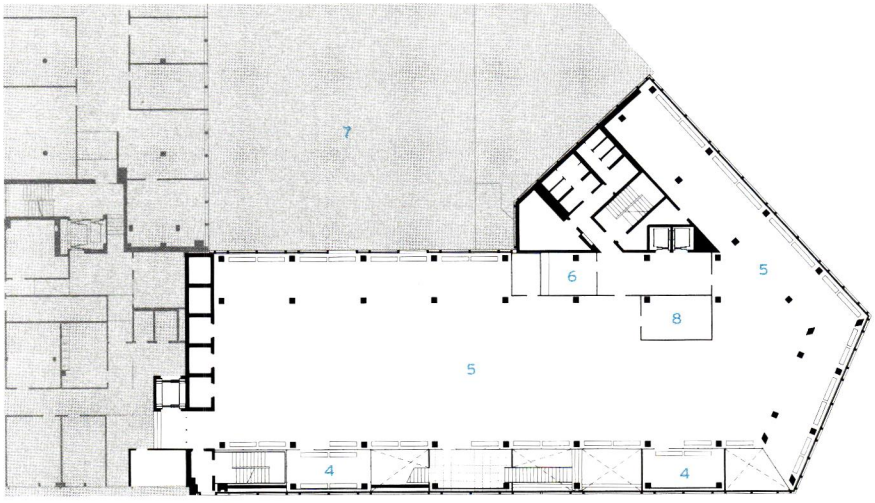
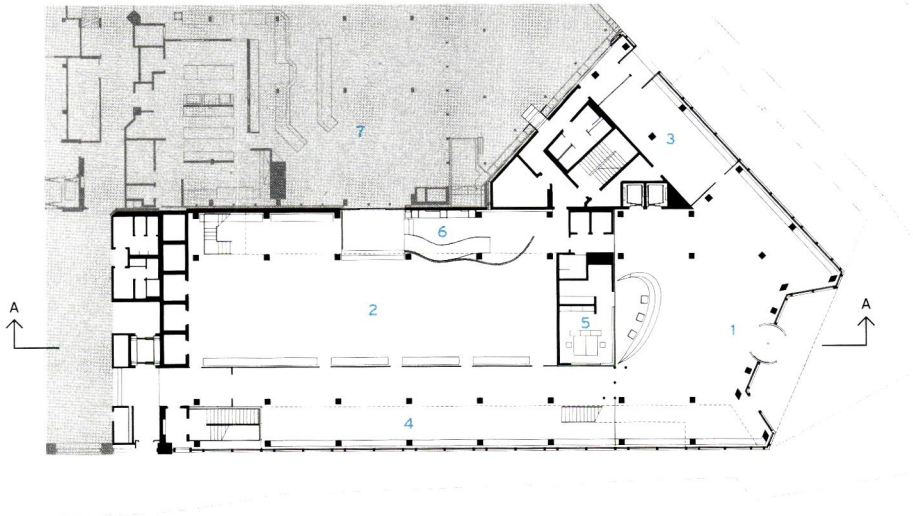


OPEN OFFICE Shigeru Ban added a timber-framed building to the Tamedia campus, located beside the River Sihl in central Zurich, and two floors to an adjacent building. Behind the glass skin (above), a multistory greenhouse-like zone includes lounges where sections of the facade can open in good weather (inset).

PHOTOGRAPHY: © DIDIER BOY DE LA TOUR

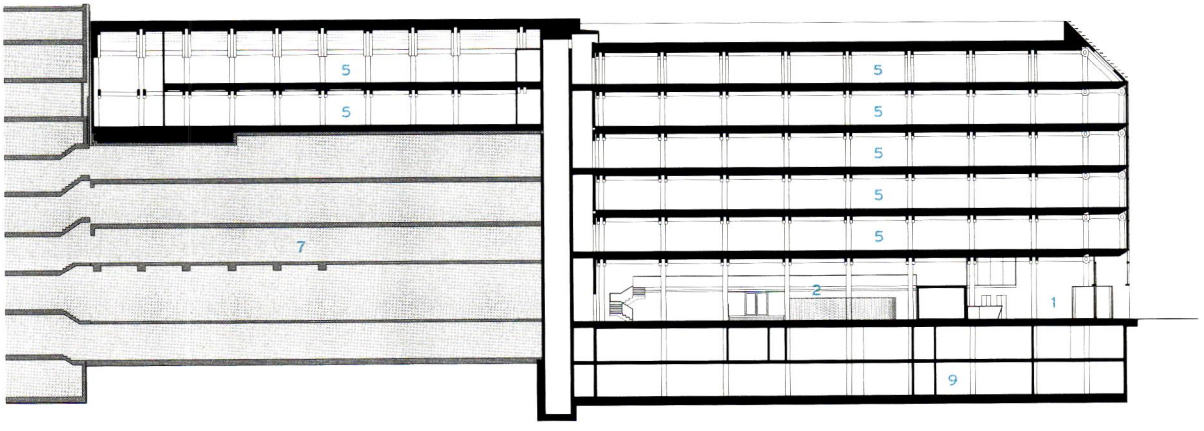


TYPICAL FLOOR



GROUND FLOOR

0 16 FT.
5 M.



SECTION A - A

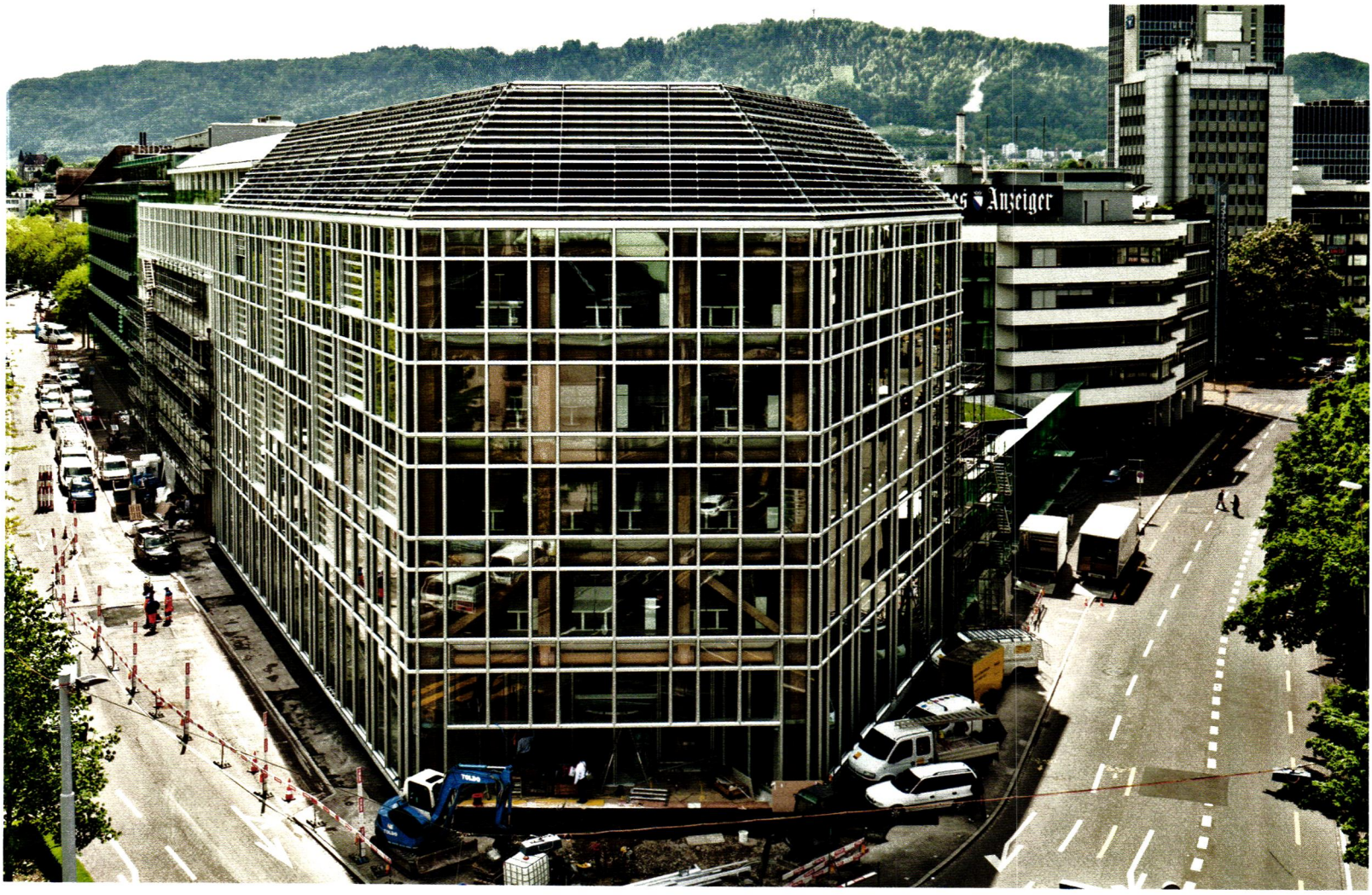
0 16 FT.
5 M.

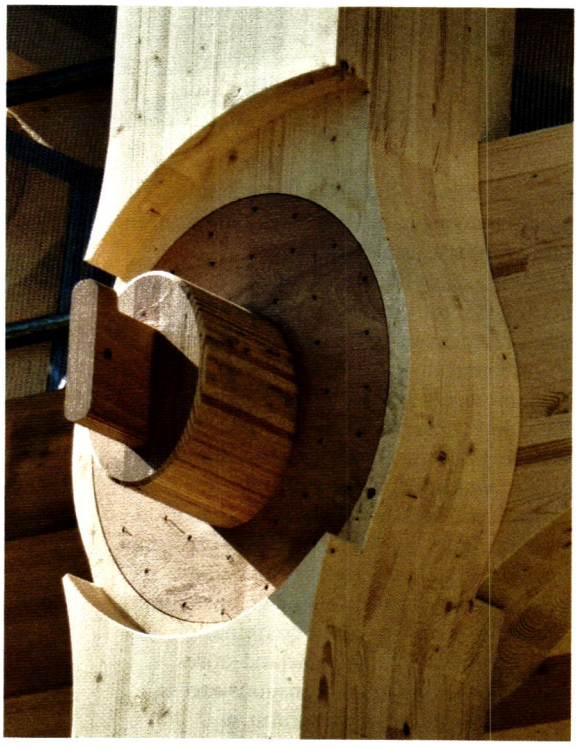
Swiss engineer Hermann Blumer, a renowned specialist in timber design and construction, who also collaborated with Ban on the Metz project. The structure was fabricated and assembled by Blumer-Lehmann, a firm that Blumer was once part of, though he now works independently.

The double row of columns around the building periphery works as a series of vertical trusses to support the 32-foot spans of the floors. The inner row works in compression, while the outer performs in tension (like the tension cables forming the outer layer of the Pompidou in Paris). On the main facade, Ban used the bay between these rows to create a continuous intermediate zone that acts as a thermal buffer. This dynamic multistory space includes runs of stairs and informal lounges, where sections of the facade can be raised on motorized tracks, transforming them into open-air balconies. Here, unencumbered by floor slabs in many areas, the wood structure is displayed to its best advantage.

Due to the continuous columns, the structure was assembled one full bay at a time, working with tolerances of 5 millimeters. The raised floors span 18 feet between the bays and sit on an assembly that includes wood joists, three-layer timber board, and gypsum and cement board (here Ban allowed nails and screws to be used). Sand infill between the joists dampens vibration and provides thermal inertia. Two concrete cores, one in the adjacent existing building, provide lateral bracing. The wood structural elements are over-dimensioned by 2 inches all around, for fire protection. "Charring provides natural protection for the wood components," explains Zimmer. "In the case of fire it would be stable much longer than a steel

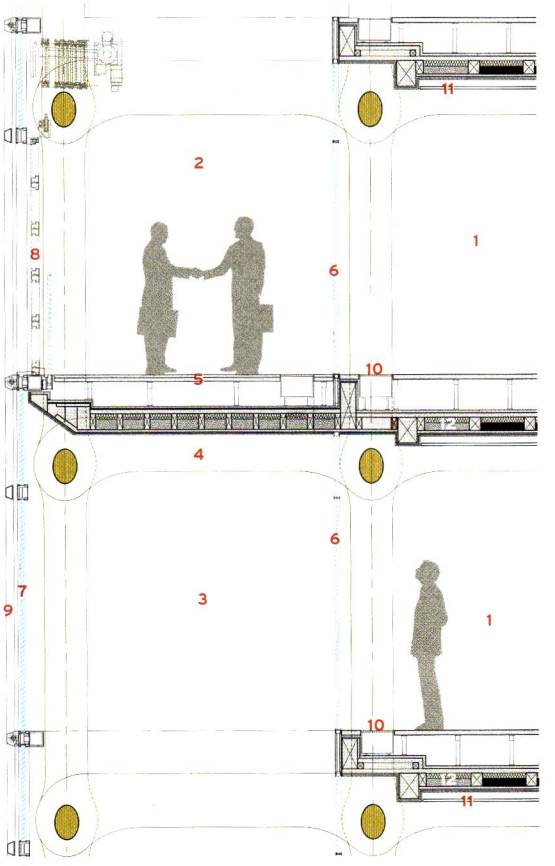
1 ENTRY LOBBY
2 MULTIPURPOSE SPACE
3 TENANT SPACE
4 LOUNGE
5 OFFICE
6 KITCHEN
7 EXISTING BUILDING
8 MEETING ROOM
9 STORAGE





BUILT TO ORDER
The laminated-spruce structure was assembled without metal fasteners, using an oval "grip" joint reinforced with beech plywood (left). Columns are continuous elements more than 65 feet tall, so the structure was erected one full bay at a time (far left). With its glass curtain wall cladding and massing, which continues that of Tamedia's existing buildings, the new structure fits discreetly into the streetscape (above).

PHOTOGRAPHY: © NELLY RODRIGUEZ (TOP); SHIGERU BAN ARCHITECTS (BOTTOM TWO)



SECTION DETAIL

1 OFFICE
2 LOUNGE
3 VOID
4 LAMINATED TIMBER FRAME
5 RAISED FLOOR
6 FIRE-RATED GLAZING
7 TRIPLE GLAZING
8 GLASS SHUTTER
9 EXTERNAL FABRIC SHADING
10 HEATING UNIT
11 RADIANT PANEL
12 SUBFLOOR ASSEMBLY

structure." The local fire code allows wood structures of up to six stories (the project team convinced officials that a mezzanine above the lobby was not part of the total floor count).

In contrast to the angled mansard-like facade on the top floor of the new timber structure, Ban spanned his addition next door with a barrel vault, using pretensioned wood beams devised by Blumer to absorb their horizontal thrust. The entry level features a handsome terrazzo floor of widely spaced river stones, along with cardboard tube chairs and tables from Ban's Carta Collection.

Even for a structure largely assembled off-site, the care with which the Tamedia building was built, leaving the exposed wood structure pristine in appearance, is astonishing, a confirmation of the fine craftsmanship available in Switzerland. The presence of the wood, with its massive sections, rounded joinery, and raw, dense materiality, is somehow both prim and voluptuous at the same time. It's an exquisitely contradictory combination of environmental responsibility (wood is renewable and stores carbon dioxide rather than producing it) and sensuous excess, put together with passionate discipline and restraint. ■

credits

ARCHITECT: Shigeru Ban Architects – Shigeru Ban, principal; Kazuhiro Asami, Gerardo Perez, Takayuki Ishikawa, Masashi Maruyama, project architects

ASSOCIATE ARCHITECT: Jean de Gastines Architectes

LOCAL ARCHITECT: IttenBrechbühl

ENGINEERS: Creation Holz (structural); 3-Plan Haustechnik (m/e/p)

GENERAL CONTRACTOR: HRS Real Estate

CLIENT: Tamedia

SIZE: 109,000 square feet

COMPLETION DATE: March 2013

SOURCES

TIMBER STRUCTURE: Blumer-Lehmann

CURTAIN WALL: Aepli Metallbau

INTERIOR GLASS PARTITIONS: BlessArt

RIVER STONE FLOORS: Walo Bertschinger

CARPETING: Bolon

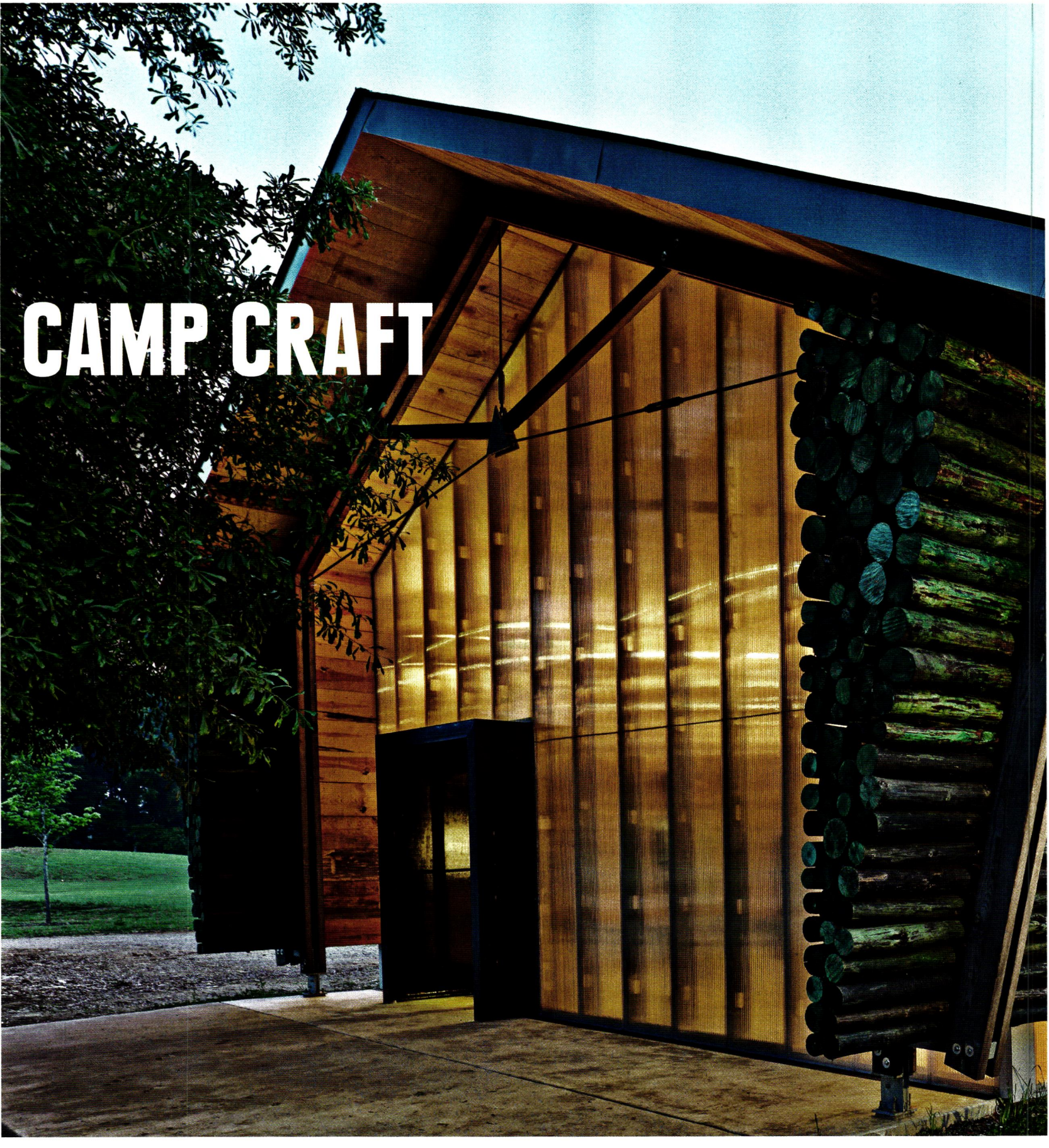
LOBBY FURNISHINGS: Wohnbedarf

FINE DETAILS
Interiors combine glass partitions, sisal carpeting, and untreated wood (above, left). The lobby features terrazzo floors inlaid with river stones, and Ban's cardboard tube furniture (above, right). The top floor of Ban's addition to the building next door has a vaulted ceiling (left). The thermal buffer between offices and the facade includes stairs and motorized operable windows (opposite).

PHOTOGRAPHY: © NELLY RODRIGUEZ (BOTTOM, AND TOP LEFT); DIDIER BOY DE LA TOUR (OPPOSITE AND TOP, RIGHT)

Lions Park Scout Hut | Greensboro, Alabama | Rural Studio

CAMP CRAFT



SCOUT'S HONOR The students built the trusses on the ground nearby, and 20 friends helped move them into position, where they bolted them to steel plates that connect to the footers, and raised them with a boom. The trusses cradle small-diameter logs that form the walls.

A design-build team explores the potential of low-grade timber for a Boy Scout troop's headquarters.

BY BETH BROOME

PHOTOGRAPHY BY TIMOTHY HURSLEY

Like so many Boy Scout troops, which meet in church basements or their Scoutmaster's living room, Greensboro, Alabama's Scout Troop 13 and Cub Pack 13 had no place to call home. For years, they had been gathering in the extension office of the Alabama Fish Farming Center, which provides technical advice on catfish production and sits on the edge of Greensboro's 40-acre Lions Park. Over time, the Scouts had labored to clean the park, "bushhogging" (clearing undergrowth) and maintaining trails. In a way, they had become its unofficial stewards. They were in good company: Auburn University's Rural Studio design-build program had been working there on a multiphase restoration since 2006 (RECORD, June 2014, page 114), creating playing fields, restrooms, landscaping, a playground, and a skate park. "From day one, we knew there was a need to help the Scouts with a headquarters that could give them an identity," says Rural Studio director Andrew Freear. "But we were struggling to understand where to put another object building—we did not want it floating in the park."

It was Rural Studio's project team of fifth-year students (class of 2012) that came up with the idea to locate the hut on a former parking lot between the skate park and a Pee Wee football field. Anchoring Lions Park's west perimeter, the bar-shaped building sits at a 90-degree angle to a covered picnic structure creating a protected outdoor area. The Scouts' brief was modest: they needed a 2,000-square-foot space for meetings and events, with a small kitchen for fundraisers like their catfish fry. The hut's dimensions were determined largely by the space required to house two travel trailers and the imperative to accommodate an elevated track for the Pinewood Derby—the legendary Cub Scouts model car race. Pack 13 wanted the longest one they could have: 48 feet. The troop also wanted a log cabin. "It needed to look rustic on the outside and had to be very durable and robust, because boys can be rambunctious," says Scoutmaster Gregory N. Whitis. The Scouts hope the building will also help increase membership, which, they say, has been shrinking.

"From the get-go, we knew we wanted a wood building," says Elizabeth Whitlock, one of the four-person student team. After studying the Scout-hut archetype, the students set out to find a new way to use timber that would still achieve the desired simplicity. For years, the studio had been experimenting with thinnings—small-diameter trees that are harvested to prevent them from competing with larger, more valuable ones. Seen as refuse, thinnings are chipped or pulped, used as fence posts or firewood. They are cheap, but dimensionally unstable. The more you manipulate the wood, the more you weaken it and add cost, notes Freear. "We tried to touch the thinnings as little as possible, using them as dead weight."

Sandwiched 2-by-6 rough-cut Southern yellow pine bents form the trusses. Inside, these elements support the roof;

outside, they cradle the thinnings, which the team stripped of their bark and treated with copper naphthenate to prevent decay and insect infestation. (All of the wood was obtained from within 50 miles of the site.) The logs are held in place by their neighbors. While Whitlock describes the site and slab work as the most challenging part of the job, lifting the logs was the most physically grueling. "It just required brute strength," she says. In addition to protecting the hut from the elements, the heavy walls act as ballast—or, as Freear says, "saddlebags"—adding tension to the trusses and grounding the building in potential hurricane-force 110-mile-per-hour winds, as mandated by code. Atop slender steel footings set into the slab, the unique wall configuration lifts its skirts 18 inches to expose a ground-level polycarbonate ribbon window, which runs along the building's long sides, admitting a soft light across the polished concrete floor inside. The team did not want horizontal connections for the end walls, so used heavy-gauge 2-by-6 steel studs, which are visible through honeycomb polycarbonate.

In keeping with the rustic aesthetic, the team clad the interior in 1-inch rough-finish Southern yellow pine. A wood-burning stove is the sole source of heat and, in summer, two extractor fans and large rotating ceiling fans facilitate airflow.

As with all Rural Studio projects, the team was backed by a number of consultants, among them Chicago-based structural engineer Joe Farruggia, who has worked with the studio for 10 years. Farruggia guided the team over the phone or on-site. "They would resolve these structural details and develop them into these beautiful pieces," he says. "That's where the elegance of the structure comes from. Once they decide what it should look like, I just run the numbers."

Design and construction took two and a half years. By the ribbon cutting last April, the students had long since graduated. But, true to Rural Studio tradition, they had stayed on as super-thesis students—affectionately known as "leftovers"—to see the job through, achieving closure for their hands-on education and leaving Greensboro's Scouts with a home of their own. ■

PLAIN AND SIMPLE
A polycarbonate wall admits ample light into the pine interior (bottom). Almost all the wood (and other elements) were donated by lumber companies or manufacturers. Rigid steel-plate entries with deep foundations (opposite) act as moment frames, providing further stiffening for lateral stability.

credits

DESIGNERS: Rural Studio, Auburn University – students: Tyler Allgood, Sarah Al-Rukkhayes, Benjamin Pendergraft, Elizabeth Whitlock; faculty: Andrew Freear, Elena Barthel, Xavier Vendrell, Dick Hudgens, Steve Long, Mackenzie Stagg, Cameron Acheson, John Marusich, Johnny Parker

ARCHITECT OF RECORD: David Hinson

STRUCTURAL ENGINEERS: Joe Farruggia, Anderson Inge

CLIENT: Boy Scouts and Cub Scouts of Greensboro

OWNER: Lions Club

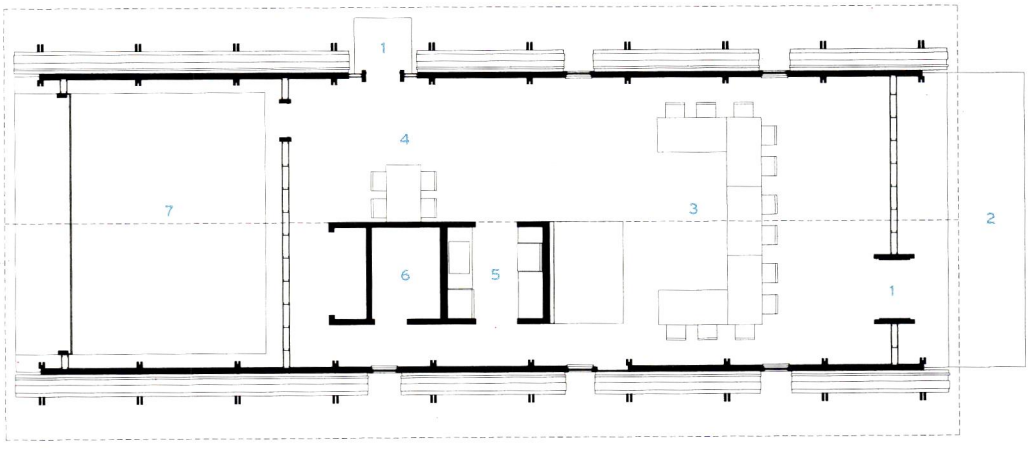
SIZE: 2,000 square feet

COMPLETION DATE: May 2014

SOURCES

WOOD: McShan Lumber, Westervelt Lumber, Willcutt Block & Supply, Farley's Forest Products, U.S. National Forest Service

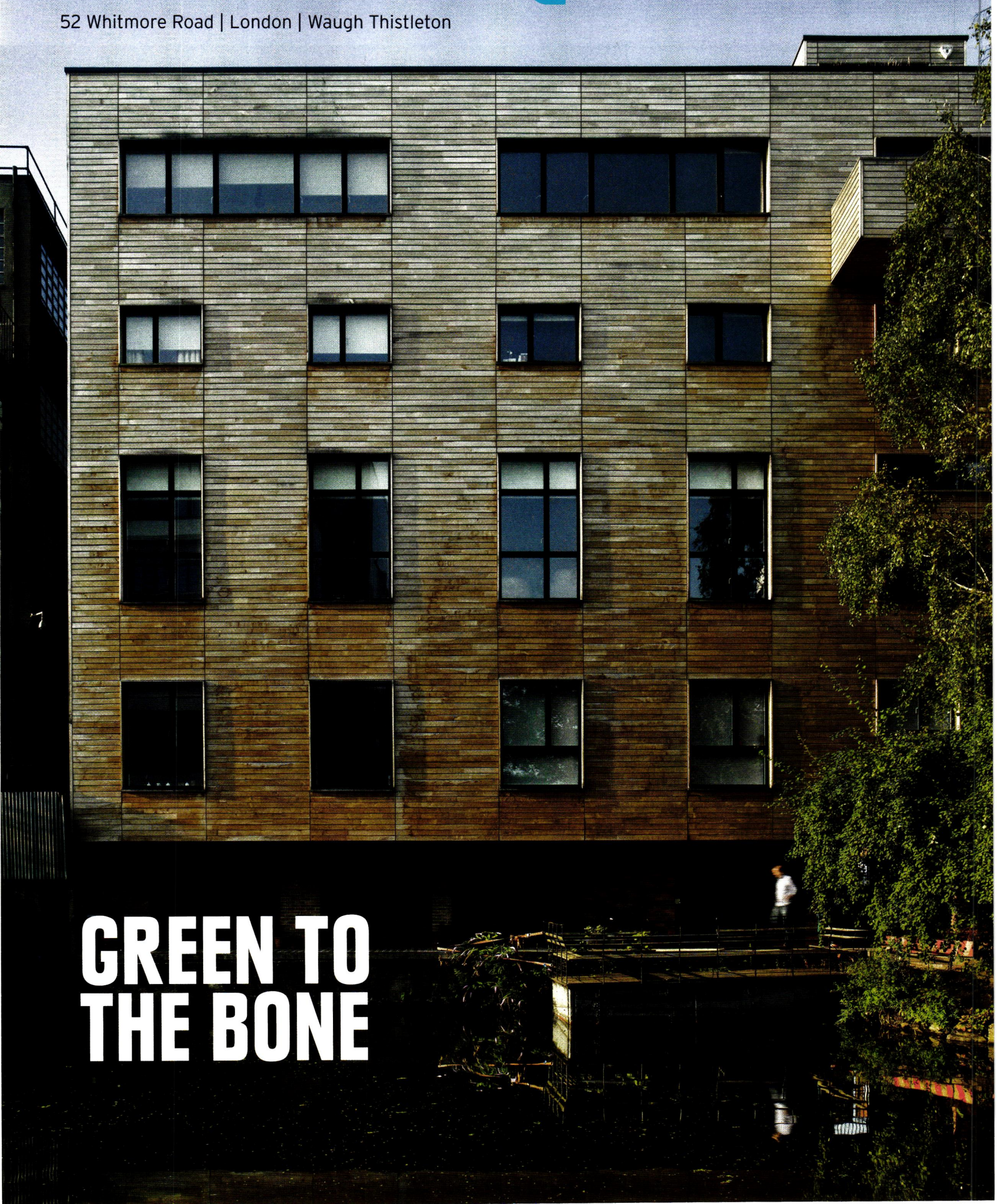
DOORS, WINDOWS: Kawneer, Pella



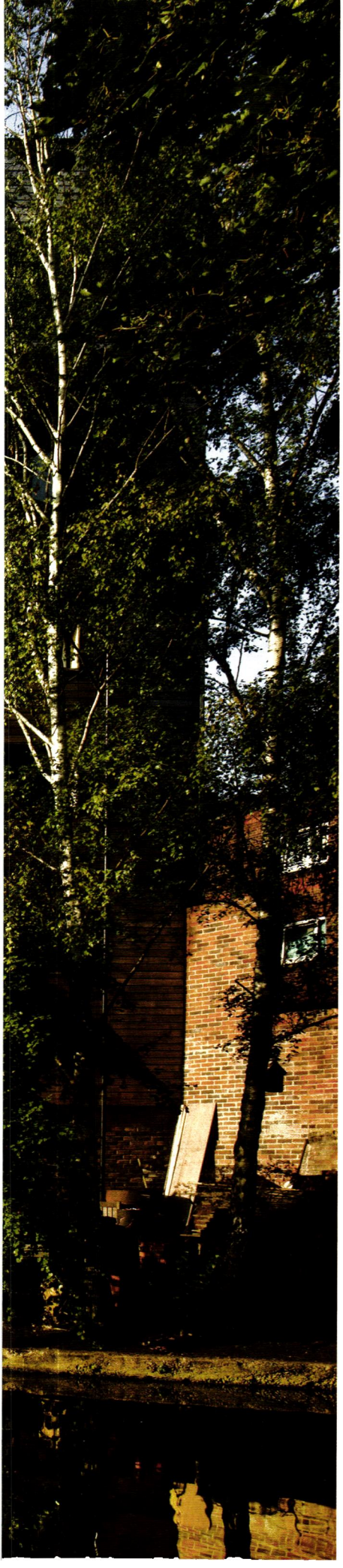
FLOOR PLAN

1 ENTRANCE
2 PORCH
3 LARGE MEETING SPACE
4 SMALL MEETING SPACE
5 KITCHEN
6 RESTROOM
7 GARAGE

52 Whitmore Road | London | Waugh Thistleton



GREEN TO THE BONE



A mixed-use building experiments with an engineered wood material that is gaining traction in Europe.

BY HATTIE HARTMAN

PHOTOGRAPHY BY WILL PRYCE

Architect Andrew Waugh, director of London-based Waugh Thistleton, is evangelical about saving the planet—yet adamant that his practice's work should not "reek of sustainability." The firm's recent 52 Whitmore Road project, a mixed-use building that cantilevers over North London's Regent's Canal, shares more with Italian rationalism than with the organic structures of late American architect Bruce Goff or the solar roofs and wind cowls of British architect Bill Dunster, both avid environmentalists at the margins of mainstream practice.

At Whitmore Road, the elegant proportions of the windows facing the canal are based on the golden section, not on an arbitrary wall-to-window ratio intended to optimize thermal performance. This is not hair shirt sustainability, but rather the invisible kind embodied by good design.

Fed up with the scorecard approach to green design inherent in the BREEAM certification system (Britain's answer to LEED), Waugh searched for a building material that could also sequester carbon. That material was cross-laminated timber (CLT) from Austria, an engineered wood product made of kiln-dried finger-jointed spruce strips glued under pressure in perpendicular layers to form slabs that can be used as load-bearing walls and floors.

Waugh Thistleton first used the material at Murray Grove, a nine-story residential building in Hackney, East London. It was the world's tallest CLT structure when it was completed in 2009. Since then, the firm has further explored the use of the material in several projects, the latest of which is Whitmore Road. The project is a cooperative venture between a community trust and three individuals: a photographer, a café owner who runs a nearby coffee shop on the canal, and Waugh. The six-story, 11,000-square-foot building houses two floors of offices for the trust, the photographer's studio above, and three triplex apartments on top. Waugh and his family live in one of the apartments.

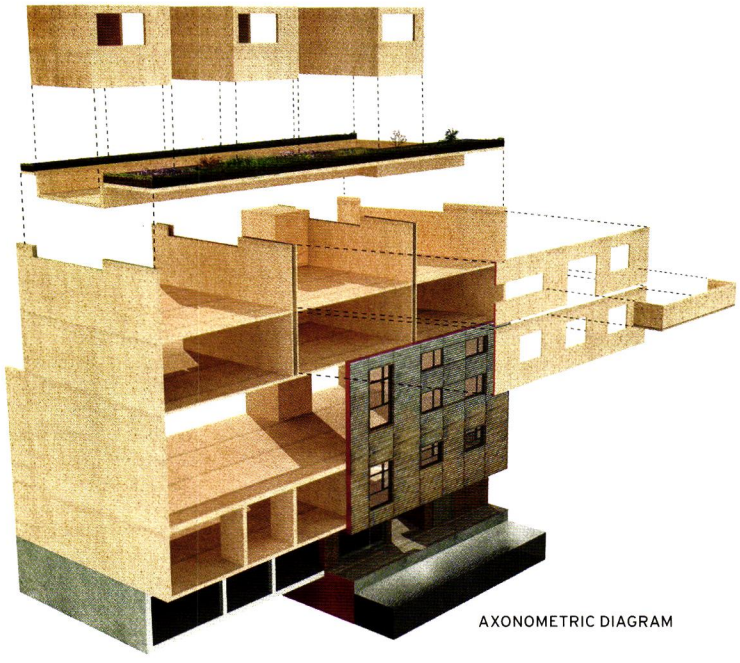
A dual entrance arrangement cleverly separates office workers from residents, one of the project's numerous thoughtful details. A metal security gate—leading to the offices—frames a glimpse of the canal, not otherwise visible from the street, while residents slip through another gate to climb three flights of stairs in a straight run along the rear of the building to reach the apartments. Sweet chestnut cladding wraps the exterior, and the open board detail adds texture while allowing the timber to breathe. Likewise, the diamond-patterned brick pavers, commonly used in stables, add texture to the entrance area.

In the offices, the underside of the approximately 5-inch-thick first-floor CLT slab is exposed, revealing a simple steel angle detail devised to tie the wood, which cantilevers 5 feet over the canal, to the concrete walls below. "We always lift the timber off the ground," notes Waugh. The timber structure weighs approximately one-fourth of a comparable one in concrete, permitting fewer and shallower foundation piles, saving both money and carbon.

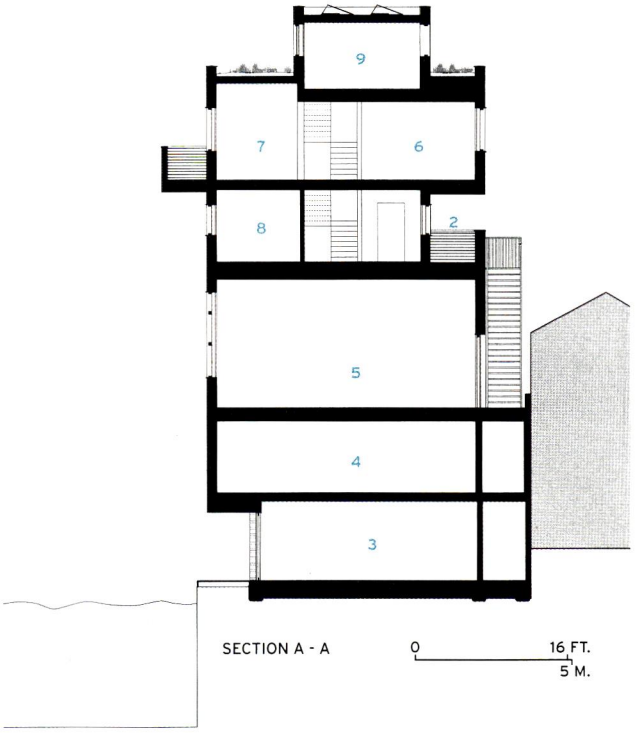
The photographer's requirement for a 21-foot-tall, 2,000-square-foot column-free studio posed a structural challenge because CLT lends itself to tighter, honeycomb-like floor configurations. The problem was solved by treating the front and rear facades as beams and stiffening them with the walls that separate the apartments above.

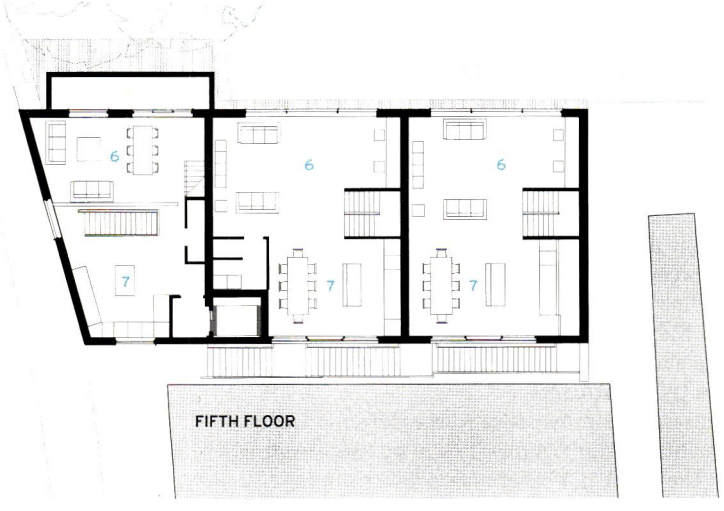
In addition to sequestering carbon, CLT offers other benefits. Off-site prefabrication means that waste is reduced and on-site construction times are shortened by up to half, says Waugh. However, he warns, the design phase can last longer, because all issues, including openings for mechanical and plumbing services,

ALL ABOARD
Waugh Thistleton has cleverly combined Austrian cross-laminated timber and sweet chestnut cladding in a mixed-use project overlooking Regent's Canal in North London (opposite). The building houses two floors of offices, a photographer's studio, and three triplex apartments.

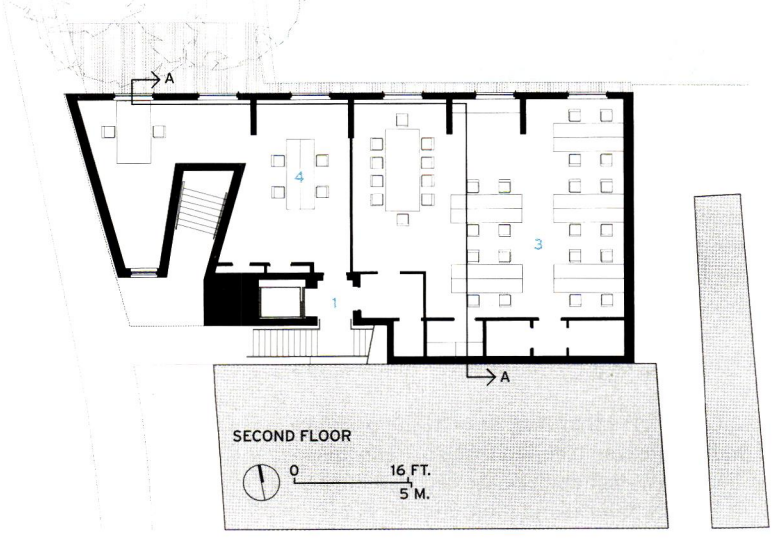


AXONOMETRIC DIAGRAM





1 OFFICE ENTRY
2 RESIDENTIAL ENTRY
3 GENERAL OFFICE SPACE
4 PHOTOGRAPHER'S OFFICE
5 PHOTOGRAPHER'S STUDIO
6 LIVING
7 KITCHEN
8 BEDROOM
9 ROOF POD



credits

ARCHITECT: Waugh Thistleton Architects – Andrew Waugh, director; Rachel Crozier, project architect

CONSULTANTS: KLH UK (structural); Michael Popper Associates (m/e); Brook Barnes James (quantity surveyor); SRL (acoustical)

GENERAL CONTRACTOR: Jerram Falkus

CLIENT: withheld

SIZE: 11,000 square feet

CONSTRUCTION COST: $3 million

PROJECT COST: $4.2 million

COMPLETION DATE: November 2012

SOURCES

CROSS-LAMINATED TIMBER: KLH UK

MASONRY: Petersen Tegl

ROOFING: Sika Sarnafil

WINDOWS AND DOORS: Velfac

LOCKSETS: Joseph Giles

must be resolved before fabrication. Another critical consideration is having adequate site access for lifting the panels into place by crane, points out Richard Neuhercz, a structural engineer with KLH, Whitmore Road's CLT supplier. The project's construction costs were about $240 per square foot, (excluding kitchens and baths, which were beyond the contract scope), remarkable for London.

European production of CLT has grown tenfold since 2009, and surpassed 650,000 cubic yards last year. After a slow start in the United Kingdom, a plethora of CLT projects are now in the pipeline. Waugh invited 200 architects to Murray Grove's opening; only four showed up. Initially used mostly for schools, CLT has now penetrated the residential sector, with six buildings taller than 10 stories under way across the country. In addition to a residential tower to be completed next year, Waugh Thistleton is working on two other projects in London that use CLT—a 182-room hotel near the Liverpool Street station and a six-story mixed-use development near their Shoreditch office.

Although British firms building with CLT have had to import the material, a team at Napier University in Edinburgh is exploring its manufacture from Scottish Sitka spruce; commercial production is likely to start within the next 24 months. The market for CLT in North America, according to Waugh, is where Britain was 10 years ago. But he predicts "they will catch up and take over." ■

Hattie Hartman is an American architect and journalist based in London and sustainability editor at The Architects' Journal.

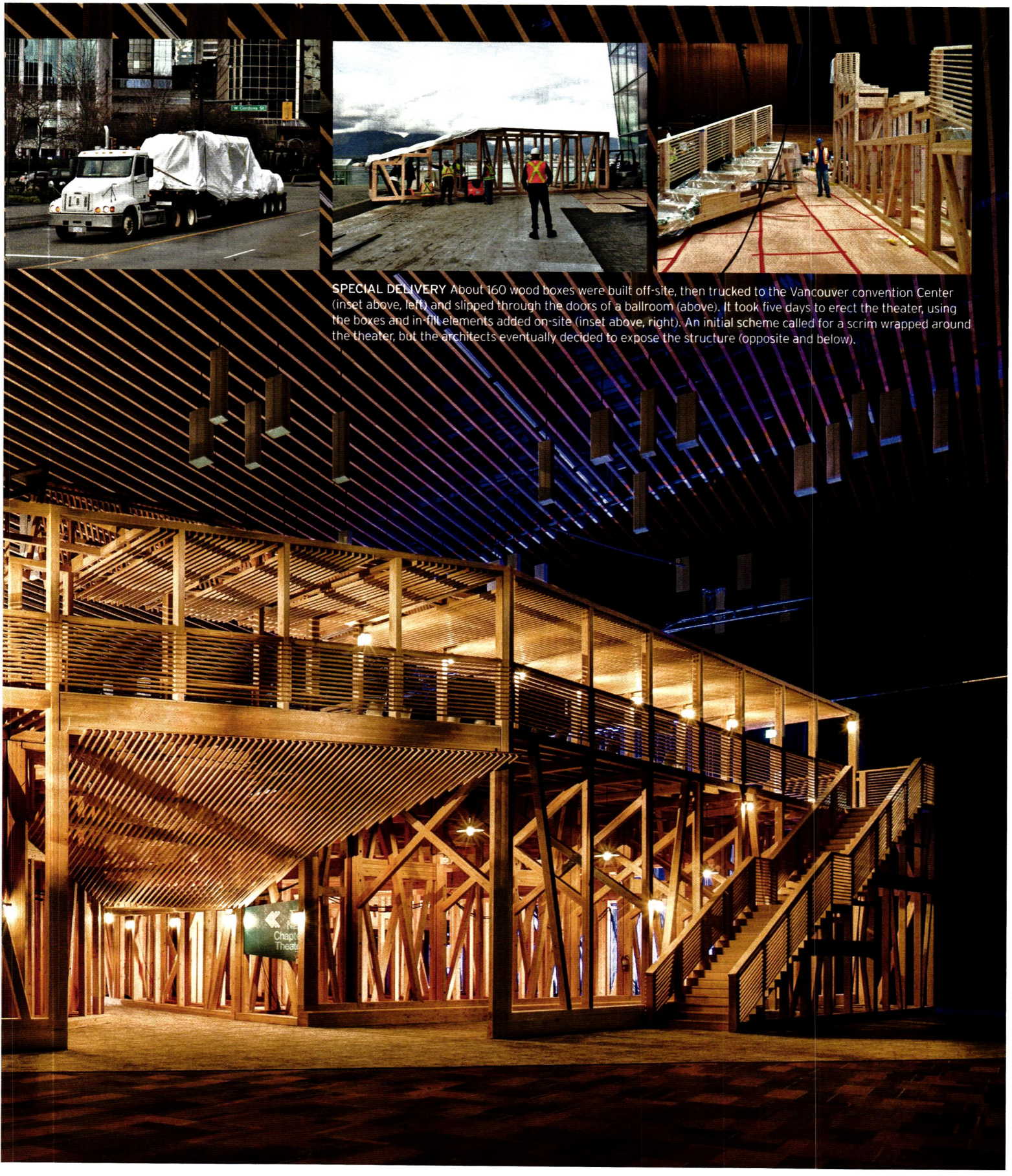
LESS IS MORE In the ground-floor offices (top), the cross-laminated timber ceiling slab is tied to the concrete walls with a simple exposed steel angle. The photographer's requirement for a column-free studio space (above) pushed the structural limitations of cross-laminated timber.

TED Theater | Vancouver, British Columbia | Rockwell Group

TRAVELING SHOW

A pop-up theater assembled inside a giant ballroom brings new scale to portability.

BY CLIFFORD A. PEARSON



SPECIAL DELIVERY About 160 wood boxes were built off-site, then trucked to the Vancouver convention Center (inset above, left) and slipped through the doors of a ballroom (above). It took five days to erect the theater, using the boxes and in-fill elements added on-site (inset above, right). An initial scheme called for a scrim wrapped around the theater, but the architects eventually decided to expose the structure (opposite and below).

PHOTOGRAPHY: © PAUL WARCHOL, EXCEPT AS NOTED; COURTESY ROCKWELL GROUP (INSET, 3)

Having designed theater sets for Broadway shows and the Oscars, architect David Rockwell knew a lot about temporary structures. But he had never designed a temporary theater. Until Chris Anderson, who runs the organization behind the Technology, Entertainment and Design (TED) talks, asked Rockwell to create a pop-up home for its annual conference—one that could be erected inside a ballroom at the Vancouver Convention Center, disassembled, stored, and then reassembled a year later in the same place or shipped somewhere else.

Rockwell, who had attended many of the TED conferences and presented at some, loved their "campfire" nature, with a community gathered to hear stories told well. A better analogy, though, might be to Chautauqua, the adult-education movement that once brought thousands of people together for summer camps of lectures and cultural performances. Retaining that character was important to Rockwell and Anderson and informed their decision to specify wood as the primary material for the project. Using one material for all of the structural elements seemed like the best strategy, since it would limit work to one trade and take advantage of British Columbia's large pool of skilled carpenters. Also, says Anderson, "It was a natural choice to select locally harvested wood. It made sense for the environment, and it was a nod to our new home in Vancouver."

Though the project was a different kind of challenge for the architects, "it intersected with things we have been investigating for the past 30 years—craft, spectacle, community, and the ephemeral nature of theater," says Rockwell.

Making the theater feel intimate, even as it holds 1,200 people, was imperative. In TED's previous home in Long Beach, California, some seats were as far as 125 feet from the stage; the custom-built theater in Vancouver would reduce this to 80 feet. And instead of a uniform arc of seats with one or two aisles, Rockwell created a patchwork of sections with 10 different kinds of seating—including ringside benches, lounge-type arrangements with sofas, and rows that have a combination of chairs and benches. "People like having a choice," says Rockwell, and the different options help them gather in informal groups within the larger community.

As they worked, Rockwell and his project manager, Michael Fischer, kept a few precedents in mind: medieval pageant plays with their mobile stages, Shakespeare's timber-frame Globe Theater in London, and Hans Scharoun's Berlin Philharmonic. Though neither temporary nor made of wood, the Berlin Philharmonic (completed in 1963) breaks a large expanse of 2,440 seats into various sections, which inspired Rockwell to do the same. "We liked the way Scharoun created a topography of seating," says Rockwell.

To speed construction, Rockwell worked with Nussli, a Swiss company that supplies temporary structures for trade fairs and now has offices in the U.S. Together they designed a system of "boxes" that could be attached side by side or stacked on top of each other—some as seating sections, some as stairs, and others as "hats" crowning the theater's perimeter. Like a building, the structure needed to handle live and dead loads, but each individual box also had to accommodate the dynamic forces imposed when picked up and moved. The dimensions of the boxes were dictated by the ballroom doors through which they would pass: 10 feet by 8 feet. Their

View a video at architecturalrecord.com.

credits

ARCHITECT: Rockwell Group – David Rockwell, president; Michael Fischer, project manager; JT Bachman, staff

ENGINEERS: Equilibrium Engineers (structural)

CONSULTANTS: Intensity Advisors (stage lighting); McCune Aduio Visual (audio-visual)r

TIMBER FABRICATION: CutMyTimber

GENERAL CONTRACTOR: Nussli

CLIENT: TED

SIZE: 20,000 square feet (1,200 seats)

PROJECT COST: withheld

COMPLETION DATE: March 2014

SOURCES

CARPET: Custom by Shaw

SEATING: Steelcase

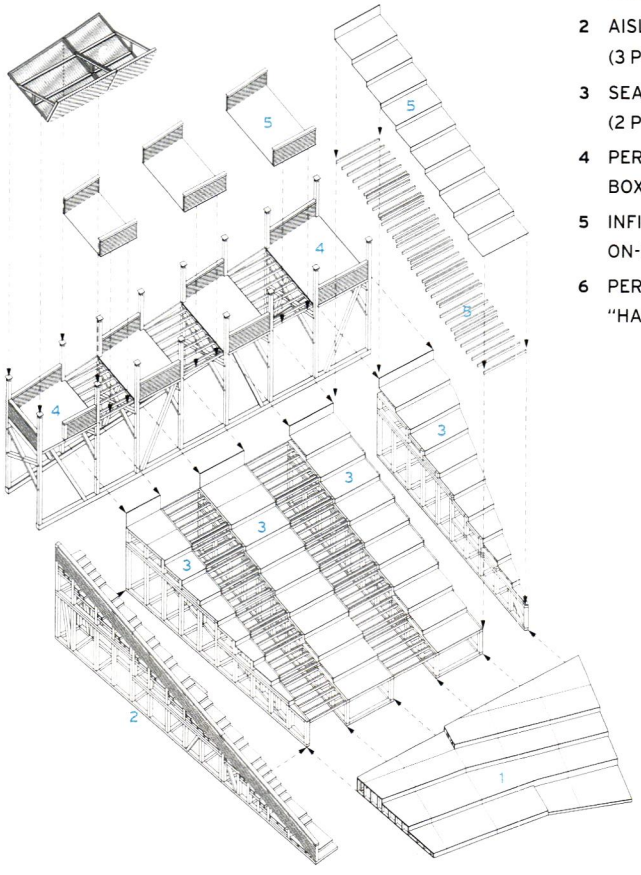
INTERIOR LIGHTING: Hubbell; Barn Light Electric

length was limited by the size of the flatbed trucks that would transport them: 30 feet (but most pieces were just 12 feet).

A Vancouver company, CutMyTimber, used computer-numerical-controlled (CNC) milling that reduced waste to just 2 percent. Nussli assembled the pieces—mostly 4-by-6-inch Douglas fir glulam and Douglas fir plywood—into about 160 boxes, starting with the ones that would be needed last (and could be stored in the back of the warehouse) and finishing with those needed first. After three months of manufacturing off-site, trucks delivered the boxes in 60 loads, plus three of equipment, tools, and floor protection. Over the course of just five days last March, two 12-hour shifts of 30 workers built the stage, connected the boxes using nuts and washers—on threaded steel rods embedded in the wood—and added infill elements such as beams, slatted guardrails, cross-laminated-timber railings, and plywood flooring, all made of the same Douglas fir as the boxes.

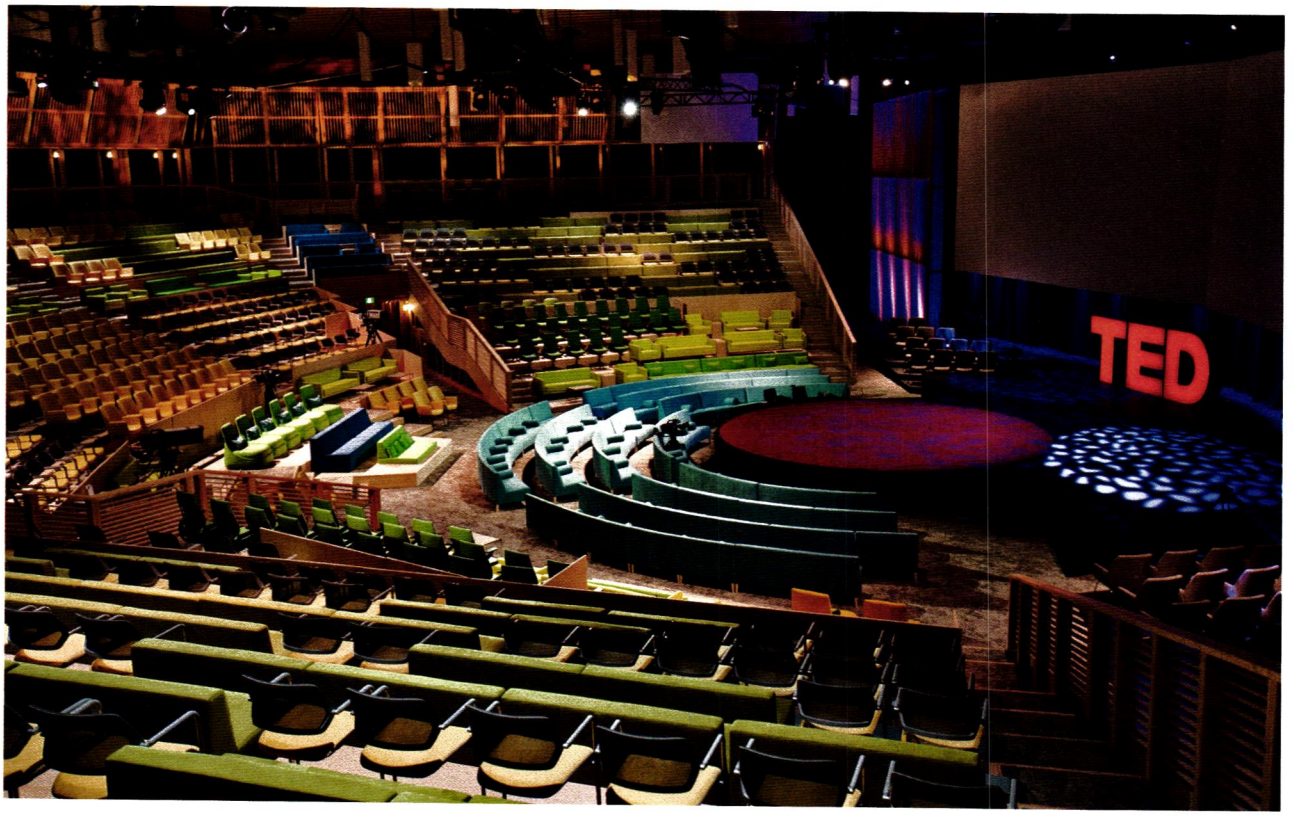
After the conference, the crews took two and a half days to disassemble the theater. Nussli has guaranteed the project for 10 iterations, but Fischer says, "We feel it could probably last more than that." Though no one has decided what will happen to the wood after such a time, Fischer says CutMyTimber has a database of the 8,000 pieces it cut and could use it as an inventory for recycling and remilling them.

According to Rockwell, the new theater helped "give a boost" to a 30-year-old event while highlighting the ephemeral nature of such gatherings. Anderson, the client, says, "Our community absolutely loved the theater. We'll make just some minor tweaks—a slightly smaller stage, a few more seats, and some lighting and audio adjustments." The biggest surprise, he says, was "the powerful scent of the wood itself. It blew us away." ■



1 LOWER BOWL SEATING PLATFORM
2 AISLE STAIR BOXES (3 PIECES)
3 SEATING RISER BOXES (2 PIECES)
4 PERIMETER WALKWAY BOXES
5 INFILL ELEMENTS BUILT ON-SITE
6 PERIMETER TRELLIS "HATS"

KIT OF PARTS
The pre-made boxes could be attached side by side or stacked on top of each other (diagram above). Using wood for almost all elements meant that just one trade was needed for construction and created a forest-like effect when moving through the theater (opposite). Ten different types of seating—including sofas, benches, and chairs—offered a broad range of gathering areas in the theater (right).



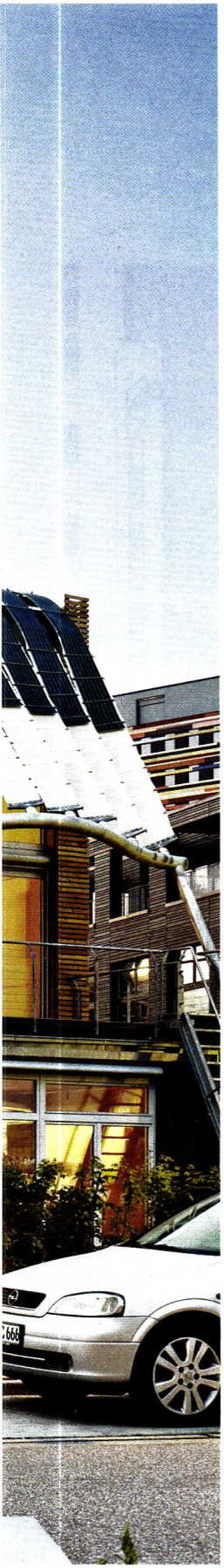
Soft House | Hamburg | Kennedy & Violich Architecture (KVA Matx)

TIMBER'S NEW WAVE

A set of rowhouses combines a traditional all-wood structure with strategies for generating and saving energy, offering a new model for low-carbon living.

BY HUGH PEARMAN

PHOTOGRAPHY BY MICHAEL MOSER



The Hamburg IBA (for International BauAustellung, or "building exhibition") is the latest iteration of a long-running German tradition: a showcase of experimental housing, intended to display new thinking in domestic architecture but built to be permanent and sold on the open market. In Hamburg's case, the aim was to demonstrate how the city could expand in a sustainable fashion into the relatively underdeveloped Elbe islands. These are separated from the city center by HafenCity, the docklands that are being transformed into a mixed-use neighborhood. The Soft House, by the KVA Matx team led by Boston-based Kennedy and Violich Architecture, couples a traditional solid softwood-construction technique with advanced technology, expressed in its architectural form.

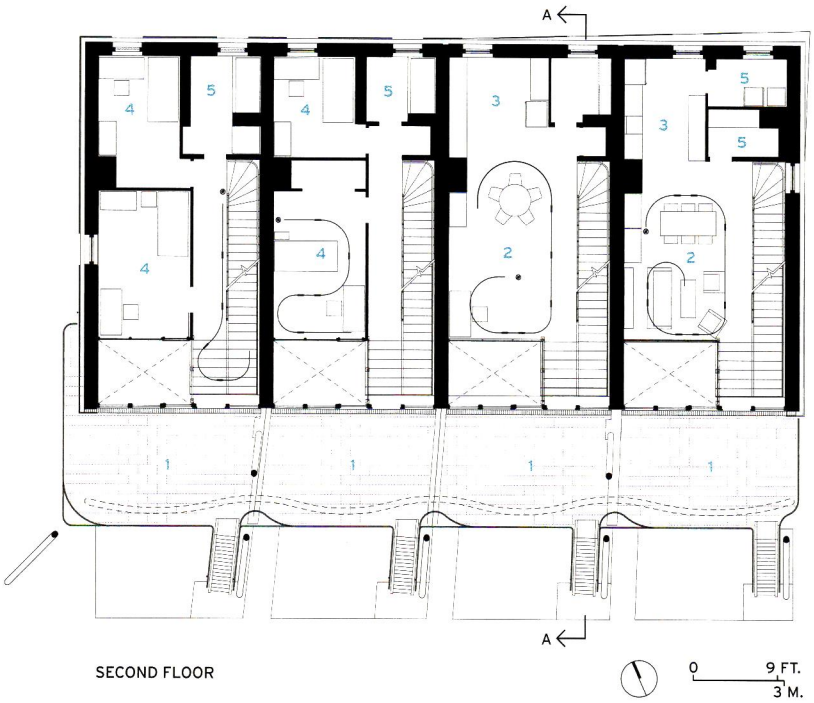
The Soft House is in fact four rowhouses, each about 1,800 square feet, intended as live-work units and designed to exceed the Passivhaus standard (a rigorous performance standard for very low-energy buildings). As you walk into this new part of the Wilhelmsburg district (where both this part of the IBA and a garden festival, another popular German tradition, were held last year), you see Soft House's distinction from the orthogonal blocks of the other demonstration apartment buildings. They are generally four or five stories tall, while Soft House rises only three stories. But its most unusual feature is its undulating carapace–comprising tensioned ribbons of flexible photovoltaic (PV) panels at the top and solar-shading mesh lower down–described as "energy-harvesting textile cladding" by the architects.

The cross-section of a typical unit is L-shaped, with a deep ground floor giving way to shallower upper floors, providing each house a section of a shared second-floor terrace. The architects' aim was to allow for flexibility: the ground floor could be a workspace, for instance, entered from the rear, since exterior steel stairs provide separate access from the small front gardens to the terrace level.

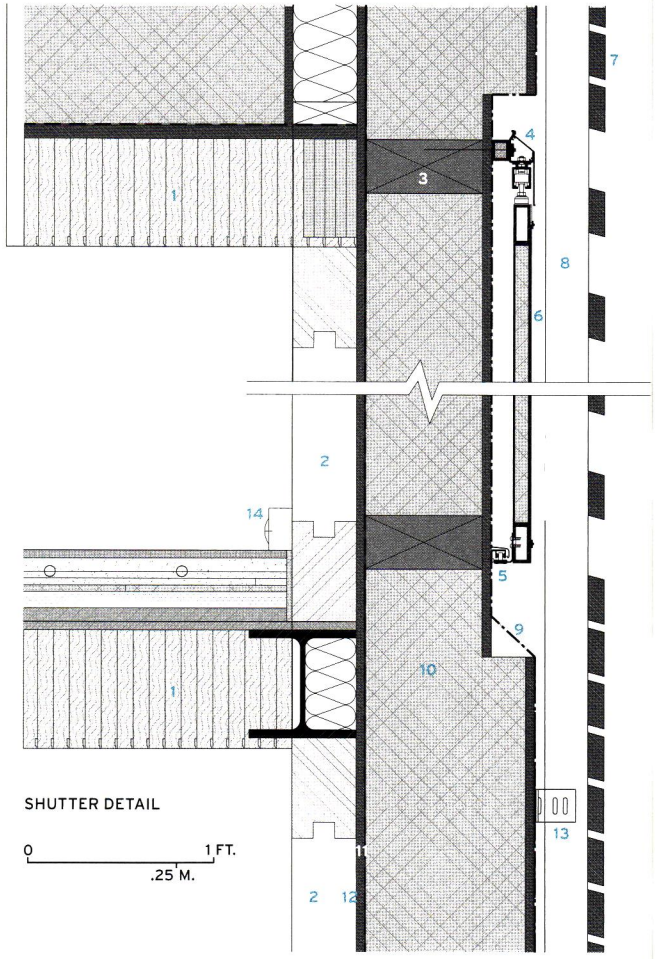
The garden side of the Soft House is partially enclosed by the PV ribbons, which are mounted on a beefy steel armature rising from the terrace and tensioned by fiber-reinforced composite boards anchored at roof level. Servo motors rotate the ribbons to follow the course of the sun, while pistons adjust the overall geometry of the array, pulling it flat to the roof during high winds.

The shading and energy-generating ribbons allow the

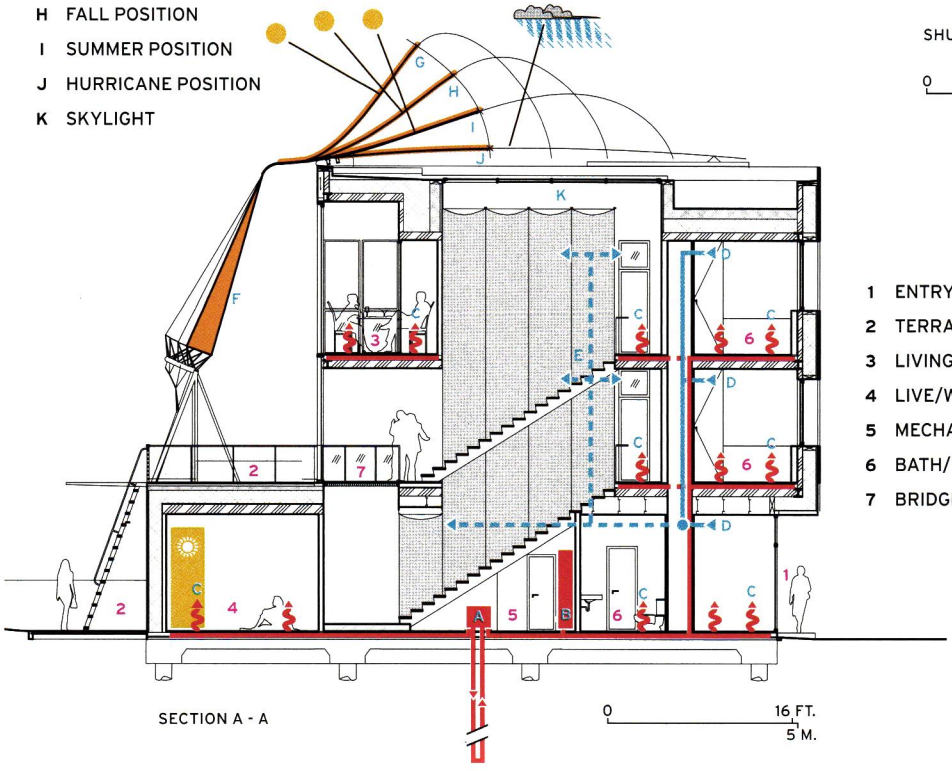
SMART SKINS The Soft House's flexible PV-shading ribbons (opposite), which rotate and twist to track the path of the sun, allow the extensive use of glass on the south facade. The building's other, mostly solid, elevations are clad primarily with open-jointed Douglas-fir slats and contain small windows protected by sliding aluminum shutters (below).



1 TERRACE
2 LIVING SPACE
3 KITCHEN
4 BEDROOM
5 BATH/LAUNDRY

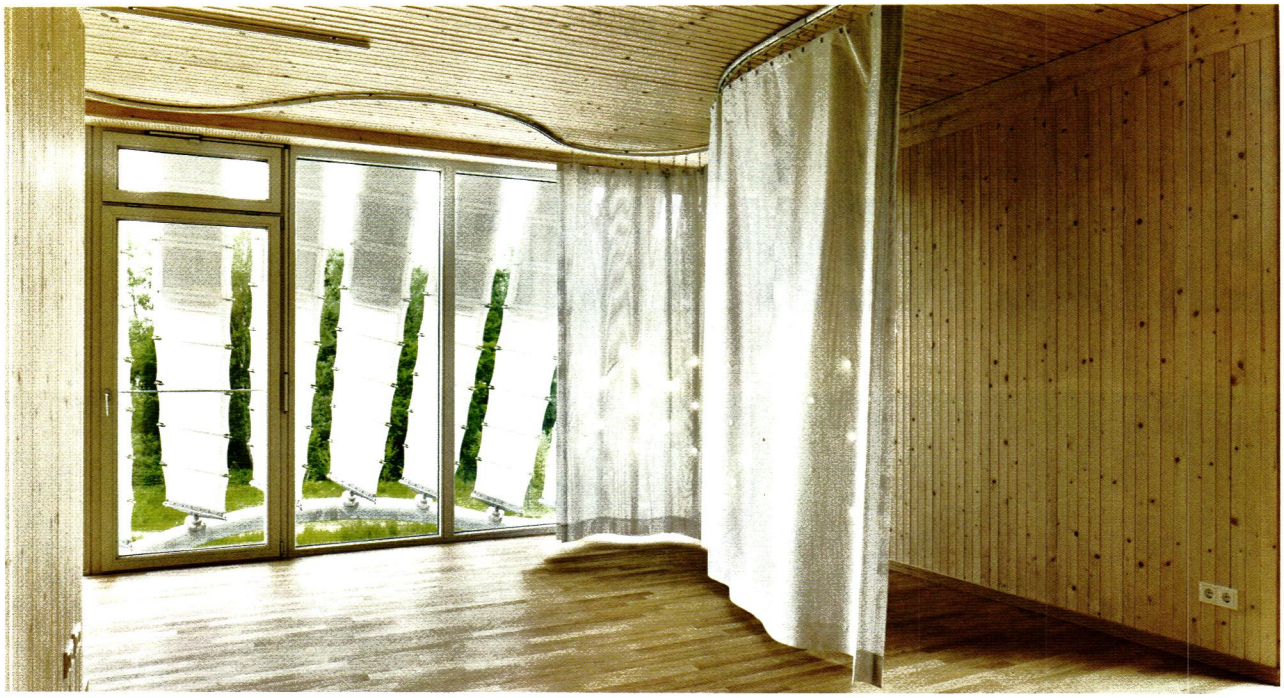


A GEOTHERMAL PUMP
B HOTWATER TANK
C RADIANT HEATING AND COOLING
D VENTILATION RETURN
E VENTILATION SUPPLY
F PV-SHADING RIBBON
G WINTER POSITION
H FALL POSITION
I SUMMER POSITION
J HURRICANE POSITION
K SKYLIGHT



1 ENTRY
2 TERRACE
3 LIVING SPACE
4 LIVE/WORK SPACE
5 MECHANICAL ROOM
6 BATH/LAUNDRY
7 BRIDGE

1 "BRETTSTAPEL" SLAB
2 "BRETTSTAPEL" WALL
3 BLOCKING
4 UPPER SLIDING RAIL
5 LOWER SLIDING RAIL
6 INSULATED ALUMINUM PANEL
7 WOOD SLATS
8 VERTICAL WOOD BATTENS
9 PERMEABLE UV BARRIER
10 RIGID INSULATION
11 VAPOR BARRIER
12 ORIENTED STRAND BOARD
13 ALUMINUM ANGLE
14 DATA/POWER RAIL



SPACE DEFINING
The solid-wood structural system, made of spruce pieces pegged together, serves as the finish ceilings and walls, reducing the need for other materials such as drywall. Interior curtains (left and below), which have integrated LEDs, are powered by DC current supplied by the PV ribbons that rise from the houses' terrace level, visible out the window.

extensive use of south-facing glass, maximizing the penetration of daylight while minimizing heat gain and glare. In addition to the PVs, the Soft House has ground-source heat pumps, convection ventilation via an atrium, and heat recovery. These features, combined with super-insulation and triple glazing, produce a building that is so efficient it can export electricity. The *brettstapel* jointed softwood panel and deck construction also contributes to the building's green credentials: it sequesters carbon and, because it is exposed on the interior, serves double duty as both structure and interior-finish material. Since it is pegged together, without glue or nails, it can readily be recycled at the end of the building's life.

Although demonstration-housing enclaves are not always commercially viable, the German model seems to work well enough and includes some concessions to the demands of the market. For instance, these houses are organized in a familiar suburban layout with ample provision for cars, both in open-air lots and garages. Now that the exhibition is officially over, families are moving in; one of the houses at the end of the Soft House row is looking comfortably lived in, its terrace bedecked with potted plants and a bird feeder.

Perhaps the greatest achievement of the Soft House is that it feels like a very adaptable home rather than an experiment in ultra-insulation. "Although there are innovations of a technical nature in the Soft House, the most important innovation is that of creating a lifestyle experience for low-carbon living," says Sheila Kennedy, KVA principal. "The infrastructure is not hidden," she says. "It is transformed and made materially soft to take on a responsive, space-making role as part of the architecture." As to the durability of this moving soft shell, time will tell how well it responds to the needs of residents and to changing technology. ■

Hugh Pearman is architecture critic of the Sunday Times, *London, and editor of the* Riba Journal.

credits

ARCHITECT: Kennedy & Violich Architecture (KVA Matx) – Sheila Kennedy, Frano Violich, principals; Veit Kugel, senior associate

ARCHITECT OF RECORD: 360grad+ architekten

CONSULTANTS: Knippers Helbig Advanced Engineering (structural); Buro Happold (mechanical); G2 Landschaft (landscape); Steinbeis Forschungsinstitut für Solare und Zukunftsfähige Thermische Energiesysteme (climate planning)

GENERAL CONTRACTOR: Holzbau Merkle

CLIENTS: International BauAustellung (IBA); PATRIZIA Projektentwicklung

SIZE: 10,000 square feet

CONSTRUCTION COST: $2.8 million

COMPLETION DATE: April 2013

SOURCES

TEXTILE FACADE: Stamisol Color

FACADE PANELS: Trespa

WINDOWS: Heinrich Buck

SHUTTERS: Baier

PHOTOVOLTAICS: Global Solar Energy

PTFE SHADE: Verseidag

CURTAIN TEXTILES: Svensson Global

TEACHING AN OLD MATERIAL NEW TRICKS

Three projects under construction in North America demonstrate that timber can be used as an alternative to concrete, steel, and even masonry.

BY JOANN GONCHAR, AIA

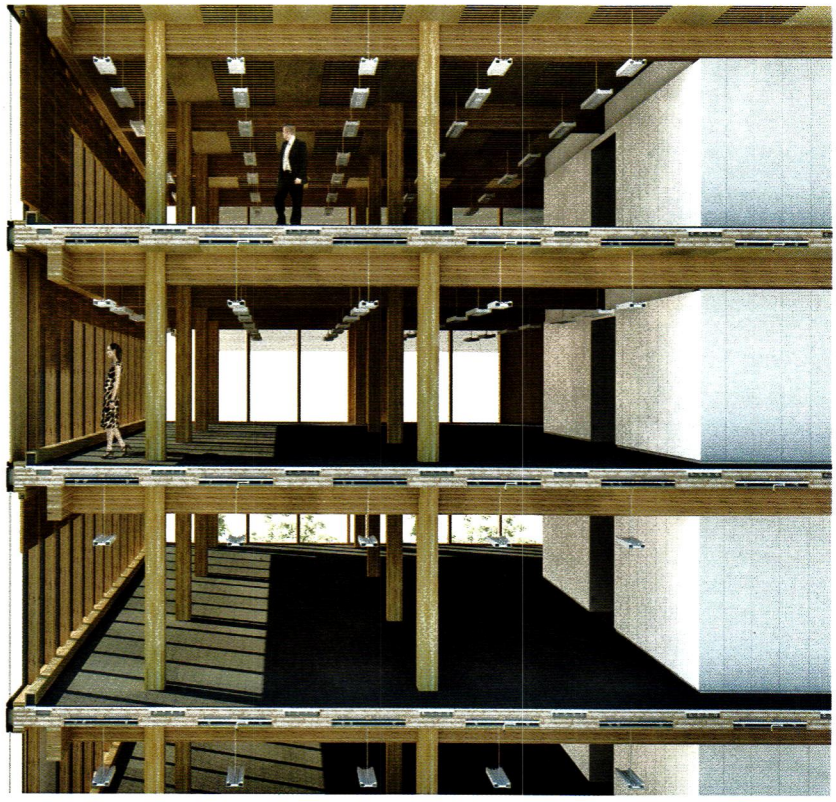
As a building material, wood's appeal has endured at least as long as humans have been constructing shelters. However, since the industrial revolution, the range of potential building materials has expanded, putting wood at a disadvantage—until now, that is. In the last several years, designers have taken a new interest in wood, even for structural applications in commercial and institutional projects—the kinds of buildings that as a matter of course have been constructed of steel or concrete.

TAKING TIMBER TALLER

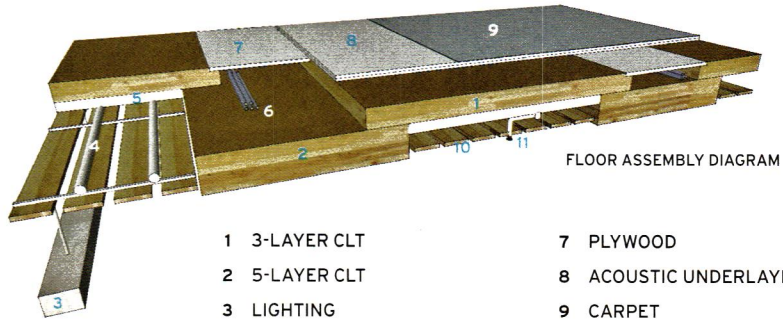
What is behind wood's new allure? The attribute increasingly cited as a reason to substitute it for other materials is its ability to store the greenhouse gas carbon dioxide—so long as the wood doesn't burn or decompose. These storage properties are among the key factors that interested Vancouver-based architect Michael Green in developing a hypothetical scheme for a 30-story tower with a structure made almost entirely of wood. He has now built a wood "tower"—albeit one that is only six stories: the Wood Innovation Design Centre (WIDC) now nearing completion in Prince George, British Columbia. Topped out in April at just under 100 feet, it is the world's tallest wood building, says Green.

The $23 million (U.S.) WIDC, owned by the province, is intended as a showcase for the region's expertise in designing and constructing innovative timber buildings. It relies almost exclusively on engineered wood components, left largely exposed, and made from a variety of species grown in the region, including Douglas fir, spruce, and pine. Starting this fall, the approximately 51,000-square-foot structure, which takes the form of a straightforward box, will house the University of Northern British Columbia's wood-engineering program and office space for other tenants.

Clad in cedar siding that has been charred (to reduce flame spread, explains Green), the WIDC is supported by glued-laminated timber (glulam) post-and-beam structure. Even its stair and elevator-core walls, which make up the primary lateral load-resisting system, are wood. These consist of cross-laminated timber, or CLT (spruce strips



SECTION-PERSPECTIVE

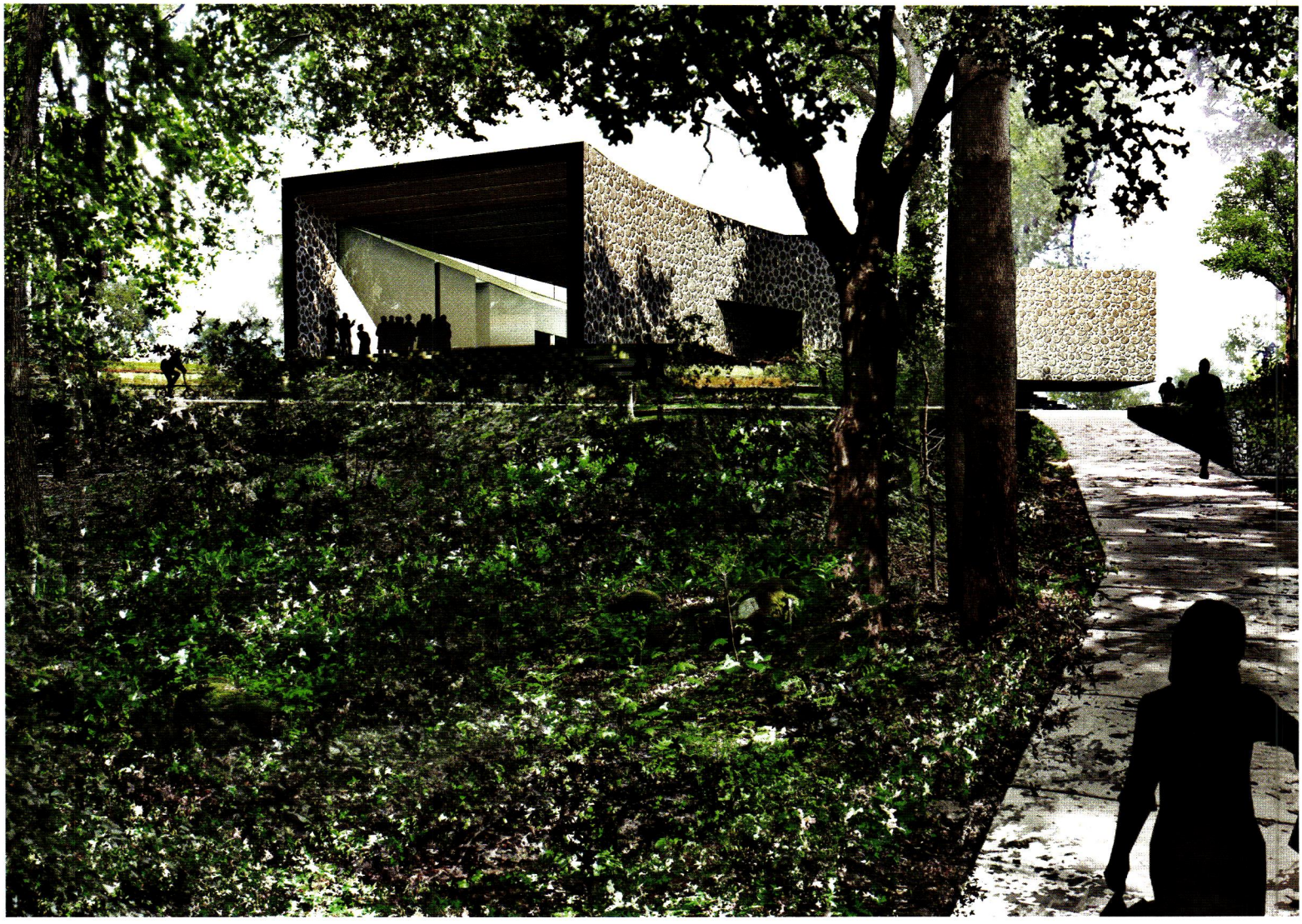


FLOOR ASSEMBLY DIAGRAM

1 3-LAYER CLT
2 5-LAYER CLT
3 LIGHTING
4 SERVICES IN CEILING TROUGH
5 ACOUSTIC INSULATION
6 SERVICES IN FLOOR TROUGH
7 PLYWOOD
8 ACOUSTIC UNDERLAYMENT
9 CARPET
10 WOOD SLATS
11 SPRINKLERS

WOOD INNOVATION DESIGN CENTRE At nearly 100 feet, the Wood Innovation Design Center (opposite), in Prince George, British Columbia, is the tallest timber-supported building in the world. It contains six full stories, a mezzanine, and a mechanical penthouse and is almost completely made of engineered wood components. It is supported by a glued-laminated post-and-beam structure (top) with a cross-laminated timber core for lateral load resistance. Its floors consist of overlapping CLT panels to create chases for building services (middle and bottom).

IMAGES: COURTESY MICHAEL GREEN ARCHITECTURE



glued under pressure in perpendicular lamellae) anchored to the foundation and connected vertically with self-tapping screws. But the WIDC's most ingenious feature is its wood floor slabs made of overlapping panels of 3- and 5-layer CLT joined together with adhesives and a mesh connector. The configuration provides troughs, above and below the slab, for services such as sprinklers and lighting. The finished floor assembly sits on top of the slab, while removable wood slats conceal the service trenches from below.

Green points out that one of the chief advantages of the arrangement is the absence of a topping slab, which should make post-occupancy modifications to the building systems relatively straightforward. And, at the end of the structure's life, he says, it will be easy to disassemble it and reuse the timber components due to the limited use of concrete.

To go beyond the code-permitted height for commercial wood buildings—four stories—the design and construction team received a special exemption from the provincial government, following a peer-review process. But the system deployed at the WIDC could be used for buildings at least as tall as 20 stories, says Eric Karsh, principal of Equilibrium Consulting, the project's Vancouver-based structural engineer. In order to build to that height, more tests for fire and lateral load resistance would be needed, but he is confident that the system would perform well. The current height limitations are based on the properties of light-frame construction, he explains. "Post-and-beam systems behave differently, as does solid-panel construction," he says.

PLAY ON THE PAST

Performance attributes such as structural properties and fire resistance are just one set of issues that design teams consider when selecting a material. Chicago-based Studio Gang Architects clad its Arcus Center for Social Justice Leadership, nearing completion on the campus of Kalamazoo College, in Michigan, with stacked white cedar logs harvested in the northern part of the state. They chose the material, known as cordwood masonry, for the outside of the boomerang-shaped steel-framed building, in part because of its connection to the place: it was first used in the region by early homesteaders. "The material is renewable and has a history there," explains Todd Zima, a Studio Gang design principal.

The building's cladding and construction method also offered a number of other "synergies" with the center's

ARCUS CENTER
Studio Gang Architects' Arcus Center for Global Justice Leadership on the campus of Kalamazoo College, in Michigan, has exterior cladding made of cordwood masonry—a construction method first used in the region by its early homesteaders.

IMAGE: COURTESY STUDIO GANG ARCHITECTS

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The design team earned approval by using ANSI/APA PRG 320-2011 Standard for Performance-Rated cross-laminated timber (CLT)
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VERSATILE
Increased deck spans enhance the glulam beam and column superstructure and create a unique space
RENEWABLE
North American forests grow the wood used in this building in 1 minute
ECONOMIC GROWTH
Wood contributes $100 billion to US gross domestic product
PROJECT: THE CROSSROADS, GOOD MANUFACTURING PRACTICES FACILITY, MADISON, WI | COMPLETION: 2013
ARCHITECT: UIHLEIN/WILSON ARCHITECTS, INC., MILWAUKEE, WI & ARCHEMY CONSULTING • EWINGCOLE, PHILADELPHIA, PA
OWNER: PROMEGA CORPORATION ENGINEER: EWINGCOLE, PHILADELPHIA, PA
CONTRACTOR: KRAEMER BROTHERS, PLAIN, WI CLT ENGINEER: EQUILIBRIUM CONSULTING INC., VANCOUVER, BC
PHOTO: C&N PHOTOGRAPHY, INC.
CIRCLE 49

mission to support the pursuit of human rights, says Zima. In addition to its tie to a vernacular building technique, each of the log sections has its own color, shape, and size, reflecting the diversity of the population that the center will serve. He describes the process of building a cordwood masonry wall as "democratic"—it doesn't depend on sophisticated technology or machinery and allows people with a wide range of abilities to participate.

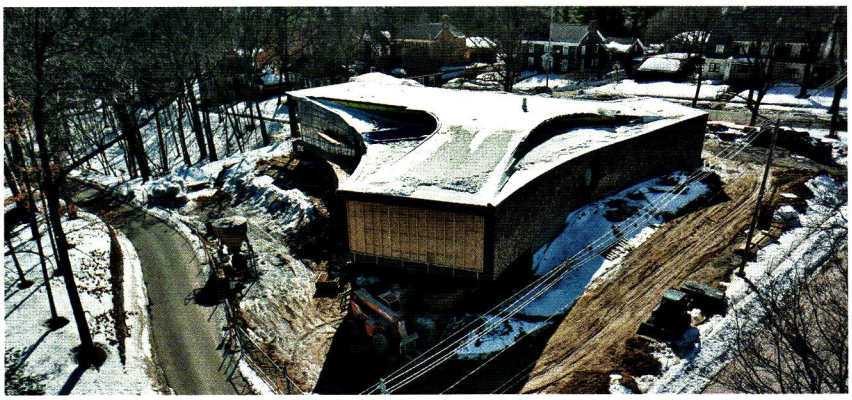
As it turns out, professional masons are constructing the 10,000-square-foot center's cordwood walls. "For various reasons, like liability, it was better to have professionals build them," says Zima. But despite such real-world concerns, project stakeholders—including the architects, the contractors, and the client—did get a chance to try their hands at the technique. They took part in workshops led by cordwood-masonry experts Rob and Jaki Roy, from Earthwood Building School of West Chazy, New York. The training sessions, held during the design and construction phases, helped generate enthusiasm for the method and provided the project team with a solid foundation for experimenting with the material. For example, it gave the architects the necessary knowledge to detail the building's curved walls and allowed them to understand the criteria involved in selecting a mortar mix—one that wouldn't cure too fast and pull moisture out of the wood, creating unsightly cracks.

Although cordwood is inherently a good insulator, the project team improved its performance by incorporating it into an assembly that is similar to a brick cavity wall. In addition to the wood, which is 11 inches deep, and a 1½-inch cavity, the exterior enclosure also includes continuous insulation, air and waterproof barriers, and a stud wall. Like a typical brick cavity wall, it also has weep holes. The entire system is almost 2 feet deep and provides a thermal resistance of R 30.25—an insulation value that comfortably surpasses the minimum set by the code. The wall section, points out Zima, also serves to update a traditional material, making it appropriate for a modern, pressurized building.

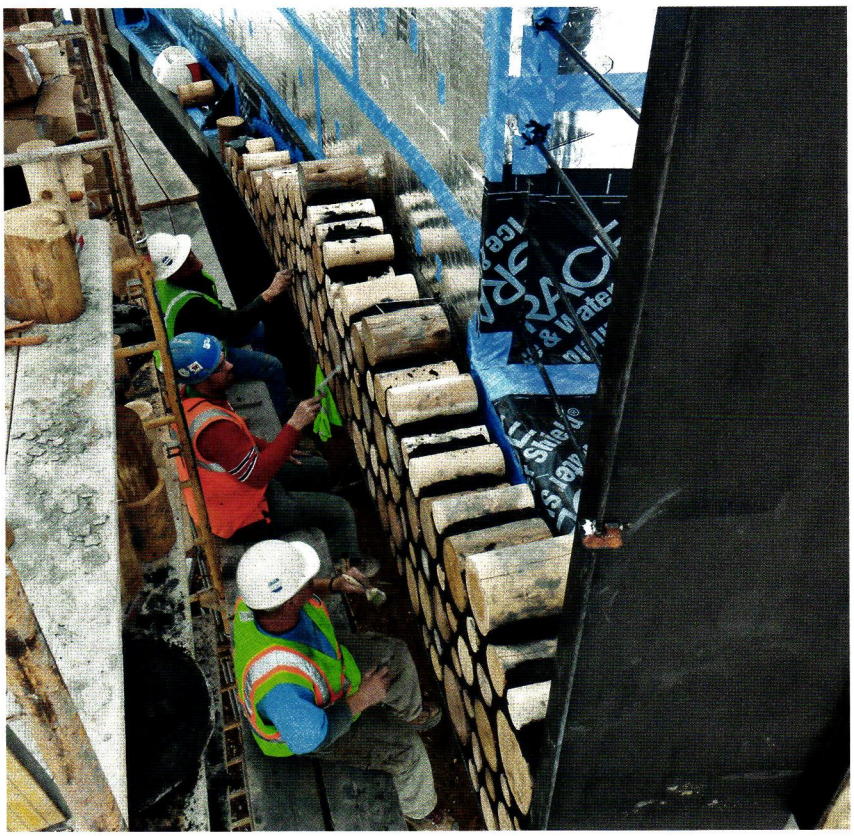
MAKING WAVES IN WOOD

While some designers are attracted to timber for its ability to store carbon and some for its cultural and historical associations, other project teams are using the material to creatively solve the problem of longer spans. The $42 million (U.S.) Grandview Heights Aquatics Centre is the result of such an approach. Here Vancouver-based Hughes Condon Marler Architects (HCMA) has devised an undulating timber roof to cover a municipal swimming pool complex under construction in Surrey, British Columbia. The roof structure is made up of glulam beams, only 5 inches wide and 10½ inches deep, which span 425 feet with just one set of intermediary supports. Even HCMA's project architect, Melissa Higgs, says the beams, placed in pairs every 30 inches on center, are "astonishingly thin."

These beams behave, in fact, like cables, performing in tension. Suspended from a line of post-tensioned concrete buttresses at each end of the building, and a set of V-shaped concrete columns at midspan, they form catenary curves that dip from a maximum height of 72 feet to a minimum of about 29 feet. The impetus for this swooping profile was the need for the roof to clear a set of diving platforms at the deep end of the complex's competition pool. The architects

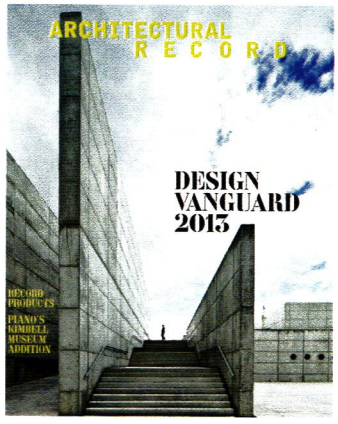


ARCUS CENTER
Because of the building's boomerang shape (above), its cordwood walls—which are constructed like masonry cavity walls (below)—are curved, complicating construction. To help ensure that each section of wall contained a variety of different-diameter logs (left), they were cut to length and sorted by size before being shipped to the site.



PHOTOGRAPHY: COURTESY STUDIO GANG ARCHITECTS

2014 CALL FOR ENTRIES
Design Vanguard



The editors of ARCHITECTURAL RECORD are looking for the best emerging architecture firms from around the world to feature in our Design Vanguard coverage. Although we do not have an age limit, we try to select architects who have had their own practices for less than 10 years.

To enter the competition, send a low-resolution PDF (no larger than 8 MB) with a portfolio containing five to eight projects (both built and unbuilt), CVs of your firm's partners, and a short statement of your firm's design philosophy.

Submit your portfolio by August 11, 2014.
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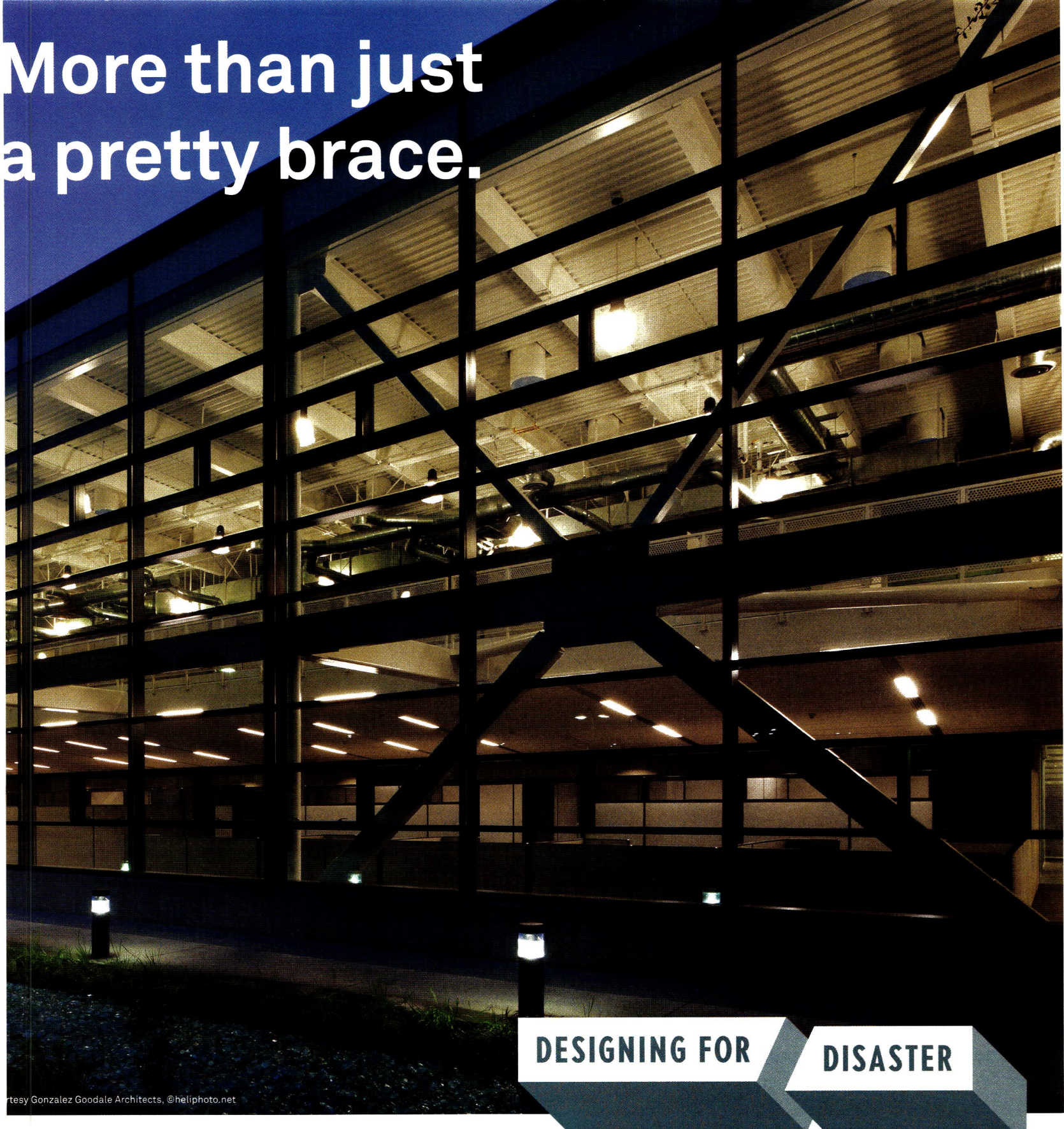
For more details and to enter online visit http://app.wizehive.com/apps/recordproducts2014.
E-mail questions to ARCallForEntries@mhfi.com. (Please indicate ***Record Products*** as the subject of the e-mail.)
Submissions are due September 5, 2014.



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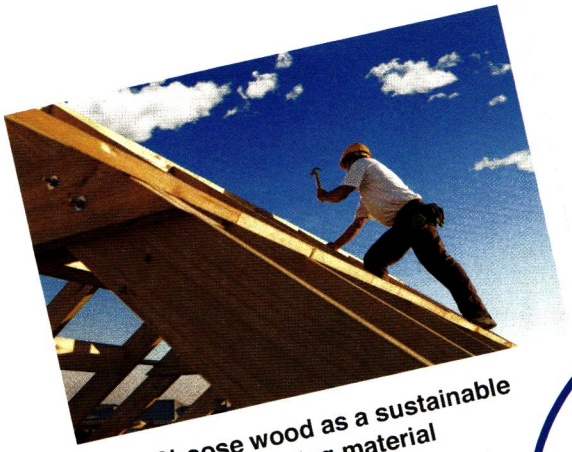

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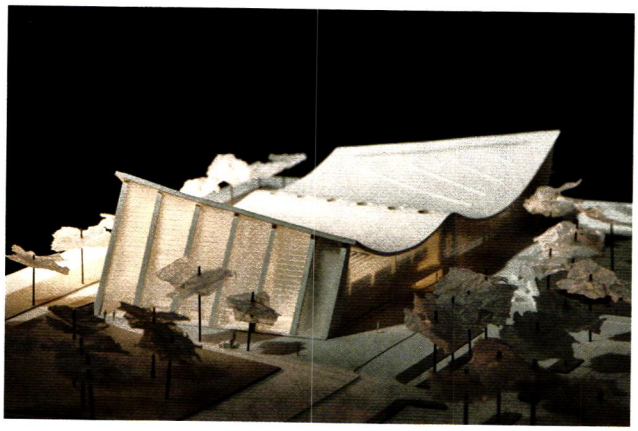
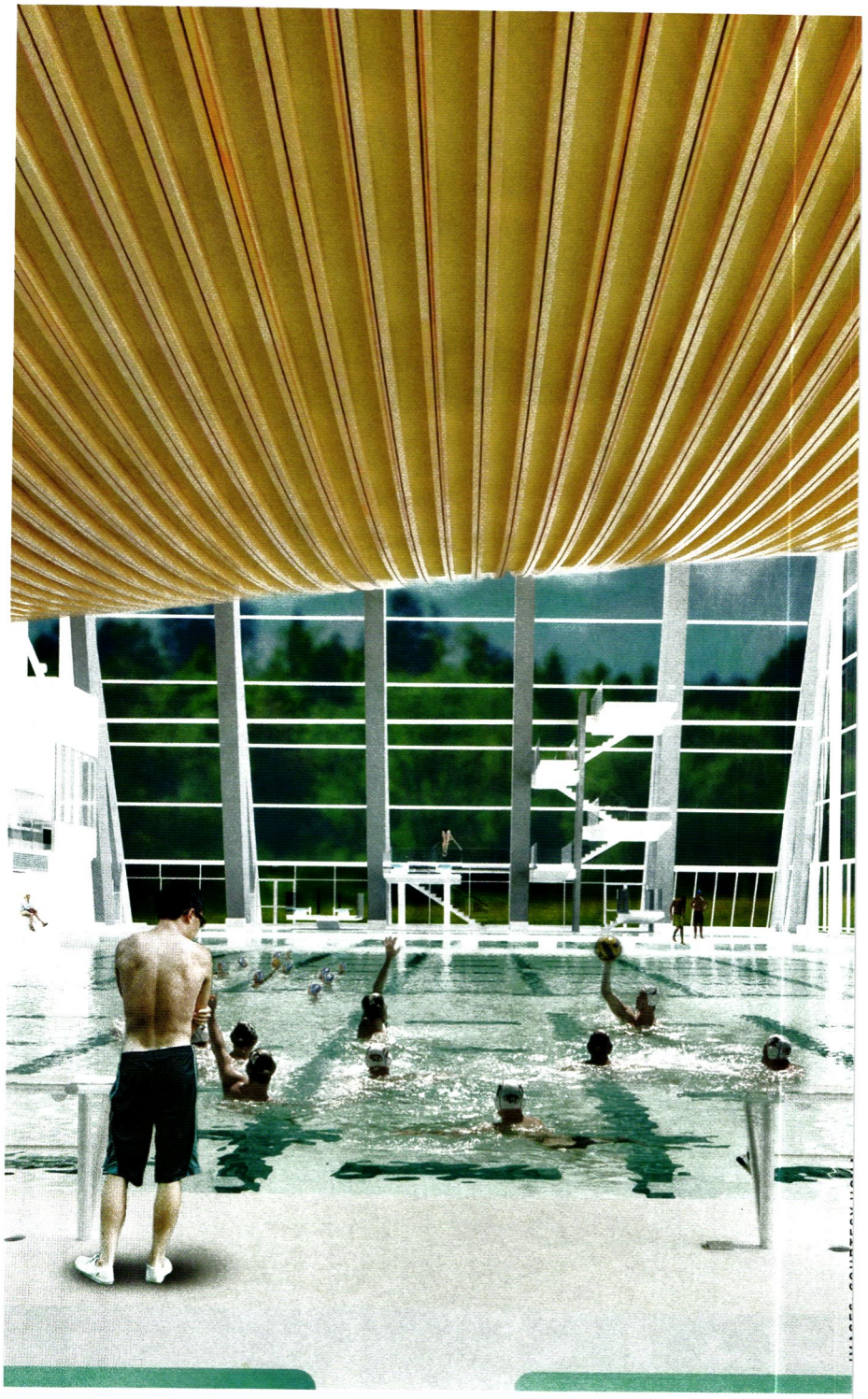




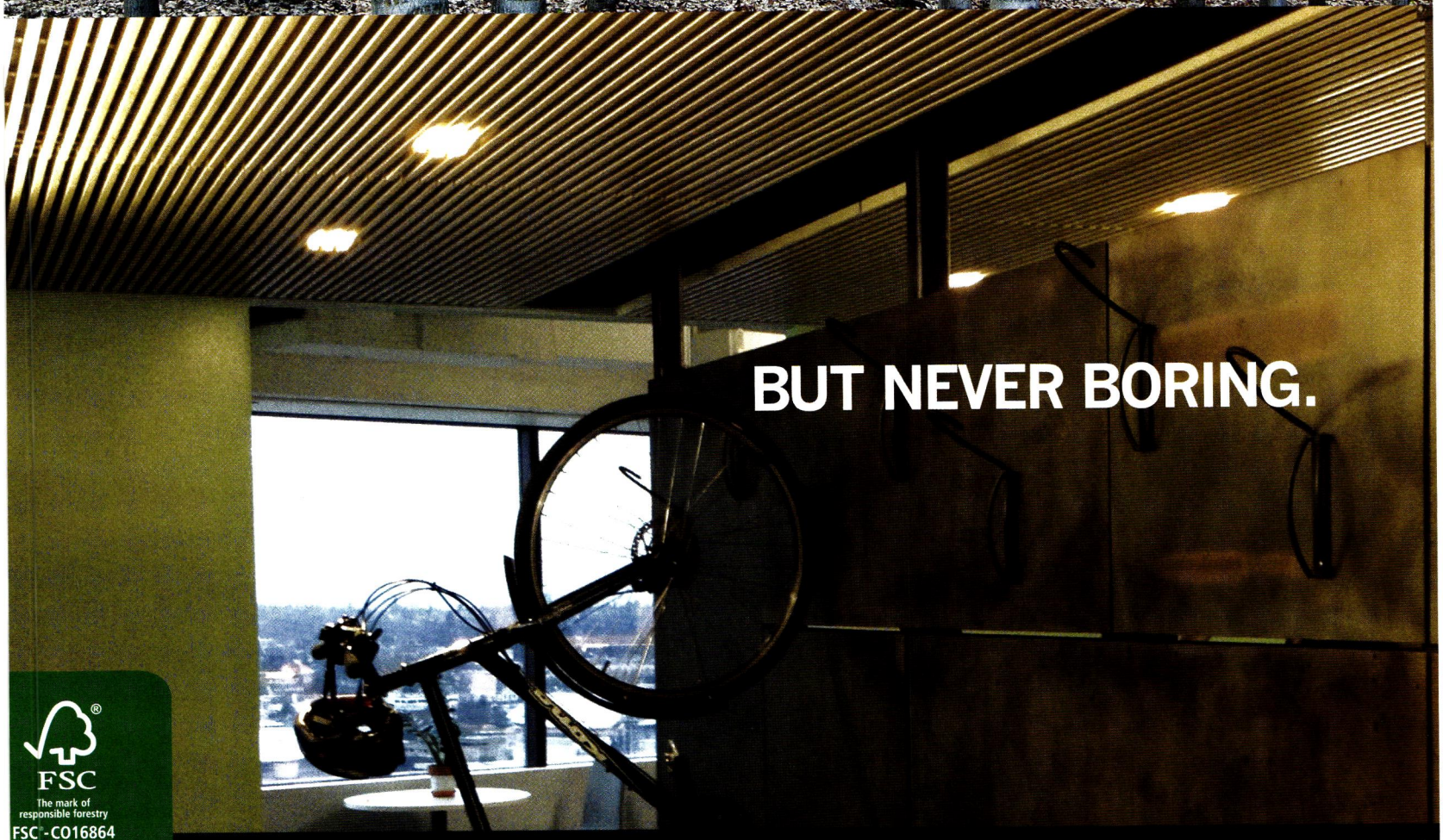
considered the height unnecessary for the rest of the 86,000-square-foot building, which also houses a leisure pool, a waterslide, a café, and a fitness center. All are enclosed within a curtain wall that combines glass and translucent polycarbonate.

The team explored other options for supporting the roof, including steel trusses. However, these would have needed to be almost 10 feet deep, making the structure even taller. That would have made the conditioned space within the building envelope greater, raising construction costs (for the additional curtain wall enclosure) as well as energy costs. Designers also considered a traditional steel cable. But such a solution would have provided "zero bending stiffness," says Derek Ratzlaff, an associate at Fast + Epp, the project's Vancouver-based structural engineer. In order to prevent it from deflecting too much in the wind, the steel cable version of the roof would have needed to be heavier, as well as less elegant, he adds. The glued-laminated elements have bending stiffness, so extra weight was not required.

The timber structure also offered the advantage of being better suited than steel for the potentially corrosive pool environment. But the biggest benefit of the wavy wood roof is its drama, says Higgs: "The ceiling ends up being a big part of the visitor's experience." It is such possibilities, in addition to its structural and environmental characteristics, that make wood so alluring. The material's aesthetic value, as well as its performance attributes, will continue to push architects and engineers to find new applications, create longer spans, and reach for new heights. ■

GRANDVIEW HEIGHTS AQUATICS CENTRE The swooping roof over the pool complex that Hughes Condon Marler has designed for the city of Surrey, British Columbia, is supported by glulams 5 inches wide and 10½ inches deep (right). They span 425 feet, with only one set of intermediary supports (above and top). The impetus for the wavy profile was the need to clear a set of diving platforms.

CONSISTENT AND UNIFORM.



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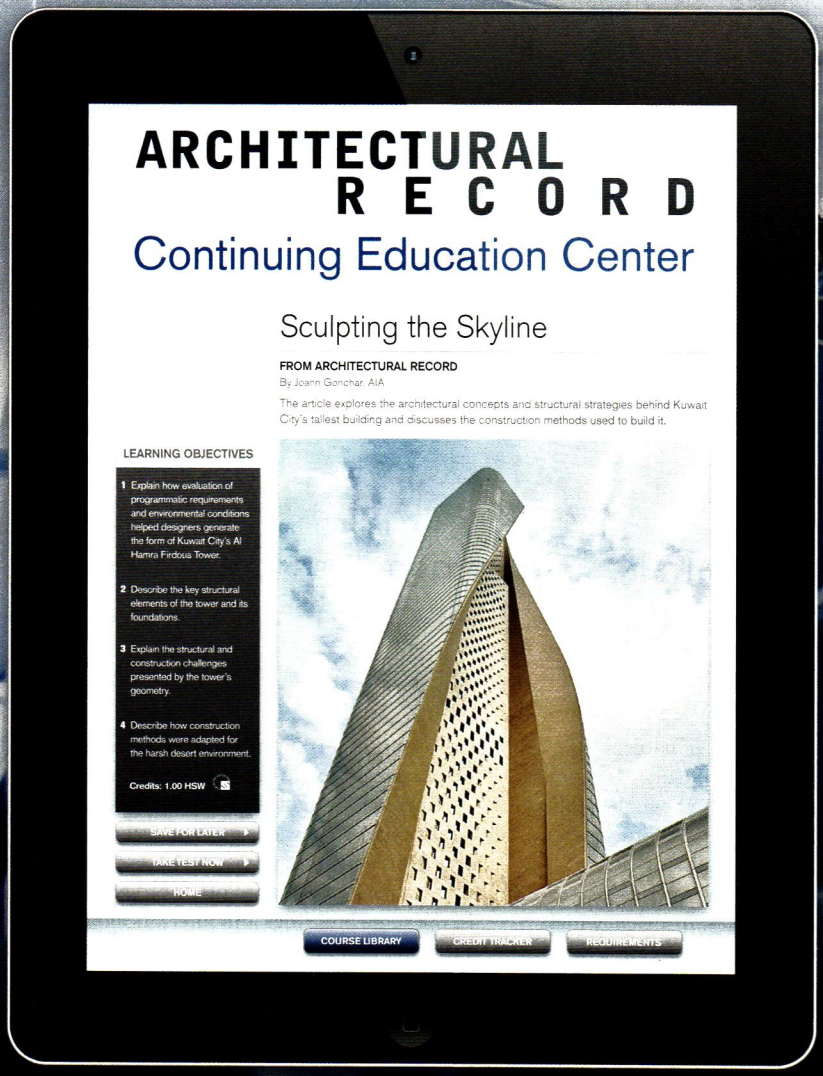

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Photo courtesy of WRCLA

Growing Bolder: Specifying Western Red Cedar for Architectural Applications

Offering new ways to design and build, Western Red Cedar benefits from better specs for both clear and knotty grades

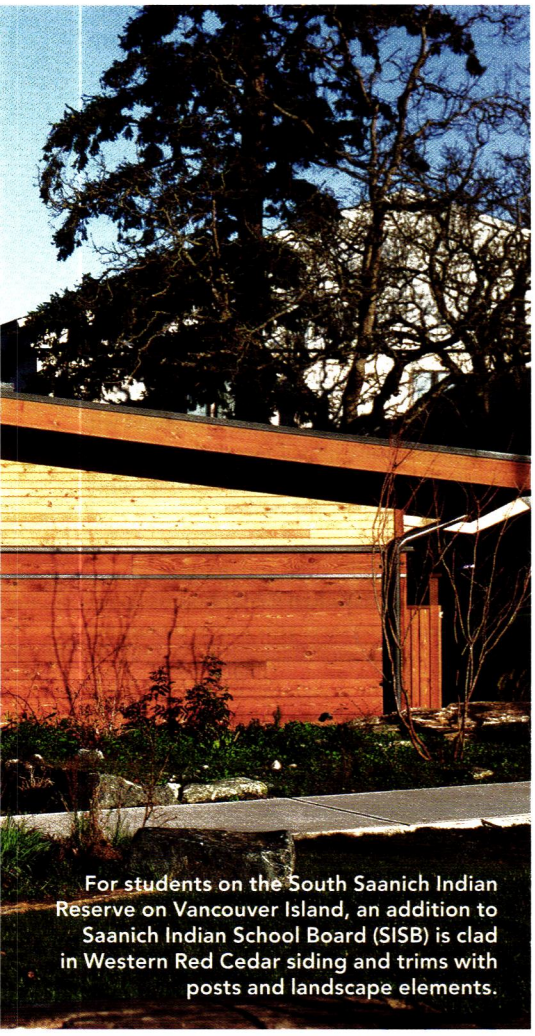
Sponsored by Western Red Cedar Lumber Association | *By C.C. Sullivan*

A number of related trends in architectural design today are contributing to a growing use of Western Red Cedar (sometimes called "red cedar" or "western redcedar"), a wood species that can present a number of performance advantages. Yet, like many natural materials, the general classification Western Red Cedar comprises a large range of potential traits and application options. Various grades, colors, patterns, and cut techniques account for much of the variety in use and design expression.

One segment of the grades spectrum for Western Red Cedar is *clear*, which displays a relatively "limited number of natural characteristics" according to RealCedar.com.[1] Clear grades are considered to be high-quality products, and for siding or trim, for example, they are normally supplied kiln-dried.

Contrasting with the clear variants is knotty cedar, also supplied kiln-dried, which offers more variety in visual characteristics and appearance and can be used to present a finish that is more textured and biomorphic. Described by designers as "smart casual," "rustic," and "optical," knotty cedar grades are also available for some light structural applications. Dimensional sizes of Western Red Cedar for light framing and structural joists and planks are typically kiln-dried or unseasoned.

Consideration of the use of knotty cedar opens doors to new design expression for architects, including those who use clear grades of Western Red Cedar in other projects—or in the same buildings and interiors alongside the other grades. Recent examples include the downtown Seattle storefront of retailer Columbia Sportswear, designed by Boston's Bergmeyer Associates (with Raja Slate tiles), or the award-winning Lobster Boat Residence on Seattle's Portage Bay by Chadbourne + Doss Architects, with the latter displaying both



For students on the South Saanich Indian Reserve on Vancouver Island, an addition to Saanich Indian School Board (SISB) is clad in Western Red Cedar siding and trims with posts and landscape elements.

exterior and interior applications. The knots—left by the base of a side branch or a dormant bud, yielding areas of hardened, darkened wood in roughly circular patterns around which the grain direction flows—can be exploited for a number of visual effects.

Grades as well as standards for the wood species are defined and promulgated by the National Lumber Grades Authority (NLGA), West Coast Lumber Inspection Bureau (WCLIB), and Western Wood Products Association (WWPA) in addition to WRCLA producer standards. Several are suitable for siding and trim, one of the most common architectural uses of Western Red Cedar, says Paul Mackie, a technical specialist and field representative for the lumber association. For example, bevel siding—the most widely used kind, in which the lumber is resawn at an angle to create a thicker edge and a more slender edge—is offered on the following categories:

- Clear Vertical Grain (VG) Heart. The highest grade for bevel siding, all clear VG heart grade is sawn vertical grain, also known as edge grain, and kiln dried. The smooth faces should be free from any "growth characteristics" that could impact performance or look, says Mackie, so they hold finishes well and exhibit the best dimensional stability.
- A Clear. This is also a fine grade meant for consistent appearance, though it allows more growth characteristics in pieces of mixed grain—both vertical and flat. They may be sold along with B grade pieces of cedar.
- Clear Rustic (also called Clear Tex). Where a more rustic or saw-textured appearance is desired, the rustic grade may be suitable, with its limited growth characteristics that offer a distinctive look but do not detract from serviceability.

Clear Vertical Grain and A Clear bevel siding are graded for smooth face applications but are generally also reversible to the resawn face.

On the other hand, some designs call for the special look of knotty Western Red Cedar, which adds warmth and impact as a bevel siding or trim product. The look is essential to the Lobster Boat House project, which blends the wood with reinforced acrylic sheets and fiber cement panels to "celebrate its location" on a dense urban shoreline site. In addition to reusing an existing floor and basement foundation, the building employs materials and systems "based on low monetary, environmental, and life-cycle costs."

In this way, knotty cedar has earned a reputation as a value specification, though it is seen in high-end building projects including

The signature retail spaces for Columbia Sportswear Company and subsidiary brand Mountain Hardwear created a storefront of knotty Western Red Cedar leading into nearly 20,000 square feet of retail space on a highly visible corner in Seattle.

Photo by Benjamin Benschneider, courtesy of WRCLA

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Learning Objectives

After reading this article, you should be able to:

1. List the grades and standards applied to Western Red Cedar, explaining their impacts on appearance, durability, and environmental qualities.
2. Describe the differences and benefits of using Western Red Cedar clear grades and knotty grades, including their resilience and sustainability benefits.
3. Discuss the applications and situations in which one can specify clear or knotty Western Red Cedar, or both, such as for siding, trims, decking, and interiors.
4. Explain using case studies how Western Red Cedar has been used to achieve architectural and green building objectives.

To receive credit, you are required to read the entire article and pass the test. Go to **ce.architecturalrecord.com** for complete text and to take the test for free.

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CASE STUDY #1

SAANICH JUNIOR HIGH SCHOOL, SAANICH, B.C., CANADA

For this addition to the educational campus serving students of the four Coast Salish Indian bands at the South Saanich Indian Reserve on Vancouver Island, the Saanich Indian School Board (SISB) sought a school building that would relate to the existing campus structures—which have lots of wood—reference traditional, indigenous building forms, and utilize local materials. Western Red Cedar can be found throughout: in exterior siding, trims, posts, and landscape elements, as well as a bench and a traditional canoe suspended overhead in the entry hall. Referencing traditional plank houses, the form integrates responses to solar orientation that vary by elevation: open on the northeast, shaded with WRC screens and overhang elements on the southwest. The cladding is a combination of 1-inch x 6-inch lapped and 1-inch x 4-inch tongue-and-groove Western Red Cedar siding in Select Knotty, rough sawn with a semitransparent stain. The effect is rustic, reflecting the existing school building and gymnasium structures, while expressing a coherent relationship to the surrounding woodland and to the traditions of the Coastal Salish peoples in the area.

country clubs, resorts, and high-visibility commercial settings. In these applications, two kinds of knotty grades are used for siding:

- Select Knotty. As expected, this grade has knots and other natural features, though the knots must be sound and tight. In occasional cases, the siding boards may be prepared with knots glued on the reverse face. It may also be sold with a percentage of Quality Knotty grade. (NLGA 205b/WCLIB 111-f)
- Architect Knotty. This product is designed for siding detailed with the resawn face exposed, after trimming, to fit the needed stud wall spacing or other substrate conditions. These boards have no open areas or through defects, and adhesives may be used, in a small number of cases, on the reverse face to secure knots. This is a good, kiln-dried grade for factory priming or finishing.

Other types of siding call for different grades and wood standards. For example, the vertically articulated board-and-batten claddings are typically made with rough-sawn, kiln-dried wood or boards surfaced on one side and two edges. On the other hand, lap sidings with shadow line effects, such as channel siding—whether installed vertically, horizontally, or diagonally—can use knotty grades including Select Knotty or A Clear-type pieces. Other siding profiles can be seasoned or unseasoned and can be clear or knotty grades, but in general, specialists will rarely recommend diagonally applied sidings. The claddings should be kiln-dried for best results. Lap siding types may also be specified as:

- Clear Heart, the highest grade for clear Western Red Cedar. This grade includes only pieces with heartwood on the exposed face. Some pieces may have minor imperfections, but overall the grade ensures a fine, consistent appearance.

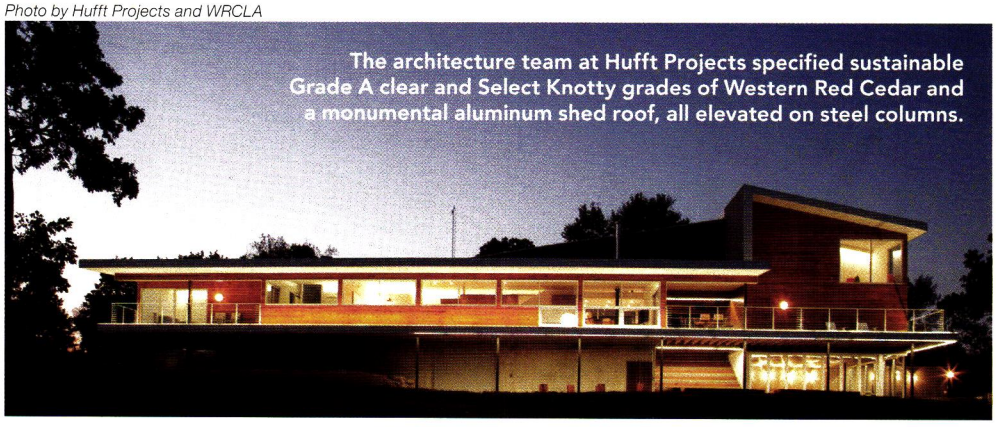
Trim boards are another common architectural application, and grades and textures for Western Red Cedar boards have been developed to serve this niche, including both clear and knotty varieties.

Enhancing the design flexibility, the boards can be textured as rough, surfaced on one side, two edges and surfaced on four sides. If knotty is preferred, the best grades to choose are Select Knotty and other proprietary or in-house grades determined suitable by the producer. Where clear Western Red Cedar is desired for kiln-dried finish lumber, Clear Heart and A Clear grades are typically used. Two additional grades are available for trim made of unseasoned or seasoned clear grades:

- C and Better Clear. This is high-quality lumber for use where appearance is important, used both as trims and for cabinetry, doors, windows, and the like.
- D Clear. For general utility and cost savings, this grade may be allowed. It permits larger and more numerous natural visual characteristics. Cross-cutting may be necessary to achieve the best results for this grade.

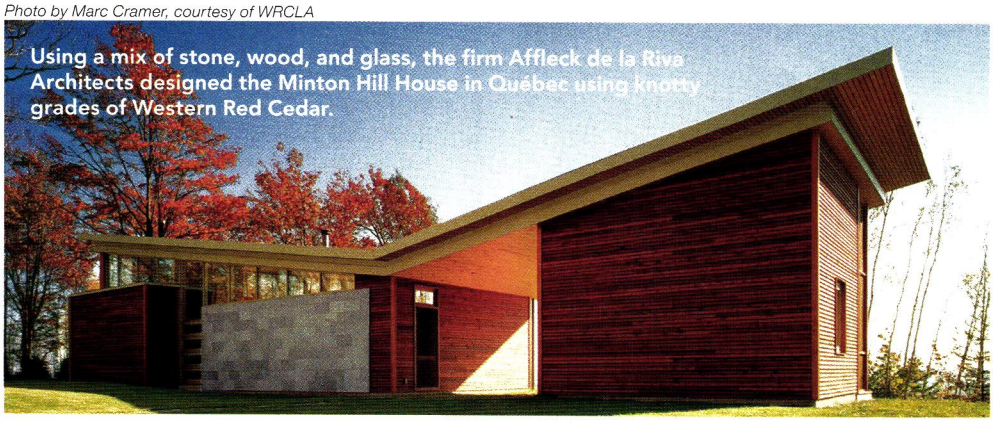
For trim boards and for some kinds of siding, there are also proprietary grades—a term that means the wood is designed to meet the appearance requirements given by the architect and defined, agreed, and "graded" by the producer. In this case, the architect and project team should work with the manufacturer to understand the specifications written in terms of nomenclature and visual results.

Photo by Hufft Projects and WRCLA



The architecture team at Hufft Projects specified sustainable Grade A clear and Select Knotty grades of Western Red Cedar and a monumental aluminum shed roof, all elevated on steel columns.

Photo by Marc Cramer, courtesy of WRCLA



Using a mix of stone, wood, and glass, the firm Affleck de la Riva Architects designed the Minton Hill House in Québec using knotty grades of Western Red Cedar.

DECKING AND TIMBERS

In some cases, Western Red Cedar decking is specified and designed by the architectural team, especially when part of a custom or commercial project. Two grades apply to decking, and a third knotty grade is specified for timbers:

- Architect Knotty. As with siding assemblies, this grade is specified for the best-quality, most visually consistent knotty timber, boards, or

trims. The Architect Knotty standard, defined by WRCLA, requires sound and tight knots. Architect Knotty may not have any holes or wane on the graded face, which describes the presence of bark or lack of wood from any cause on edges or corners. Kiln-dried materials are well-suited to factory finishing.

- Custom Knotty. Defined to combine good looks and budgetary value, the Custom Knotty standard is applied only to decking. Unlike the Architect Knotty grade, the Custom Knotty grade limits holes and restricts wane and unsound knots to a lesser degree.
- Appearance Knotty. Used for timbers only and for both structural and nonstructural uses, Appearance Knotty grades of Western Red Cedar are manufactured to meet the visual requirements of quality projects, thus explaining its name. However it is known for value, not just appearance. No holes or other inappropriate characteristics are allowed, and wane allowances are highly restricted to ensure well-defined corners.

There are other standards for Western Red Cedar that architects may employ in project specifications, including the lower-cost Standard and Better category, used for general construction and other applications where structural benefit should outweigh the need for uniform, quality appearance. This contrasts with Select Knotty, the grade of product for trim boards with sound, tight knots and other natural features known for strong visual character and performance traits ideal for exterior and interior applications. In some cases, this grade may include a percentage of Quality Knotty grade.

For decking and similar applications, the knotty varieties contrast with the clear grades of Western Red Cedar, including *Architect Clear*, a WRCLA standard that requires the greatest possible, strictly controlled visual appearance. Whether seasoned or unseasoned, the products' fine appearance can be costly, and many projects require a custom order for the lot of specified material, rather than finding off-the-shelf availability. Alternatively, some decking and other applications may benefit from the *Custom Clear* grade of Western Red Cedar, which delivers the wood's stability and durability in a sophisticated clear appearance ideal for the most discriminating designers. Custom Clear requires a finely machined surface that shows limited characteristics that could detract from its visual attractiveness, making it a frequent specification for custom homes and nonresidential projects requiring fine woodwork.

Western Red Cedar is also widely used for large buildings in which "both the strength and appearance of exposed wood members are of equal importance; and second, in landscape, park, and garden structures where appearance is paramount," according to WRCLA, which may include outbuildings, gazebos, and pergolas as well as classic exposed heavy-timber lodge buildings, residences, and commercial structures. In these cases, the naturally resilient qualities of the wood provide a lasting and weather-resistant construction of exposed timbers. For timber construction, the offered grades of clear Western Red Cedar include:

- No. 2 and Better Clear, for the finest-quality rough lumber.
- C and Better Clear and D and Better Clear, which offers good appearance in high-quality lumber suitable for architectural landscape structures and as exposed posts and beams in heavy timber construction. The grades may be mixed, and D Clear will have large and more numerous natural traits that are acceptable for outdoor structures. Cross-cutting may be necessary with lower grades of Clear to achieve the required results.

Appearance Knotty grades are also offered as a nonstructural component of timber and outdoor structures. In addition, there are three structural grades: Select structural, No. 1 Structural, and No. 2 Structural, which are evaluated for strength and stability and employed in engineered applications where appearance is not an important specification criterion. (Timbers may be ordered that meet both appearance and structural standards.) Similarly, Standard beams posts and timbers are like utility lumber or rough lumber, used for "general construction purposes where serviceability is more important than appearance."

See endnote in the online version of this article.

Continues at ce.architecturalrecord.com

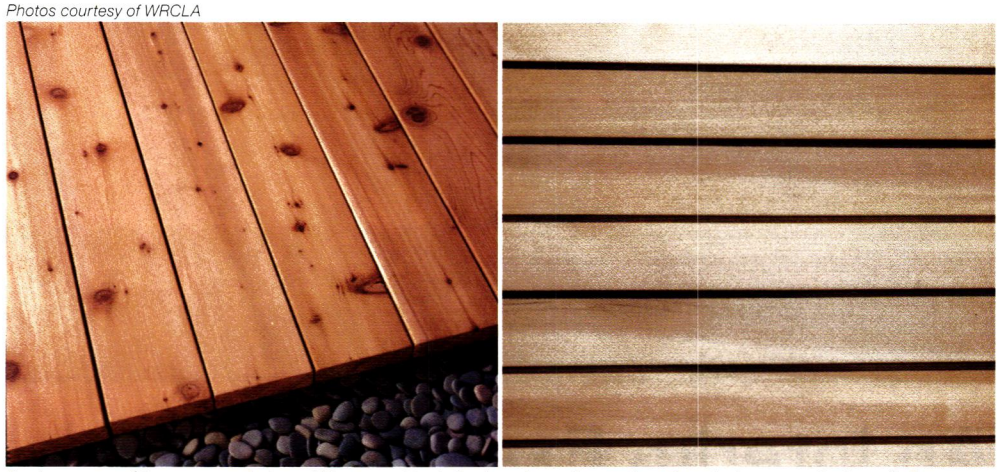
***C.C. Sullivan** is a marketing consultant and content studio specializing in the architectural industries and AEC firms (www.ccsullivan.com).*

CASE STUDY #2

POSTCARD HOUSE, BRANSON, MO.

Using knotty grades of Western Red Cedar and a monumental shed roof, the architect Matthew Hufft of Hufft Projects, Kansas City, designed this dwelling on a steep, wooded lakefront in Branson West, Missouri, based on inspiration from a vintage Polaroid camera. "It is all about the views and the experience," says Hufft, explaining that the framed landscape explains the home's name. The solution is elevated on steel columns with minimum site paving, with an exterior clad in sustainable Grade A clear and select knotty Western Red Cedar, contrasting against the aluminum roof plane. "It was a natural fit in the wooded setting," says the architect. "A high level of precision and craft went into the construction of the residence, and Western Red Cedar satisfied this requirement."

Photos courtesy of WRCLA



A close up of knotty and clear Western Red Cedar show how the visual characteristics of the two grades are quite distinct, adding texture and optical qualities to architectural applications.

The Western Red Cedar Lumber Association is a Vancouver-based non-profit association representing 17 quality suppliers of Western Red Cedar lumber products in Washington, Oregon, and British Columbia (Canada). Founded in 1954 and known as "the voice of the cedar industry," the WRCLA delivers market programs throughout the United States and Canada to support its members' cedar products with information, education, and quality standards. **RealCedar.com**

CIRCLE 75

To deal with that extensive space, the design team brought in acoustical ceiling tiles with ceiling fixtures and dropped pendants.

An Interim Executive Dining Facility Is a Good Business Decision for the B School

Harvard chooses quality, speed, and sustainability with a frame-supported, architectural membrane-clad, food service complex

Sponsored by Sprung Instant Structures Inc. and Kitchens To Go, LLC

Harvard Business School's Kresge Hall, which was built in the 1950s and served primarily as an executive education dining center, was slated to be torn down to make space for a replacement facility. While the B school stood to gain an important new building, a pressing question became what to do in the meantime. How could Harvard accommodate the scores of prestigious executives who came to attend its executive education program in the style to which they had become accustomed—all in a high-end solution that could be mobilized quickly, cost effectively, sustainably and, above all, not look like a temporary solution but like a permanent facility that fit well with other buildings on campus? This article will discuss how Harvard solved this dilemma and the design team's process, challenges, and accomplishments, and go on to describe the elements of such a facility from both a structural and foodservice operations standpoint. Also covered will be experiences with similar interim facilities at other universities.

THE HARVARD EXPERIENCE

Harvard University is replacing its famed Kresge Hall in order to make space for the new Ruth Mulan Chu Chao Center, following a $40-million donation by the Chao family. The new center is named after Ruth Mulan Chu Chao, wife of James Si-Cheng Chao and

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Learning Objectives

After reading this article, you should be able to:

1. Explain the value of a team approach to quickly mobilizing a high-end interim structure.
2. Compare the energy efficiency profile of a properly insulated architectural fabric structure to that of a pre-engineered metal building and conventional construction.
3. List the advantages of a coated architectural membrane.
4. Evaluate the cost effectiveness of a temporary kitchen facility vs. other alternatives.

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Photos courtesy of Kitchens To Go/Sprung Structures

The interim kitchen facility at Harvard Business School is an aesthetically pleasing structure with high-end finishes.

the mother of six daughters, four of whom graduated from the Business School. The Chao Center, which broke ground in 2014, will serve as a central space for participants in the executive education program by providing classrooms, dining services, and offices.

Bridging the gap during construction and providing the same high-quality dining services to its prominent clientele took Harvard beyond the obvious solutions. In any such situation, the alternatives include off-the-shelf, temporary trailers, which, in this case, lacked a quality finished look consistent with Harvard's prestigious image, or a conventional building, which would have required a significantly longer build out. After much deliberation, Harvard Business School, or the B School, as its commonly known, opted to go with an architectural membrane structure and high-tech modular kitchen structures whose refined finishes and exterior appearance fit the university's objectives. The interim executive education dining and kitchen facility, which will operate for some 32 months while the new facility is built, opened in March 2014, meeting key aesthetic considerations as well as strict budgets and timelines—a solution that was not previously available on such a high level.

The Importance of Color

A key factor in Harvard's decision to go with a membrane structure was color—specifically, the fact that the membrane exterior could be color matched to the exterior of the existing architecture at Harvard. The university took advantage of a new development—a Kynar®-coated[1] membrane, the only such product currently available that provides a proven color-fast solution that will not fade. Previously available on metal coatings, within the past year Kynar has become available as a coating on membrane. Kynar is a polyvinylidene fluoride (PVDF) resin[2] used in the makeup of fluoropolymer resin-based coatings. Fluoropolymer resin-based coatings take advantage of the inherent strength of the carbon-fluorine bond, one of the strongest known to science.

A Stress Membrane Structure with High-End Finishes

Architecturally, the interim facility is a stress membrane structure that is made up of a series of aluminum frames covered with a polyvinyl chloride (PVC) membrane stretched between them. The structure itself, which utilizes a number of 5-foot 10-inch aluminum I-beams to span the 80-foot width, is set up to be a permanent facility (though relocatable in design) and will be on site for up to 32 months. Full HVAC facilities are incorporated to keep occupants cool in summer and warm during the winter months—this works very efficiently thanks to the 8-inch-thick (r25) blanket of fiberglass insulation within the walls of the structure.

The university brought in a noted design team, Shepley Bulfinch, to work specifically on the interior of the dining and servery area. Designers specified high-end finishes and solved multiple space issues. "The volume was the piece we focused on the most," says Sara DiNoto, associate at Shepley Bulfinch. One challenge was fitting the required number of seats and the servery within the length and width of the structure, and creating viable transitions between the seating area and the servery. "We looked at a few ways of how we were going to

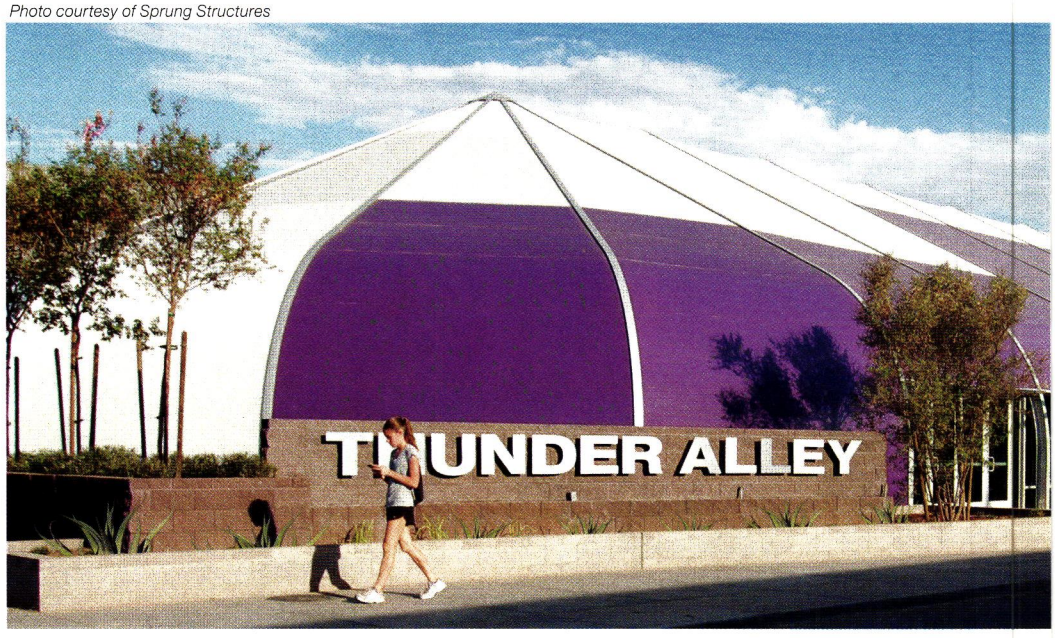
anchor the space with the servery," says DiNoto, explaining that ultimately a few partitions were built to create an endpoint and serve as a "storefront" for that piece of the structure.

Another issue was the high ceiling which afforded considerable volume above the usable portion of the building. To deal with that extensive space, the design team brought in acoustical ceiling tiles with ceiling fixtures and dropped pendants. At the center, however, an open ceiling system with larger drum pendants was employed both to allow light from the skylight to shine through and to adjust the scale of the building.

The foodservice production facilities include cooking modules, prep modules, and cold and dry storage facilities as well as an in-house bake shop, all of which function to serve breakfast, lunch, and dinner. Breakfast is cooked entirely in house, and for lunch and dinner, some of the foods are brought in already prepared, such as the soup offerings. Other foods are finished and cooked in the facility, so the preparation and cooking area is used as a finishing kitchen and also as a full-function bakery, with all areas consolidated into an effective workflow.

Staff locker rooms and wash rooms are also included in the structure. In one of the key features of the interim dining and kitchen complex, designers integrated a series of enclosed modular walkways for efficiency and ease of transitioning between task areas. "The enclosed walkways provide an enclosed protected environment for the movement of food and production staff and tie the entire modular space together," says Ralph Goldbeck, AIA, partner at Kitchens To Go. The interface between the architectural membrane structure and the kitchen modules was given considerable attention, and has worked out to achieve open and free access visually, verbally, and physically.

Photo courtesy of Sprung Structures



During the construction process, a major concern was protecting the large, historic trees on the grounds. "It's one thing not to go through the trees but you also have to be careful of their root systems and any loads that you are imposing within these systems," says Rob Pierce, director of Shepley Bulfinch. "We all struggled with ways to thread the facility amongst the trees." The solution involved the installation of a series of large-scale girders that span the rootball of these large specimen trees, so as to not stress the tree.

Users call the interim facility beautiful visually and operationally, and staff note that the work areas are efficient and effective. "No one can believe it is a temporary structure," says Todd Mulder, regional director at Restaurant Associates. "If you didn't tell people there were trailer modules back there, I don't think they would know."

TEMPORARY QUARTERS FOR THE U.S. NAVY

The U.S. Naval Academy at Annapolis, Maryland, opted for an interim solution. When King Hall, the on-campus galley, was outdated and needed renovation to meet current standards in serving 4,500 midshipmen approximately 14,000 fresh meals a day, a temporary kitchen complex was designed and built to substitute for the galley during the 18-month renovation period. The 38,000-square-foot facility was erected in less than 78 days, fully capable of producing more than 14,000 meals a day, and more than 6 million meals during the 18-month project term.

Foundations were set to serve as a sound base for the modular kitchen units, and a 350-ton crane was used to place the units and erect the stressed membrane structure. After the first three trusses were erected, contractors began to put up the first of the insulation and fabric, and place HVAC and large rooftop equipment on top of the units. Five more trusses were erected, creating an enclosure so that lights could be hung, plumbing installed, freezer and cooler units placed, and the skeleton for offices erected. Special penetrations were made in the fabric structure to enable installation of HVAC throughout the complex.

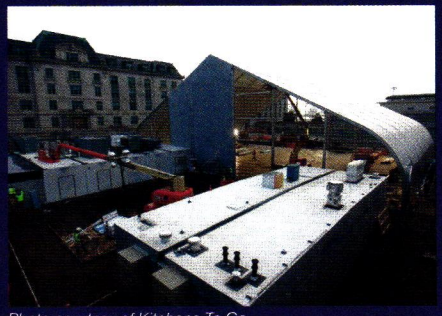
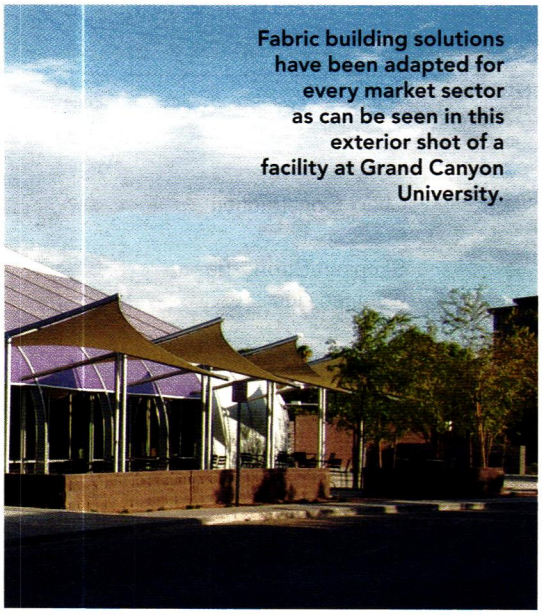


Photo courtesy of Kitchens To Go

Fully building code and health code compliant, the complex comprised 10 cooking modules featuring four clamshell griddles, 12 combi ovens, six 80-gallon steam kettles, separate bulk and dry issue refrigerators and freezers, dry storage spaces, and two warewash modules. The temporary complex was designed to allow bulk storage for dry and canned goods, with capacity to keep five to seven days worth of food in house at all times. Also included in the complex was a 7,000-square-foot center for administrative offices for Navy personnel and civilians who support the kitchen service as well as locker rooms, showers, and bathrooms for kitchen staff. An entire corridor system was constructed around all kitchen modules in the complex to facilitate efficient flow of food and people from the structure to serve the midshipmen in King Hall—a flow that was considered more efficient for serving 14,000 meals a day than that seen in conventional facilities.

Despite a compressed schedule, a tight work space, and Maryland's worst winter on record—three blizzards hit the site during construction—the temporary kitchen complex was completed within the 10-week construction deadline.



Fabric building solutions have been adapted for every market sector as can be seen in this exterior shot of a facility at Grand Canyon University.

Photo courtesy of Kitchens To Go

Candidates for mobile kitchens include quick-serve and off-premise foodservice operators.

HIGH-PERFORMANCE FABRIC BUILDING SOLUTIONS EXPLAINED

The stressed membrane structure has been around for more than three decades. Patented in the late 1970s as an alternative to existing construction methods, these permanent, habitable tension-membrane structures were first used for the oil and gas industry in both arctic and desert climes, and eventually adapted for use in virtually every market sector.

Fabric Building—Engineered for Performance and Designed to be Relocated and Repurposed

No, a fabric structure is not a tent. It is an engineered stressed membrane structure that is a customized solution for permanent or semi-permanent projects, and constructed of extruded aluminum arches that are integrally connected to an all-weather outer flame-retardant architectural membrane. Unlike a tent product with a short life as a temporary structure, an architectural membrane facility can serve as the basis for a habitable building for many years, and is structured to withstand high wind loads and designed to shed snow. The three building blocks of a fabric building solution are: substructure, architectural membrane, and insulation.

Substructure. While many times conventional construction relies on steel as its substructure material, a prefabricated and ready-to-assemble extruded aluminum substructure can provide greater versatility and performance. Aluminum offers several advantages over other substructure materials. It is rustproof and, unlike steel and wood, an aluminum substructure performs extremely well in humid environmental conditions. Aluminum's strength exceeds building codes and it is lightweight, about one-third the weight of steel. In terms of structural versatility, aluminum has an edge over other materials as it can be extruded into virtually any shape. Connections are bolted, not welded. Its ratio of strength-to-weight means it can provide more value for less weight—which in turn translates to easier, less expensive shipping and handling. Aluminum has an indefinite life expectancy, and has been shown to actually get stronger as it ages. Further, it is 100 percent recyclable, with no loss of quality.

Architectural membrane. Unique among construction materials, the architectural membrane affords architects the ability to enhance creative solutions using a strong, environmentally friendly, and energy-efficient product. An exterior architectural membrane can be superior in many ways to conventional types of construction, and offers one of the lightest materials on the market today and associated reductions in transportation and handling costs.

There are various types of membranes on the market.

Kynar formulated PVDF resins are one of the most stable and purest of all commercial resins, and are designed for permanent or long-term applications. The technology of protective coatings was first introduced in the late 1940s and continuously developed. It has evolved through the subsequent years with technological innovation. Initial applications occurred in chemical handling due to the resin's exceptional chemical resistance, and subsequently in other protective uses such as wire insulation, and ultimately in building protection due to its environmental durability.

Today Kynar PVDF is widely accepted for superior long-term performance where color retention, weatherability, and low-maintenance reliability are required. In architectural membranes, Kynar PVDF extends membrane life, protecting the aesthetic appearance, improving cleanability, and offering exceptional fire-retardant capability. Kynar PVDF-coated membranes offer low maintenance and a clean, bright look that is conducive to graphic treatments.

Weighing approximately 24 ounces per square yard, a Kynar PVDF-coated fabric has a blackout design that prevents solar gain and manages climate control while guarding against UV and airborne contaminants. Color choice is also among the many hallmarks of the architectural membrane.

See endnotes in the online version of this article.

Continues at ce.architecturalrecord.com

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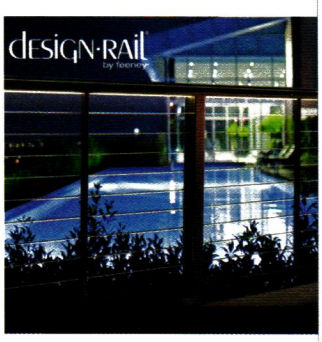

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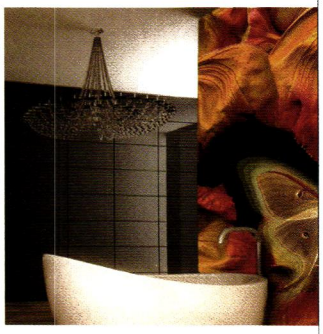

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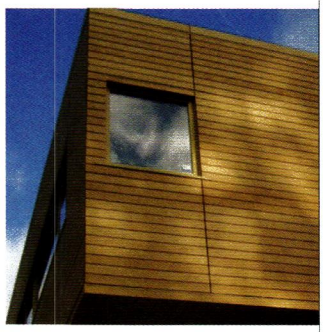

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New and Upcoming Exhibitions

NYC Makers: The MAD Biennial
New York City
July 1–October 12, 2014
This exhibition spotlights the creative communities thriving across the five boroughs of New York. It showcases the work of approximately 100 makers who have been nominated by a pool of more than 300 New York–based cultural leaders, with final participants selected by a jury. From world-renowned cultural leaders to emergent enfants terribles, every maker selected demonstrates the highest level of skill in their respective field, whether architecture, furniture design, fashion, or film. At the Museum of Arts and Design (MAD). For more information, visit madmuseum.org.

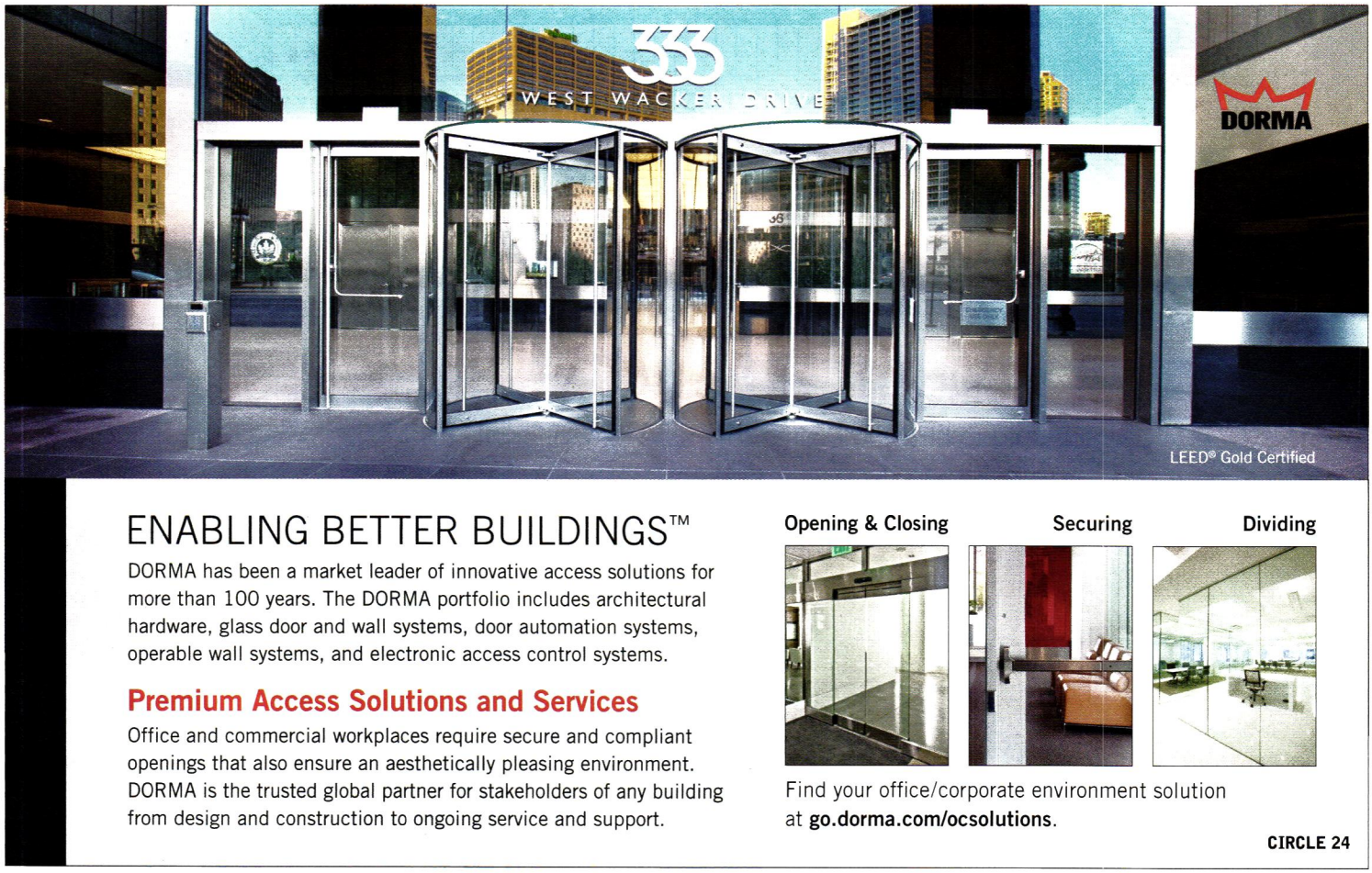
Louis Kahn: The Power of Architecture
Shad Thames, London
July 9–October 12, 2014
Louis Kahn (1901–1974) was a visionary architect, an expert manipulator of form and light, a creator of uniquely dramatic buildings, and a highly complex individual. This new exhibition at the Design Museum explores Kahn's work and legacy through architectural models, original drawings, travel sketches, photographs, and films, bringing to life his singular career and diverse output. *The Power of Architecture* explores such broad themes as ruins and archetypes, the world as structure, and community. For more information, visit designmuseum.org.

Mackintosh Architecture
Glasgow
July 18, 2014–January 4, 2015
The result of a four-year research project led by The Hunterian museum at the University of Glasgow, *Mackintosh Architecture* is the first major exhibition to be devoted to Mackintosh's architectural work, featuring more than 80 architectural drawings, films, models, and rarely seen archival material from The Hunterian and collections across the U.K. The exhibition is supported by three special displays that showcase Mackintosh's skills as a draughtsman and designer, including his travel sketches and still-life compositions. At The Hunterian. For more information, visit glasgow.ac.uk/hunterian.

Unsettled Landscapes
Santa Fe, New Mexico
July 20, 2014–January 11, 2015
Unsettled Landscapes will look at the urgencies, political conditions, and historical narratives that inform the work of contemporary artists across the Americas—from Nunavut to Tierra del Fuego. Through three themes—landscape, territory, and trade—this exhibition at SITE Santa Fe explores the interconnections among representations of the land, movement across the land, and economies and resources derived from the land. For more information, visit sitesantafe.org.

Ongoing Exhibitions

Design Revolution: Innovating for a Better World
Atlanta
Through August 3, 2014
Based on the idea that design is a way of looking at the world with an eye toward changing it, this exhibition offers a glimpse of the ways designers, engineers, students, professors, architects, and social entrepreneurs from the Southeast are designing solutions to the problems of the 21st century. These real-world



problems range from the purification of water to the provision of shelter for the homeless, and from the rethinking of transportation systems to the development of games that produce positive world outcomes by teaching, training, and raising awareness of social issues. At the Museum of Design Atlanta. For more information, visit museumofdesign.org.

Heather Flood's Punk'd
Los Angeles
Through August 3, 2014
Heather Flood's Punk'd installation at the SCI-Arc Gallery explores the visual effects that can be produced when two-dimensional graphic patterns are translated into 3-D constructions. At the intersection of architectural and graphic form, *Punk'd* slips between two and three dimensions into a space of 2.5-D, where color, pattern, and luminosity are precisely calibrated in an effort to augment the effects of three-dimensional form. For more information, visit sciarc.edu.

Hans Scharoun: Architect and Visionary
Cambridge, Massachusetts
Through August 15, 2014
Hans Scharoun (1893–1972) is known today for expressionist architecture of profound humanism. Having gained recognition for his house designs at the German Werkbund exhibitions of 1927 and 1929, his practice before World War II focused on residential projects, the most successful of which were the Siemensstadt Housing Estate in Berlin (1930) and the Schminke House at Löbau in Saxony (1932). This exhibition at the MIT School of Architecture + Planning focuses on Scharoun's graphic art, from his earliest preserved drawings of 1909 to graphics for posthumous projects. For more information, visit mit.edu.

Finland: Designed Environments
Minneapolis
Through August 17, 2014
The first major U.S. exhibition devoted to contemporary Finnish design since the 1990s, *Finland: Designed Environments* will present a holistic overview of the past 15 years in Finland, a period of rapid innovation and design breakthroughs. The exhibition, hosted by the Minneapolis Institute of Arts, pays particular attention to young Finnish architects emerging as major international voices such as K2S Architects, Hollmén Reuter Sandman, Verstas Architects, and others. For more information, visit new.artsmia.org.

Wright Around Chicago & The Pedal Oak Park Guided Tours
Chicago & Oak Park, Illinois
Through August 27 & September 28, 2014
Two popular bus tours allow people to experience the wealth of Frank Lloyd Wright–designed buildings in the Chicago area. The Wright Around Chicago guided bus tour features the best of Frank Lloyd Wright in Chicago and Oak Park, Illinois, and runs June 4 through August 27. The Pedal Oak Park guided bicycle tour stops at 22 Wright-designed structures in the Frank Lloyd Wright-Prairie School of Architecture Historic District in Oak Park and runs June 6 through September 28. For more information, visit flwright.org.

Italian Futurism, 1909–1944: Reconstructing the Universe
New York City
Through September 1, 2014
The first comprehensive overview in the United States of one of Europe's most important 20th-century avant-garde movements, *Italian Futurism* features more than 360 works by more than 80 artists, architects,

designers, photographers, and writers. This multidisciplinary exhibition at the Solomon R. Guggenheim Museum examines the full historical breadth of Futurism, from its 1909 inception with the publication of Filippo Tommaso Marinetti's first Futurist manifesto through its demise at the end of World War II. For more information, visit guggenheim.org.

Open to the Public: Civic Space Now
New York City
Through September 6, 2014
An exhibition exploring why people gravitate to (or avoid) civic spaces—the places between buildings where people can assemble—the exhibition's 20 civic spaces are divided into three intersecting themes: congregation, contemplation, and circulation. *Open to the Public* presents the work of contemporary designers, including Snøhetta, Weiss/Manfredi, and James Corner Field Operations along with other almost unnoticed places where people gather. At the Center for Architecture. For more information, visit cfa.aiany.org.

Palaces for the People: Guastavino and the Art of Structural Tile
New York City
Through September 7, 2014
At the Museum of the City of New York, this exhibition showcases the architectural beauty and engineering strength of spaces created by Spanish immigrants Rafael Guastavino and his son, Rafael Jr., who immigrated to New York from Barcelona in the late 19th century. Their legacy can be seen in thin-tile structural vaults hidden in plain sight throughout New York, including Grand Central Terminal, the famous Oyster Bar, the Cathedral of Saint John the Divine, the Ellis Island Registry Hall, the Elephant House at the Bronx Zoo, the Boathouse, the Tennis Shelter in Prospect Park, and many others. For more information, visit mcny.org.

Architecture in Uniform: Designing and Building for the Second World War
Paris
Through September 8, 2014
Open to the general public at the Cité de L'Architecture et Du Patrimoine, following its presentation in Montreal in 2011, *Architecture in Uniform* investigates the consequences of the Second World War to the built environment and reveals the immense development undertaken by architecture during these years. Curated by Jean-Louis Cohen, the exhibition features drawings, photographs, posters, books, publications, models, historical documents, and films from all sides of the conflict. For more information, visit cca.qc.ca.

Konstantin Grcic
Weil am Rhein, Denmark
Through September 14, 2014
The Vitra Design Museum is now presenting the largest solo exhibition on Konstantin Grcic and his work to date. Specifically for this exhibition, Grcic has developed several large-scale works rendering his personal visions for life in the future—a home interior, a design studio, and an urban environment—on which fictional scenarios are staged, confronting the viewer with the designer's inspirations, challenges, and questions. The highlight of these presentations is a 30-meter-long panorama that depicts an architectural landscape of the future. For more information, visit design-museum.de.

Houghton Hall: Portrait of an English Country House
Houston
Through September 22, 2014
For the first time, a collection of paintings, sculptures, and decorative arts from Houghton

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Hall in England—architect William Kent's 18th-century masterpiece—travels to the U.S. The exhibition brings together more than 100 objects and furniture, some designed by Kent himself, to evoke the stunning rooms at Houghton Hall. At the Museum of Fine Arts. For more information, visit mfah.org.

EXEMPLARY: 150 Years of the MAK—From Arts and Crafts to Design
Vienna
Through October 5, 2014
This exhibition examines how the MAK, established in 1864, has developed from being a traditional educational institution for Austrian craftspeople into one of the world's most important museums of architecture and contemporary art and design. The exhibition relies on objects, books, and magazines from MAK's collection to trace the turning points in design history. At the MAK Exhibition Hall. For more information, visit mak.at.

HOLLEIN
Vienna
Through October 5, 2014
The extensive exhibition *HOLLEIN*, presented at the MAK in collaboration with the University of Applied Arts Vienna, will delve deeper into the universe of Hans Hollein, the only Austrian to have won the Pritzker Prize to date, and present his entire oeuvre from a new perspective, revealing a range of material from his archive that has never before been on public display. For more information, visit mak.at.

Designing Home: Jews and Midcentury Modernism
San Francisco
Through October 6, 2014
The first major exhibition to explore the role of Jewish architects, designers, and patrons in the formation of a new post–World War II American domestic landscape, *Designing Home* highlights the essential contributions of well-known designers and architects, among them Anni Albers, George Nelson, and Richard Neutra. With more than 120 objects, *Designing Home* is organized around five key areas including furniture, Judaica, and Hollywood. At the Contemporary Jewish Museum.
For more information, visit thecjm.org.

Designing for Disaster
Washington, D.C.
Through August 2, 2015
From earthquakes and hurricanes to flooding and rising sea levels, natural disasters can strike anywhere and at any time. In light of this stark reality, the National Building Museum presents a multimedia exhibition

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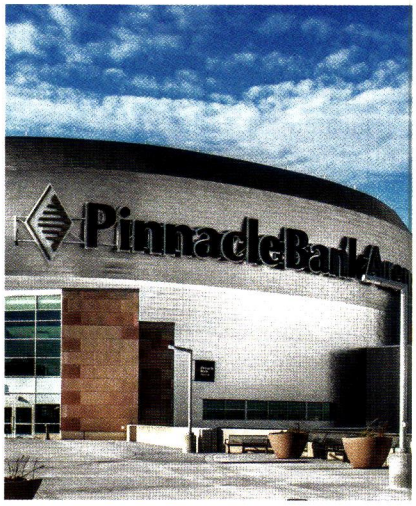

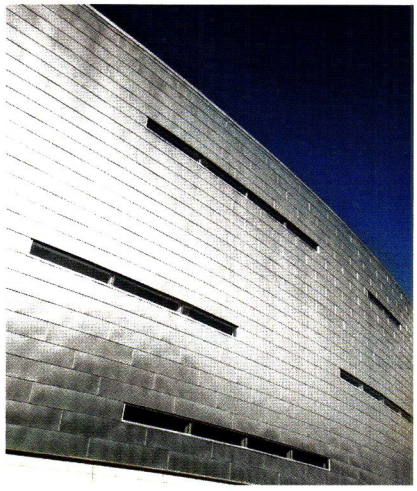

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titled *Designing for Disaster*, a call to action for citizen preparedness on the part of design professionals, local decision-makers, homeowners, and school kids. The exhibition explores strategies local leaders are currently pursuing to reduce risks and build more disaster-resilient communities. For more information, visit nbm.org.

Competitions

Moriyama RAIC International Prize
Submission deadline: August 1, 2014
The Moriyama RAIC International Prize is a biennial architecture prize open to any architect or firm with an outstanding building or project. The prize recognizes architecture that reflects Canadian architect Raymond Moriyama's focus on social justice, equality, and inclusivity. The winner will receive $100,000. Three individual cash scholarships of $5,000 will be awarded for three student essays. For more information, visit raic.org.

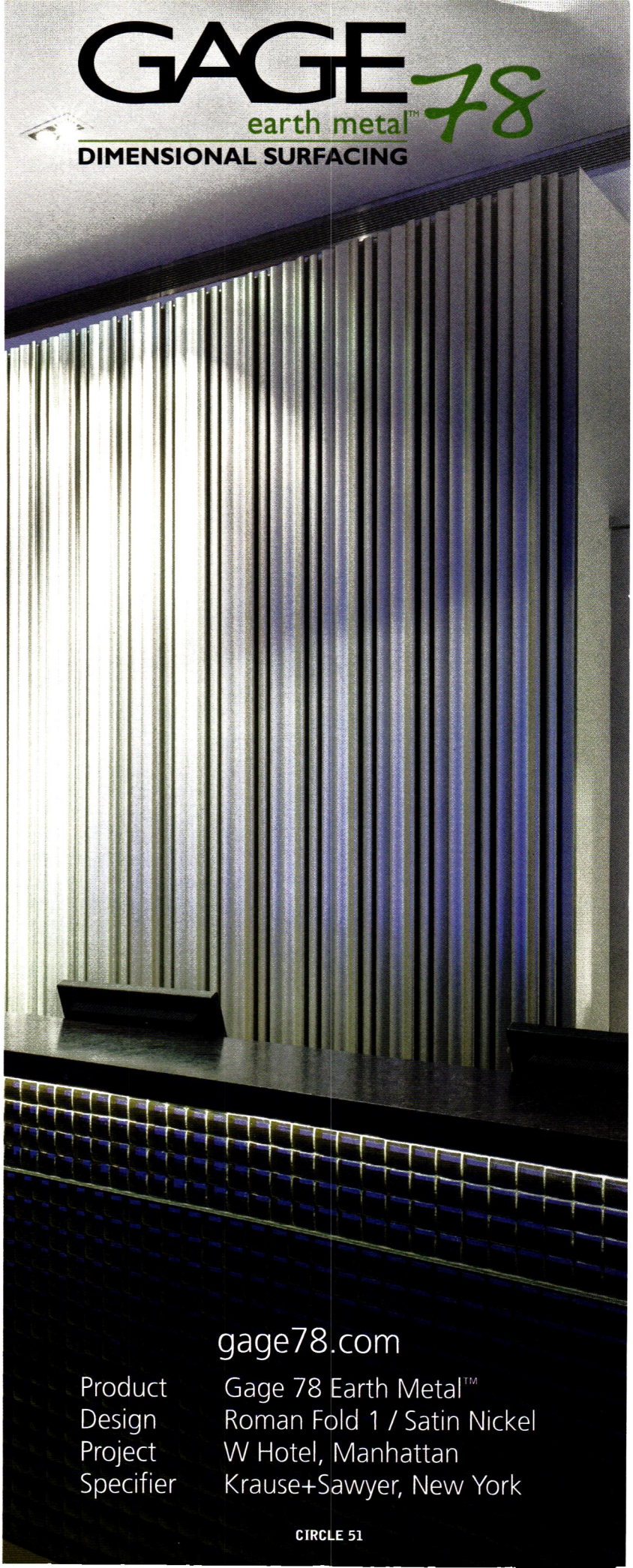
Society of Architectural Historians Award for Film and Video
Application deadline: August 1, 2014
An annual award that recognizes the most distinguished work of film or video concerning the history of the built environment, the Society for Architectural Historians Award values, above all, a work's contribution to its understanding, defined either as deepening that understanding or as bringing that comprehension to new audiences. Other criteria include a high standard of research and analysis, and excellence in design and production. For more information, visit sah.org.

Mud House Design 2014
Registration deadline: August 15, 2014
Nka Foundation invites students to Mud House Design 2014, an international architecture competition to demonstrate that mud architecture can be well-made and durable. Designs should be for a single-family home, and use local materials and labor. The first place–winning entry will be built in the Ashanti Region of Ghana. For more information, visit nkafoundation.org.

vision42design Competition
Registration deadline: September 8, 2014
The Institute for Rational Urban Mobility is hosting a design competition to imagine an enhanced public environment for 42nd Street in Midtown Manhattan. Participants should transform the street into a world-class boulevard, complete with public spaces and a light-rail tram. Prizes include $10,000 and a feature in *The Architect's Newspaper*. For more information, visit vision42.archpaper.com.

Breaking New Ground
Registration opens October 2014
Breaking New Ground is an international design and ideas competition that addresses the urgent affordable housing needs of farmworker and service-worker families in the Coachella Valley in southeastern California. Efforts to improve living conditions suffer from a lack of funding and coordination. The competition seeks to address this by harnessing the power of design to envision new precedents, mechanisms, and policies for affordable-housing implementation and development, with implications for California and the nation. For more information, visit breaknewground.org.

E-mail information two months in advance to recordevents@mcgraw-hill.com.



snapshot

PROJECT TRANSARQUITETÔNICA
LOCATION SÃO PAULO
DESIGNER HENRIQUE OLIVEIRA

OSCAR NIEMEYER was famous for his organic architecture. Now artist Henrique Oliveira takes the Brazilian architect's approach one step further at the Museum of Contemporary Art of the University of São Paulo, which is housed in Niemeyer's 1955 Palace of Agriculture in Ibirapuera Park. In an annex of the building, the artist created a sprawling 250-foot-long installation. *Transarquitetônica* is about the transformation of space, says Oliveira, as well as material, for which he looked to the city as his primary source, collecting discarded scraps of billboards and plywood. The result is a series of spaces that devolves from Niemeyer's modern long white gallery into brick-and-mud chambers evoking the rough interiors of a favela, and finally morph into an enveloping burrowlike environment covered in variegated strips of wood. "The lanky shape of the original room suggested the possibility of a spatial narrative," says Oliveira. To build these organic caverns, Oliveira covered a skeleton of bentwood poles with thin pieces of plywood and a barklike veneer. By reconstituting these cast-off materials, the artist hopes to liberate them from their manufactured state; on the exterior, the work resembles a gnarled root system. It lies at the junctures between architecture and sculpture, the natural and man-made, the visible and invisible—an allegory of sorts for a frenetically changing São Paulo. *Anna Fixsen*

PHOTOGRAPHY: © HENRIQUE OLIVEIRA