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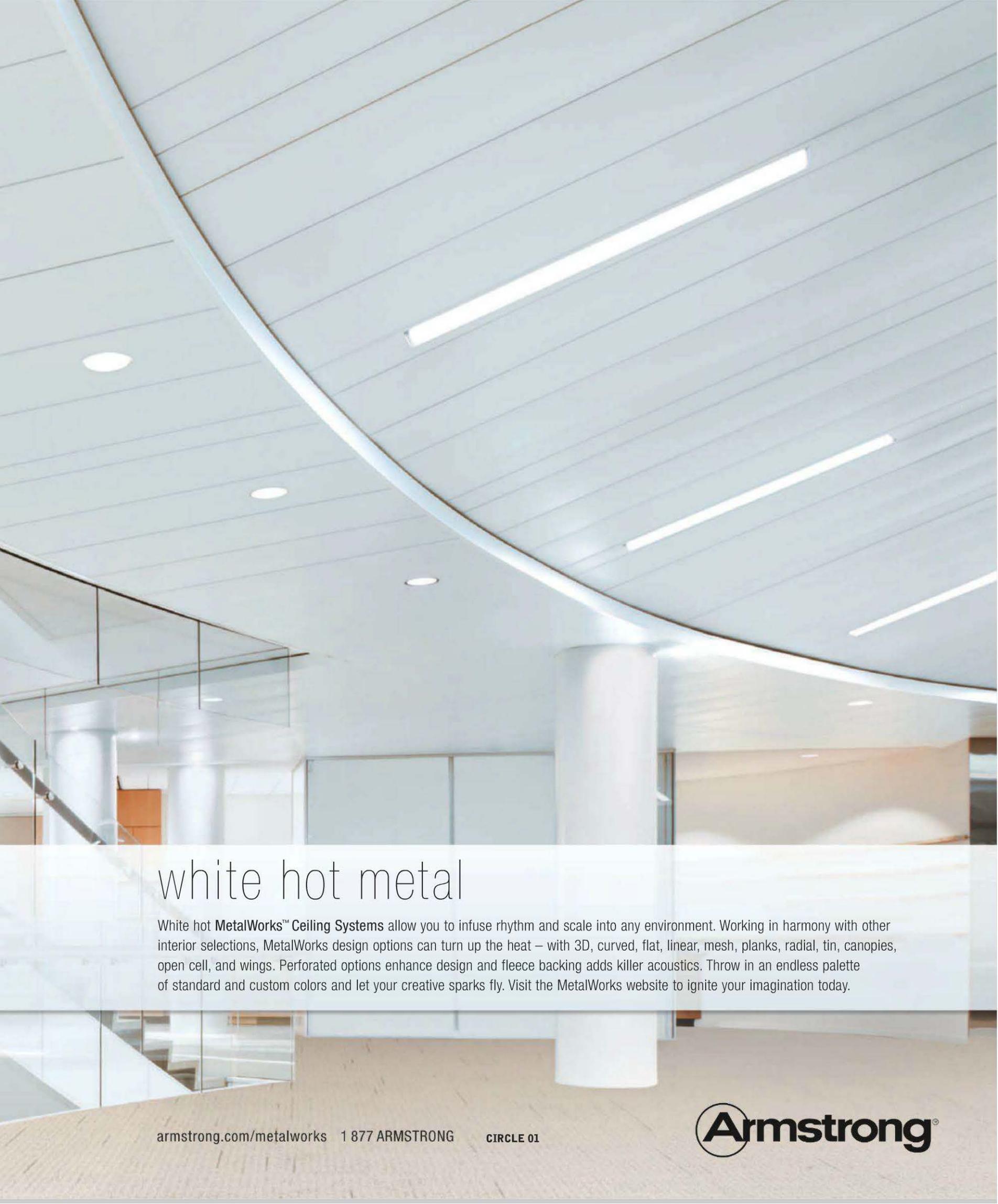




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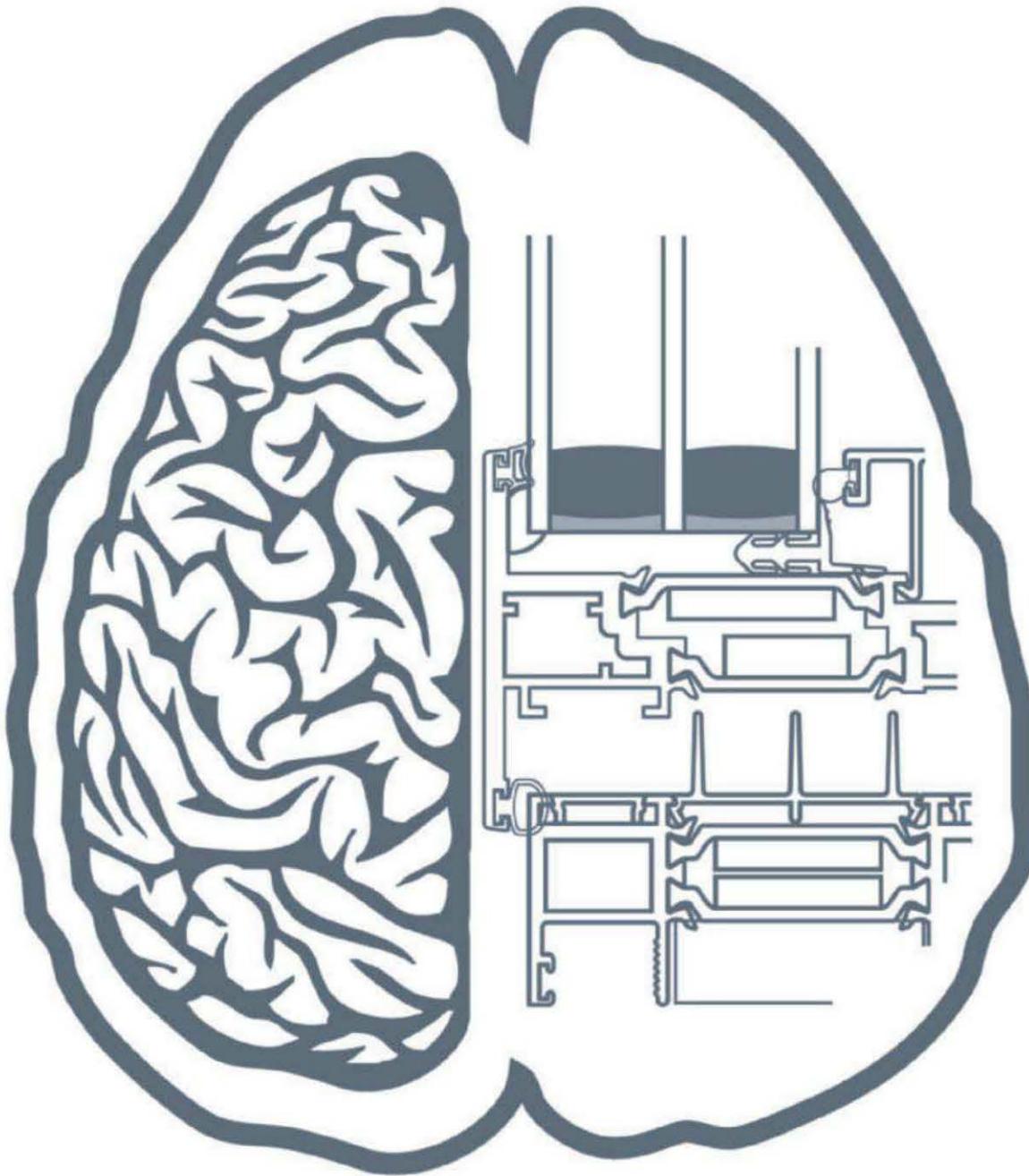
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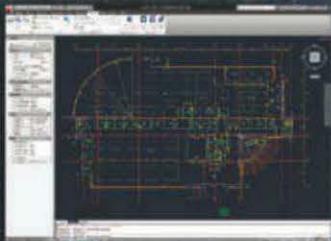
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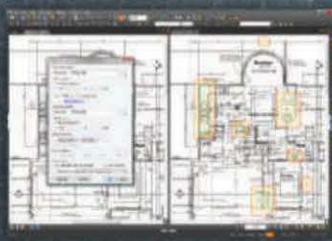
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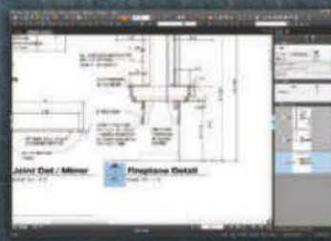
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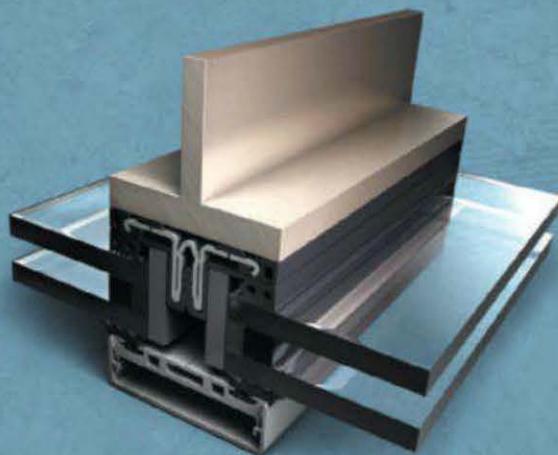
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THIS PAGE: FRANCIS KÉRÉ IN FRONT OF ONE OF HIS SCHOOLS IN GANDO VILLAGE, BURKINA FASO. PHOTO BY IWAN BAAN.

ON THE COVER: LIONS PARK PLAYScape, GREENSBORO, ALABAMA, BY AUBURN UNIVERSITY RURAL STUDIO. PHOTO BY TIMOTHY HURSLEY.

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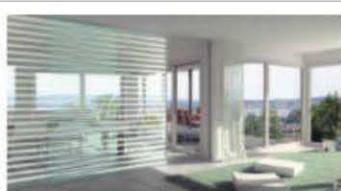
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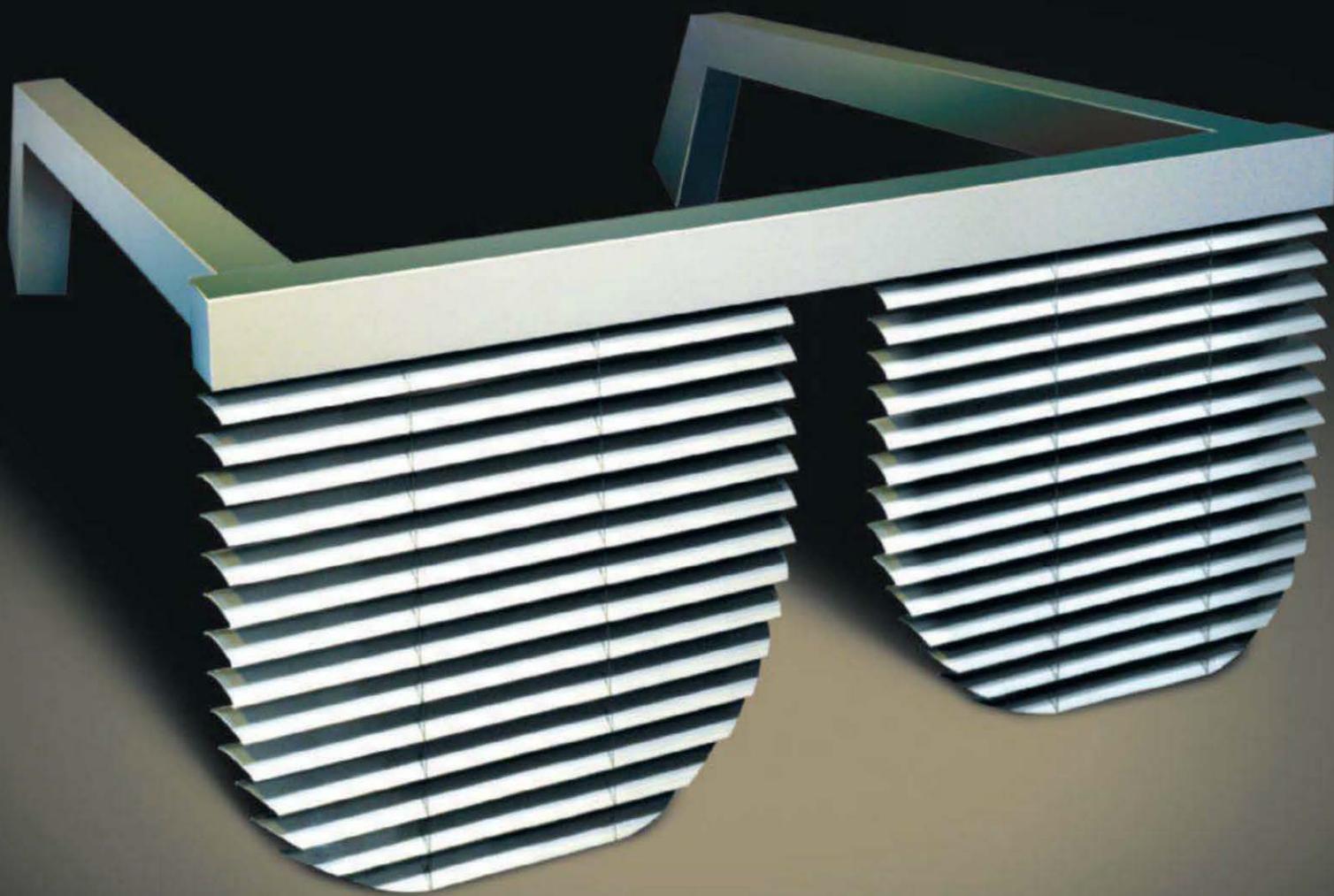
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CIRCLE 14

Architecture for Everyone

Can public-interest design become a viable alternative to traditional practice?

LAST MONTH *Salon* published an article titled “The Architecture Meltdown.” The piece, by Scott Timberg, detailed the high unemployment rates, the shrinking fees, and the tough climate for fresh architecture grads, weighed down by heavy student debt. It’s so bad, said one architect, Guy Horton (a contributor to *ARCHITECTURAL RECORD*), that architecture has become “the new English major.” The article’s author blamed the poor economy, of course, but he also tore into the profession as the designer of its own demise. While the media has lionized the starchitect—the solo creative genius at the top—the profession has perpetuated a culture in which architectural acolytes toil for years for poor pay, with no guarantee of eventually making a decent living. Now “architecture is exposed to the realities of the marketplace like few other fields,” said Timberg.

A few days later, Thomas Fisher, dean of the College of Design at the University of Minnesota, responded in a blog post on *Metropolis*. “Nontraditional job opportunities for architects have never been better,” Fisher wrote, “and while it may take some time for these markets to mature, they seem likely to grow much faster in years to come.”

One of those markets is public-interest design. While architecture has largely been patronized, in Timberg’s description, by the top 1 percent, Fisher sees a shift in architectural services for the other 99 percent. Humanitarian design, often funded by grants, is on the rise, providing work and a sense of purpose for a growing legion of (mostly young) practitioners.

No one is pretending that designing for social change can solve the challenges many in the profession face. Most architects aren’t able to cast off responsibilities to colleagues, families, and communities to run off to save the world through design. One mid-career architect who left a firm to work for Architecture for Humanity in Haiti can’t subsist on the fellowship stipend and must use savings to cover a mortgage and a child’s college tuition back home in the United States. Architects, whether on a mission to do good, or on the staff of a traditional firm, deserve fair pay for their expertise.

While these ideas have been bubbling around the blogosphere, we’ve been reporting on trends in activist architecture. What we bring you in this special issue is a sampling of projects, programs, and people who are building for social change in the United States, Latin America, Africa, the Caribbean, and Japan. Of course, there are countless other such projects, of all sizes, around the globe; a few more of them will be featured on *archrecord.com* over the next month.

Activist architecture is not new—and the most recent groundswell began well before the onset of the recession. An emerging generation of architects has been reflecting, for some years now, professional values that the *Salon* article did not acknowledge—a move away from the glorification of the star architect toward a more collaborative design process among architects and across disciplines; a global awareness and



social consciousness; and a concern with local conditions as part of a more holistic approach to sustainability.

Indeed, one significant aspect of the new architecture detailed in the pages ahead is sustainability. These are projects almost always built with local materials, methods, and labor—not Western typologies exported to other countries, but a hybrid of design ideas customized for conditions on the ground. The Boston-based MASS Design Group built the Girubuntu Primary School (page 81) of bricks and bamboo with local labor in Rwanda. The brilliant Francis Kéré, who returns regularly from his practice in Berlin to build in his home village in Burkina Faso, brings Modernist ideas adapted to vernacular construction techniques, even using—ingeniously—local clay pots (page 78).

For most practitioners, social architecture begins at home. Architects with a little extra time during this downturn, who engage in their communities or find work in neighborhoods in need, can demonstrate to local leaders that good design is essential in all civic building and infrastructure—not just in high-end construction. That’s a vital message for the future of the profession.

One day, when the recession is officially declared over, the practice of architecture is likely to have changed. As Fisher points out, architects who look beyond the traditional studio—to conduct research or collaborate with other disciplines or to design in the public interest—are likely to find that the way they’re trained to think is highly valued. But for now, however you practice or connect to the world of design, there are lessons and inspiration in building for social change.

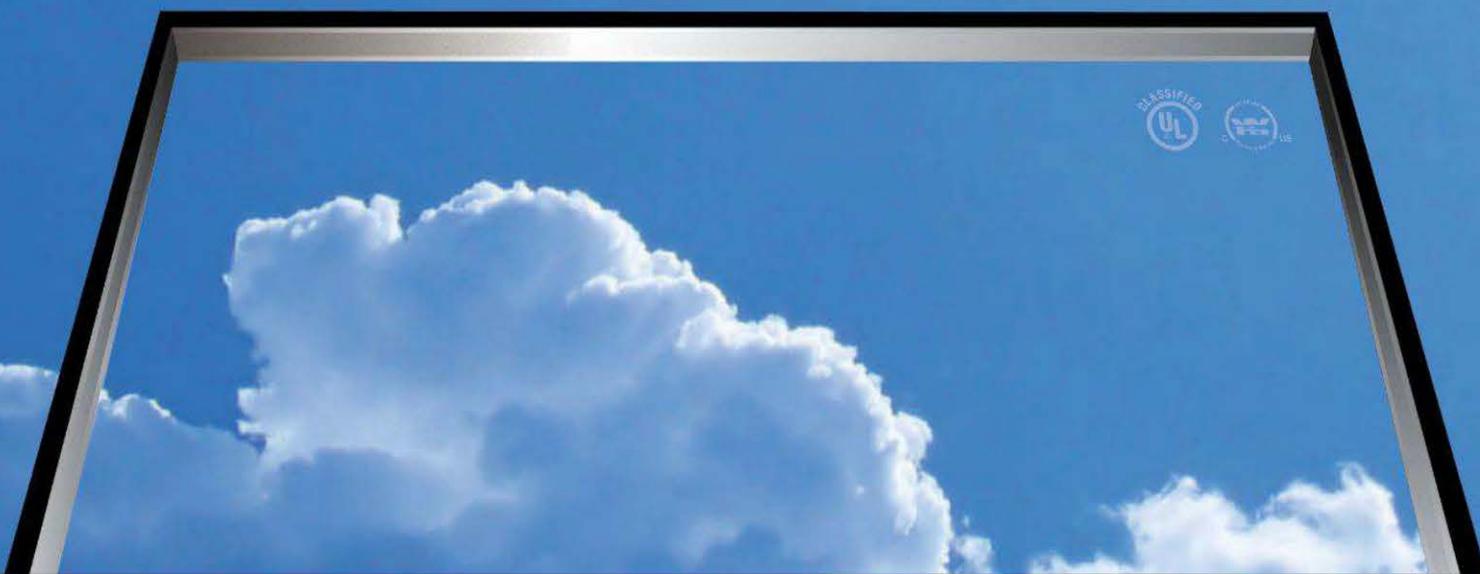
Cathleen McGuigan

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AIDS Memorial Winner Announced

BY C.J. HUGHES

A competition to create New York City's first large-scale memorial to the victims of the AIDS epidemic has produced a winning scheme and three runner-up designs. Titled "Infinite Forest," the proposal, by Studio a+i, calls for enclosing a 17,000-square-foot triangular park at Seventh Avenue and Greenwich Avenue with 12-foot-high walls lined with mirrors on the inner surface, to reflect birch

the surrounding park-starved neighborhood." AMPC's 13-member jury, chaired by Michael Arad, designer of the National September 11 Memorial, included the Museum of Modern Art's architecture chief curator Barry Bergdoll, Diller Scofidio + Renfro partner Elizabeth Diller, and actress Whoopi Goldberg, along with RECORD deputy editor Suzanne Stephens. The president of McGraw-Hill Construction,

Keith Fox, headed the AMPC steering committee.

The jury selected three runners-up: "Forest of Memories" by Ooi Yin Mau of Malaysia, "Not Yet" by Rodrigo Zamora and Mike Robitz of Manhattan, and "The Village Red" by Jonathan Kurtz, Christopher Diehl, Katherine Ritzmann, Brant Miller, Mykie Hrusovski, and David Berlekamp of Cleveland.

The 475 entrants focused on this

parcel because of its special significance in AIDS history: It faces the former St. Vincent's Hospital, a pioneer in treatment of the disease, which closed in 2010. The park site, part of St. Vincent's, contained a loading dock and liquid oxygen tanks for the hospital.

Now the old St. Vincent's campus is being redeveloped by the Rudin Organization into an \$800 million, 450-unit condo complex. Rudin had already commissioned a more traditional park for the site, for which it would spend \$10 million. The Rudin scheme, by M. Paul Friedberg and Partners, landscape architects, was green-lighted by the community board and every city agency except the City Council—which is expected to take it up soon. The design resulted from consultation with the neighborhood. While it does not have a specific AIDS tribute, one evidently will be forthcoming, according to

continued on pg. 28



Studio a+i's winning scheme proposes walls of mirrors reflecting birches in the park.

trees planted there. The exterior would be clad with slate, on which visitors could scrawl commemorative messages with chalk. Inspiration for the impromptu messages came from a fence across the street that was adorned with makeshift memorials after September 11, and which today has rows of similarly decorated tiles, said Mateo Paiva, who founded his Brooklyn-based firm in 2004 with Lily Lim.

Yet getting the design built exactly as planned might not be easy. The AIDS Memorial Park Coalition (AMPC), founded by Christopher Tepper and Paul Kelterborn, proposed it as an alternative to plans already in formation.

With media sponsors ARCHITECTURAL RECORD and Architizer, AMPC organized the competition last fall, asking designers and non-designers alike to pay tribute to the 100,000 New Yorkers who died from AIDS over the past three decades. The competition also urged designers to create "a usable park for



RECORD Kudos

SOM designed the Ledge for Chicago's Willis Tower.

THE SYMBIOTIC relationship between business and design will be recognized on March 9 at the American Architectural Foundation's Accent on Architecture Gala at the stately Mellon Auditorium in Washington, D.C. RECORD will present its first Good Design is Good Business Lifetime Achievement Awards to Skidmore, Owings & Merrill for architecture and to Haworth for its patronage of design excellence.

MoMA "Wendy"



A LARGE blue sea urchin, named "Wendy," by HWKN (HollwichKushner) has won this year's Young Architects Program competition, held annually by New York's Museum of Modern Art. With high-tech fabric spines designed to clean the air, the installation will take over the courtyard at PS1—MoMA's contemporary art outpost in Queens—this summer.

AIDS Memorial Park *cont.*

Rick Parisi, Friedberg's managing principal. "Our memorial would be about the 160-year history of St. Vincent's," he explains. "It would have elements of the Titanic shipwreck"—many survivors were treated at St. Vincent's—"and the AIDS epidemic." Rudin says it will work with all the stakeholders "to best realize these memorial elements as part of the approved park design in a timely manner."

Implementing Studio a+i's more overt AIDS memorial scheme would force the entire development plan—park and condos—to go back for fresh approvals, city sources say, which could potentially delay the project six months or more. Some criticize Studio a+i's proposal for its high slate walls, which could make the park foreboding on the exterior

and might invite graffiti. Others fear the AIDS memorial would become a tourism magnet, attracting too many buses and people. Kenneth Winslow, a retired architect who lives across from the park, is now rounding up names for a protest petition. "We're not homophobic," he says. "We need something more for the community."

But juror Bergdoll points out the AMPC's chosen scheme could be modified—for example, with enlarged entrances to give more of a sense of access. Emotionally charged projects often change along the way, says jury head Arad, who saw his own September 11 memorial design beset by criticism after it was chosen in a similar process. Going forward, Studio a+i must be open to "conversation and collaboration," Arad adds. "I have made it clear to them that I am happy to assist them." ■

Over \$1.5 Billion in Service

BY JOHN CARY

WHEN JOAN Kroc died in 2003, she willed the bulk of her estate, \$1.5 billion, to the Salvation Army—the single-largest charitable gift in history, according to some accounts. Two years earlier, the widow of McDonald's founder Ray Kroc had worked with the nonprofit organization to build a Salvation Army community center in San Diego designed by AVRP Studios. Joan Kroc, who had contributed \$90 million to the project, was intimately involved with the design and construction and is said to have taken great joy in selecting paint colors.

Thanks to her posthumous donation, the Salvation Army has been able to build 19 community centers across the country, from San Francisco to Augusta, Georgia. Five more are set to open this year—in Chicago; Honolulu; Phoenix; Guayama, Puerto Rico; and Suisun City, California—and three are planned for the coming years. The facilities are built in low-income communities, where children and adults can be "exposed to different people, activities, and arts that would otherwise be beyond their reach," the organization states.

While every Salvation Army Ray and Joan Kroc Corps Community Center contains aquatic and athletic facilities, classrooms, and spaces for worship, each one is designed by a different architect and has its own distinct character. The architect is paid market fees and is chosen through a competitive RFP process. "Salvation Army had the confidence in their local organizations to choose the most appropriate site and firms," says Dan Kelley of MGA Partners, which designed the Philadelphia center in association with PZS Architects. "In my mind, it was an act of courage that they did it that way."

The Philadelphia center opened in October 2010, on time and on budget. Situated on 12.4 acres in an industrial area, the new, 130,000-square-foot facility made of brick, glass, and steel is "surrounded by abandoned factories—



these great manufacturing behemoths," says Kelley. "Rather than try to hide them, we let the existing buildings and their beautiful silhouettes frame our building." The center draws up to 1,000 people per day.

On the owner's side, the project was overseen by the husband-and-wife team Timothy and Willie Mae Lyle, both of whom have worked for the charity for 27 years. The project received \$72 million from the Kroc gift; half was designated for construction and the other half for maintenance and programming. Another \$30 million was raised locally. "We were given a chance to dream big and imagine what the future could look like, with incredible resources to make it happen," says Timothy Lyle.

A similar story played out in Boston, where a 90,000-square-foot brick-and-metal-clad center designed by the Architectural Team opened in April 2011. Michael Lui, firm partner, says the facility features a "main street" that serves

MGA Partners designed the Salvation Army Ray and Joan Kroc Corps Community Center in Philadelphia.

as the core circulation route. "It's an opportunity to see and be seen—something we recognized as particularly important to the Salvation Army's teen clientele," he says. The project was funded by \$85 million in Kroc money and \$30 million in local contributions.

The centers demonstrate the power of design in underserved communities that rarely are graced with architecture attuned to their needs. Doug Austin of AVRP Studios, who was the principal-in-charge of the very first Kroc center in San Diego, says it was an extremely rewarding project. "It's such a beautiful meeting of two different worlds: Salvation Army with its very spartan approach to what they do, always stretching their money to help people," he says, "and then someone like Joan Kroc who had the means to go beyond that." ■

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Memoir: My Dacca Days

BY JAMES WALDEN

STARTING AN architecture school in a developing country was not part of my life plan when I launched my career more than half a century ago. Yet in 1960, five years after graduating from Texas A&M University with a B.Arch. and three years after joining the architecture faculty there, the U.S. Agency for International Development (USAID) invited me and two fellow architects to travel to South Asia to establish an architecture and planning school at the East Pakistan University of Engineering and Technology in Dacca (now Dhaka).

I had seen a notice that USAID was seeking candidates, and although I had already been accepted to graduate programs, I opted for the adventure of the unknown. With my wife and two children, I set off for East Pakistan (which became Bangladesh in 1971). I was joined by Dik Vrooman, a fellow professor at Texas A&M, and Dan Dunham, who was working in Dacca for Berger Engineers. Both Dik and Dan are now deceased, leaving me to write this memoir of our efforts—an enterprise



that far exceeded my wildest dreams. Not only did we get the school off the ground, but it continues to thrive today.

In February, the school celebrated its 50th anniversary with a week-long seminar on architectural education and research. Now called the Bangladesh University of Engineering and Technology (BUET), the school invited me to deliver the opening keynote address. I made the long journey from my home in Connecticut, and my arrival in Dhaka immediately kindled strong memories.

When Dik, Dan, and I landed in Dacca in early 1961, we had nothing except our enthusiasm: no classrooms, offices, curriculum, or students. The vice chancellor, an MIT graduate from Bengal, quickly found space for us in existing undistinguished buildings. We then set about devising a curriculum for a five-year undergraduate program (the program later expanded to offer master's degrees).

There was no handbook on starting an architecture school, let alone one in a far-flung locale, in a country much different from our own. We knew we needed to offer classes in basic design, as well as those in strength of materials and in math. We made humanities a requirement,



In the 1960s, James Walden (left) and two colleagues started an architecture school in East Pakistan, now Bangladesh, as part of a USAID initiative. He recently returned to give a keynote address at the school's 50th-anniversary celebration. In the archival photo below, Walden is the teacher standing in the background.

too. We had brisk discussions about developing a curriculum around Islamic architecture; instead we settled on design studios that encouraged students to be inspired, broadly, by the culture of East Pakistan. (In one studio, I assigned students to design a village school made of materials transportable to the site by a simple boat.)

We also had to recruit students. An advertisement we posted drew hundreds of applicants, and we created an entrance exam to separate the wheat from the chaff. The last question asked candidates to fold a blank piece of paper into an interesting shape and leave it on their desks.

Even though it went against the norm, we decided to accept female students. In the end, our inaugural class, in the fall of 1961, comprised 26 men and three women. I have succeeded in contacting almost all of the surviving members of the first class of graduates and saw many of them at the anniversary celebration. Everyone I have spoken to either owns a firm or holds a senior-level position. They are scattered all over the globe, from Singapore to Canada.

All did not go smoothly in Dacca in the early 1960s. The school was part of a larger USAID initiative in Pakistan, a country long dependent on foreign assistance. There were monsoon rains and hurricanes that blew up from the Bay of Bengal. There were frequent student riots and general unrest. In 1965, Pakistan and India went to war.

Remarkably, this barely interrupted our coursework. We remained focused. Wonderful things happened, too. I was allowed to design faculty housing and a student center on campus. I met Louis Kahn, a frequent visitor to Dacca in those years because he was designing the National Assembly of Bangladesh. One evening, I hesitantly called him at the bungalow where he was staying and explained how badly I wanted to go to the University of Pennsylvania, where he was a professor. Kahn asked to meet and see my work, and he then promptly arranged for a fellowship that made it possible for me to attend. I earned my M. Arch. and master's in City Planning at Penn in 1968.

I stayed in Dacca for five years, leaving in 1966. Dik and Dan left a couple years later. Back in the United States, I started my own practice in Greenwich, Connecticut, which was absorbed by a New York firm 25 years later. I then worked for Helpert Architects, Lothrop Associates, and Thornton Tomasetti (where I still do some consulting work).

As was clear from my recent trip to Dhaka—my first visit since I left in '66—our little school has grown to become one of the largest and most successful architecture and planning schools on the subcontinent. It now has its own building, a distinguished faculty, and about 400 students. (USAID no longer provides funding.)

Our modest contribution clearly delivered a huge return. The school's success is a tribute to not only our efforts, but to all of the professors who followed in our footsteps. I'm now in talks with the architecture school at Texas A&M and BUET about reestablishing a student- and faculty-exchange program between the two schools. Wouldn't it be wonderful for a new era of architects to attend a 100th anniversary celebration? ■

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The New Frontier in Education

BY DAVID HILL

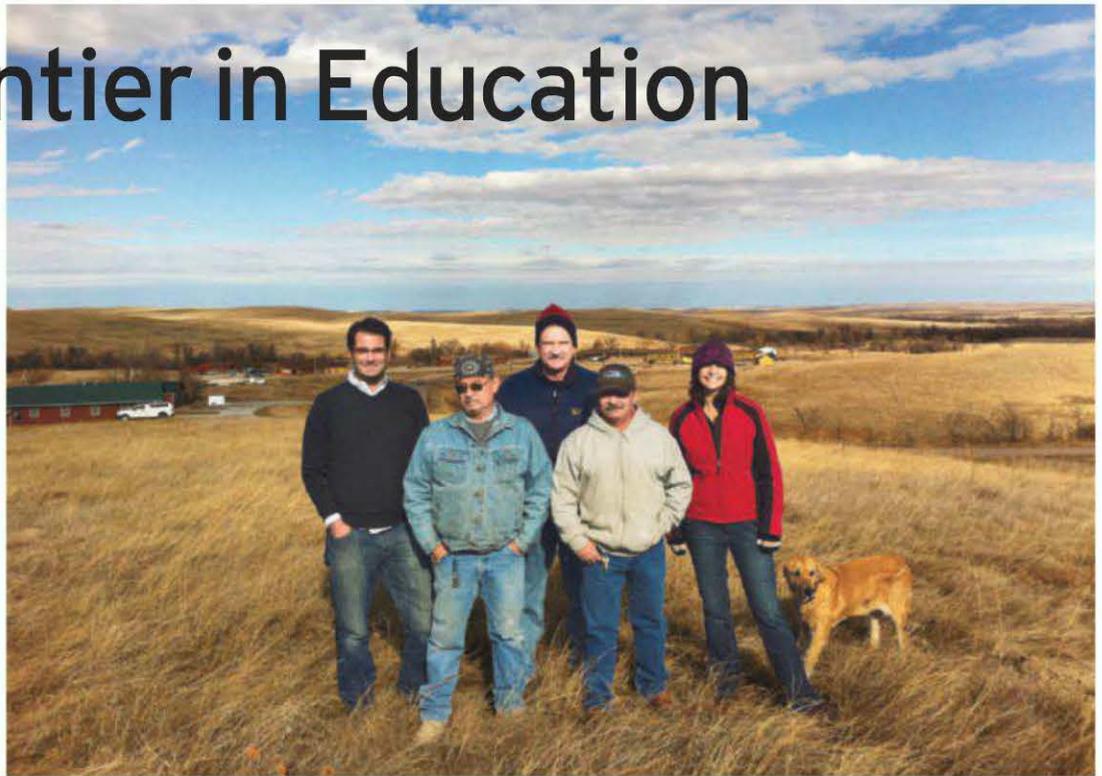
Like a lot of architects and architecture students these days, Nathan Hammitt believes design has a social purpose, and his studies at the University of Cincinnati's School of Architecture and Interior Design reflect his desire to change things for the better. "I want to use the skills and knowledge I'm gaining in architecture school for a good cause," he says.

Hammitt, 22, had the chance to do just that last spring. He jumped at the opportunity to enroll in a class called Humanitarian Design, taught by professor Michael Zaretsky. After studying the history of humanitarianism and reading books like *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation*, by IDEO president Tim Brown, the



class headed to Tanzania, where a group of Zaretsky's previous students had designed and built a rural health center. Hammitt spent a week working on a post-occupancy analysis of the clinic, before traveling to Cape Town, South Africa, for a three-month stint as a volunteer with the nonprofit Architecture for Humanity (AFH). "I'm not at a point where I need to be supporting a family or making a lot of money," says Hammitt, who will graduate this May. "While I have the chance, I want to make a difference."

Architecture students used to go to Rome to



study, and while many still do, other rookie designers are heading to impoverished and disaster-hit communities to build hospitals, houses, and schools. Design-build programs such as Auburn University's Rural Studio, launched in 1993 by the trailblazer Samuel Mockbee, have been encouraging socially conscious design work for years. But increasingly, schools are responding to student demand by incorporating humanitarian design courses into curricula and supporting faculty members who want to partner with nonprofits in public-interest design projects, both in the United States and abroad.

"A lot of architecture students are extremely interested in doing this work," says Thomas Fisher, dean of the College of Design at the University of Minnesota. "It's a phenomenon of this generation." Part of the impulse stems from genuine altruism, but it also can be linked to the dismal economy. "I think they've decided, 'If I'm not going to get a high-paying job, I might as well do something that is meaningful and purposeful,'" Fisher says.

The University of Minnesota is one of many schools that has sent students to Haiti to rebuild following the devastating earthquake of 2010. Graduate architecture students have partnered with AFH to design and build several prototype schools, which also double as orphanages. "We have ongoing studios in Haiti," Fisher says. "Students spend an entire semester there, working with locals and getting to know what their needs are, instead of just parachuting in for short periods of time."

Architecture students from the University

TOP: University of Colorado students will design housing for the Pine Ridge Indian Reservation.

LEFT: Yale graduate students have been required to design a low-income house since 1967. This dwelling, at 12 King Place, was built in 2010.

of Virginia are also working in Haiti, as part of a studio course called Initiative reCOVER. The current project, Breathe House, is a prefabricated structure designed for Haitians with tuberculosis and HIV/AIDS, says professor Anselmo Canfora, who is leading the class. The house contains passive ventilation and other features to minimize the spread of airborne diseases. A prototype is currently being prefabricated in Virginia, and students will travel to Haiti this spring to assemble the house in the coastal town of Saint-Marc.

"Students these days are really interested in rolling up their sleeves and trying to solve real-world problems," says Canfora, who has also worked with students on projects in Uganda and the Mississippi Gulf Coast. "Twenty years ago, when I was in school, we would work on these really esoteric projects, like a gallery for an artist who lives out in the woods somewhere. I would never assign that as a project in my design studio today. It's just too disconnected from contemporary issues."

Some question whether students need to travel to far-flung locales for humanitarian work. Speaking on a panel at the Victoria and Albert Museum in November, London-based architect Farshid Moussavi, who also teaches at Harvard's Graduate School of Design, said during a Q&A session, "It's quite telling that Harvard students, when they want to be activists,

continued on pg. 34

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University cont.

have to go to these areas of the world. Well, it's tougher to be an activist in America." She added, "Most of them are not the really good students. Because it also can become an excuse and an easy option." Her comments sparked a backlash online. In the December issue of *The Architectural Review*, Moussavi, who declined to be interviewed for this article, expanded on her ideas of the complexities of architectural activism, calling on architects to use their specific strengths and skills: "It is critical that different architects pursue different practices of activism at the same time, recognizing that each is not a finite or comprehensive solution, but is interrelated with others."



ture professor Rob Pyatt recently launched the Native American Sustainable Housing Initiative. In January, 16 of his students began to design affordable homes for South Dakota's impoverished Pine Ridge Indian Reservation.

Are such programs evidence that public interest design has become mainstream at U.S. architecture schools? Yes and no, says Fisher, who has written extensively about the emerging humanitarian design movement. "I find that in almost every school," he says, "there are at least a couple of faculty members interested in it, even in schools that are very traditional. It has definitely emerged as a kind of grassroots phenomenon at a lot of different

Of course, architecture students don't have to trek halfway around the globe to satisfy their humanitarian urges. A number of schools offer design-build programs that serve low-income communities in the United States. Under Andrew Freear, Auburn's Rural Studio is alive and well, 10 years after Mockbee's death at the age of 57. At the University of Kansas, Dan Rockhill's Studio 804 has created Modernist houses for low-income families. Tulane University's URBANbuild program, founded in 2005 and led by architecture professor Byron Mouton, allows students to spend an entire year designing and constructing a prototype affordable house in New Orleans.

Yale has championed socially conscious design for decades. Since 1967, first-year graduate students in the Ivy League architecture school have been required to design and build a low-income, single-family home as part of the Vlock Building Project. Another community-oriented program, the Yale Urban Design Workshop, has been around since 1992.

Meanwhile, University of Colorado architec-

ture professor Rob Pyatt recently launched the Native American Sustainable Housing Initiative. In January, 16 of his students began to design affordable homes for South Dakota's impoverished Pine Ridge Indian Reservation.

architecture schools. And I think it's great. But we have to take it to the next level."

Fisher wants to create an entire interdisciplinary degree program based on socially conscious design. It would be "a kind of hybrid between architecture, cultural studies, engineering, and industrial design," not unlike the field of public health, which grew out of medicine to serve the needs of communities and large populations. And the architecture profession, he adds, will have to respond by creating new avenues for students to pursue careers—and earn a salary—doing humanitarian work.

"Humanitarian design isn't just a fad," Fisher says. "Students recognize that as a profession, we've largely relied on fee structures that allow us to do work for wealthy clients, while most of the world's population doesn't benefit from our services. There's a growing sense that at some level we have to take responsibility for the shelter needs of all seven billion people on this planet." ■

BIG Designs Art Center for Sundance City

Danish architect Bjarke Ingels and his firm, BIG, have won a competition to expand the Kimball Art Center in Park City, Utah, home to the Sundance Film Festival. The proposal for an 80-foot-tall addition playfully references a historic building with wooden boxes stacked like twisting Jenga blocks.

Texas Museum Taps Steven Holl for Expansion

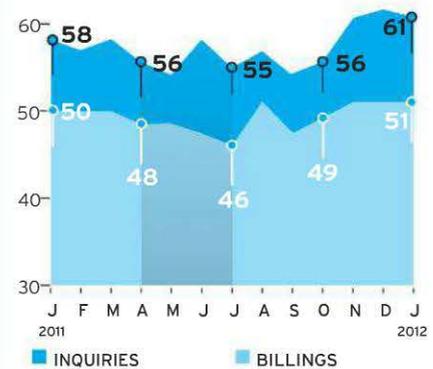
In February, the Museum of Fine Arts, Houston announced that Steven Holl Architects beat out Snøhetta and Morphosis to design an expansion for the cultural institution, which boasts one of the largest campuses in the country. The new building will rise on a two-acre site now used as a parking lot.

Herzog & de Meuron and Ai Weiwei Teaming Up Again

The Swiss firm and the Chinese artist/activist behind Beijing's "Bird's Nest" stadium for the 2008 Summer Olympic Games have reunited to design the annual pavilion at London's Serpentine Gallery. The archaeology-inspired project will be on view when London hosts the Olympics this summer.

First Black Female Architect Dies at Age 85

Norma Merrick Sklarek, FAIA, the first African-American woman in the country to become a licensed architect (in 1954), died February 6 in Pacific Palisades, California. Sklarek directed such major projects as the U.S. Embassy in Tokyo for Gruen Associates and the LAX Terminal 1 for Welton Beckett.

**Uptick for the ABI**

The Architectural Billings Index hit 50.9 in January, down a pinch from December's score of 51.0. The inquiries index was 61.2. Regional averages: Midwest (53.7), South (51.6), Northeast (50.7), West (45.6). **Note:** Every January, the AIA updates seasonal factors used to calculate the ABI, resulting in the revision of scores from the prior year.

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CIRCLE 27

FORECAST 2012 Office Construction

With this issue, *Architectural Record* introduces a new page featuring McGraw-Hill Dodge's construction-economics intelligence. This month, we focus on the office-building market.

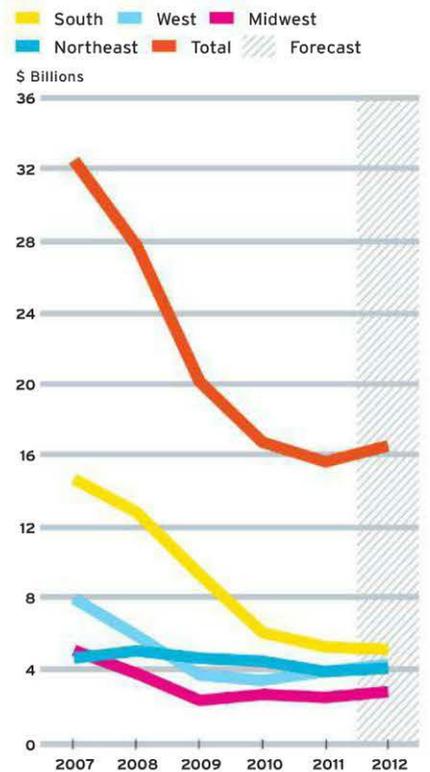
After four consecutive years of decline, office construction starts are poised to turn the corner in 2012.

According to McGraw-Hill Dodge Analytics, U.S. office starts are expected to increase 5% this year, to \$16.6 billion. While this is an improvement from the 2011 low, office construction remains far below the 2007 peak of \$32.6 billion. Between 2007 and 2011, office construction fell a cumulative 52%. However, office employment has been on a gradual incline since hitting bottom in late 2009. After losing 2.4 million office jobs from the 2007 high, the economy has gained back 734,000 jobs and office vacancy rates have inched downward. They slid to 16.0% at the end of 2011, from 16.5% a year earlier, according to real-estate services firm CB Richard Ellis. While any improvement is welcome, the recovery for now will remain halting.

\$16.6 billion

Expected level of U.S. office starts in 2012

Office Construction Starts by Region
Including U.S. total and 2012 forecast figures



Top Metro Area Markets Office-Construction Starts: 2007-2011 (in \$ millions)

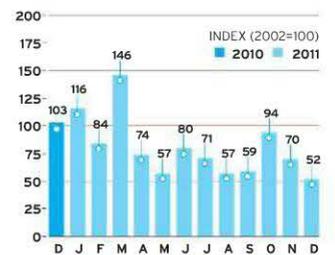


4 World Trade Center by Maki and Associates

RANK	REGION	2007	2008	2009	2010	2011	2007-2011
1	New York, NY	\$ 2,718	\$ 2,631	\$ 3,043	\$ 3,335	\$ 2,358	\$ 14,085
2	Washington, DC	\$ 1,799	\$ 1,760	\$ 2,563	\$ 1,735	\$ 675	\$ 8,532
3	Houston, TX	\$ 942	\$ 1,716	\$ 566	\$ 294	\$ 579	\$ 4,079
4	Dallas, TX	\$ 1,045	\$ 1,094	\$ 358	\$ 169	\$ 274	\$ 2,940
5	Atlanta, GA	\$ 1,154	\$ 702	\$ 318	\$ 296	\$ 437	\$ 2,908

THE DODGE INDEX FOR OFFICE CONSTRUCTION 12/2010 - 12/2011

The office construction index is based on seasonally adjusted data for U.S. office-construction starts. The average dollar value of projects in 2002 serves as the index baseline.



Top 5 Projects Ranked by 2011 U.S. Office-Construction-Starts Value (in \$ millions)

Top 5 Design Firms

Ranked by 2011 U.S. office-construction-starts value

- 1 Architectural Nexus
- 2 Gensler
- 3 Childs Bertman Tseckares (CBT)
- 4 Skidmore, Owings & Merrill (SOM)
- 5 Granum A/I

PROJECT: Utah NSA Data Center
ARCHITECT: Architectural Nexus, KlingStubbins
LOCATION: Bluffdale, UT
VALUE: \$1,100

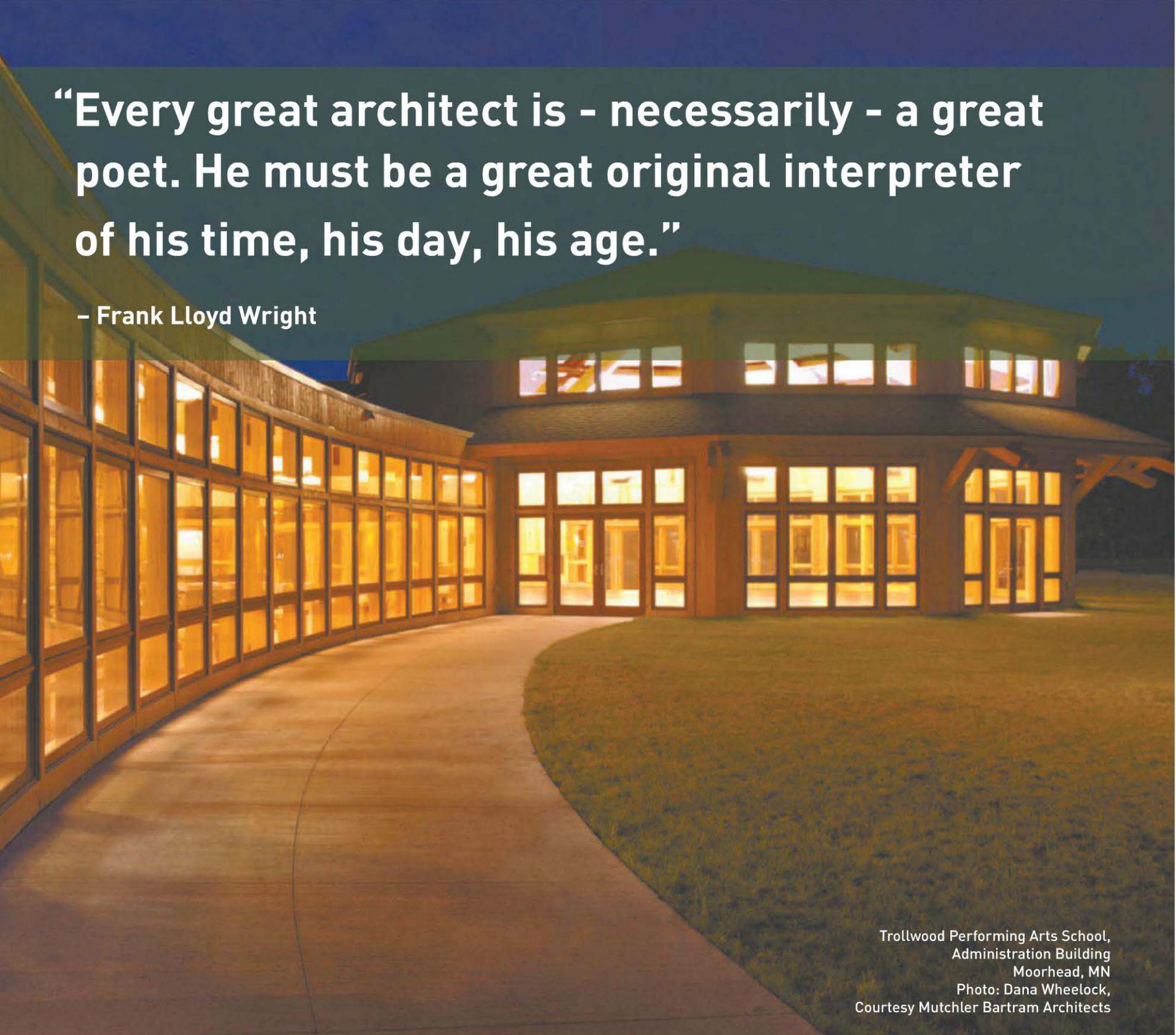
PROJECT: 250 West 55th Street
ARCHITECT: SOM
LOCATION: New York, NY
VALUE: \$285

PROJECT: Liberty Mutual Office Building
ARCHITECT: CBT
LOCATION: Boston, MA
VALUE: \$252

PROJECT: Facebook Data Center (Building 2)
ARCHITECT: Sheehan Partners
LOCATION: Prineville, OR
VALUE: \$200

PROJECT: ExxonMobil Houston Campus
ARCHITECT: Gensler, Pickard Chilton, PDR
LOCATION: Spring, TX
VALUE: \$160

These data have been provided by McGraw-Hill Dodge Analytics, which tracks projects from predesign through construction. The data capture hard construction costs for stand-alone office buildings and the office portion of mixed-use buildings. For reporting purposes, data centers are considered part of the office-building category.



“Every great architect is - necessarily - a great poet. He must be a great original interpreter of his time, his day, his age.”

– Frank Lloyd Wright

Trollwood Performing Arts School,
Administration Building
Moorhead, MN
Photo: Dana Wheelock,
Courtesy Mutchler Bartram Architects

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WOOD

Does “Doing Good” Pay the Bills?

Architects devoted to humanitarian work are finding ways to make ends meet.

BY C.J. HUGHES

IN TOUGH times, architects find it hard to say no to clients who can help them make the payroll, even if the potential projects won't show off the firm at its best. And if a firm plays in the big leagues, its principals are hotly pursuing those few golden commissions that not only earn big fees but also garner media attention. That doesn't leave much time or resources for pro bono design.

Some architects, however, are challenging that model for running an office. Whether creating parks in poor neighborhoods, aiding in post-disaster situations, or constructing migrant-worker housing, there are surprising numbers of designers intensely focused on socially conscious work. Their efforts are undoubtedly noble, yet the question remains: Can they possibly make a living doing it?

For MASS Design Group, the answer is yes. “Increasingly, architecture is serving the wealthy few. We've got to come up with new models to deliver fundamental services to communities that have been underserved,” says Michael Murphy, 32, executive director of the Boston-based nonprofit firm. MASS is an

acronym for Model of Architecture Serving Society.

While still a student at Harvard's Graduate School of Design in 2008, Murphy founded MASS with five classmates. Their first major project was the roundly praised Butaro Hospital in Rwanda, funded by the U.S. foundation Partners In Health (PIH) and the Rwandan government, and completed in 2011. Most of the firm's work on the 65,000-square-foot project was done on a volunteer basis.

Now their higher profile in the humanitar-

“We have to come up with new models to deliver fundamental services to communities that have been underserved.”

ian design field is leading to paying commissions. The firm has earned fees for its work on the design of a 22,000-square-foot tuberculosis hospital in Port-au-Prince, funded by GHESKIO, a local charity. MASS also earned fees for the design of a new wing for the historic Nyanza Maternity Hospital in Rwanda, a

UNICEF project.

Until MASS acquires its pending not-for-profit tax status, PIH is serving as its “fiscal sponsor.” That means the fledgling firm must coordinate its fund-raising efforts—such as requesting donations through e-newsletters—with PIH. According to firm cofounder Alan Ricks, MASS is now garnering more than \$400,000 a year in contributions from private foundations, corporations, and individual donors. Recent supporters include Herman Miller, the furniture manufacturer, which

announced last fall it would sponsor an undetermined number of fellows. Today, MASS employs 21 people full-time, five of whom are supported by a yearlong fellowship program. The firm has outposts in Rwanda, Haiti, Boston, and Los Angeles.

Murphy spends half his time on business development, not design, but finds it rewarding. “I get to talk to people who believe that architecture can improve lives,” he says. And the firm is quickly earning accolades: It was named *Contract* magazine's 2012 Designer of the Year, and *Forbes* recently put Ricks on its “30 Under 30” list of notable artists and designers.

Still, in terms of its business model, MASS is in small company. Less than one percent of U.S. design firms are not-for-profit, a status determined by the Internal Revenue Service. If a firm has charitable goals, and if it reinvests all profits back into the organization, it will likely be awarded 501(c)(3) status, freeing it from paying federal income taxes.

But keeping these firms alive is challenging. About 250 nonprofit design groups (including architecture firms, advocacy organizations, and design centers) have launched in the past 50 years, but only about 100 remain, says Sharon Haar, a University of Illinois architecture professor who is writing a book about architecture as a force for social change. Most of the surviving nonprofits have emerged in the past 20 years, says Haar: “There's been a return to an interest in the broader social dimensions of architecture” that hasn't been seen since the early 1970s.

Bryan Bell is a pioneer in the recent resur-



Founded in 1991, Raleigh-based Design Corps has focused on creating structures for migrant workers, including housing and chicken coops.

gence. In 1991, after a short stint in Steven Holl's office, he founded Design Corps, a Raleigh-based nonprofit firm that now employs two full- and two part-time staffers. For its first decade, the studio primarily designed migrant worker housing, about 150 units in total, funded mostly through federal grants. The U.S. Department of Housing and Urban Development supplied three grants totaling \$1.1 million, and the National Endowment for the Arts kicked in six grants totaling \$600,000. In addition, the U.S. Department of Agriculture (USDA) has contributed about \$600,000 over the years.

"I had never heard of the USDA when I graduated from Yale," Bell says. "But if you look at all the funding sources in government that have design potential to them, you're talking about hundreds of billions of dollars."

Since 2000, Bell has offered socially conscious architects two-day training sessions around the country through his Public Interest Design Institute. A recent session at Yale drew about 50 attendees and included speakers such as David Perkes, the founding director of the Gulf Coast Community Design Studio, and Austrian architect Anna Heringer, whose "Handmade School" in Bangladesh has received



Michael Murphy (right) and Alan Ricks founded MASS in 2008 while students at the Harvard GSD.

wide acclaim and was exhibited at the Museum of Modern Art in New York.

In fact, individual architects of all ages are becoming more interested in socially activist work. Charles Newman, who earned a B. Arch. from Syracuse University in 2005, worked in New York City for several different offices. By 2008, however, he had grown weary of the "academic undertones of the sleek

architecture firms." Today, the 29-year-old designer is a construction manager in the Democratic Republic of Congo, where he builds schools, bridges, and clinics for the International Rescue Committee, which gives him a salary and benefits. Previously, Newman spent two years working on and off in Haiti in the wake of the 2010 earthquake. "Getting out into this world has helped me rediscover the value of design on a more intimate scale," he says.

Similarly, Kate Evarts, a mid-career professional who logged 25 years in conventional firms in New York and Seattle, is now in Haiti on an 18-month Architecture for Humanity fellowship to rebuild schools damaged by the quake. The job doesn't exactly pay the bills. Although she receives a small stipend for her Haiti work, she must use her savings to cover some living expenses, a mortgage, and a child's college tuition. Still, the monetary trade-off is worth it. "My time in Haiti has been rewarding in surprising ways," she says, "as I've gotten back to the basics of what I loved about architecture." ■

C.J. Hughes is a New York City-based writer and contributing editor at ARCHITECTURAL RECORD.

Pro Bono Work on the Rise

Despite concerns about the pitfalls of donated design services, The 1% program is gaining traction.

THE GROWING DESIRE among designers to help the less fortunate is welcome news to John Peterson, founder of Public Architecture. In 2005, the San Francisco-based nonprofit firm, with support from a National Endowment for the Arts grant, launched The 1% program, which encourages firms to donate 1 percent of their total working hours to philanthropic causes.

So far, about 950 firms, large and small, have signed on. In May, the program will get a huge boost when the AIA launches a database to track firms' pro bono contributions. The AIA's involvement suggests that "we have moved closer to the institutionalization of pro bono practices," Peterson says.

Other professions have long advocated for giving back. Lawyers are expected to put in 50 hours of pro bono service a year, according to the American Bar Association, and the American Medical Association strongly encourages charity work as well. No standards exist in architecture, although the AIA's Code of Ethics does state that members "should promote and



Perkins + Will designed a center for GEMS, which aids former teenage prostitutes.

serve the public interest in their personal and professional activities." Some argue that architects shouldn't design for free because it eliminates much-needed paying jobs. Others say pro bono work can be haphazard and ineffectual: A large firm might volunteer to design a master plan for a town but not oversee its long-term implementation.

Yet when big firms do donate time, the impact can be significant. A case in point: Annual contributions by HOK, with 1,900 people on the payroll, are the equivalent of 25 employees working exclusively pro bono, firm principals say. Definitive projects have resulted, such as a 3,500-square-foot office for the Taproot Foundation, a San Francisco-based nonprofit that helps other charities get access to marketing, finance, and other services. The project was finished in 2010.

Similarly, Perkins + Will, another 1%-er, designed the New York center for Girls Educational & Mentoring Services (GEMS), which aids former teenage prostitutes. Awash in bright yellow and orange walls, the 1,700-square-foot space was completed last year.

Pro bono work can boost employee morale and, yes, it can enhance a firm's public image, says Clark Davis, HOK's vice chairman. But he believes that it also taps into a deeper impulse: "There is something in our DNA as architects and designers that causes us to care." C.J.H.

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perspective **exhibitions**

IN PLACING AN EMPHASIS ON SOCIALLY AND ENVIRONMENTALLY CONSCIOUS SUBJECTS, TWO NEW YORK MUSEUMS MUST ADDRESS THE CHALLENGES OF PRESENTATION.

BY SUZANNE STEPHENS

ARCHITECTURAL EXHIBITIONS aimed at a general audience are hard to pull off. Small-scale representations—photographs, models, drawings, and, increasingly, video—can only approximate the sense of the full-size work. Like art objects, they need to captivate the museum visitor while acknowledging the thicket of constraints—program, site, budget—that shape the form. If the projects have a socially or environmentally conscious dimension, the challenge is tougher: The display may lack the wow factor—the visual panache of extravagantly innovative or elegant architectural works and objects that make museum visitors stop in their tracks. And the danger lurks that providing the necessary information to appreciate the projects displayed will make the show look like a walk-in book.

Undaunted by such issues, two leading art and design institutions, the Museum of Modern Art (MoMA) and the Smithsonian Cooper-Hewitt, National Design Museum, both in New York, have been embracing this type of exhibition in the last few years. Both museums have boldly organized design shows that address issues of problematic living conditions around the globe.

When Cooper-Hewitt mounted *Design for the Other 90%*, at its palatial quarters on upper Fifth Avenue in 2007, it generated a lot of media attention and an audience of 100,000. In 2009, the museum designated Cynthia Smith, who had organized that show, as the Curator of Socially Responsible Design. Smith, an industrial designer with a background in public service, followed up with a sequel, *Design with the Other 90%: CITIES*, which opened for a three-month run in October 2011 at the United Nations while Cooper-Hewitt is expanding its building. The show displayed 65 projects from 25 countries, concentrating on slums and informal settlements in the Global South; it drew 150,000 visitors, including many UN diplomats and staff. “The United Nations was a great location,” says Smith.

MoMA’s exhibitions in this arena have been even more popular with the public. *Rising Currents: Projects for New York’s Waterfront*, devoted to architects’ theoretical solutions to rising sea levels from global warming, hit a high of 881,520 visitors over its six-and-a-half-month duration in 2010. *Small Scale, Big Change: New Architectures of Social Engagement*, which examined innovative design created for



underserved communities on five continents, opened in October 2010, and drew 311,188 during its three-month stay.

And now MoMA has just installed *Foreclosed: Rehousing the American Dream*, on view until July 30. With this exhibition, the museum has further deepened its socially conscious identity under the aegis of Barry Bergdoll, the chief curator of architecture and design since 2006. Bergdoll, also a Columbia University professor of architectural history, seems an unlikely candidate to lead MoMA away from monographic exhibitions on Frank Lloyd Wright or Mies van der Rohe, with which the museum has become so identified. Yet Bergdoll points out that MoMA’s first architecture show, the legendary *Modern Architecture: International Exhibition* of 1932, had a social housing component. Over the decades similar subjects appeared sporadically there.

But the frequency of do-good shows clearly has stepped up. As Joseph Rosa, the director of the University of Michigan Museum of Art notes, “The museum today is becoming more of an incubator of ideas, with people thinking about socially minded critiques of culture.” Bergdoll says he is trying to pose questions not addressed in normal architectural commissions.

MoMA’s *Foreclosed: Rehousing the American Dream* includes Zago Architecture’s animation for its colorful proposal for Rialto, California.

“But the shows do involve architects whose work is already of interest, so we are continuing the traditional role of MoMA in culling the finest talent.”

Like the *Rising Currents* show, the *Foreclosed* exhibition put MoMA in an activist role, actually commissioning speculative solutions, developed through a workshop process. Bergdoll, who organized the project with Reinhold Martin, Director of Columbia University’s Temple Hoyne Buell Center for the Study of American Architecture, isolated five geographical areas in the U.S., from Florida to California, where the banking mortgage crisis of 2007–08 led to stalled projects and swaths of publicly held land now available for development. For each of the five sites—identified based on Buell Center research—Bergdoll and Martin assigned a team, led by architects and including experts in finance, housing, planning, and infrastructure. Each team created proposals meant to provoke new ways of thinking about housing and dense community living: Bergdoll wants to engage the public in understanding “how architects think.”

For example, among the *Foreclosed* teams—which include Studio Gang, MOS, WORKac, and Visible Weather—Zago Architecture has proposed redesigning a failed subdivision, pocked with unbuilt lots, in an unincorporated section of Rialto, east of Los Angeles. Principal Andrew Zago’s quixotic and colorful scheme presents various housing types, such as duplexes and row houses, rearranged to avoid the deadly repetitiveness of the subdivision house/yard/driveway model.

As is typical in socially oriented exhibitions, *Foreclosed* includes a good deal of nonvisual material: One gallery is devoted solely to presenting data underpinning the show’s program. Granger Moorhead, who designed the Cooper-Hewitt exhibition at the UN, tackled the problem of grainy photos and variously fabricated architectural models by abandoning any notion of a slick, “museum-quality” look. Instead, “We tried to present the content in an informal, collaged way,” he says.

With such thorny matters to consider, museums wisely seek a balance of subjects. In the near future the Cooper-Hewitt will devote an exhibition to graphic design, while MoMA plans two architecture shows next—one on proto-Modernist Henri Labrouste; the other, its first retrospective of Le Corbusier. *Ars longa...* ■

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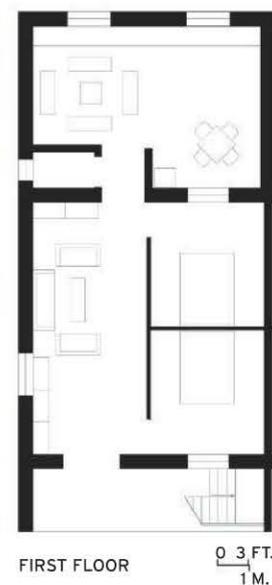
BY LAURA RASKIN

ON MAY 12, 2008, a 7.9-magnitude earthquake rocked the Sichuan Province in Western China, killing 68,000 people. The quake also toppled homes and public buildings that were supposed to withstand such disasters after the devastating 1976 Tangshan earthquake. The Qiang community, an ethnic group in the northwestern part of the province, was one of the hardest hit. In Yangliu Village, many of the houses were destroyed. Others were in the path of a possible landslide. Villagers lived in tents.

By September 2009, Taiwanese architect Hsieh Ying-Chun had helped the agricultural village construct 56 new homes for 350 people. Hsieh runs the 30-person firm Atelier-3 in Sun Moon Lake, Taiwan, and has dedicated his practice to disaster-relief architecture since the 1999 earthquake in Taiwan. In 2011 he was awarded the Curry Stone Design Prize.

Using lightweight steel framing, locally sourced stone, reinforced concrete, and wood, Hsieh taught Yangliu villagers how to assemble homes that are stronger than before. The 3,000-square-foot, three-story dwellings employ similar floor plans: kitchens and bedrooms for elderly relatives on the ground floor, living space and bedrooms on the second floor, and more bedrooms on the third.

Hsieh's style is the vernacular: he adapts local design and leans on the expertise of area craftspeople but helps them reduce inefficient techniques and the use of hard-to-source materials. His adobe-walled house in China's Hebei Province, for example, looks nothing like his Tibetan herder settlement housing, which preserved local woodworking techniques. For people whose homes have been destroyed, this reliance on familiar materials and designs is comforting. He is currently at work on reconstruction projects in Taiwan related to the August 2009 Typhoon Morakot. ■



TOP: Yangliu Village sits in the Min River Valley, where homes were destroyed by the 2008 earthquake.

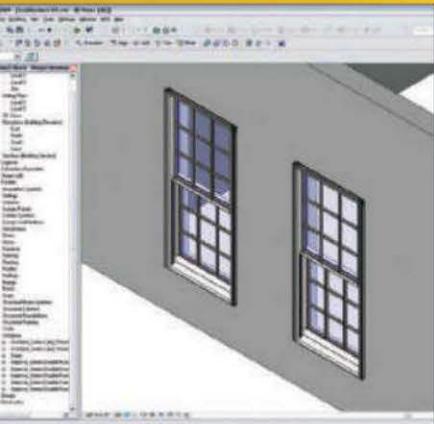
MIDDLE: Each dwelling houses an average of six people. External staircases connect porches and free up interior space.

BOTTOM: Autodesk, the Chinese Red Cross, the Narada Foundation (based in China), and Atelier-3 donated steel and construction money for the new homes, seen here from above.





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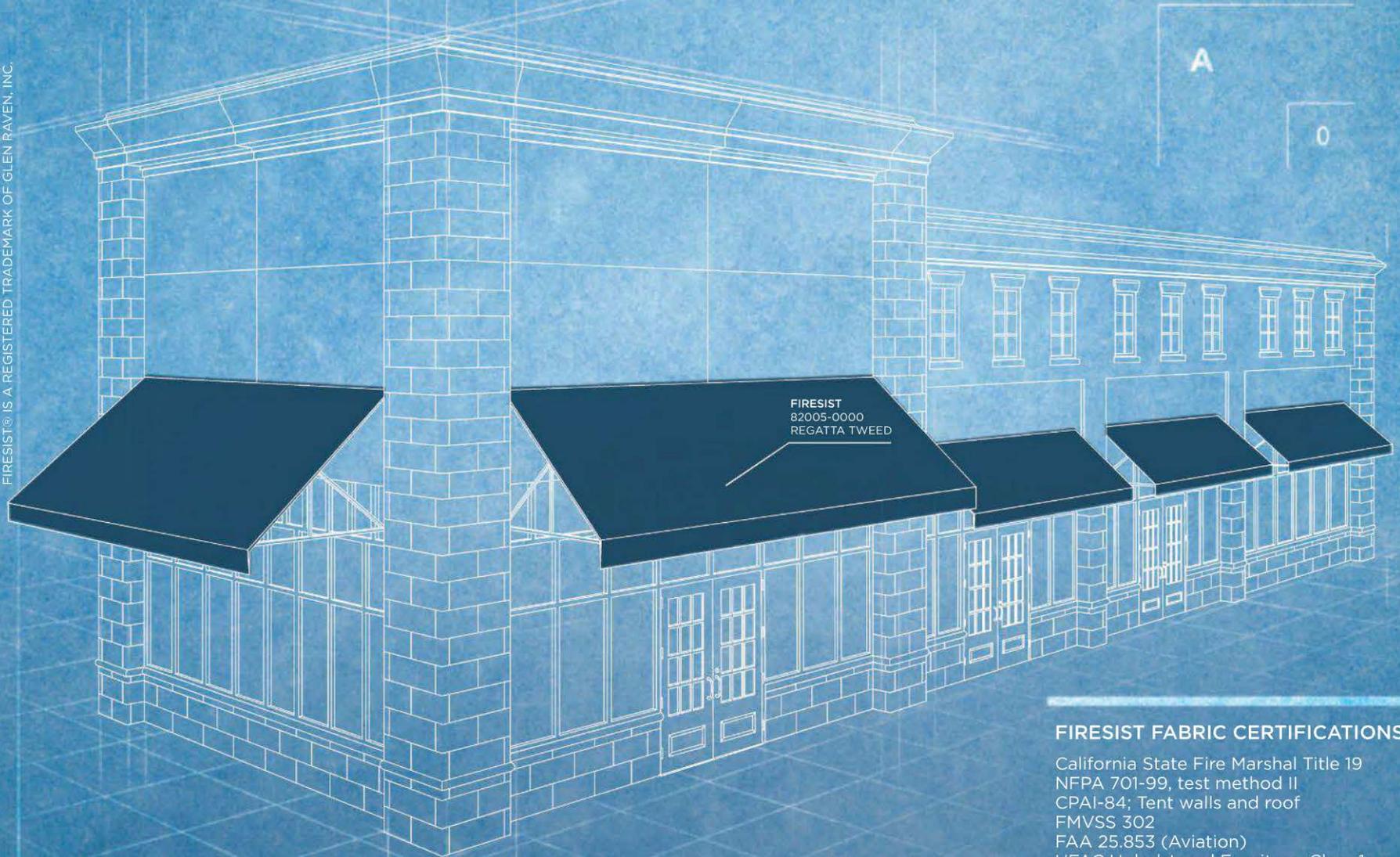
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Molo Softshelter

SOME PEOPLE throw themselves into their work, but Molo Design literally moved into it. In order to test out a new temporary shelter made of paper, a studio assistant at the Vancouver-based multidisciplinary firm (a 2010 ARCHITECTURAL RECORD Design Vanguard winner) occupied a unit set up within the studio. An evolution of Molo's softwall product line of paper- and textile-based partitions, softshelter can be used for disaster relief or homeless shelters, as well as temporary voting booths, clinics, schools, or any situation where there is the need to set up a series of adjustable, private rooms.

To conduct the study, a mock-up was built in the Molo studio, and David Ullock, an assistant who conveniently needed a place to stay, moved in for about four months (a shower was installed for him in the studio for the experiment). An old clause in the studio's lease allowed for caretaker occupation, but for Todd MacAllen, a partner in the firm along with his wife, Stephanie Forsythe, the experiment would have been necessary even if the occupation weren't entirely legal. "Most of the work we do is based on experience," says MacAllen. Living with the shelter in the studio reinforced the importance of its ability to adjust to changing conditions, which, says MacAllen, was what the product was originally designed to do.

Using magnets and stretchable expanses of fire-retardant kraft paper, softshelter creates personal spaces within a larger shelter area, giving families a sense of privacy and community in the days following a disaster. While the shelter's paper remains high-quality and fire-retardant, it is a lighter weight than the original softwall, making it slightly more pliable, stretchable, and easier to transport. A few small details were added as a result



of the study, including lighting, a Tyvek saddle to hang belongings, and a handle that can turn any wall into a door.

Late last year, Molo participated in an emergency-preparedness conference in Vancouver, where the product was well received. As it takes six to eight weeks to turn around a large order, MacAllen envisions the shelters can be part of a preparation program that could also be kept on hand for other

community needs as they arise (it has not been used yet in a real disaster). He doesn't understand why some people are offended when humanitarian products are repurposed for other uses, such as exhibits or high-end retail. "I don't think we should be categorizing products and materials into whether they are high-end or low-end," says MacAllen. As for softshelter's potential, "we don't see it only as a response to disaster." **CIRCLE 200**

TOP: To properly test out the shelter, an assistant moved into a unit set up in the studio for about four months.

ABOVE LEFT: The kraft-paper units can be shipped flat and opened up on-site to create a series of private spaces in response to a disaster or a nonemergency situation.

ABOVE RIGHT: Multiple shelters can be linked to create smaller private rooms that are part of a larger unit.

Change Makers

Relief packaging that can be repurposed into furnishings, a cleaner-burning wood stove that generates electricity, and an inflatable solar light are just three of the exciting new solutions that can help people in developing countries and disaster zones be healthier and more comfortable in their living and working environments.

By Rita Catinella Orrell



UNICEF Packaging Concept

Danish-born designer Martin Jørgensen was inspired by the 2010 Haitian earthquake to develop a concept for UNICEF that would bring added value to the packaging used to ship supplies from the relief organization. Requiring only a knife and the instructions printed on the box, recipients would be able to transform the packaging into temporary furnishings for a family in a refugee camp or into games or educational materials for children. According to Jørgensen, UNICEF is currently waiting for approval to set up a field test of one of his kits, though there is no specific time frame for production.

martinjorgensen.dk



BioLite HomeStove

Nearly half the world's population cooks on open fires, which kill nearly two million people every year due to wood-smoke-related diseases. Designed by Jonathan Cedar and Alec Drummond, the BioLite HomeStove reduces smoke emissions by more than 95% while serving as an affordable source of electricity to charge devices with USB ports such as mobile phones and LED lights. After field trials on four continents, BioLite is currently working with Columbia University's Mailman School of Public Health on a large health study to determine how advanced cook stoves can improve the health of pregnant women and infants. Two thousand stoves will be shipped to Ghana later this summer to begin the study; pilot programs are also planned for India and Kenya.

biolitestove.com

LuminAID

The LuminAID inflatable solar light was developed two years ago by Anna Stork and Andrea Sreshta while graduate students in architecture at Columbia University; the two were participating in a studio focused on designing disaster-relief aid and infrastructure in response to the 2010 Haitian earthquake. "We observed a gap in providing lighting solutions as part of the supplies commonly sent in emergency relief," says Sreshta. "We attributed this to the fact that many of the existing solar lighting products were too costly and bulky to send in the large numbers required for disaster-relief aid." Now in production, LuminAid is a cheaper, safer alternative to kerosene that uses an integrated solar panel to provide four to six hours of light. In just two years, the team has presold 1,500 units in more than 25 countries and collected donations to fund over 3,000 lights for organizations doing work in off-grid regions in countries including India, Uganda, and Laos.

luminaidlab.com



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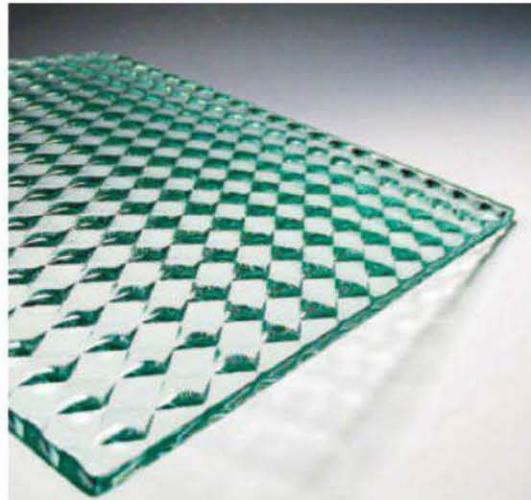
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THESE NEW GLASS DESIGNS—INCLUDING A LINE OF 3-D GLASS BLOCKS—FOLD, BEND, AND GLOW TO ADD DRAMA TO FACADES, INTERIOR WALLS, STAIRS, AND OTHER SURFACES. RITA CATINELLA ORRELL

**Vision**

Sefar Architecture sefar.com

Vision, a range of high-precision fabrics, is produced from black synthetic fibers coated on one side with a thin layer of metal that can be used in combination with laminated glass or acrylic for walls, partitions, doors, and other surfaces. When used in a facade, such as this office in Madrid, the outer metal surface helps reduce solar heat gain, while the inner surface reduces glare without hampering views. **CIRCLE 201**

NanaGlass SL25

NanaWall Systems nanawall.com

NanaGlass SL25, a frameless opening glass wall system, can be installed on the exterior of balconies and patios to extend indoor areas sheltered from the elements. With no vertical door stiles, the system provides uninterrupted views and natural light while forming an insulating air pocket over the facade. The panels easily slide open and stack to one or both sides; top-supported in a single track, they can ride a fixed balcony railing or extend to the floor. **CIRCLE 202**

Metallic Back-Painted Glass

Bendheim bendheim.com

Bendheim has added new metallic hues to its extensive back-painted glass palette for exterior wall cladding, interior feature walls, residential backsplashes, countertops, and tabletops. Available in 10 customizable metallic colors on low-iron glass as well as five low-iron etched patterns, the glass comes in thicknesses ranging from 1/8" to 3/4" and in sheets up to 5' x 12'. **CIRCLE 203**

Symmetry

Nathan Allan Glass Studios nathanallan.com

Nathan Allan's latest collection, Symmetry, includes five glass textures that are a balance of embossed and debossed shapes recalling surfaces ranging from Penny Round tiles to metal stair treads. Part of the company's special Josiah J. Collection of designs, the glass is available in 7' x 12' (annealed) or 6' x 10' (tempered) sizes in thicknesses from 1/4" up to 3/4". The glass comes in clear, low iron, and tint glass, in a range of finishes. **CIRCLE 204**

Pegasus 3D Collection

Seves USA sevesglassblock.com

Seves Glassblock hopes to move glass block out of its conventional role into a more artistic exploration of light and space. The new Pegasus collection includes three 3-D glass designs engraved on the outer surface, including a mosaic motif, a wave effect, and Diamante (shown), a dramatic asymmetrical pyramid that was created in collaboration with the Italian architectural firm 5+1AA. **CIRCLE 205**

Glass Staircase

ThinkGlass thinkglass.com

Cast in one solid piece in thicknesses ranging from 1.5" to 6", the steps and risers from ThinkGlass do not feature the visible lines common in laminated glass stair treads. An antiskid laminate film gives the stair a safe, slip-resistant surface. A variety of organic textures, colors, and edge treatments are available, and stairs may be curved, straight, or spiral. LED lighting can also be embedded within the steps, as shown above. **CIRCLE 206**



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BUILDING FOR SOCIAL CHANGE

Visit us online throughout the month to view slide shows, see videos, and read additional stories.

AT A time when high-flying architects were mesmerizing the design world with extravagant buildings, Cameron Sinclair took a decidedly different approach. In 1999, the young designer, along with journalist Kate Stohr, founded Architecture for Humanity (AFH), a nonprofit dedicated to helping underserved communities. Sinclair had inherited the do-good bug as a teenager in Bath, England, where civic spaces designed by 18th-century architects inspired him. "They would spend decades doing amazing work for very rich clients," he says, "and at the end of their careers, they would do a series of pro bono projects for the city." Sinclair, however, didn't want to wait until his twilight years to give back.

His San Francisco-based organization took off. Today, AFH has 67 chapters worldwide, and similar-spirited groups have emerged in the past decade: Emergency Architects Foundation, Public Architecture, and Article 25, among others. Working in post-disaster zones, urban slums, and rural villages, these organizations—along with countless firms, university programs, and independent designers committed to improving human welfare—are elevating the role of architecture in solving social and environmental problems. Humanitarianism has "always bubbled under the surface of the profession," says Sinclair, but for some architects, it is now a priority.

For this special issue, RECORD combed the globe, hunting for goodwill buildings that have both pragmatic and aesthetic appeal. The exemplary work featured here is a mere sample of our findings. Designed by a diverse roster of architects, and varying in scope and program, these projects embody the power of architecture to foster social change. *Jenna M. McKnight*

United States

- » EAST BAY CENTER FOR THE PERFORMING ARTS / Mark Cavagnero Associates
- » WINDSOR SUPER MARKET / Studio H
- » LIONS PARK PLAYSCAPE / Auburn University Rural Studio
- » THE WINDCATCHER / The University of Colorado, Denver

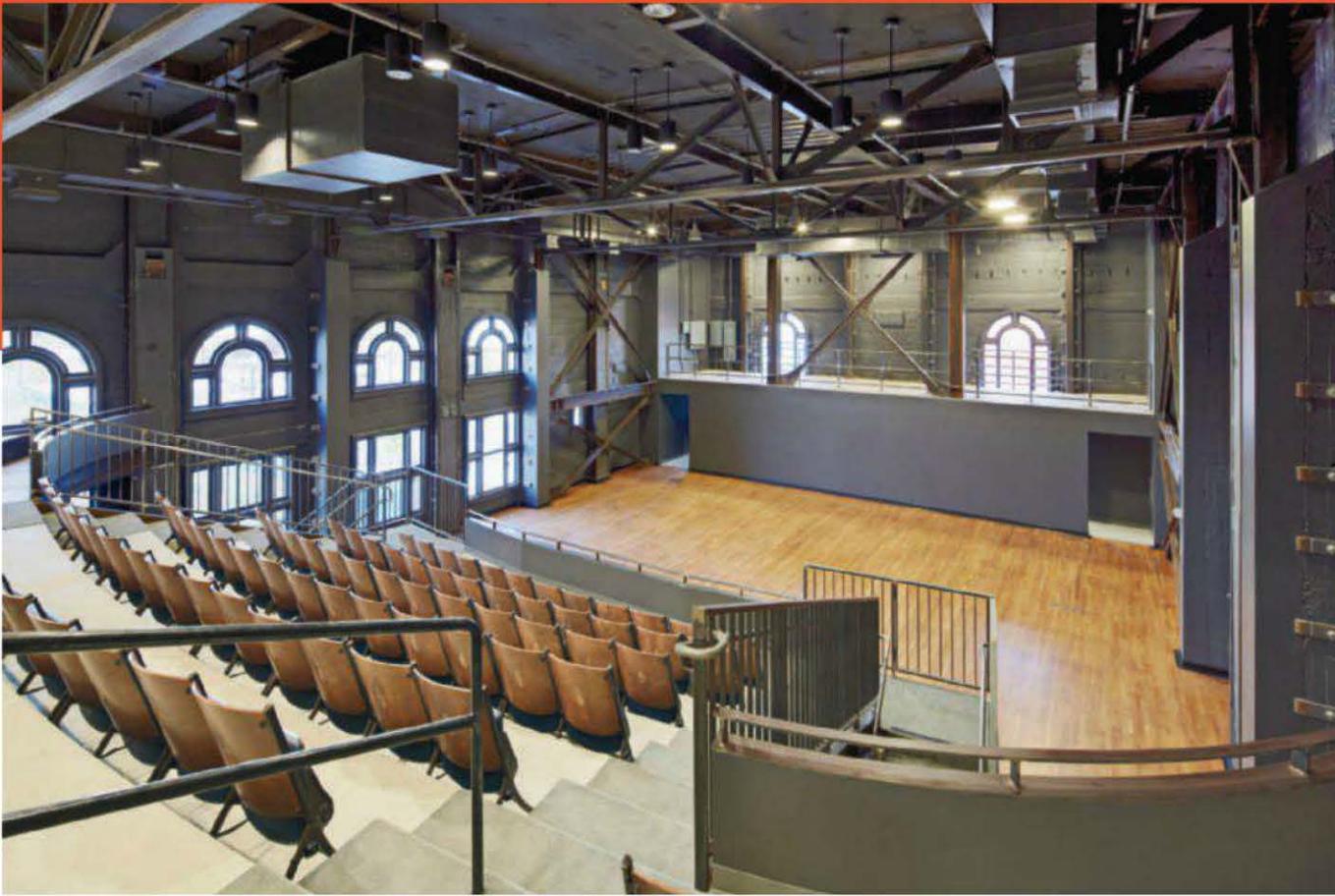
- » EAST OAKLAND SPORTS CENTER / ELS Architecture and Urban Design
- » JHS 11TH- AND 12TH-GRADE CAMPUS / DLR Group
- » STAR APARTMENTS / Michael Maltzan Architecture
- » THE LAURA A. PARSONS BUILDING / WASA/Studio A
- » DISASTER RECOVERY PLAN / BNIM

Professional architects and design students are bringing inventive strategies to communities as diverse as L.A.'s Skid Row, rural Alabama, and a Navajo reservation.



The Winters Building, circa 1924, sits on a corner lot. The design team removed years of grime, stucco, and other buildup on the facade, in addition to demolishing the old interiors. At night, large windows along the first level allow passersby a look at the Center's classes and special events.

[View additional images at architecturalrecord.com.](http://architecturalrecord.com)



ARCHITECT: Mark Cavagnero Associates.
BUDGET: \$8.3 million.
CONTEXT: Downtown Richmond, California, in the city's "Iron Triangle" neighborhood, so named for its past as a hub of the shipbuilding industry.

East Bay Center for the Performing Arts

Richmond, California

BY ASAD SYRKETT

In the early 1920s, Adolph and Elisabeth Winters, recent German émigrés, hired a little-known San Francisco architect, Albert W. Cornelius, to design a center for ballroom dancing, concerts, and the occasional boxing match, in downtown Richmond, California. The Beaux-Arts structure became known as the Winters Building and, over the years, housed retail space and a bank. But by 1973, when the East Bay Center for the Performing Arts took up residence in part of the building, much of it had fallen into disrepair: Its roofs leaked, its ceilings were low, and the first level's stalwart concrete face gave it the look of a bunker. Add to that a town that had lost much of its population after World War II and was plagued by drug-related crime, and the setting was grim.

Enter Jordan Simmons, who, since 1985, has been the center's artistic director and its effusive champion. In 2005, Simmons commissioned Mark Cavagnero Associates Architects, of San Francisco, to complete an \$8.3 million rehabilitation of the old Winters Building, a 16,000-square-foot, reinforced-



concrete-and-heavy-timber structure. In conjunction with a campaign to revitalize downtown Richmond, spearheaded by the city, funds became available from public, private, and corporate sources to pay for the renovation. "The original mission was not just about access to quality arts education, but also about creating a vehicle for social change,"

says Simmons. "The challenge for Mark was taking a narrow, long building and making it work for the program."

That program had to accommodate acoustically isolated practice rooms (in the basement), rehearsal spaces (throughout the building), an upgraded, 200-seat theater (on the second floor), and administrative offices (on the top

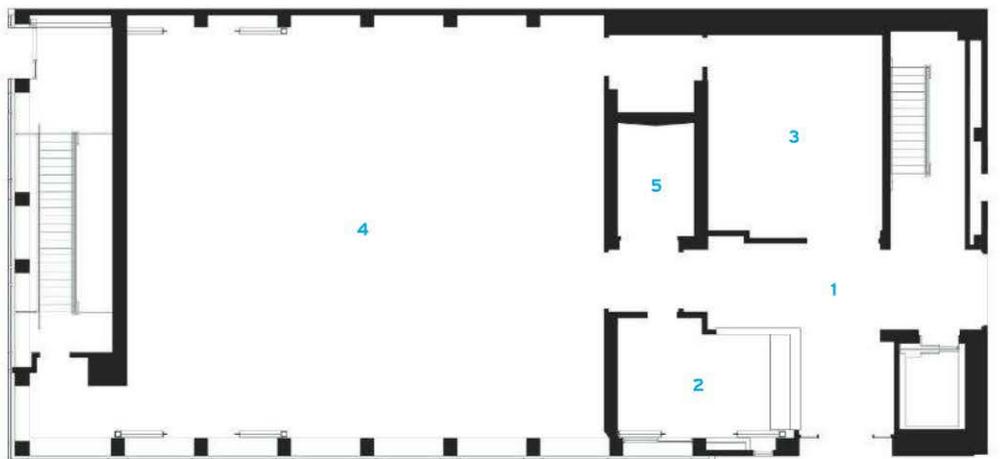
United States

level). Cavagnero undertook a gut renovation of the historic building, but aimed to keep it in line with the neighborhood's industrial aesthetic. The design team opted to expose new seismic bracing, which figures prominently in the first-floor reception area and in a 2,500-square-foot black box theater. Simmons insisted on simple, unadorned finishes overall that put the energy of the students, rather than architectural extravagance, at center stage. "We knew that the brackets and gusset plates and bolt connections would really be the only decoration," says Cavagnero. Vestiges of past occupants—advertising, signage, and decorative elements—are visible through windows on the newly transparent ground level, which replaces the previously impenetrable concrete facade with large glass panes and sleek black mullions. The firm also removed stucco from the exterior, exposing the original concrete and decorative details (including portraits of original owners Adolph and Elisabeth Winters), and put in new windows on the 25-foot-high second story.

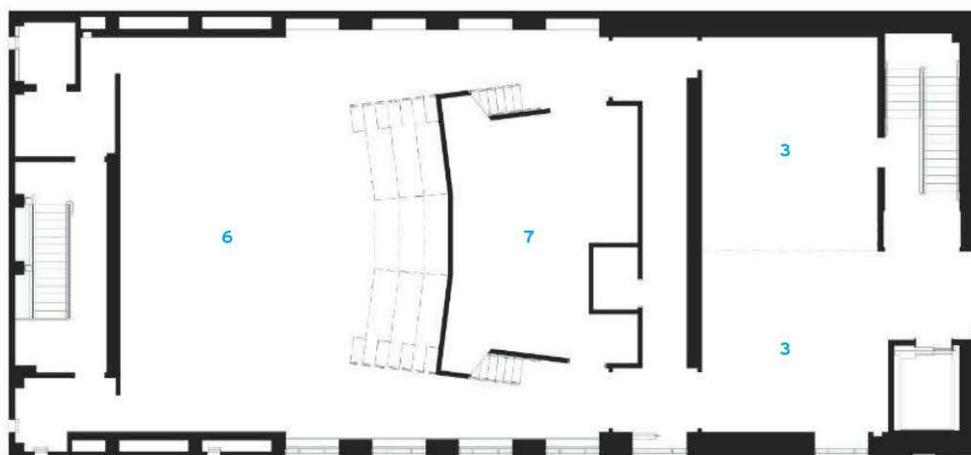
As on the ground level, the floor of the second level is dance-ready sprung oak. While multiuse spaces generally act as preshow reception areas, on the first floor this space serves double-duty as a large-group rehearsal room and, on the second, an almost identical space is sometimes employed for children's dance instruction. The theater, which was created from the space left when an original second-floor mezzanine was demolished, is also flexible, with 75 spaces for folding chairs and 125 fixed seats. The space under these seats is used for storage. "We worked with Mark to maximize every square foot," Simmons says.

On a recent visit, students at the center mentioned the theater and the cluster of practice rooms on the basement level as their favorite upgraded areas: Each student has a space in which he or she can practice, free from self-consciousness about noise leaking into adjacent rooms. When asked if Richmond's reputation as a place for violent crime and poverty is changing because of the center, 17-year-old Andre, a countertenor, pianist, and budding thespian who is one of the center's newest students, paused for a moment. "Well," he said, "I feel like it's changing the way I am. And since I'm part of Richmond, it's changing the way Richmond is." ■

- | | |
|--------------------------|----------------------|
| 1 LOBBY | 5 PRACTICE ROOM |
| 2 RECEPTION | 6 PROSCENIUM THEATER |
| 3 FLEXIBLE PROGRAM SPACE | 7 FIXED SEATING |
| 4 BLACK BOX THEATER | |



FIRST FLOOR PLAN



SECOND FLOOR PLAN





The pavilion occupies a spacious site in Windsor. A wooden ramp provides access inside, where custom-made wood counters line a central aisle delineating vendor space from public areas (below).

DESIGNERS: Studio H high school students, Project H Design.

BUDGET: \$72,000, 100 percent grant-funded.

CONTEXT: In Bertie County, North Carolina, one in three children lives in poverty. The poorest and most rural county of the state, it is swampy, humid, sparsely populated, and primarily agricultural. There is no Walmart, no movie theater, and the Bojangles' fried chicken joint is the only place with Wi-Fi access.

Windsor Super Market

Windsor, North Carolina

In 2010, Emily Pilloton and Matthew Miller moved their nonprofit design enterprise, Studio H, from San Francisco to Bertie County, North Carolina, to engage in a bold experiment in community development. There they established Project H, a design-build studio for high school students in one of the poorest-performing school districts in the state. “We teach design thinking and vocational skills to apply to improving the local community,” explains Pilloton. Working in a converted auto body shop, 10 high school students designed and subsequently built an open-air farmers market in the county seat of Windsor for local farmers. Following a full year of academic programming, “we hit the jobsite, shifting gears from a studio to real-life construction site,” says Pilloton. “Managing the design team as well as the budget, legal/safety issues, time frame, material procurement, etc., was a daily balancing act.”

None of the students had ever done anything remotely like this in their lives. “They followed a typical academic design process, including research, conceptual sketching, design development, model making, and critique,” says Miller. When ready to build, students prefabricated truss elements in the shop. Because the teens were not allowed to operate power equipment, they hand-assembled the rest of the 1,800-square-foot structure on-site. Completed in October 2011, the pavilion’s rectangular structure appears to float above the ground. Locally grown and milled southern yellow pine wraps the building at the top and bottom, open to the air in between. One student, Colin White, admitted that the town did not believe the students would get the project done, but “we built it, it was just us. Every time I see it, I have such a sense of pride.” *Jane Kolleeny*

PHOTOGRAPHY: © BRAD FEINKNOPF



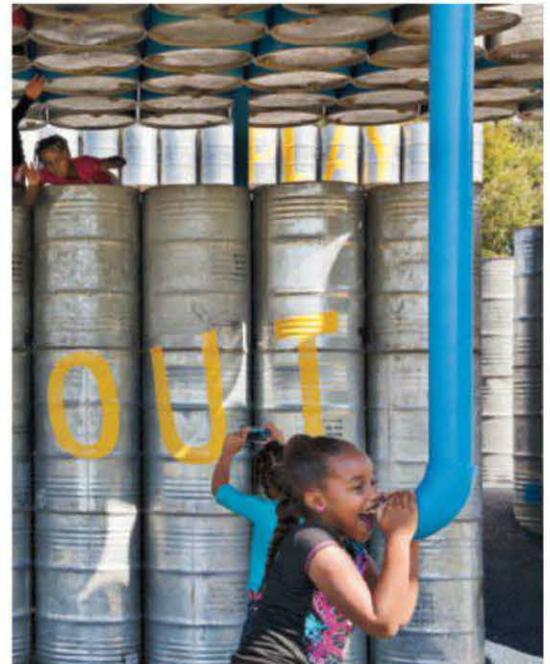
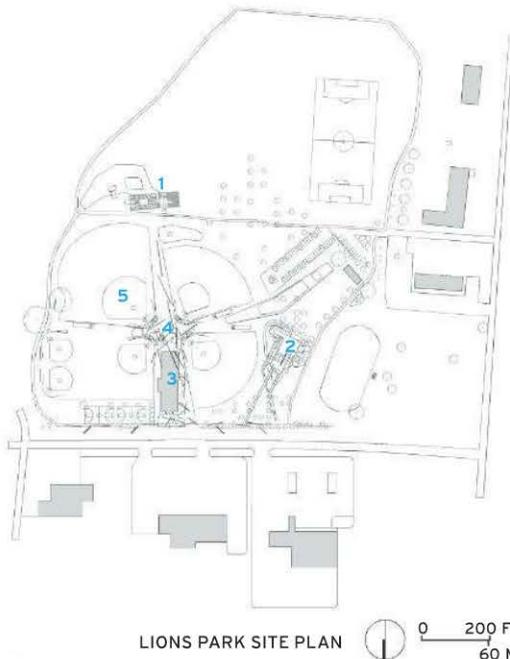
United States



For the playscape at the Lions Park in Greensboro, Alabama, students from Auburn University's Rural Studio created a mazelike environment on the ground and a canopy overhead of steel drums. The project also includes swings and sound tubes made of the same steel that supports the canopy.

ARCHITECT: Auburn University Rural Studio.
BUDGET: N/A.
CONTEXT: The playscape replaces an inhospitable playground at a park jointly owned by the City of Greensboro, Hale County, and the local Lions Club.

- 1 PLAYSCAPE
- 2 SKATE PARK
- 3 RESTROOMS
- 4 CONCESSION STAND
- 5 BASEBALL FIELDS



Lions Park Playscape Greensboro, Alabama

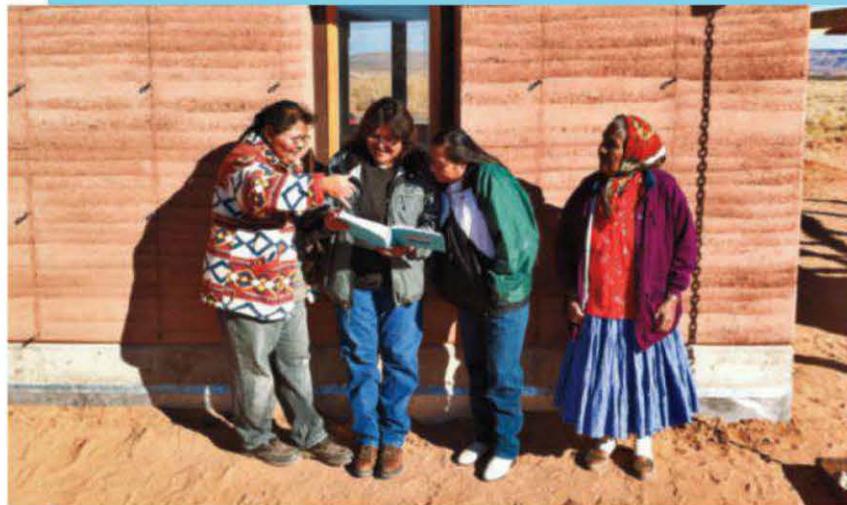
“Individually they are ugly. But in agglomeration they are beautiful,” says Andrew Freear, director of Auburn University’s Rural Studio. Freear is referring to the galvanized steel drums making up the design-build studio’s latest intervention at Lions Park in Greensboro, Alabama.

Completed in September, the “playscape,” which replaces a much-vandalized playground, is the fifth element designed and constructed at Lions Park by Rural Studio students. Since 2007, successive thesis classes have built baseball fields, bathrooms, a skate park, and a concession stand in the 40-acre park.

With this most recent piece, the students hoped to create an environment that would foster children’s sense of imagination. “Traditional playgrounds don’t encourage make-believe,” says Cameron Acheson, a current Rural Studio staffer and a member of the thesis class that designed and built the playscape. Acheson, along with fellow students Bill Batey, Courtney Mathias, and Jamie Sartory, clustered almost 2,000 of the donated 55-gallon drums—originally used to transport mint oil—in a mazelike arrangement. Kids can hop from the top of one drum to the other and run in between them.

In order to shade the playscape, Chicago-based structural engineer Joe Farruggia helped the students develop a canopy constructed of the drums. With the exception of those that surround vertical tube-steel supports (where extra rigidity was required), the top and bottom of each container have been removed, so that children can see the sky and watch the clouds sweep by. Each cylinder is welded to those adjacent to it in eight places, creating an assemblage that performs structurally like a truss, explains Freear.

Although the studio subcontracted the installation of rubber safety surfacing, the students performed almost all of the remaining work themselves. For each of the cylinders comprising the maze, for example, the students leveled the earthwork, installed geotextile fabric, and spread and tamped gravel. They then placed and leveled each drum, welding it to its neighbors, before starting the process again. It was tedious and backbreaking work, but rewarding, says Acheson. Construction “was both the best and the most difficult part.” *Joann Gonchar, AIA*



A rammed-earth house for Maxine Begay (far left) and her 10-year-old son, Maurice, evokes the traditional hogan dwelling of the Navajo people.

ARCHITECT:
DesignBuildBLUFF/
University of Colorado,
Denver.

BUDGET: \$43,800.

CONTEXT: On a Navajo reservation in the arid southwestern desert, a design-build studio teaches students about passive design strategies.

The Windcatcher House Bluff, Utah

A “windcatcher” is a centuries-old Persian technology featuring a tower that takes advantage of natural ventilation by capturing and cooling air. Hank Louis, founder of DesignBuildBLUFF, the University of Utah/University of Colorado, Denver design-build studio, recognized the merits of this simple solution for a recently completed Navajo family home. The house features a tower made of compressed earth bricks with four openings around the top. As the wind blows through the slits, wet blankets (moistened by a drip line) chill the air that then circulates around the home. The National Renewable Energy Laboratory (NREL) helped the students engineer the tower, which works in concert with a ceiling fan to cool the space. A combination of grants, donations, portions of participating students’ tuition, and support from the Utah Navajo Trust Fund financed the modest house. Students chose simple, locally available materials like rammed earth, cement board, salvaged rusted steel, and drywall for the construction. “It was the first time we’d ever used rigid insulation in the middle of the rammed-earth wall,” says Louis of the experimental 24-inch-thick walls. “It was difficult because we had to carefully build up each side simultaneously.” Many materials—such as the aluminum ceiling panels—were donated, and students got creative with other fixtures. The front entrance, for example, is a pivoting door on a ball bearing that the students devised from car parts. “We’re trying to teach these kids common-sense building strategies, says Louis. “Sustainability folds in nicely with the curriculum of students learning about this culture and having compassion for people without housing.” *Alanna Malone*

United States



East Oakland Sports Center Oakland, California

A city-commissioned, 25,000-square-foot community sports center aiming for LEED Silver (left) takes its stylistic cues from a nearby shipping company's unadorned HQ. Sustainable materials and features (solar-thermal panels, rainwater-collecting bioswales, a solar-heat-gain-reducing brise soleil) prove green can be fun while providing a haven for kids and the elderly. *Asad Syrkett*

ARCHITECT: ELS Architecture and Urban Design.

BUDGET: \$20 million.

CONTEXT: In a neighborhood notorious for drug- and gang-related activity, the building allows respite and recreation on a site once proposed for a sports center for San Francisco's unsuccessful 2012 Olympics bid.



Joplin High School Joplin, Missouri

After a deadly tornado tore through Joplin, Missouri, last May and destroyed the local high school (above), district officials pledged to be ready for the regularly scheduled start of the school year—less than three months away. Within a vacant 96,000-square-foot store at a shopping mall (above and below right), architecture firms DLR and Corner Greer created a campus for 1,000 11th- and 12th-graders that includes classrooms clustered to encourage collaborative teaching, and spaces, like a cybercafé, for socializing and group study. The architects plan to incorporate these features in a permanent school slated to open in August 2014. *Joann Gonchar, AIA*

ARCHITECTS: Corner Greer & Associates, DLR Group.

BUDGET: \$5.5 million.

CONTEXT: A former department store was transformed into an educational campus after a tornado destroyed the town's high school.





Star Apartments Los Angeles

ARCHITECT: Michael Maltzan Architecture.
BUDGET: \$19.3 million.

Michael Maltzan Architecture's third project for the Skid Row Housing Trust will connect to its urban context in a variety of ways. For example, the now-under-construction 95,000-square-foot building (left) will incorporate an existing one-story structure slated to house shops and support services for both residents and the larger community. Above this podium, prefabricated apartments will be stacked to define recreational spaces and courtyards, making it the first modularly constructed, multiunit residential building in Los Angeles. *Joann Gonchar, AIA*

CONTEXT: When completed in 2013, Star will add 102 apartments to the approximately 1,300 residential units managed by the Skid Row Housing Trust. The organization provides housing for people who might otherwise live on the streets of Los Angeles's Skid Row—a neighborhood with one of the largest concentrations of homeless people in the country.

The Laura A. Parsons Building Bronx, New York

"We maximized the use of cost-neutral elements—light, form, color, and proportion—to make every dollar count," says WASA/Studio A senior partner Jack Esterson about the 30,000-square-foot facility (right) for men struggling with substance abuse. On the first two floors, which house support services such as counseling, vocational training, and medical care, a frosted-glass facade lets in daylight but preserves privacy. The top three floors of bedrooms establish a hierarchy of progression for clients—if they stick to the treatment, they move from shared rooms on lower floors to private rooms on upper floors with better views. Residents maintain a garden in the rear and create artwork for the interiors, both forms of therapy. Appeasing the three different agencies collaborating on the state-funded project was difficult, but "we were determined to deliver a beautiful building," says Esterson. *Alanna Malone*

ARCHITECT: WASA/Studio A.
BUDGET: \$10.5 million.

CONTEXT: VIP Community Services, a nonprofit specializing in substance-abuse treatment programs, opens a facility in the heart of the Bronx for 80 men recovering from addiction.

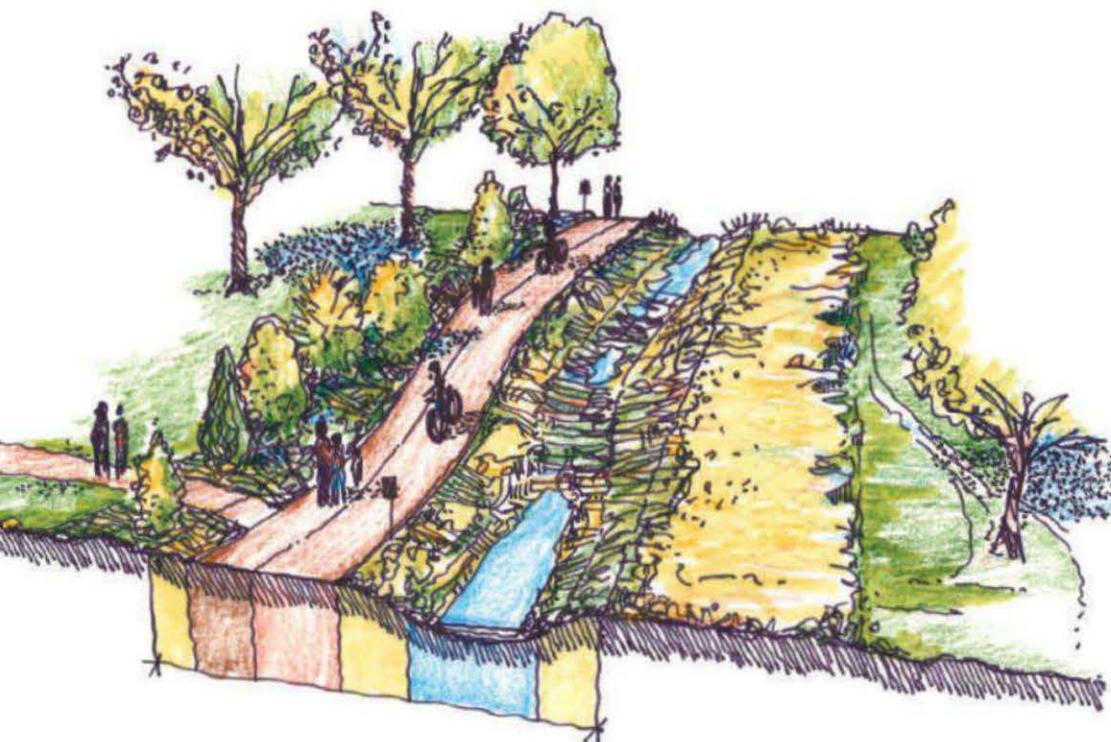


Disaster Recovery Plan Tuscaloosa, Alabama

The twister that pummeled Tuscaloosa on April 27, 2011, killed more than 50 people and left a trail of destruction a mile wide and more than five miles long. The city's plan for rebuilding calls for neighborhood-scaled commercial centers, improvements to several city parks, and the construction of new municipal facilities like police and fire stations. The scheme also includes a recreation trail that doubles as storm-water-management infrastructure. This greenway (left), dubbed the "Citywalk," follows the scar left by the tornado, preserving it as a "path of remembrance and recovery," explains Stephen Hardy, BNIM associate principal. *Joann Gonchar, AIA*

Master Planner: BNIM.
BUDGET: N/A.

CONTEXT: The recovery plan for Tuscaloosa responds to a devastating tornado with a multipronged rebuilding effort.



Latin America

- » FERNANDO BOTERO LIBRARY PARK / G Ateliers Architecture
- » LEARNING AND INNOVATION NETWORK / Ludens
- » LO BARNECHEA / ELEMENTAL
- » SHIROLES RURAL SCHOOL / Elisa Marin & Manfred Barboza
- » NUEVA ESPERANZA SCHOOL / al bordE arquitectos
- » JARDIN INFANTÍL PAJARITO LA AURORA / Planb arquitectos & Ctrl G

Six projects highlight architecture's role in galvanizing communities, in particular through centers for learning.



ARCHITECT: G Ateliers Architecture (Orlando Garcia, design principal; Adriana Salazar, project team).

BUDGET: \$103/square foot (construction cost).

CONTEXT: A township on the west side of the Aburrá Valley on the fringes of Medellín. It comprises 17 hamlets and is dependent on flower cultivation and agriculture.

The front facade (opposite) has a civic presence; the back (left) is scaled to the pedestrian. The open-air vestibule (below) looks down to the entry atrium, soon to house a cat sculpture donated by Botero.



Fernando Botero Library Park

San Cristóbal,
Medellín, Colombia

BY BETH BROOME

Cool and urbane, the Fernando Botero Library Park stands sentry on the hillside of San Cristóbal, a rough-edged “urban village” on Medellín’s western fringes. The city’s sixth library-park, it is one of the newest additions to the public building program here, which has garnered worldwide attention in recent years. “It is a difficult topography,” says G Ateliers Architecture’s Orlando Garcia of the mountainous terrain dotted by informal brick construction, “so we wanted to do a simple yet powerful building.” Referring to the constraints of time, budget, and the local workforce’s ability, Garcia notes, “We worked with the reality of our means. That is also part of understanding the context.”

In 2001 the architect, who is from Medellín, relocated to New York City, where he eventually established a practice. Later, in the face of the recession and with all his projects on hold, he amped up his participation in competitions. When he won the commission for the San Cristóbal library in 2009, he returned to Medellín for the duration of the project.

Like the library-parks that precede it, this one (named for Medellín-born figurative artist Fernando Botero) is a community center for the underserved. But it stands apart as the first designed for one of Medellín’s five *corregimientos*—agricultural/urban townships on the city’s outskirts. San Cristóbal, which grew in the shadow of the city, has gained a recent visibil-



ity thanks to a new highway connecting the Pacific and Caribbean coasts that passes through the district. The competition brief for this new building (which is part of a larger plan that will include a hospital and government administration offices) spelled out the basic programmatic needs: a lending library, daycare, computer rooms, meeting spaces, and visual and performing arts facilities. As the project progressed, members of the community became involved in the preliminary program phase, says Garcia: “Their desires and dreams are reflected in this building.”

To free up as much of the site as possible for open public space while retaining existing footpaths, and to simplify construction, the architects designed a bar-shaped volume with a small footprint. The library stands out dramatically against the background of surrounding buildings with their sides of unfinished brick block that face the valley. “We thought our building could honor its context by also having these openings looking to the landscape,” says Garcia. “The idea of using perforations to intensify the identity of the place, and as a texture for the building, became the driving idea.” To

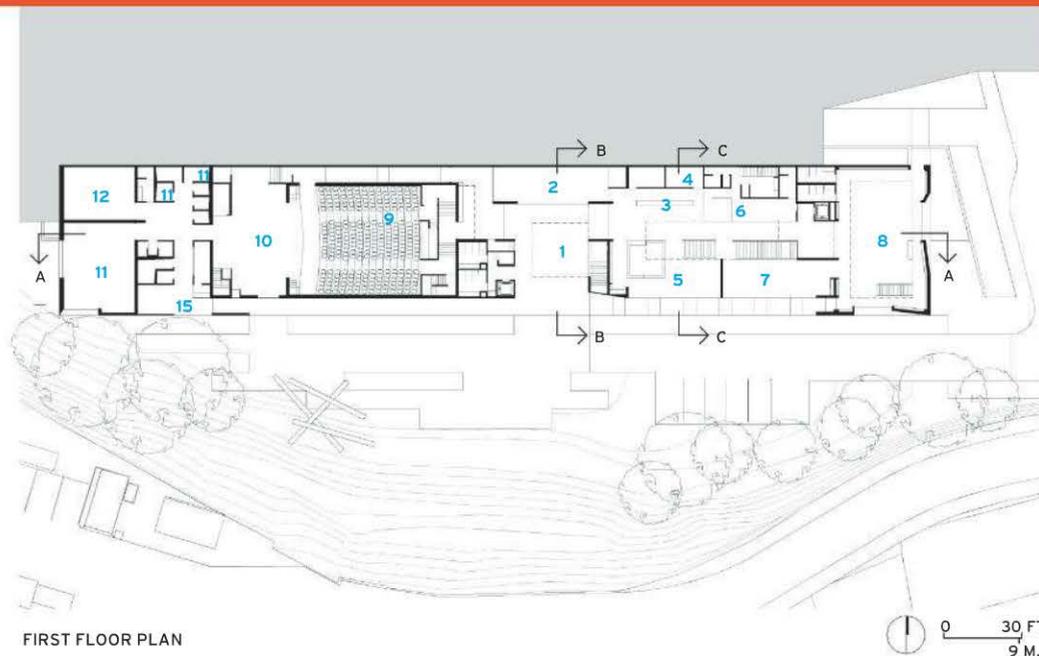
Latin America

keep things simple and on budget, the team employed humble, sprayed-concrete insulated panels as cladding for the concrete-framed building, and dressed it up by painting it black. While the 48,000-square-foot building asserts its presence during the day, it vanishes in the landscape at night, its windows twinkling along with thousands of others on the hillside.

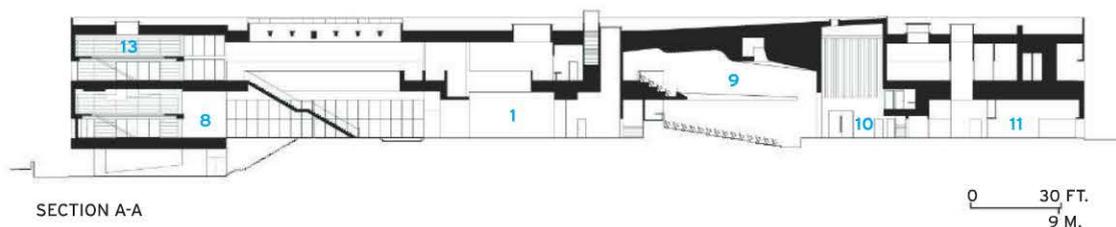
From a distance the library appears monolithic. But the interior is a series of carved voids that offer surprising glimpses through and between the spaces. On a recent morning, schoolchildren popped out on balconies, while teenagers congregated in the shade of deep overhangs below. Meanwhile, a group of senior citizens chanted the Lord's Prayer in the open-air vestibule that looks down to the entry atrium, before jogging a lap around the building. The black walls flow inside as plaster on a brick block and CMU substrate. The somber hue underscores the building's importance as a place of learning but also its role as a backdrop animated by the natural environment and human activity. "One of the ideas," says Medellín-based associate designer Adriana Salazar, "was for each window to capture a detail of the landscape, which is a complex collage of images—from the rural town to the mountains and highway." As children study in the reading room, buses zip by below. Across the building in the music school another window reveals two women lost in conversation in a pasture, cows grazing beyond.

Ennobling a simple material palette rendered a building that appears serious but not severe. Everything is cheap and locally sourced, including brick from a nearby factory, oak paneling, and black terrazzo floor tiles. In an unusual move, the team made a 300-square-foot, full-scale mockup on-site to test materials and methods, hoping to avoid delays during construction, which took just 13 months.

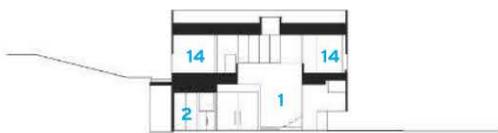
The Fernando Botero Library Park has quickly become an important resource for San Cristóbal. And it achieves this without condescending to a marginalized population. Instead, it communicates a dignity and respect for knowledge and community and for those who come seeking these things. "The people here have appropriated the library and its services and have become very protective of it," says acting library coordinator María Marcela Ocampo Rodríguez. Garcia takes the observation one step further: "The building is going to embed itself in the collective memory of the village," he predicts. "We hope that soon it will be hard to imagine San Cristóbal without it." ■



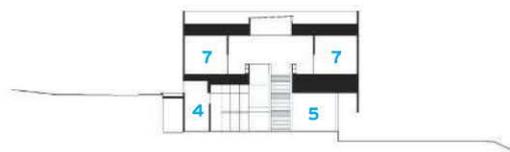
FIRST FLOOR PLAN



SECTION A-A



SECTION B-B



SECTION C-C

- | | |
|---------------------------|---------------------------|
| 1 ENTRY ATRIUM | 9 THEATER |
| 2 EXHIBITION SPACE | 10 STAGE |
| 3 FRONT DESK | 11 REHEARSAL ROOM |
| 4 MEETING ROOM | 12 MUSIC CLASSROOM |
| 5 COMMUNITY ROOM | 13 ADULTS' READING ROOM |
| 6 OFFICES | 14 OPEN-AIR VESTIBULE |
| 7 COMPUTER ROOM | 15 MUSIC SCHOOL RECEPTION |
| 8 CHILDREN'S READING ROOM | |





A large skylight covered with PVC membrane illuminates the central stair (opposite). The children's reading room (above) is animated by large windows, which admit light and the bustling activity outside, as well as a playful ceiling, illuminated by light fixtures with a sky motif. The design accommodates the addition of a perimeter balcony, should expansion be desired. A formal 313-seat theater (right) with a flyloft that makes for a sophisticated theater experience.



Latin America



Learning and Innovation Network Mexico City

"We wanted the construction to be very straightforward since, for many people, this would be their first encounter with technology," notes Mexico City architect Iván Hernández Quintela of his community tech hubs. To create classrooms, information centers, and cafeterias, modular units are inserted into existing community centers. Hernández says the units were inspired by "cimbras," the makeshift scaffolding found at local construction sites. For example, two-by-fours form the structure for a classroom's polycarbonate walls (left). Now, 72 of Hernández's computer centers are open around the city, offering classes to all ages for about 15 cents each.
Marina García-Vasquez

Lo Barnechea Santiago, Chile

Long-term residents of an informal community in danger of being priced out of a district of metropolitan Santiago are able to stay near schools and jobs owing to the construction of subsidized housing. The money came from the municipality and the ministry of housing; each family pays \$2,300 per dwelling. ELEMENTAL, led by Alejandro Aravena, designed 150 connected houses for the first phase, placing the poured-concrete-and-ceramic brick structures, painted white, around a courtyard on a 1.5-acre site. *Suzanne Stephens*

ARCHITECT: ELEMENTAL, a design firm led by Alejandro Aravena in partnership with Chilean Oil Company and Catholic University.

BUDGET: Cost of each house is \$37,800, including land and infrastructure.

CONTEXT: The 1.5-acre site of a former informal community in an expensive district in metropolitan Santiago.

ARCHITECT: Ludens (Iván Hernández Quintela and Norma Maldonado).

BUDGET: About \$33/square foot.

CONTEXT: The project repurposes existing community centers on Mexico City's densely populated and impoverished fringes.





Shiroles Rural School

Shiroles, Costa Rica

In the low-income, banana-farming community of Shiroles, 140 miles southeast of San José, infrastructure and basic amenities are sparse: Before San José–based architects Elisa Marin and Manfred Barboza helped establish the Shiroles Rural School in 2009, the closest school was 12 miles away. Government assistance, too, was minimal. Instead, “we had a lot of support from the community,” says 27-year-old Marin. This support came in both matter and might: parents and other members of the community donated manual labor and building material—timber from the surrounding forest and corrugated metal from a small store about an hour away. The most recent set of buildings was inaugurated in April 2011, heralding the completion of the second segment of a multiphase master plan developed by Marin and Barboza. “We tried to use materials that residents would be able to find in the future,” Marin explains, while bringing skills, not just schoolhouses, to the community. Going forward, Marin and Barboza will continue to raise funds to realize plans for a library, gymnasium, soccer fields, and, of course, several additional classroom buildings. *Asad Syrkett*

Because Shiroles is isolated from the country’s densely populated, higher-income Central Valley region, it is rarely visited by outsiders, says Marin: “[Building the school] was a nice opportunity for social integration.” University of Costa Rica design students worked alongside parents and kids in the community throughout the planning and building processes.

ARCHITECTS: Elisa Marin and Manfred Barboza.
BUDGET: \$8,000 per classroom, including furnishings.
CONTEXT: The town of Shiroles lies in the Costa Rican county of Talamanca. Much of Shiroles consists of reservations for the country’s indigenous peoples. The school serves the youth of these low-income agricultural communities.



Latin America

Nueva Esperanza School Manabí, Ecuador

The Nueva Esperanza School, which was completed in 2009, attempts to live up to its name—*new hope* in Spanish—by providing a much-needed one-room schoolhouse for a coastal Ecuadorian community. Simple materials (including locally sourced wood, dried palm fronds, and a minimum of purchased hardware) went into the 387-square-foot thatched-roof building, designed by David Barragán and Pascual Gangotena of Quito-based *al bordE* arquitectos, who were commissioned by one of the school's teachers, and donated their services. Construction was a team effort: Members of the community assisted a team of volunteers and *al bordE* staffers to finish the building's hexagonal base, walls, roof, and furnishings. *Asad Syrkett*



The scheme for the school was developed with Ecuadorian vernacular structures and the skills of local laborers in mind (top). To compensate for minimal floor space, *al bordE* fabricated a lumber-and-bamboo bookshelf (right) that acts as both storage and screen.

ARCHITECT: *al bordE* Arquitectos (David Barragán, Pascual Gangotena, principals).
BUDGET: \$200, donated by members of the community and the school's single teacher.
CONTEXT: In a beachfront community in the province of Manabí, 160 miles east of the capital of Quito.





The building celebrates the rooftop—highly visible in this city of steep hillside communities. Though they designed planted roofs, the designers settled for artificial turf when the city nixed the plan, for purportedly upkeep-cost reasons.

ARCHITECTS: Planb arquitectos (Federico Mesa); Ctrl G (Catalina Patiño, Viviana Peña, Eliana Beltrán).

BUDGET: \$1.84 million.

CONTEXT: A hillside neighborhood on the city's southwestern fringes with a large new public housing complex.



Jardín Infantil Pajarito La Aurora **Medellín, Colombia**

Starting in 2006, residents of Moravia, a community living atop a mountain of garbage in Medellín, were relocated to new public housing in Pajarito, a hillside neighborhood on the city's fringes, accessible by the new Metrocable line. Medellín-based Planb arquitectos and Ctrl G partnered in a public competition to create this daycare center for 300 of Pajarito's children. Deformed hexagon modules allowed for easy rotation and organizational flexibility of classrooms. The team linked the board-formed concrete volumes in a ring and connected them with an exterior corridor, rendering terraces and cloistered areas for play. The roofs fold to mimic the surrounding mountains and visually divide interior spaces. While the brief called for something more monumental, says Planb's Federico Mesa, "We wanted a building that was for the barrio, and for the children—at the right scale for both." *Beth Broome*



Africa

- » NIKE FOOTBALL CENTRE / RUFproject
- » GANDO VILLAGE / Kéré Architecture
- » OGUAA FOOTBALL FOR HOPE CENTER / Architecture for Humanity
- » GIRUBUNTU SCHOOL / MASS Design Group
- » UBUNTU CENTRE / Field Architecture

To activate change, new architecture is engaging local people in activities such as sports, entertainment, learning, and building.





ARCHITECT: RUFproject.

LOCAL ARCHITECT: MMA Architects.

BUDGET: Withheld.

CONTEXT: The Football Centre sits within the vibrant fabric of Soweto, the township in Johannesburg that became famous in the 1970s for its resistance to apartheid. Today more than 1.3 million people live in Soweto. The center serves as a hub for organizations fighting AIDS, as well as a sports facility and a place to promote the Nike brand.

Nike Football Training Centre

Soweto, South Africa

BY HANNAH LE ROUX

The Nike Football Training Centre is a billboard of a building in the loud and proud tradition of Soweto, South Africa's biggest and most ambitious township. From the rooftop of the three-story building, you can see an endless fabric of low-rise government housing and ad hoc shacks, but also signs of change: BMWs parked at the Maponya Mall, cabs heading to the revamped taxi stand at Baragwanath Hospital, and worshippers crowding into new Pentecostal churches. On most days, you will find groups of kids at play and in training on the immaculate soccer fields below.

These scenes suggest a new prosperity in Soweto, driven by the Johannesburg municipality's long-overdue investment in its infrastructure and by a burgeoning black middle class. But there is an underlying story, too—a reason for more churches and for upgrading the hospital's taxi facility. Soweto has some of the highest rates of HIV/AIDS infection in a country where the epidemic has lowered life expectancy to less than 50 years, and many of the township's young people engage in risky activities. Some kids on the fields of the Nike Centre hope to be spotted by a scout and make it to the pro leagues, but most come for fun. In the process, they hear messages that may save their lives.

The center offers a space between the aspirational worlds of young people replaying the

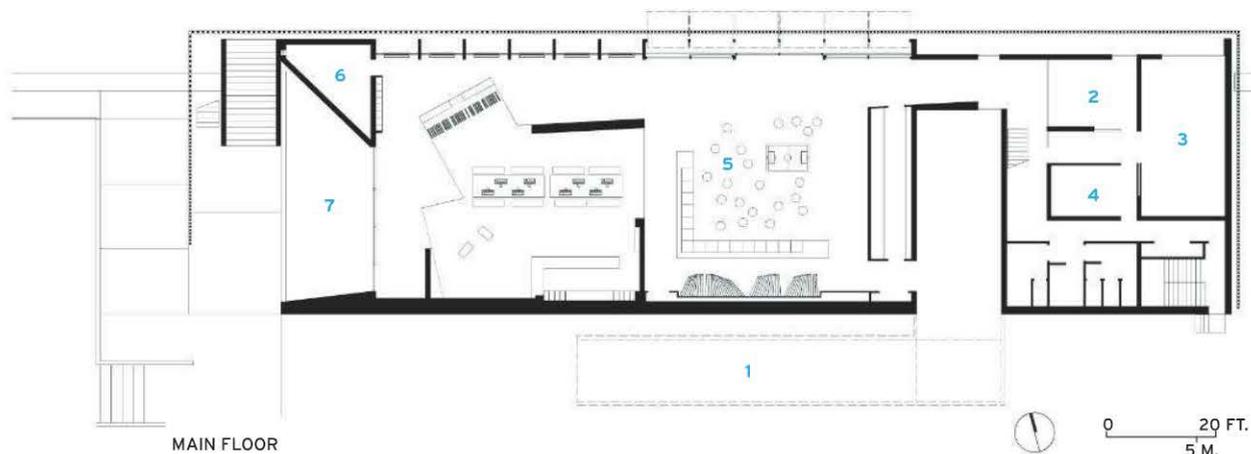


glory of South Africa's hosting of the 2010 FIFA World Cup and the hard realities of their lives. Built for Nike events right before the World Cup, it promotes the footwear company's global brand while also serving the local community. Its decor dovetails closely with Nike's advertising and retail look, in its mix of gritty images of young athleticism, bright colors, and eye-grabbing text. Its public spaces—particularly the entry-level hall with its display of inspirational objects from soccer stars and an array of shiny iMacs, as well as the boot room below—directly promote the mythology and products developed by the sponsor. The large windows of the central office floor, the covered area on the field level, and the roof terrace offer views of Soweto's first artificial-turf fields, making it a great place for drawing both spectators and players.

At the same time, the center supports the work of local organizations such as the Soweto Football Association, which will eventually

Interiors blend commercial images from Nike with social spaces for players (above and top). Balconies and a roof terrace provide multiple places for spectators, turning the north elevation into a kind of grandstand (opposite).

Africa



- 1 TUNNEL
- 2 OFFICE
- 3 CLASSROOM
- 4 CONSULTATION
- 5 LOUNGE
- 6 SECURITY
- 7 LANDING



In a renovated structure behind the new building (above), RUFproject worked with the graphic design agency Grid Worldwide to stamp each dressing room with the logos and colors of famous football teams sponsored by Nike.

take over its management. Another group, Grassroots Soccer, builds HIV/AIDS awareness through life-skills coaching, while the organization Right to Care runs HIV testing. A lobby mural promotes (RED) laces, Nike's brand that grew out of rock star Bono's campaign to raise money for AIDS and links the visual styles of the promotional and social spaces.

The building's architect, Sean Pearson of Vancouver-based RUFproject, worked as a paid consultant to Nike on the project, developing the program, construction process, and architecture. (He had been a design director for Nike in Europe before starting his firm in 2008.) His design addresses the potential discontinuities between the building's branding function and its social uses by detailing the thresholds between them in ways that are never absolute. The building uses glazing and screens rather than solid walls to divide public from private areas. Timber slats on the north facade reduce heat gain inside while maintaining views out. A chain-link fence designed by the South African artist Kronk lets neighbors look into a playing area in the back, and carries on the energetic branding of the interior.

In designing the interiors, Pearson articulated routes that parallel the success stories of Nike-sponsored players and the lives of local kids. He renovated a tired building in back of the new one to changing rooms, using the striking visual style and logos of Nike teams on the walls. As athletes walk to the playing fields, they see inspirational messages, iconic images, and the names of the center's first graduates amongst those of famous players. However ephemeral this experience, it works with the architecture to inspire life-changing choices. ■

Hannah le Roux is a Johannesburg architect.



says Kéré, who grew up in the remote agricultural community of 6,000 people, left to go to study in Germany, and today runs a seven-person office in Berlin. “Now people everywhere know me through this work, so I am getting something back from it.”

His first project for his home village was a clay-brick primary school, which caught the attention of the humanitarian design world—winning the Aga Khan Award for Architecture in 2004—in part because it was built by local people from materials made mostly on-site. “Francis is a great example of someone who works with a community, bringing knowledge, adapting it to the local means, and exchanging it—not just doing charity architecture,” says Andres Lepik, current Loeb Fellow at Harvard’s Graduate School of Design and incoming chair of architectural history and curatorial practice at the Technical University of Munich. Lepik featured Kéré’s work in the 2010 exhibition *Small Scale, Big Change: New Architectures of Social Engagement* at New York’s Museum of Modern Art. “He also designs beautiful projects, which is important because you’re not only providing for a need but creating something of cultural value as well.”

Kéré’s three new projects under construction in Gando are funded largely through his foundation and, like the primary school, they employ local labor and materials to create public buildings that arise from the community they serve. “When people make things themselves, they protect them,” says Kéré.

Public Projects

Gando Village, Burkina Faso

BY WILLIAM HANLEY

The village of Gando is more than a three-hour drive from the capital of Burkina Faso, Ouagadougou, on occasionally unpaved roads that thread through a landscape of scorched orange dust and isolated trees buffeted by sub-Saharan winds. It’s an unlikely place to launch a global design practice, but architect Diébédo Francis Kéré couldn’t imagine doing this anywhere else. “In the beginning, I built in Gando because I had a duty to my family,”

Gando Library

Kéré’s library floats an iron roof over an oval structure, creating an enclosed space and a shaded outdoor reading area. Perforations in the ceiling made with traditional clay pots provide ventilation to the interior.

ARCHITECT:
Kéré Architecture
(Diébédo Francis Kéré).

BUDGET: \$46,536.
CONTEXT: Currently under construction, the library stands adjacent to Kéré’s original primary school and its subsequently built expansions and teacher housing. When completed, the library will serve both students and the public.



Africa



Women's Association Center

With built-in storage for cereal grains, made from clay pots embedded in the walls, the women's center will foster a growing number of women running small businesses in Gando. An iron roof supported by a timber frame rises above clay-brick ceiling vaults. Gaps in the ceiling allow air to circulate through the interior storage and meeting spaces.

BUDGET: \$66,480.

CONTEXT: In a region where some 97 percent of the female population over age 15 is illiterate, the cooperatively run center will provide a space for adult-education programs, as well as classes about health, nutrition, and agriculture for 300 village women. Kéré hopes the completed project will attract both governmental and nongovernmental organizations to develop programming for the center.

The building process also teaches people skills that can be used to maintain the structure and be applied to other projects. With the new projects—a women's center, a library, and a secondary school—Kéré is experimenting. He is rethinking Gando's native materials, finding new ways to mitigate the region's harsh climate, and developing techniques for building much faster.

The 3,900-square-foot Women's Association Center, a cooperative, will provide classrooms, a kitchen, latrines, a meeting room, and a collective storage area for 300 women in the agricultural community. Located next to Kéré's family compound, the building will curve in plan around an old-growth neem tree, a traditional gathering place because of the shade it casts. Benches set into the curving wall allow a group to watch a presenter standing in front of the tree's trunk.

The building's timber frame supports a sweeping roof that references European Modernism, but is made from corrugated iron, a common material in Burkina Faso. Hand-formed earth walls rise to meet it. Clay pots embedded into the walls allow the women who use the center to store surplus grain, which they can later sell. "The pots are made by village women," Kéré says. "And the idea was to help them run a good business using elements that are familiar."

Kéré's experiments with using pots as built-in storage led him to devise another use for the nontraditional building material. Adjacent to his primary school, he is currently constructing a 1,600-square-foot library. The oval-shaped, clay-brick building has a concrete ceiling that villagers poured around a cluster of specially made pots with open bases. A rectangular iron roof raised several feet above the ceiling on an open steel rebar structure will extend beyond the oval to shade outdoor reading areas. As the sun heats the metal roof, hot air inside the library will be drawn up through the pots perforating the ceiling, creating a stack effect to cool the interior.

A facade of eucalyptus louvers will enclose the exterior spaces, further shading them from the sun. Eucalyptus grows like a weed in Burkina Faso and is normally used only for firewood, but Kéré has introduced it into his projects as a renewable building material.

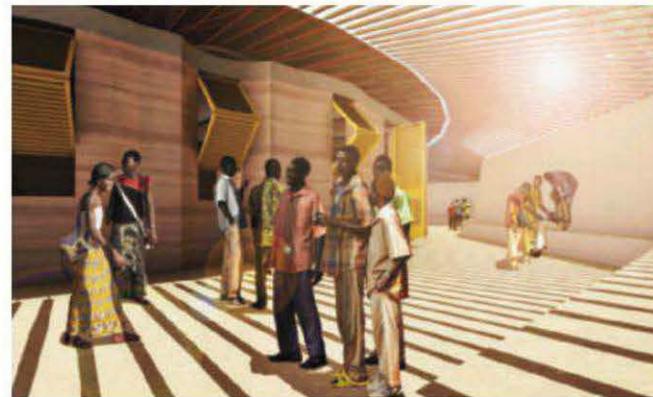
Construction of the library was slated to be completed by the end of 2011, but in June of last year, Kéré's father, the head of a family group that extends to hundreds of people in



the village, died. As the oldest son of 13 children, Kéré had many ceremonial obligations to perform, which led to several construction delays since the building schedule must work around the agriculture calendar. With work needing to finish before the next rainy season—you can't build with clay in a downpour—and funding for the Women's Center from the German government contingent on an April completion date, Kéré sped up construction on all three projects.

Instead of forming bricks from clay and drying them for a full month, Kéré worked with villagers to develop a process for casting clay like concrete. The method allows two people to pour a mixture of clay, gravel, sand, and cement into iron formwork. The mix sets in one day, and the forms can then be reused. He is putting the system to the test with the new secondary school where the walls will be cast in six-foot sections using two modular forms—one solid, one with space for a window. He expects to complete the walls in less than two months.

The building is the first in a 42,000-square-foot complex that follows the traditional layout of a family compound in Gando, a ring of structures closed to the dusty winds from the east and open to western breezes. His ambitious plans have more than just the backing of his supporters abroad. "When his father died, Francis inherited a lot of responsibility, but also a lot of power," says Lepik. "He can say, 'We are going to build this,' and command 30 to 40 people." Even as he works on projects from an exhibition space in Switzerland to an industrial waterfront rehab in China with his Berlin-based practice, Kéré has become leader in his hometown. ■



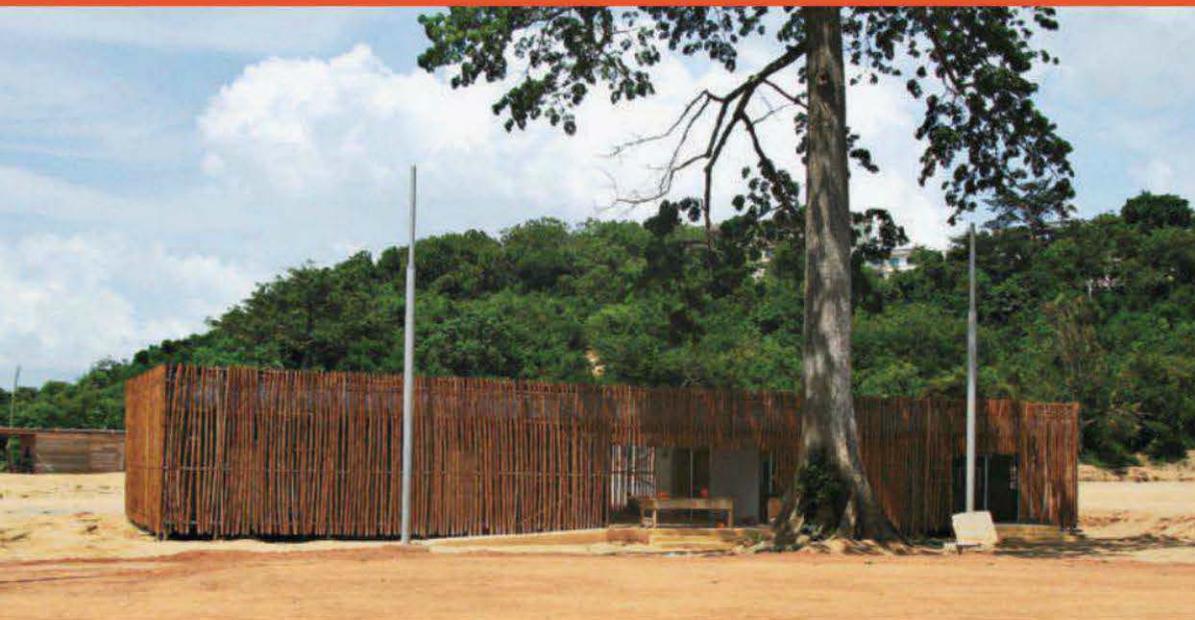
Secondary School

Kéré's plan for a secondary school includes air shafts leading from vents in the floor to beds of vegetation—irrigated by a rainwater cistern and a deep well with a wind-powered pump—located outside. As the roof pulls hot air up through a porous ceiling, cooler air from the beds will replace it from below.

BUDGET: \$46,536.

CONTEXT: Education at the primary school (pictured, top, with Kéré in white) will continue at the secondary school (renderings, middle and bottom) in a new, separate complex. The plan follows the layout of a traditional Gando compound, with a ring of buildings enclosing an overlapping series of courtyards, some shaded by louvered coverings.

Africa



Oguua Football for Hope Centre Cape Coast, Ghana

One of 20 football facilities that Architecture for Humanity is designing across Africa for the nonprofit Play Soccer, the Oguua center is a place for disadvantaged youth to learn soccer, health, and social skills. Doubling as a community center, it is located on the grounds of Mfantshipim, the Gold Coast's first secondary school (and Kofi Annan's alma mater), established in 1876. Designed by Architecture for Humanity fellow David Pound, the Oguua center has a 2,150-square-foot steel frame made of recycled scaffolding poles. It is clad in bamboo that was harvested, supplied, and installed by the Sabre Charitable Trust, a local nonprofit. Shipping containers raised up on concrete-filled oil drums house classrooms, while timber decks create informal, ventilated spaces around them.

Despite frustrations—slow construction pace, lack of skilled workers, and difficulty sourcing certain materials—Pound described his experience on the project as a rare privilege. “We got community members to discuss their expectations for the project,” he wrote in an e-mail from Ghana, where he is now designing a school. “It helped the community develop connections with the project so they could understand that it was not exclusive, but a place where they could all go.”

Laura Raskin



Trees have a special social importance in Ghana, so the architects set the football center and pitch around the mature specimen seen above.

ARCHITECT: David Pound, Constructs LLC.

BUDGET: \$185,000.

CONTEXT: 1.5 miles from Cape Coast Castle, the British hub of the transatlantic slave trade.

Ubuntu Center Port Elizabeth, South Africa

Set at a crossroads in Zwide, a township in Port Elizabeth, this multipurpose center provides pediatric HIV/AIDS testing and treatment, as well as spaces for dance classes, performance, and social functions. By including non-health-care activities and placing the building at an important intersection, the Ubuntu Education Fund aims to integrate the center with the local community and make HIV care a part of

people's daily lives. Stan Field, who grew up in Port Elizabeth, and his son Jess designed the building as a series of poured-in-place concrete structures that seem to lean on each other and embody the client's mission of people supporting one another. Founded in 1999 by a young American, Jacob Lief, and a South African teacher, Banks Gwaxula, the Ubuntu Fund is dedicated to providing education and health care to children from birth to adulthood. *Clifford A. Pearson*

The architects used overhangs and wood screens to reduce the impact of the sun, and created covered and outdoor paths through the project. Instead of sitting behind a wall for security, the center relies on its users' feeling of ownership to discourage graffiti.

ARCHITECT: Field Architecture.

BUDGET: \$6 million.

CONTEXT: The building replaces a post office that had been burned down as a symbol of apartheid. Opened in October 2010, the center acts as part of the community's recent transformation, says Stan Field.



Girubuntu Primary School

Kigali, Rwanda

In addition to designing the Girubuntu school, MASS Design Group founders Michael Murphy and Alan Ricks helped select its site, get approvals, and build the organizational infrastructure to support it. Working with their client, Brooks Newmark, and his charity A Partner In Education (APIE), the designers (who were still at Harvard's GSD when planning began in 2007) immersed themselves in Rwandan society, culture, and bureaucracy. "I personally purchased the property, then had Brooks transfer money into my bank account," says Murphy.

The new buildings house nine classrooms, a library, a computer room, administration space, and a kitchen, which replace a rundown facility one mile away. They use local materials such as brick and bamboo, and rely on natural ventilation and sun shading to reduce energy consumption. Set on a terraced hillside, they incorporate outdoor spaces (some covered by sloping roofs) as extensions of the classrooms. MASS's project manager Garret Gantner and project architect Sierra Bainbridge used verendeel trusses for the roofs, employing clerestories that bring in the strong equatorial sun from above to balance light from windows. Classes in the new school began in January 2012. *Clifford A. Pearson*

The school serves a mixed-income group of students, about one-third of whom do not pay tuition. It was designed to help teachers move away from the old "chalk-and-talk" model of education and use more integrated lesson plans, says Murphy.

ARCHITECT: MASS Design Group — Michael Murphy, Alan Ricks, Garret Gantner, Sierra Bainbridge, Andrew Brose, Branden Collins, Ebberly Strathairn, Eric Mutabazi, project team.
BUDGET: \$280,000.

CONTEXT: The school sits on a hillside in the Kabeza neighborhood of Kigali, which is growing rapidly with both low- and higher-income residents.



Japan post-disaster

- » BANYA / Yasushi Takeuchi, Motomu Uno, Shuji Funo
- » CONTAINER HOUSING / Shigeru Ban Architects
- » CAMPSITE HOUSING / Masayuki Harada, Daisuke Sugawara
- » KAMAISHI PLAN / Toyo Ito & Associates
- » BATH HOUSE / Hiroto Kobayashi

One year after the catastrophic earthquake and tsunami, Japan is making progress toward rebuilding its devastated east coast, assisted by local architects and construction professionals eager to help—but there is still a long way to go.

by Naomi R. Pollock, AIA

On March 11, 2011, a 9.0-magnitude earthquake struck Japan's eastern Sanriku coast, triggering an enormous tidal wave that left 310,000 people homeless, 23,000 dead or missing, and a cluster of unstable nuclear reactors. Today the debris is largely cleared, roads are open, railways are back in operation, and more than half of the damaged seaports are functioning again. And there is more good news. All of the evacuation centers are closed, thanks to the completion of temporary housing throughout the blighted region.

After the quake, many architects were quick to get involved. Just eight days later Hitoshi Abe launched ArchiAid, a network intended to support a range of reconstruction activities. And early on a group of five Tokyo architects—Hiroshi Naito, Toyo Ito, SANAA's Kazuyo Sejima, Kengo Kuma, and Riken Yamamoto—formed KISYN-no-kai in an effort to contribute their skills to the rebuilding. But with reconstruction plans moving at a snail's pace and planning matters delegated to civil engineers (as Japan is wont to do), these groups are turning their attention to small interventions and community-centered activities.

Myriad temporary housing developments, funded entirely by the central government, occupy schoolyards, baseball diamonds, and any other usable land. Built at the discretion of individual municipalities by local contractors, the housing projects are intended for two-year occupancy. This short term excuses the projects from the usual building codes. Yet realistically, it will take a lot longer than two years to put a permanent solution in place.

To qualify for funding, projects must comply with government standards, such as a 323-square-foot size limit. But these developments vary in quality, often requiring custom interventions to make them tolerable. To help, volunteer architects and students are boosting comfort levels by building benches, installing shelving, and taping insulating plastic sheets on windows. "It's not glamorous or 'design,' but the impact on people's lives is enormous," says Liz Maly, a doctoral student researching global-



disaster-relief housing at Kobe University.

Stopgap construction fixes, however, cannot resolve the endemic social issues. Since few of the afflicted communities were able to move en masse into a single development, residents were wrenched not just from their homes but from their support networks as well.

Doing what they can to offset the deficits, architects are designing small buildings that they, and the community, can erect quickly, without equipment or skilled labor—both in short supply. "This is the first time many architects are actually building," says Shigeru Ban. "They are always leading groups, but if there are too many leaders, nothing moves." Still, the question of permanent solutions—a 10-year process as anticipated by the Prime Minister's Reconstruction Headquarters—looms large. And while architects are engaged in the discussion, their role is yet to be determined and the process is slow.

One problem is where to rebuild. Because of the tsunami, and a threat of future tidal waves, the in situ reconstruction typical after an earthquake is risky at best and impossible where the water level has risen for good. But

Architect Yasushi Takeuchi (right) surveys the debris near the ruins of the destroyed Shizugawa fish market with his client and the branch head of the local fishermen's union. The site was cleared of rubble by the Japanese Self-Defense Force before construction for the Banya (opposite) could commence.

flat land is limited and leveling mountains is expensive, even for the government, which has allocated 18 trillion yen (about \$232 billion at the time of publication) for reconstruction, according to the *Nihon Keizai Shimbun*, a leading economics newspaper.

Another issue is what to rebuild. "[Local residents] want to recover what they had before, but even then half of the shopping areas were closed," says Abe, a Sendai architect and chair of Architecture and Urban Design at UCLA. The consolidation of shrinking towns was already being considered for the region, which had been affected by depopulation and an aging citizenry prior to the disaster. And in Fukushima Prefecture (home of the Daiichi nuclear debacle) actual damage was modest, but no one really knows when it will be safe for residents, mainly farmers, to return. ■



Because of the acute labor and equipment shortage, the building was assembled from a precut system. It serves as a preparation area where fishing nets and other equipment are readied, as well as a communal space for meals.

ARCHITECT: Yasushi Takeuchi; Motomu Uno, Shuji Funo, collaborators.

BUDGET: N/A.

CONTEXT: Located off the coast of Miyagi Prefecture in Shizugawa, a town famous for its oysters, the *banya* is a gathering place for a group of local fishermen and fishmongers. Designed by Professor Yasushi Takeuchi with his students and collaborating colleagues, the wooden structure was built entirely with donated materials and volunteer labor.

Shizugawa Banya

Miyagi Prefecture

Yasushi Takeuchi, a professor of architecture at Miyagi University in Sendai, was at school when the earthquake hit. In an instant, electricity and cell phones died. Two hours later, the land lines went. With nowhere to go, some 40 students flocked to the campus, blankets and food in hand. For two days they hunkered down in its generator-powered buildings. During that time, the plight of one budding architect's family prompted the teacher to take action.

His protégé's father, an oyster fisherman, lost everything—dwelling, boats, workplace—when the tsunami washed away his coastal hometown of Shizugawa. "I asked him what he needed," recalls Takeuchi. When the student replied—a communal space where his father and 13 fellow fishmongers could revive their business—Takeuchi began to solicit money, materials, and manpower from colleagues.

"Ninety percent of the local population survived, but they ran in different directions and had no place to meet," explains architect Motomu Uno, a professor at Tokyo University of Science and—along with Shuji Funo, vice president of the Architectural Institute of Japan—a Takeuchi collaborator. Within two weeks, Takeuchi and his pro bono client were ready to build a *banya*, or "meeting hall," for the Shizugawa fishermen.



Together with his students, Takeuchi devised a construction system made of precut wood elements that could be assembled by unskilled labor. Held together with mortise-and-tenon joints, the components were donated by Nakajima Komuten, a timber construction company based in Gifu Prefecture.

It took the team three and a half days to realize the 538-square-foot building. A wood-frame structure with a plywood roof and walls, the Shizugawa Banya is not meant for long-term use. But even a modest effort built in consultation with its users is an important first step.

The group has since engaged team Takeuchi to build a permanent factory nearby, and the oyster dealers' association asked for two more *banyas* in Higashimatsushima and Kessenuma. ■

Japan



Quick to construct (and deconstruct), the buildings consist of shipping containers stacked and secured by a steel frame. For insulation and seismic resistance, they are arranged in a checkerboard pattern with glazed walls covering gaps in between.

ARCHITECT: Shigeru Ban Architects.

BUDGET: N/A.

CONTEXT: Built in three months, Ban's Container Temporary Housing consists of nine two- or three-story buildings spanned by 36-foot-wide slots of open space that serve as car parking and privacy buffers. They also create room for various communal functions.



Container Housing Onagawa, Miyagi Prefecture

The residents of Shigeru Ban's Container Temporary Housing in Onagawa used to call themselves the unluckiest people in town. For starters, the Miyagi Prefecture town of 10,000 was all but destroyed on March 11, when 3,800 of its 4,500 houses sustained significant damage or were demolished outright. Then they lost the lottery for temporary housing, leaving them no choice but to remain even longer in the town's gymnasium-turned-evacuation-center. But after moving into Ban's buildings, finished in November, this crowd feels it is the luckiest.

Though the end product proved to be worth the wait, Ban's housing seemed to be a long time coming. "Any bureaucrat in any country is very careful and doesn't want to take the risk of doing something new," explains the Japanese architect. Building with shipping containers was uncharted territory for prefectural government officials, but it was Ban's proposal for multistory structures that was the real sticking point. It took months to convince the authorities to deviate from their standard-issue, single-story solutions.

This time, however, single-story housing



Each apartment contains a bath, kitchen, and one or more bedrooms (above). Natural wood shelving not only provides storage, it also serves as additional seating. Outside, Ban added an atelier for children's art classes (top right and center), largely funded by painter Hiroshi Senju of Kyoto University of Art and Design, as well as a community center (bottom).

Network assembled shelving that allows for storage without compromising space. Furniture and appliances provided by the retailer MUJI also help. Outside, Ban erected two structures central to the dwellings: an atelier for the Onagawa government to host children's art classes, and a community center, both built with paper tubes and shipping containers. A donated tent serves as an open-air market selling produce and other daily goods.

just wasn't feasible. There simply was not enough flat land to accommodate all of Onagawa's homeless. After months of Ban's gentle persistence, the local officials eventually saw the light, and in August they gave the architect permission to start construction on the town baseball diamond.

In just three months, the housing was ready for occupancy. The project consists of nine separate buildings, supplying 189 residential units in six three-story and three two-story apartment blocks, with open public space in between for a tent-covered market and other communal functions. Each building block is a vertical checkerboard of containers secured by a steel frame. Private areas, such as sleeping quarters and bathrooms, are concentrated within the containers themselves, while the kitchen and dining areas occupy the enclosed, void spaces in between.

Because of its prefectural funding, the housing adheres strictly to the government's rules regarding the size of each unit. "But we used the space very efficiently," says Ban. "It is very well organized and includes built-in closets so it feels bigger than the standard temporary unit."

Inside, members of the Voluntary Architects

The residents are so satisfied with their interim accommodations that they have already expressed a desire to live here longer than the established two-year term. Yet Ban's buildings come apart like Tinker Toys, so they are at the ready to be relocated and rebuilt when the next disaster strikes. ■



Japan



Each house is a simple timber box built from factory-made components and containing two bedrooms, a dining-kitchen area, and a bathroom. Insulation and electric heaters maintain comfortable indoor temperatures, while a wind canopy at the entrance cuts the cold air during Iwate's long winters.

Interim Housing for Rikuzentakata Sumita-cho, Iwate Prefecture

Having received the green light from the Iwate Prefectural government to erect 60 units of temporary housing for Rikuzentakata, a seaside town of 24,000 that lost 48 percent of its homes, Sumita Jutaku Sangyo, a timber construction company based in the blighted prefecture, tapped Tokyo-based architects Masayuki Harada and Daisuke Sugawara to develop a scheme for the new homes on the appointed site—a hilly inland campground designed for recreational vehicles.

Located inland in Sumita-cho, a town that survived the disaster relatively unscathed, the campsite's individual berths were equipped with utility hookups, and seemed an ideal place for interim housing. But the undulating landscape did not mesh with the construction firm's row-house-style housing blocks. "They're great carpenters but they are not urban planners," says Sugawara. Assuming that role, the architects proposed incorporating the existing infrastructure where possible, and devised a site plan.

Though the prefectural government initially discouraged using the campground's utility lines, the architects were opposed to starting from scratch. That would be a costly, time-consuming process for an interim project intended to eventually revert back to a campground. Instead, they persuaded authorities to



beef up the existing electricity and water supply, add telephone and other communication conduits, and install more water-purification machines to assist with sewage.

Within each bay, the architects positioned a single, 320-square-foot house at an angle relative to the existing street. "If we had aligned them in a row, no one would have privacy," explains Harada. This solution yielded gardens in between the units where neighbors can interact. It also positioned the houses closer to the street and, therefore, to the existing supply lines, minimizing the quantity of additional piping needed to attach each house to the system.

"In the end, it was a new housing area that looks like an old village," says Sugawara. "Our project may not have punch," he says. "But we have improved local life with our small design." ■

ARCHITECTS: Masayuki Harada, Daisuke Sugawara.

BUDGET: N/A.

CONTEXT: Occupying an existing campground, the houses were each built within a day by two carpenters out of prefabricated timber components. When no longer needed, the houses will be converted into wood pellets suitable for heating fuel.

What Now?

Given the size and scope of the damage, it is clear that a one-size-fits-all reconstruction solution will not work region-wide. To aid the process at the level of individual townships, the central government has appointed consultants—mainly civil engineers and urban planners—to many of the shattered communities. The hope is that they will work with local officials and architects on concrete solutions. “Like after Hiroshima, this is a chance to create a new system of city planning,” explains architect Motomu Uno, professor at Tokyo University of Science.

Though many people dream of reconstruction schemes that can withstand earthquakes and tidal waves, hard solutions can be expensive and far from foolproof. Consequently, many architects and academics support soft solutions as well. It isn’t possible to prevent another cataclysm, but better planning could reduce loss of life and property—and jump-start rebuilding efforts. “After the Kobe earthquake in 1995, the government did not prepare for the next disaster,” explains architect Shigeru Ban. “Improvements must be done now, during the post-disaster time.”

Kamaishi City proposal Iwate Prefecture

An advisor to the Kamaishi city government, Tokyo-based architect Toyo Ito has proposed a reconstruction scheme incorporating both built and landscape elements. Bordering the coast, the plan features berms, green belts, and sloped building sites for housing, intended to mitigate future flooding or tidal waves, while a “Fisherman’s Wharf” area and seaside park is planned to reinvigorate the city’s commercial center.

ARCHITECT: Toyo Ito & Associates, Architects.

BUDGET: N/A.

CONTEXT: Located on the Iwate Prefecture coast, Kamaishi City was heavily damaged on March 11. Though local citizens are keen to resurrect their town as before, the government envisions rebuilding on higher ground.



Toyo Ito
13 Dec. 2011



Bathhouse Minami Sanriku

This project, funded in part by Keio University’s Environmental Innovators Program, includes an integrated community meeting place and bathhouse, set for spring completion. The compact building will house separate baths and changing rooms for men and women, plus a boiler room and multipurpose space. Due to the lack of supplies and skilled labor, architect Hiroto Kobayashi, a professor at the university, and his students devised a clever construction system using interlocking plywood panels, which can be easily assembled by the team itself with simple hand tools.

ARCHITECT: Hiroto Kobayashi, Keio University.

BUDGET: N/A.

CONTEXT: When the public bath (On-sen) was closed at the Heisei no Mori temporary housing area in Minami Sanriku, the residents found themselves in need of a replacement. Architect Hiroto Kobayashi of Keio University was invited to create a two-phase project with his students to satisfy that need.



Haiti post-disaster

» L'ECOLE DE CHOIX / Studio Drum Collaborative, Malcolm Morris

» MIREBALAIS HOSPITAL / Nicholas Clark Architects

» ECOLE LA DIGNITÉ / Architecture for Humanity

» COLLEGE MIXTE LE BON BERGER / Architecture for Humanity

Architects are making slow but steady progress in this troubled

Caribbean nation, over two years after a deadly earthquake leveled countless buildings and left more than a million homeless.

by Jenna M. McKnight

Hervé Sabin, now 35 years old, fondly recalls his childhood in Port-au-Prince, where he spent his days studying, playing soccer, and watching films at the neighborhood movie theater. The streets were clean; the city felt safe. “I had everything a kid could want,” he says, noting that he was oblivious to the rising political tension that spurred countless Haitians to flee the country. “I didn’t really see it.” As conditions worsened under a military regime, Sabin migrated to the United States in 1989, at age 13. But he always vowed to return to his homeland.

In March 2010, shortly after the 7.0-magnitude earthquake ravaged the island country, Sabin made good on his promise. Armed with an M.Arch. from Pratt Institute and several years of professional experience at a New York City firm, Sabin moved back to Port-au-Prince—a city much different from the one he grew up in. Today, destitution is ubiquitous. “I was out last night, at midnight, and there were so many kids on the street asking me for money. It’s a shock,” he recently told *RECORD*. “Where are their parents? Why aren’t they in school? I broke down in tears in the car.”

Sabin, who comanages a design firm called Studio Drum Collaborative, is one of many architects determined to improve life in Haiti. There are no simple solutions. For decades, the country has grappled with widespread corruption, governmental instability, and the obliteration of key industries such as agriculture and tourism. The abundance of aid groups working here is both a curse and a blessing, as they deliver vital services while stifling local economies. For a nation already struggling to stand on its own feet, the massive earthquake delivered a devastating blow.

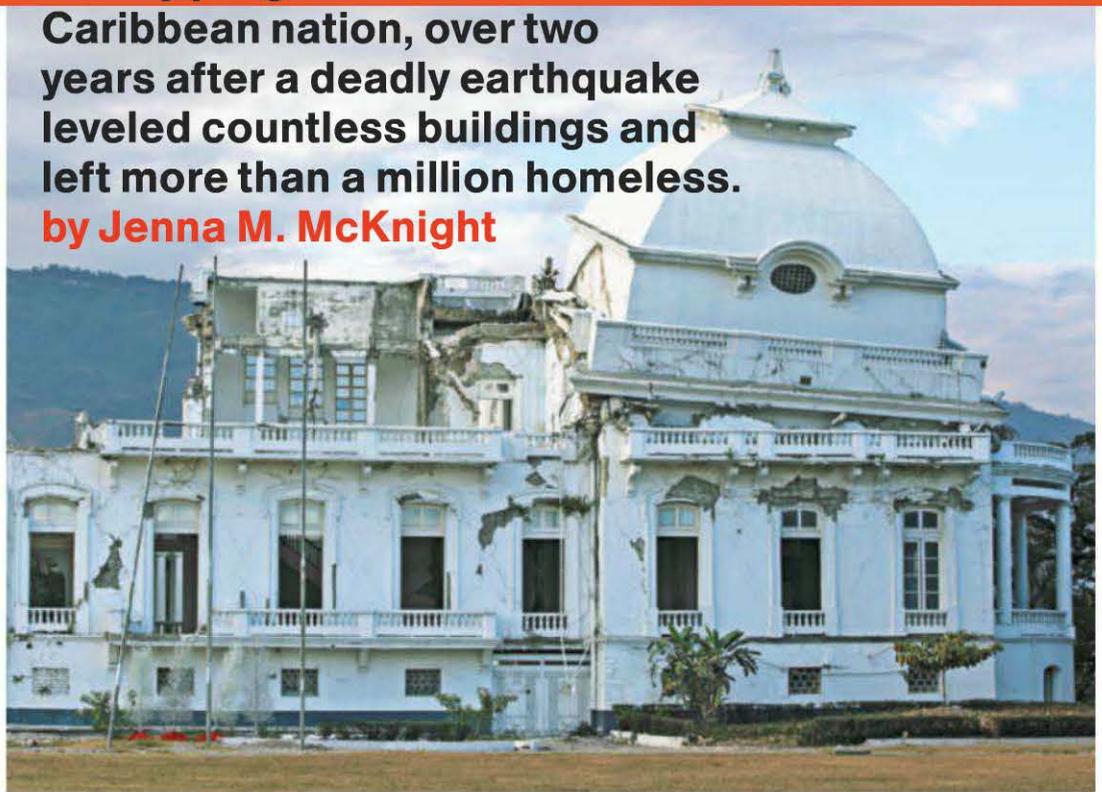
Not surprisingly, the rebuilding effort has been sluggish. International donors pledged \$4.6 billion for 2010–11, but only \$2.4 billion has been disbursed. Part of the delay is due to the chaotic 2010 presidential election, which wasn’t resolved until last April when Michel Martelly was finally declared the winner. Other reconstruction challenges include questions about land ownership, a dearth of skilled

laborers, and a lack of building materials and equipment.

There are some signs of progress. In downtown Port-au-Prince, the big success story is the restoration of the historic Iron Market, overseen by John McAslan + Partners [*RECORD*, February 2012, page 76]. Most work, however, has occurred beyond the dense metropolis. Rural areas are dotted with transitional plywood housing built by charitable groups. Other nonprofits, such as Architecture for Humanity (AFH), are focusing on long-term redevelopment and creating buildings with structural and aesthetic integrity (page 92). Education is also central to AFH’s mission. Its Port-au-Prince office is dubbed the Haiti Rebuilding Center, and every Friday its doors are open to anyone who wants design and construction advice. AFH also hires local architects, contractors, and construction crews, often providing training on site.

Creating job opportunities is key to the country’s revival. Yves François, a Haitian-American architect who was educated in New York and spent years working for U.S. corporations, returned to Port-au-Prince in 2009 to launch a design and construction company. Recently, he also established a manufacturing facility, where he employs Haitians to fabricate sheets of corrugated metal. “Hopefully, in 10 years, you’ll really see a difference,” he says of the overall outlook for Haiti.

Sabin is upbeat about the future, but urges patience. “You can’t bring out the magic stick and make everything better,” he says. “It’s going to take time.” With architects like him committed for the long haul, Haiti might just have a shot at a stable, tranquil future. ■



Although the National Palace (above) in central Port-au-Prince remains in shambles, there are post-quake success stories in Haiti. In the town of Mirebalais, the Haitian firm Studio Drum Collaborative, in collaboration with Chicago architect Malcolm Morris, has completed L’Ecole de Choix (right). The simple yet beautiful classrooms feature ample daylight and natural ventilation.



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Haiti



L'Ecole de Choix Mirebalais, Haiti

One rarely sees a new building when traveling through Haiti. While aid groups have tossed up temporary shelters in Port-au-Prince and outlying areas since the deadly January 2010 earthquake, ramshackle structures still dominate the impoverished country.

Yet standing on the dusty fringe of Mirebalais, a town 37 miles north of Port-au-Prince, is a collection of handsome new buildings that comprise L'Ecole de Choix, or the School of Choice, which presently houses 200 students, from pre-kindergarteners through fourth-graders (expansion plans are in the works). Designed by a local firm in collaboration with a Chicago architect, the campus is a welcome sign of progress in this struggling nation. Nearby, construction of a large hospital offers added reason for optimism.

Like most Haitian schools, L'Ecole de Choix is privately owned and operated. The Foundation for the Technological and Economic Advancement of Mirebalais (FATEM), a Boston-

based charity that works to boost educational services in central Haiti, spearheaded the project. Plans for the new facility emerged after the quake due in part to the influx of refugees into the region. L'Ecole de Choix is intended to "serve as a model school that people can look up to—a shining light," says FATEM president Jacky Poteau, who grew up in Mirebalais.

Funding for humanitarian projects can come from unexpected sources. In the case of L'Ecole de Choix, players of online games offered by the company Zynga largely backed the \$900,000 project. In FarmVille, for instance, users bought virtual sweet-potato seeds at a premium price, with proceeds donated to Haiti initiatives. Zynga's CEO is the brother of Laura Hartman, a DePaul University business-ethics professor who served as FATEM's strategic adviser during the school project.

To oversee the facility's design and construction, FATEM turned to Chicago architect Malcolm Morris, whose expertise in high-end residential projects made him an unlikely candidate. "I accidentally raised my hand at a dinner party [hosted by Hartman]," he jokes when asked how he got involved. The organization also hired the local firm Studio Drum Collaborative to serve as the architect. Hervé Sabin, a Pratt Institute alum and firm cofounder based in Port-au-Prince (his business partner, Colin Montoute, lives in New York), says he initially heard about the project through a pal's Facebook message, which led him to pursue the commission.

Completed in November 2011, the three-acre campus features clusters of cubic and rectangular volumes positioned at various angles to

Organic in plan, the campus contains loosely defined outdoor areas and clusters of buildings placed at varying angles. The design strategy was to create an atmosphere that wasn't linear and rigid.

ARCHITECTS: Studio Drum Collaborative with Malcolm Morris.

BUDGET: \$900,000.

CONTEXT: Outskirts of Mirebalais, a town in central Haiti.

FATEM, an aid group, estimates that roughly 60 percent of children living in rural areas outside of Mirebalais don't attend school.

provide views of the surrounding countryside. In total, the school has three single-classroom buildings and six double-classroom buildings, plus an administration area, nurse's office, kitchen, and open-air dining hall. Landscape design elements include white gravel to help mitigate flooding during the rainy season and almond trees that, once mature, will offer respite from the intense sun.

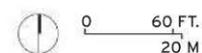
Structurally speaking, the buildings are rather straightforward: Concrete columns with concrete-block infill form the walls, and steel trusses support corrugated metal roofs. Unlike much concrete construction in Haiti, reinforcing bars are properly tied together to ensure stability during earthquakes.

The architects' ingenuity is evident in the details. To supply daylight and foster air circulation, the designers incorporated rooftop ridge vents, clerestories, and open-air windows lining opposite sides of the room. The windows and classroom doors feature hand-woven grass affixed to steel frames—an attractive design element that utilizes a native material and local craft tradition. "Each panel took about a half day," says Sabin, noting that they hired six Haitians to fabricate the screens. To further connect the architecture to its pastoral setting, the buildings were painted earthy colors, from spring green to terra-cotta.

FATEM recently transferred ownership of the campus to the new School of Choice Education Organization, based in Illinois and overseen by a board of directors chaired by Hartman. If money can be secured, the group hopes to construct teacher housing and six more classroom buildings to accommodate grades five through 12. Perhaps another FarmVille fund-raising campaign could help this growth become reality. ■



FIRST PHASE SITE PLAN



- | | |
|------------------|------------------------|
| 1 CLASSROOM | 5 KITCHEN |
| 2 ADMINISTRATION | 6 OPEN-AIR DINING HALL |
| 3 LAVATORY | 7 MECHANICAL |
| 4 COMPUTER LAB | 8 FUTURE EXPANSION |

Mirebalais Hospital

L'Ecole de Choix isn't the only new project in town. Just up the road, a 180,000-square-foot hospital designed partly pro bono by Chicago-based Nicholas Clark Architects is slated to open this summer. Funded by Haiti's Ministry of Public Health and the nonprofit group Partners In Health, the \$16 million, 320-bed medical center will accept patients from around the country while also serving as a teaching facility. Modern health-care services will be provided within a pleasing setting: abundant windows, light-filled rooms, outdoor courtyards, and vibrant mosaics. Notes hospital director Dr. David Walton, "Part of the objective was to create a beautiful space."



ARCHITECT: Nicholas Clark Architects.
BUDGET: \$16 million.
CONTEXT: Facility will serve as a national referral hospital and teaching facility. Poverty and malnutrition are prevalent in Haiti, yet medical facilities are scarce.



Haiti

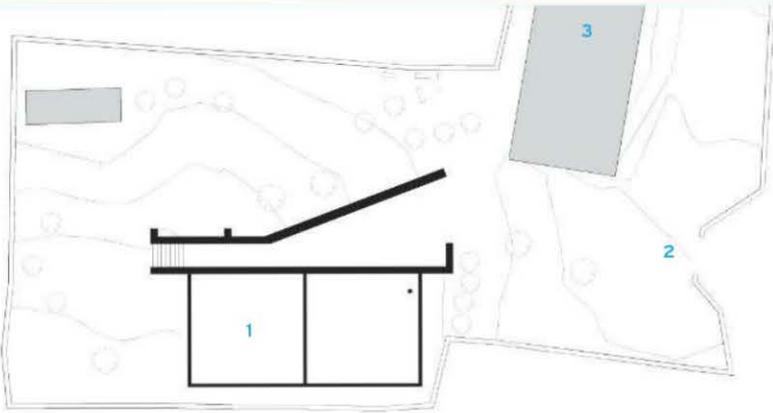


Openings covered with locally fabricated bamboo screens help ventilate the two-classroom building. Stones used for the foundation walls and entrance facade were collected from a nearby riverbed.

ARCHITECT: Architecture for Humanity.
BUDGET: \$75,000.
CONTEXT: Roughly 85 percent of Haiti's schools are privately run. Families often can't afford tuition. In 1999, Vivianne Vieux single-handedly founded Ecole la Dignité, the only free private school in the Jacmel area. Serving first through ninth graders, the academy currently has 300 pupils.



- 1 NEW BUILDING
- 2 CAMPUS ENTRANCE
- 3 EXISTING BUILDING



SITE PLAN

Ecole la Dignité Jacmel, Haiti

Headmaster Vivianne Vieux is clearly thrilled with the new addition to the free private school she runs in the coastal town of Jacmel. "It's a piece of art," the exuberant administrator exclaims, gesturing toward the 2,100-square-foot structure shaded by palm trees. "It's beautiful!"

Featuring natural materials such as stone and bamboo, the two-classroom building certainly stands apart from the average Haitian schoolhouse—uninspired structures made of concrete block. Completed in November 2011 and designed by Architecture for Humanity (AFH), the project exemplifies the nonprofit firm's mission to create safe and dignified buildings for impoverished communities. "If you're going to do a building, do it well, stand on principle, and don't compromise," says Eric Cesal, program manager for AFH's Haiti office.

The Ecole la Dignité project came about via a scouting process launched in April 2010, when AFH issued an RFP from Haitian schools in need of design services. Applicants were required to have operational funding, among other prerequisites, and AFH was immediately drawn to Vieux, who founded her thriving academy in 1999. "She's a dynamic woman, and she had a very reliable funding stream," says Darren Gill, an AFH design fellow who led the project. The school's secluded, hillside campus already contained two buildings, and Vieux needed more space to accommodate growing enrollment.

Beyond providing daylight and natural ventilation, the designers were determined to use local materials, notably stones from a nearby riverbed. Mindful of seismic concerns, the team conceived a confined masonry system for the rectangular building. Stones form the foundation walls and entrance facade while concrete blocks make up the remaining walls; concealed reinforced-concrete columns and beams lend structural strength. Overhead, wood trusses anchored to a concrete ring beam support the building's corrugated metal roof.

Inspired by local craft traditions, the architects lined the upper portion of the building with bamboo-and-rebar screens supplied by Studio Drum Collaborative, a Haitian design firm (page 90). Bamboo panels also cover unglazed windows and doors. During a recent visit on a warm day, the interior felt cool and refreshing.

Beyond AFH, the \$75,000 project was financed by the Stiller Foundation, Students Rebuild, and the Bezos Family Foundation. Vieux says there's only one problem with the new addition: Every student wants to hang out there. That bodes well for AFH. "We don't want this to be the end," Cesal says. "We want the school to expand and endure." ■

College Mixte Le Bon Berger

Situated on Haiti's west coast in the town of Montrouis, the College Mixte Le Bon Berger was forced to demolish its two preexisting, structurally unsound buildings following the 2010 earthquake. AFH recently completed the first phase of a reconstruction project for the 400-student private school. A new rectangular, two-story building contains eight classrooms, with decorative window and door screens fabricated by local metalworkers. To enliven the building, a steel-truss system extending beyond the exterior walls was recently painted a rainbow of colors. Plans for the project's second phase are under way.

ARCHITECT:
Architecture for
Humanity.

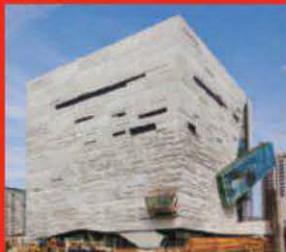
BUDGET: \$306,000.

CONTEXT: Primary school's two buildings were razed due to structural instability resulting from poor construction and earthquake damage. Students travel up to 9 miles round-trip by foot to attend classes here.





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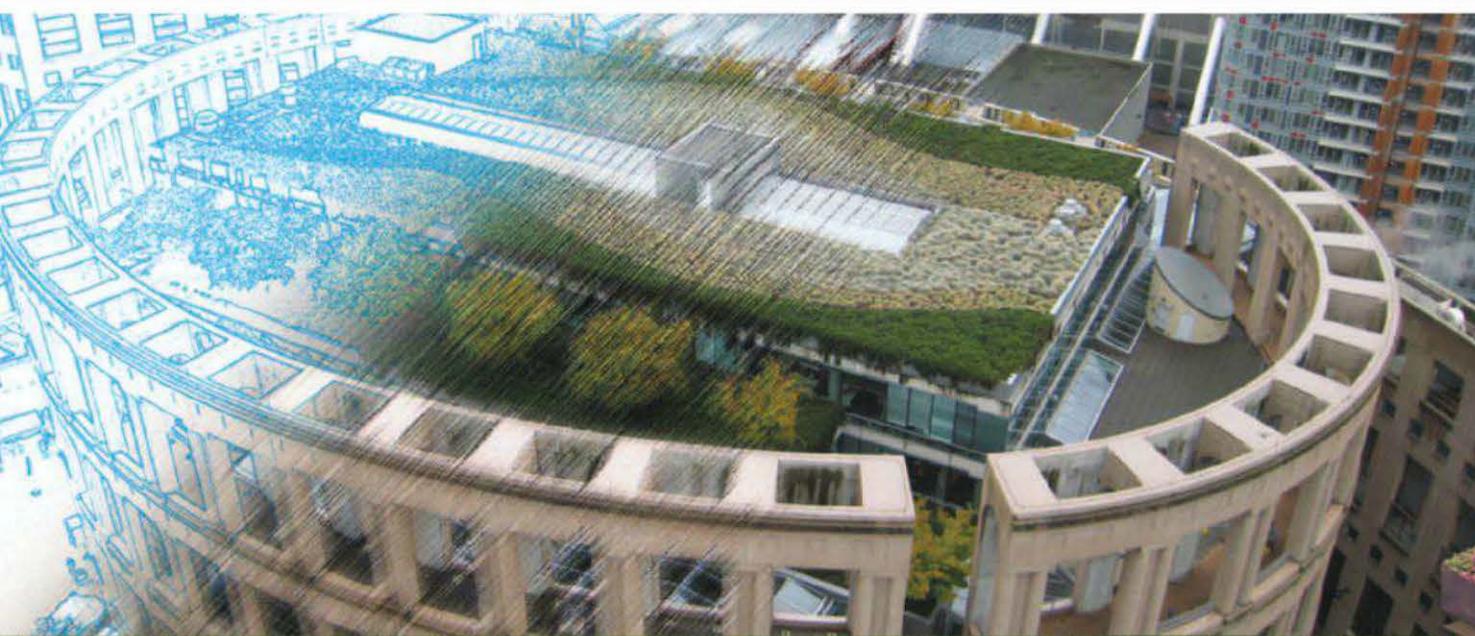
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CIRCLE 41

CENTER FOR THE ADVANCEMENT OF PUBLIC ACTION

North Bennington, Vermont | Tod Williams Billie Tsien Architects

Three new buildings on the Bennington College campus incubate public action by fostering both discussion and quiet contemplation. **By Laura Raskin**

The seminar windows look out to the residences for visiting scholars. All three CAPA buildings are clad in meticulously chosen slabs of reclaimed Vermont marble, set unevenly into the facades.

OF THE THREE new buildings that compose Tod Williams and Billie Tsien's Center for the Advancement of Public Action (CAPA) at Bennington College in Vermont, it is the program-less "Lens" that best represents the iconoclastic institution where students have been designing their own curricula since 1932. The Lens is somewhat of a folly: Black walnut benches define the interior space of a marble-clad cube and cerulean walls slope inward and up to a James Turrell-like manual oculus. The space is open from morning to night, with the idea that solutions for the world's ills—CAPA's purpose—don't always begin with collaboration.

CAPA's other two marble buildings house a lush, luxe residence for visiting scholars, and a symposium with classrooms, offices, the college's first-ever faculty lounge, and a mini-UN-style seminar room. The idea for CAPA coalesced during several years of discussion about a new academic program that would engage students in urgent social issues. It was given a jump-start in 2007 by a \$20 million gift from Susan Paris Borden (class of 1969) and her husband, Robert. "One of the reasons CAPA emerged was the challenge of the world," says Elizabeth Coleman, Bennington's president since 1987. "How do you, as an educational institution, sit still in the face of what's going on? How do you just act as if nothing is going on? To me, that's no longer acceptable."



LEFT: CAPA edges a pond near the back of the campus, which is framed by the Taconic Mountains.

BELOW: CAPA's entrance is marked by the Lens, on the left, a meditative space with a manual oculus.

OPPOSITE TOP: The granite-paved courtyard has a radiant system for melting snow. An Adlai Stevenson quote is embedded in the slabs.

OPPOSITE BOTTOM: "Letters," wool fabric designed by Gunnar Aagaard Andersen in 1955, is wrapped around insulation board for soundproofing and then hung behind the batten walls.





CAPA opened last fall, offering classes in technology and social change, the politics of the AIDS pandemic, and “Solving the Impossible.” It houses offices for a seven-week fieldwork term. Yet its program remained undefined well into the architects’ design planning. This led to frustrating and costly redesigns, but the overall experience was deeply satisfying for the team. “It was an opportunity to work on something where we really believed in the mission,” says Tsien.

Tsien and Williams sited CAPA behind a performing and visual arts building, in front of a pond and a meadow leading up to the very back of the campus and one of the college’s oldest building, Jennings Hall, a 1903 Colonial Revival mansion made of Vermont granite. This led to a cleanup of the pond, and better connected the campus to Jennings.

The low, skewed buildings sit in a semi-circular cluster and are clad in reclaimed Vermont marble slabs, set unevenly in the facade to show off their weathered imperfections. The



1. Visitors to the Lens can open or close the oculus with the turn of a hand-crank (not pictured). Walnut benches define its interior space.

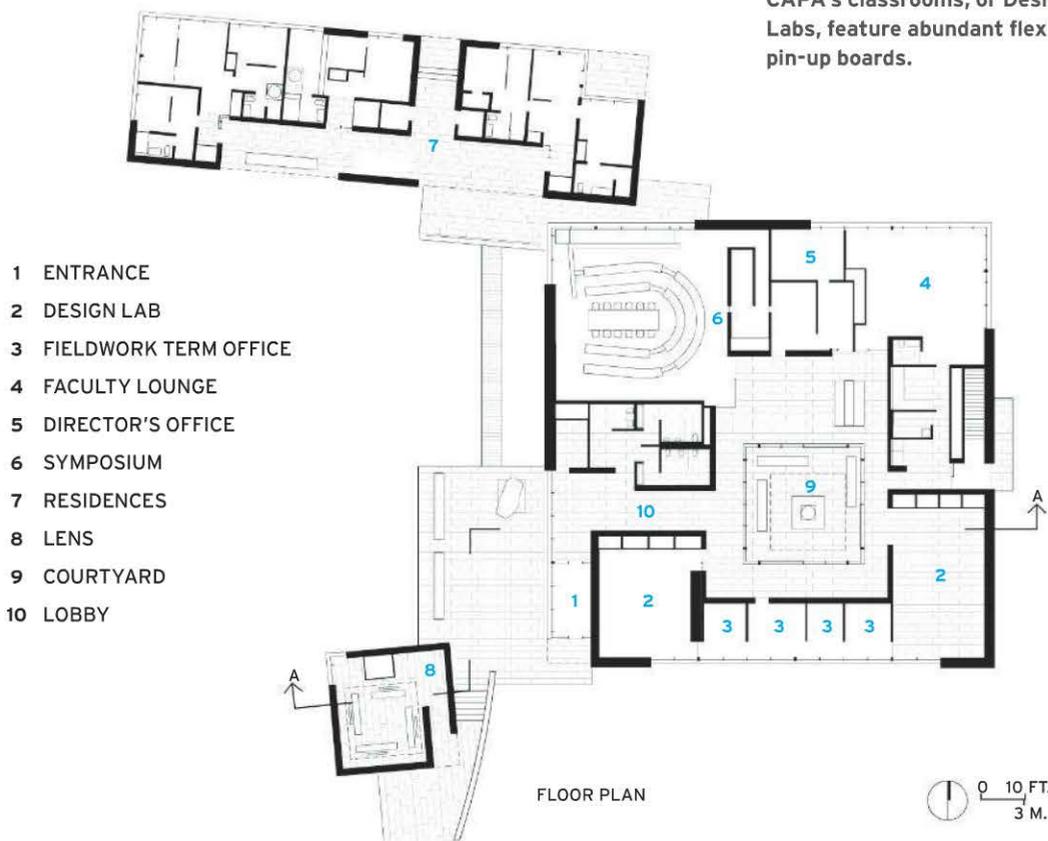
2. The benches and all of the custom walnut cabinetry, shown here in one of the residences, were produced in Brooklyn by Descience Lab.

3. Residences are serene and luxurious, with Japanese soaking tubs and views.

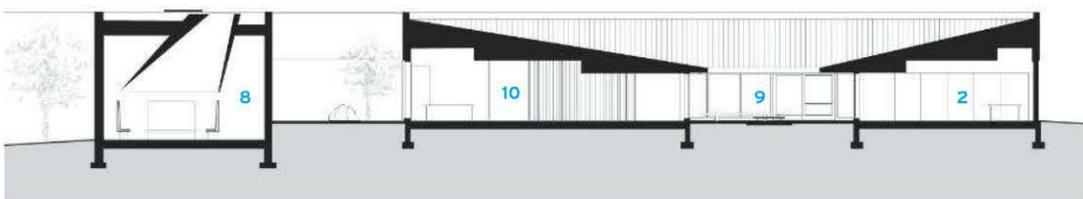
4. Chris Gustin's handmade ceramic tiles line the walls behind the bathtubs.



CAPA's classrooms, or Design Labs, feature abundant flexible pin-up boards.



- 1 ENTRANCE
- 2 DESIGN LAB
- 3 FIELDWORK TERM OFFICE
- 4 FACULTY LOUNGE
- 5 DIRECTOR'S OFFICE
- 6 SYMPOSIUM
- 7 RESIDENCES
- 8 LENS
- 9 COURTYARD
- 10 LOBBY



SECTION A-A

architects rented a warehouse nearby to lay out each slab precisely. CAPA sits on a slight rise, and the cornices of each building are the same height. While the marble sets CAPA apart from other buildings on campus by architects such as Kyu Sung Woo and Pietro Belluschi, it fits into the context.

“We wanted it to be somewhat like walls in the landscape and not have such a big presence,” says Tsien. “Rather than compete with the power of the landscape, we wanted to draw power from being lower, tighter, smaller, denser.” Williams explains further: “We also have a strong belief that the surface of the campus is where the real dialogue occurs. Community exists on the ground. What we were trying to do is charge the ground.”

The quiet richness exhibited by CAPA's exteriors also imbues its interiors. The walnut used for the benches in the Lens is a repeating material in the other two buildings, with custom-made cabinetry and batten walls. The spalike apartments have Japanese soaking tubs, handmade tiles, and views of the pond and meadow. “That’s very intentional,” says Coleman. “We want [visiting fellows and scholars] who come here to want to come back and to feel special.”

Classrooms, by contrast, are muted and flexible, ready for courses that have not yet been dreamed up. A central courtyard lined with frosted glass allows natural light to flood the corridors and common spaces. “In the academy, we treat our work as separate from, and even corrupted by, action,” says Coleman. CAPA affirms the opposite—that action isn’t an indulgence, but a necessity. ■

CREDITS

ARCHITECT: Tod Williams Billie Tsien Architects
– Tod Williams and Billie Tsien, principals in charge; Susan Son, project architect

ENGINEERS: Otter Creek Engineering (civil); Severud Associates (structural); Ambrosino, DePinto & Schmieder (m/e/p)

CONSULTANTS: Tillotson Design Associates (lighting); Reed Hilderbrand Associates (landscape)

CLIENT: Bennington College

SIZE: 17,861 square feet

COST: \$13.6 million

COMPLETION DATE: July 2011

SOURCES

MASONRY: Gawat Marble & Granite

WINDOWS: Viracon, Duratherm

BUILT-UP ROOFING: DensDeck, Grace Ultra

BILL & MELINDA GATES FOUNDATION

Seattle | NBBJ

A local firm with a global practice
rethinks the headquarters for the
world's largest charitable foundation.

By Clifford A. Pearson



PHOTOGRAPHY: © SEAN AIRHART / NBBJ

With its pools and native plants, a landscaped plaza recalls the natural history of the site, which had been a wet meadow and bog before becoming a parking lot in the 20th century.



AT A TIME WHEN many people are questioning everything big—government, business, even philanthropy—the Bill & Melinda Gates Foundation is settling into its big, new headquarters in Seattle. With more than \$33 billion in its asset trust endowment, the Gates Foundation is the wealthiest charitable entity in the world. But it wanted to send the right message with the architecture of its new home: bold but not arrogant, global but also a good neighbor. While the 640,000-square-foot complex designed by NBBJ and opened in June 2011 has its flaws, it hits most of the right chords in terms of sustainability, transparency, workplace quality, and image.

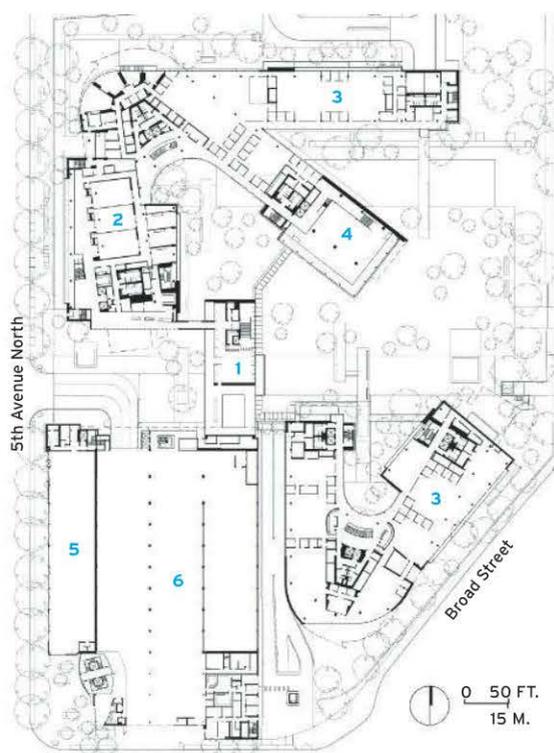
Established in 1994, the Gates Foundation had worked out of five buildings, including a renovated check-processing plant with a large footprint but little daylight inside. Modest, perhaps to a fault, the disconnected facilities lent the foundation an unwanted air of mystery, says Martha Choe, the organization's chief administrative officer. "We wanted a headquarters with more transparency, both internally and to the outside community," she explains. "We also wanted to create a place that would encourage collaboration and make everyone feel they worked for one organization."

The new headquarters occupies a prominent site, across Fifth Avenue from the Seattle Center, where the 1962 World's Fair took place and the Space Needle rises. In 2000, the Frank Gehry–designed Experience Music Project (EMP) opened, bringing new energy to a part of town that had grown seedy after the fair closed. The 12-acre Gates campus reinforces the area's comeback, while adding a more buttoned-down sensibility. A pair of curved office buildings, a reception pavilion, and a 1,000-car parking structure anchor three corners of the site and may be joined by a third office building in the future. By burying four of the garage's five levels below grade and creating a plaza in front, NBBJ tamed the impact of the huge structure. A visitor center designed by Seattle-based Olson Kundig Architects occupies part of the garage's frontage on Fifth Avenue, adding another hospitable note to the structure.

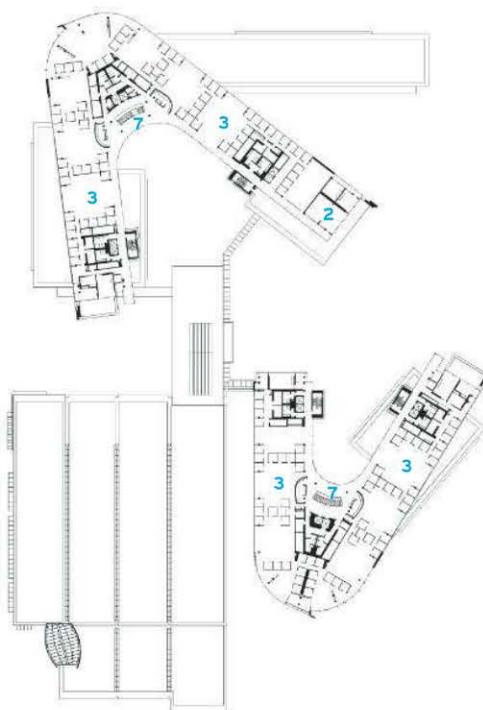
Early in the design process, the architects and client decided that a campus was the right model for the project. So they broke the complex into a set of four buildings and collaborated with Seattle-based Gustafson Guthrie Nichol on the landscape. Weaving buildings and landscape together was an essential part of the scheme, says Christian Carlson, NBBJ's lead designer for the project. To take advantage of a climate that is temperate most of the year, the design team created a large plaza one level below the street. (Dropping the plaza below



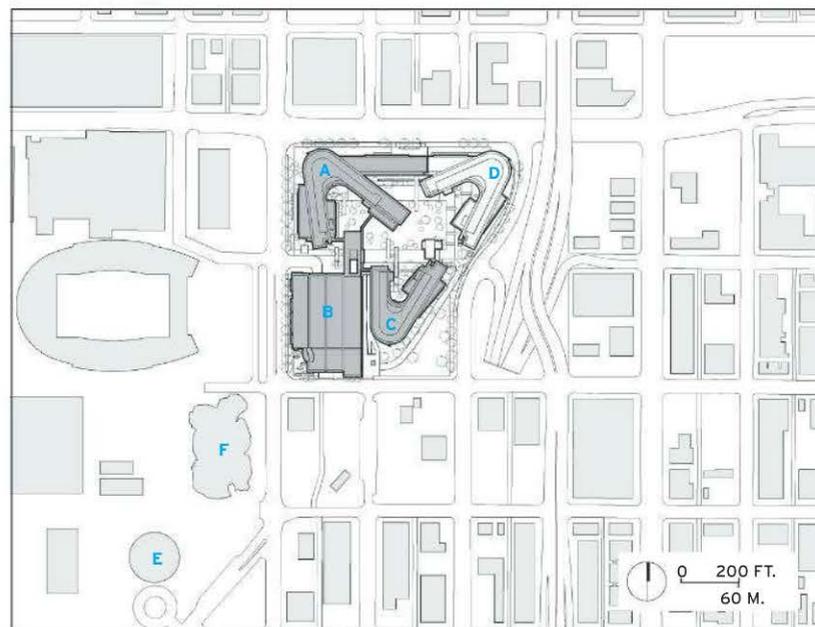
PHOTOGRAPHY: © BENJAMIN BENSCHNEIDER (TOP); TIMOTHY HURSLEY (BOTTOM LEFT AND RIGHT)



ENTRY LEVEL



LEVEL FIVE



SITE PLAN

- 1 RECEPTION
- 2 MEETING
- 3 OFFICES
- 4 ATRIUM
- 5 VISITOR CENTER
- 6 PARKING
- 7 HUB

- A OFFICE BUILDING A
- B OFFICE BUILDING B
- C GARAGE
- D FUTURE PHASE
- E SPACE NEEDLE
- F EXPERIENCE MUSIC PROJECT

grade allowed the architects to add an extra floor to the office buildings without exceeding the height limit, which is measured from the street.) On nice days, foundation employees work on laptops and socialize here. A shaded courtyard next to the reception pavilion offers views to the plaza below, providing a degree of transparency to people even if they don't have any further access.

From Fifth Avenue, the complex smacks a bit of well-dressed corporate architecture, especially compared to the exuberance of Gehry's EMP and the Space Needle. But once on the campus, visitors can appreciate the office buildings' boomerang forms and 40-foot cantilevers hovering above the plaza. Curving the buildings' arms adds a degree of boldness to the design and expresses the idea of the Gates Foundation reaching out to different parts of the globe, says Steve McConnell, one of the two NBBJ partners in charge of the project. Meanwhile, Gustafson Guthrie Nichol's landscape aligns with nearby streets, knitting the complex into its Seattle context.

The project earned a LEED Platinum rating by applying a range of sustainable strategies, including landscaping and green roofs that cover 40 percent of the site; a 1 million-gallon tank that stores rainwater for use in irrigation, reflecting pools, and toilets; a 750,000-gallon underground tank for water to chill the buildings, and aggressive daylighting made possible by narrow buildings that keep all workstations within 30 feet of sunlight.

A multistory atrium at one end of the north office building serves as a civic space where employees can eat lunch, work on laptops, or gather for special presentations. A floor-to-ceiling glazed corridor running along the plaza side of each office building lets people see their colleagues from afar and feel connected, says Melissa Milburn, who handles external communications at the foundation. "It's like *Hollywood Squares*. We can see who's here." Open "hubs" at the elbow of each floor and a variety of casual spaces encourage chance encounters and socializing. Forty-four years ago, Kevin Roche built the iconic Ford Foundation in New York around a hushed indoor garden. NBBJ has updated that model, wrapping the Gates complex around a lively outdoor plaza and greening its roofs. ■

OPPOSITE TOP: The atrium serves multiple functions, from eating or socializing to presentations for several hundred people.
 OPPOSITE BOTTOM LEFT: By using larger glass smoke skirts and extra sprinklers, NBBJ was able to keep staircases open for six flights.
 OPPOSITE BOTTOM RIGHT: To encourage chance encounters and collaboration, each floor has open spaces to meet, such as this "hub" near the stairs.

CREDITS

ARCHITECT: NBBJ – Steve McConnell, William Nichols, partners in charge; John Hendry, project manager; Christian Carlson, lead designer; Knut Hansen, project architect; Rysia Suchecka, Anne Cunningham, lead designers (interiors)
ENGINEERS: KPFF (civil and structural); Arup (structural, m/e/p)
LANDSCAPE ARCHITECT: Gustafson Guthrie Nichol
GENERAL CONTRACTOR: Sellen

SIZE: 640,000 gross square feet
COST: \$500 million
COMPLETION DATE: June 2011
SOURCES
INSULATED GLAZING: Oldcastle BuildingEnvelope
CURTAIN WALL: Enclos
GREEN ROOFS: American Hydrotech
COPPER ROOFING: McKinstry
DOOR-EXIT DEVICES: C.R. Laurence

BSA SPACE

Boston | Höweler + Yoon Architecture

With a new, more visible headquarters on the city's waterfront, the Boston Society of Architects is positioned to become a hub of architectural discussion for both the profession and the public.

By Rita Catinella Orrell

A bright green steel staircase in the center of the 1,500-square-foot, street-level gallery draws visitors up to the second floor. An information desk in the gallery will serve the entire Four Point Channel area.

WORKING OUT OF an office in Boston's financial district—inaccessible to the public and incapable of holding large public functions—the Boston Society of Architects (BSA) wanted a change of scene. The AIA chapter found the right match in a 16,000-square-foot space on two floors of the recently completed Atlantic Wharf complex in South Boston's Four Point Channel, a neighborhood of artists, designers, and cultural institutions. The LEED Gold high-rise mixed-use building, designed by Childs Bertman Tseckares, incorporates a new tower and the historic facades of three low-rise Classic Revival-style brick buildings. The new headquarters, known as BSA Space, is located in the 1897 Graphic Arts Building, designed by Boston firms Rand and Taylor, and Kendall and Stevens.

Höweler + Yoon Architecture (a 2007 ARCHITECTURAL RECORD Design Vanguard) won an open, blind competition among BSA members to design BSA Space, with an interior retrofit concept centered around a bright green steel staircase that lends visual punch to the ground floor and draws visitors up to the second-floor galleries. "We felt the idea had to be this super-clean, bright thing that comes down and scoops you up," says Eric Höweler, who is a partner in the firm with Meejin Yoon. According to BSA president Laura A. Wernick, as part of their lease the BSA is required to use the space for community and public events; as a result, the nonprofit has taken on the role of organizing exhibitions and staffing an information desk in the 1,500-square-foot street-level gallery, which will serve the Four Point Channel area.

To open up the space and overcome the challenge of small square footage on street level and a larger space above, the team punched a hole through the floor and connected the two levels with the steel stairs (Höweler says the tight construction was "like putting a ship in a bottle"). Since restrictions prevent the installation of modern signage on the historic facade, the staircase and the second floor glimpsed through the windows function as a billboard. The $\frac{3}{4}$ " steel-plate staircase was prefabricated in five pieces by a metal shop in Michigan and then bolted and painted on-site; clear glass risers were added for code. Upstairs, the steel wall connected to the stairs becomes a counter; a matching green soffit continues into the gallery spaces. The decision to pursue LEED-CI Gold certification was a no-brainer, says Höweler, and the methods were straightforward, including the selection of low-VOC paints, location in an urban area, and enhanced commissioning to improve energy performance.

Ascending the stairs, visitors can walk



LEFT: Visible from the street through unobstructed windows, the staircase serves as a billboard for the BSA.

BELOW: Atlantic Wharf is a LEED Gold high-rise mixed-use building on Boston's waterfront. The 1897 facades of three historic brick buildings on the site were preserved.

BOTTOM: The second floor will include public galleries, meeting rooms, and offices for the staff of the BSA and other nonprofits.

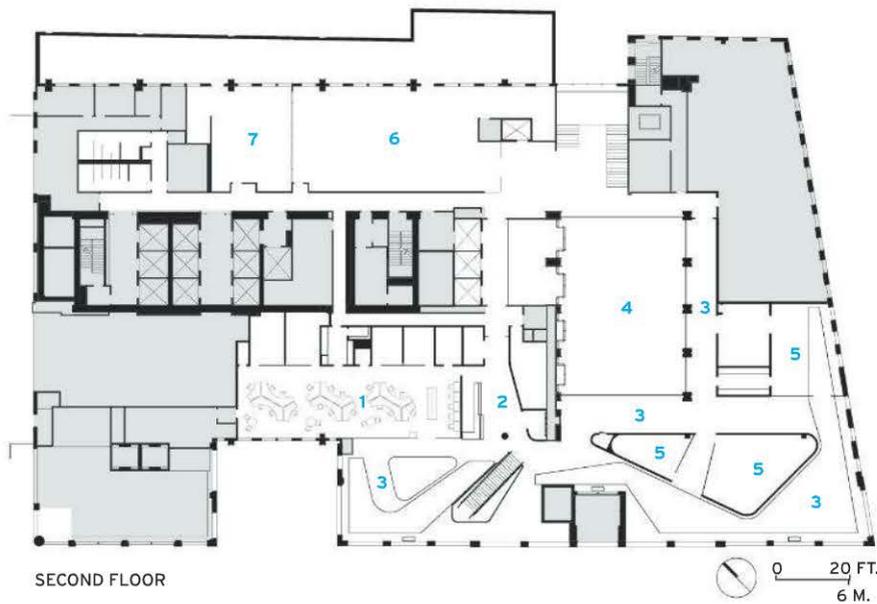




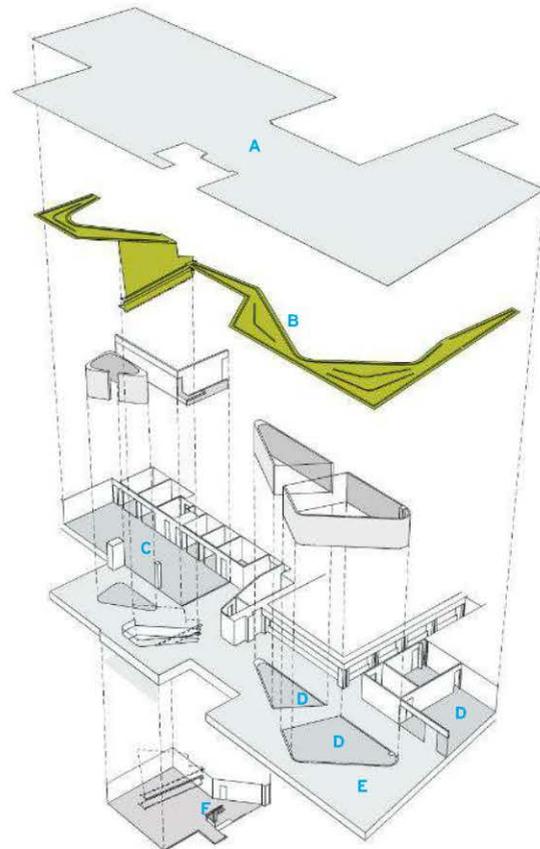
through the 6,000-square-foot second-level gallery, attend meetings, and enjoy views of the harbor through the unobstructed windows on the south-facing facade. Behind a glass wall, a rectangular office area serves BSA staff alongside employees of other design-oriented nonprofit partners. Two irregularly shaped conference rooms float in the gallery like “little islands” to encourage interactions between professionals and the public; their curving exteriors have become part of the exhibition surface. The ceiling accommodates HVAC, lighting, and a channel system to hang exhibits. “We’ve done a lot of exhibition design and we are always frustrated with the spaces,” says Höweler, “so we try to provide for the things an exhibition designer would want.”

In February, the BSA opened their first guest-curated exhibit, exploring the impact of architects and designers on Boston from the 1950s to today. “I hope that BSA Space will demystify architecture,” says Wernick, “and be a welcoming and inclusionary place for people who are interested in design.” ■

A green ceiling extends from the staircase to wrap around the second-floor gallery space.



- 1 STAFF AREA
- 2 RECEPTION DESK
- 3 GALLERY SPACE
- 4 WATERFRONT SQUARE
- 5 CONFERENCE ROOMS
- 6 MULTIMEDIA ROOM
- 7 MEETING ROOM



EXPLODED AXONOMETRIC

- A EXPOSED CEILING
- B STAIR/GREEN CEILING
- C OFFICES
- D CONFERENCE SPACE
- E EXHIBITION SPACE
- F CONCIERGE DESK

CREDITS

ARCHITECT: Höweler + Yoon Architecture – Meejin Yoon, Eric Höweler, principals; Parker Lee, project architect; Thena Tak, Ryan Murphy, Xi Liu, Cyrus Dochow, James Leng, design team

ENGINEERS: ARUP (structural); AHA Consulting Engineers (m/e/p); Hughes Associates (code)

CONSULTANTS: Kalin Associates (specification); Mark Dannettel (glass engineering)

GENERAL CONTRACTOR: Commodore Builders

CLIENT: Boston Society of Architects

SIZE: 16,000 square feet

COST: \$2.5 million

COMPLETION DATE: December 2011

SOURCES

STAIR FABRICATOR: Couturier Iron Craft

WOODWORK: CW Keller

LIGHTING CONTROLS: Lutron

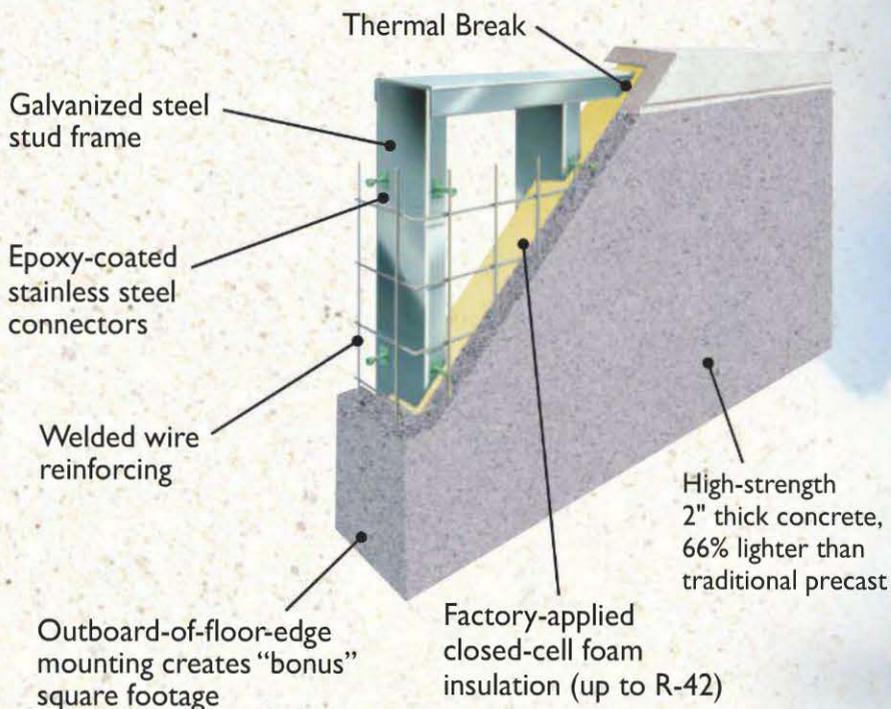
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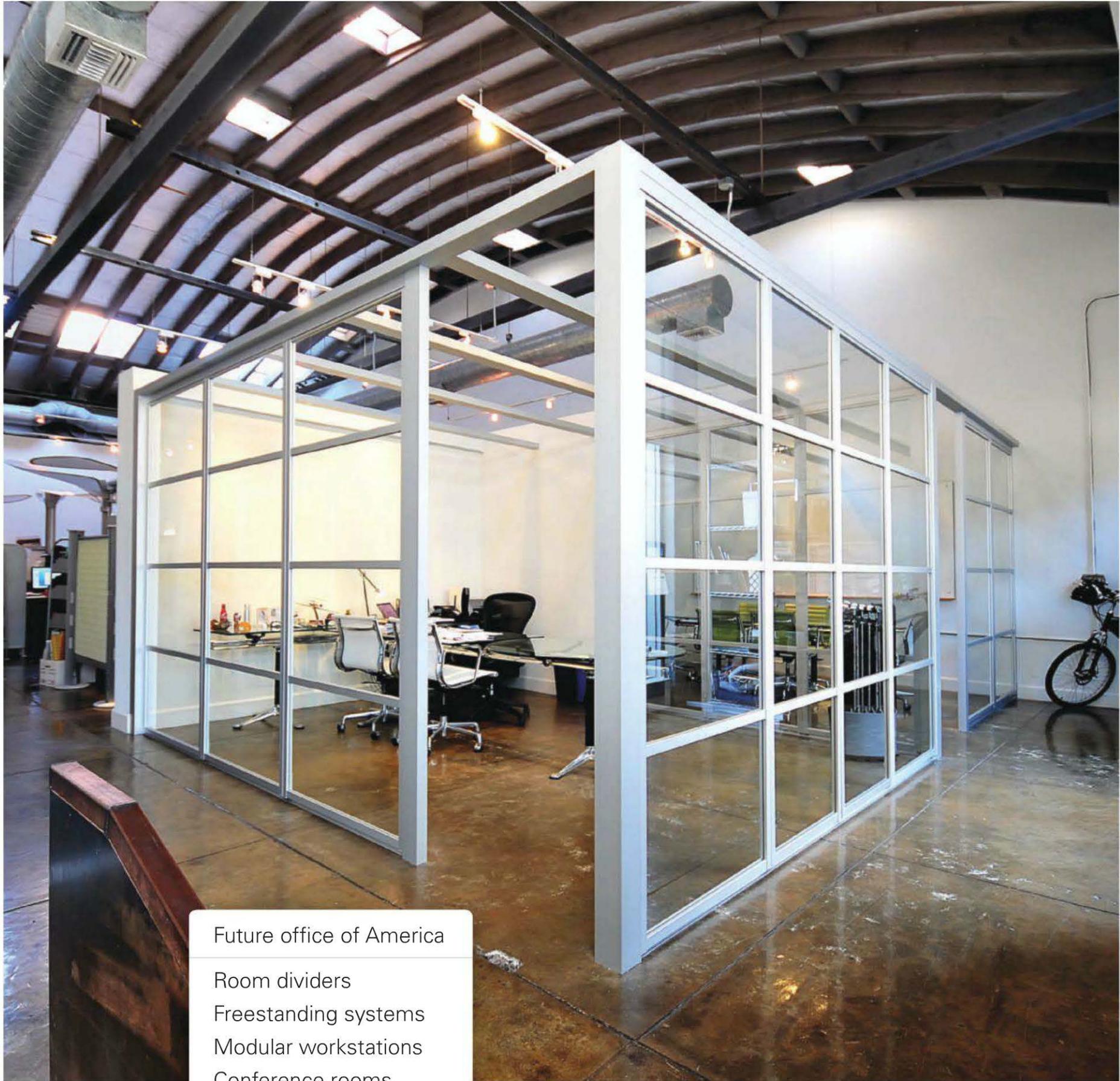
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Off the Map

Geographic information systems put data in the hands of designers, relief agencies, and policy-makers, helping them plot recovery efforts, anticipate the effects of climate change, and create more livable urban environments. [By Russell Fortmeyer](#)

AFTER THE March 11, 2011, earthquake and tsunami devastated the coast along Sendai, Japan, a special team at the software company Esri quickly jumped into action. Working out of Esri's global headquarters in Redlands, California, this group of engineers and technical support staff began putting together maps and data sets to form a geographic information system (GIS) tool that would ultimately assist Japan's government and relief agencies in the cleanup and restoration of devastated cities and countryside.

Eric Wittner, a solutions engineer with Esri's geodesign services group, helped develop the pro-bono project. In part, Esri relied on data provided by the Federal Emergency Management Agency (FEMA) describing debris generation following Hurricane Katrina in 2005. FEMA's data provided a link between typical construction types, like a wood-framed, single-family house or a commercial building, and the expected amount of debris they would generate if destroyed by a natural disaster. Using satellite imagery from before and after the Japanese earthquake, and working with their Esri counterparts in Japan, Wittner and his colleagues developed the tool so they could quickly estimate the variety of building types in a given location and the amount of debris. Another layer cross-referenced these quantities with available capacity in nearby landfills and included information about road quality and access for the trucks carrying the debris away.

Other partners, such as Honda Motor Company and Pioneer Electronics, eventually joined Esri, forming an emergency mapping team. Using Esri's ArcGIS software—the lingua franca of the GIS industry—the group created visualizations that could be easily understood by people with non-GIS backgrounds. Team members identified which areas along Japan's northeast coast had been affected by the earthquake, the tsunami, or the nuclear emergency, explains Wittner. They then quantified the waste by material types, so that timber could be burned, concrete could be removed to docks and transported by ships to be dumped at sea, and radioactive debris could be moved to the "hot zone" around the destroyed power plant. With an additional map, the group assessed sites' suitability for temporary housing, com-



Onagawa, a fishing port north of Sendai, was engulfed by the March 11, 2011, tsunami that assaulted Japan's northeast coast.

paring slopes, soil types, vegetation, and distances to other cities, among other overlays.

GIS is not only a tool for responding to natural disasters. Architects, engineers, urban planners, and policy-makers can use GIS software to design new cities, understand the impact of new development on increasingly strained infrastructure and ecosystems, anticipate the effects of climate change, or to identify existing sites for developing urban parks. Only computing power and interoperability stand in the way.

GIS EXPLAINED

"ArcGIS is similar to information modeling and everyone is doing that now," says Keith Besserud, referring to the growing use among architects of three-dimensional building information modeling (BIM). He suggests the transition to a full GIS platform may be easier for the industry than the move to BIM. An architect in the Chicago office of Skidmore, Owings & Merrill (SOM), Besserud directs the firm's BlackBox group that focuses on research-oriented computational design. The team is creating a data model of Chicago's core, starting with a simple 3-D Studio Max model of the city's geometry. Although the model hasn't been developed in ArcGIS, the group is using a GIS-based approach. Besserud intends to layer in data obtained from public sources and build up an intelligent database that will include



Continuing Education

To earn one AIA/CES continuing education hour (CEH), including one hour of health, safety, and welfare/sustainable design (HSW/SD) credit, read the extended "Off the Map" story online and complete the test at no charge at ce.construction.com. Upon passing the test, you will receive a certificate of completion and your credit will automatically be reported to the AIA. Additional information regarding credit-reporting and continuing-education requirements can be found at ce.construction.com, under "resources and requirements."

Learning Objectives

- 1 Discuss how geographic information systems (GIS) can be used as a disaster-response planning tool and to help anticipate the effects of climate change.
- 2 Explain how designers are deploying GIS to study the relationship between development and urban infrastructure needs.
- 3 Describe how GIS can help identify sites with renewable energy potential.
- 4 Describe the limitations of GIS.

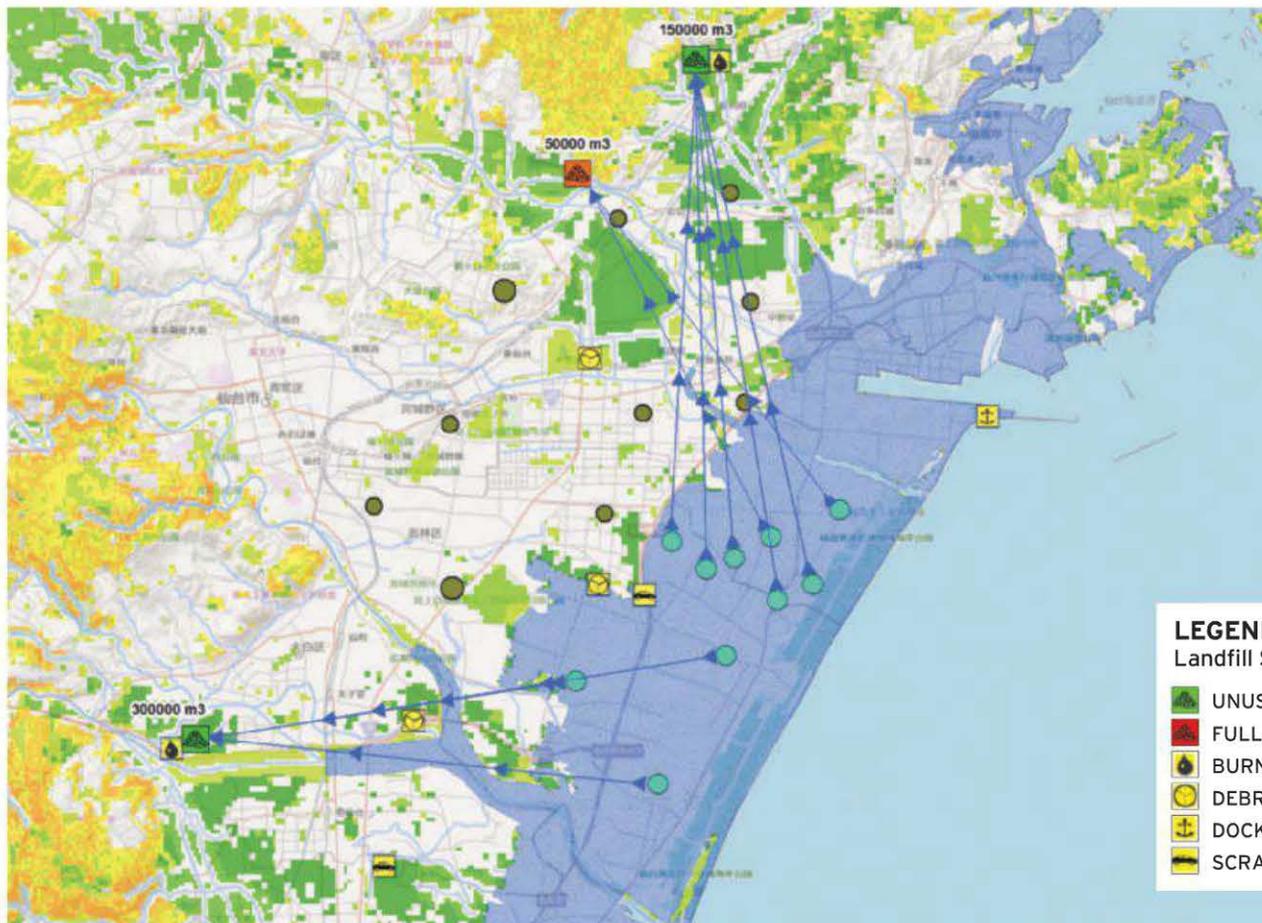
AIA/CES Course #1203A

Disaster-Response Mapping



DEBRIS CLASSIFICATION

ESRI and its fellow members of the emergency mapping team relied on GIS to help the Japanese government and relief agencies locate debris, understand its composition, and estimate quantities.



DEBRIS DISPOSAL

With GIS tools, the emergency mapping team created visualizations that plotted the location of debris and identified potential disposal sites. In separate layers they studied factors such as the quality of roads leading to landfills.

information describing infrastructure and buildings. The ultimate goal is a tool that could be used to test development options and simulate their effect on energy, water, and waste systems in real time.

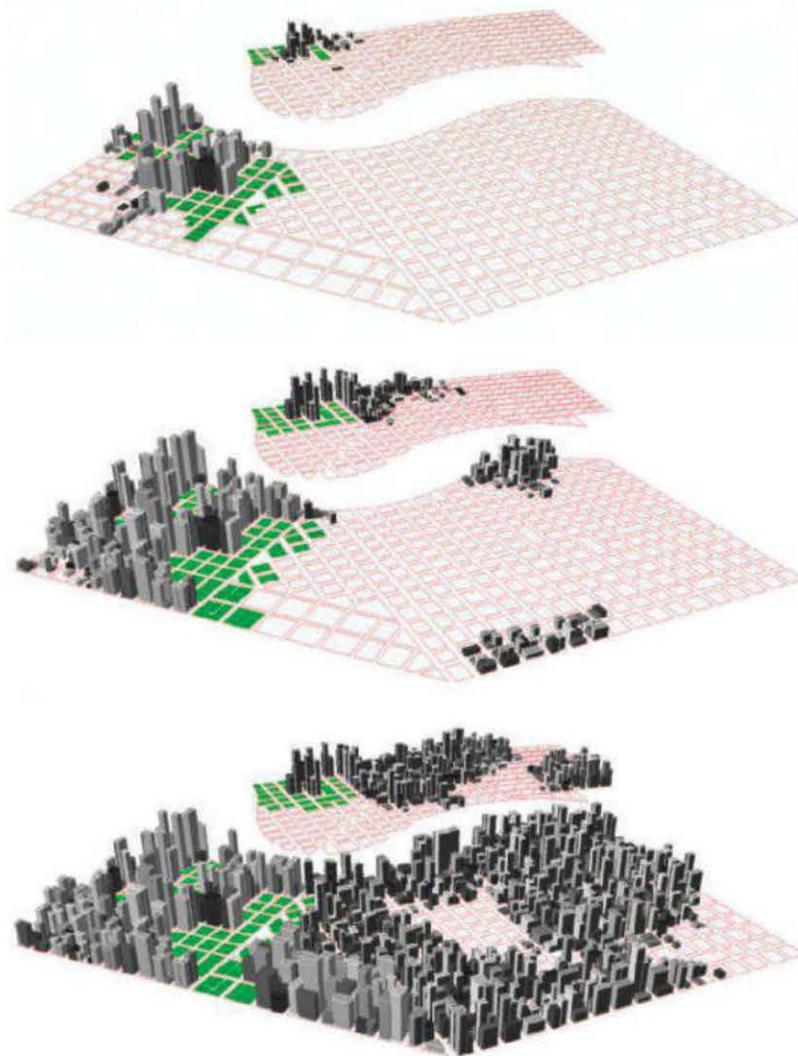
At its core, GIS is a digital representation of the earth that can be viewed at a variety of scales and depths. Like the city grid, GIS can be used to spatially plot coordinates. Or it can be used to locate specific objects and tie intangible information, such as demographics, to a representation of a site, establishing a visually simple way to describe the spatial relationships among objects, people, and events. In addition, global positioning systems (GPS) embedded in devices like smartphones have made it easier for anyone to tag site-specific data in web-based applications like Facebook or Google Maps. The developing interface between GIS platforms and other software, like Google SketchUp or Autodesk's Infrastructure Modeler or Revit, could one day allow architects to explore all facets of a design within a GIS context.

The information mapped into GIS software is becoming more reliable as organizations and government agencies invest more resources in preparing data sets. However, most GIS experts recommend verification through a commissioned survey, photographic documentation, or some other method—especially when extreme accuracy is required.

There are a variety of ways that data are collected in GIS software. Light Detection and Ranging (LIDAR) is a method that relies on lasers to survey a site, either from the ground or from a plane. The most common basis is Landsat imagery, captured by NASA's satellite, which forms the backbone of the Google Earth software, as well as others. NASA's World Wind project layers additional imagery onto this data set to create three-dimensional depictions of the earth's surface (as well as the moon, Jupiter, and a smattering of other planets). The benefit of using NASA's information is that it's open-source, a product of the Open Geospatial Consortium (OGC) movement within the GIS industry. The goal of the OGC is to make data sets publicly available and to standardize file types across different platforms.

One outgrowth of the open-source effort is the expanding number of online repositories, such as www.geocommons.com and PostGIS, where users can upload maps and data sets and make them available to others. According to Shannon McElvaney, an Esri project manager, these sites offer great "crowd-sourcing" potential. He points to the maps generated and posted online by the general public in the aftermath of the Japanese quake and tsunami with information about aftershocks and links to geo-located video and images. "GIS is a way

Mapping the City



DATA AND URBAN DEVELOPMENT

Architects in the Chicago office of Skidmore, Owings & Merrill (SOM) are developing a data model of the city's core with a GIS-based approach. The model will include information about the city's buildings and infrastructure and will help the firm understand the effect of development on the demand for power, water, and waste systems.

to document and publish a huge body of local knowledge," he says.

Dan Getman, the geospatial team leader in the Strategic Energy Analysis Center at the National Renewable Energy Laboratory (NREL) in Golden, Colorado, is a proponent of open-source software and publicly available data sets, both of which he relies on to create renewable energy maps with his research team. NREL has a tool called IMBY Solar that allows anyone to draw a solar photovoltaic array on an aerial image of a site and instantly calculate its potential for energy generation. The engine running that calculation is hosted on external servers and the entire application is web-based. Getman sees the move to cloud computing as one of the most important GIS developments. It allows users who may not have large amounts of computing power access to massive quantities of data. "GIS is no longer something you do on your desktop," he says.

Although GIS can support activities as

diverse as disaster recovery and the design of renewable energy systems, the sheer numbers of data sets and kinds of software required can create obstacles that only savvy programmers can currently circumvent. Esri's Wittner is optimistic that the OGC will eventually develop an industry cross-model that could collapse all data into a single file type. The company has been paying close attention to the OGC's evolving Geography Markup Language (GML), a programming language that many in the industry expect to become this common platform. "In the next 10 years, most of the European Union nations will adopt GML as a standard," Wittner says. "And it's getting better every year." ■

Russell Fortmeyer is an engineer, sustainability consultant, and journalist based in Los Angeles.

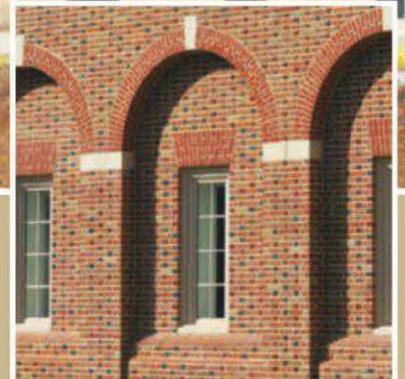
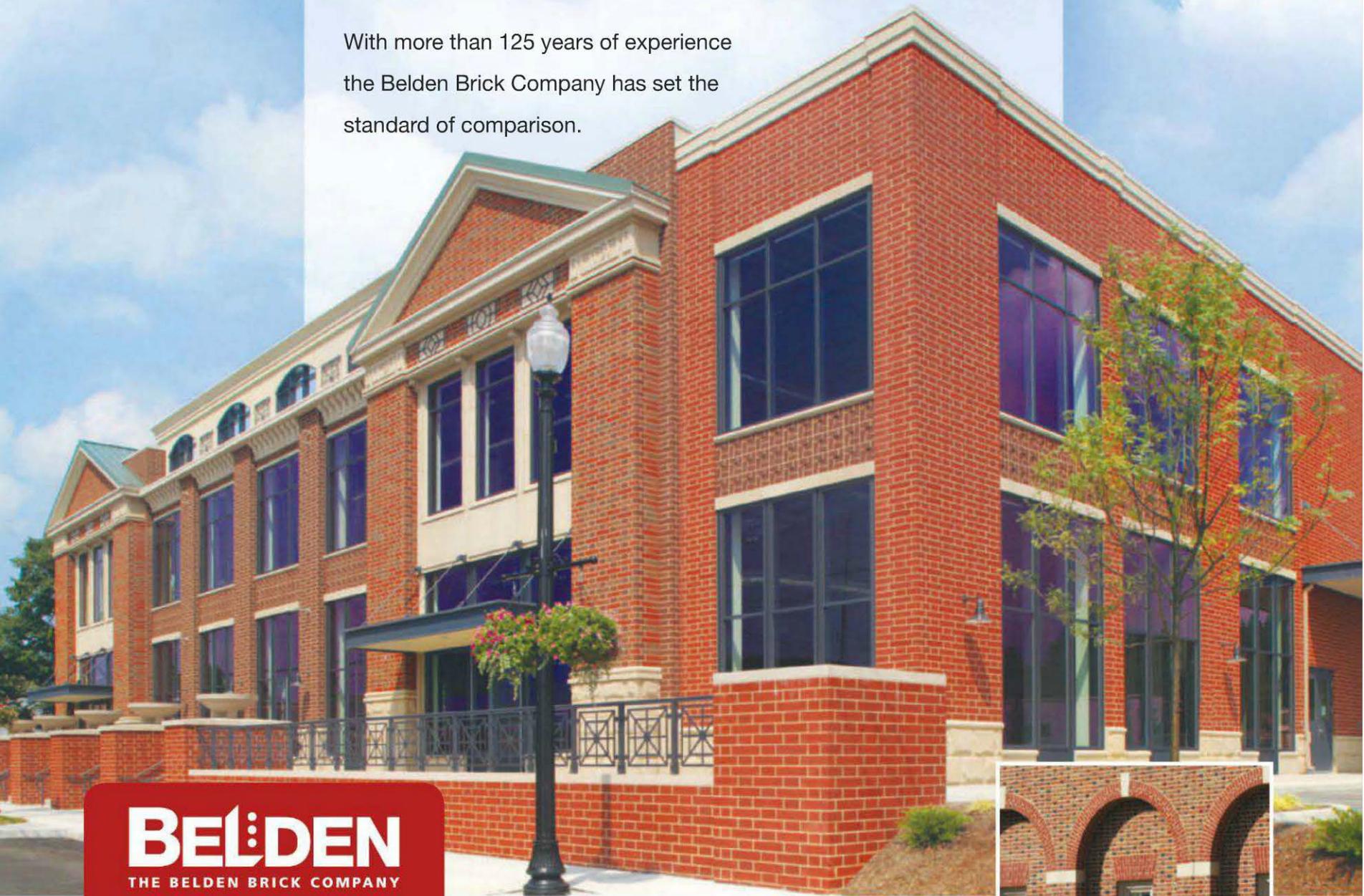
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 Use the learning objectives below to focus your study as you read **Zinc Roofing and Wall Systems**. To earn one AIA/CES Continuing Education Hour (CEH), including one hour of health, safety, welfare/sustainable design credit, answer the questions on page 119, then follow the reporting instructions or go to ce.architecturalrecord.com and follow the reporting instructions.

Learning Objectives

After reading this article, you should be able to:

- Differentiate among basic qualities of zinc as a sustainable building material compared to other architectural metals.
- Analyze and assess the multiple qualities of zinc that can contribute to green and sustainable building design including its long-term life-cycle benefits.
- Explore the qualities of zinc roofing in green building design among common application types.
- Examine the different applications of exterior zinc wall panel systems including green building applications.

By Peter J. Arsenault, FAIA, NCARB, LEED-AP

Office building, Hoboken (Belgium)

Designed by Sylvie Bruyninckx, Conix Architects

Architects have a number of choices when selecting architectural metal for roofing or siding based on the variety of design conditions in different building types. Many of those choices are rather energy intensive such as aluminum, copper, painted steel and stainless steel. However, zinc is emerging as an architectural metal of choice in the U.S. due in part to its comparatively low level of energy intensity and its widespread and long-term use in other parts of the world. Design professionals in European cities such as Paris, have specified zinc roofs since the late 1800s where the distinctive gray patina continues to crown over 80 percent of the rooftops there—some of which have been around for more than 100 years. Zinc building products, including roofing, wall cladding and rainwater systems, are thus enjoying new popularity in the U.S. due to recognition of its sustainability qualities and its long-lasting, low-maintenance benefits for owners.

PROPERTIES OF ZINC

Zinc is a naturally occurring element (Zn is #30 on the periodic table) and a significant mineral that is prevalent throughout the world. In fact, it is reported to be the 23rd most abundant element in the earth's crust found not only in rocks, soil, air and water, but also in all living organisms including plants, animals and humans. Zinc is mined worldwide predominantly from extraction processes that avoid strip mining meaning that less land is disturbed and any potential environmental damage is minimized. Various projections have been made about the worldwide supply of zinc, but current estimates predict up to 750 years' worth of supply at current extraction levels. When recycling and reuse of zinc is considered, the projections are even longer.

When zinc is used as a building material, it is actually fabricated as an alloy. Typically, it is 99.995 percent pure zinc, produced by an electrolytic process that introduces very controlled trace quantities of copper and titanium. The copper helps with mechanical resistance, making zinc easier to work with. The titanium is added to alleviate the tendency of material creep. Historically, it was observed that a sloped

pure zinc roof on a building would become much thicker at the bottom of the roof than at the top in as little as five years. The zinc would literally "creep" down the roof over time, prompting the addition of titanium to overcome that problem.

The manufacturing of zinc into building products has been refined over the past 100 years or more to the point where it is quite efficiently and sustainably done. Once the metals are mined, they go through a casting process at a mill that obviously requires heat to form the metal into usable portions for processing. The environmental air emissions produced from zinc processing at these plants are minimized due in part to the use of up-to-date equipment and emission abatement processes. But compared to other metals, it is worth noting that zinc requires significantly less energy to process due to its relatively lower melting point of 786 °F compared to other metals like aluminum at 1,120 °F, copper at 1,983 °F, and steel at 2,372 °F. Following this process, the zinc is then rolled, cooled and transformed into large primary coils which are further rolled and cut into smaller, saleable coils to be formed into specific building products.

...zinc roofing and wall cladding have become attention grabbing design elements.

ASTM B6-09 is the "Standard Specification for Zinc" as a metal and covers zinc processing from ore by a process of distillation or by electrolysis in five grades: LME grade (related to the London Metal Exchange standards), special high grade, high grade, intermediate grade, and prime western grade. Under this standard, the zinc metal is tested to conform to chemical composition requirements free of any surface corrosion and adhering foreign matter. The most common, but separate building-related standard for products then manufactured out of zinc metal is ASTM B69-09 "Standard Specification for Rolled Zinc." This standard covers Type I coils or sheets cut from strip rolled zinc, and Type II zinc plates such as boiler and hull plates produced by any rolling method. This

accepted standard dictates the dimensional tolerances for thickness, width, length, saber and flatness. It also dictates the quantity of the trace elements that can be contained in the product.

While two-thirds of the zinc manufactured worldwide is used for flashings and rainwater goods, zinc roofing and wall cladding have become attention grabbing design elements. Products are available in a full range of applications from low-sloped roofing, high-sloped decorative roofing, ornamental features such as eyebrows and dormers, wall panels, rain screens, and sun shading devices. As an exposed and visible part of the building envelope, it is distinguished by its beautiful patina characteristics that many building professionals are starting to understand and seek. When rolled zinc first comes out of the mill, it is shiny like mill-bright aluminum. As the material is exposed to air, humidity, and pollution, it weathers, naturally creating a gray-colored patina that develops over time, much the same way bright mill copper develops a brown and then green patina over time. With zinc, this natural patina is a layer of zinc hydroxy-carbonate that typically takes 2 to 5 years to develop fully depending on environmental factors such as air quality and humidity. So, in areas with a higher concentration of CO₂, the patina appears more quickly while zinc used in protected interior applications may rarely, if ever, develop a patina.

Once the patina develops, the zinc has a uniform and consistent color of gray for its lifespan. However, the patina layer also has unique characteristics that contribute to its sustainability. The patina layer is compact and insoluble to rainwater which thereafter controls the rate of corrosion. This patina is said to be a self-healing protection for the zinc. If it becomes scratched or is removed mechanically, it will naturally redevelop from continued exposure to rainwater and carbon dioxide. The scratch would appear first as a shiny area but would then appear to actually "heal" itself as the patina reforms.

Zinc manufacturers also offer pre-patina materials, sometimes called pre-weathered, with a gray look that is very true to the natural soft gray patina. To achieve this look, the shiny or natural zinc coils are run

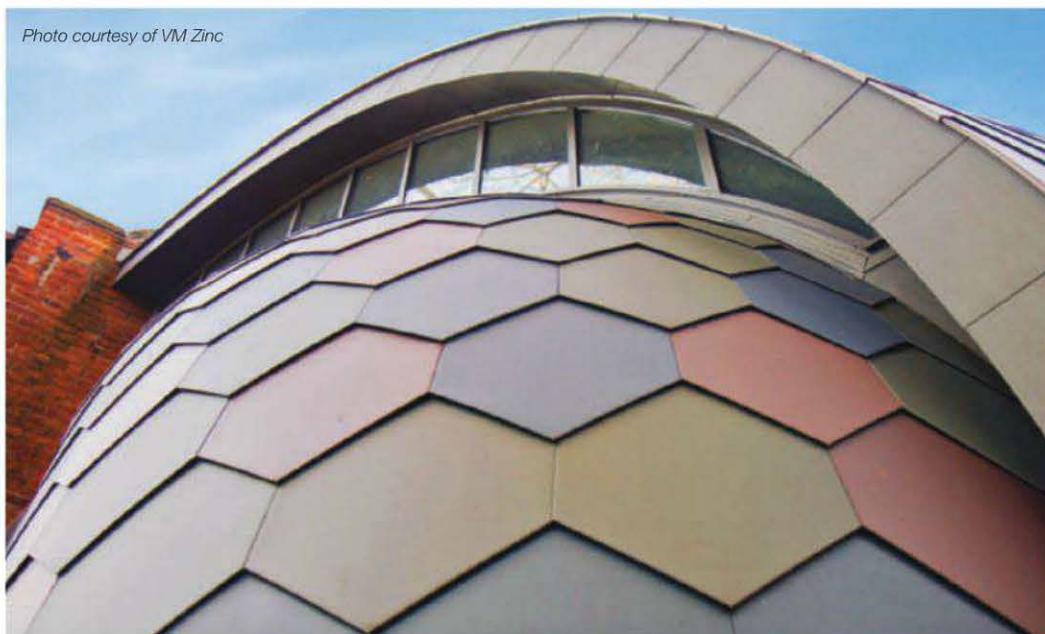


Photo courtesy of VM Zinc

Zinc forms a natural gray protective patina and can be pre-weathered in a variety of colors.

through an acidic bath giving the material a weathered appearance. The longer the period of time they are in the bath, the darker the resulting color. Manufacturers also offer factory-applied transparent organic coatings that include subtle blues, reds and greens. Over time these colored and darker shaded materials will still develop the natural gray zinc patina eventually. The length of time for this to happen, however, still varies with air quality but typically these colors will last up to 30 years before gradually changing to the natural gray.

Many manufacturers work with building professionals during the design phase and even during construction to advise on installation, and many strongly recommend or even require training prior to installation. In the process, a misperception that zinc is hard to work with and install is being overcome. One aspect of working with zinc, similar to all architectural metals, is its expansion and contraction. Zinc will move approximately 1 inch in 30 feet so the design must be engineered to accommodate this normal thermal movement. To achieve this, a combination of sliding and fixed clips must be installed in zinc roofing while wall systems use similar measures to achieve the same results. The sliding clips consist of two parts in which one part can slide to accommodate thermal movement. Working temperature is another misunderstood

aspect of working with zinc and is particularly important when bending the material on site. The material is malleable but can become cold and brittle at lower temperatures. Therefore, zinc should not be folded when the metal is at temperatures of less than 45 °F. Crazeing, which is seen as long wrinkles in the material, can occur if this is attempted. When working in temperatures below 45 °F, installers can use a heat gun to warm the material to the right temperature for bending and installation or fold the material in a temperature-controlled environment before moving to the building site for installation. Pre-manufactured wall panels and flashings also limit the need for bending zinc on the job site. It is important to factor temperature into construction scheduling when planning to bend or fold the material prior to installation. Once the material is installed correctly, however, low temperatures do not create problems provided accommodations have been made for thermal expansion and contraction.

In addition to the strong historical track record of zinc, architects should also be aware that there are some emerging trends and practices of companies that manufacture zinc building products that will make it easier to specify and design zinc into buildings in the U.S. First is the offering of material in 48-inch-wide products instead of only the previously available meter-wide material. This

coordination with American standard construction sizes will make it easier to design and install zinc wall and roofing products at new scales and with more economical installation. Second, is a global approach to the fabrication and service for a specific product. This means that a product can be specified in the U.S. for a project in Europe, China or the Middle East and have exactly the same make up and characteristics in any of those locations. Finally, zinc is being used innovatively to improve building performance such as rain screen products that harness air flow in parts of the building envelope for enhanced heating, cooling and ventilation. Coupling all of this with a growing awareness of an envelope that meets a strong and positive life-cycle cost analysis, architects and designers are becoming increasingly savvy in making long-term choices that allow for both contemporary and traditional aesthetics, even allowing a seamless flow from roofing to walls in some cases.

Photo courtesy of VM Zinc



Zinc metal is produced into rolls with an initial shiny bright appearance.

Continues at ce.architecturalrecord.com

Peter J. Arsenault, FAIA, NCARB, LEED-AP, is a practicing architect, sustainability consultant and freelance writer.

See Quiz on the Next Page or
Take the Quiz Free Online

To receive AIA/CES 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. The quiz questions below include information from this online reading.

Program title: “Zinc Roofing and Wall Systems” (03/12, page 116). AIA/CES Credit: This article will earn you one AIA/CES CEH of health, safety, welfare/sustainable design (HSW/SD) credit. (Valid for credit through March 2014). **Directions:** Refer to the Learning Objectives for this program. Select one answer for each question in the exam and fill in the box by the appropriate letter. A minimum score of 80% is required to earn credit. **To take this test online and avoid handling charge, go to ce.architecturalrecord.com**

1. Typically, zinc is 99.995% pure, produced by an electrolytic process that introduces very controlled trace quantities of:
 - a. aluminum.
 - b. brass and copper.
 - c. mild steel and titanium.
 - d. copper and titanium.
2. The protective patina of zinc is usually complete in about five years although it will continue to renew itself throughout its life and self-repair any imperfections or scratches.
 - a. True
 - b. False
3. Among the emerging trends in the zinc industry, one that is making it easier to specify zinc products in the U.S. is:
 - a. zinc mine locations.
 - b. global manufacturing.
 - c. standardization to 48-in. panels instead of only meter-wide panels.
 - d. historical track record in Europe.
4. In addition to maintenance costs, life-cycle analysis is fundamentally dependent on:
 - a. the source of the material.
 - b. the ownership of the building.
 - c. the longevity or service life of a material or system.
 - d. the code requirements related to service life.
5. The architectural metal with the least embodied energy content is:
 - a. aluminum.
 - b. zinc.
 - c. copper.
 - d. stainless steel.
6. Because zinc is both valuable and recyclable, what percentage is typically recycled during demolition and remodeling projects?
 - a. 50%
 - b. 75%
 - c. 80%
 - d. 90%
7. Zinc roofing panels are suitable for:
 - a. roof slopes above 1:12.
 - b. straight roofing systems.
 - c. curved or folded roofing systems.
 - d. All of the above
8. Batten seam roofs are one roofing style option that is suitable for virtually all building types, particularly complex shapes.
 - a. True
 - b. False
9. Metal rain screen wall panels made from zinc are:
 - a. suited for both new and renovation projects.
 - b. can be specified to be fully pressure equalized.
 - c. not laminated nor a composite, so they will never delaminate.
 - d. All of the above
10. In general, water should not be allowed to run onto zinc from above if it first passes over:
 - a. aluminum.
 - b. galvanized steel.
 - c. lead.
 - d. copper.

<p>Last Name _____ First Name _____</p> <p>Job Title _____</p> <p>Firm Name _____</p> <p>Address _____</p> <p>City _____ State _____ Zip _____</p> <p>Tel. _____ Fax _____</p> <p>E-mail _____</p> <p>AIA ID Number _____ Completion date (M/D/Y) _____</p> <p>Check one: <input type="checkbox"/> \$10 Payment enclosed. (Make check payable to McGraw-Hill Construction and mail to: Continuing Education Certificate, PO Box 5753, Harlan, IA 51593-1253.)</p> <p>Charge <input type="checkbox"/> Visa <input type="checkbox"/> Mastercard <input type="checkbox"/> American Express</p> <p>Card# _____</p> <p>Signature _____ Exp. Date _____</p>	<p><input type="checkbox"/> To register for AIA/CES credits: Answer the test questions and send the completed form with questions answered to address at left, or fax to 888/385-1428.</p> <p><input type="checkbox"/> For certificate of completion: As required by certain states, answer test questions, fill out form, and mail to address at left, or fax to 888/385-1428. Your test will be scored. Those who pass with a score of 80% or higher will receive a certificate of completion.</p> <p>Material resources used: This article addresses issues concerning health, safety, welfare and sustainable design.</p> <p>I hereby certify that the above information is true and accurate to the best of my knowledge and that I have complied with the AIA Continuing Education Guidelines for the reported period.</p> <p>Signature _____ Date _____</p>
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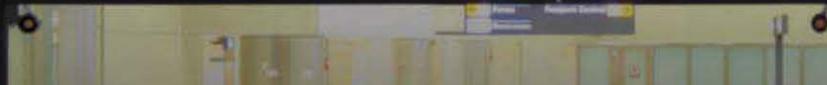
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New and Upcoming Exhibitions

The Utopian Impulse: Buckminster Fuller and the Bay Area

San Francisco

March 31–July 29, 2012

This exhibition links legendary Buckminster Fuller's radical idealism to local innovators inspired by his visionary thinking. The presentation will feature some 65 works, including prints, drawings, photographs, documentary video, books, models, and ephemera representing some of Fuller's most iconic projects. At the San Francisco Museum of Modern Art. For more information, visit sfmoma.org.

Colombia: Transformed

Chicago

April 3–May 27, 2012

Ten recently completed projects by Colombia's top architects demonstrate the country's commitment to design, and show how architecture can improve the lives of ordinary people. These works—schools, community centers, and more—reflect the significant social shifts happening in Latin America today. The projects (by Daniel Bonilla, Giancarlo Mazzanti, Felipe Mesa, Juan Manuel Pelaez, and Felipe Uribe) will be explored through photographs, drawings, films, and models at the Cervantes Institute. Visit chicago.cervantes.es.

Ongoing Exhibitions

Felix Candela

New York City

Through March 31, 2012

Regarded as one of the greatest Spanish-born architects of the 20th century, Felix Candela is celebrated for his feats of architectural engineering. Highlights of this exhibition at Columbia University's Wallach Art Gallery include the Cosmic Rays Pavilion, Los Manantiales Restaurant, Chapel Lomas de Cuernavaca, and more. For more information, visit columbia.edu.

Reach: Architecture of the Freelon Group

Cambridge, Massachusetts

Through April 13, 2012

The Freelon Group is a 55-person design firm founded in 1980 by Phil Freelon. Located in Durham, North Carolina, the firm's projects include the National Center for Civil & Human Rights in Atlanta, the Museum of the African Diaspora in San Francisco, and the Reginald F. Lewis Museum in Baltimore. The projects featured in this exhibition at MIT's Wolk Gallery exemplify the reach of firm's work

with models, drawings, and photographs. For more information, visit freelon.com/MIT.

Foreclosed: Rehousing the American Dream

New York City

Through July 31, 2012

Examining new architectural possibilities for American cities and suburbs in the context of the recent foreclosure crisis in the United States, this exhibition at the Museum of Modern Art presents the work of five interdisciplinary teams of architects who envisioned a rethinking of housing and related infrastructures that could catalyze urban transformation,

particularly in the country's suburbs. For more information, visit moma.org.

Lectures, Conferences, and Symposia

LEducation 6

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LEducation 6 is the largest single-day exhibition and educational event dedicated solely to the ever-evolving LED market and technology. Attendees are able to participate in a variety of accredited educational seminars held

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Architectural Wood Design & Preservation Conference

Cambridge, Massachusetts

March 24–25, 2012

At this conference at MIT, over 30 noted architects, engineers, and researchers will give presentations on the use of architectural wood. Topics covered will include: basic properties of wood and their effect on performance and

durability, advances in wood-based materials, development in construction techniques for use in restoration/preservation projects, and more. Visit architects.org.

Coverings 2012

Orlando

April 17–20, 2012

Coverings is the global show and conference for ceramic tile and stone. With nearly 1,000 exhibitors from more than 50 countries, this expo is the most comprehensive marketplace of its kind, featuring the newest products, technology, innovations, machinery, supplies,

and tools. Visit coverings.com.

AIA Europe: International Conference and Chapter Meeting

Tel Aviv

April 19–22, 2012

In the throes of realizing itself as a uniquely cosmopolitan society based on deep roots in ancient history, Israel has become a complex and modern place, the source of many technological, artistic, and cultural inventions. This conference will consider the ways architecture connects the past with the present and the role of public architecture. Anticipated tours include the Tel Aviv Museum of Modern Art, Holon Design Museum, Bauhaus White City, the Israeli Supreme Court, and the Peres Center for Peace. Visit aiaeurope.org/telaviv.

Competitions

AIANY Medal of Honor Redesign Competition

Submission Deadline: March 15, 2012

This award is open to any architect, sculptor, artist, or student, and asks for a redesign of the current medal of honor. The specifications of the proposed medal will be the same as the existing design: bronze, bas-relief, and reverse-side text (text should be centered). For more information, visit aiany.org.

2011 Open Architecture Challenge

Registration Deadline: March 31, 2012

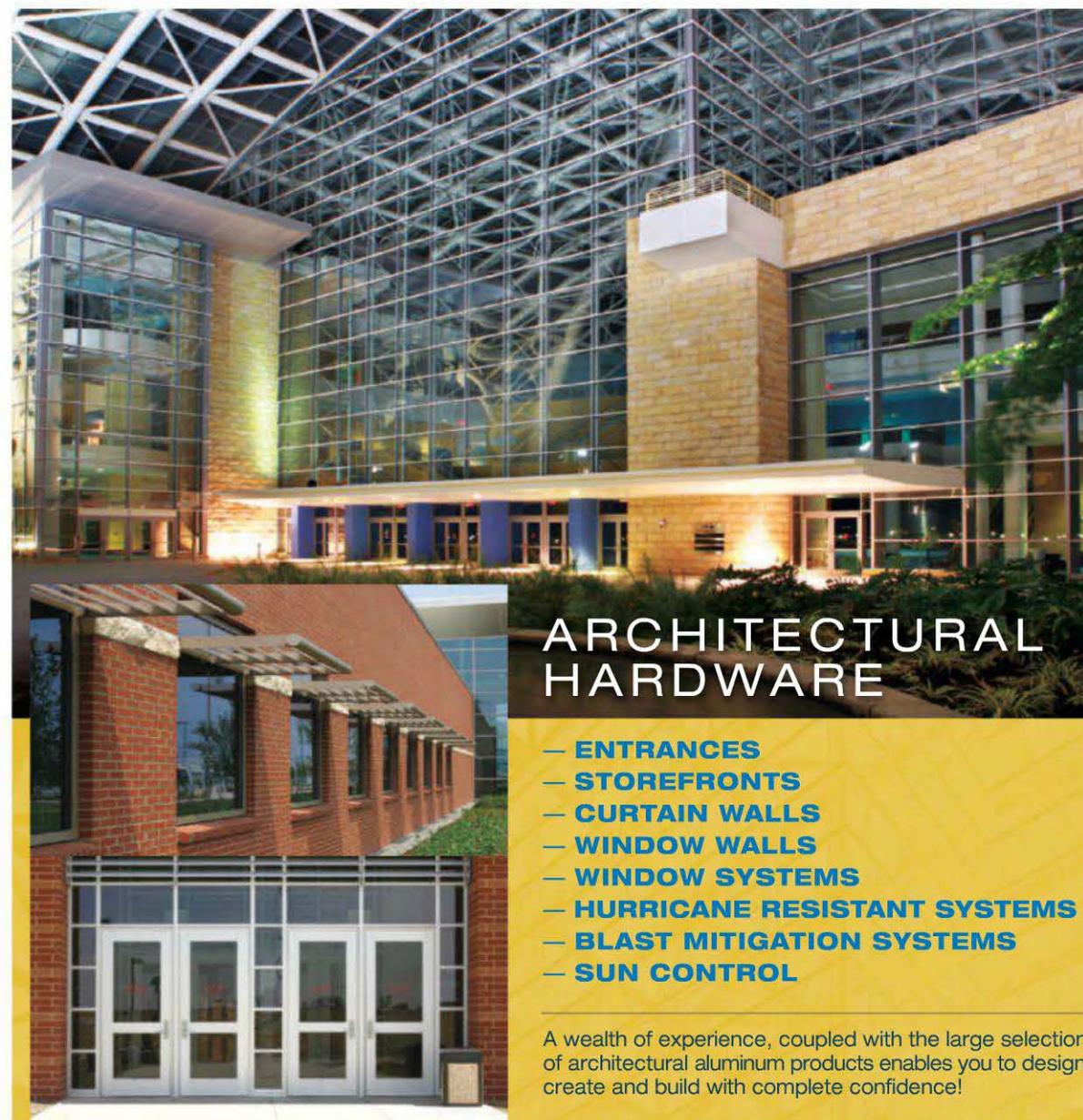
Decommissioned military installations leave their marks on the global landscape—symbols of triumph, pride, pain, and the unforeseen consequences of military aggression. This design competition seeks to reenvision the future of decommissioned military space. The design-and-construction community is asked to identify retired military installations in their own backyards; collaborate with local stakeholders; and reclaim these spaces for social, economic, and environmental good. For more information, visit openarchitecturenetwork.org/competitions/unrestrictedaccess.

Core77 2012 Design Awards

Submission Deadline: April 10, 2012

With categories like design writing, furniture design, interiors and exhibitions, and 14 more; professional and student entry fields; globally distributed juries; and a unique trophy, the Core77 Design Awards celebrate client work and self-initiated projects. For more information, visit core77designawards.com.

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ARCHITECT: Mark Cavagnero Associates
ENGINEERS: Franco Civil Engineering (civil); Jon Brody Structural (structural); LMR Consulting Mechanical Engineers (mechanical); the Engineering Enterprise (electrical, lighting)
CONTRACTOR: Oliver & Company
CLIENT: East Bay Center for the Performing Arts

STRUCTURAL SYSTEM: Romak Iron Works
CURTAIN WALL, ALUMINUM WINDOWS, DOORS: Kawneer
CONCRETE EXTERIOR CLADDING: Conco
BUILT-UP ROOFING: GAF
GLASS: Oldcastle BuildingEnvelope
SKYLIGHTS: Velux
HARDWARE: Schlage, Ives, LCN, Von Duprin
ACOUSTICAL CEILINGS: Armstrong
PAINTS AND STAINS: Glidden
BATHROOM TILE: Daltile
RAISED FLOORING: Action Floor Systems
LIGHTING: Focal Point, Tech Lighting, Alera, Shaper
LIGHTING CONTROLS: Lutron
ELEVATORS/ESCALATORS: ThyssenKrupp
PLUMBING: Daltile

WINDSOR SUPER MARKET, WINDSOR, NC

DESIGNERS, BUILDERS: Studio H high school students, Project H Design
STRUCTURAL ENGINEER: Andy Eller, PE*
FUNDING FOR CONSTRUCTION: W.K. Kellogg Foundation*, the Adobe Foundation*, Sappi: Ideas That Matter*
CLIENT: Town of Windsor

EXTERIOR CLADDING: PT SYP, sourced locally
ROOFING: Firestone, EPDM

LIONS PARK PLAYScape, GREENSBORO, AL

DESIGN TEAM: Auburn University Rural Studio*
STRUCTURAL: GFGR Architects and Engineers*
LANDSCAPE: Xavier Vendrell Studio*
ENVIRONMENTAL CONSULTANT: Atelier Ten*
ARCHITECTURE: Wheeler Kearns Architects*
CLIENT: Lions Park Committee

55-GALLON GALVANIZED BARRELS: IP Callison*
STEEL: Turnipseed International*, Dogan Steel (discounted)
SURFACING: Shaw (partially donated by Strategic Alliance for Health)
WEATHERED STEEL: Dogan Steel (discounted)

THE WINDCATCHER HOUSE, BLUFF, UT

DESIGN TEAM: DesignBuildBLUFF, the University of Colorado Denver*
STRUCTURAL: Studio NYL*
CONTRACTOR: Big-D construction*
CLIENT: Maxine and Maurice Begay

WINDOWS/DOORS: 3form*

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ARCHITECT: ELS Architecture and Urban Design
ENGINEERS: Telamon Engineering (civil); SOHA Engineers, (structural); F.W. Associates (electrical); H&M Group (mechanical)
CONSULTANTS: Aquatics Consultants (aquatic); Keller Mitchell & Company (landscape); Rick Unvasky Consulting Services (LEED)
CONTRACTOR: Turner Construction
CLIENT: City of Oakland

SIDING: Centria
GLASS: PPG
CEMENT MASONRY: Trenwyth Industries
CURTAIN WALL AND STOREFRONT: Kawneer
SPORTS FLOORING: Connor Sports Flooring, Mondo U.S.A.
WOOD CEILINGS: Rulon International

JOPLIN HIGH SCHOOL, JOPLIN, MO

ARCHITECTS: DLR Group, Corner Greer & Associates
ENGINEER: DLR Group
GENERAL CONTRACTOR: Crossland Construction
CLIENT: Joplin Schools

SLIDING DOORS: Crown Industrial Supply
LOCKSETS: Yale
SECURITY DEVICES: MagLocks, Assa Abloy
CABINETWORK: Cohen Architectural Woodworking
PAINTS: Sherwin-Williams
CARPET: Interface
LIGHTING: HE Williams, Lite Control, Delray

LAURA A. PARSONS BUILDING, BRONX, NY

ARCHITECT, MEP, LANDSCAPE: WASA/Studio A
STRUCTURAL ENGINEERS: Structural Consultant Services
CONTRACTOR: Procida Construction
CLIENT: VIP Community Services

EXTERIOR CLADDING: Brick by Tristate Masonry
WINDOWS/DOORS: EFCO
INTERIOR FINISHES: Crossville, Daltile, Azrock
PAINT: Benjamin Moore
LIGHTING: Legion Lighting, Linear Lighting

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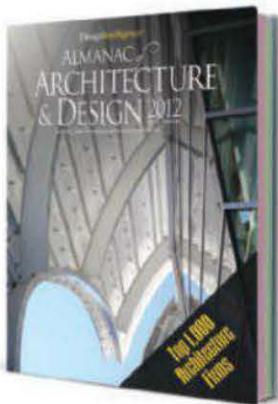
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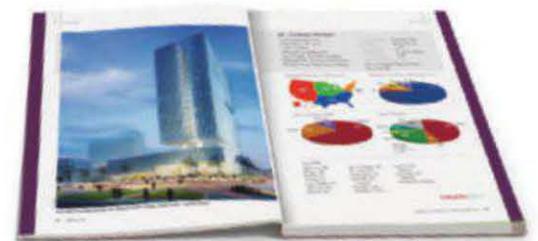
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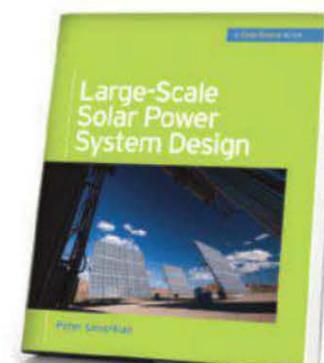
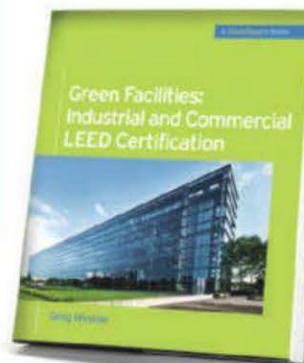
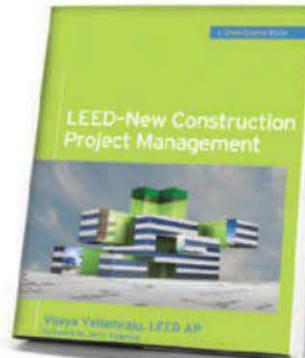
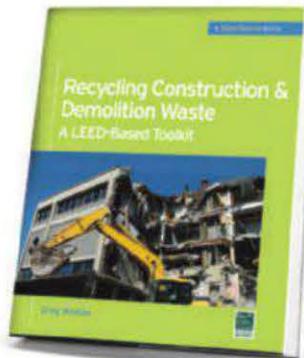
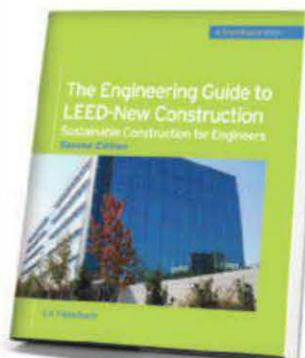
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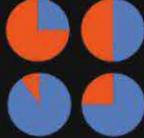


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LOCATION ALTOS DE CAZUCÁ, SOACHA, COLOMBIA
DESIGNERS EL EQUIPO DE MAZZANTI

ALTOS DE CAZUCÁ, a neighborhood just outside of Bogotá, developed organically in the 1970s as peasants fled rural areas plagued by the ongoing armed conflict. In 2004 the Pies Descalzos (“barefoot”) foundation, led by singer Shakira, began a collaboration with two schools in the crime-ridden area, and then, with Spanish NGO Ayuda en Acción, worked with Bogotá-based architect Giancarlo Mazzanti to construct this new shelter, completed in 2011, to protect the play yard from rain and sun. The concept: to design a modular system that could grow over time to link to other nearby public spaces. Slender steel columns support a treelike canopy of steel-framed dodecahedrons, wrapped with a metal mesh and enclosing a sheet of translucent polycarbonate. As is typical, the court is the heart of the community, hosting sporting events, but also markets and festivals. Says Mazzanti, “The canopy has become a central gathering space for the people here.” *Beth Broome*



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