

ARCHITECTURAL RECORD

DESIGN VANGUARD 2013

RECORD
PRODUCTS

PIANO'S
KIMBELL
MUSEUM
ADDITION



CEILING SYSTEMS

Between us, ideas become reality™

enhance the menu

WoodWorks® Ceiling Systems let you create tasty interiors with a natural warmth and sophistication. The FSC®-certified panels contain 100% biobased content that's certified by the USDA BioPreferred® Products program. Choose from flat, radial, and curved designs in a variety of sizes, finishes, and acoustical perforations for the perfect blend of beauty and performance.

Visit our website to learn more about the tasty looks of WoodWorks. armstrong.com/woodworks 1 877 ARMSTRONG CIRCLE 14



PRODUCT: WoodWorks® Vector® custom perforated panels
BUILDING: Ohio University, Nelson Commons, Athens, OH
ARCHITECT: Champlin Architecture, Cincinnati, OH

Armstrong®

ASTOR TURF

In Manhattan's East Village, a neighborhood known for passionately independent movements, **51 Astor** coolly shows it belongs. Designed to attract a diverse range of tenants by **Maki and Associates** for **Edward J. Minskoff Equities**, it links two huge volumes on a full city block yet manages to appear different from each angle. The building's structural steel acrobatics ensure flexibility to serve this market long-term while coalescing with a neighborhood master plan to connect community through public space—a restrained composition in an unrestrained neighborhood.

Structural Steel Right for any application

For help achieving the goals of your next project, contact the Steel Institute of New York.

 **Steel Institute of New York**

Publisher of *Metals in Construction*
211 E 43 ST | NY, NY 10017 | 212-697-5553 | www.siny.org

CIRCLE 16

Architect: Fumihiko Maki, Maki Associates
Structural Engineer: Ysrael A. Seinuk
Photo: Richard Ginsberg

ARCHITECTURAL RECORD

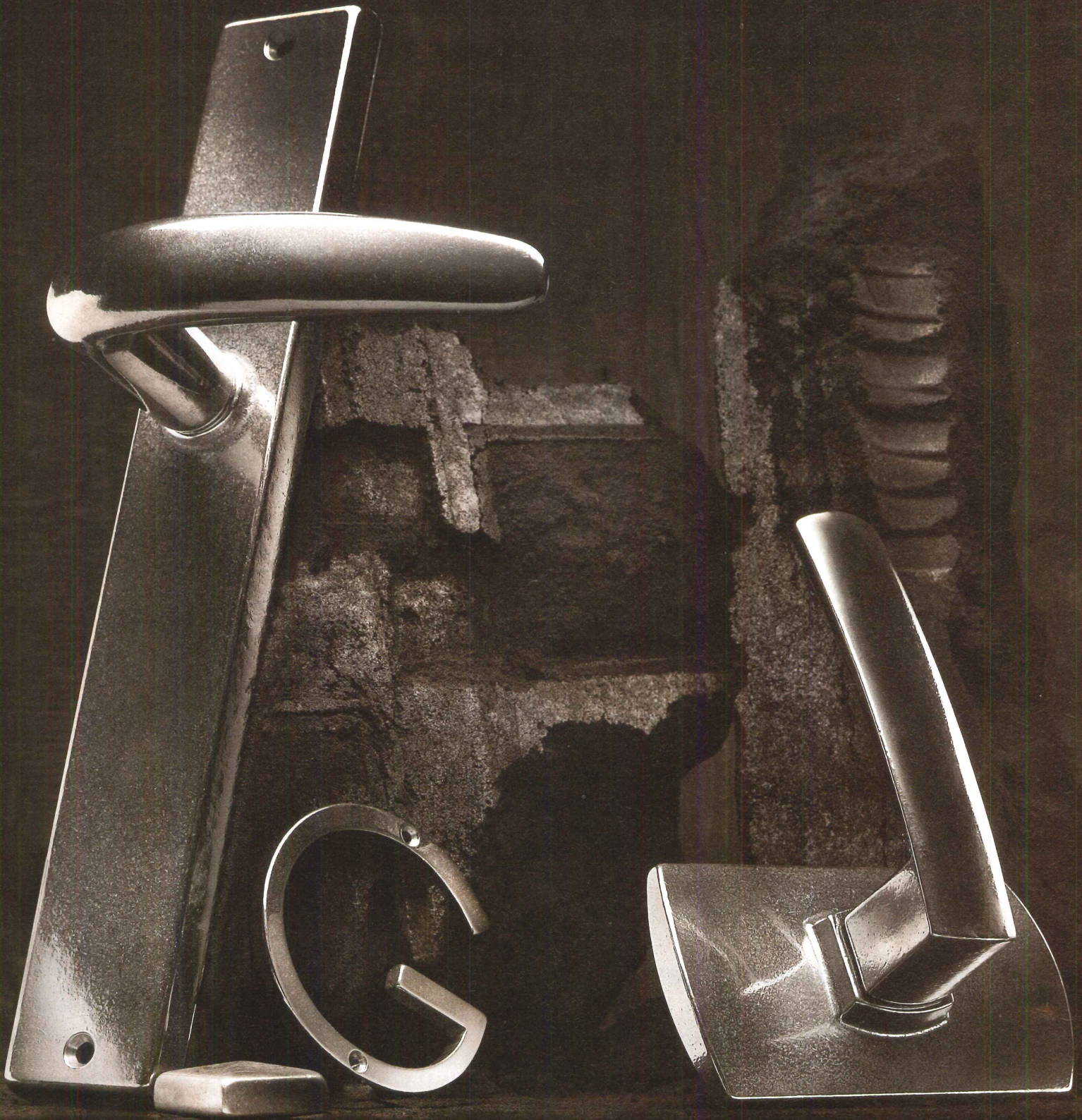
EDITOR IN CHIEF	Cathleen McGuigan, cathleen.mcguigan@mhfi.com
MANAGING EDITOR	Beth Broome, elisabeth.broome@mhfi.com
SENIOR GROUP ART DIRECTOR	Francesca Messina, francesca.messina@mhfi.com
DEPUTY EDITORS	Clifford A. Pearson, pearsonc@mhfi.com Suzanne Stephens, suzanne.stephens@mhfi.com
SENIOR EDITORS	Joann Gonchar, AIA, LEED AP, joann.gonchar@mhfi.com Linda C. Lentz, linda.lentz@mhfi.com
PRODUCTS EDITOR	Sheila Kim, sheila.kim@mhfi.com
SENIOR EDITOR, DIGITAL MEDIA	William Hanley, william.hanley@mhfi.com
NEWS EDITOR	Laura Raskin, laura.raskin@mhfi.com
ASSISTANT EDITOR	Laura Mirviss, laura.mirviss@mhfi.com
EDITORIAL INTERN	Anna Fixsen, anna.fixsen@mhfi.com
ART DIRECTOR	Helene Silverman, helene.silverman@mhfi.com
ASSOCIATE ART DIRECTOR	Gordon Whiteside, gordon.whiteside@mhfi.com
CONTRIBUTING ILLUSTRATORS, PRESENTATION DRAWINGS	I-Ni Chen Peter Coe
EDITORIAL SUPPORT	Monique Francis, monique.francis@mhfi.com
CONTRIBUTING EDITORS	Sarah Amelar, Fred A. Bernstein, Robert Campbell, FAIA, C.J. Hughes, Blair Kamin, Jayne Merkel, Robert Murray, David Sokol, Michael Sorkin, Ingrid Spencer, Clare Jacobson, Lamar Anderson
SPECIAL INTERNATIONAL CORRESPONDENT	Naomi R. Pollock, AIA
INTERNATIONAL CORRESPONDENTS	David Cohn, Tracy Metz, Aric Chen, Chris Foges
CONTRIBUTING PHOTOGRAPHER	Iwan Baan

ARCHITECTURAL RECORD: (ISSN 0003-858X) December 2013. Vol. 201, No. 12. Published monthly by McGraw Hill Financial, 1221 Avenue of the Americas, New York, NY 10020. **FOUNDER:** James H. McGraw (1860-1948). Periodicals postage paid at New York, NY, and additional mailing offices. Canada Post International Publications Mail Product Sales Agreement No. 40012501. E-mail: arhcustserv@cdsfulfillment.com. Register for GST as McGraw Hill Financial. GST No. R123075673. **POSTMASTER:** Please send address changes to ARCHITECTURAL RECORD, Fulfillment Manager, P.O. Box 5732, Harlan, IA 51593. **SUBSCRIPTION:** Rates are as follows: U.S. and Possessions \$72.00; Canada and Mexico \$79 (payment in U.S. currency, GST included); outside North America \$199 (air freight delivery). Single copy price \$9.95; for foreign \$11. Subscriber Services 877/876-8093 (U.S. only); 515/237-3681 (outside the U.S.); fax: 712/755-7423. **SUBMISSIONS:** Every effort will be made to return material submitted for possible publication (if accompanied by stamped, self-addressed envelope), but the editors and the corporation will not be responsible for loss or damage. **SUBSCRIPTION LIST USAGE:** Advertisers may use our list to mail information to readers. To be excluded from such mailings, send a request to ARCHITECTURAL RECORD, Mailing List Manager, P.O. Box 555, Hightstown, NJ 08520. **OFFICERS OF MCGRAW HILL FINANCIAL, INC.:** Harold W. McGraw III, Chairman, President and Chief Executive Officer; Kenneth M. Vittor, Executive Vice President and General Counsel; Robert J. Bahash, Executive Vice President and Chief Financial Officer; Elizabeth O'Melia, Senior Vice President, Treasury Operations. **COPYRIGHT AND REPRINTING:** Title reg. in U.S. Patent Office. Copyright © 2013 by McGraw Hill Financial. All rights reserved. Where necessary, permission is granted by the copyright owner for libraries and others registered with the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. To photocopy any article herein for personal or internal reference use only for the base fee of \$1.80 per copy of the article plus ten cents per page, send payment to CCC, ISSN 0003-858X. Copying for other than personal use or internal reference is prohibited without prior written permission. Write or fax requests (no telephone requests) to Copyright Permission Desk, ARCHITECTURAL RECORD, Two Penn Plaza, New York, NY 10121-2298; fax 212/904-4256. For reprints call 800/360-5549 x168 or e-mail architecturalrecord@theygsgroup.com. Information has been obtained by McGraw Hill Financial from sources believed to be reliable. However, because of the possibility of human or mechanical error by our sources, McGraw Hill Financial and *Architectural Record* do not guarantee the accuracy, adequacy, or completeness of any information and are not responsible for any errors or omissions therein or for the results to be obtained from the use of such information or for any damages resulting therefrom.

EDITORIAL OFFICES: 212/904-6229. Editorial fax: 212/904-4256. E-mail: monique.francis@mhfi.com. Two Penn Plaza, New York, NY 10121-2298. **WEBSITE:** ArchitecturalRecord.com.



ROCKY MOUNTAIN®
H A R D W A R E



HAND-CAST HERITAGE. Intricate details are achieved using the ancient art of lost-wax casting, while sand casting results in pieces with individual character due to the variations in each granule of sand.

DOOR WINDOW CABINET LIGHTING
PLUMBING TILE HOSPITALITY CUSTOM

10 patinas to choose from. 90% post-consumer recycled materials. Handmade in the USA.

CIRCLE 56

888 552 9497

rockymountainhardware.com

STAR



From Las Vegas's star-studded cast of gaming resorts to New York landmark **Yonkers Raceway**, casinos are becoming synonymous with innovative design. This historic 1890s racetrack bet its future on a 21st-century overhaul of its **Empire City Casino** by New York-based **Studio V Architecture**. With a philosophy of exploring architectural expression based on contemporary technology, the award-winning firm capped its redesign with a space-age *porte-cochère* of steel latticework clad with ETFE Teflon-coated film. The innovative entrance stunningly reinvents the casino's image and marks the first U.S. application of this cutting-edge material—showing a building need not be conventional to be a good bet.

Transforming design into reality

For help achieving the goals of your next project, contact the Ornamental Metal Institute of New York.



Publisher of *Metals in Construction*
211 E 43 ST | NY, NY 10017 | 212-697-5554 | www.ominy.org

CIRCLE 48

Architect: Studio V Architecture

ARCHITECTURAL RECORD

VICE PRESIDENT, PUBLISHER
Laura Viscusi, laura.viscusi@mhfi.com

SENIOR DIRECTOR, MEDIA OPERATIONS
Brenda Griffin, brenda.griffin@mhfi.com

SENIOR DIRECTOR, HEAD OF MARKETING
William Taylor, william.taylor@mhfi.com

PRODUCTION MANAGER
Marilyn DeMilta, marilyn.demilta@mhfi.com

MANAGER, MARKETING COMMUNICATIONS
Michael Nass, michael.nass@mhfi.com

FINANCE DIRECTOR
Ike Chong, ike.chong@mhfi.com

FINANCE MANAGER
Tom Maley, tom.maley@mhfi.com

ASSISTANT TO MEDIA DEPARTMENT
Pina Del Genio, pina.delgenio@mhfi.com

ADVERTISING SALES

NEW ENGLAND AND PA: Joseph Sosnowski
(610) 278-7829 Fax: (610) 278-0936, joseph.sosnowski@mhfi.com

SOUTHEAST/MID-ATLANTIC: Susan Shepherd
(859) 987-9913 Fax: (404) 252-4056, susan.shepherd@mhfi.com

MIDWEST (IA, IL, MN, MO, WI): Martin McClellan
(312) 233-7402 Fax: (312) 233-7430, martin.mcclellan@mhfi.com

MIDWEST (IN, MI, OH, EASTERN CANADA): Lisa Zurick
(513) 345-8210 Fax: (513) 345-8250, lisa.zurick@mhfi.com

NORTHWEST: Bill Madden
(503) 557-9000 Fax: (503) 557-9002, bill.madden@mhfi.com

PACIFIC/TEXAS: Sherylen Yoak
(760) 568-0465 Fax: (720) 559-9818, sherylen.yoak@mhfi.com

KS, NE, ND, NY, SD: Risa Serin
(212) 904-6041 Fax: (212) 904-4652, risa.serin@mhfi.com

SPOTLIGHT SALES: Risa Serin
(212) 904-6041 Fax: (212) 904-4652, risa.serin@mhfi.com

WORKFORCE/ RECRUITMENT: Diane Soister
(212) 904-2021 Fax: (212) 904-2074, diane.soister@mhfi.com

INTERNATIONAL

GERMANY: Uwe Riemeyer
(49) 202-27169-0 Fax: (49) 202-27169-20, riemeyer@intermediapartners.de

ITALY: Ferruccio Silvera
(39) 022-846716 Fax: (39) 022-893849, ferruccio@silvera.it

JAPAN: Katsuhiko Ishii
(03) 5691-3335 Fax: (03) 5691-3336, amkatsu@dream.com

KOREA: Young-Seoh Chin
(822) 481-3411/3 Fax: (822) 481-3414

MCGRAW-HILL CONSTRUCTION

PRESIDENT Keith Fox
VICE PRESIDENT, OPERATIONS Linda Brennan, linda.brennan@mhfi.com
VICE PRESIDENT, MHC PRODUCT DEVELOPMENT Kathryn E. Cassino, kate.cassino@mhfi.com
VICE PRESIDENT, TECHNOLOGY Isaac Sacolick, isaac.sacolick@mhfi.com
VICE PRESIDENT, FINANCE John Murphy, john.murphy@mhfi.com

WEBSITE: ArchitecturalRecord.com. **SUBSCRIBER SERVICE:** 877/876-8093 (U.S. only); 515/237-3681 (outside the U.S.). Subscriber fax: 712/755-7423. E-mail: arhcustserv@cdsfulfillment.com. If the Post Office alerts us that your magazine is undeliverable, we have no further obligation unless we receive a corrected address within one year. **INQUIRIES AND SUBMISSIONS:** Letters, Beth Broome; Practice Suzanne Stephens; Books, Clifford A. Pearson; Products, Sheila Kim; Lighting and Interiors, Linda C. Lentz; Residential, Laura Raskin; Architectural Technology, Joann Gonchar; Web Editorial William Hanley. **REPRINT:** architecturalrecord@theygsgroup.com. **BACK ISSUES:** Call 877/876-8093, or go to archrecord.com/backissues.



REFLECTIVE SERIES

**CHANGING YOUR PERSPECTIVE
ON CONCRETE MASONRY!**

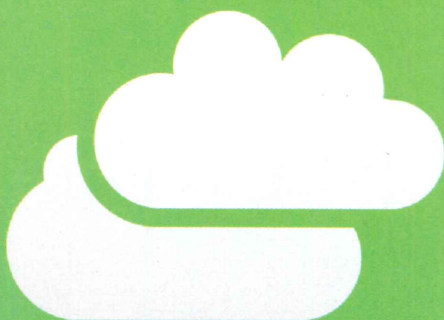
Dillon's Reflective Series will forever change the way you think about concrete masonry. Our superior aggregates and "state of the art" grinding process places the Reflective Series a class above all other polished masonry units. Request a sample to see the reflective quality available for your next project.

For more information or to locate a dealer near you please contact us at (800) 234-8970 or visit our website www.edillon.com



AN AMERICAN OWNED COMPANY SINCE 1968

IMPROVING THE AIR WE BREATHE



DISCOVER THE NEW SCIENCE OF INDOOR AIR QUALITY

As people encounter more chemicals at home, at school and at work, it is critical to understand potential hazards and minimize adverse health effects. Through New Science, UL is working to mitigate emerging indoor air quality safety risks and safeguard innovation.

JOURNALS. VIDEOS. INFOGRAPHICS. TRENDS.
VISIT UL.COM/NEWSCIENCE

UL and the UL logo are trademarks of UL LLC © 2013



ARCHITECTURAL RECORD



12 2013

NEWS

- 15 WORLD'S LARGEST WOMEN'S UNIVERSITY COMPLETED IN SAUDI ARABIA
By Lamar Anderson
- 18 LEARNING FROM LEGACY CITIES
By John Gallagher
- 20 CURRY STONE WINNERS ANNOUNCED
By Lamar Anderson

DEPARTMENTS

- 10 EDITOR'S LETTER: THINK GLOBAL, ACT LOCAL
- 24 ARCHITECTURAL ANALYTICS
- 27 BOOKS: ROBERT A. M. STERN'S *PARADISE PLANNED* Reviewed by *Justin Davidson*
- 31 BOOKS: WITOLD RYBCZYNSKI'S *HOW ARCHITECTURE WORKS* Reviewed by *Aleksandr Bierig*
- 33 HOUSE OF THE MONTH: BOHLIN CYWINSKI JACKSON'S KICKING HORSE HOUSE
By Suzanne Stephens
- 35 GUESS THE BUILDING
- 37 PRODUCT FEATURE: TADAO ANDO'S DREAM CHAIR *By Naomi R. Pollock, AIA*
- 41 PRODUCT BRIEFS: HOLIDAY GIFT GUIDE
By Sheila Kim
- 42 INDIA: BOOM OR BUST? *By Sarah Amelar*
- 46 FIRST LOOK: AMATEUR ARCHITECTURE STUDIO'S CAMPUS CENTER IN CHINA
By Clare Jacobson

BUILDING TYPES STUDY 941 MUSEUMS

- 53 INTRODUCTION
- 54 KIMBELL ART MUSEUM ADDITION, FORT WORTH
RENZO PIANO BUILDING WORKSHOP
By Sarah Williams Goldhagen
- 60 ANDO MUSEUM, NAOSHIMA, JAPAN
TADAO ANDO ARCHITECT & ASSOCIATES
By Naomi R. Pollock, AIA
- 66 MUSEUM OF THE HISTORY OF POLISH JEWS,
WARSAW LAHDELMA & MAHLAMÄKI
By Peter MacKeith

DESIGN VANGUARD 2013 GO TO ARCHRECORD.COM FOR EXPANDED COVERAGE

- 75 INTRODUCTION
- 76 HÉCTOR FERNÁNDEZ ELORZA ARCHITECTS
By David Cohn
- 80 WILLIAM O'BRIEN, JR. *By Clifford A. Pearson*
- 82 RURAL URBAN FRAMEWORK *By Aric Chen*
- 84 AKIHISA HIRATA ARCHITECTURE OFFICE
By Naomi R. Pollock, AIA
- 86 MARC FORNES/THEVERYMANY
By Joann Goncher, AIA
- 88 JOHO ARCHITECTURE *By Clare Jacobson*
- 90 GRUPO ARANEA *By David Cohn*
- 94 OYLER WU COLLABORATIVE
By Deborah Snoonian Glenn
- 96 S-AR *By Beth Broome*
- 98 PARA-PROJECT *By Laura Mirviss*

RECORD PRODUCTS 2013

- 101 INTRODUCTION
- 103 FURNISHINGS
- 105 EXTERIOR CLADDING
- 106 LIGHTING
- 108 OPENINGS
- 111 MATERIALS
- 112 FINISHES
- 115 PLUMBING & HVAC
- 117 EQUIPMENT/SPECIALTIES
- 118 EDITORS' CHOICE 2013

ARCHITECTURAL TECHNOLOGY

- 126 PERFORMANCE ANXIETY
CREATING BUILDINGS THAT DELIVER ON AMBITIOUS ENVIRONMENTAL GOALS REQUIRES ENERGY SIMULATIONS THAT PREDICT POST-OCCUPANCY CONSUMPTION
By Peter Fairley
- 156 READER SERVICE
- 159 DATES & EVENTS
- 164 SNAPSHOT: NONLIN/LIN PAVILION

THIS PAGE: KIMBELL ART MUSEUM ADDITION, FORT WORTH, BY RENZO PIANO BUILDING WORKSHOP. PHOTO BY ROBERT POLIDORI.

ON THE COVER: VENECIA PARK, BY HÉCTOR FERNÁNDEZ ELORZA ARCHITECTS, SARAGOSSA, SPAIN. PHOTO BY MONTSE ZAMORANO.

See expanded coverage of Projects and Building Types Studies as well as web-only features at architecturalrecord.com.

This symbol denotes that enhanced content is available in our iPad edition.

Visit us at facebook.com/architecturalrecord

Follow us on Twitter at @archrecord

LEARN & EARN



Earn all your continuing education credits free online or at Architectural Record's Continuing Education App!*

IN THIS ISSUE

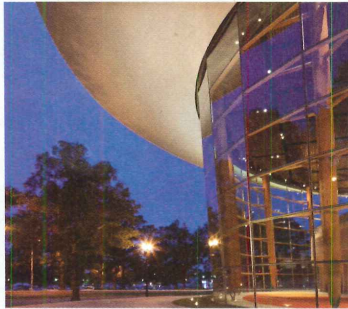


Photo by Nic Lehoux courtesy of Bing Thom Architects

Materials In Action

Sponsored by
reThink Wood

Credit: 1 HSW, 1 GBCI CE Hour

Page 135



Using Built-in Appliances to Enhance Design

Sponsored by
Electrolux

Credit: 1 HSW

Page 140



Projection Screens Made Simple

Sponsored by
Draper Inc.

Credit: 1 HSW

Page 146



Photo ©Ryan Gobuty / Gensler

Architects Warm to Chilled Ceilings

Sponsored by
Price Industries

Credit: 1 HSW, 1 GBCI CE Hour

Page 150

NEW ONLINE AT ARCHITECTURALRECORD.COM



Photo: naturallivewood.com

A Natural Choice

Sponsored by reThink Wood

Credit: 1 HSW, 1 GBCI CE Hour



Noise Reduction in HVAC Duct Systems

Sponsored by Kinetics Noise Control

Credit: 1 HSW



Metal Roofing Systems: Making Sense of a World of Choices

Sponsored by Firestone

Credit: 1 HSW

ALSO ONLINE AT ARCHITECTURALRECORD.COM

Interior Sliding Frameless Glass Doors Make a Clear Contribution to LEED
Sponsored by Klein USA, Inc.

Reaching the Roof: Specifying Fixed Access Aluminum Ladders for Safety and Efficiency
Sponsored by ALACO Ladder Company

A Guide for Specifying Commercial Lighting
Sponsored by Prudential Lighting

Smart Safety Design to Prevent Slips, Trips and Falls
Sponsored by SlipNOT® Metal Safety Flooring

Noise Control and Room Acoustics in Building Design
Sponsored by Kinetics Noise Control

Architectural Stone Veneers: Authentic and Appropriate Technology
Sponsored by Eldorado Stone

Advancements and Applications in Resinous Floors and Walls
Sponsored by Stonhard

Materials Matter
Sponsored by reThink Wood

Earn Free Health Safety Welfare (HSW) and Green Building Certification Institute (GBCI) credits with Architectural Record

*All Architectural Record articles and presentations count toward the annual AIA continuing education requirement. All exams are available at no charge and are instantly processed.

A moving walk you can roll out like a rug.

iwalk, from ThyssenKrupp Elevator, will fit anywhere and can easily be integrated into existing buildings. It can even be installed on top of the existing floor. All you need are two ramps, one at each end. So install the **iwalk** and remove it just as easily. A flexible option that accommodates crowds or renovation work.

iwalk
the easier way

Learn about the *iwalk* at www.thyssenkruppelevator.com/moving-walks/iwalk

CIRCLE 32

ThyssenKrupp Elevator Americas



ThyssenKrupp

Think Global, Act Local

Young architects deploy new tools to advance common values

DESIGN VANGUARD, our annual look at the best emerging architectural practices, is a window into the future, a glimpse of where the profession is heading. This year, two of our 10 winning firms are from Spain (despite the country's damaging recession) with work that demonstrates a powerful materiality, such as Venecia Park by Héctor Fernández Elorza Architects, featured on our cover. Other international winners come from Mexico, Japan, Korea, and Hong Kong. We're pleased, as well, to honor four U.S. practices—though young American architects have often had less opportunity to build than some of their foreign peers. With the economy picking up, these domestic designers are coming out of a period of intense experimentation, where they worked on installations, temporary structures, and unbuilt projects. Take Marc Fornes, who calls his Brooklyn firm TheVeryMany: he has been creating astonishing curvy and lacy sculptural forms, digitally designed and fabricated from thousands of computer-cut elements. The Oyler Wu Collaborative, a husband-wife team in Los Angeles, has designed elaborate temporary structures made of woven or crisscrossing lines of polypropylene rope, tubular aluminum, and other industrial materials. The results of such stunning exploratory efforts will surely have an impact on their architecture going forward.

Many of the emerging architects in this issue share common ideas and sensibilities. Like Fornes's work, the projects of Akihisa Hirata of Tokyo allude to nature. But Hirata is equally concerned that contemporary architecture should not be so extreme that it loses "its connection to society. The problem facing my generation is reconstructing that relationship," he maintains. Hirata's work fosters social interaction, as does an unusual project by Grupo Aranea of Alicante, Spain. For a park in the town of Elche, the principals—he is an architect, she a landscape architect—devised elevated footbridges that curve and flow across a river bed, to knit together two parts of the town.

Some Vanguard firms are actively activist, such as Rural Urban Framework, a nonprofit partnership based in Hong Kong, which designs modest interventions that seek to improve the lives of those remaining in the rapidly changing farming villages of China. The Monterrey, Mexico, architecture office of S-AR established a nonprofit arm to develop small-scale low-income housing. "We need to make beautiful places, but these works have to help make the country better for everybody," says principal César Guerrero. "I think that's the point of architecture."

Recently, I was on a design jury sponsored by the San Francisco chapter of the AIA and Pacific Gas & Electric Company as part of the Architecture at Zero program. The competition brief called for a net zero energy multi-unit affordable-housing project in the tough Tenderloin neighborhood of the city. One particularly outstanding project turned out to be from a student designer, Victor Bao, at California Polytechnic State University, San Luis Obispo. Cal Poly is



the leading undergraduate architecture program in the U.S., according to the annual survey we published last month in *RECORD* [November, page 97]—and also is considered the top program in sustainable-design practices and principles. What was striking about Bao's work was the confident handling of energy-efficient strategies, seamlessly integrated into the design. This is how it should be: sustainable features shouldn't be add-ons or plug-ins that can be value-engineered out of a project. As we point out in this month's Continuing Education article [page 126], energy modeling can help design teams ensure that sustainability is an integral part of a project from the beginning. For an emerging generation of architects, this is how they are trained to think.

As we look at the small but meaningful gestures of this year's crop of Vanguard architects, we can't help but recall the mantra *Think global, act local*. Today's young architects are clearly innovating in their assured use of digital tools and sustainable strategies, but they are using architecture, even modest interventions, for a larger goal: to improve the life of communities around the world. ■

Cathleen McGuigan

Cathleen McGuigan, Editor in Chief

Hidden in Plain Sight

Clear fire rated solutions that blend seamlessly



Products: SuperLite II-XL 60 in GPX Framing
Project: CCTC Health Sciences Building (Sumter, SC)
Architect: LS3P Associates Glazier: Charlotte Glass



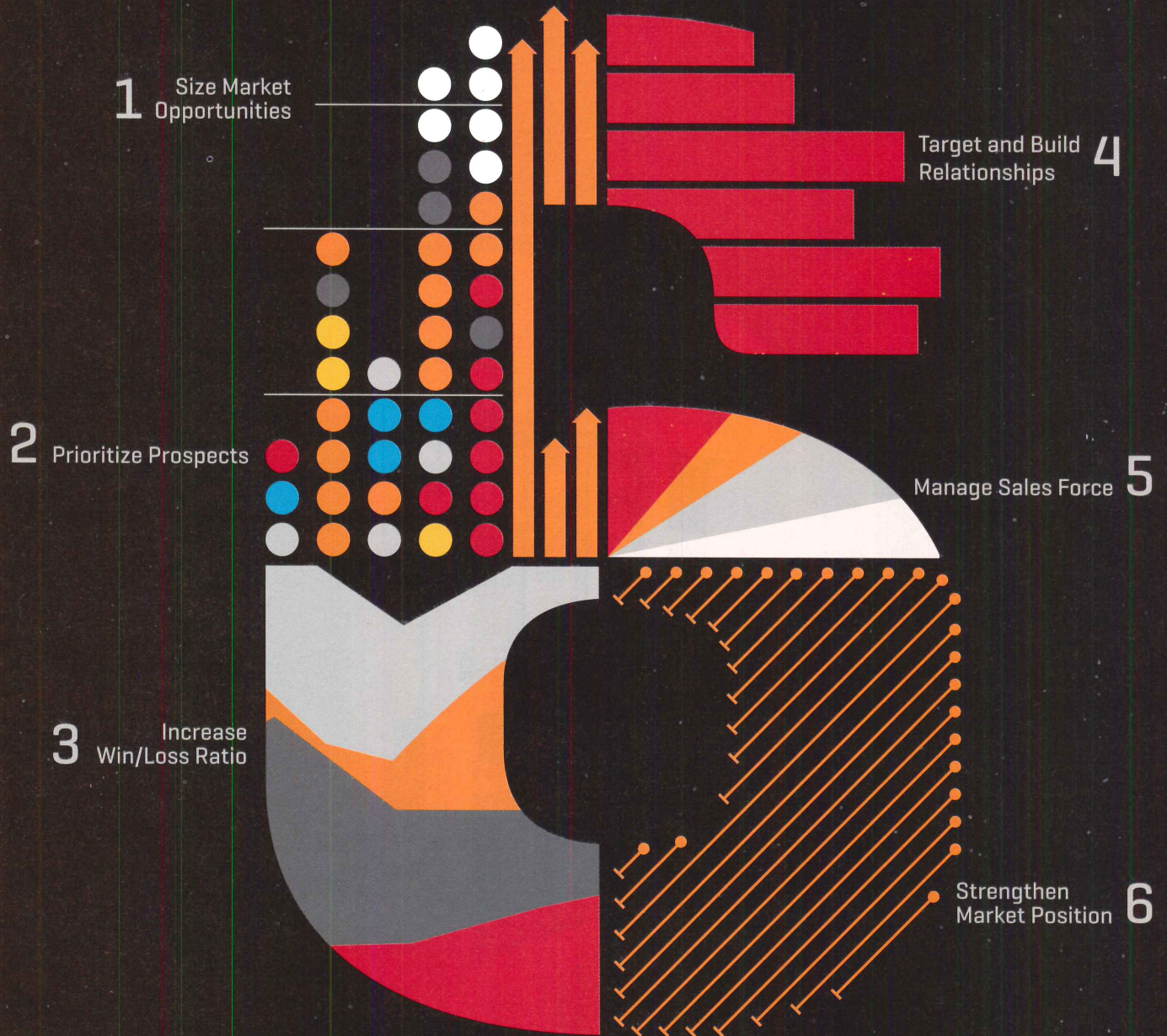
888.653.3333

www.safti.com/ar

 **SAFTI FIRST**TM
FIRST IN FIRE RATED GLAZING



Six ways Dodge builds your business



DODGE

Essential intelligence to build on

Belden delivers more.



The Standard of Comparison since 1885

An ISO 9001:2008 Registered Quality Management System
An ISO 14001:2004 Environmental Management System

330.456.0031
www.beldenbrick.com



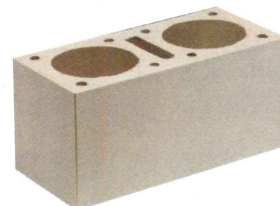
Ambassador - 3-5/8" x 2-1/4" x 15-5/8"



Double Monarch - 3-5/8" x 7-5/8" x 15-5/8"



6" Thru-Wall - 5-5/8" x 3-5/8" x 15-5/8"



8" Double Thru-wall - 7-5/8" x 7-5/8" x 15-5/8"



More Colors, Sizes, Shapes & Textures

The Belden Brick Company is proud to give customers more choices. With a selection of more than 300 colors, 20 different sizes, 13 textures and unlimited shapes, Belden Brick offers the widest range of products to choose from.

That is why since 1885, The Belden Brick Company has been recognized as the quality leader in the brick industry.

Precast Helps Architects Achieve Aesthetic Visions

The Perot Museum of Nature and Science cultivated a distinct identity that would engage and invigorate visitors before they even entered the building. The architect used the aesthetic versatility of precast concrete to create the free-flowing exterior which mirrors the stratified surface of the earth. High performance precast gives designers the versatility to turn their dreams into reality.

Discover **High Performance** Precast
Versatile | Efficient | Resilient

For more information
and free continuing
education, visit

www.pci.org/hpprecast

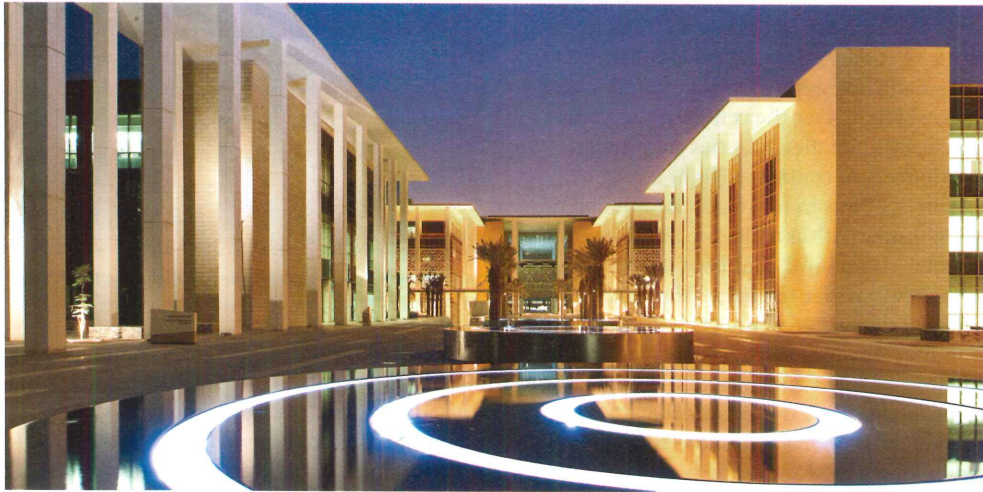


DAILY UPDATES
archrecord.com/news
twitter.com/archrecord

perspective

“It’s nice to do buildings that people like,” Stern says with an impish smile. “I’m not sure all my colleagues get to enjoy that.” —Robert A.M. Stern, “Unfashionably Fashionable,”

by Justin Davidson, New York Magazine, November 3, 2013



The university's new limestone and concrete campus includes a central pedestrian mall overlooking the main gateway.

A New Place for Women in Riyadh

BY LAMAR ANDERSON

IF SQUARE footage is any indication of power, Saudi Arabia's female students are gaining ground. The Princess Nora Bint Abdulrahman University (PNU) in Riyadh, which opened in 2011 and completed its final phase earlier this year, is the largest women-only university in the world. With 32 million square feet and the capacity for 60,000 students, the school absorbed three existing campuses in Riyadh while more than doubling the city's number of college slots for women.

In a country that sharply limits women's participation in public life, PNU is significant as a watershed in women's education and as a micro-economy dedicated to women's advancement—about 12,000 women make up the faculty, staff, and administration. “This university is creating a workforce,” says Pat Bosch, design principal at Perkins+Will.

In a tract of desert off the highway that connects the airport with the Riyadh city center, Perkins+Will and collaborator Dar Al-Handasah (Shair and Partners) designed a new limestone and concrete campus. The project is part of a broader initiative by the nation's monarch, King Abdullah, to boost women's access to education and jobs. (Nearly 35 percent of women who want to work in the country can't find jobs, compared with just over 6 percent of men, according to statistics

released this year by the Saudi government.) PNU's campus comprises 15 academic colleges, housing, a teaching hospital, recreational facilities, and a monorail connecting it all.

One of the architect's biggest challenges was to design a public space for women who must remain concealed from the opposite sex. It raised the academic core of the campus nearly 20 feet above grade, allowing students to remove their veils without being seen from below. Like the women, the buildings seem to unveil themselves from the perimeter to the center of the complex: solid concrete on outward-facing elevations gives way to fiber-reinforced concrete latticework screens (evoking traditional *mashrabiya*) and glass on walls that face interior courtyards.

Yet for any of this progress to take root, Saudi Arabia's economy must do a better job of creating demand for the tens of thousands of newly minted professionals who graduate each year. “It's a great thing to have the university, and it's going to have a great impact on the education system in Saudi Arabia,” says Hatem Samman, director of the Ideation Center, a Booz & Company think tank in Dubai. “But, look, if you graduate doctors tomorrow, but those women have no place to work, they're going to be unemployed doctors, regardless of how educated they are.” ■

Amazon Prime: NBBJ's Design for Corporate Campus

Architectural firm NBBJ is putting a new spin on the dot-com bubble. On October 22, a design review board in Seattle unanimously approved a 3.3-million-square-foot design for Amazon.com's corporate campus, which includes a trio of interconnected five-story glass spheres.

Situated in Seattle's Denny Triangle district, NBBJ's proposal includes three 38-story office towers and two midsize office buildings. The Catalan Domes, supported by a latticed skin of structural steel, will vary between 80 and 95 feet in height, and envelope indoor trees and landscaping. A glazed canopy connects the domes with an adjacent office tower.

To integrate Amazon's campus into the community, the design features a public dog run, cycling track, approximately 18,000 square feet of retail space, and landscaped swaths of native plants. According to NBBJ, permitting is under way to begin construction. *Anna Fixsen*



The architect has described the latest iteration of the spheres as “visually lighter, and geometrically organic and sculptural.”

New Queens Reign

BY JOSEPHINE MINUTILLO

BUILT TO house the New York City Pavilion for the 1939 World's Fair, whose theme was "World of Tomorrow," the nearly 75-year-old Queens Museum of Art building has seen its share of yesterdays. It was a recreation center, home to the General Assembly of the newly formed United Nations from 1946 to 1950, a pavilion once again for the 1964 World's Fair, and, for much of the period since then, divided up into an art museum and an ice-skating rink.

Plans to have the museum take over the entirety of the 105,000-square-foot limestone colonnaded structure have had an equally intriguing, and seemingly as lengthy, history. In 2001, Eric Owen Moss's proposal to surgically remove the central portion of the building and re-enclose it with an undulating glass "drape" won a design competition for the museum's expansion. The arrival of new museum executive director Tom Finkelpearl, however, saw the departure of Moss and the introduction of a far less radical expansion scheme that, since 2005, has been carried out by the New York office of Grimshaw with

executive architect Ammann & Whitney. Original plans to begin construction by 2007 were delayed several times, with groundbreaking not taking place until 2011.

Last month, the multifaceted institution—rebranded as the Queens Museum—opened to the public after a two-and-a-half-year, \$69 million construction project. Finkelpearl stressed the museum's commitment to "openness," figuratively and physically. The main feature of Grimshaw's design is a 30-foot-tall daylight-diffusing structure, suspended from a new skylight over the central gallery, for large works. Smaller galleries surround it, with louvers to control daylight levels.

"Our goal was to reinforce the mission of the museum within a historic building that has an architectural quality of its own," says Grimshaw partner in charge Mark Husser.

The design also reconnects with the surrounding Flushing Meadows Corona Park by shifting the main entrance to the west facade, on axis with views to the Unisphere, an iconic remnant of the 1964 fair in the shape of a giant globe. The west facade is also the location of Grimshaw's other main intervention. Visible from the Grand Central Parkway is a sculptural metal entry canopy, and a series of



The architects suspended a light-diffusing structure, called the "lantern," from a skylight over a core gallery.

glass panels equipped with programmable LED lighting spans the length of the building. One thing hasn't changed—the nearly 10,000-square-foot *Panorama of the City of New York*. The largest architectural scale model in the world is still in view, and remains the jewel in the crown of the Queens Museum's collection. ■

Taking Desks to New Heights

Turn a desk into a standing workplace with just the touch of a button! Our new TLEL3 electric table leg system adjusts from 27" to 45". With different frame sizes to suit tops to 30" depth and up to 72" long. Weight capacity 220 pounds, three standard finishes.



Control Panel



"FINE ARCHITECTURAL HARDWARE FOR YOUR FINE FURNITURE"®

MOCKETT
DOUG MOCKETT & COMPANY, INC.

CIRCLE 59

www.mockett.com • 800-523-1269

WE FIGURED THE
WORLD'S LEADING DECK BRAND
DESERVED THE WORLD'S MOST
AMAZING DECK FRAME.

TREX ELEVATIONS®

STRONGER, STRAIGHTER,
SMARTER, STEEL.

BECAUSE YOU DON'T
PUT A FILET MIGNON
ON A PAPER PLATE.



WHERE ENGINEERING MEETS ARTISTRY

THE COLLECTION STEEL FRAMING DECKING RAILING LIGHTING TRIM TREX.COM



Learning From Legacy Cities

BY JOHN GALLAGHER

THE FINE art of reimagining what post-industrial cities can become through better design took the spotlight last month at the 2013 Bruner Loeb Forum, held in Detroit. Organized in partnership with the J. Max Bond Center on Design for the Just City, the Detroit Collaborative Design Center, and The American Assembly at Columbia University, the symposium drew a by-invitation-only roster of about 100 architects and planners, developers, government staffers, academics, and media to share best design practices and innovations from cities that struggle with chronic population loss and land vacancy.

The social impact of urban redesign was a key theme, and resident involvement a key solution to those impacts (when negative), because any project invariably encroaches on people already living there. Roberta Feldman of the University of Illinois at Chicago recounted the story of citizen involvement in the remaking of Chicago's Cabrini-Green housing

project, razed and rebuilt as mostly market-rate housing. Feldman said she and other advocates of public-interest architecture were able to inject some democratic design strategies into what threatened to be just another yuppie upscale development. Residences for moderate-income people from the old Cabrini-Green were included, as well as playgrounds, which the redevelopers had initially left out of their design plan for young professionals.

humbled by the lessons of city builders from times when hubris led to massive projects that often wounded cities deeply. One antidote is a reliance on temporary projects as a city feels its way toward a new solution. "I think we have to admit we don't really know what's going to happen to a lot of these cities," said Terry Schwarz, director of the Cleveland Urban Design Collaborative at Kent State University.

Toni L. Griffin, director of the J. Max Bond

A Detroit forum helped produce a more robust catalogue of projects under way in cities struggling with population loss and vacancy.

A popular theme during the work sessions was the removal of the expressways that had sliced and diced cities a generation or two ago. Case studies from Syracuse, NY; Milwaukee; and other cities illustrated the trend. "Like weeds, the freeway in the city is the wrong thing. It's a failed experiment in America," said urban planner Peter J. Park. "When you take freeways out of cities, they get better."

A willingness to experiment with short-term pop-up installations found a lot of acceptance at the forum. The practitioners remained

Center, said the forum achieved crucial goals, including production of a more robust catalogue of real-world projects now under way in legacy cities and the strengthening of ties among people who normally work independently in their separate communities. "We want to continue the conversation in a way that deepens the amount of knowledge we have about these cities and the design opportunities," she said. "And I hope that we can continue to follow up in some way as an advocate for why design matters in these cities." ■

Think 'one-step' installation.
Think thermal efficiency.

THINK
ALL WEATHER
INSULATED
PANELS

All Weather Insulated Metal Panels:
For one step installation, superior
thermal efficiency and now with
three manufacturing locations.

CIRCLE 15

awipanel.com

Vacaville, CA, USA | Little Rock, AR, USA | Hamilton, ON, Canada

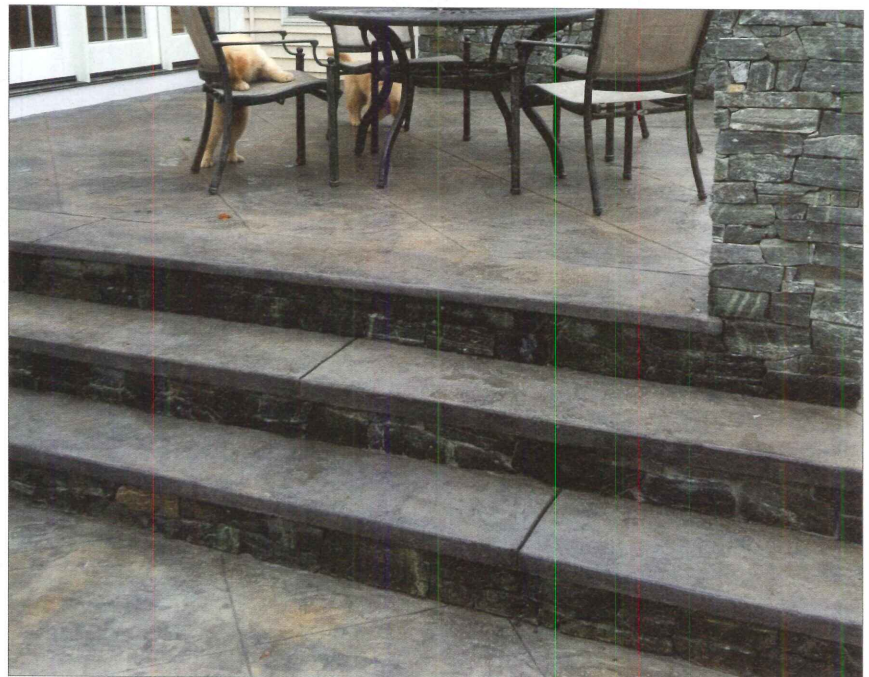
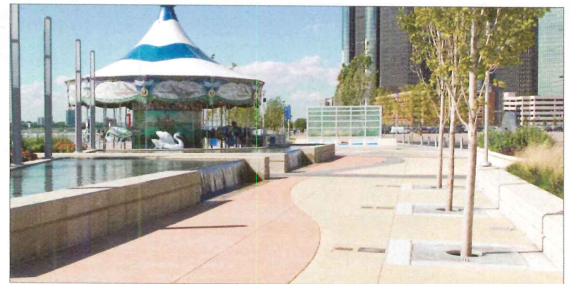
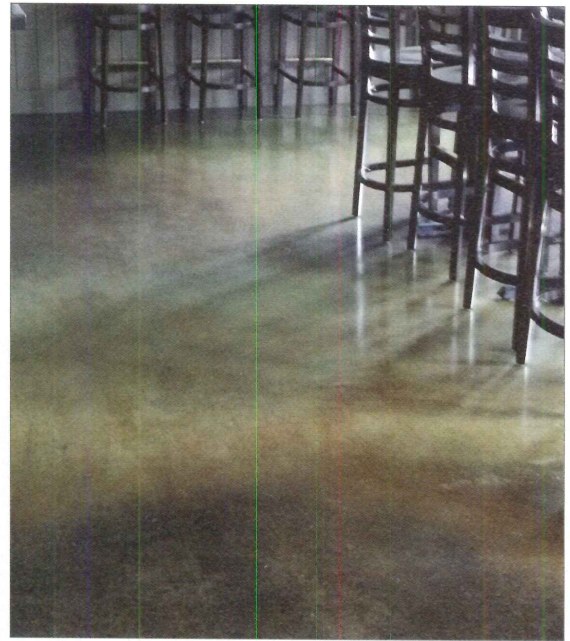


**ALL WEATHER
INSULATED PANELS**

A Vicwest Company



Changing the Way the World Looks at Concrete.



For nearly 100 years Scofield has been manufacturing engineered systems that give architects, specifiers and designers the tools they need to realize their creative vision through the durability of concrete. Learn more and earn CEU credits by taking our online courses at scofield.com/architects.

“Designing with Architectural Concrete”

This introduction to designing with Architectural Concrete addresses the numerous ways to add color and texture to concrete surfaces for new construction or renovation.



✓ 1 CEU credit

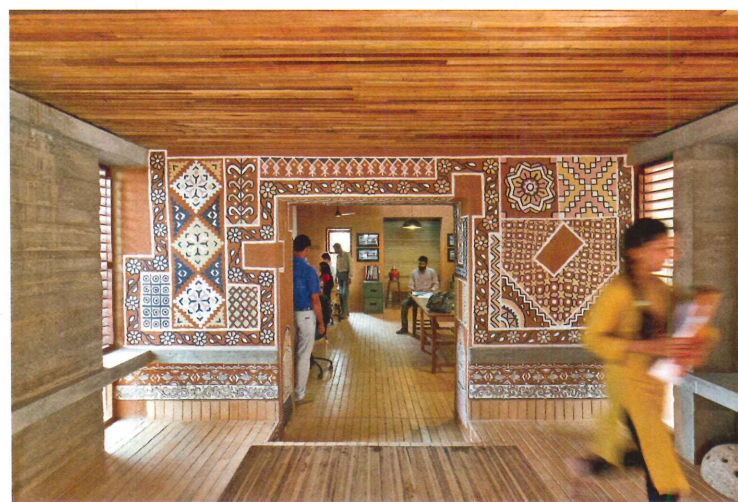
1-800-800-9900

www.scofield.com

CIRCLE 47

Curry Stone Winners Strive for Small, Local Solutions

BY LAMAR ANDERSON



Clockwise from left: Hunnarshala helped build a sewage-treatment plant in Bhuj, a city in Gujarat, India, that was devastated by a 2001 earthquake; Proximity Design's Baby Buffalo foot pump, designed with IDEO, allows farmers to push water up to a storage basket for later use, or attach it to a sprinkler hose; Hunnarshala's office in Bhuj.

AS SUPER Typhoon Haiyan was bearing down on the Philippines last month, across the Pacific in San Francisco, the Curry Stone Foundation announced the winners of this year's Curry Stone Design Prize. Now in its sixth year, the award honors architects and designers who devise innovative, often low-tech responses to help strengthen communities faced with natural disaster, political upheaval, or a poverty of resources.

At a November 17 awards ceremony at the Contemporary Jewish Museum, prize secretary Emiliano Gandolfi praised the three 2013 winners for zeroing in on local issues. "We're trying to learn from local conditions and look for designers who understand how to develop small ideas, implemented locally," said Gandolfi, an architect and cofounder of the design cooperative Cohabitation Strategies in Rotterdam.

In an industry that has fallen hard for prefab and the promise of one-size-fits-all construction, the Curry Stone jury honored practices that think small before thinking big. The India-based housing nonprofit Hunnarshala

harnesses the traditional building techniques of local artisans, whose time-tested rammed-earth and mud-roll structures outlast concrete in India's variable climate. The nonprofit Proximity Designs develops and distributes super-low-cost irrigation tools that help poor farmers in Myanmar increase their crop yields. And a collaborative team formed by the Venice-based architecture firm Studio TAMassociati and the health-care NGO Emergency construct free sustainably-built hospitals for war victims in Africa and the Middle East. The foundation gave each winner \$40,000 and inaugurated a new prize, the Vision Award, which went to Cameron Sinclair, the outgoing executive director of Architecture for Humanity, and Architecture for Humanity cofounder Kate Stohr.

The jurors—among them prize benefactor Clifford Curry and Rahul Mehrotra, chair of urban planning and design at the Harvard Graduate School of Design—singled out the winners for working in a different way. "The winners share this notion that they don't have to wait for a client," said prize curator Chee

Pearlman. "A client would probably slow them down." For this year's honorees, the hardships of the developing world are not seen as merely setbacks. Proximity Designs sells a \$17 foot-operated plastic water pump and a \$20 plastic water-storage tank that inflates to hold 250 gallons. "It was inspired by a kiddie pool," said Proximity chief executive Jim Taylor.

For the Salam Centre for Cardiac Surgery in Khartoum, Sudan, where dust storms rage, Studio TAMassociati avoided installing an expensive air-filtering system by sending breezes down chimneys and into a labyrinth of walls. Like the sand trap in a car radiator, the walls knock the dust to the ground as the air moves through them.

Crucially, all three winning organizations go beyond solving pure design problems by building social infrastructure as well. Gandolfi applauded the explicitly human direction this year's awards have taken: "The Curry Stone has become more and more interested in the softer side of architecture, in building what's between the walls, the functioning software that brings life to our buildings." ■



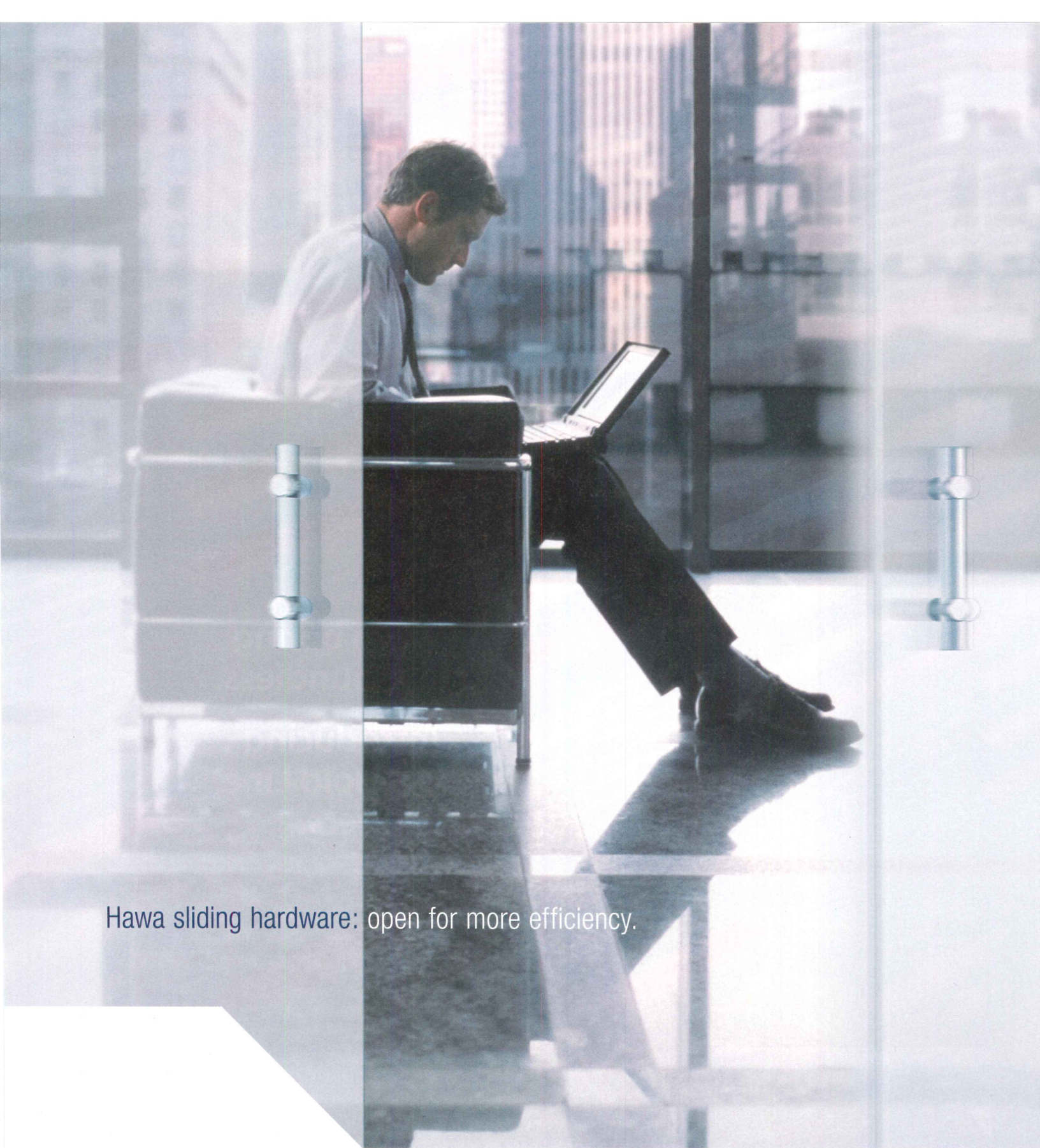
From boring
to boundless.

Introducing
C/S Bold Line
Louvers.



Who says a louver is just a louver? Not us! After decades of creating the industry's best made, best performing louvers, we focused on what a louver looks like. We now can provide new tools for architects to use on their facades. **Texture, color and enhanced shadow lines can transform the louvers** from something you want to hide into a major design feature of the building. All without sacrificing performance. Welcome to the era of C/S Bold Line. To learn more, call Construction Specialties at (800) 631-7379, or visit www.c-sgroup.com.

CS Louvers



Hawa sliding hardware: open for more efficiency.

Urban growth, coupled with the increasing demands of our society, is turning space into a luxury commodity in many locations. Hawa AG recognized this trend early on. That is why we have been developing hardware systems and solutions for many years, helping architects, designers, craftsmen and users to create, use and partition rooms with greater efficiency, without imposing any restrictions on the room with regard to your creativity.

[NEWSMAKER]

David van der Leer

BY DAVID SOKOL

IN 2008, after holding several positions in design publishing and communications in both Rotterdam and New York, David van der Leer shifted gears, becoming the first member of the Guggenheim Museum's architecture and urban studies-focused curatorial team. At the Guggenheim, van der Leer steered the museum on a course of public outreach on city-related issues, including the BMW Guggenheim Lab, the recently concluded project in which experts and residents in New York, Berlin, and Mumbai discussed life in their cities.

In May of this year, van der Leer took the reins of the Van Alen Institute as its executive director. The New York-based organization holds competitions, mounts exhibitions and other public programs, and conducts research to shape conversations about the built environment and introduce high-quality design solutions to cities around the world.



David van der Leer

Already the organization has announced a new storefront design and a multiyear series of programs, research, and competitions focused on the role of escape in the urban landscape. RECORD spoke with van der Leer about his plans.

Why did you want to go outside museum walls, as you did with the BMW Guggenheim Lab?

There are a lot of fascinating people in the design fields, but sometimes you get the feeling that the conversations are taking place in a bubble. BMW Guggenheim Lab cocurator Maria Nicanor and I wondered how to open these discussions to everyday audiences of urban citizens, and whether it would lead us in new directions. Now I realize that I like to look at an institution and imagine new possibilities within its existing frameworks, something that is very interesting to do at Van Alen Institute: I see it as an almost-120-year-old start-up.

Where is the Van Alen is heading?

We are taking the strongest points of Van Alen and carefully placing these in a new framework of multiyear initiatives. This allows us to continue running our robust design competitions—something we have done for decades—and make them work better for our reinvigorated research and public programs. The first of these multiyear initiatives is Elsewhere: Escape and the Urban Landscape. We kicked it off with a festival-style week of

programs and, over the course of the coming months, two new competitions and a research project will be added. The initiative covers a variety of urban locations, sectors, and experiences. It is an ideal opportunity to connect to new groups around the city and the world. [So Elsewhere represents a dovetailing of Van Alen activities?](#)

We can undertake competitions and programs and larger research queries, especially if we organize them under thematic umbrellas. For that reason it is very important that Van Alen doesn't only feel renewed programmatically next year but also looks new in its home in Chelsea. And that is where the idea for our redesigned space fits in, by Collective-LOK. We hope to open it next summer.

Why the "escape" theme?

There is almost no way to speak about the contemporary urban landscape without addressing escape, physically and mentally. I'm always looking for poetic themes that people can fairly easily relate to but that also inspire the inquiries of academics and practitioners. "Escape"

allows us to explore multiple scales. Looking through many lenses will help us understand why, when, and how we escape, and I think this will drive fresh and unexpected ideas for the design and organization of cities and regions. What I described may not sound like straightforward architecture, but I do feel that one of the roles of design is to help with these issues.

Currently, one of your highest-profile competitions is Rebuild by Design. How can its specific responses to Hurricane Sandy be interpreted in the more general, thematic manner you're aiming for?

Rebuild by Design is a project of the U.S. Department of Housing and Urban Development with the collaboration of Van Alen Institute, New York University's Institute for Public Knowledge, the Municipal Art Society, and the Regional Plan Association. It is active around the entire Sandy-affected region. The design teams are listening very carefully to communities, interacting with them, figuring out what's happening at the level of natural systems. To me, implementing design solutions for these communities is just one element of the work. The beauty is that there's also a lot of collaboration happening between the design teams. I find it fascinating to see this commitment to making our region more resilient. ■

American Academy in Rome Names New President

Mark Robbins will be the next president of the American Academy in Rome, effective January 2014. Currently executive director of the International Center of Photography, Robbins was previously the dean of the School of Architecture at Syracuse University.

DOCOMOMO US to Hold First Modernism in America Awards

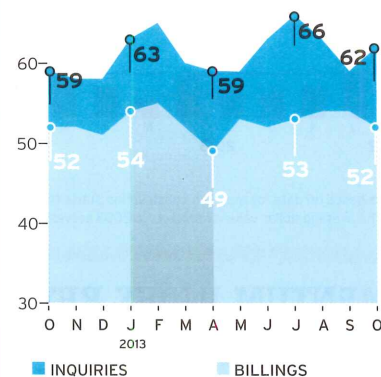
The nonprofit DOCOMOMO US will host its first annual Modernism in America Awards, celebrating the documentation, preservation, and reuse of modern buildings, structures, and landscapes in the U.S. or on U.S. territory. For more information, visit docomomo-us.org/programs/awards.

Skyscraper Plans Unveiled for Prentice Women's Hospital Site

As the hospital was being razed in Chicago last month, Northwestern University released three finalists' schemes for a building that could replace it, from Goettsch Partners and Ballinger; Adrian Smith + Gordon Gill and Payette; and Perkins+Will.

Make It Right Opens Kansas City Affordable Housing

Make It Right opened its most recent project, in Kansas City, Missouri, in November. The organization, founded by Brad Pitt, and BNIM transformed an abandoned school into LEED Platinum affordable apartments, a gym, auditorium, and computer lab, with gardens.

**ABI Stays in Positive Territory**

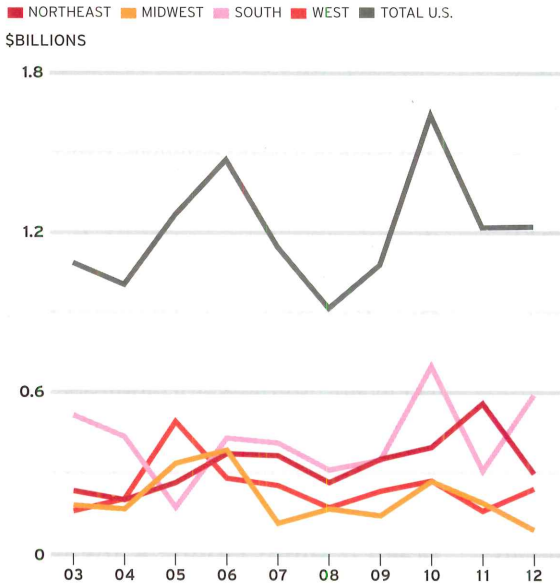
The American Institute of Architects (AIA) reports that the October Architecture Billings Index (ABI) score dipped slightly to 51.6 from September's mark of 54.3 (any score above 50 indicates an increase in billings). The inquiries index went up from 58.6 to 61.5. Residential billings went up to 57 from 55.2.

MARKET FOCUS

MUSEUM CONSTRUCTION

Museum Starts by Region

In addition to U.S. total

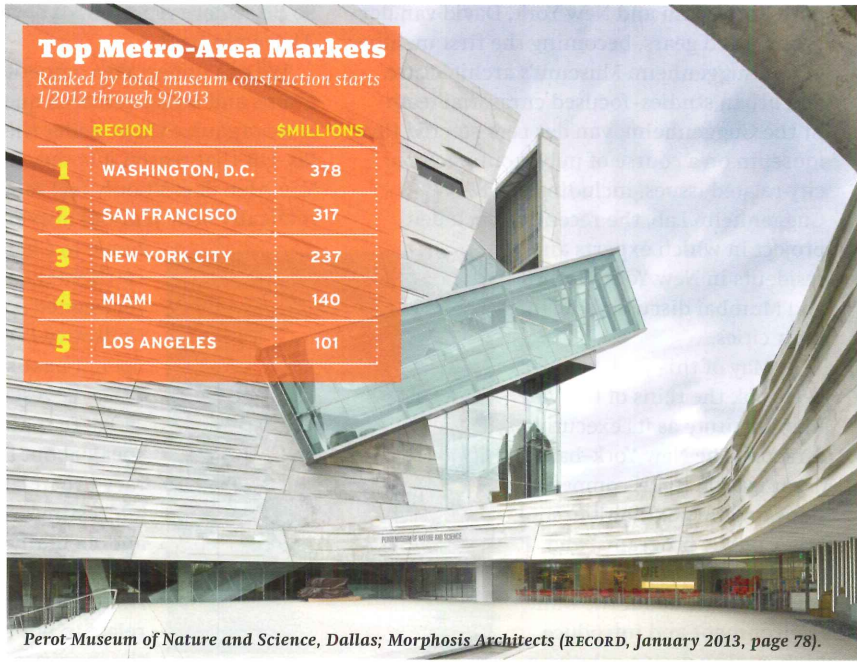


While museums often opt for big-name architects when designing a new building or expanding, the U.S. market has only a handful of large projects. Since January 2012, just 60 museums valued at \$5 million or more have broken ground.

Top Metro-Area Markets

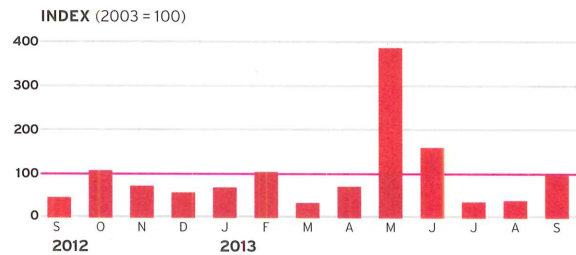
Ranked by total museum construction starts 1/2012 through 9/2013

Rank	Region	\$Millions
1	WASHINGTON, D.C.	378
2	SAN FRANCISCO	317
3	NEW YORK CITY	237
4	MIAMI	140
5	LOS ANGELES	101



Perot Museum of Nature and Science, Dallas; Morphosis Architects (RECORD, January 2013, page 78).

The Dodge Index for Museum Construction 9/2012-9/2013



The index is based on data for museum construction starts that have not been seasonally adjusted. The average dollar value of projects in 2003 serves as the index baseline.

Top 5 Design Firms

Ranked by museum construction starts 1/2011 through 9/2013

- 1 Cooper, Robertson & Partners
- 2 EHDD
- 3 The Freelon Group
- 4 Renzo Piano Building Workshop
- 5 Adjaye Associates

Top 5 Museum Projects

Ranked by museum construction starts 1/2012 through 9/2013

\$290 MILLION

PROJECT: Smithsonian National Museum of African American History and Culture
 ARCHITECTS: The Freelon Group, Adjaye Associates, Davis Brody Bond, SmithGroupJJR
 LOCATION: Washington, D.C.

\$250 MILLION

PROJECT: SFMOMA Expansion
 ARCHITECTS: Snøhetta, EHDD
 LOCATION: San Francisco

\$132 MILLION

PROJECT: Patricia and Phillip Frost Museum of Science
 ARCHITECTS: Grimshaw Architects, Rodriguez and Quiroga
 LOCATION: Miami

\$100 MILLION

PROJECT: The Broad
 ARCHITECTS: Diller Scofidio + Renfro, Gensler
 LOCATION: Los Angeles

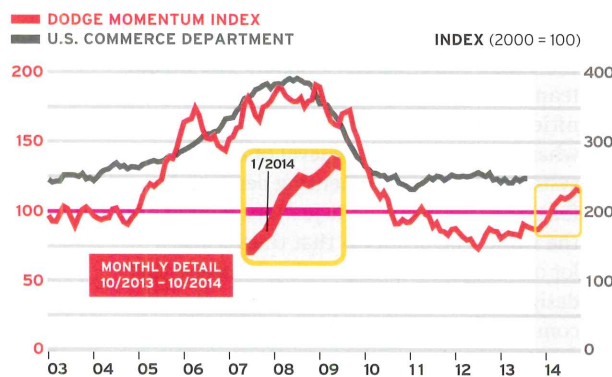
\$65 MILLION

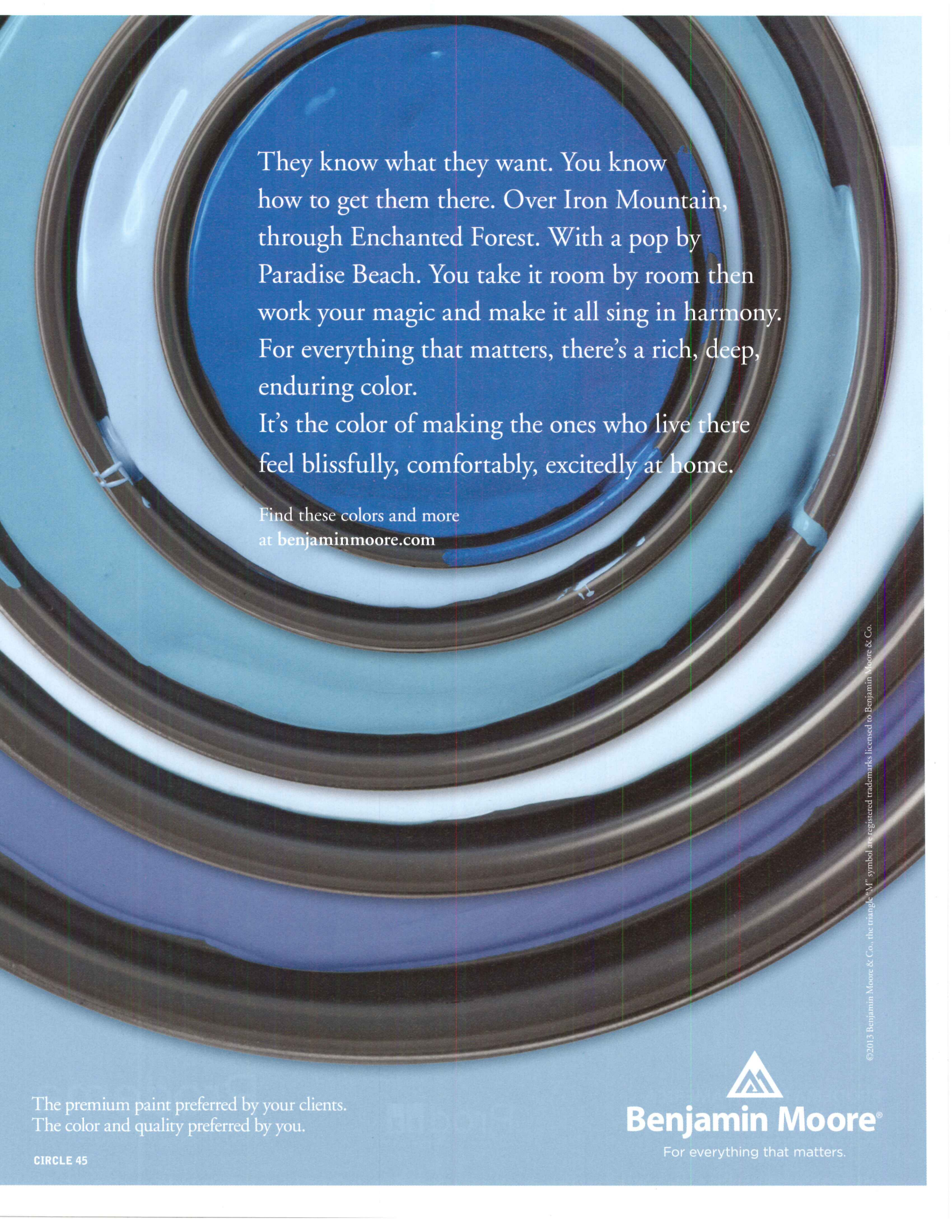
PROJECT: Berkeley Art Museum and Pacific Film Archive
 ARCHITECTS: Diller Scofidio + Renfro, EHDD
 LOCATION: Berkeley, CA

MOMENTUM INDEX RETREATS

In October, the Dodge Momentum Index slipped 0.9% to 115.3. Despite the drop, the index is still well above the 90.8 mark registered at the end of last year.

The Dodge Momentum Index is a leading indicator of construction spending. The information is derived from first-issued planning reports in McGraw Hill Construction's Dodge Reports database. The data lead the U.S. Commerce Department's nonresidential spending by a full year. In the graph to the right, the index has been shifted forward 12 months to reflect its relationship with the Commerce data.





They know what they want. You know
how to get them there. Over Iron Mountain,
through Enchanted Forest. With a pop by
Paradise Beach. You take it room by room then
work your magic and make it all sing in harmony.
For everything that matters, there's a rich, deep,
enduring color.

It's the color of making the ones who live there
feel blissfully, comfortably, excitedly at home.

Find these colors and more
at benjaminmoore.com

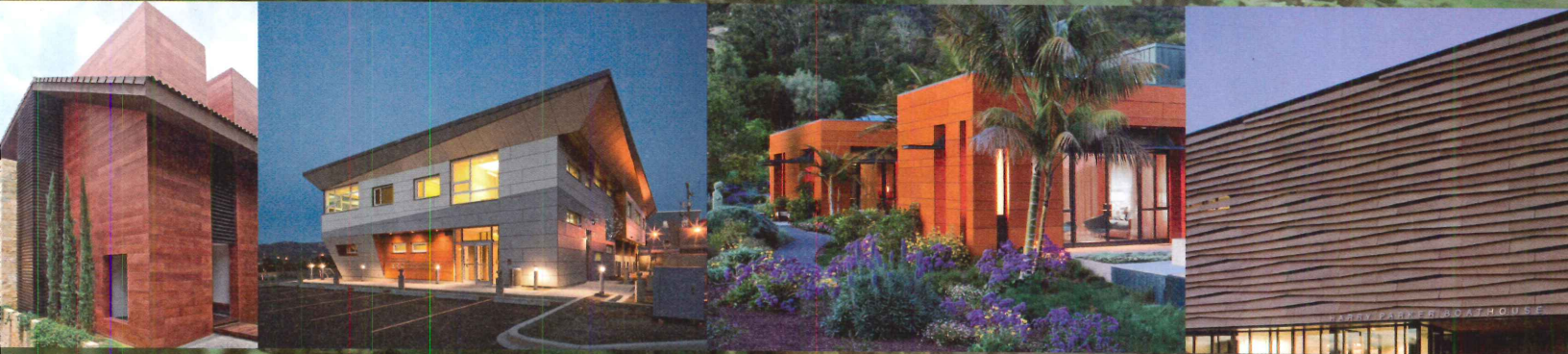
The premium paint preferred by your clients.
The color and quality preferred by you.

CIRCLE 45



Benjamin Moore[®]
For everything that matters.

©2013 Benjamin Moore & Co., the triangle "M" symbol are registered trademarks licensed to Benjamin Moore & Co.



Sense & Sensibility

There are some projects that are planned down to the smallest detail,
but that come straight from the heart.

Buildings that are alive, created by architects with a special feeling for
design, elegance and comfort. With the gift of extraordinary sensitivity
towards respecting Nature when designing buildings.

Limitless quality demands.

It is for this kind of professional that we here at Prodema offer a wide
range of natural wood products for façade cladding.

Unique pieces for designing buildings with sense and sensibility.

PRODEMA NORTH AMERICA

5582 N.E. 4th Court, 7B
Miami, FL 33137 • Tel: 305-756-2062
Email: sales@formasinc.com

ProdEX
exteriors by Prodema®

Prodema
NATURAL WOOD BEAUTY

Utopia by Design

Paradise Planned: The Garden Suburb and the Modern City, by Robert A.M. Stern, David Fishman, and Jacob Tilove. Monacelli Press, 2013, 1,072 pages, \$95.

Reviewed by Justin Davidson

WHEN *PARADISE PLANNED* arrived at my home—all 1,072 extra-thick high-gloss pages—my first instinct was to set the volume down on its own half-acre lot, give it a peaked roof, and simply move in. Instead, I rushed to the gym and spent a few days building up the biceps needed to lift the thing. Then, awed by the sheer cumulative industry of writing triumvirate Robert A.M. Stern, David Fishman, and Jacob Tilove, I lowered their exhaustive survey of the garden suburb onto my insufficient lap and started to read. I made it through by being selective, in much the same way some people flip past the threshing scenes in *Anna Karenina* to get to the main plot. If you quizzed me on Swedish bedroom communities in the early twentieth century, I might get a little vague. I know where to look it up, though. All this bulk has a larger purpose: to prove

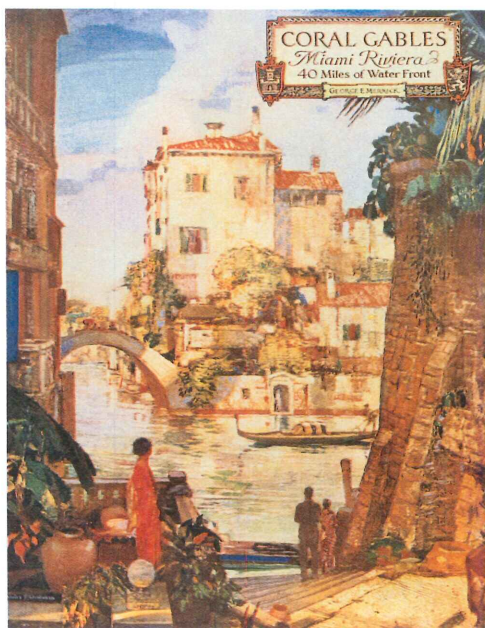
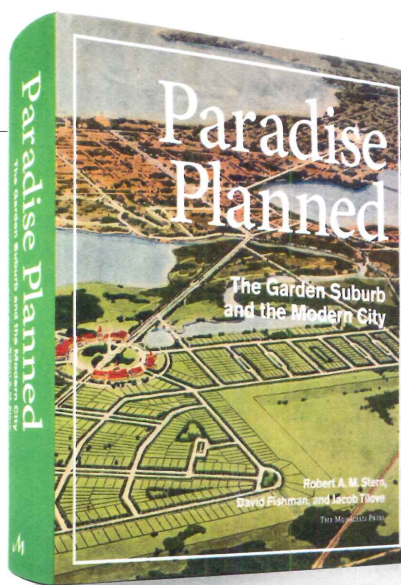
overwhelmingly that the topic is not marginal or slight—that you can't fathom the modern city without understanding the immemorial longing for a house in a bower, just outside the city walls. The authors deploy industrial quantities of homework and buckets of elegant prose—not to mention maps, drawings, then-and-now snapshots, close-up details, and aerial views—to rescue a “tragically interrupted, 150-year-old tradition” from modern disrepute. This is not another treatise on sprawl; it's

about the work of planners who believed, as Frederick Law Olmsted did, that well-ordered suburban settlements entwined with nature were the “most attractive, the most refined, the most soundly wholesome forms of domestic life.” (It didn't always work out that way, of course; you can feel the authors' frustration with harmoniously laid-out areas of Rio de Janeiro that were later hemmed in, overbuilt, and under-beautified.)

The story begins in England, where the 18th-century penchant for imposing Cartesian order on uncooperative nature merged with the opposite desire for the irrational and picturesque. The little Dorset town of Milton Abbas was charmingly arranged along a road by Capability Brown and his nemesis William Chambers, both to suit the local landowner and to make it seem as if the village had been that way since the days of Arthur. Fantasy and pretension have wafted through many suburban projects, but they can lead to spectacular results.

The engine of those developments was usually money but often idealism—or ideology, depending on your point of view. The writers escort us to the Italian coastal villages of Littoria and Sabaudia, which Mussolini conjured out of the malarial swamps south of Rome in the 1930s. They were triumphalist places, small towns with big squares so that the populace could turn out in the leader's praise. But they were also pleasant beach towns, sensitively knit to the low-slung landscape. (Stern has a soft spot for big plans, so dictators, lords, princes, and tycoons swagger through these pages, usually with good intentions, at least so far as urbanism goes.)

As every savvy politician knows, you don't win an argument with facts alone, so Stern and his wingmen have ornamented their case with cinematic vignettes and wry asides. We learn that George Merrick, the founder of Coral Gables, turned “an abandoned limestone quarry into a spectacular public swimming



Forest Hills Gardens in Queens, New York, designed by the Olmsted Brothers in 1909, was conceived when new rail lines expanded possibilities for urban planning. Cul-de-sacs, broad boulevards, and public spaces such as Station Square (left) created a respite outside Manhattan. A few decades later, developer George Merrick planned Coral Gables, Florida, as an idyllic resort town. An advertisement from 1926 (above) lured prospective residents southward with the promise of lush gardens, exotic homes, and glimmering canals.



PHOTOGRAPHY: COURTESY RAMSA (LEFT); © NORMAN HATHAWAY (TOP)

pool . . . where, on a floating raft, the portly bandleader Paul Whiteman, resplendent in a swimming suit and hat, conducted his jazz orchestra.” We cruise around the globe, making scenic stops for summaries that read like film treatments: a Hungarian soldier-architect escapes from Siberia to Shanghai, where he hooks up with a real estate company founded by a Californian huckster to build the leafy enclave called Columbia City.

The book pauses from time to time in its brisk march through hundreds of places, inviting readers to savor the pleasures of a particularly gracious few. We linger on the Regent’s Development by John Nash, the winding corridor from St. James’s Park to Regent’s Park, which is now locked into the dense center of London but in the late 18th century made possible “both a real and a metaphoric journey from town to country.” Later, we amble through Olmsted’s Riverside, Illinois, where gently curving streets enliven the flat topography and, in the designer’s words, “imply leisure, contemplativeness, and happy tranquility.” Yet Riverside is an utterly modern product of the technology of speed: without quick rail access to downtown Chicago, it



Milton Abbas in Dorset (above) became one of England’s first suburbs when the village’s owner decided to move its 600 constituents to a more attractive location. Completed in 1786, the village featured 40 thatch-roofed cottages flanking a single road. Two centuries later, in 1987, Robert A.M. Stern Architects was commissioned by the Walt Disney Company to devise a master plan for Celebration, Florida. The heart of the development, Celebration Village (left) features buildings by Philip Johnson, César Pelli, Michael Graves, and Robert Venturi and Denise Scott Brown.

could never have been born.

Rather than alternate narrative and analysis, the book weaves the two together in long, sturdy ropes of prose. “With much of its land mass literally scooped up from the sea by Carl G. Fisher, who cut down the mangrove trees to two feet above ground, leaving the stumps in place, and pumped sand from the bottom of Biscayne Bay to a height of two feet to create

new land, Miami Beach was the best known of the new resort city-suburbs, but not necessarily the best planned.” There’s an awful lot packed into that sentence: a Citizen Kane-like real estate mogul arrogantly terraforming nature to his liking; a summary of a massive engineering feat; the origin myth of a familiar place; a taste of ’twenties marketing; and an understated critical swipe. Now multiply that

density by all those pages, and you get some idea of the book’s informative riches.

Paradise Planned closes with a full-throated paean to Celebration, Florida, the town that Disney built, for which Stern produced the master plan. It was a profoundly controversial project, a pastel projection of American optimism that rubbed plenty of people raw. But critics who “complained about the level of design control” were “ignorant of precedents such as Forest Hills Gardens, suggesting that this was something new and faintly fascistic.” Ah, so that’s where the logic was headed all along: once enough urban thinkers understand the depth of the garden suburb tradition, they will naturally want to reclaim it. In the meantime, I defy anyone who so much as leafs through this book to sniff dismissively at a verdant enclave ever again. ■

Justin Davidson is the architecture and classical music critic for New York Magazine.



57% reduced post-consumer waste; one bulk jug holds the same amount of soap as five 800ml proprietary cartridges.



Locking cover opens to a wide top-fill port eliminating awkward, labor-intensive soap resupply down under the counter.



Choice of two models: Liquid or Foam.

SureFlo®. The ultimate soap dispensers for all reasons.

Design continuity with other accessories and fixtures is achieved with SureFlo's polished chrome finish and contemporary styling. Bulk jug foam and liquid soap, available on the open market, provide freedom from proprietary cartridges that only fit certain dispensers, at locked-in prices. Soap savings are over 80%. Visit bobrick-koala.com for a demonstration.

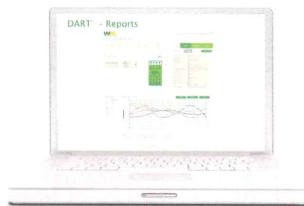


BUILDING VALUE SINCE 1906

Hit your diversion rates
like never before.



Use our new DART[®] tool.



Now you can pinpoint your efforts across your entire enterprise, from one web-based destination – 24/7.

With our exclusive Diversion and Recycling Tracking (DART) tool, you'll know exactly how much and what type of material is being diverted or recycled from every project in your company.

Ask your sales rep about DART as a part of your integrated construction plan.

Start tracking today. Sign up for DART at wm.com/bullseye or call 866 679 9445.



Go to wm.com/bullseye to download our McGraw-Hill SmartMarket Report and white paper.



©2013 Waste Management, Inc.

CIRCLE 50

THINK GREEN[®]

Sense and Sensibility in Design Today

How Architecture Works: A Humanist's Toolkit, by Witold Rybczynski, Farrar, Straus and Giroux, October 2013, 368 pages, \$27.

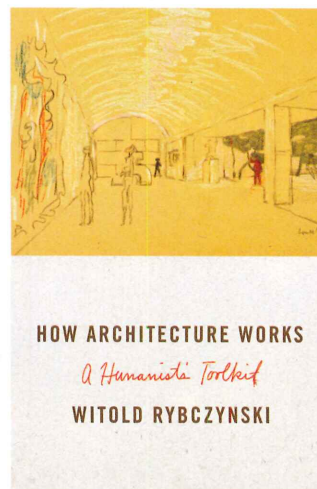
Reviewed by Aleksandr Bierig

AT SEVERAL points throughout his new book, Witold Rybczynski invokes Steen Eiler Rasmussen's classic text *Experiencing Architecture* (1959). Rybczynski, until recently professor at the University of Pennsylvania, has served as an architectural critic for an array of publications. When he studied architecture in the late 1960s at McGill University, he tells us one of his teachers was a Rasmussen disciple. In *How Architecture Works: A Humanist's Toolkit*, Rybczynski follows faithfully the central tenets of his predecessor. Both books organize architectural design into a series of sensible categories—concepts, structure, plan, skin, and so on. Both books place a high priority on the experience of the inhabitant of architecture rather than the process of design. And both books are written in a fluid, accessible style, although here Rybczynski arguably surpasses his model: his writing is well paced and never forced.

But there similarities end. Rasmussen's book served as a reorientation of a doctrinaire Modernism. In emphasizing the personal and experiential aspects of architecture, Rasmussen spurred those searching for a more "human" approach to Modern design. *How Architecture Works* could have served a similar purpose had it also been written more than 50 years ago. And there is not much to indicate it wasn't. Choosing well-worn figures (Mies van der Rohe, Wright, Le Corbusier) and supplementing with equally anodyne contemporary architects (Richard Rogers, Norman Foster, Renzo Piano) doesn't exactly advance the argument.

There is no real discussion of global practice or of environmental concerns—aside from a single paragraph warning of the perils of green-washing. Rybczynski offers a few measured, tepid defenses of traditionalist design—specifically work by Robert A.M. Stern—but, beyond that, he doesn't seem to believe in much at all. This lack of conviction is curious, particularly in contrast to the architects he cites. Take his well-chosen quotation from Louis Kahn: "You don't know what the building is, really, unless you have a belief behind the building, a belief in its identity in the way of life of man." While

grandiose, this language reveals Kahn's searching approach to architecture. Rybczynski gently chides Kahn for his mistakes and excesses and leaves it at that. He admonishes others for their inflexible style (Richard Meier) or abstruse justifications (Venturi Scott Brown)—seemingly exasperated by a supposed "overintellectualization" of the discipline. His central call, then, is for sense and sensibility—for measure, moderation, and a fine-grained orientation to architectural problems. Though this book is a pleasure to read, opening a door for young students and others entering the field, it is an inadequate match to our less than sensible times. ■



A full line of vitreous fixtures engineered and built exclusively for commercial use

Maximum performance at any flush volume

The perfect partner to our industry leading flushometers and faucets

From the leader of energy- and water-efficient commercial restroom solutions



www.sloanvalve.com

CIRCLE 24



Providing the greatest number of EPA WaterSense approved commercial fixtures on the market



CIRCLE 30

THINK BIG



Don't be afraid to go big. If your design calls for a larger, more dramatic size of paving stone, then there's only one company to turn to: Unilock.

With national distribution and the broadest variety of paving products in the industry, Unilock has been making architectural dreams a reality for over 40 years. Especially with large format slabs like Umbriano®.

With colors and textures that can be customized to emulate granite, marble, limestone or sandstone, this unique product owes its striking beauty to a random dispersing of color and granite particles, creating a mottled surface that looks remarkably natural.



And because Umbriano is from Unilock, it features EnduraColor™ Plus – an advanced technology that delivers both superior surface durability and color longevity.

Sometimes bigger is better. Especially when it's Umbriano from Unilock.

Project: Shedd Aquarium, Chicago, IL
Product: Umbriano®



UNILOCK

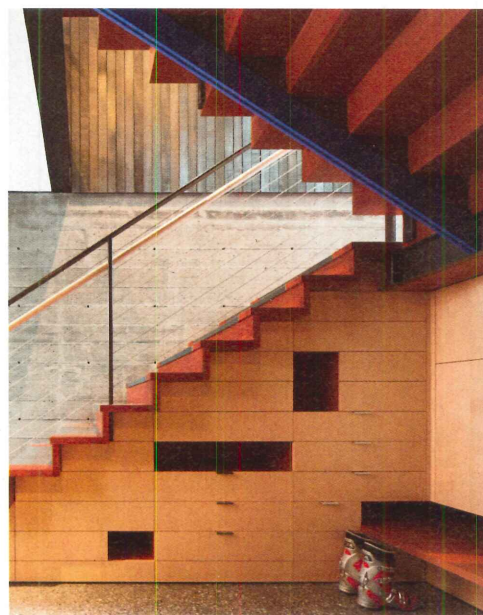
**DESIGNED
TO CONNECT.**

Contact us to learn more and arrange a "Lunch & Learn". Call 1-800-UNILOCK (864-5625)

UNILOCK.COM

perspective house of the month

ARCHITECT BOHLIN CYWINSKI JACKSON CREATES A FLEXIBLE VACATION HOUSE BY SEPARATING PUBLIC AND PRIVATE AREAS INTO DISCRETE STRUCTURES. BY SUZANNE STEPHENS



Skiers enter the house on the west (left) and descend stairs fitted with metal treads (above) to the boot room. The living and dining areas have their own pavilion (below) with views facing west.

IN DESIGNING a house for a family of five at the Kicking Horse ski resort in Golden, British Columbia, architect Bohlin Cywinski Jackson (BCJ) wanted to make the most of views while preserving privacy on a tight site. The 1-acre property sits on a loop road near a ski trail in the Canadian Rocky Mountains, bordered by houses on either side. The best vistas were from the front, looking east, and at the back, looking out to the slopes.

The architects split the 3,500-square-foot house into two volumes: one, a long, three-level bar-shaped building for sleeping and cooking, plus lower-level storage and parking; the other, a smaller polygon for the living and dining room. A glazed link between the two structures provides skiers with direct entry to the boot room one level below. The clearly articulated division of spaces is not only efficient but can comfortably accommodate over a dozen guests (with the help of bunk beds), says BCJ principal in charge Ray Calabro.

The smaller volume for the living/dining room floats over the forest floor, supported by steel beams anchored to the poured-in-place concrete fireplace and to the north stair. Its roof lifts up to the west to capture views of spruce and aspen trees, while a deep overhang acts

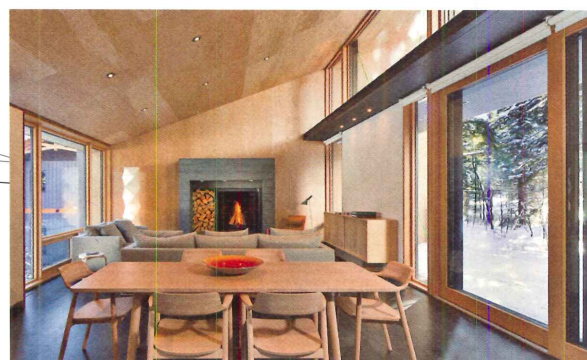


SECTION A - A

- | | |
|--------------------|------------------|
| 1 SKI ENTRY | 6 BREAKFAST AREA |
| 2 ENTRY HALL BELOW | 7 MASTER BEDROOM |
| 3 LIVING ROOM | 8 GUEST BEDROOM |
| 4 DINING AREA | 9 HOT TUB |
| 5 KITCHEN | 10 BUNK ROOM |

as a visor to shield the interior from the sun. The adjoining bar-like building has steel columns supporting an 88-foot-long timber roof pitched at a 40-degree angle to the south. It dramatically cantilevers at the east and west ends, beyond a poured concrete base.

Besides using painted steel for the folded roof, the architects sheathed exterior walls in black-stained and natural red cedar, punctuated by red and white fiber cement board panels. The combination of these materials on the exterior, along with interior surfaces of Douglas fir plywood, create an unexpectedly cozy cabin rendered as a modernist ski chalet. ■

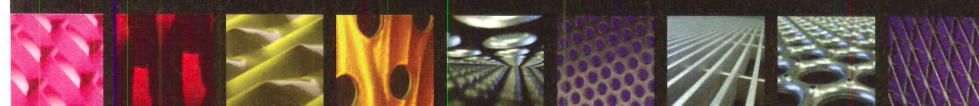




Need Perf? We've got you covered

AMICO 1/4" Diameter Holes on 5/16" Staggered
Stainless Steel Perforated
The San Francisco Federal Building
Morphosis Architects

Photograph © Tim Griffith / Esto



**APEX Expanded**

**PEAK Perforated**

**SUMMIT Grating**

Architectural Metals

AMICO®

A GIBALTAR INDUSTRIES COMPANY 

www.amicoarch.com | 800.366.2642

ARCHITECTURAL
RECORD

Guess the Architect Contest

ENTER NOW! A new monthly contest from the editors of RECORD asks you to guess the architect for a building of historical importance.



CLUE: IN THE EARLY 20TH CENTURY, THIS ARCHITECT WAS FAMOUS FOR SKYSCRAPERS HE DESIGNED, INCLUDING A GREEN TERRA-COTTA ONE FOR A PUBLISHER.

The answer to the November issue's Guess the Architect is **JAMES STIRLING**, who, with partner James Gowan, designed the Department of Engineering at the University of Leicester in England in 1963. For more details, including the winner, go to archrecord.com.

By entering, you have a chance to win an iPad Mini. See the complete rules and entry form online at archrecord.com.



560
FEET

42
STORIES

1

**LEED GOLD
CERTIFIED BUILDING**

Dallas' Museum Tower not only looks great, it's LEED GOLD thanks to ClimateMaster water source heat pumps. ClimateMaster heat pumps help maximize LEED points and minimize up-front installation costs.

Want to learn how you can get local support for your next LEED project? Find a local rep at:

CLIMATEMASTER.COM/ARCHITECT



ClimateMaster is a company of LSB Industries, Inc. - NYSE symbol LXU



Anatomy of a Dream

Ready to launch in early 2014, a sculptural wood chair by Tadao Ando for Carl Hansen & Søn signals what may be a new era for both. It is the Japanese architect's first design for production, and it is the furniture manufacturer's first collaboration with a non-Danish designer.

By Naomi R. Pollock, AIA



WHEN ARCHITECT Tadao Ando first opened his Osaka office in 1969, he purchased four Hans Wegner Wishbone Chairs. Little did he know that, some 40 years later, he too would work with Carl Hansen & Søn, the Denmark-based firm responsible for the 1950 Wegner original, as well as for the lion's share of the Danish furniture designer's work. The first collaboration between Ando and the manufacturer, the Dream Chair is poised to make its debut in January. Comprising a shell made of 3-D form-pressed Beech plywood sandwiched between decorative layers of oak or walnut veneer, the elegant lounge chair pairs the architect's refined eye for form and materials with the manufacturer's skill.

Ando does create custom furnishings for his buildings,

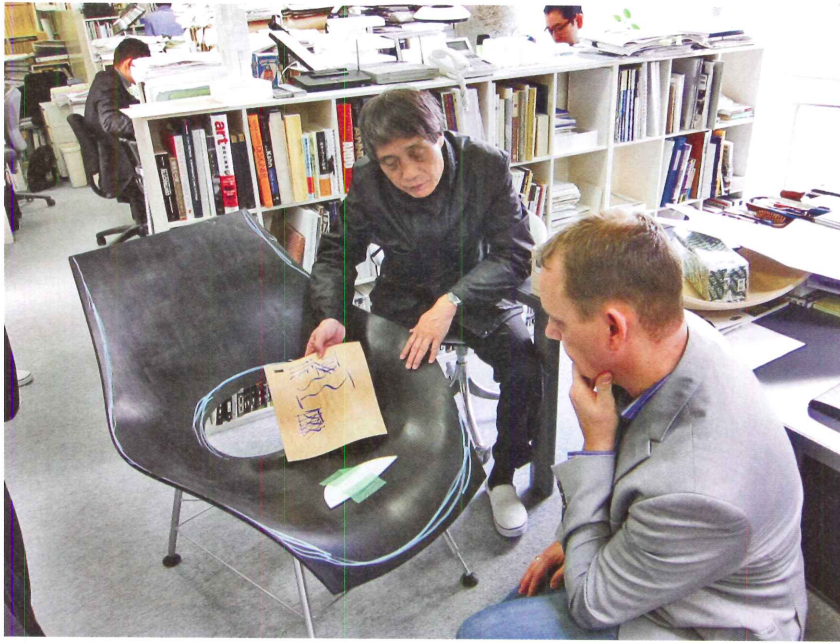


but the Dream Chair is his first production piece for a broader market. And while Carl Hansen & Søn has produced classic modern furniture with many notable Danish designers in its 100-plus-year history, this is the family-run company's first joint venture with a Japanese architect. Keen to explore new directions, Knud Erik Hansen, the current head of the company founded by his grandfather in 1908, began looking beyond Denmark's borders for design talent. This search led him to Japan, the company's largest export market for the past 25 years. Impressed by Ando's work with concrete and his concern to keep material waste minimal, which dovetails with the company's philosophy, Hansen approached the designer, who promptly accepted the invitation.

"I was struck by Carl Hansen's passion for making something special, with phenomenal craftsmanship," explains Ando, who has a like-minded approach to architecture. Though his buildings are significantly bigger than a chair, his design process remained constant. The main difference was in the choice of material. While Ando's use of concrete for his structures is legendary, this time he opted for wood. "As with concrete, I wanted to create something unique from a material that is accessible anywhere on the planet," he notes.

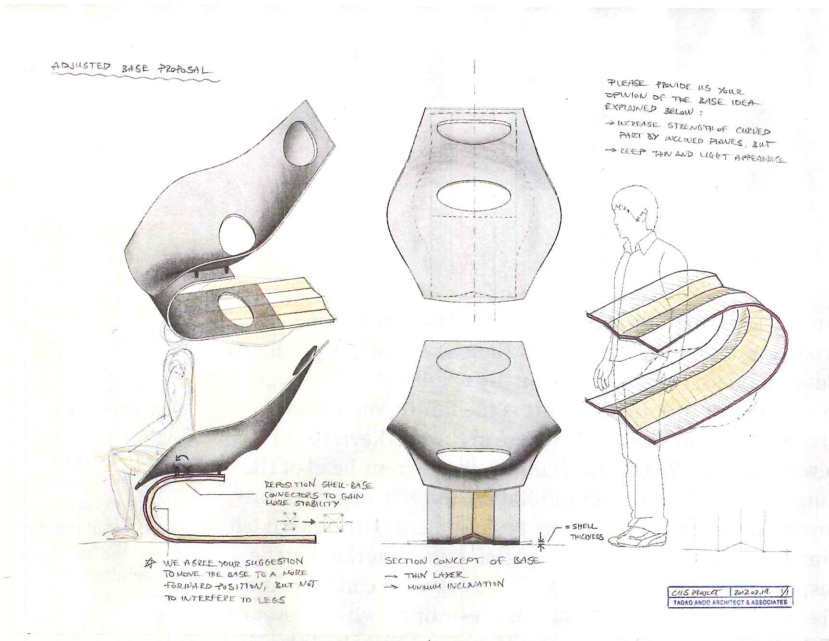
Yet when the Carl Hansen technicians saw Ando's initial sketches of a single sinuous plane forming the chair's back, seat, and base, they blanched. Bent in two directions, it cupped the body in a wood shell devoid of hardware. "If it were a cast fiberglass piece, there would be no problem," says Hansen. The concern was that the chair's large size and

Tadao Ando, seated comfortably in his Dream Chair (left) was inspired by the wood furniture of the late Danish designer Hans Wegner and developed this seat—his first production piece—in layers of that material for Carl Hansen & Søn, the manufacturer of Wegner's work. The chair is available in walnut (center) or oak (above) veneer, with a lacquer or oil finish.



void, its oval shape repeats as openings in the seat back and C-curved base, which was the most challenging element. More than a year of study and prototype-testing was required to make it sturdy enough to support the weight of a user and yet maintain the same thin profile as the seat. Though the technicians suggested making it in metal, Ando held out for wood but approved the addition of four steel pegs that discreetly pin the base and seat together.

Sculptural as well as ergonomic, the Dream Chair is a work of art, and priced accordingly, from \$4,995 for wood and from \$6,050 with leather upholstery. But when one sits back and relaxes into its warm embrace, the chair takes on its intended function. The idea, explains Hansen, is that “it embodies Tadao Ando’s desire to encourage people to take more time to dream.” ■



complex curvature exceeded the capability of 3-D wood-veneer-shaping technology that entails pressing 0.39-inch thick sheets together in a mold.

Ando collaborated with the Hansen fabrication team, which manipulated the most innovative molding methods available to achieve the architect’s desired result—with minimal modification to his original scheme. “Together,” says Hansen, “We challenged, and maybe reached, the limits of what is possible with plywood.”

The chair reads as a unified whole. In fact, it consists of three distinct pieces, a headrest, seat, and base. Attached to the seat back, the headrest is a simple disk that, like the seat, may be covered in leather or fabric. Playing on solid and

Ando examines an early mock-up at his Osaka studio (top). The architect’s original design, with a contiguous seat and base, would have been difficult to produce. A study for his solution (center) divides the seat and base for strength. The Dream Chair is available with leather upholstery (right).

Tempe Transit Center

This LEED Platinum project is the hub of Tempe's multimodal transit system which includes bus, light rail, Zipcars and a bike station. The design goal was to create an active community space environmentally, socially and economically sustainable with an 80 to 100 year life span.



tree grates



trench grates



bollards



paver-grate™



Paver-Grate™

Nearly invisible when placed, the Paver-Grate™ fits into any size tree pit, utility corridor or pedestrian walk way. Allows for the installation of unit pavers over the tree planting area rather than simply around it.

Combining Art with function, the optional Trim Rings are available in iron, aluminum or copper alloys and allow for the expansion of the tree opening to accommodate tree growth.

To find out more about all of our products including usage considerations, sizes and finishes, visit us online.

RONALD McDONALD HOUSE®
CHICAGO, IL



DU PONT®

Tyvek.

FLUID APPLIED WB

POWER-ROLLED, SUPERSIZED PROTECTION.

It takes a high-performance air and water barrier to protect the world's largest Ronald McDonald House® in Chicago. The DuPont™ Tyvek® Fluid Applied System proved its value to architects, builders and installers by combining protection with ease of application.

Learn more at: www.fluidapplied.tyvek.com/casestudies

Copyright © 2013 DuPont. All rights reserved. The DuPont Oval Logo, DuPont™ and Tyvek® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company or its affiliates.

Ronald McDonald House® and Ronald McDonald House Charities® are registered trademarks of McDonald's Corporation and its affiliates.



RONALD McDONALD
HOUSE CHARITIES
CHICAGO AND NORTHWEST INDIANA

CIRCLE 58



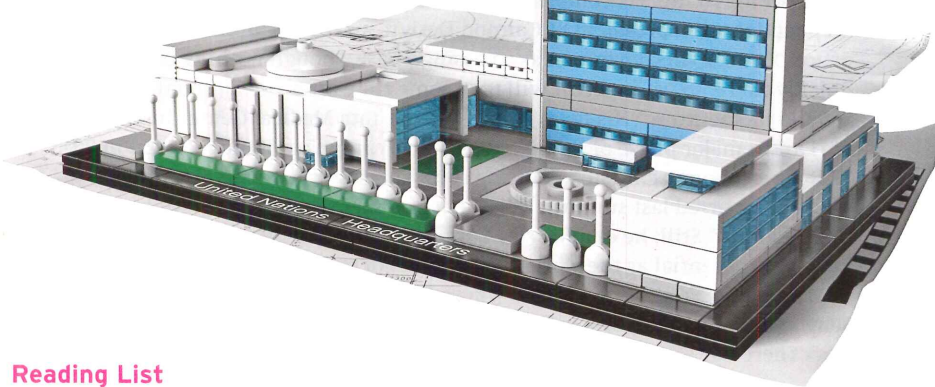
products **holiday gift guide**

RECORD PRESENTS A GUIDE TO WELL-DESIGNED GIFTS FOR CLIENTS, FAMILY, FRIENDS—OR READERS THEMSELVES. TO SEE THE FULL GUIDE, VISIT ARCHITECTURALRECORD.COM. BY SHEILA KIM

United Nations Headquarters LEGO

The latest addition to LEGO's Landmark series, this set re-creates the iconic New York City complex's Modernist masterpieces, including Le Corbusier and Niemeyer's highly recognizable Secretariat building. The set consists of 597 pieces; the finished model measures 8" wide x 5" high x 6" deep.

\$50 lego.com



Mini Jambox Bluetooth Speaker

Audio device manufacturer Jawbone has expanded its Jambox Bluetooth speaker series with the convenient and portable Mini Jambox. Usable with any Bluetooth-enabled device, such as cell phones and iPads, the 6"-long speaker is constructed from a single piece of extruded aluminum, and comes in nine different designs, from blue with a diamond pattern to a dot grid in orange, green, or red. **\$180** jawbone.com



Reading List

These 2013 new releases make great gifts:

Soviet Modernism 1955-1991, by Vienna Centre of Architecture (Park Books, \$65)

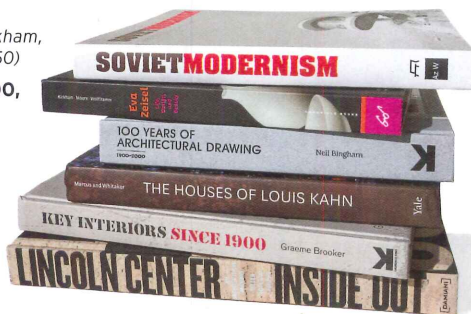
Eva Zeisel: Life, Design, and Beauty, by Pat Kirkham, Pat Moore, and Pirco Wolfframm (Chronicle Books, \$50)

100 Years of Architectural Drawing, 1900-2000, by Neil Bingham (Laurence King Publishing, \$50)

The Houses of Louis Kahn, by William Whitaker and George Marcus (Yale University Press, \$65)

Key Interiors Since 1900, by Graeme Brooker (Laurence King Publishing, \$50)

Lincoln Center Inside Out: An Architectural Account, by Diller Scofidio + Renfro (Damiani, \$85)



Washington by David Adjaye

Architect David Adjaye's first-ever furniture line, Knoll's Washington Collection, consists of tables, an ottoman, and two sculptural cantilevered side chairs. The latter comes in two styles: Skeleton features an aluminum-lattice seat and back while Skin, composed of injection-molded glass-reinforced nylon, layers a solid shell onto a lattice frame.

\$300-\$490 knoll.com



Pianta Karryon Blueprint Holder

Architects and engineers can tote blueprints and drawings in style with Teski's Pianta Karryon. Available in canvas or leather, it's a simple roll-up accessory with a Velcro closure that fits diameters from 3½" to 11". It can be carried by its handle or a removable shoulder strap. Readers receive a 10% online discount using the code T78610.

\$147-\$295 teski.com

India: Boom or Bust?

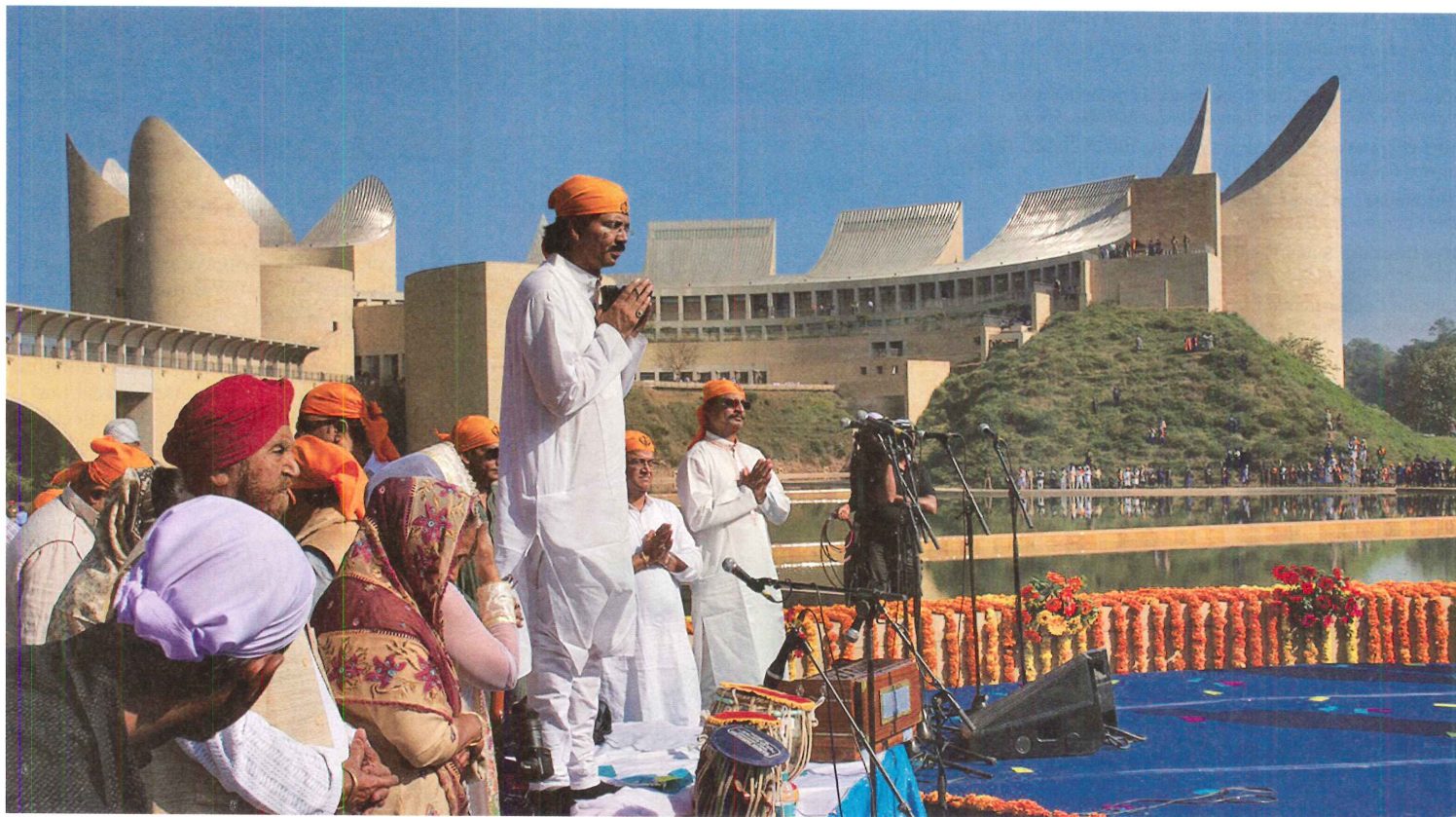
American architects have been busy in India during the past decade, but now face an economic slowdown and political uncertainty there.

BY SARAH AMELAR

BACK IN the 1960s and '70s, when Louis Kahn built the Institute for Management in Ahmedabad, American architects rarely worked in India. But the country's economic transformation, gaining momentum over the past decade, fueled a building boom, with design firms from abroad contributing conspicuously to the nation's bristling skylines—its new Western-style corporate campuses and glimmering air hubs. Just a couple of years ago, India seemed like the next China. But the tides have ebbed as the country contends with a deeply devalued rupee and an economic slowdown preceding its 2014 elections. While some ambitious projects continue without discernible setbacks, others have been pinched. In August, *The New York Times* described “cranes on Mumbai's skyline perch[ed] nearly immobilized as developers struggle for cash . . .” At the very least, questions hover about the challenges and opportunities ahead, about whether the change is transitory or more enduring.

“Working in India is complex and colorful, frustrating and exhilarating,” says Stephen Johnson, president of Cannon Design, an American firm with a Mumbai office. “We see this downturn as a passing phase, though nothing moves very quickly there, so we expect it will take some time after the national elections to rebuild momentum.” His team completed the Tata Medical Center in Kolkata in 2011 and a major phase of Kalinga Park (an IT campus in Bhubaneswar) in 2013. “But the economic climate is causing some reassessment across the industry,” Johnson reported last summer. “We've begun seeing projects delayed until after the elections.” Still, he emphasizes Cannon's commitment to stay in India “for its long-term potential as the world's largest democracy.”

Meanwhile, Frederic Schwartz, whose New York-based practice, Frederic Schwartz Architects (FSA), is finishing its fourth major airport in India, says his work there has seen “absolutely no effect” of the downturn. “The economy has



KHALSA HERITAGE CENTER, PUNJAB; SAFDIE ARCHITECTS

Located on a 75-acre site in the holy town of Anandpur Sahib, not far from Chandigarh, this project serves as a museum of the Sikh people and includes a 400-seat auditorium and a library. Safdie's design, with its swooping galleries and exterior walls clad in sand-colored stone, evoke the fortress architecture of the region. A series of dams in a ravine create a water garden, crossed by a pedestrian bridge.



cooled,” he concedes, “but the country still needs to build infrastructure in all sectors. There are ups and downs, as in China, but the train keeps rolling.”

During India’s socialist era, preceding the country’s economic liberalization in the 1990s, large-scale projects were the purview of government or public-sector architects. So no “big firm culture” developed, leaving India’s architectural profession “ill prepared to produce the international corporate work so ardently patronized there today,” says Harvard professor and architect Rahul Mehrotra. In *Indian Architecture Since 1990* (published in 2011), he identifies three major categories of architectural “imports” proliferating across the nation: 1. developer-commissioned IT campuses and mega-towers envisioned as international signifiers of competence and global status; 2. infrastructure (usually government-sponsored), ranging from airports to cultural centers; and 3. master plans for new cities, “90 percent of which,” he notes, “never break ground—they’re mostly rackets to get around India’s laws and convert agricultural sites into urban land.”

**TATA
CONSULTANCY
SERVICES,
MUMBAI; TOD
WILLIAMS
BILLIE TSIEN &
ASSOCIATES**

Called Banyan Park, this 23-acre campus includes the company’s headquarters, a conference center, cafeteria, and recreation facilities. TWBTA broke the complex into nine buildings connected by a network of shaded passageways.

Not every foreign firm doing ambitious work in India is large. “If you have the skills and work it right,” says Schwartz, “you can open yourself to big projects that a 20-person firm like ours would never get to do in the U.S.”

With opportunity, however, comes hurdles. And the complexities of working on the subcontinent are not everyone’s cup of Darjeeling.

Even with India’s burgeoning middle class and a GDP that nearly quadrupled between 2000 and 2012, almost 30 percent of the population struggles below the poverty line. And systems of roads, transportation, water, sewage, and energy remain profoundly deficient. “Unlike China,” Mehrotra observes, “India did not take its investment in infrastructure seriously enough before opening the doors on its economic policies.” The result is an emerging global power with third-world underpinnings.

The Indian government’s 12th Five-Year Plan committed to investing \$1 trillion in infrastructure between 2012 and 2017, explicitly encouraging public-private partnerships and major public works such as airports.

Emerging global hubs—for information technology in places like Bangalore, Chennai, and Pune; pharmaceuticals in Hyderabad; and call centers in Delhi—have also reshaped urban identities, particularly along metropolitan outskirts. (This work, Mehrotra points out, “epitomizes the reversals of outsourcing.” Here, Indians hire Western architects to design buildings that will be convincing enough to market Indian goods and services back to Western countries.)

Projects in India—varying widely with building type, client, and regional culture and climate—have come to American architects via different avenues. Through international competition, FSA won its commissions for airports in Raipur, Vedodara, and Chennai, leading to an invitation to design another in Goa, all in partnership with Mumbai-based Creative Group, and with Gensler on all but Raipur.

But Tod Williams Billie Tsien & Associates (TWBTA) simply received a phone message in 2003 that “an Indian gentleman” wished to meet “regarding a very large project.” Instead of the scam it imagined, the gentleman was Ratan Tata, then head of the mega-conglomerate Tata Group, and the project—Tata Consultancy Services’ 23-acre campus in Mumbai—is now under construction.

Though clients sometimes reach abroad for marquee names to design signature buildings, they often seek out foreign firms for specific expertise. For a mixed-use complex in Mumbai, the Indian developer Lodha Group chose Pei Cobb Freed & Partners (PCFP) for its experience with master planning and mega-towers. At 117 stories, the compound’s World One building will be the tallest residential structure on earth. But even when providing outside knowledge, PCFP principal Jay Berman cautions against imposing entirely imported solutions on foreign cultures rather than adapting local approaches. (At World One, his team modified vernacular concrete techniques for extreme-height geometries.)

The long-range prospects for American architectural services in India convinced the United States Department of Commerce to cosponsor a trade mission there with the AIA, in 2012 (RECORD, November 2012). But the agency’s *Doing Business in India* guide acknowledges the nation’s abysmal World Bank ranking that year: “132 out of 183 economies—among the world’s more difficult business climates and next



**CHENNAI AIRPORT,
FREDERIC
SCHWARTZ**

Working with Gensler and Creative Group, Schwartz designed this 1.6 million-square-foot airport complex (left).

**THE GRAND ARCH,
DELHI; SORG
ARCHITECTS**

This mixed-use development includes 900 residential units in high- and mid-rise buildings, plus cultural and recreational facilities (below).

to last in enforcing contracts.” The manual urges “due diligence” in researching client reliability. “Of the thousands of developers in India, we’d consider working with only about six,” says Nikki Sorg, who directs business development at Sorg and Associates, a Washington, D.C.–based architectural firm headed by Indian-born Suman Sorg. Practitioners cited in this article typically work on the subcontinent with a small number of repeat clients.

Since practice in India requires licensure by the country’s Council of Architects, Americans usually partner with regional firms or, like San Francisco’s EHDD, limit their services there to consultation on design or sustainability.

Teaming up with locals also helps foreigners work within the country’s fee structures. “Labor and construction costs are so low,” says Schwartz, “that even their good fees are a third of ours. So, from a business standpoint, the only way to do these projects is with Indian partners paying their staffs by the standards of their own economy.”

Moshe Safdie—whose firm completed the Khalsa Heritage Centre in Punjab in 2011 and is building a housing complex in Bangalore—usually declines RFPs from India. “Inadequate fees make them impossible,” he says. “There needs to be recognition that they’ll pay a premium to foreigners.”

Though architects from abroad sometimes encounter pressure in India, as in China, to deliver the concept and then leave its execution to locals, all the firms in this article decline such arrangements. But upholding design integrity often challenges quality control. “That’s one reason we opened our Delhi office,” says Suman Sorg, who is now building a 900-unit residential compound there. “The expertise for producing the detailed drawings required in the U.S. isn’t there. So builders get used to making decisions in the field, which means they need lots of oversight to prevent shortcuts and shoddy work.” Another complication is the tendency among Indian clients to change their minds often, even at late stages, viewing it as just “part of the process.”

Full-scale mock-ups produced by low-cost labor are more common in India than shop drawings. While recognizing these life-size prototypes as “indispensable to quality control, by communicating tangibly what needed to be done,” TWBTA principal Tod Williams recommends a “belt-and-suspenders” approach combining the most effective American practices with theirs.



Berman similarly stresses, “Successful projects in any foreign environment involve our humility and ability to leverage the best of their world and ours.” With India’s long history of sustainable building—responding, by necessity, to monsoons, severe heat, unreliable power, and fundamental needs for conservation and recycling—regional solutions can be extremely valuable. “Remarkable village crafts also have let us explore, in affordable ways, techniques we could never consider back home, like tiny hand-tiled mosaic over large areas,” says TWBTA partner Paul Schulhof. While some clients welcome modern integration of regional tradition and materials, others eschew local means (and conventional wisdom) in favor of an international style. “We recommended against glass and steel for the airports,” says Schwartz. “But India is competing with Singapore and China, and our clients wanted a world image that’s high-tech, with huge spans and cantilevers.” (So FSA worked to make these elements sustainable.)

A country of unexpected juxtapositions, India often defies generalization. Workers carrying pans of concrete on their heads sometimes swarm alongside state-of-the-art apparatus. “The industry in China is more sophisticated and mechanized,” says Safdie. “Both have lots of cheap labor, but, in India, the management end suffers, making it quite a different experience.”

Asked whether they would continue working in India, the architects interviewed here were split between enthusiasm and hesitancy. “We have currently chosen not to do additional work in India,” says Williams. “It’s not a great way for us to make money. Though we’ll treasure this incredible experience forever, we’re not interested in making it a business.” Meanwhile, others are spurred on by the potential of a country expected to have the world’s largest population by 2050. ■

COLLABORATE... ANYWHERE

When it's your job to call the shots, you need to be able to make decisions from anywhere, at any time. Bluebeam® Revu® combines powerful PDF markup and measurement capabilities with an integrated cloud-based collaboration solution, Bluebeam Studio™. Studio enables you to store an unlimited number of PDFs and any other file type in the cloud for free, and review and annotate the same PDFs with project partners around the world together in real time or on your own time, regardless of Internet connection, from a desktop, tablet PC or iPad.

Anything is possible.
www.bluebeam.com/designanywhere



bluebeam®
NO LIMITS®





Master Class

For his first building since winning the Pritzker Prize, Wang Shu gives a lesson in craftsmanship and material expression through an unfolding interior landscape.

BY CLARE JACOBSON

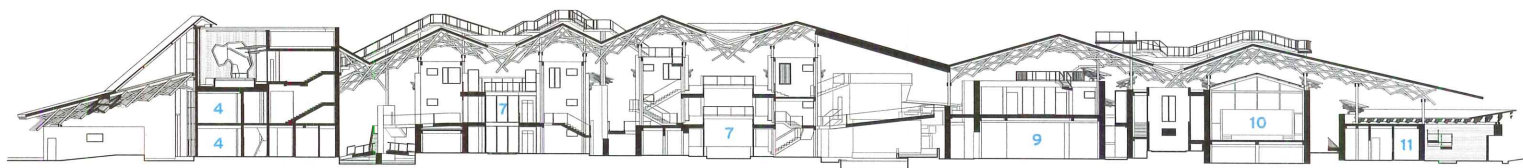
PHOTOGRAPHY BY IWAN BAAN

NAMED FOR the 394-foot-long tile roof that is its most identifying feature, Tiles Hill is the culmination of a dozen years' work by Amateur Architecture Studio on the Xiangshan Central Campus of the China Academy of Art (CAA) in Hangzhou. A reception center for faculty, visiting professors, and students and their parents, the visually kinetic building is the last of two dozen projects designed by Amateur—the firm run by Pritzker Prize-winner Wang Shu and his wife and partner Lu Wenyu—for the academy at which he serves as head of the architecture department. The collection of dormitories, classrooms, offices, and other academic facilities shows a progressive refinement in the studio's work from its first building there in 2002. Wang led the design of the project, while Lu took charge of realizing it. "For this final project, I wanted to express my deep understanding of the Chinese spirit," say Wang. "Maybe I touched it this time."

The 67,000-square-foot Tiles Hill is wedged between a wooded hill to the north and a narrow river to the south. Museums by Alvaro Siza and Kengo Kuma, the only new campus buildings not designed by Amateur, are under construction nearby. Tiles Hill contains an eclectic set of uses in four sections that ascend in height from east to west: an intimate tearoom; meeting rooms for 160, 50, and 30 people; a dining room for professors and a restaurant for

The building's jagged roof echoes the form of the hill behind it (below) and provides spaces underneath for a mix of uses including a tearoom, meeting spaces, dining facilities, and a small guesthouse. A straight walkway cuts through the width of the building (opposite), while a set of four areas run lengthwise, stepping up in height from east to west.





SECTION A - A

- | | | |
|--------------------|------------------|------------|
| 1 ENTRANCE | 5 KITCHEN | 9 STAGE |
| 2 GUESTHOUSE LOBBY | 6 BREAKFAST ROOM | 10 STORE |
| 3 RECEPTION | 7 COURTYARD | 11 TEAROOM |
| 4 GUESTROOM | 8 RESTAURANT | |



GROUND FLOOR



visitors; and a guesthouse with 28 rooms.

A path meanders through the length of the building, from the entrance on the east to the top of the guesthouse on the west, and takes visitors through a series of open and covered spaces. "You go outside, then inside, outside, inside," says Wang. "Finally you go to the top of the hill, and you see back." Other paths cut directly through the width of the building. Additional indirect rambles along tight alleys, bridges, and stairways lead to courtyards, benches, dead ends, or spots for a smoke. From any path, the roof's intricate wood-and-steel structure marks a striking contrast to walls made of rammed earth, rock, bamboo-finished concrete, and even recycled tile and pottery. The combination of traditional craftsmanship and modern construction makes visitors want to touch and engage with the building.

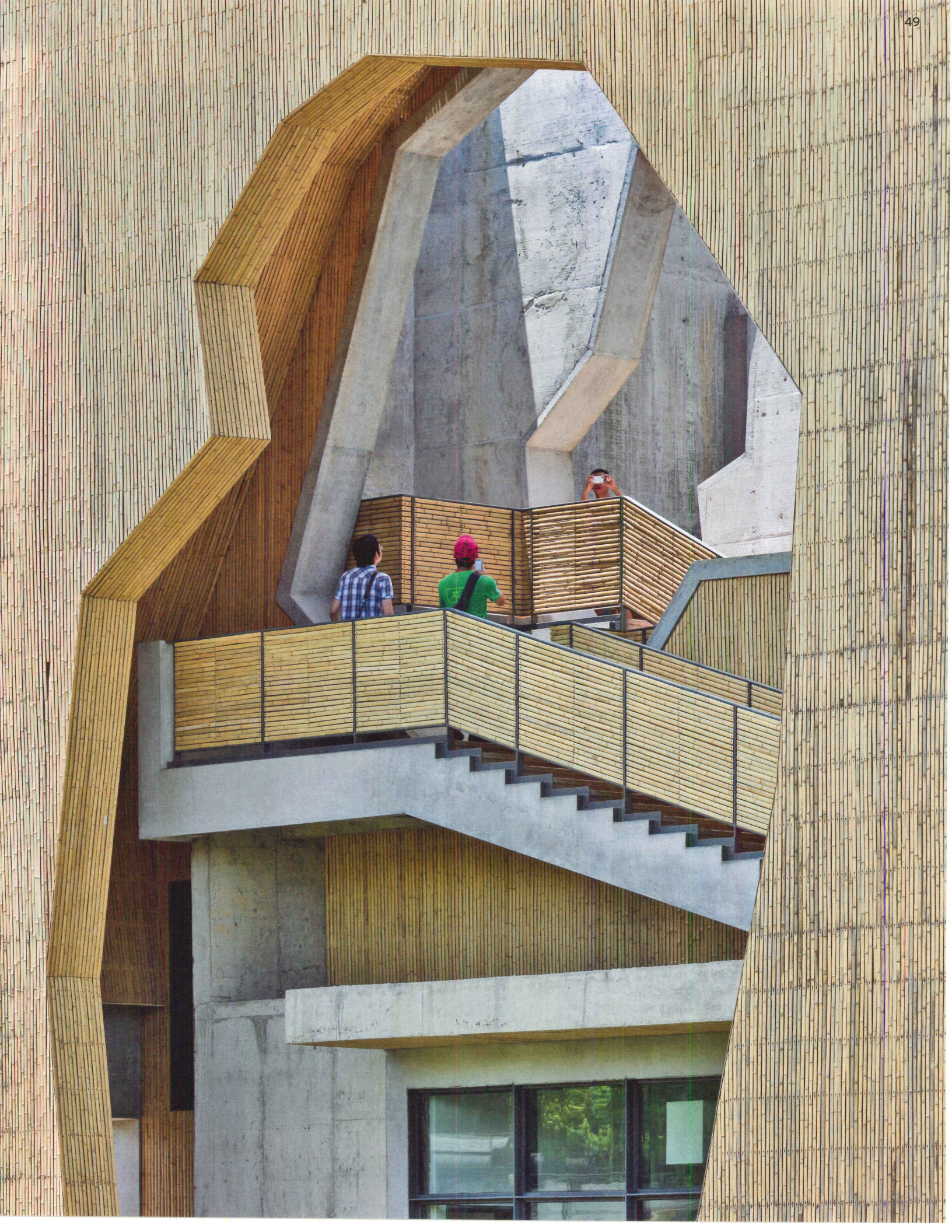
It may be a cliché to say Tiles Hill feels like a village, but after accidentally happening upon cascading pools of water and pleasantly getting lost, this urbanite felt a true sense of walking through a dense neighborhood. Wang says that the "Chinese spirit" evoked here is like winding your way through a mountain or stepping into a traditional landscape painting. Whether urban or rural, the routes are full of chance sights and meetings. "The building is not about the form or shape: it's about the discovery," says Wang. "From one layer to another, it offers surprises."

Tiles Hill is the first building Amateur has completed

Exposed throughout the building, the timber roof acts as a powerful element tying diverse uses together (right).

Large cutouts in walls recall thresholds in traditional Chinese gardens, but express a modern aesthetic (opposite). They also provide views and help visitors navigate the complex facility.



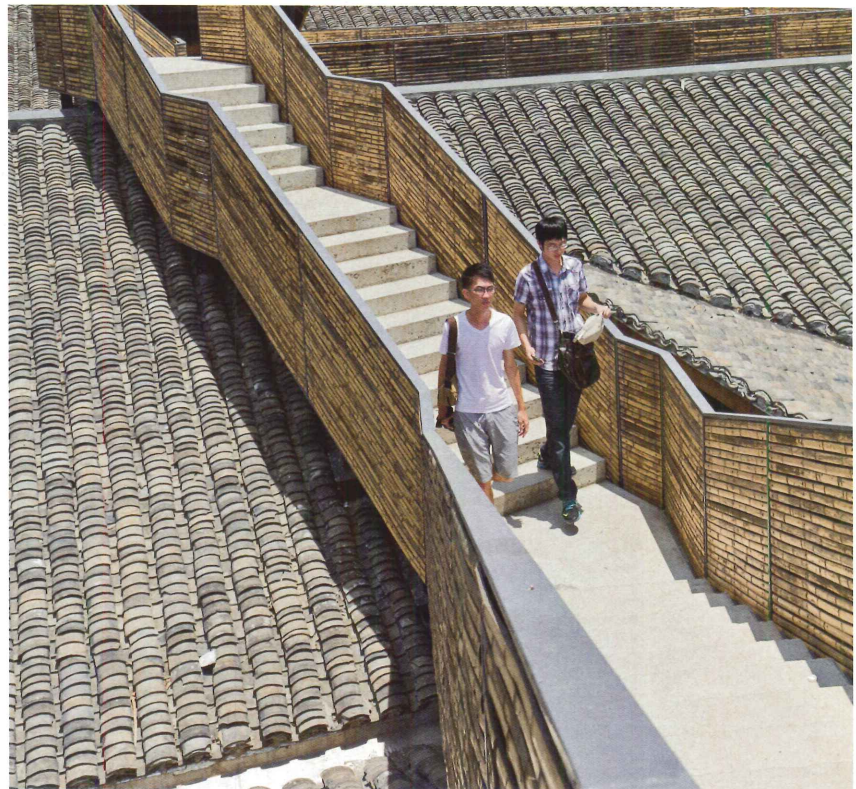


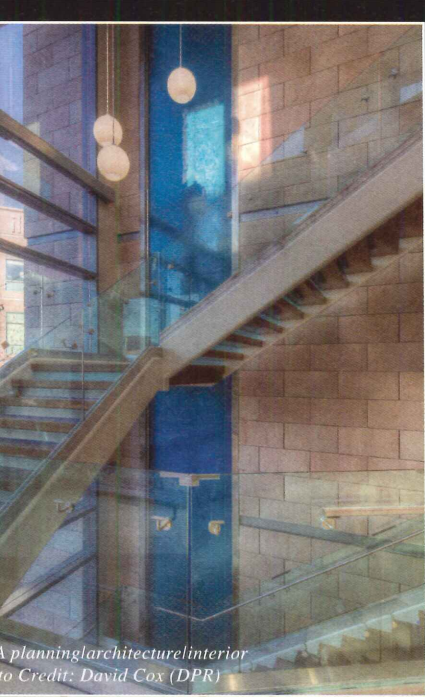


since Wang was awarded the Pritzker in 2012. It reuses some of the features that drew attention to his work. Oversized wall cutouts, referencing those in Chinese garden walls, are similar to those used in the Ningbo Tengtou Pavilion for the Shanghai World Expo in 2010. A dominating exposed-structure roof is the centerpiece of the Museum of the Imperial Road in downtown Hangzhou. A walking path on top of the roof is a hallmark of Amateur's best-known work, the Ningbo History Museum. But the success of Tiles Hill lies less in these big gestures than in its small labyrinthine spaces. As impressive as the project's large roof is, it is upstaged by the multilayered show beneath it.

Amateur's previous works include complicated interiors encased in big, bold boxes, but Tiles Hill exudes complexity both inside and out. It would be simplistic to say that the new building marks a move from iconic to contextual design for the firm. Tiles Hill's program calls for a different approach than that for a museum or pavilion. But one can only hope that the serene intricacy of this project finds a voice in Amateur's future work, including the 420,000-square-foot museum in the Fuyang District of Hangzhou that is in design and should be completed in roughly three years. ■

As the firm has done in many of its best-known projects, Amateur used different kinds of masonry to create textural contrasts (above). A walkway on top of the roof offers a great perspective on the project (right).

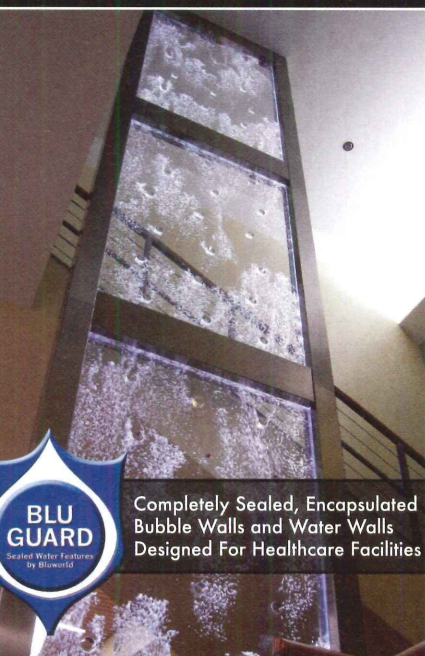




A planning architecture interior
to Credit: David Cox (DPR)



Erdmann & Associates



Completely Sealed, Encapsulated
Bubble Walls and Water Walls
Designed For Healthcare Facilities




Architect: Vison

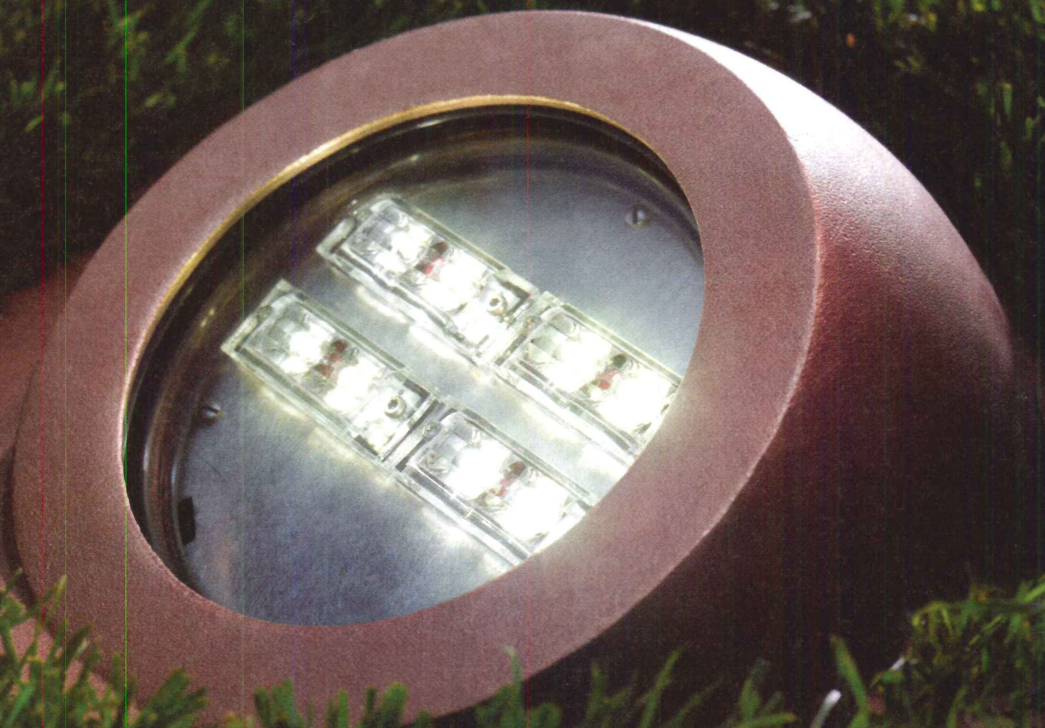
u Dream It, We Build It, You Love It.

bluworldofwater
EXQUISITE WATER DESIGN

www.bluworldusa.com
info@bluworldusa.com | p(888)499-5433

LIGHTVAULT 8

 **Bluetooth**® Wireless Adjustable Aiming & Dimming.
This is Kim Lighting.




KIM LIGHTING

 **HUBBELL**
Lighting

The Bluetooth word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Kim Lighting is under license.

Hidden in Plain Sight

A museum commission allows architects an expressiveness few building types can match. But the museums featured in the following pages whisper rather than shout—at least at first blush. Expanding Louis Kahn's masterpiece, the Kimbell Art Museum in Fort Worth, has been a vexing problem with a controversial history, but Renzo Piano has created a quietly deferential addition. On the Japanese island of Naoshima, Tadao Ando masks a daring series of spaces within a traditional old house, for a museum devoted to his own work. And in the Warsaw square that is laden with the history of the 1943 Ghetto Uprising, the Finnish firm of Lahdelma & Mahlamäki Architects has designed a muscular yet sleek enclosure for a surprising organic and undulating interior. These three projects demonstrate the power of architecture that conceals before it reveals.

With his expansion, Renzo Piano speaks softly to Louis Kahn's masterpiece.

BY SARAH WILLIAMS GOLDHAGEN

For the general public, the Kimbell Art Museum's exalted reputation rests on the extraordinarily high quality of its small collection, with hundreds of first-rate pieces by Western painters and sculptors, and a growing cache of Asian and pre-Columbian work. For architects, the building housing that collection is its crown jewel: Louis Kahn's cycloid-vaulted concrete and travertine oasis in silver and creamy white ranks as one of modern architecture's greatest monuments, perhaps his most sublime building, the one he called his favorite child.

Over the last 40 years, since it opened in 1972 in Fort Worth, the Kimbell's double blessing—magnificent building, magnificent collection—has brought with it a cursed problem: Kahn's 120,000-square-foot structure was too small to simultaneously display any significant portion of its permanent collection and host the special exhibitions that museums use to draw crowds. It needed more space.

In 1990, 16 years after Kahn's death, the museum announced an expansion, designed by Mitchell/Giurgola Architects. Its principal, Romaldo Giurgola, who had been close to Kahn, proposed replicating Kahn's modular bays and appending them at both ends, thereby altering the original building's proportions and scale. A truly nasty public outcry

ensued. Kahn's normally reticent daughter Sue Ann Kahn publicly condemned the design. Famous people, including Frank Gehry, Philip Johnson, and Phyllis Lambert, signed a petition. The Kimbell, humiliated, retracted the misguided scheme. But their space problem remained.

How to add to the sublime? Several years ago, the leaders of the Kimbell Art Foundation approached Sue Ann Kahn, hoping to avoid any hint of a reprise of the Giurgola debacle. What would she think about a separate building, connected underground, across the way from her father's celebrated

Kimbell Art Museum Addition | Fort Worth
Renzo Piano Building Workshop

FACING UP TO A LEGEND

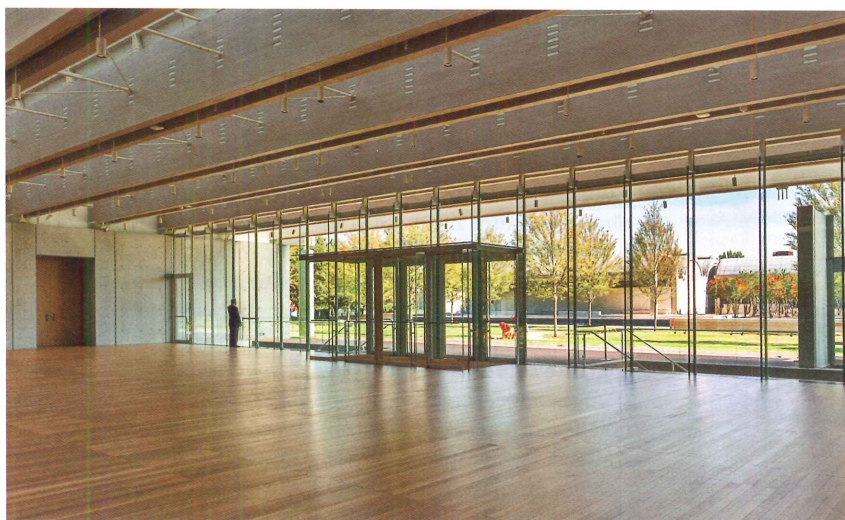
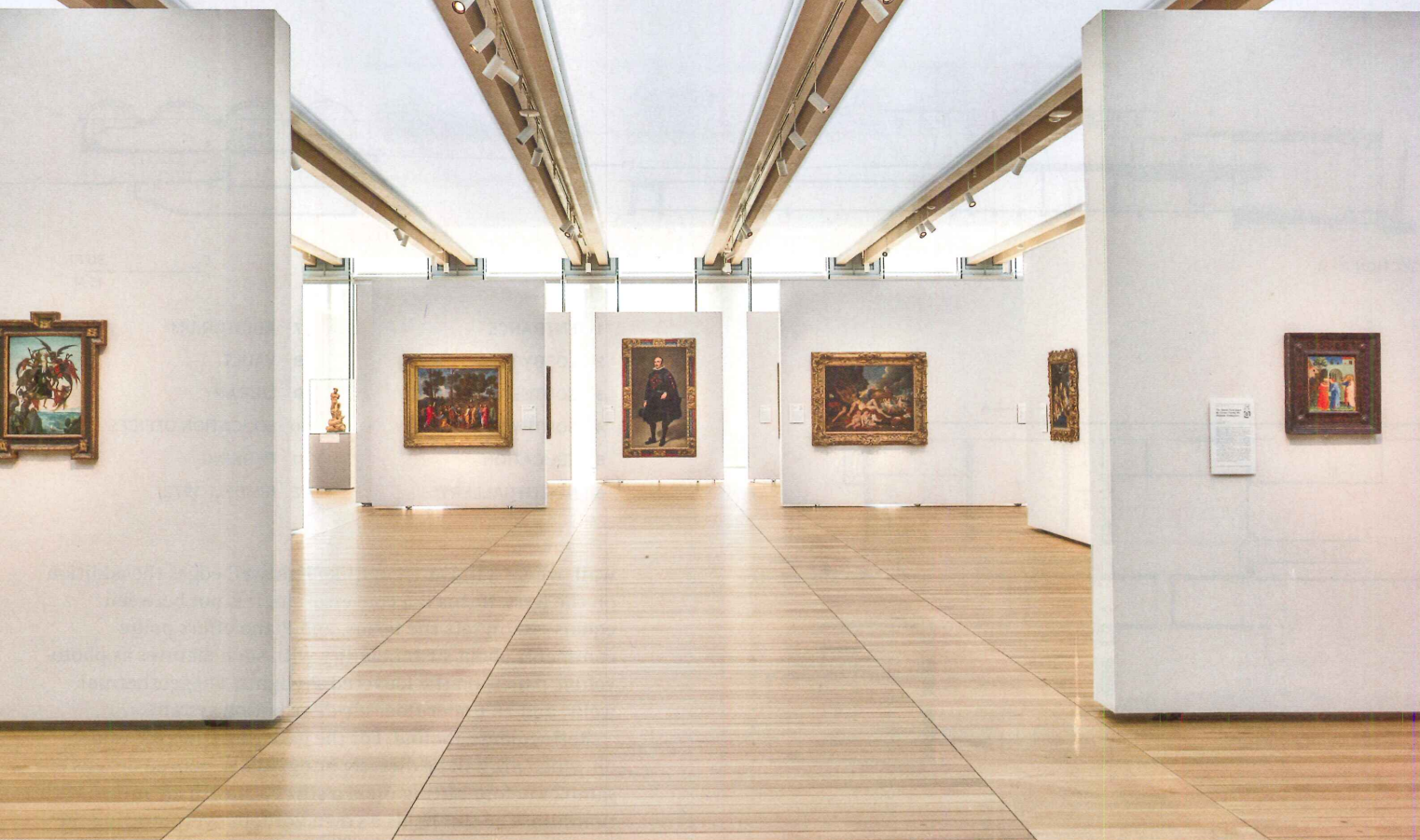
PHOTOGRAPHY: © TIMOTHY HURSLEY (RIGHT); ROBERT LAPRELLE, COURTESY OF KIMBELL ART MUSEUM (LEFT)





TECTONIC PAVILION The southeast gallery is defined by the rhythmic procession of concrete columns supporting laminated Douglas fir beams 100 feet long.





INSIDE OUT As seen in the north gallery (opposite, top) and the southeast gallery (above), the oak floor “breathes” owing to $\frac{3}{16}$ -inch gaps between the boards for the under-floor air system. The main entrance to the Piano addition (opposite, bottom) opens into an expansive lobby (above).

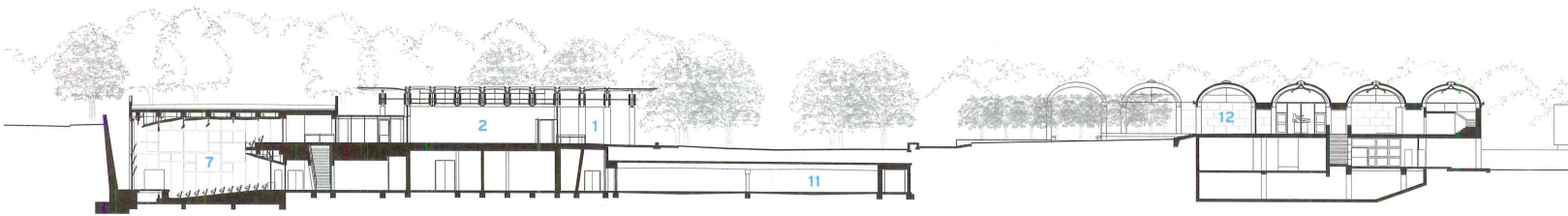
masterpiece? Kahn responded well. And whom to enlist? The Kimbell says that only one firm was ever considered: the Renzo Piano Building Workshop (RPBW).

Renzo Piano and his office have completed 21 museums and museum additions to date. Curators like the firm’s work because it “lets the art speak,” as one current client recently explained. Simple loftlike spaces acquire their refined elegance and placemaking character not through theatrical gestures that could upstage the art but through subtle moves: delicate compositions combining manufactured and natural materials, lavishly considered construction details, and abundant filtered natural light. Three of the firm’s very

best projects are museums (two in Texas): the Menil Collection in Houston (1987), the Nasher Sculpture Center in Dallas (2003), and the Foundation Beyeler near Basel (1997). And RPBW’s museums are never bad; at worst, they are dignified, if somewhat tepid.

The one-story-high addition, located a civil 160 feet from the Kahn building, is about its size, adding three large new galleries as well as a 295-seat auditorium, library, classrooms, and event space, with underground parking connecting old and new. Everything about the project drips “R-E-S-P-E-C-T”—quite frankly, it looks as though Piano designed it with a straightjacket on. Hoping to start what he calls “a conversation” between old and new, Piano kept the basic organization of Kahn’s building: a 324-foot-long horizontally slung shed divided lengthwise into three equal bays with the entrance on center. Kahn’s building is concrete, travertine, and glass with oak floors; RPBW’s is concrete and glass with oak floors. (Mock-ups suggested that travertine would mimic the older building too closely.) In both, the structural conceit is the 100-foot-long-span beam landing on concrete columns. Inside both, top-lit galleries and fine detailing—from smooth concrete to shadow joints to polished metal hardware—dominate.

The addition’s entrance axis extends from the lobby to a glazed passageway through an outdoor courtyard, terminating in a buried, auditorium wing. A 19,200-square-foot grass roof covers this underground extension, which also includes classrooms and another gallery. Behind the auditorium’s stage—in a direct quote of the basement level of the Kahn building—a monumental glass wall faces a concrete retaining



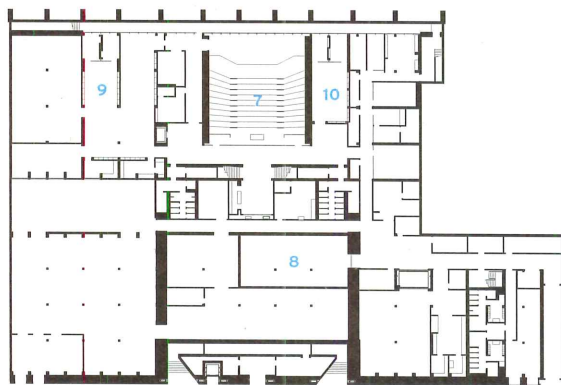
SECTION A - A

0 50 FT.
15 M.

- | | |
|---------------------|----------------------|
| 1 ENTRANCE | 7 AUDITORIUM |
| 2 LOBBY | 8 VAULT |
| 3 SOUTHEAST GALLERY | 9 LIBRARY |
| 4 SOUTHWEST GALLERY | 10 EDUCATION OFFICES |
| 5 EDUCATION | 11 PARKING |
| 6 NORTH GALLERY | 12 KIMBELL 1972 |



LEVEL 1



LEVEL B1

0 50 FT.
15 M.

wall, where a linear troughlike lightwell edges the addition on the west. If this is a conversation, it is not between equals—Kahn sets the terms, and Piano offers polite comments about sustainability with such features as photovoltaic panels on the louvered skylights, 140 geothermal wells, and an under-floor air-distribution system.

Refinements abound. For the galleries' concrete walls, on which art will be directly hung, RPBW poured dozens of samples before hitting upon a silvery-gray shade mixed with titanium. The tint holds its own without overpowering the visually delicate Old Master paintings that form the core of the collection. (The opening show is devoted to the permanent collection; after that, traveling exhibitions will be housed in Piano's galleries.) The architectural team devised a construction system of birch plywood forms for a 30-foot pour without tie-holes that creates super-smooth walls resembling spun silk. The 29 pairs of 100-foot-long-by-52-inch-deep laminated Douglas fir beams are, regrettably, almost invisible inside the two top-lit galleries owing to the scrim stretched between the beams. But their exposed surfaces help infuse the interior with a soft yellow light.

Muscularity trumps obsequiousness twice, once outside, once in. On the north and south elevations, closely spaced concrete columns support paired wood beams and a glass skylight above, creating a pounding tempo. And inside, north-south axes of paired courtyards and monumental staircases generate a strong rhythm.

More often than not, though, the docile acquiescence of the RPBW building highlights why Kahn's architecture is so compelling. RPBW's straightforwardness lacks the spatial nuance Kahn achieved with his more complex composition: the low-slung cycloid vaults pull the roofline closer to the user and help, along with the tartan grid plan, to disaggregate the building into smaller cells related to the scale of the human body. Galleries in both the original and the new building may be top-lit, but Kahn's long, dramatic swaths of daylight, cast from slots running down the center of vault-like cantilevered beams, change all day long. Piano's glazed ceilings may be a curator's dream but add none of the temporal complexity to the experience of being indoors that Kahn's cycloid vaults and skylights do. And although the buildings seem so similar, a sense of nature suffuses only Kahn's,

credits

ARCHITECT: Renzo Piano Building Workshop – Renzo Piano, principal; Mark Carroll, partner in charge; Onur Teke, associate in charge; Shunji Ishida, partner

EXECUTIVE ARCHITECT:
Kendall/Heaton Associates

ENGINEER: Guy Nordenson & Associates (structure); Brockett/Davis/Drake (structural consultant to construction manager); Arup,

Summit Consultants (m/e/p)

CLIENT: Kimbell Art Foundation

SIZE: 101,130 square feet

COST: \$135 million

COMPLETION DATE: November 2013

SOURCES

CURTAIN WALL, SKYLIGHT: Seele

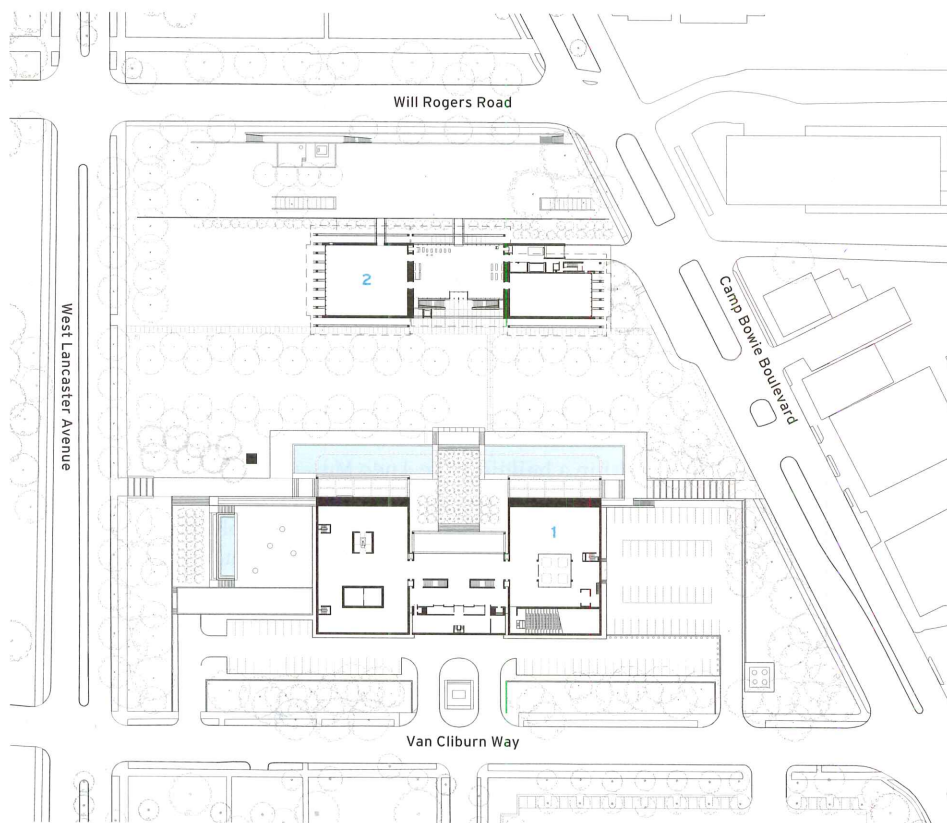
LAMINATED TIMBER BEAMS: Structurlam



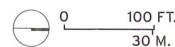
owing to the more highly textured materiality of his wood, travertine, and concrete, along with his more vigorous sculpting of natural light. The domestic feel of Kahn's more dynamic, roomlike spaces is absent in the addition's institutional Miesian interiors. For these reasons and more, only the Kahn portion brings about a deeply personal connection between user and building.

Kahn often said that a building is a struggle, not a miracle. It's too bad that Piano didn't engage in a more intense conversation with Kahn. Reportedly Piano proposed design features that would have more strongly differentiated the two buildings, such as wood siding and taller proportions, but these suggestions were rebuffed by clients wary of public outcry. That RPBW successfully solved the Kimbell Art Museum's space crunch without ruining, or even particularly changing, the original building is an accomplishment worth applauding. In the case of beloved monuments, even this outcome is never preordained. ■

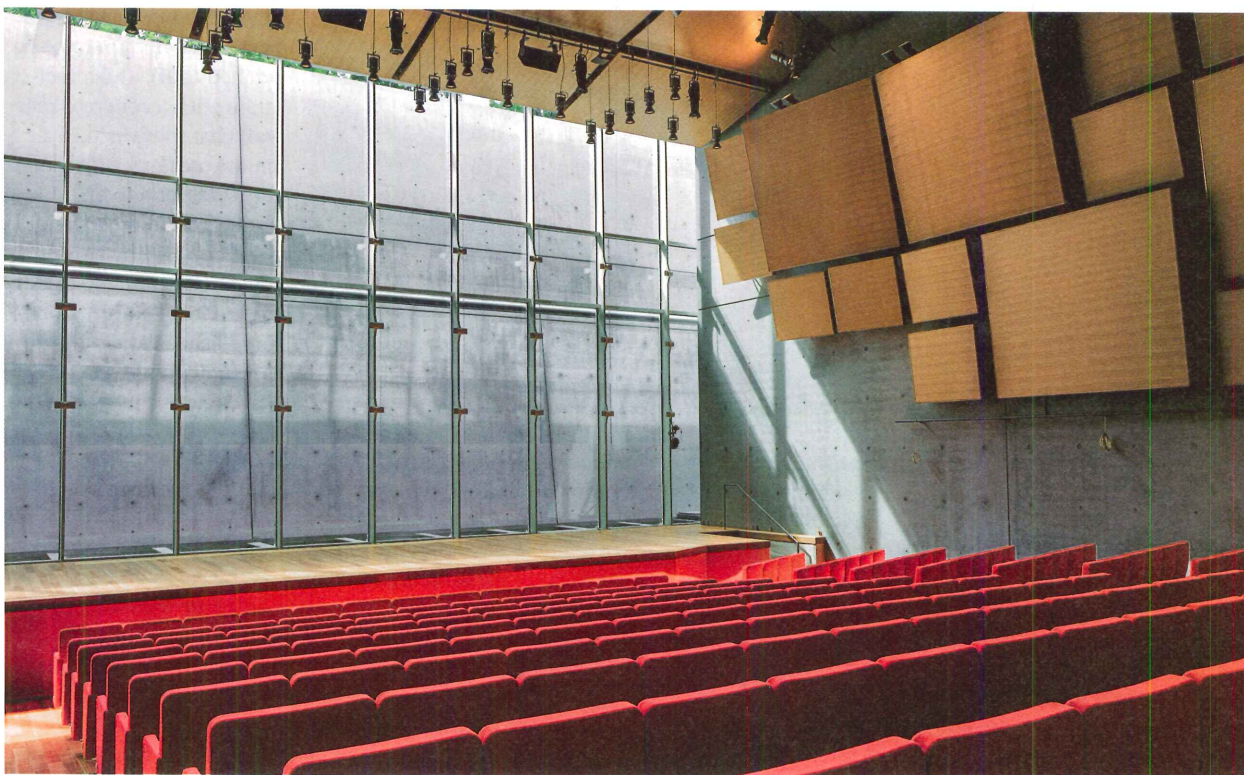
Sarah Williams Goldhagen, the architecture critic for The New Republic, wrote Louis Kahn's Situated Modernism (2001).



SITE PLAN



- 1 KIMBELL 1972
- 2 KIMBELL ADDITION



BURIED TREASURES

The entrance to the Kimbell addition faces a lawn and the reoriented main entrance to Kahn's Kimbell (top). Parking, with 132 spaces, is underneath. Adjustable motorized aluminum louvers with photovoltaic panels form the top layer of Piano's skylit roof. Beneath these, double glazing, laminated with a UV filter and ceramic frit, admits light into the galleries. Grass on the roof of the western portion continues on the stair treads to the space below. There, the auditorium's stage (left) is backed by a glazed expanse and a concrete retaining wall that form a lightwell.

Ando Museum | Naoshima, Japan | Tadao Ando Architect & Associates

MODERN TO THE CORE

Challenged to create a building in which to showcase his own work, a celebrated Japanese architect constructs a series of unique spaces within the shell of a historic house.

BY NAOMI R. POLLOCK, AIA

A building within a building, the Ando Museum celebrates work on the Inland Sea island of Naoshima by one of Japan's most influential architects. Designed by Tadao Ando himself, it looks like a 100-year-old wooden house from the outside. But within this modest residential exterior, Ando placed a contrasting interior defined by concrete and articulated by daylight—the pillars of his architecture. Commissioned by the Naoshima Fukutake Art Museum Foundation, the new museum is the Osaka designer's ninth project on Naoshima.

A former industrial outpost, the island was reborn 25 years ago under the aegis of Soichiro Fukutake, whose father founded the successful Fukutake Publishing Company. "Mr. Fukutake wanted to create an island where artists wanted to place their art," explains Tadao Ando. Fukutake managed to do so partly with the aid of Ando, who authored the combined art museum-hotel Benesse House, Naoshima's first major development, as well as the more recent Chichu (RECORD, October 2005, page 116) and Lee Ufan museums, among other buildings on the island. But when it came to displaying the architect's own work, Fukutake asked Ando to utilize the historic house, one of many purchased by

Fukutake for art installations. While a number of Naoshima's 430,000 annual visitors come to see its contemporary art collection, few leave unmoved by Ando's architecture.

Located in the town of Honmura, the Ando Museum sits amid a tight cluster of historic dwellings, most still inhabited by island residents. The building faces a narrow street with a gravel-covered courtyard that leads into the museum. The only hint of anything extraordinary is a small glass cone embedded in the pebbly ground. While Ando retained the shell of the original two-story home, he gutted the interior and extended the structure into the back garden. Enclosed

by a tile roof and walls of blackened *yaki-sugi* (the traditional charred cedar planks favored on Naoshima), the new construction melds effortlessly with the old.

Inside, the structure shifts from antique to contemporary, wood to concrete, and familiar to otherworldly. The entrance hall, primarily made with *tsuchikabe* (rammed-earth) walls and a stone-studded *araidashi* floor, recalls the original foyer.

From there, stairs ascend to the exhibit area, where models and photos of Ando's Naoshima works are on display. Delineated by freestanding walls and floor-level changes, the room is sliced into three distinct galleries layered front to back: a double-height oblong outlined by wood columns and beams, a narrow wedge sandwiched between concrete partitions (but open to the pitched roof), and a rectangle with a concrete rear wall that morphs into a vaulted ceiling. Adjacent stairs descend to an underground meditation chamber. Hiding this new construction in and under the existing building preserved the island's charm through what Ando calls "invisible architecture."

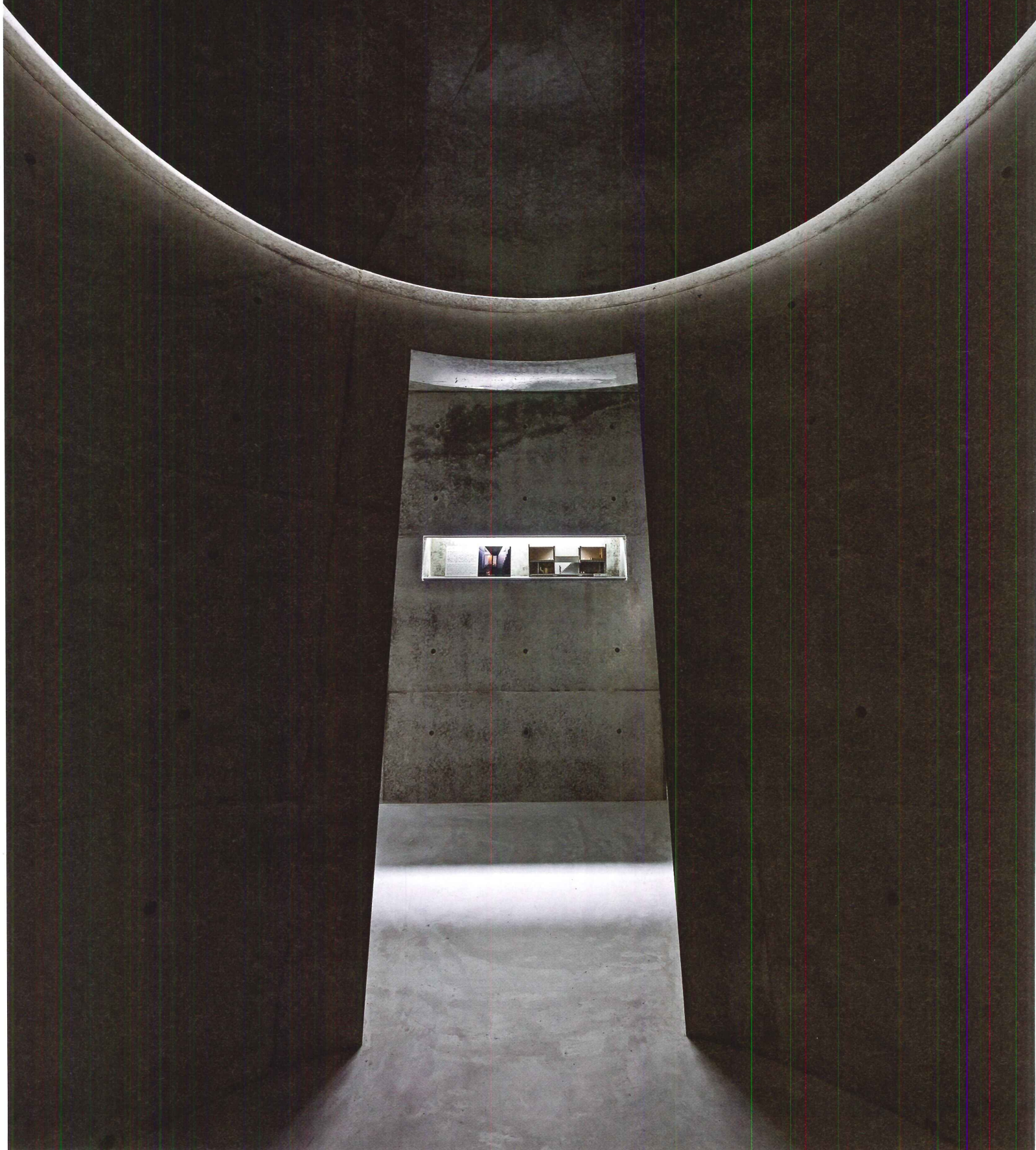
Free of the organization

and expression of the old house, the cryptlike chamber is entombed in a slanted concrete cylinder measuring 9 feet in diameter. Capping the space, a floating ceiling ringed with muted daylight emits an eerie glow. The light source, a conical skylight in the courtyard, is the earth-embedded room's only connection to the outside world. Together, the semi-darkness, round shape, and tilted axis generate an illusory sensation of unsteadiness, as if the floor were off-kilter. "When a building cannot be seen, the quality of its space becomes the only matter of importance," remarks Ando.

Creating the subterranean cylinder was the first stage of



UNDER COVER Japan's Ando Museum (above) is located under the skin of an old house in Naoshima. It comprises a series of concrete spaces by Ando, culminating in a below-grade meditation chamber (opposite).





STRUCTURAL LINKS Ando built a concrete box within the old walls, leading visitors from a somewhat traditional entrance into the main galleries, where photos and a model of his work are on display. One wall tilts toward the ridge beam for a sense of openness (left). Sunlight streams through a new skylight in the wood roof (right).



credits

ARCHITECT: Tadao Ando Architect & Associates
– Tadao Ando, principal

ENGINEERS: COREe Structure Design (structural);
Kajima Corp., Tonets Corp., Toko Electrical
Construction Co. (m/e)

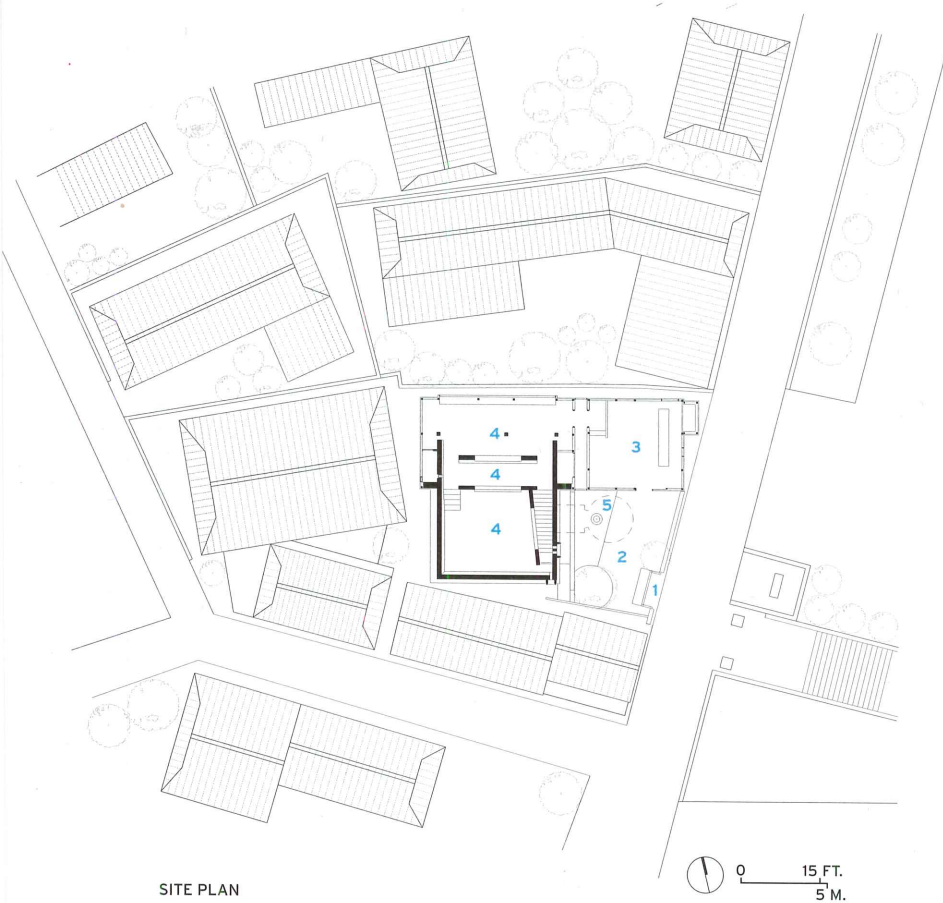
GENERAL CONTRACTOR: Kajima Corp.

CLIENT: Naoshima Fukutake Art Museum
Foundation

SIZE: 2,051 square feet (site area); 1,233 square
feet (building area); 1,355 square feet (floor area)

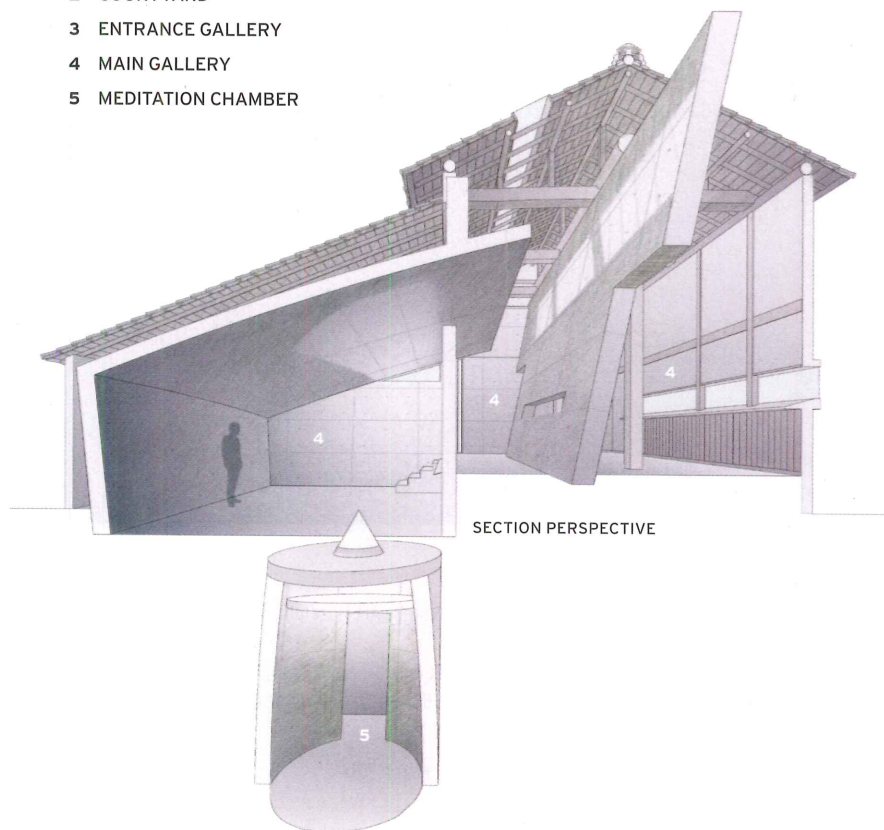
COST: withheld

COMPLETION DATE: March 2013



SITE PLAN

- 1 ENTRANCE GATE
- 2 COURTYARD
- 3 ENTRANCE GALLERY
- 4 MAIN GALLERY
- 5 MEDITATION CHAMBER



SECTION PERSPECTIVE

construction. In preparation, the contractors dismantled the existing house and stored its reusable parts. Then they excavated a portion of the courtyard, poured a concrete tube and, once it cured, surrounded it with earth. Next, the crew built the above-grade galleries—a contiguous concrete mass—finally covering them with the reconstituted wood house.

Wherever possible, Ando used the salvaged beams, columns, and roof tiles, reassembling them using traditional techniques. Elsewhere, he replaced worn-out parts with exacting facsimiles. The greater challenge, however, was crafting the concrete formwork needed for the new walls' silky texture and geometric complexity. Though smaller than Ando's other Naoshima museums, this building incorporates some of his most sophisticated shapes to date. While fabricating the wood molds required advanced computer imaging and precision craftsmanship, the concrete's natural finish came from the formworks' carefully treated inner surfaces, which had to be damage-free and smooth. Even stray flecks of dust would compromise the results.

This meticulous attention to detail yielded untreated

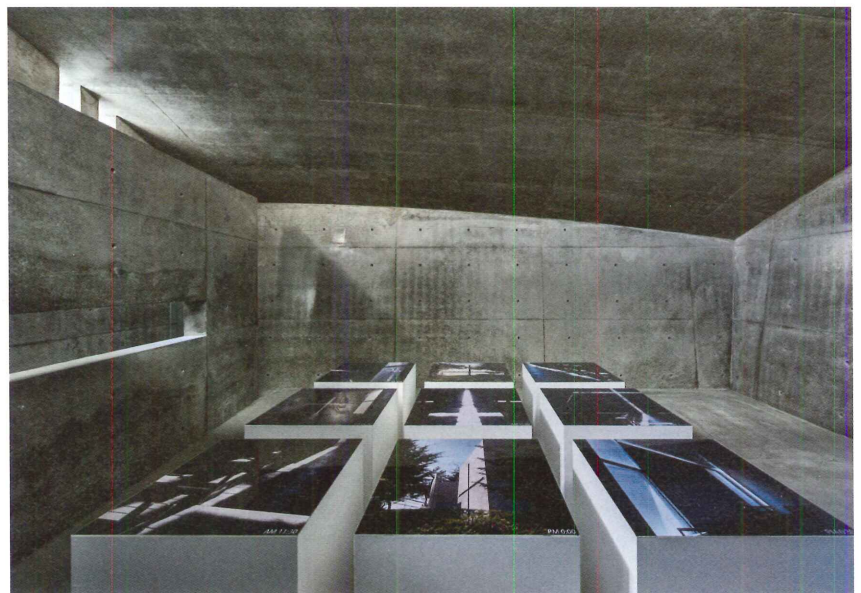


PATHS OF DISCOVERY Adjacent to the museum entrance, what appears to be a conical sculpture in the courtyard (above) is actually a skylight that illuminates Ando's underground meditation chamber. Before descending to the 9-foot-round room, museumgoers can enter a third gallery (opposite), next to the stairway. Enclosed by a vaulted ceiling, this space is punctuated by slender apertures, in both its internal and external walls, that control daylight and views for dramatic effect.



concrete so glossy that it reflects enough daylight to gently illuminate the galleries. While relying exclusively on the sun restricts the museum's operating hours, it also eliminated the need for electrical fixtures (except at the ticket desk and in the stair landing). Instead, a long skylight, parallel to the roof's ridge beam, and carefully placed wall slits are the main sources of light. Filtering down from above, the sun's rays ricochet off the angled wall in the middle of the gallery, illuminating the whole room and altering the perception of the space throughout the day.

While soft light might seem counterintuitive in a museum, it evokes the demure beauty of a shadowy corner or a dim room, common sights in traditional Japanese houses. Plus the exhibits are not the museum's *raison d'être*. "Before, I wanted to make spaces suited for art," explains the architect. "But this museum makes a statement just through its architecture." In the process, Ando retains the memory of the old house while invigorating it with a new identity—an apt metaphor for Naoshima itself. ■

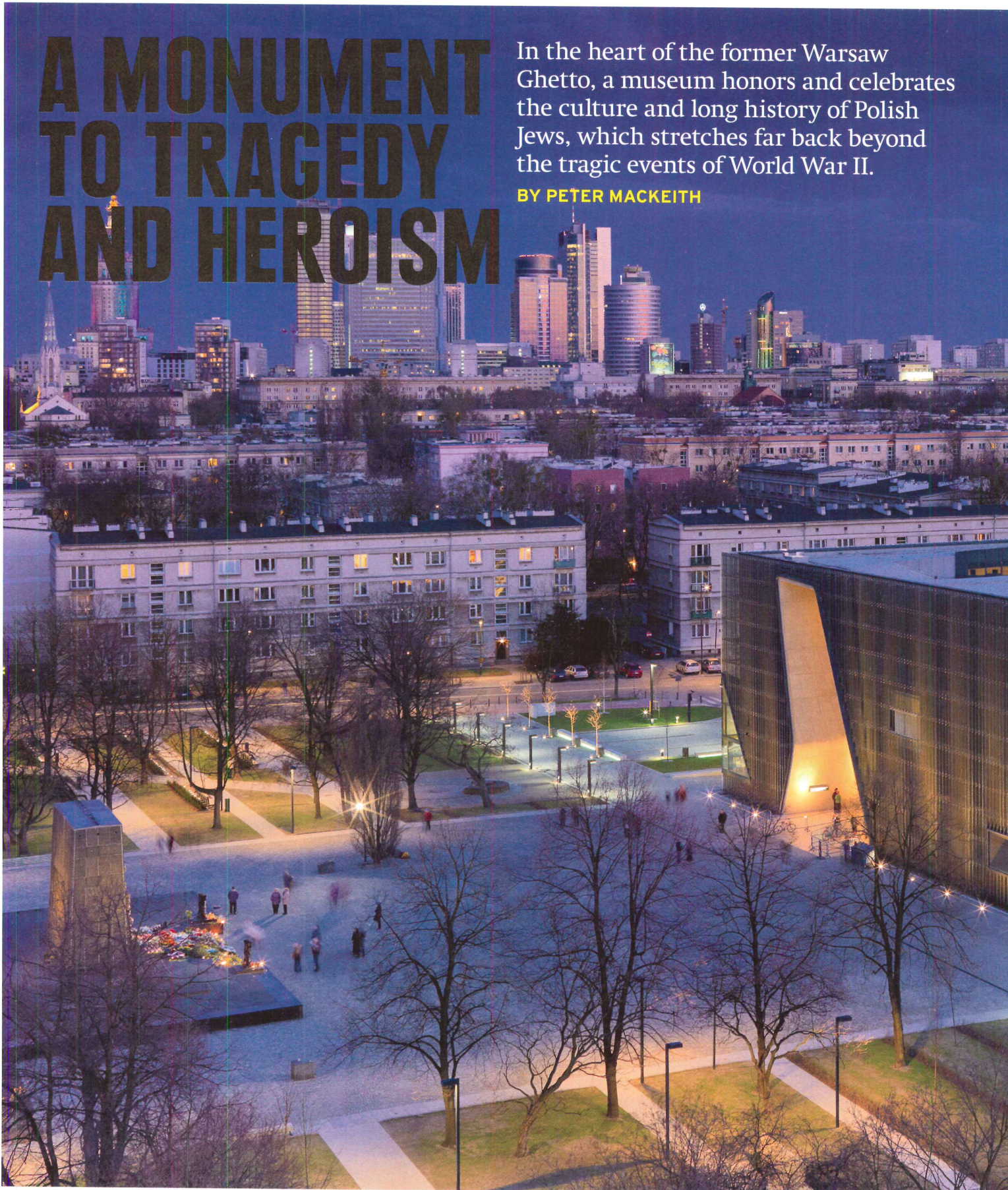


Museum of the History of Polish Jews | Warsaw | Lahdelma & Mahlamäki Architects

A MONUMENT TO TRAGEDY AND HEROISM

In the heart of the former Warsaw Ghetto, a museum honors and celebrates the culture and long history of Polish Jews, which stretches far back beyond the tragic events of World War II.

BY PETER MACKEITH





LUMINOUS HOME The museum is located in what was the heart of Jewish Warsaw during World War II, across a plaza from a memorial commemorating the 1943 Warsaw Ghetto Uprising.



For 70 years, a square in the northern quarter of Warsaw has been a site of strife and conflict, memory and mourning. In 1943, the Warsaw Ghetto Uprising emerged from the streets around it, as Polish Jewish partisans fought the Nazi occupiers bent on their extermination. Following the liberation of Poland, and the more complete comprehension of the Holocaust, a monument to that heroic resistance effort was built in the square in 1948, from stones the Nazi architect Albert Speer had sent to Warsaw.

This April, the square was newly framed against the backdrop of the long-awaited Museum of the History of Polish Jews. The museum's strongly delineated rectilinear volume glows in its pale-green screen-wall enclosure of fritted glass panels. A monumental concrete entrance portal is sinuously carved into the eastern facade, facing the monument. Even ahead of the completion of permanent exhibitions and an official inauguration (2014), throngs of visitors have streamed across the square's renewed and planted landscape toward that portal's spatial drama and the museum's superbly organized facilities.

Late this summer, Finnish architect Rainer Mahlamäki, one-half of the Helsinki-based design practice of Lahdelma & Mahlamäki Architects, stood in the museum's sublimely high entrance hall. The building's design and construction had consumed Mahlamäki's days since his partnership won (to the surprise of many, given that the other invited competitors included Peter Eisenman and Daniel Libeskind) an international competition for the commission in 2005. "The proponents of the museum wanted a monument to recognize the long, tragic,

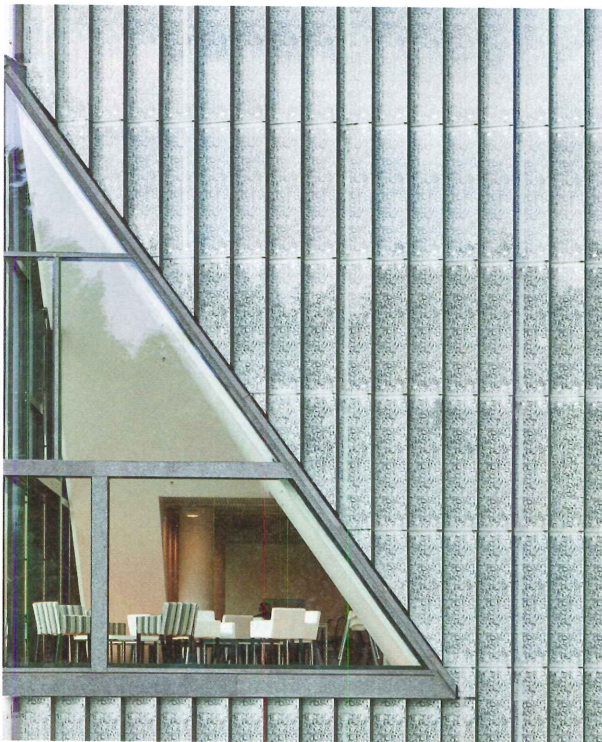
heroic, and now revitalized presence of the Jewish people in Poland," Mahlamäki says. "In particular, the site of the museum—in the center of the former Warsaw Ghetto—necessitated a building of monumental character to honor the events of World War II that occurred there, as well as that political, social, and cultural history."

The commission is the first for the partnership outside of Finland, despite 20 years of designing highly regarded public buildings throughout that Nordic nation. Aware of the history of culturally responsible architecture without being weighed down by a compulsion to overtly signify through form, the architect designed the museum on more restrained terms: "In our view, such a monument could only be approached with quiet dignity rather than with too-confident formal expressiveness or flamboyant material pyrotechnics. We won the competition, we think, by virtue of our more modest Nordic sensibility, in which the drama of the design, and indeed the drama of the museum's contents and purposes, are concealed within an elegant exterior."

The strategy has paid off. The museum's glowing presence in the square compels attention, and the institution has already hosted a broad range of public performances, temporary



GRAND HISTORY
The boxy museum, which is clad in angled fritted-glass panels separated by strips of perforated copper (above), conceals a cavernous entrance hall with curving concrete walls and a travertine floor (right).

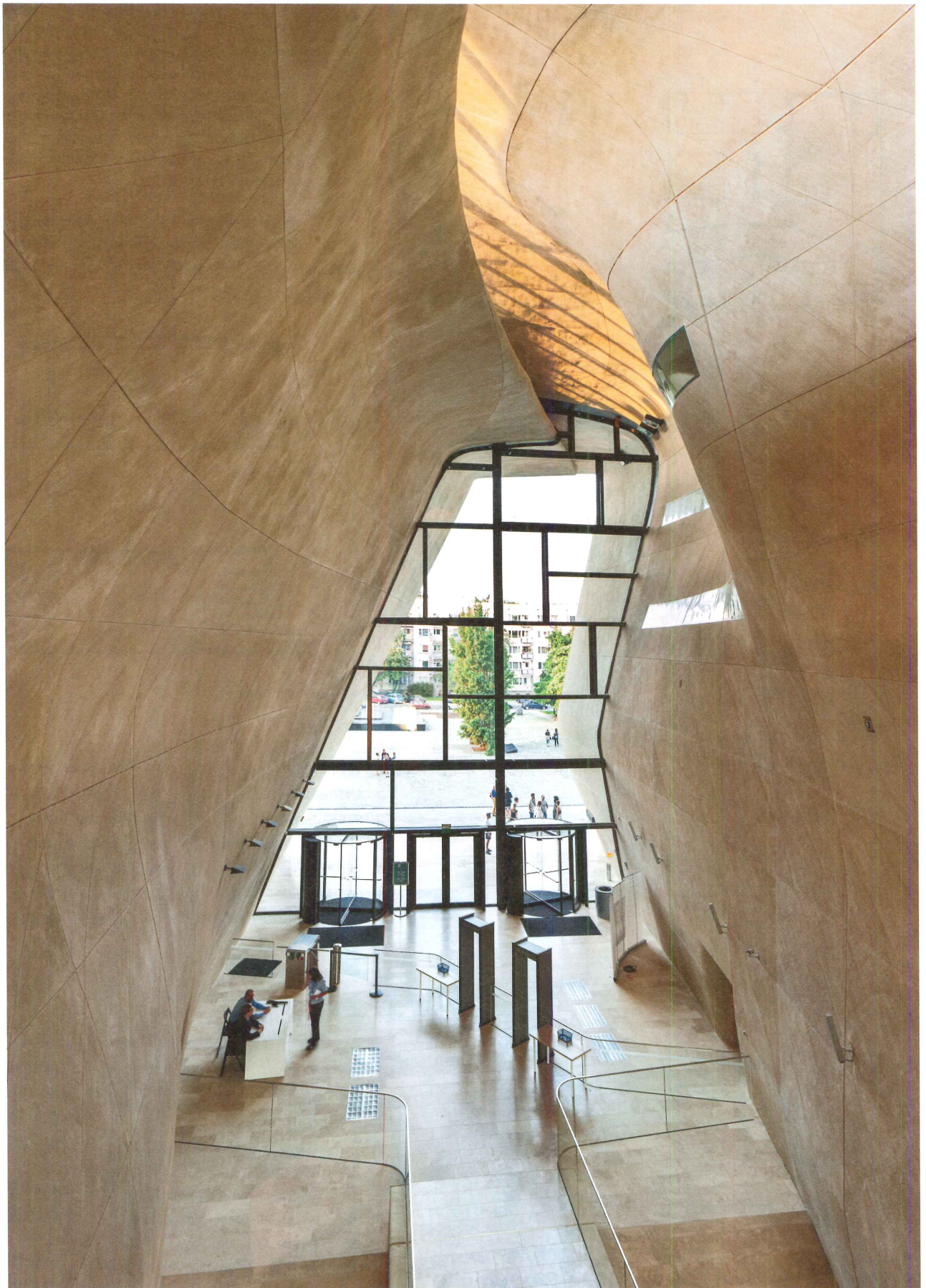
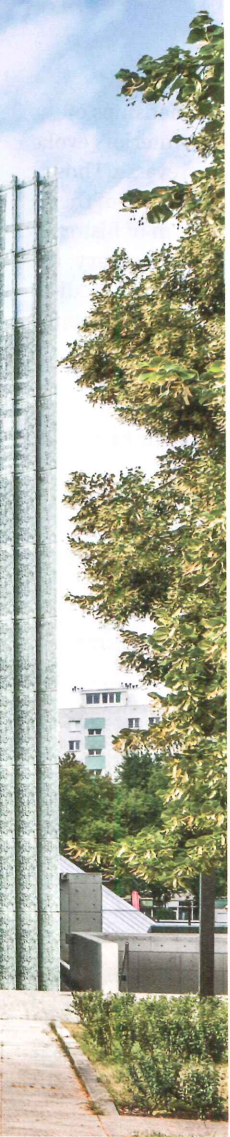


exhibitions, and discussions, promoting it as an important cultural actor in Warsaw.

At 197,000 square feet and with six levels, the museum's scale against the square is aided by the placement of its permanent exhibition space below grade, in a "black box" now a common element for many museums. Above-grade floors contain galleries for changing exhibitions, an auditorium, conference facilities, cafeterias, a restaurant, library and bookstore, staff offices, and exhibition-preparation areas—all within a tightly controlled perimeter. Conventional tectonic systems informed construction and modulate the disposition of the program: a column grid laces through the largely concrete bearing wall. But the entrance atrium was a complex engineering and construction feat: the geometries of the space were eventually rendered into a textured concrete layer sprayed onto a complex double-curved steel backing frame. The museum's glazed western facade—a spider-system curtain wall—also strained structural and material limits. Throughout the building, the architects made an effort to use some locally crafted materials to give the museum a more personal touch.

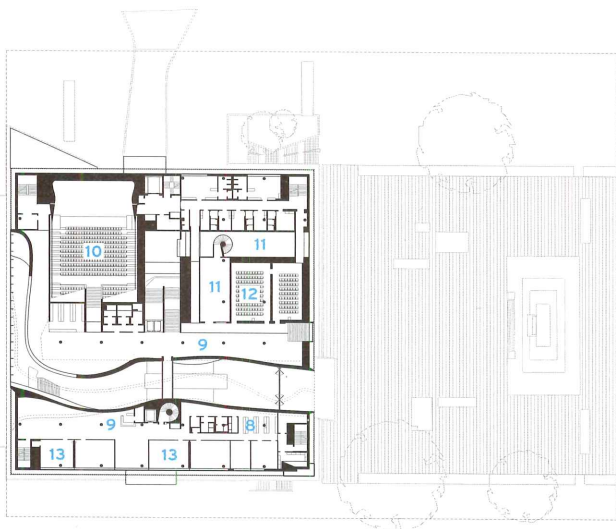
A project of such cultural significance poses an essential question: Can architecture communicate cultural meaning and historical understanding? As the art historian James E. Young has poignantly asked of museum designs devoted to Jewish culture, "Can the construction of a contemporary architecture remain entirely distinct from, even oblivious of, the history it shelters? Is its spatial existence ever really independent of its contents?"

The wisdom of the architect's approach to these questions is evident in the Warsaw museum, through methods more subtle and substantial than those employed in the Jewish or Holocaust history museums in Berlin or Washington,

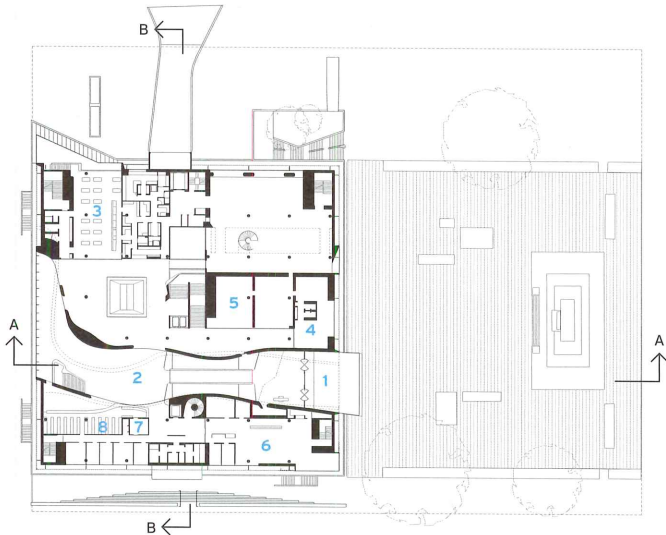


WORDS OF WISDOM

The exterior glass panels are silk-screened with the Latin and Hebrew letters for the word "Polin," Hebrew for "Poland" or "rest here" (opposite, top and bottom). The entrance atrium (right)—a textured concrete layer sprayed onto a complex double-curved steel backing frame—was developed with software specially designed by the architect for the project.



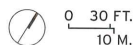
SECOND FLOOR



GROUND FLOOR

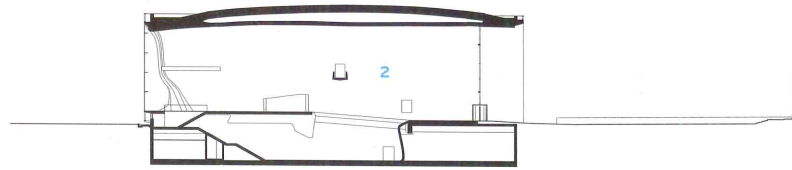


PERMANENT EXHIBITIONS

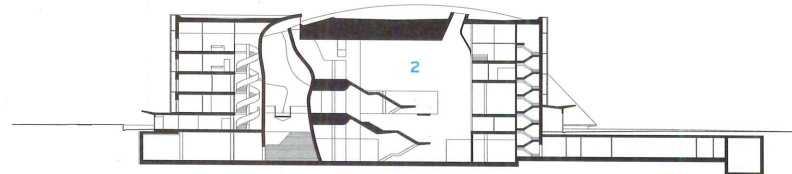


D.C., or San Francisco. The complementary relationships of orthogonal external geometries and expressive interiors evoke multiple images of a wave, a cave, a canyon, a crevasse. Those analogies refer to reconciliation—a temporary parting of the seas, a tectonic shift of cultures, a temporal chasm of history—but without simple one-to-one symbolism. To the contrary: if architecture can have a representational capacity in our culture, the designers articulate a distinctly quiet but still deeply felt language. ■

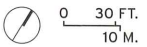
Peter MacKeith is an associate professor of architecture at Washington University in St. Louis. He curated the Nordic Pavilion at the 13th Biennale of Architecture in Venice (2012).



SECTION A - A



SECTION B - B



- | | |
|---------------------------|--------------------------|
| 1 VESTIBULE | 8 CLOAKROOM |
| 2 ENTRANCE HALL | 9 LOBBY |
| 3 RESTAURANT | 10 AUDITORIUM |
| 4 CHILDREN'S PLAYROOM | 11 TEMPORARY EXHIBITIONS |
| 5 SHOP | 12 PROJECTION ROOMS |
| 6 LIBRARY | 13 CLASSROOMS |
| 7 TICKETS AND INFORMATION | 14 PERMANENT EXHIBITIONS |

credits

ARCHITECT: Lahdelma & Mahlamäki Architects – Rainer Mahlamäki, Ilmari Lahdelma, Riitta-Liisa Id, Maritta Kukkonen, Jukka Savolainen, Miguel Freitas Silva

LOCAL ARCHITECT: Kurylowicz & Associates

CONSULTANTS: Akukon (acoustics); Mirja Sillanpää (built-in furniture)

ENGINEERS: Arbo Projekt (structural); Pol-Con Consulting (HVAC); Elektroprojekt (electrical)

GENERAL CONTRACTOR: Polimex

CLIENT: City of Warsaw

SIZE: 197,000 square feet

COST: \$48 million

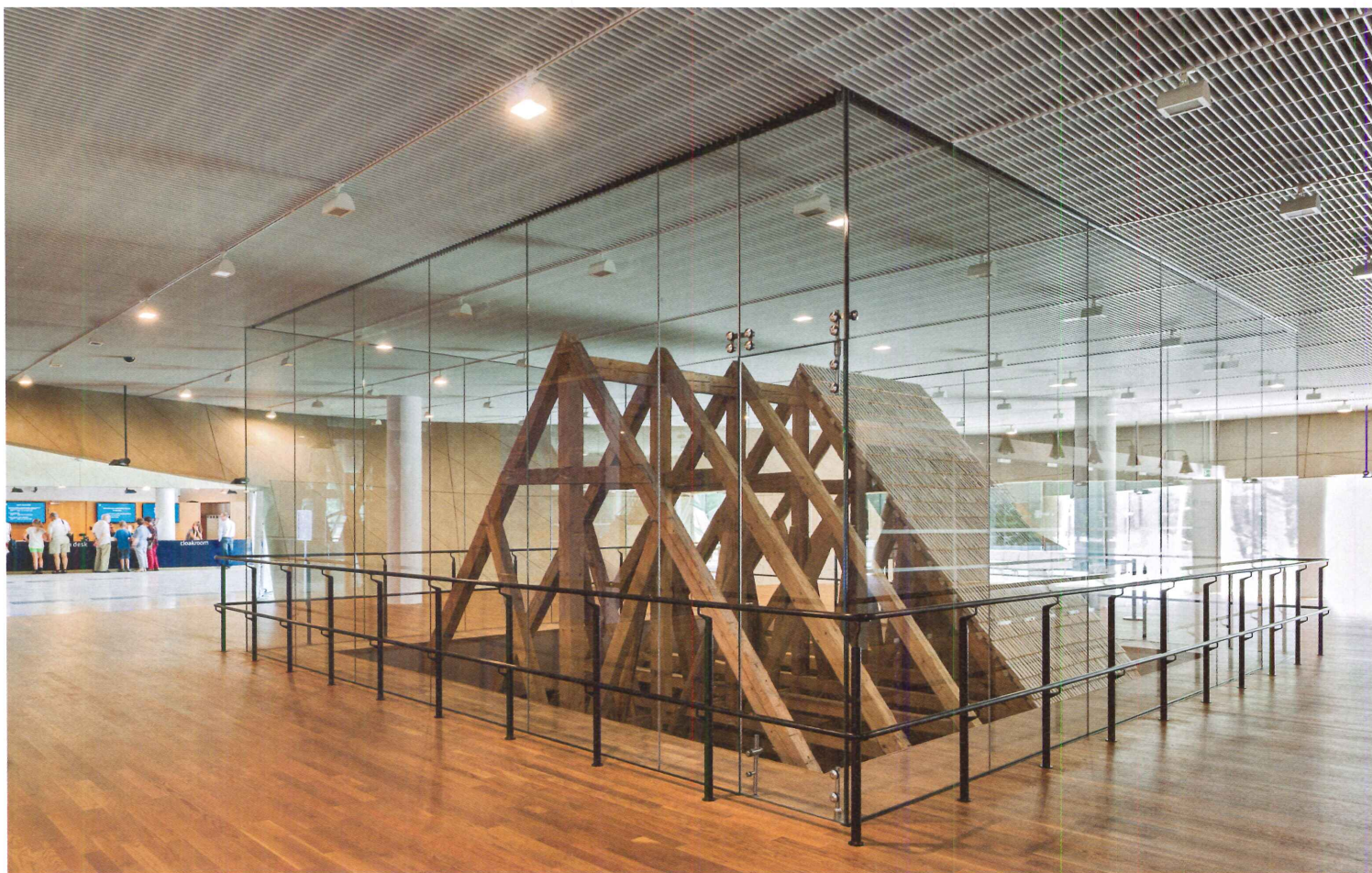
COMPLETION DATE: May 2013

SOURCES

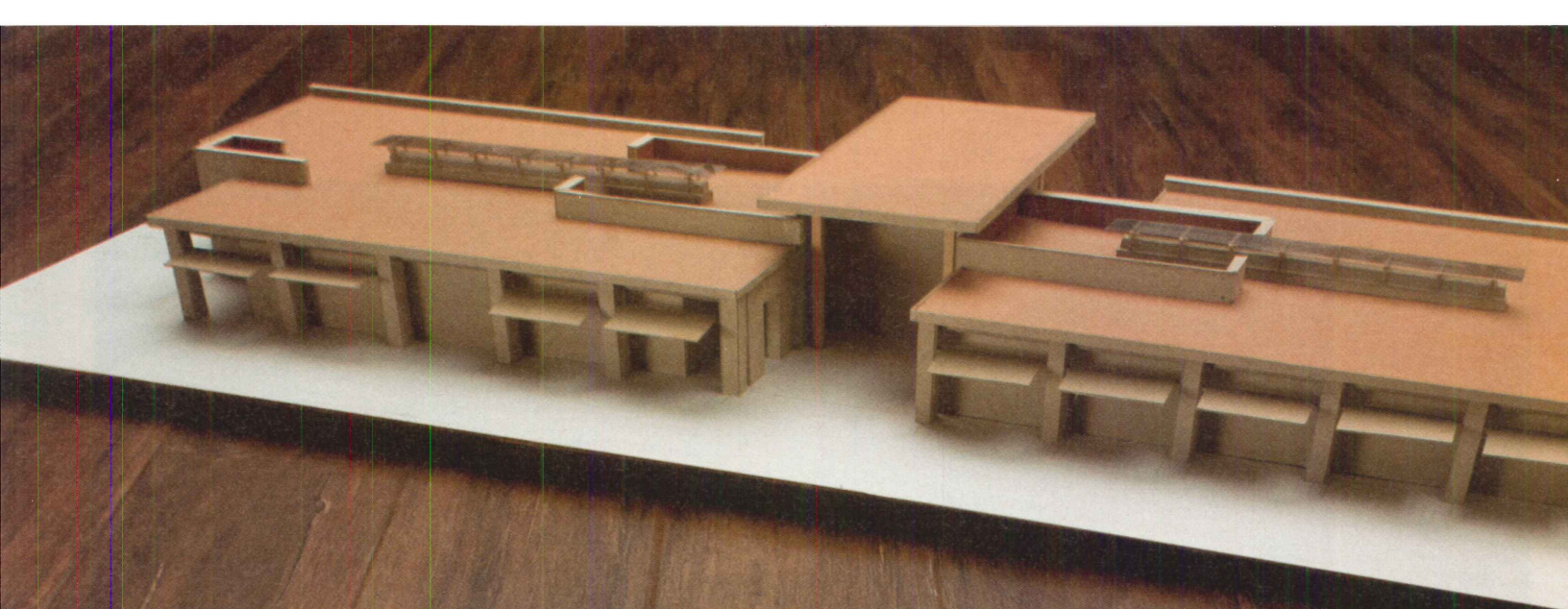
SPRAYED CONCRETE WALLS: Torkret

COPPER CLADDING: Aurubis

CURTAIN WALL: Metalplast-Stolarka



REBUILDING HISTORY
The presence of the permanent exhibitions on the museum's lower level is signaled by a replica of the roof of Gwozdziec Synagogue, built in the 17th century and destroyed by the Nazis in World War II (top). A glowing spiral stair, made of poured-in-place concrete, connects the permanent-exhibition level, temporary exhibitions (left), and staff offices and conference areas.



EARTHWERKS® GIVES YOUR LEFT BRAIN AND RIGHT BRAIN EXACTLY WHAT THEY ARE LOOKING FOR.

While your right brain is demanding the rich colors and textures of hardwood flooring or natural stone, your left brain is screaming out for a budget-conscious value. With EarthWerks® Luxury Vinyl Tile and Plank flooring there is a meeting of the minds. Get it all: great looks, value and durability in one Earth friendly, recyclable package that's easy to install and maintain.

When you specify EarthWerks® you're really using your head.


earthwerks®
FLOORING INSPIRED BY NATURE



For information regarding our extensive line of sustainable vinyl flooring, please call 800-275-7943, or visit us online at www.earthwerks.com

CIRCLE 46



DESIGN VANGUARD 2013

GO TO ARCHRECORD.COM
FOR EXPANDED COVERAGE

HAILING FROM Europe, North America, and Asia, this year's roster of emerging firms represent diverse backgrounds and attitudes toward design and the profession. But a few threads run through much of their work, even as the expressions vary greatly: complex layering, nature, engagement. Just a few years ago, "complexity" often meant convoluted forms generated by fancy new software. Today, it's less obvious and emerges from a search for multiple meanings. It also flows from an interest in the rules of nature, which support a rich growth of ideas. Underlying most of the projects here is a sense of engagement—with the places and people served by these architects. This year's Vanguard coverage spans print and digital media, so go to archrecord.com for more projects and features.

FEATURED FIRMS

HÉCTOR FERNÁNDEZ ELORZA ARCHITECTS

WILLIAM O'BRIEN, JR.

RURAL URBAN FRAMEWORK

AKIHISA HIRATA ARCHITECTURE OFFICE

MARC FORNES/THEVERYMANY

JOHO ARCHITECTURE

GRUPO ARANEA

OYLER WU COLLABORATIVE

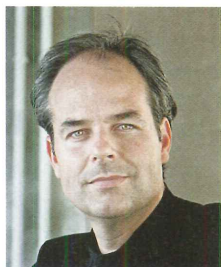
S-AR

PARA-PROJECT



WATERCOLOR OF SALINE JONICHE WETLANDS
RESTORATION, ITALY, GRUPO ARANEA

Héctor Fernández Elorza Architects **Madrid**



Rooted in Spain but influenced by Sweden, a Madrid-based architect combines the rugged and the refined.

FOUNDED: 2003

DESIGN STAFF: 3

PRINCIPALS: Héctor Fernández Elorza

EDUCATION: KTH Stockholm, Ph.D., 2000; Escuela Técnica Superior de Arquitectura de Madrid, M.Arch., 1998

WORK HISTORY: Aparicio Architects, 2000

KEY COMPLETED PROJECTS: University of Alcalá Faculty of Cellular and Genetic Biology, Madrid, 2012; Venecia Park, 2011; Santo Sepulcro's Chapel, 2010; Twin Squares, 2010; UAH Chemical Laboratory Building, 2009; Valdefierro's Park, 2009

KEY CURRENT PROJECTS: San Esteban's Cultural House

WWW.HFELORZA.COM

USING RAW primary materials such as concrete and galvanized steel, simple forms, and an adroit manipulation of scale, the Madrid-based architect Héctor Fernández Elorza gives even small projects a monumental authority. Two horizontal glass slashes across the facade of his Faculty of Cellular and Genetic Biology at the University of Alcalá, for example, transform the rows of diminutive offices and seminar rooms behind them into a mysterious, iconic mask, while deeply projecting concrete planes shade the interior spaces from the western sun. At a larger scale, in the Valdefierro Park outside his native Zaragoza, long concrete retaining walls emerge from the hillside like the ruins of a lost city.

After graduating from the Escuela Técnica Superior de Arquitectura de Madrid, Elorza spent two years in Stockholm studying the work of Gunnar Asplund and his disciple Sigurd Lewerentz, and he credits particularly the latter for showing him how the tactile quality of materials can become the protagonist of a design. But he translates this lesson from the Swedish context of fine craftsmanship in wood and masonry to the more brutish realities of low-budget public construction in Spain. Valdefierro is a case in point, where he saved money by reusing the tons of demolition rubble that filled the site as aggregate for its concrete walls and then raked their surfaces with a trench-cutting machine to create a coarse, irregular finish that vibrates under the strong local light.

That strategy exemplifies Elorza's drive to find the "opportunity" in each project within what generally presents itself as an obstacle. In the university building, that opportunity was the direct western exposure of its facade. And when restoring a chapel for a cultural center in the small town of Jarandilla de la Vera, he reused the wood substrate of the building's ruined roof as a richly textured formwork for the new concrete walls, floor, and ceiling inside the space.

With its formal austerity and muscular use of materials, his work has much in common with that of several past Design Vanguard winners from Madrid, including Iñiqui Carnicero (December 2011, page 60), José María Sánchez García (December 2009, page 94) and Antón García-Abril (December 2004, page 164). All four were strongly influenced by the teachings of Alberto Campo Baeza and, in different ways, have added sculptural weight to the elegantly severe and minimalist forms that Campo Baeza is known for. In the case of Elorza, his work reduces formal play in and of itself to a minimum. He dismisses what he terms "geometry" as merely a "tool" for the architect. "The idea is always something else," he maintains, "and geometry allows you to build it." Despite the obvious differences, his connection to Scandinavia also distinguishes him from his Spanish contemporaries, inspiring perhaps that streak of romantic theatricality that pushes his work toward the sublime. *David Cohn*



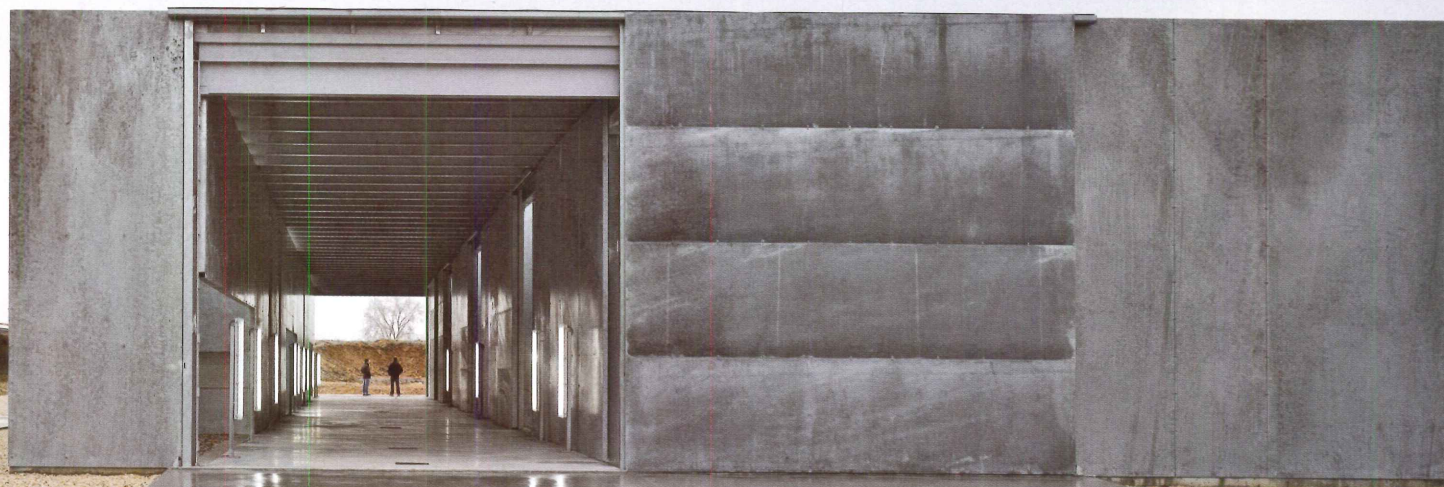
Architectural Documentation Center and Lecture Hall

This intervention occupies the basement of a Neoclassical loggia in Madrid. Collaborating with Jesús Aparicio, Elorza removed a portion of a thick floor slab to create a double-height auditorium lined with rough concrete walls that reinforce the structure's foundations and hide mechanical services and uplighting.



OPPOSITE, BOTTOM; MONTSE ZAMORANO (OPPOSITE, TOP LEFT)





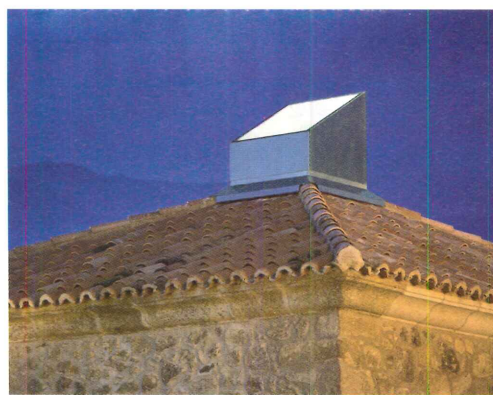
Chemical Laboratory, University of Alcalá

At this windowless facility in Madrid where scientists handle dangerous substances, narrow patios separate four labs, while a vehicular service corridor runs the length of the building. Elorza enclosed the structure in 16-foot-high galvanized steel panels to keep costs down, but also to create visual interaction between the material's imperfect surface and the changing daylight reflected on it.



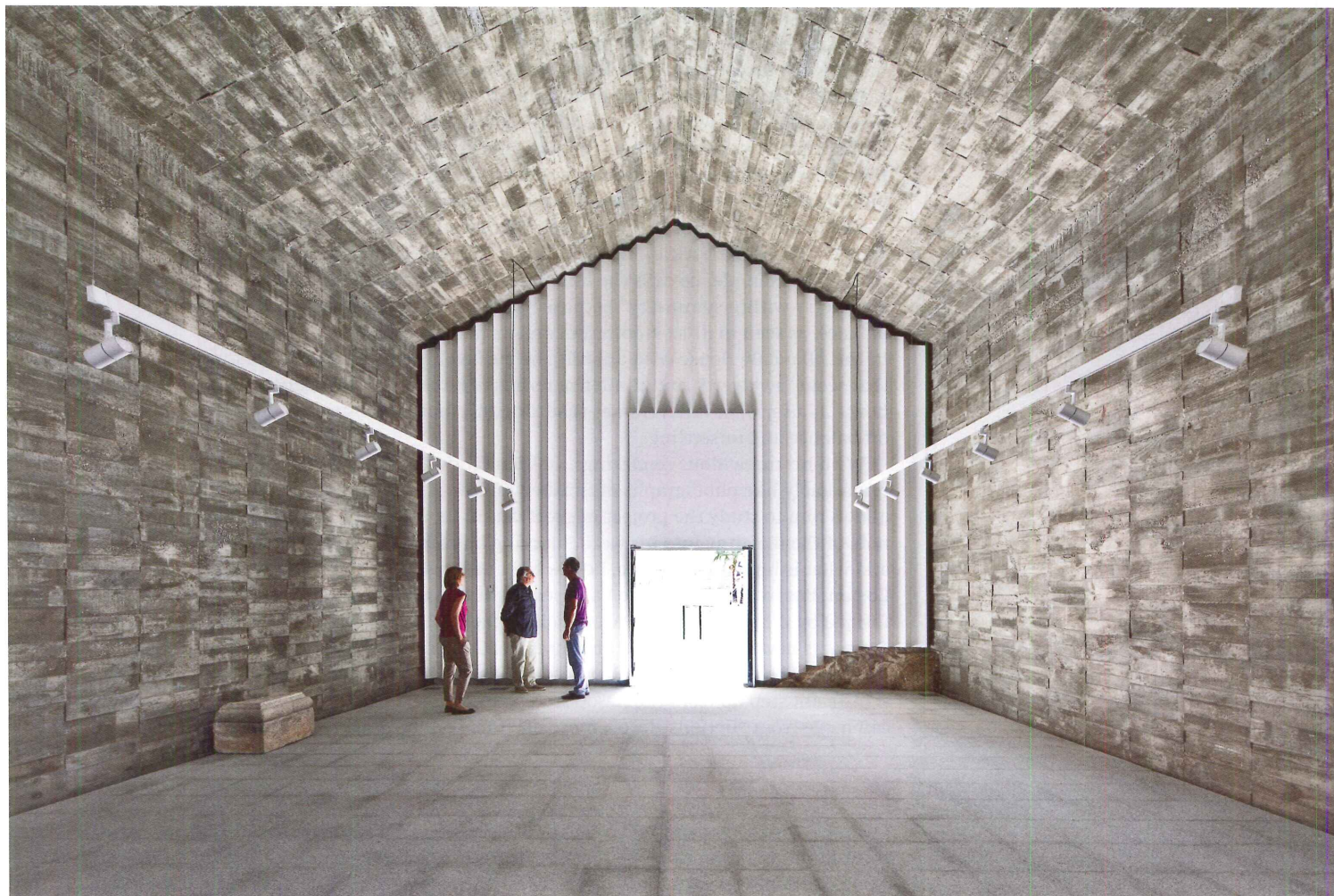
School of Cellular and Genetic Biology, University of Alcalá

To give this addition to an existing 1940s building in Madrid its own identity, Elorza separated the two structures with a long patio and raised the new one on four piers. The patio is lined on one side with corridors, enclosed in translucent polycarbonate sheets, that serve as bridges to access rooms in the new section. Deep concrete planes protect the new facade from the western sun, as does an L-shaped flap, which, like a cupped hand, shields the floor-to-ceiling windows of a large meeting room.



Santo Sepulcro Cultural Center

Elorza converted this deconsecrated chapel in Jarandilla de la Vera into a center for cultural activities. He lined its interior with a tube of structural concrete—floor, walls, and pitched ceiling—to reinforce the exterior masonry and to replace the ruined roof structure. By using the discarded wood substrate of the old roof as formwork for the new concrete, he gave the interior surfaces a rich and varied texture. The gable end of the space is finished with a wood screen, cut in a sawtooth pattern to absorb sound.



William O'Brien, Jr.

Cambridge, Massachusetts



A teacher and practitioner challenges accepted notions of balance, reality, and narration as he establishes his small firm.

FOUNDED: 2009

DESIGN STAFF: 4

PRINCIPAL: William O'Brien, Jr.

EDUCATION: Harvard GSD, M.Arch., 2005; Hobart College, B.A., 2000

WORK HISTORY: Preston Scott Cohen, 2004; Office dA, 2003

KEY COMPLETED PROJECTS: Mouldings, A Store for Aesop, Boston, 2012

KEY CURRENT PROJECTS: Cliff Haven house, Ithaca, 2014; Screen Play, Van Alen Institute headquarters, 2014

WWW.WOJR.ORG

CEREBRAL AND fluent in the language of ideas, William O'Brien, Jr. has moved skillfully within academia and the art scene while slowly establishing a practice that will allow him to build too. Teaching gigs at Berkeley, Ohio State, the University of Texas, and now MIT; essays in *Log* and *ACADIA*; fellowships at the MacDowell Colony and the American Academy in Rome; and exhibitions at the Zoellner Art Gallery in Pennsylvania and Pinkcomma Gallery in Boston have positioned him as someone to watch.

A recent commission to design a small house in Ithaca, New York, took a somber turn when the client's brother died and the client asked that the project somehow honor the young man's life. O'Brien had been thinking about the work of John Hejduk, intrigued by the way he was able to use symbolism and memory to create an enigmatic quality in his drawings and built work. Still in the early stages of the project—which he calls Cliff Haven—O'Brien hopes to apply his ideas about Hejduk to the design of the house and an accompanying contemplative space.

During his fellowship in Rome (2012–13), O'Brien explored notions of narrative in architecture and began work on a series of “architectural fictions” that will be included in an exhibition at Pinkcomma. One of the pieces in the show will be a “remaking” of Palladio's Villa Foscari (also called La Malcontenta) that interprets the 16th-century building's brick vaults for the 21st century. Another piece stems from a Roman catacomb that O'Brien visited, and will evoke the sense of a modern labyrinth.

Before going to architecture school, O'Brien studied music theory. “Music can be very mathematical,” he says, “and it has affected the way I think about form.” For example, he calls the unbuilt Hendee-Borg House “a study in symmetry within symmetry” because it offers riffs on the rules of geometric balance, as seen in its sawtooth roof and its paired studios for two artists. In the Allandale House (also unbuilt), he pushed himself to investigate forms that seem “awkward” and challenge norms of beauty. So he designed the house as a series of tall A-frames that tilt oddly and create spaces that are off-balance and unsettling.

With his meticulous renderings, O'Brien fabricates images that look remarkably like photographs of finished buildings. Creating these drawings allows him to study the project in great detail, he says. But it also injects a note of the uncanny into his work, blurring boundaries between what is real and what is imagined. To date, he has built only a small store for Aesop in Boston. But in September, the Van Alen Institute picked Collective-LOK—formed by O'Brien, Jon Lott/PARA-Project (page 98), and Michael Kubo—to design its new workspace and public venue. Construction should start in March and be done in September 2014. Though just 2,500 square feet, it's a significant step up from the Aesop store and will let O'Brien show how he can move from “fictions” into a more habitable realm. *Clifford A. Pearson*

Allandale House

Designed for an idiosyncratic collector of such things as books, wine, and stuffed birds, this unbuilt vacation house in the mountains of Colorado unfolds as a trio of A-frames whose elongated proportions and tilting profiles challenge norms of balance and composition.



Hendee-Borg House

O'Brien calls this house for two artists, in Sonoma, California, "a study in symmetry within symmetry" due to the geometric explorations he undertook in its design. On both the exterior and interior, the saw-tooth roof establishes a repetitive rhythm for a pair of studios that sit in mirrored fashion on either side of a set of stairs. Within each studio and the domestic areas of the house, O'Brien created "local symmetries" that play off the larger ones. As in his other projects, he produced strikingly realistic renderings of this unbuilt house as a way of better understanding and explaining it. By making us wonder if a project has been built or not, he raises questions of what's "real" in a digital age.



Rural Urban Framework

Hong Kong

A nonprofit firm tackles the needs of China's forgotten countryside, designing projects that help communities come together.



FOUNDED: 2006

DESIGN STAFF: 4

PRINCIPALS: John Lin, Joshua Bolchover

EDUCATION: *Lin:* Cooper Union, B.Arch., 2002. *Bolchover:* Bartlett School of Architecture, UCL, Dip.Arch., 2000; Cambridge University, M.A. (Cantab), 1996.

WORK HISTORY: *Lin:* Diller + Scofidio, 2000-01. *Bolchover:* Chora/Raoul Bunschoten, 2003-07; Newbetter (own firm), 2002-07; Diller + Scofidio, 2001-02.

KEY COMPLETED PROJECTS: Mulan Primary School, Guangdong, 2012; Yongxin Secondary School Prototype, Jiangxi, 2012; Lingzidi Bridge, Shaanxi, 2012

KEY CURRENT PROJECTS: Angdong Health Center, Hunan, 2014; Mulan Ecological Landscape, Guangdong, 2014

WWW.RUFWORK.ORG

Lingzidi Bridge

In northern Shaanxi province, this bridge forms a concrete loop that crosses a small river and provides access to the water for fishing, washing, and recreation. By connecting residents to agricultural fields, it creates a new meeting point for trade and social activity.

OFTEN LOST among the headlines about China's astonishing development—not least those covering its government's latest proposal to urbanize an additional 400 million people over the next decade—has been a growing interest in the corresponding transformation of the Chinese countryside. At the forefront of architectural research and experimentation in this area is Rural Urban Framework (RUF), a studio headed by University of Hong Kong professors Joshua Bolchover and John Lin.

Since 2006, Bolchover and Lin, who originally hail from England and Taiwan, respectively, have been working with nonprofit organizations, private donors, and local governments on projects in villages throughout China. In Qinmo, in southern Guangdong province, they converted a disused school building into a community center, complete with a demonstration farm. In northern Shaanxi province, their Lingzidi bridge spans a small river to better connect local residents with agricultural fields, while accommodating washing, fishing, and small-truck access. "Nowadays, 50 percent of the world lives in cities," says Lin. "But we're interested in the other 50 percent—especially in China, one of the most intensively urban and intensively rural places in the world."

Indeed, RUF's work stems not from a desire to preserve or re-create some pastoral idyll but rather a hardnosed pragmatism that addresses the current-day realities on the ground: complex social structures and the legacy of collectivism under Communist rule; shifting government imperatives and the subsumption of villages by ever-expanding cities; migration and capital flows, and a resulting depopulating of the countryside that is paradoxically coinciding with its hyperdevelopment. "There's no comfortable transition between rural and urban in China," says Lin. "It's a collision between the two."

RUF, which works pro bono—cobbling together funding from grants and donations—tackles its projects at multiple levels. Building and programming often work hand in hand, as with the demonstration farm for higher-value organic produce and livestock that they brought to Qinmo, or the outdoor, bleacher-style public gathering spaces integrated into their Mulan primary school in Guangdong. The studio makes a point of employing the materials at hand—recycling bricks for a school in Jiangxi province, for example, or using readily available concrete blocks for the renovation of a historic bridge—while also working at a range of scales, from acupuncture-like interventions to the design of entire villages. Proving their dexterity, their Yongxin Secondary School Prototype responded to changes in government policy by combining several existing schools

into a mammoth complex of perimeter buildings around a courtyard for over 5,000 students. It was later replicated in a more urban location nearby.

Given China's unprecedented changes, experimentation and testing new models are the rule of the day. But Bolchover and Lin are under no illusions that architecture can (or should try to) offer a definitive panacea. "We're just trying to introduce a challenge [in designs] that can change or be adapted over time," Lin says. "What we can do is limited," Bolchover adds. While they can't solve the problems of China's countryside, they can help make some people's lives a little better. *Aric Chen*



Taiping Bridge

In reconstructing and resurfacing this 300-year-old bridge in Guizho, RUF sought to revitalize the historic structure using the means and techniques available. Precast concrete was added to strengthen and rebuild the bridge's arches, as well as for new paving planters, and seating.



Akihisa Hirata Architecture Office Tokyo



An imaginative architect is inspired by nature to link people and places.

FOUNDED: 2005

DESIGN STAFF: 10

PRINCIPAL: Akihisa Hirata

EDUCATION: Kyoto University, B.A., 1994; Kyoto University, M.Arch., 1997

WORK HISTORY: Toyo Ito & Associates, Architects, 1997-2005

KEY COMPLETED PROJECTS: Photosynthesis, Milan, 2012; Coil, Tokyo, 2011; Bloomberg Pavilion, Tokyo, 2011; Foam Form, Kaohsiung, Taiwan, 2011; Alp, Tokyo, 2010; Architecture Farm, Aodi, Taiwan, 2008; CSH, 2006; Sarugaku, Tokyo, 2006; Masuya, Niigata, Japan, 2005

KEY CURRENT PROJECTS: Kamakishi Project, Iwate, Japan, 2014; Long House, Los Vilos, Chile, 2014

WWW.HAO.NU

GROWING UP in a planned community on the edge of Osaka, Japan, Akihisa Hirata dreamed of becoming either a biologist or an architect. By designing buildings inspired by smoke, bubbles, and other natural phenomena, you could say that he found a way to do both. What drives Hirata, however, is not purely an academic pursuit. Nor is it aesthetics. Instead, Hirata is searching for a conceptual grounding that engages the public. "Japanese architecture has become very extreme and lost its connection to society," explains Hirata. "The problem facing my generation is reconstructing that relationship."

Having received his master's in architecture from Kyoto University in 1995, Hirata came of age architecturally when Japan was still reeling from the Great Hanshin earthquake in Kobe (just 19 miles from Osaka) and the sarin gas attack in Tokyo, when the morale countrywide was low. Against this gloomy backdrop, Toyo Ito introduced his competition-winning scheme for the Sendai Mediatheque, an entirely new type of public space defined by webbed steel columns that tilt like seaweed underwater. "I was shocked by the model photo," exclaims Hirata. "It showed something very brilliant." His spirits lifted by Mediatheque's inspirational scheme, Hirata headed to Tokyo, where he hoped to join Ito's staff. Though Hirata only intended to stay for a short stint, he remained for eight years before leaving to launch his own practice.

Predictably, Hirata's first independent project was a new home for his parents. "They didn't ask me to design them a house, but I did it anyway," chuckles the architect. They didn't ask him to realize the house either, but the project did land him Japan's prestigious SD Review prize. Still in need of wage-earning work, Hirata entered an Internet-based competition for a showroom selling farm equipment. It seemed unlikely that a dealer in tractors and snow blowers out in the sticks would go for Hirata's unconventional design, yet the young designer got the commission and with that his practice was off and running.

As his body of work grows, Hirata's projects have become increasingly organic in form. As

opposed to making architecture purely by enclosing space, he proposes a model inspired by the intertwining of different elements in nature, which he calls "tangling." To illustrate his point, Hirata describes how underwater rocks support seaweed where fish roe mature. "We are making a kind of infrastructure for people based on the ordered layering in the living world," he explains. His largest application of "tangling" is a new housing complex in the tsunami-ravaged town of Kamaiishi. Taking its cues from the hilly topography, this development begins with a three-dimensional scheme that supports a circulatory system feeding a sequence of gathering spaces embraced by individual dwelling units. By layering this and other projects with different uses, Hirata aims for a "tangling" between person and place, with the hope of making architecture that people can once again relate to. *Naomi R. Pollock, AIA*

Sarugaku

Completed in 2006, Sarugaku is a shopping complex located in Tokyo's fashionable Daikanyama neighborhood. Influenced by the area's charming streets and small boutiques, Hirata created a meandering pedestrian walk of his own and lined it with two-story buildings (plus basements) for commercial tenants. Full-height windows allow the various vendors to flaunt their wares and stairs enable customers to browse. Potted trees and ground cover soften the angular white architecture with a touch of greenery.





Masuya

An unlikely pairing of avant-garde architecture and agricultural machinery, Masuya is a showroom for tractors and snow blowers located in rural Niigata Prefecture. Completed in 2005, the concrete building was awarded to Hirata via an online design competition. Hirata's winning idea was to divide the ground floor into a 16-foot grid. He then divided the square bays diagonally with triangular panels that simultaneously separate and connect adjacent display and sales areas. The smaller second floor holds an employee break room.

Marc Fornes/TheVeryMany Brooklyn, New York



A small studio deploys computational design and digital fabrication to make inventive structures that define space.

FOUNDED: 2005

DESIGN STAFF: 6

PRINCIPAL: Marc Fornes

EDUCATION: Architectural Association School of Architecture, M.Arch., 2004; École Nationale Supérieure d'Architecture de Strasbourg, Architecte DPLG, 2001

WORK HISTORY: Zaha Hadid Architects, 2004-06; Skidmore, Owings & Merrill, 2006-08

KEY COMPLETED PROJECTS: Under Tension, Rennes, France, 2013; Les Danseurs du Tailor, Moss Bureau, New York, 2013; Chromatae, Denver Botanic Gardens, 2013

KEY CURRENT PROJECTS: MaHouse, Strasbourg, France, 2014; Amphitheater, Columbia, Maryland, 2015

WWW.THEVERYMANY.COM



AT FIRST glance, the work of Marc Fornes, founder of Brooklyn-based Marc Fornes/TheVeryMany, seems more like sculpture than architecture. His geometrically complex pieces, developed through computational design and fabrication, include museum installations, public art, and pop-up environments. They appear to take their cues from natural forms including those of crustaceans, plants, and wild animals. But Fornes, who is a native of France but moved to New York in 2006 to work for Skidmore, Owings and Merrill, insists that his approach is that of an architect rather than a sculptor. TheVeryMany's formal language, he says, is the product of exploiting curvature to make efficient structures. "With each project, we are trying to produce space and structure," he explains.

Fornes's objects are usually comprised of thousands of flat elements—hence the name TheVeryMany. These are cut with a computer numerical control (CNC) machine from sheets of aluminum and are held together with rivets to form self-supporting skins. And, although they do not provide shelter in the conventional sense, the finished works define space and are often large enough to occupy. One example is Double Agent White, which Fornes designed and built in 2012 while an artist-in-residence at the Atelier Calder in Saché, France. Made of weblike aluminum surfaces describing nine intersecting spheres, it is now at the FRAC Centre in Orléans (RECORD, October 2013, page 80), where visitors can walk under the roughly 11-foot-tall canopy, 20 feet in diameter, and circulate around its supporting "trunks."

Although Fornes has not yet completed any buildings, his projects nevertheless involve a host of practical, real-world concerns. For instance, TheVeryMany served as executive architect for a pop-up store at Selfridges in London that was the product of a collaboration between artist Yayoi Kusama and Louis Vuitton. Here, Fornes had to devise components that would be small and light enough to easily maneuver inside the department store, but also large enough to minimize the need for on-site assembly. The resulting environment, which features elements reminiscent of pumpkins or sea urchins perforated by Kusama's signature dots, represents a technical innovation, says Fornes. It is the first self-supported carbon-fiber shell used in a work of architecture.

Fornes and his team of five employees—all of whom are trained as architects—perform almost every stage of the work themselves. They take each project from conceptual design through development of fabrication files, and they ultimately assemble the pieces on-site. Only one step—the cutting and milling—is performed by others. This process, says Fornes, gives him tight control over the finished product.

TheVeryMany has begun to win more traditional types of architectural commissions: the firm was recently selected for an open-air theater in Columbia, Maryland, and has a house under construction in Fornes's hometown of Strasbourg. Fornes hopes that as his projects grow in size and complexity, there will still be opportunities to build smaller-scale pieces. These are the kinds of projects, he says, that allow him to keep testing new ideas in design and fabrication. *Joann Gonchar, AIA*

Pop-Up Store

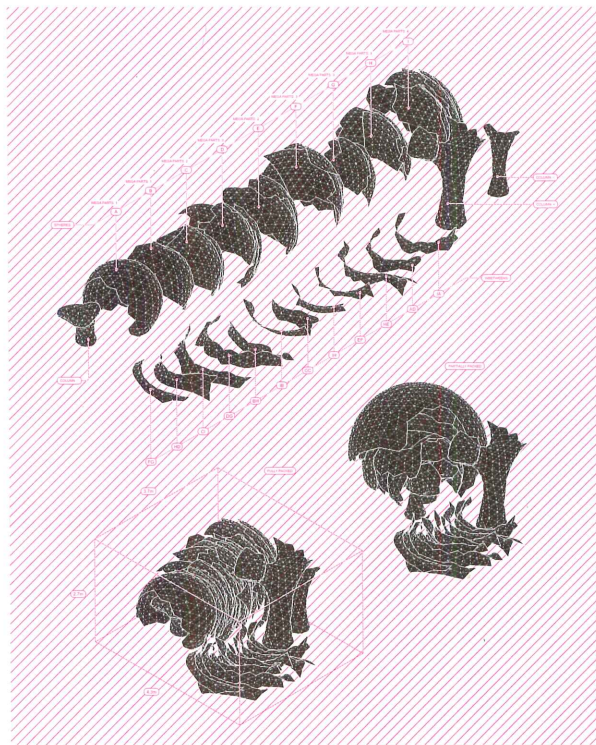
Fornes helped Japanese artist Yayoi Kusama and Louis Vuitton create a pop-up store that was installed at Selfridges in London during the late summer and fall of 2012. Doubly curved V-shaped "slices" or segments of carbon fiber comprised the installation's pumpkinlike shapes. Kusama's signature polka dots, which were water-jet cut into the individual elements, made the pieces lighter and easier to handle.



THE VERY MANY

Double Agent White

The pavilion that Fornes designed and built while an artist-in-residence at the Atelier Calder in Saché, France (above), can be taken apart for storage. Although it is approximately 11 feet tall and 20 feet in diameter, the work can be broken up into sub-assemblies and packed in a 14-by-12-by-9-foot crate (right). Fornes's fabrication files included information about how the project's thousands of elements would be positioned on the aluminum sheets they were cut from (far right).



5 DOUBLE AGENT WHITE
A-001
THE VERY MANY
A-001
© 2011 Jaume Plensa



JOHO Architecture

Seoul, South Korea



Returning to his native country after years in Europe, an architect finds ways of spanning borders and making traditional elements feel modern.

FOUNDED: 2009

DESIGN STAFF: 7

PRINCIPAL: Jeonghoon Lee

EDUCATION: Lavillette School of Architecture, M.A., 2007; School of Architecture of Nancy, M.A., 2004; SungKyunKwan University, B.A., 2000

WORK HISTORY: Zaha Hadid Architects, 2008-9; Agence Moatti et Rivière, 2007-8; Shigeru Ban Architects Europe Office, 2004-5

KEY COMPLETED PROJECTS: Curving House, Yongin, 2012; Egg 333, Seoul, 2012; Namhae Cheo-ma House, Namhae-gun, 2011; Herma Parking Building, Yongin, 2010

KEY CURRENT PROJECTS: Yin Yang House, Seongnam, 2013; Gangnam Nonhyeon Cultural Center, Seoul, 2014; Baemi Wedding Hall, Pyeongtaek, 2014; Dongtan Storage Building, Hwaseong, 2015

WWW.JOHOARCHITECTURE.COM

HOW DID a phone call to Paris launch an architecture firm in Seoul? “It was kind of destiny,” says JOHO Architecture principal Jeonghoon Lee. He had been studying and practicing architecture in Europe for seven years when a relative from his native Korea contacted him. The man was working on a project, but had fired the architect. He needed someone he could trust. Lee agreed to take on the job—the Herma Parking Building in Yongin, a city 25 miles outside of Seoul. He soon found that managing it from Paris was too difficult, so he moved to Seoul and set up JOHO Architecture in 2009. That first commission led to more, and now JOHO has five completed projects and seven designers on staff.

The name JOHO has two sources. It’s a nickname Lee used in France, since it was easier than Jeonghoon for his classmates to pronounce. And in Korean, “jo” means “constructing” and “ho,” “liking.” “Enjoy Construction” is a good fit for a firm that focuses on material explorations. Lee uses wood, brick, and metal in their raw forms. “I want to explore the essence of the material,” he says. But by employing common elements in uncommon ways, he produces unexpected results. For the Namhae Cheo-ma House, for example, he connected 500 pieces of 11.5-foot aluminum louvers—standard pieces made for fences—into a curving facade. For Egg 333 he took off-the-shelf wood louvers, split them in two, and fitted them over the existing brick facade of a residential building. These and JOHO’s other projects repeat materials in layers to create sculptural surfaces.

Lee’s design focus comes in part from his graduate degree in architectural materials from the School of Architecture of Nancy (EAN). He recalls the impact that class trips to glass factories and lumber mills had on him. Another influence was working for Shigeru Ban on the Centre Pompidou–Metz, known for its innovative glue-laminated timber roof and fiberglass facade. Lee shares Ban’s interest in inexpensive materials—a necessity, he says, for young architects working with small budgets.

In its contemporary designs, JOHO offers playful takes on traditional Korean motifs: the curved *cheoma* (eaves) of a tiled roof, the open *daecheong-maru* (front hall) of a traditional house, the *byeongpung* (folding screens) used as room dividers. Lee borrows these elements and abstracts them in his work. While it has been easy for him to take on Korean cultural references, it has been more difficult to adjust to the local way of building. “I didn’t know the Korean construction reality because I studied in France and practiced in European offices,” he says. He has had to learn a lot by working on-site, a task that has been difficult but rewarding. Enjoying construction, after all, is Lee’s destiny. *Clare Jacobson*



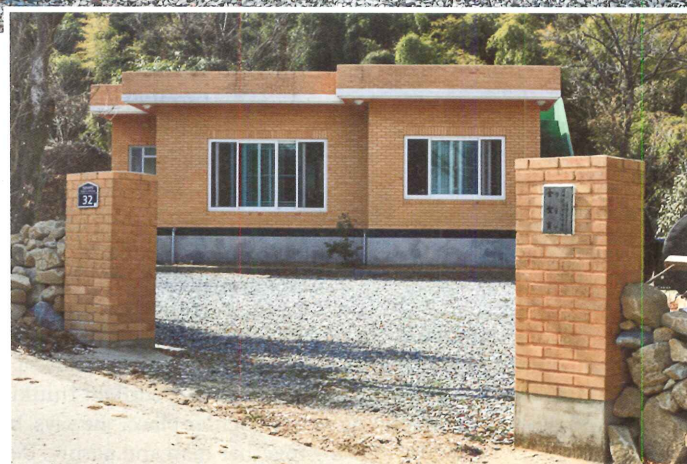
Herma Parking Building

Korean garages typically look like rows of ramps or try to disguise themselves as concrete commercial buildings. Both models, says Lee, are eyesores. Lee wrapped the Herma garage, in Yongin, in polycarbonate and stainless-steel panels and accented its facade with ventilation holes inspired by car grilles. The acute-angled building fills a difficult site to create a dynamic street-front presence, which has increased the value of its commercial spaces.



Namhae Cheo-ma House

The owner of a Seoul design company owned an ugly brick house in the mountains in Namhae county (right), where he liked to escape. He decided to make it more welcoming, so he hired JOHO to remake the building. Lee gave the residence a new aluminum facade, with curved lines that reference *cheo-ma*, which are the eaves of a traditional Korean tiled roof. A new entryway with a ramp, stairs, and garden bring depth to the facade and make it look bigger, a trick borrowed from Imhaejun Palace in Gyeongju.



Grupo Aranea

Alicante, Spain



A firm rooted in hand-drawing adapts natural forms to create a flowing architecture.

FOUNDED: 2003

DESIGN STAFF: 9

PRINCIPALS: Francisco Leiva Ivorra, Marta García Chico

EDUCATION: *Leiva:* Universidad Politécnica de Valencia (UPV), Architecture, 1998. *García Chico:* UPV, M. Landscape Architecture, 2006; UPV, Agricultural Engineering, 1999.

KEY COMPLETED PROJECTS: Secondary School in Rafal, Spain, 2009; La casa verde, Sax, Spain, 2006; Public library in San Vicente, Spain, 2005

KEY CURRENT PROJECTS: Urban Environmental Observatory, Alicante, Spain, 2014; Urban Rehabilitation in the Historic Center of Onda, Spain, 2014; Saline Joniche, Anthropic Park, Reggio Calabria, Italy, 2018

WWW.GRUPOARANEA.NET



Saline Joniche

To restore a coastal area ravaged by abandoned industrial projects, the architects focus on earth-moving to restore saline ponds and the torrential rain channels that feed them.

THE THEME of circling, flowing movement runs through every project by Grupo Aranea. Based in the coastal city of Alicante in southeastern Spain, the studio is led by architect Francisco Leiva Ivorra and his wife, landscape architect Marta García Chico, who draw inspiration from curving natural forms. Their first building, a library in San Vicente del Raspeig completed in 2004, is a continuous spiraling ramp. And both a seaside spa in Gijón and an Environmental Observatory in Alicante spin around themselves in open-ended loops. Their Lude House sits like a hard white seashell atop an existing building in the town of Cehegín, rippled inside and out by the curving, rising movement of its stair and double-height living area.

Even a completely orthogonal design, a public high school in the village of Rafal, is organized around circular movement: a pink-carpeted bleacher opposite the entrance, which doubles as a wide stair and meeting point, kicks off a sequence of corridors and outdoor spaces that circle back over the entry and around a playing field to connect classroom pavilions.

In the firm's landscape and environmental restoration projects, circles give way to flowing forms. At their River Park in Elche, which the architects call "The Braided Valley," crisscrossing paths take flight, swooping over a river on narrow concrete bridges, like a miniature highway interchange. And a proposal to restore the watercourses and ponds of Saline Joniche, an area on the Italian coast of Reggio Calabria dotted with derelict industrial facilities, brings the theme of fluid movement back to its origins in the water-formed landscape.

These flow patterns weave together many different strands of intent. "The spiral is a good way to move through a confined space and connect things," Leiva explains. "We are interested in the concept of the embrace, of embracing places," he continues. "In [the Gijón spa], that embrace tames the rough waters of the Bay of Biscay for bathing. The design emerges from the ground and rises up, in the form of a raised promenade, to return views towards the city." Circling movement also creates protected interior realms in the firm's work, as it does in the enclosed community of the high school or the cocoon of the Lude House.

Leiva has had little contact with the slightly older generation of Alicante architects such as Alfredo Payá or Javier García Solera. He cites instead the influence of Enric Miralles, a model for his free, dynamic forms and his engagement with the social dimension of space. But the most direct

source of the organic, sometimes convulsive designs of Grupo Aranea is found in Leiva's own drawings, which are inspired by landscape and nature. He admits to being a compulsive sketcher. "Drawing without thinking is a filter that allows me to relate to the world, and to a particular place," he says. In his hands, drawing and design become ways for weaving together man and nature. *David Cohn*

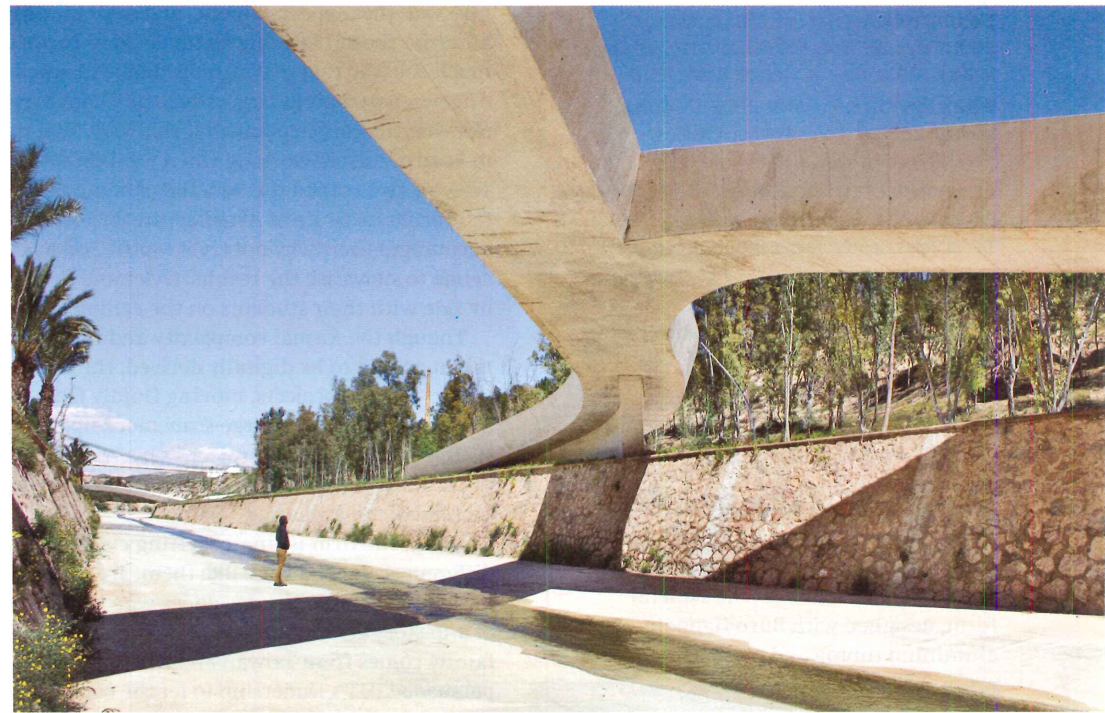
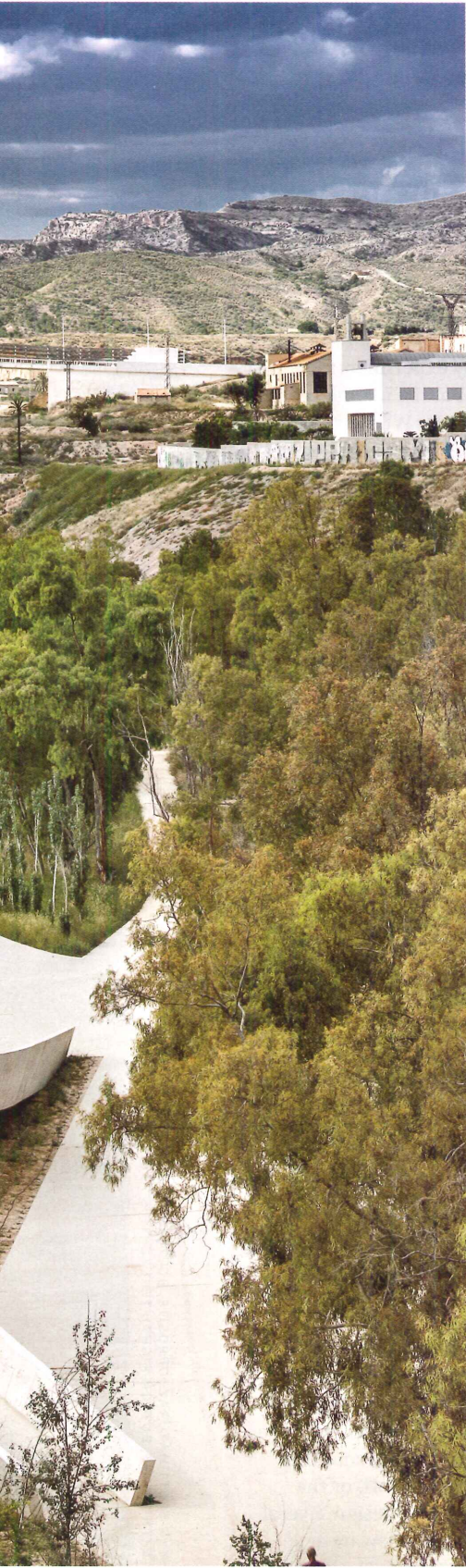


Casa Lude

The client added a one-bedroom penthouse to the modest building where his mother and sister live. The architects oriented windows at oblique angles to the streets for views and protection from direct sunlight. Spaces interconnect vertically through the mezzanine, which overlooks the double-height living area and opens to the double-level roof deck.







The Braided Valley

Crisscrossing paths and bridges open access to the steep slopes of the River Vinalopó, which cuts the town of Elche in half. The architects organized citizens' workshops to help choose routes and destinations, and planted local species and trees in the spaces between paths. Pedestrian bridges continue the paths' flowing movement. "They aren't perpendicular to the river, so that crossing them is simply part of the stroll," explains Levia.

Oyler Wu Collaborative

Los Angeles

After learning the ropes with a series of installations, a husband-and-wife team is building up to larger and more permanent projects.



FOUNDED: 2004

DESIGN STAFF: 4

PRINCIPALS: Jenny Wu, Dwayne Oyler

EDUCATION: *Wu:* Harvard GSD, M.Arch., 2001; Columbia, B.A., 1997. *Oyler:* Harvard GSD, M.Arch., 2001; Kansas State, B.Arch., 1996.

WORK HISTORY: *Wu:* ARO, 2002; Gluckman Mayner, 2003-4. *Oyler:* Lebbeus Woods, 1997-9; Toshiko Mori, 2001-4.

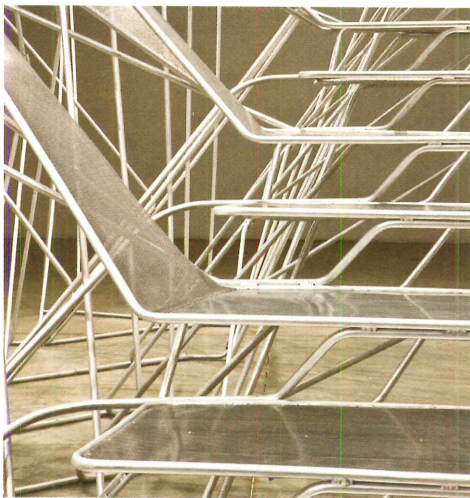
KEY COMPLETED PROJECTS: The Cube, Beijing Biennale, 2013; Stormcloud, Los Angeles, 2013; Taipei Sales Center, Taipei, 2013; Centerstage, Los Angeles, 2012; Screenplay, Los Angeles, 2012; Netscape, Los Angeles, 2011

KEY CURRENT PROJECTS: Meditation-space prototype, Los Angeles, 2014; Taipei Tower, 2015

WWW.OYLERWU.COM

Live Wire

Call it the unstaircase—a not-to-code structure that lets people ascend from the ground level of SCI-Arc’s gallery in L.A. to a catwalk above. The skeletal form, designed with Buro Happold, is aluminum tubing and mesh.



MANY ARCHITECTS make names for themselves by experimenting with building materials. But Dwayne Oyler and Jenny Wu, the married couple who ditched budding careers in New York to form Oyler Wu Collaborative in Los Angeles nearly 10 years ago, are the rare ones who’ve exploited the design potential of polypropylene rope—hundreds of thousands of feet of it. “We’re both a bit obsessed with lines, and using rope has let us explore this idea in our installations,” says Wu.

These experimental projects, which include a soaring canopy, a sculpture wall that appears kinetic, and most recently *The Cube*, a steel-and-rope affair for the 2013 Beijing Biennale, have become the firm’s calling card, much the way that cutting-edge houses launched the careers of Los Angeles-based predecessors such as Thom Mayne and Eric Owen Moss. Not that the couple planned it that way. “We started doing installations to keep ourselves working when we didn’t have clients,” says Oyler. They’ve also reaped the benefits of being on the faculty at Southern California Institute of Architecture (SCI-Arc), an institution that both encourages their why-not-try-it? spirit and has given them a regular venue to showcase the results. Oyler and Wu have built a project side by side with their students on the campus nearly every year since 2008.

Though the formal complexity and repeating motifs in their work might appear to be digitally derived, the couple uses software as just one tool to develop projects, moving fluidly from sketches to digital models to physical models to large-scale mock-ups and back again. “Often, it’s a sketch that kicks off a project,” says Wu; indeed, Oyler’s precise pen-and-ink studies will convince any skeptic that some young, tech-savvy architects can still draw.

Today, the firm is finally getting clients who are building at many different scales and who, like them, are young and willing to experiment. Case in point: JUT, the developer who hired them to design the exterior of a 16-story residential tower in Taipei. Wu, a Los Angeles native whose family comes from Taiwan and who’s unafraid to knock on doors, first persuaded JUT’s leadership to let the couple design an installation that the developer could build. That kickoff effort, an interactive work called *Anemone* that featured thousands of tentacle-like plastic rods, gave the company confidence that Oyler and Wu could apply their innovative thinking to a full-scale building.

Now that a temporary sales center for the tower has been built according to their design and the tower itself is about to start construction, the couple is eager to keep tackling the challenges of scaling up their work, both in Taipei and beyond. “At first, with the tower, we were applying ideas from our smaller, line-based projects directly, and they didn’t always work,” says Oyler. “Sometimes the scale was off, or the proportions, or the neighborhood fit, so we reworked the design several times. In the long run, we would welcome projects that allow us to go more deeply into solving problems of entire buildings from the ground up. If someone asked us to design an arts center in the middle of Los Angeles, that’d be our sweet spot.” Are you listening, City of Angels?
Deborah Snoonian Glenn

PHOTOGRAPHY: © SCOTT MAYORAL (OPPOSITE, BOTTOM); CLIFFORD HO (OPPOSITE, TOP); JOSHUA WHITE (THIS PAGE, BOTTOM RIGHT); TERI YU (THIS PAGE, TOP LEFT)

Centerstage

A year after finishing a pavilion called Netscape for SCI-Arc's graduation in 2011, Oyler and Wu were asked to design a second work that would play off the first and reimagine the ceremony's format. They changed the flow of the event so the audience would face the school instead of downtown L.A., and built a painted-steel structure that's part stage, part bleacher-like seating, and part cantilevered shade structure.

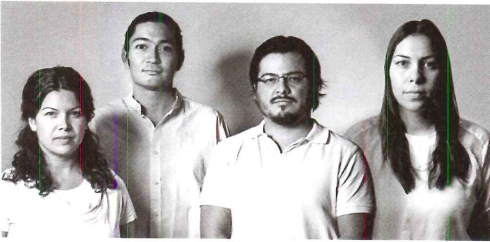
Screenplay

This 21-foot-long installation in Los Angeles (right), made of rope strung across steel framing, forms an optical illusion. Look at it straight on and you see a repeating, legible pattern. But move around it and you discover that the ropes aren't installed uniformly, which creates a dynamism that invites viewers to explore the piece from every vantage point.



S-AR

Monterrey, Mexico



FOUNDED: 2006

DESIGN STAFF: 4

PRINCIPALS: Ana Cecilia Garza, Carlos Flores, César Guerrero, María Sevilla

EDUCATION: *Garza:* Institute for Advanced Architecture of Catalonia, M.Arch., 2005; Monterrey Institute of Technology (ITESM), B.A., 2003. *Flores:* ITESM, B.A., 2004. *Guerrero:* ITESM, B.A., 2004. *Sevilla:* ITESM, B.A., 2008.

WORK HISTORY: *Garza:* Nuevo León State Urban Planning Agency, 2003–4. *Flores:* Undurraga Devés, 2003–6. *Guerrero:* Roldán + Beregué, 2003; Assadi + Pulido, 2003–5. *Sevilla:* Tadao Ando, 2007; Dominique Perrault, 2008.

KEY COMPLETED PROJECTS: Box House, Zuazua, 2013; S-AR Workshop, San Pedro Garza García, 2012; Ofimodul Showroom, Monterrey, 2009

KEY CURRENT PROJECTS: 2L House, San Pedro, 2014; Dhar House, Baja California, 2014; church and community center, Monterrey, 2018

WWW.S-AR.MX

Living off the fat of the land: four designers tap into the abundance of local materials and labor.



EXPLOITING THE bounty of local building products as well as a regional tradition of craft, Monterrey, Mexico-based S-AR is amassing a rugged, though subtly refined, body of work that reflects the city around them. The capital of the northeastern state of Nuevo León, Monterrey is also the country's industrial center, home to cement giant Cemex and a slew of other manufacturing concerns, steel and glass companies among them. In other words, it is a materials smorgasbord for designers like the four partners of S-AR, who met during college. "Our work is based in the resources of this city," says principal César Guerrero, "but we also want to do something more handmade, using traditional processes." With labor also in abundance here, the locavore "diet" becomes the logical one: fabricating custom components rather than specifying mass-produced or imported ones for practical and economic reasons.

Casa 2G, a private city residence that wears its rough material palette on its sleeve, illustrates the firm's approach. Inside and out, the reinforced concrete walls and floors of the low box are left exposed and unadorned, punctuated by simple detailing—windows, doors, and metalwork fabricated by local manufacturers and tradespeople. S-AR also explores atypical applications for basic building blocks. For example, the structure for the firm's Casa Huastok is built largely of scrap metal from the client's Monterrey-based steel company. "We translate materials," says Guerrero, referring to the house's skin, made from corrugated steel that is typically used for warehouses and fencing. Likewise, for an emergency-housing prototype, Módulo 10x10, the architects employed fiberglass panels repurposed after being used as formwork for a nearby parking garage. Working this way means embracing the scars, says Guerrero. "It's raw—it's not perfect—but you have some kind of beauty in that."

After finishing their studies at the Monterrey Institute of Technology, Guerrero, Ana Cecilia Garza, and Carlos Flores went their separate ways to study or practice in Europe and South America. A couple of years later, they reunited in Monterrey and formed their practice, adding classmate María Sevilla. They originally named the firm *Stación-AR*quitectura, *stación* being the Spanglish version of *estación*, referring to Monterrey's Americanization as well as alluding to their aspiration to serve as a "station" where designers would come and go after leaving their mark. Perhaps ironically, the four founding partners—all in their early 30s—still remain (though with an abbreviated firm name), joined by a few students each year.

To date, all of S-AR's built work is in Mexico. The architects are not concerned about expanding their horizons geographically, so long as they can continue to focus on what Guerrero describes as honest architecture: "We want to keep our work as pure as possible in terms of the use of materials and the relation between the building and the city." To this end, the architects have created *Comunidad Vivex*, a nonprofit that coordinates the design and development of small-scale low-income housing. They recently completed their first house and have two more in the works. "With the social-economic conditions of Mexico, we cannot just think about doing beautiful places," says Guerrero. "We need to make beautiful places, but these works have to help make the country better for everybody. I think that's the point of architecture." *Beth Broome*



Casa Huastok

This weekend retreat for a young couple sits lightly atop columns on its awe-inspiring site surrounded by the Sierra Madre mountains in Nuevo León state. The architects used scrap steel for much of the structure, employed a double-skin, and clad the naturally ventilated house with corrugated metal.



Casa de Madera

The architects built this 250-square-foot experimental house on an empty lot in Monterrey. With its small footprint and simple material palette, it poses an alternative to overdevelopment in the city. Fronted by large spans of tempered glass, the house reveals its structure: a grid of pine columns and beams that support the plywood ceiling and morph into a shelving system. A large cylindrical volume contains a bathroom, mirrored by a smaller cylinder that contains the sink.



Para-Project

Brooklyn, New York



A firm obscures views and distorts perspectives to challenge the familiar and produce the unexpected.

FOUNDED: 2005

DESIGN STAFF: 4

PRINCIPAL: Jon Lott

EDUCATION: Harvard GSD, M.Arch., 2005; Cal Poly San Luis Obispo, B.Arch., 2003.

WORK HISTORY: OMA/REX, NYC, 2005/2008; New York City's Capital Projects Department, 2007

KEY COMPLETED PROJECTS: Haffenden House, Syracuse, 2013; Huntington Hall, School of Education, Syracuse University, Syracuse, 2013; FritzKraus Haus, Brooklyn, 2013; La Casita, Syracuse, 2011; Crawford Attic Writing Room, Syracuse, 2009

KEY CURRENT PROJECTS: Van Alen Institute, New York City, 2014 (with William O'Brien, Jr. and Michael Kubo, Collective-LOK); Syracuse University School of Architecture Info Spot, Syracuse, 2014; Skaneateles Lake House, Homer, New York, 2014

WWW.PARA-PROJECT.ORG

JON LOTT, the principal of New York-based Para-Project, says he wants the firm's work to allure while raising questions. "Ambiguity, distortion, and estrangement are essential tools for me," says the architect, who cofounded the practice months after graduating with his M.Arch. from Harvard's Graduate School of Design in 2005. "I play with the relationship between the familiar and the foreign. Unless you make it strange, it's taken for granted."

For one of Para's first jobs, a small project in Syracuse, New York, where Lott taught until recently at Syracuse University's School of Architecture, the firm converted a 400-square-foot residential attic into a writing studio, inserting a large window opposite a bookcase lined with mirrored inserts to create the illusion that the space is open on both sides. "I continued that experiment in a lot of other projects," says the architect, who routinely uses screens and various translucent and reflective materials to distort light and space. In the fall, Lott won a competition with fellow Vanguard winner William O'Brien (page 80) and Michael Kubo to redesign the ground floor of the Van Alen Institute, a nonprofit architecture organization in New York. Their scheme lures pedestrians to the entrance with mirrored panels and uses a series of transparent scrims suspended from the ceiling to differentiate interior spaces.

Lott formed Para eight years ago with Brian Price and Dominic Leong, two fellow graduates of the undergraduate architecture program at Cal Poly San Luis Obispo. The practice gained momentum slowly, and for the first few years, the three principals had day jobs at firms including OMA, SHoP, and Bernard Tschumi, while moonlighting as Para-Project. The name, Lott maintains emphatically, does not connote parametric modeling. Rather, it comes from the prefix para-, meaning "beyond," and refers in part to the firm's early days, when it worked mostly on theoretical projects before commissions started to trickle in. "I wanted the name to be as general as possible," Lott says, adding that his goal is to have a flexible practice and a name that suggests he is amenable to a wide range of building types. "I have an allergy to a specialized way of working." Around 2008, work started to ramp up, and the architects left their day jobs to focus full-time on Para. (Price and Leong have since gone on to start separate practices, with Price founding Price Studio in San Francisco in 2012 and Leong, with his brother Christopher, starting Leong Leong in 2009 [RECORD, December 2011, page 72].)

The firm's most recently completed project, located in Syracuse and finished in November, is the Haffenden House, a writing studio for two poets who own the house next door. The clients, wanting a light-filled space with few distractions, asked that the building feel like an escape from its uninspiring surroundings. To give the house an ethereal quality, Para covered the wood-frame structure in a layer of white fabric. "It purposefully stands out," says Lott. "I want people to pause and think about it. I hope it inspires some reflection, some intrigue and curiosity." *Laura Mirviss*



Van Alen Institute

Jon Lott teamed up with William O'Brien and Michael Kubo earlier this year to produce the winning design for this new storefront and 2,500-square-foot office and exhibition space on the ground floor of the Van Alen Institute in New York City. Construction, slated to begin this winter, is expected to wrap up by fall 2014 to coincide with the Van Alen's 120th anniversary next year.



Haffenden House

This 1,125-square-foot three-story building, which contains a garage, writing studio/library, and reading room at the top, is wrapped in a 1-millimeter-thick swath of white fabric made of silicone-impregnated fiberglass. While the fabric is adhered with silicone to most of the exterior, it is not attached to the glazing on the front facade. "That fuzziness comes from the distance between the fabric and the glass," says Jon Lott. Para did not screen the glazed wall at the rear, allowing for unobstructed backyard views.



TAKTL[®]

DISCOVER ULTRA HIGH PERFORMANCE CONCRETE
Stronger. Leaner. Lower Cost.

TAKTL[®] offers a full line of architectural elements – including VECTR[®] facade and wall panels, corners, screens, louvers, and fins – made of TAKTL Ultra High Performance Concrete. Uniting superior strength, durability, and design possibilities – TAKTL will change the way you think about concrete.

ASTM C1186, Grade IV Certification
7 Standard Textures + 10 Standard Colors
SHOWN: Custom color in Matte

WWW.TAKTL-LLC.COM | 412.486.1600 | Made in USA **CIRCLE 39**

PROJECT Hollister Courthouse
OWNER Superior Court of California, San Benito County
ARCHITECT SmithGroupJJR
INSTALLER B.T. Mancini Company

Light Sheet
by Cooledge Lighting
PAGE 106

- 103 FURNISHINGS
- 105 EXTERIOR CLADDING
- 106 LIGHTING
- 108 OPENINGS
- 111 MATERIALS
- 112 FINISHES
- 115 PLUMBING & HVAC
- 117 EQUIPMENT, SPECIALTIES
- 118 EDITORS' CHOICE 2013

2013 Record Products

Edited by **Sheila Kim**

Juror portraits by **Axel Dupeux**

Every year an influx of new products comes onto the market promising more efficiency, additional options, improved performance, less environmental impact, and sometimes, simply, a more handsome design. In response, the editors of ARCHITECTURAL RECORD invite manufacturers across all categories – from glazing and interior finishes to lighting and plumbing fixtures – to enter their latest offerings in the annual Record Products competition. To select the best entries for 2013 installment, we enlist the expertise of architects, designers, and materials and product specifiers at leading American firms.

Thanks to improvements in LEDs, the lighting category had a large number of innovative products this year, note the judges. The openings category is also noteworthy, says judge Laurie Butler: “I liked that there were off-the-shelf products that are dealing with resiliency issues, so that you don’t have to custom-fabricate to address hurricanes and the like. And some of the modular systems are quite elegant.” These, and all the other products that scored highest with the judges, are featured on the following pages.

TOP
PICK

This button identifies the jury's favorite product in each category.

Jurors *All jurors are based in New York City*

Laurie Butler, AIA, LEED AP BD+C, is an associate principal at Perkins+Will. Her experience ranges from designing commercial projects to developing master plans, while her portfolio includes federal courthouses, sustainable-development guidelines for Songdo city in South Korea, and work for clients such as New York’s Department of Design and Construction and Memorial Sloan-Kettering. She holds degrees in architecture and fine art.

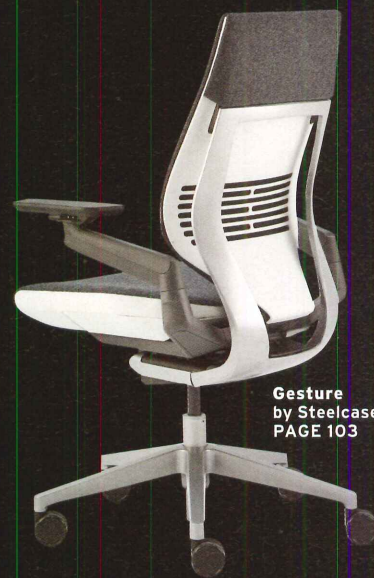
Steven Danielpour, AIA, LEED AP BD+C, CCS, is the director of firm-wide specifications for HOK. His experience is in all phases of architecture, urban design, and interior design, with work ranging from preparation of construction documents to project management. His projects span markets that include transportation, commercial, education, and health care. He holds a Bachelor of Architecture from Syracuse University and is a certified construction specifier.

Rowan O. Georges, AIA, is an associate director at Skidmore, Owings & Merrill (SOM), where he leads the New York office’s specifications group. He has worked on some of SOM’s largest projects in transportation, science, commercial, and hospitality markets. Recent projects include the Sheikh Khalifa Medical City Hospital in Abu Dhabi, United Arab Emirates, and the BBVA Bancomer Operations Center in Mexico City. He is a graduate of the New York Institute of Technology.

David Haakenson, AIA, LEED AP BD+C, is an associate and project architect at H3 Hardy Collaboration Architecture, where he has taken several public and cultural projects from conception through construction. His major projects include the Polonsky Shakespeare Center and the Brooklyn Academy of Music’s Richard B. Fisher building, both in Brooklyn, New York, and the Botanical Research Institute of Texas in Fort Worth. He holds a Master of Architecture from the University of Pennsylvania.

Kate Mann, AIA, LEED AP, is a senior associate at Ennead Architects. Her notable design projects include the William J. Clinton Presidential Center and Park in Little Rock and the Neukom Building at Stanford University Law School in California. She holds a Master of Architecture from Princeton University and a Bachelor of Science in Architecture from Georgia Institute of Technology. She has served as visiting juror at institutions including Columbia University and Parsons The New School for Design.

Erin Ruby, is an associate principal at the full-service design firm Studios Architecture. Specializing in corporate interiors, she has recently completed headquarters for prominent clients such as Dow Jones, IMG Worldwide, and the Johnson Company. She has also collaborated with manufacturers to develop award-winning contract furniture and textile products. She is a graduate of Virginia Tech and is NCIDQ-certified.



Gesture
by Steelcase
PAGE 103

Some things
in life just
aren't worth
rolling the
dice on...



Reduce the Risk of Floor Covering Failures with Aridus[®] Rapid Drying Concrete

Accelerates your project schedule:

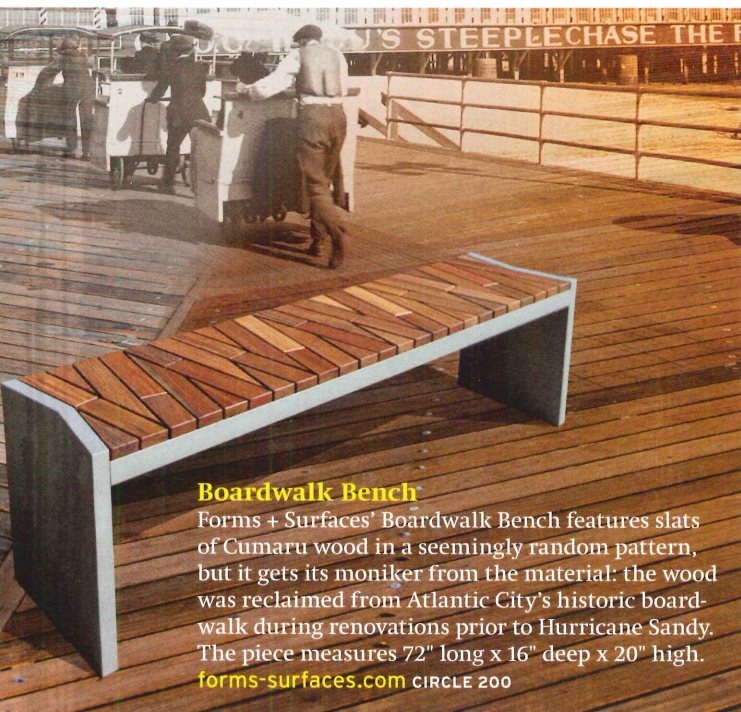
- + Dries up to 6x's faster than conventional concrete
- + Eliminates moisture mitigation problems with flooring
- + Provides high-early strength for rapid construction



www.US-Concrete.com/Aridus
1-866-882-6176 or Aridus@US-Concrete.com

Furnishings

Window Shades | Seating | Furniture



Boardwalk Bench

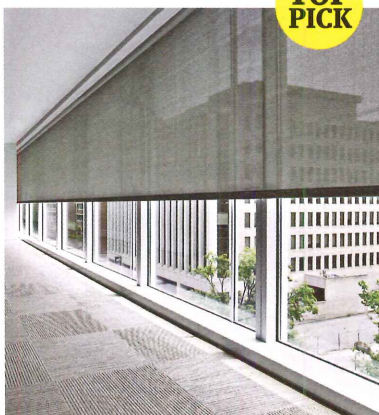
Forms + Surfaces' Boardwalk Bench features slats of Cumaru wood in a seemingly random pattern, but it gets its moniker from the material: the wood was reclaimed from Atlantic City's historic boardwalk during renovations prior to Hurricane Sandy. The piece measures 72" long x 16" deep x 20" high. forms-surfaces.com CIRCLE 200

"MagnaShade from MechoSystems eliminates the need for a row of multiple shade systems. What's especially noteworthy is that the system is designed to fit a relatively small header profile."

Rowan O. Georges



TOP PICK



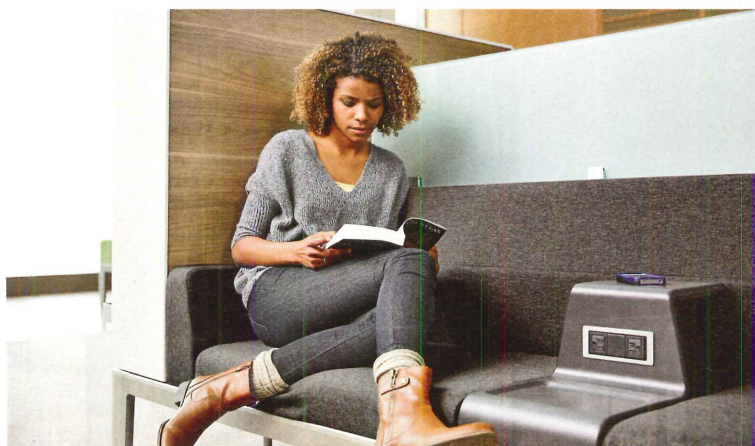
MagnaShade

Multiple shading units can easily ruin the sleek, minimalist appearance of a window wall. But MagnaShade from MechoSystems solves this conundrum: the motorized roller shade can cover an expanse of up to 40" wide x 20" long. The housing piece, which measures 5½" high x 6½" deep, consists of a ceiling- or wall-mountable aluminum cradle and a steel tube-holder that are easy to install and maintain. mechoshade.com CIRCLE 201

Gesture Task Chair

Ergonomic seating design used to consider how we sit while typing on computer keyboards and, later, on portable laptops. Steelcase is addressing how we work on those as well as on the current crop of tablet devices and smart phones we toggle between. The company's Gesture synchronizes with the user to support postures such as back, front, and side leaning, and leg positions including stretched, crossed, and tucked-under, while chair arms easily adjust to further support elbows when user views tablet screens.

steelcase.com CIRCLE 204



Regard Furniture Line

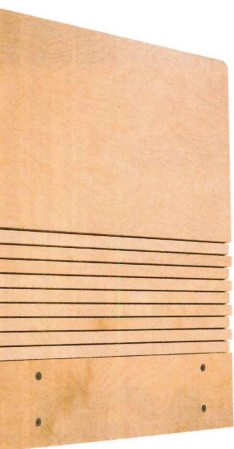
The trend in design to offer options for different ways to work or take breaks—individually or in groups—is making its way into health-care facilities. Nurture's Regard is a comprehensive furnishings line that caters to various patient and visitor activities in waiting rooms and lounges. It includes seating, tables, desks, privacy panels, and conveniences such as integrated power modules and charging stations that double as tabletops.

nurture.com CIRCLE 202



JumpSeat Wall

Sedia Systems made a splash last year when it introduced the JumpSeat (RECORD, January 2013, page 148), its ultramodern and compact seating concept for auditoriums. Recently the company expanded the line to include a wall-mounted version. Ideal for corridors and other space-challenged areas, JumpSeat Wall utilizes the same innovative folding mechanism as the original to cantilever the seat and is composed of 100% pre-consumer recycled birch plywood, as well as steel and foam. sediastystems.com CIRCLE 203





STEP UP TO ALACO.

Architectural Ladders

- Over 100 years experience manufacturing ladders that meet or exceed ANSI and OSHA requirements for quality and safety
- Lightweight for fast installation and low-cost shipping
- Standard Aluminum
- Heavy Duty Aluminum
- Steel
- Anodized, galvanized, powder coat
- Up to 1500 lb. work load
- Complete 3-part specifications
- Made in USA

fixed • caged • mezzanine • folding • ships

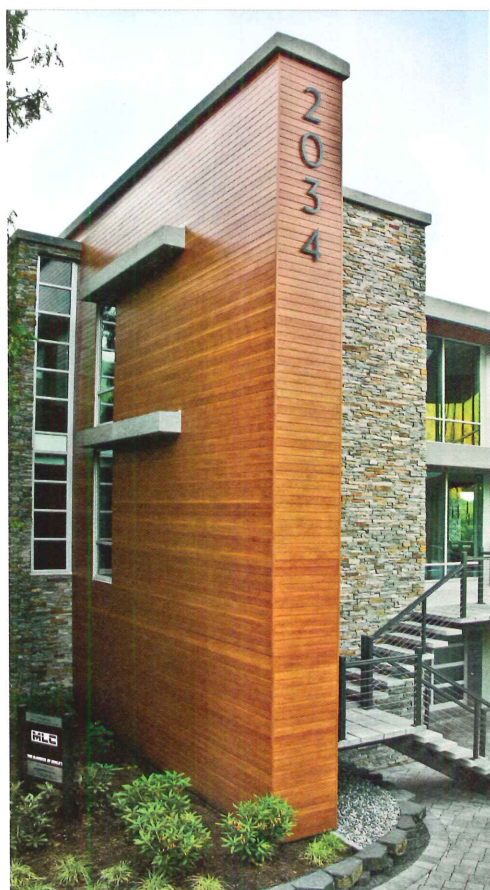
Toll free 1-888-310-7040 • Fax 909-591-7565
www.alacoladder.com



ALACO
Ladder Company

Exterior Cladding

Metal Cladding | Wood-Laminate Panels

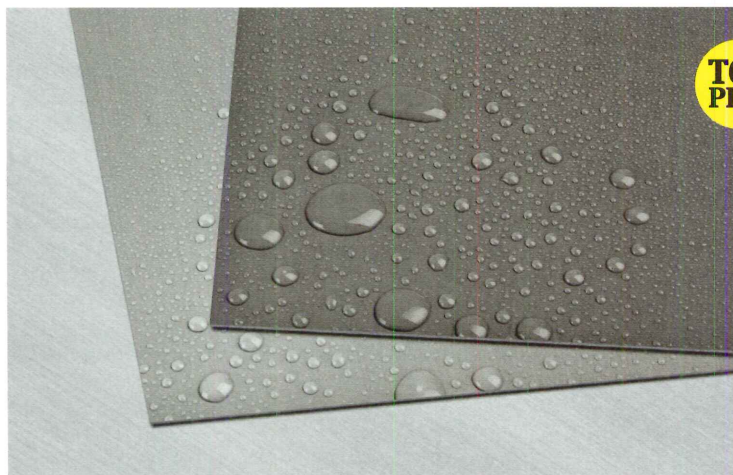


Longboard Premium Soffit & Siding

Close inspection reveals that Longboard wood cladding material for soffits and siding is not wood at all, but aluminum. Developed by Mayne Coatings Corp., Longboard is powdercoated to achieve both its faux wood-grain appearance and an ease of maintenance. The product is available in 22 colors and is 100% recyclable. longboardproducts.com CIRCLE 220

“Rheinzink Protect can work in environments where one would not necessarily think of using zinc. It’s a welcome addition to the company’s already robust and time-tested product line.”

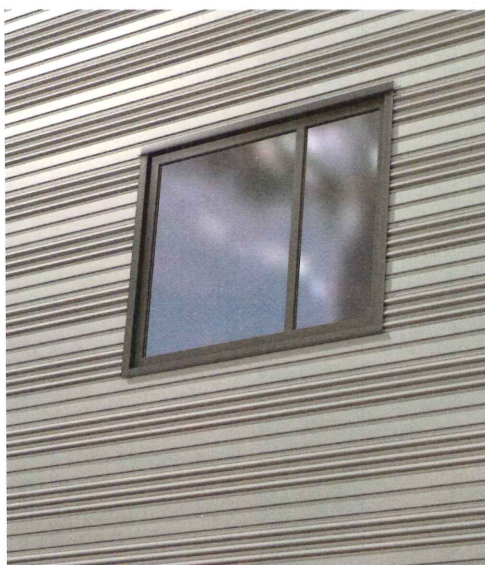
Laurie Butler



TOP PICK

Rheinzink Protect

Developed to combat harsh microclimates such as coastal or tropical zones, the Protect line from Rheinzink is the company’s pre-patinated metal cladding, sealed with a transparent coating that prolongs a fresh appearance. The product—composed of zinc, titanium, and copper—comes in a blue-gray or graphite-gray color, is fully recyclable after use, and is available in four standard thicknesses and coil and sheet widths of up to 39½" (blue-gray) or 27½" (graphite-gray). rheinzink.us CIRCLE 221



Cascade Metal Panel System

This single-skin metal panel system from Centria Architectural Systems features a profile of sloped ribs that creates visual interest for building facades. Designed to blend in with Centria’s Concept Series panels, Cascade is offered in seven different styles, where the ribbing and spacing are varied. The product’s galvanized steel comprises approximately 25% post-consumer and 7% pre-consumer recycled content. centriperformance.com CIRCLE 223



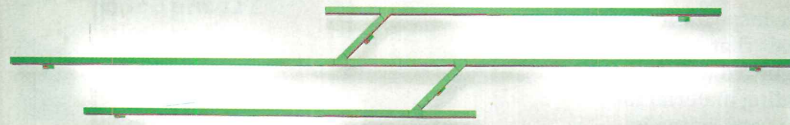
Meteon Matt Finish with FSC Certification

Trespa International’s Meteon facade panels come in a variety of styles, including wood that is actually high-pressure laminate with up to 70% wood-based content. These panels, available with FSC certification upon request, are now offered in a matt finish, which has a more natural wood appearance without changing performance or cleanability. trespa.com CIRCLE 222

Lighting

Lamping | Fixtures

TOP
PICK



Kao

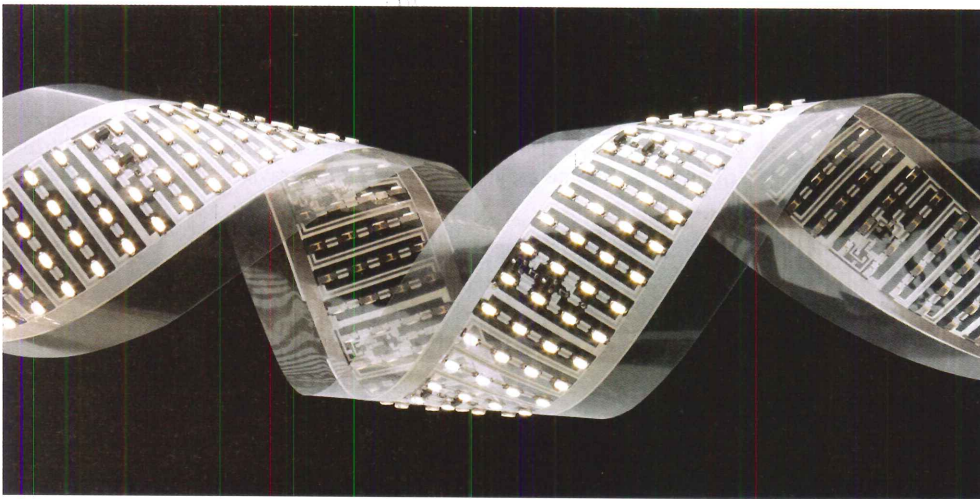
Conceived by Bruno Houssin for Artemide, this architectural series of indirect lighting for walls and ceilings was inspired by the structural formations of tree branches as observed by the French designer during a winter walk in the woods. Rectilinear in section, the 1½"-square aluminum fixtures come in a standard white-paint finish, and are available in a variety of preassembled, prewired configurations that house T5 fluorescent lamps.

artemide.us CIRCLE 232



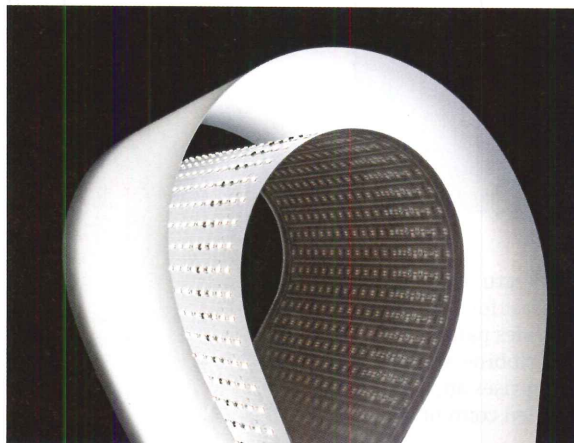
Cylinder LED Luminaire CYLA3

This surface-mounted fixture from the Lucifer Lighting Company was designed for ease of installation and use, but it is also easy on the eye. The compact 2⅓"-diameter x 6¼"-high cylinder has an integral heat sink and features a tilt of up to 45° and 361° rotation with toolless adjustment. Dimmable LED options include: 2,700K to 4,000K color temperatures; 25°, 40°, or 60° beam spreads; and a color rendering index (CRI) of 80+ or 95+. It comes in brushed aluminum and powder-coated finishes in matte white or black, metallic gray, and bronze. luciferlighting.com CIRCLE 233



Light Sheet

This incredibly lithe LED system from Cooledge Lighting combines mechanical, electrical, and light source in one flexible sheet that, according to the manufacturer, eliminates the typical heat concerns of LEDs. Made up of a dense array of small, low-power light emitting diodes on a plastic substrate, the Light Sheet allows for a wide variety of design applications, offering over 100 configurations of lumen output, color temperature, width, and length. cooledgelighting.com CIRCLE 238



1 Puck LP

Codesigned by a product engineer and architect, this 1¼"-diameter recessed LED luminaire from Minimis has an extremely tiny aperture yet is said to be powerful enough to wash a 12' to 14' wall in light. Ideal for indoor or outdoor use in drillable surfaces such as floors, decks, walls, ceilings, and soffits, the 1 Puck LP is made of solid marine-grade aluminum and is available in Warm White (2,700K to 3,200K) or Pure White (5800K to 6300K) color temperatures. tinyled.net CIRCLE 237



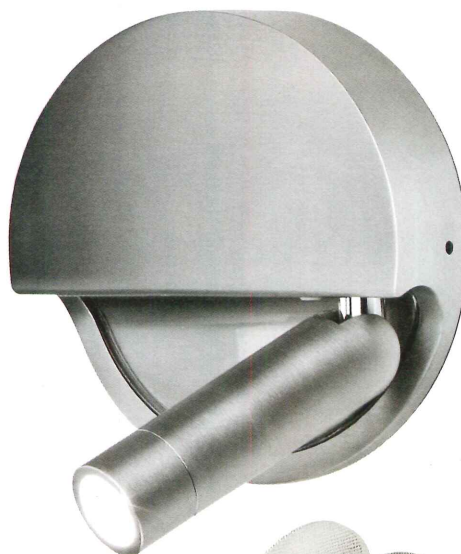
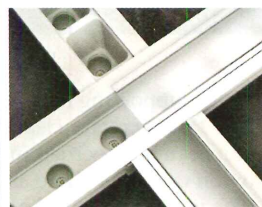


“Artemide’s Kao is lighting in its most versatile form. Its horizontal, vertical, and diagonal expression has far-reaching commercial applications and can be used in any configuration.”
Steven Danielpour



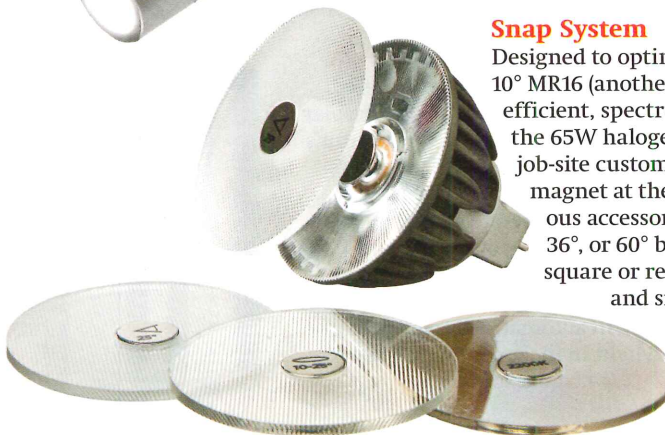
Continuum Lighting System

Providing 500 lumens per foot, these slim, recessed LED luminaires can be ganged for a continuous run of illumination in commercial, contract, health-care, even residential settings. Made of extruded aluminum, the system includes warm-, neutral-, or cool-white LEDs, with a CRI of 88. dalume.com CIRCLE 234



Ledtube

Compact but not fluorescent, the handsome Ledtube from Marset provides a warm 2,700K glow and focused beam for reading and other tasks. Ideally suited for hotel and residential bedrooms, airport lounges, or health-care facilities, the slender 6¾" x 2¾" x 1½" tubular wall fixture alone can be installed vertically or horizontally, recessed, or, within the 5¼" Ledtube Rounded version, surface-mounted (left). Finish options include black, white, and aluminum. marset.com/usa CIRCLE 235

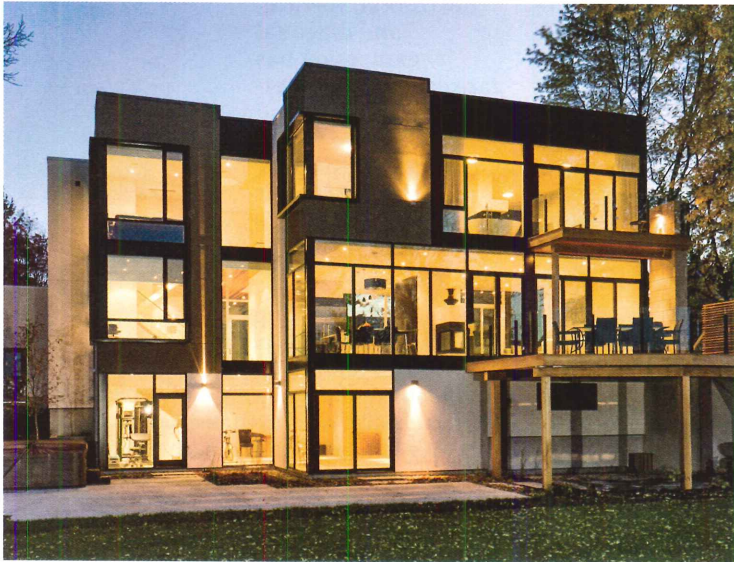


Snap System

Designed to optimize the Soraa Vivid 2 LED 10° MR16 (another jury favorite)—said to be an efficient, spectrum-perfect replacement for the 65W halogen—the Snap System reduces job-site customization to child’s play. A small magnet at the lamp’s center accepts numerous accessories including lenses with 25°, 36°, or 60° beam spreads; evenly illuminated square or rectangular beams; hex-louvers and snoots to reduce glare; gratings to create linear light patterns; and filters for color-temperature shifting and tint effects. soraa.com CIRCLE 236

Openings

Windows & Doors | Glazing | Door Hardware



VistaLuxe Collection

With its slim minimalist frames supporting large expanses of glass, VistaLuxe by Kolbe Windows & Doors creates clean lines well suited to modern architecture. The units can be specified in a flush style where the glass, sash, and frame are on the same plane, or an accent profile, where the sash is recessed. The interior side of the frame is offered in nine different wood species.

kolbe-kolbe.com CIRCLE 205

Kitchen Transition

Designed to connect indoor and outdoor kitchen counters, NanaWall Systems' Kitchen Transition combines the company's folding glass windows, which replace traditional windows over a kitchen countertop, with folding glass floor-to-ceiling walls. The window and wall portions operate independently and work with either wood or aluminum frame systems.

nanawall.com CIRCLE 213



Solar Powered Fresh Air Skylight

A logical solution, Velux's Solar Powered Fresh Air Skylight features a built-in solar panel that takes advantage of the unit's rooftop position to absorb the sun's rays and then convert them into energy to operate the skylight.

The remote-controlled unit requires no wiring, utilizes LoE3 glass, and has a rain sensor that will automatically close the skylight in inclement weather.

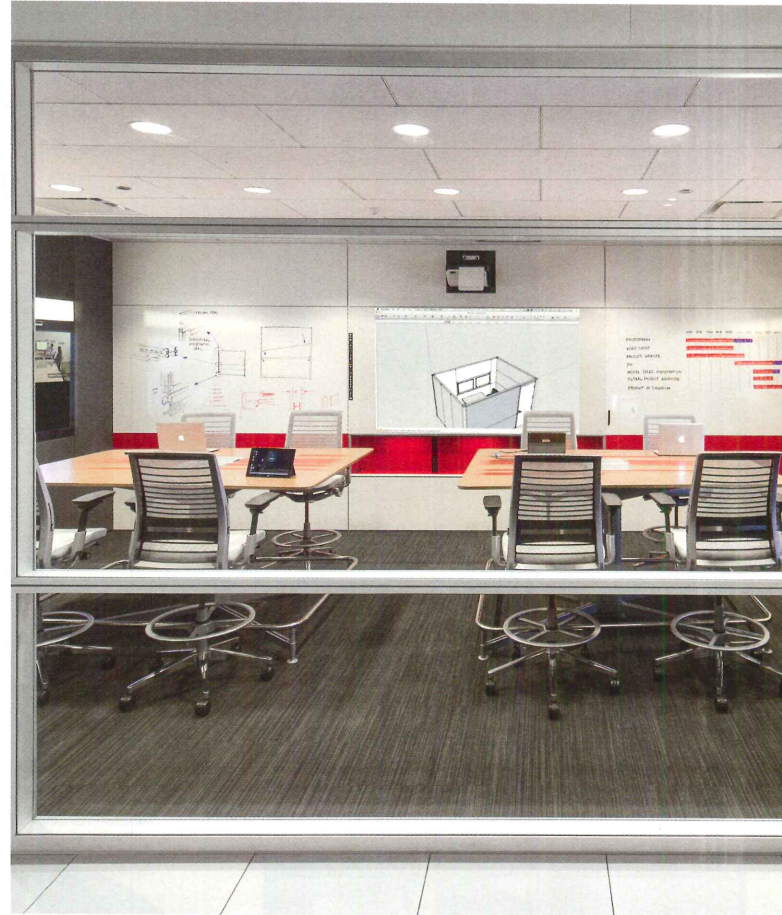
veluxusa.com CIRCLE 212



PanoramicView Corner Lift-Slide

This corner system by Zola Windows enhances views with its reduced frame thickness—and a dramatically slimmer profile on the fixed corner panel. The product's sustainable attributes include a selection of furniture-grade, FSC-certified varieties of wood for the interior framing and glass with R-values up to R11. The system is available in sizes up to 11' high x 38' wide per side.

zolawindows.com CIRCLE 211



TOP
PICK**V.I.A. Solutions**

In today's open office spaces, where transparency is desired yet privacy and acoustics are major issues, interior wall systems like Steelcase's V.I.A. (Vertical Intelligent Architecture) can make all the difference. Its sturdy steel framework, "skins" (glass, whiteboard, or steel panels), and precise mechanical skin-attachment brackets are all manufactured with acoustical seals to ensure quiet conversation for booths and large conference rooms alike.

steelcase.com CIRCLE 206



"The V.I.A. system from Steelcase combines bespoke engineering and detailing with unprecedented acoustic performance. It is a significant contribution to the demountable-wall-systems landscape that's easy to specify and customize for cost tracking."
Erin Ruby

**Purolino Plus 80**

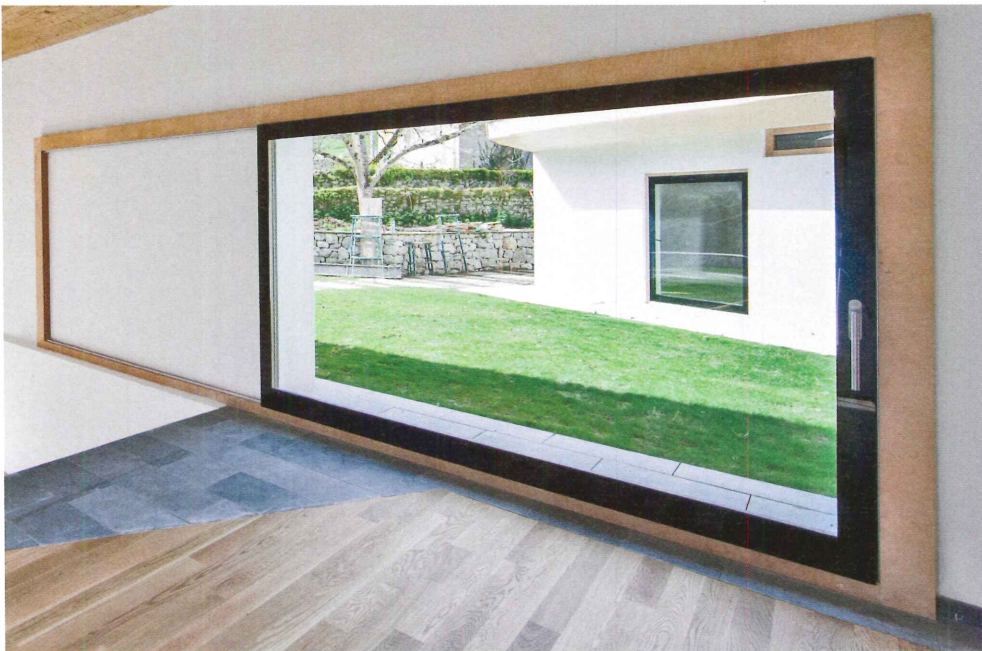
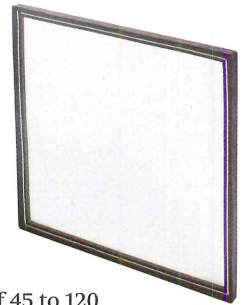
Enabling architects to create seamless glass walls and sliding doors, Hawa's Purolino Plus 80 is a hardware system that is concealed within ceilings, walls, and floors. Highlights include a hydraulic damper for the company's SoftMove 80 soft-closing mechanism, and floor guides and ball-bearing technology that provide smooth operation. The components—tracks, trolleys, bearings, guides—are composed of aluminum, steel, plastic, or a combination of these.

hawa.com CIRCLE 207

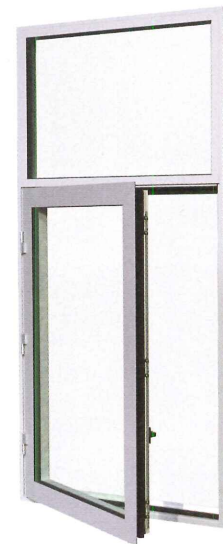
SuperSecure II-XLS

This fire-resistive product by SAFTI First is ideal for openings in areas requiring security glazing. It combines tempered glass-clad polycarbonate, laminated tempered glass, and a proprietary polymer to provide the full range of 45 to 120 minutes of temperature-rise protection along with forced-entry resistance, yet it is dramatically larger in size than typical wired-glass options of comparable protectiveness.

safti.com CIRCLE 208

**Weco Windows**

Three Spanish architects collaborated to create a new, attractive wood window series with large expanses of uninterrupted glass under the company name Weco System. The slim-profile frames are composed of 100% birch plywood with phenolic resin glues, while the double or triple glazing is tempered and laminated for thermal, acoustical, and weather performance. Suitable for residential and small commercial projects. weco-system.es CIRCLE 210

**YOW 225 TUH Series, XXL Window System**

Among today's commercial-building needs is a high demand for larger storm-rated windows. This latest window system from YKK AP answers that call: the casement outswing windows are sized up to 4' x 6' and have passed impact and cyclic requirements for Florida's high-velocity hurricane zones.

ykkap.com CIRCLE 209

elmes

Custom made



Custom made

Custom made

Aesthetics and Craftsmanship —
Creating richer architectural spaces through products
that are stunning in their design, material and finish.

CIRCLE 35

ELMES
www.elmesworld.com

Materials

Glass | Engineered Wood and Stone | Metal Specialties | Concrete Admixture

Houdini Glass

As the name suggests, Houdini Glass by Bendheim has illusory qualities: the low-iron clear material lets in ample daylight, but its micro-ribbed texture on one side obscures objects and people behind it. The non-laminated, fully recyclable glass not only meets privacy and lighting needs, but it can also be mirror-backed and colored for decorative effects.

bendheimarchitectural.com

CIRCLE 214



TOP PICK

"Bendheim's Houdini glass is a simple but beautiful way of creating separation. The panels maintain privacy while allowing light through, and the blurred view of activity can enliven what might otherwise be a standard, dull partition or divider."

David Haakenson



Omega 1510

This stainless-steel metal fabric from GKD can be used for a variety of applications but is most ideal for sunshading: it features an open area of 35% and achieves a visible transmittance of 0.12 to 0.39, as well as a solar-gain coefficient of 0.11 to 0.28. The flexible material can be custom manufactured to dimensions as large as 26' wide.

gkdmetailfabrics.com CIRCLE 215



Silestone Nebula Code

An addition to Cosentino's popular Silestone engineered stone line, Nebula Code presents new patterning that evokes the veining of authentic stone. Like all other Silestone products, Nebula Code is composed of 94% quartz and comes in a neutral palette with a polished or matte finish. The material is well suited to kitchen and bath countertop applications.

silestoneusa.com CIRCLE 218

Solachrome Integral Coloring Treatment for High-SRI Concrete

A powdered concrete admixture, Solachrome Integral Coloring Treatment by L.M. Scofield Company gives concrete a solar-reflective tint to reduce the Urban Heat Island Effect. The cooler pavement is not only beneficial for the environment, it also improves comfort for pedestrians. Solachrome can be mixed with white or gray concrete to produce 32 colors.

scofield.com CIRCLE 219



Digital Glass Portfolio

Skyline Design's Digital Glass Portfolio, an architectural glass collection featuring works by eight celebrated artists, is a testament to the transformative power of art. The images are reproduced large-scale on low-iron PPG Starphire tempered glass that is backed with a translucent or opaque layer. The panels are specifiable in sizes up to 72" x 144" and can serve as interior walls, demountable partitions, and doors. skydesign.com CIRCLE 216



Windfall Engineered Panels

Windfall Lumber reclaims Douglas fir from industrial, agricultural, and residential buildings in the Pacific Northwest for this new light-weight engineered-wood line. The 4' x 8' or 3' x 8' panels are 1/4" thick, and are available in a range of stains from natural and golden to medium-brown and ebony tones. The product can be used for interior elements such as wall coverings, case work, and signage.

windfalllumber.com CIRCLE 217

Finishes

Tile | Acoustic Treatments | Flooring | Paints & Coatings

TOP
PICK

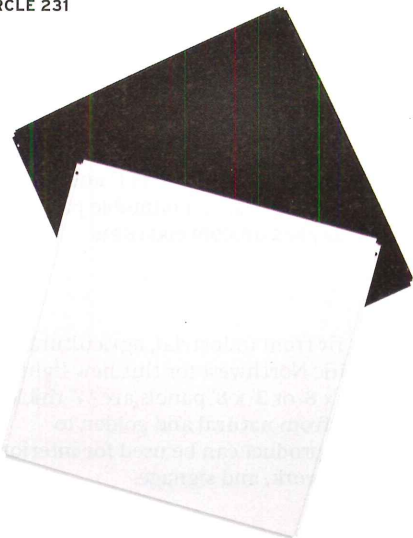
Bios Self-Cleaning Ceramics

After launching its successful Bios Antibacterial Ceramics, Italian manufacturer Casalgrande Padana collaborated with leading sanitary ware company TOTO to add another layer of innovation—self-cleaning technology. The resulting porcelain tile—usable indoors or outside—can reduce odors and remove some nitrogen oxides from the air when exposed to sunlight. The tiles are available in a wide variety of colors and finishes. casalgrandepadana.com CIRCLE 224



Silk Metal

Micro-perforations within Silk Metal architectural ceiling and wall panels, by Acoustical Surfaces, enable the product to effectively reduce noise without extra lining or backing while appearing as a smooth, monolithic, and almost textile-like surface. Applicable in lay-in, snap-in, hook-on, and baffle installations, the panels come in a range of sizes up to 26³/₄" x 78³/₄" and require 4" of air space. acousticalsurfaces.com CIRCLE 231



Narrative Floor Covering

A hybrid resilient-flooring product, Tandus Centiva's Narrative features an impermeable wear layer consisting of a woven micro fabric onto which patterns are digitally printed, and a resilient polymer topcoat that offers ease of maintenance. The PVC-free flooring can be specified in modular tile or sheets in customizable designs and contains 50% post-consumer content, when combined with the company's Ethos backing. tandus.com CIRCLE 230



Harmony Interior Acrylic Latex Paint

This interior paint by Sherwin-Williams Company features patented technologies that can reduce ambient odors to help rooms stay fresher longer, as well as reduce the levels of VOCs from potential sources such as insulation, carpets, cabinets, fabrics, and other building materials. The acrylic latex product is ideal for new construction and renovation projects where elevated concentrations of formaldehyde may exist. Harmony is available in flat, eggshell, and semigloss finishes.

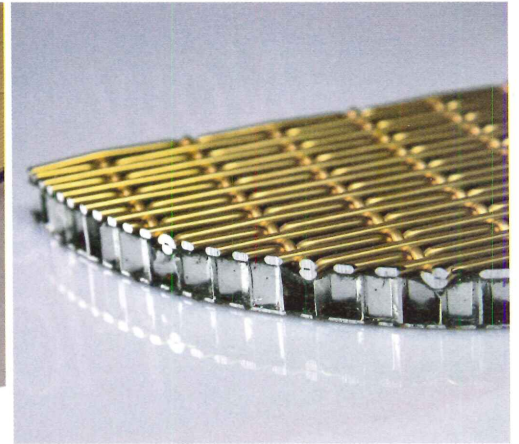
sherwin-williams.com CIRCLE 229

Norament Satura

Ideal for high-traffic areas, particularly in education or health-care settings, Nora Systems' rubber floor coverings are high-performance, easy to maintain, slip-resistant, and noise-reducing. Norament Satura is the manufacturer's recent line, which was developed in conjunction with a group of architects seeking new color palettes. The resulting tiles feature a hammered texture and flecks, and come in 40" squares and both neutral and saturated tones. Stair-tread formats are also available nora.com CIRCLE 225



"Casalgrande takes sustainability to the next level with their innovative new ceramic line that works to mitigate pollution."
David Haakenson



Composite Mesh Plate

This acoustic ceiling product from GKD features the company's metal fabric backed by an aluminum honeycomb plate, which provides rigidity for maintaining shapes, and an absorptive acoustic underlayment material. Reaching dimensions of up to 6' x 13', Composite Mesh Plate can be used on standard suspension or concealed clamping systems. A total of eight different mesh styles are available.

gkdmetailfabrics.com CIRCLE 226



Flexible Architecture

Linear pattern-making is the main feature of Philippe Starck's first-ever ceramic tile collection, Flexible Architecture, designed for Ceramica Sant'Agostino. The 12"-square tiles can be specified with faux-grout recessed edges anywhere from one to all four sides or none at all, to create desired grids and compositions. Eight colors in glossy, matte, or chrome finishes are available through Nemo Tile.

nemotile.com CIRCLE 228



Porcelain Raised Floor Panels

Tate's latest raised floor system offers a more elegant look compared to most other access floors, thanks to its laminated porcelain panels. The units comprise steel bottom supports, cement board, and finally a porcelain tile layer with PVC edging that appears as grout lines. The panels come in three sizes—1' square, 1' x 2', and 2' square—giving architects the freedom to combine the tiles into unique geometric patterns.

tateinc.com CIRCLE 227

CAPTIVEAIRE

COMMERCIAL KITCHEN VENTILATION

*Now
Shipping from
Florida*

Next Generation Exhaust Hood

Integrated Self-Cleaning Hood

CORE Protection System

Captrate Combo & Solo Filters

Pollution Control Unit

Energy Management System

Factory Welded Grease Duct

Exhaust Air Systems

Dedicated Make-Up Air

Make-Up Air Plenum

CaptiveAire Manufacturing



CIRCLE 30

CAPTIVEAIRE

Plumbing & HVAC

Fixtures & Fittings | Dryers | Drains



TOP PICK

Airblade Tap

This aerodynamic hybrid from Dyson combines a commercial lavatory faucet with a high-velocity hand dryer—drying hands in 14 seconds at the sink and eliminating the typical trail of water on the floor between basin and wall-mounted dryer or paper towels. Made of a corrosion-resistant stainless steel used for boats, the Airblade Tap is said to cost \$48 a year to run.

airblade.dyson.com CIRCLE 244

“The Dyson Airblade Tap is an all-in-one product that alleviates common maintenance issues in public restrooms by combining both hand-washing and -drying functions in one fixture. Very smart.”



Erin Ruby

Axor Citterio Kitchen Fittings

The solid-brass body and spare utilitarian styling of Italian architect Antonio Citterio’s collection of kitchen taps for Axor (Hansgrohe’s high-end brand) is tailored for serious cooks. The designer’s latest offerings include two low-lead pot fillers in deck- or wall-mounted (shown) versions with a swivel range of 180° and an aerated spray, and a two-hole high-arc faucet from the sleek Citterio M line. Both are available in chrome or Steel Optik finishes.

hansgrohe-usa.com/axor CIRCLE 248



Modex Kitchen Sink Workstation

Defined by a raised 3"-high profile, Blanco’s Modex kitchen sink and workstation accommodates food preparation and cleanup tasks with a modest 20 $\frac{7}{8}$ "-square sink cutout. Made of the company’s stonelike Silgranit II, said to be heat, chip-, scratch-, and bacteria-resistant, the unit features an ash cutting board over a generous bi-angled drainboard and measures 47 $\frac{1}{4}$ " x 23 $\frac{3}{4}$ ". blancoamerica.com CIRCLE 246

STō Pulldown Kitchen Faucet

Featuring a low-flow rate of 1.5 gallons per minute, this beautifully simple kitchen tap has an integrated pull-down spout that docks discreetly inside the neck for a more streamlined appearance when stationary. STō is available in chrome (shown), Spot Resist Stainless, and matte black finishes.

moen.com CIRCLE 245

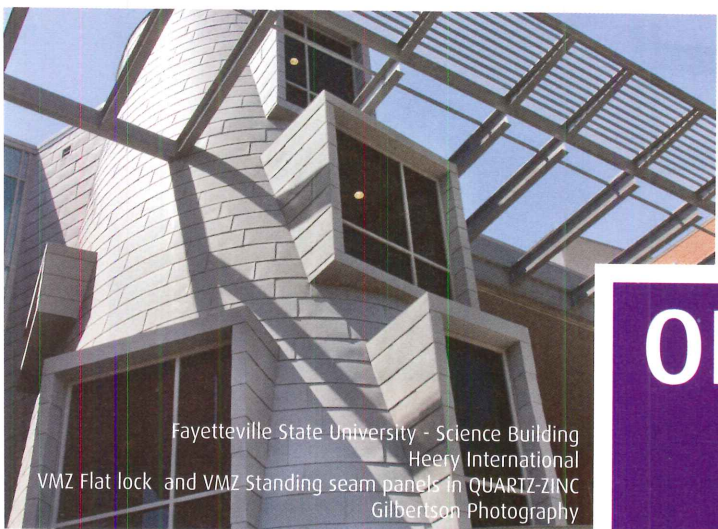
MN Series by Marc Newson

Having exploited the hexagon to shape previous installations and products, London-based designer Marc Newson created a collection of linear drains pierced with hexagonal cutouts for Infinity Drain. Made of 14-gauge stainless steel, the new grates come in fixed lengths from 32" to 60" and are available in five finishes: satin or polished stainless steel, Lifetime Oil-Rubbed Bronze, and matte white or black.

infinitydrain.com CIRCLE 247



FROM RESIDENTIAL TO COMMERCIAL



Fayetteville State University - Science Building
Heery International
VMZ Flat lock and VMZ Standing seam panels in QUARTZ-ZINC
Gilbertson Photography

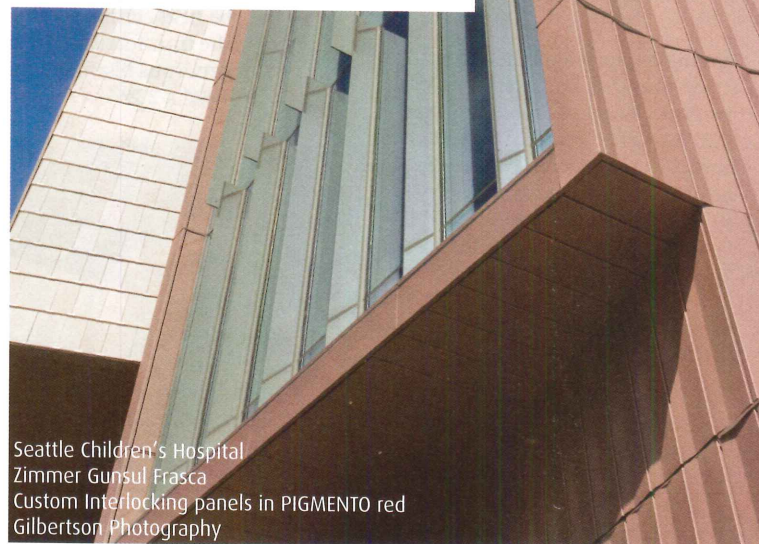


Private Residence
Jose Garcia
Dri-Design panels in QUARTZ-ZINC and ANTHRA-ZINC
Ryan Kurtz Photography

ONE ENVELOPE SOLUTION



Private Residence
Taylor Smyth Architects
VMZ Standing seam panels in PIGMENTO red
Gilbertson Photography



Seattle Children's Hospital
Zimmer Gunsul Frasca
Custom Interlocking panels in PIGMENTO red
Gilbertson Photography

Umicore Building Products USA, Inc. • (919) 874-7173 • www.vmpzinc-us.com • info@vmzinc-us.com

VMZINC
passionate about zinc

Equipment

Kitchen Appliances

TOP PICK

Brilliant White Plus

Taking cues from Mies van der Rohe's Farnsworth House, the Miele design team created Brilliant White Plus Series, a line of built-in, culinary appliances that is even more minimalist than the German manufacturer's existing offerings. Made of stainless steel with white glass fascias, chrome handles, and intuitively apparent touch controls, the series comprises a 30" convection oven, steam oven, speed oven, whole-bean coffee system, and a plate-and-cup-warmer.

mieleusa.com CIRCLE 239



"Miele's Brilliant White Plus is an elegant and deceptively simple approach to kitchen systems—and a longed-for change from stainless steel."

Laurie Butler



Discovery WineStation

Ideal for custom-residential, hospitality, and small corporate office projects, the Dacor Discovery WineStation is an automated temperature-controlled wine-dispensing and preservation system for four bottles. Similar to large units used by restaurants and bars to serve fine wine by the glass, this small stainless-steel unit can be built in or installed on a counter, and features CleanPour heads that ensure the taste and quality of the wine from one bottle to the next.

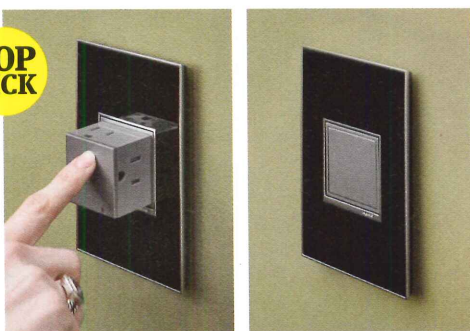
dacor.com CIRCLE 240



Specialties

Electrical Supply | Control System | Outdoor Shower

TOP PICK



Pop-Out Outlet

An ingenious variation on the multi-plug outlet, the Pop-Out 1-gang version—part of the Adorne collection of switches, dimmers, and outlets by Legrand—keeps its three sockets under wraps until needed. A push of the button either reveals or conceals them. Available in magnesium and white finishes with a selection of 32 wall-plate hues, the easy-to-install device requires a minimum 22½"-cubic box.

legrand.us CIRCLE 241

"Legrand's Adorne Pop-Out has a beautiful design and lots of high-end finishes. It's perfect for those places that you hate to spoil with an outlet, like kitchen islands and backsplashes."

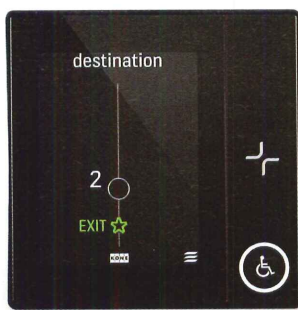
Kate Mann



Polaris Touch Screen Display

The user interface on Kone's new Polaris touch screen Destination Operating Panel (DOP) is extremely user-friendly and has a clear, high-contrast display, simplifying the elevator experience for all passengers. Made of glass and aluminum, the DOP features short- and long-range proximity sensors with a timer that saves energy and prolongs the life of the device.

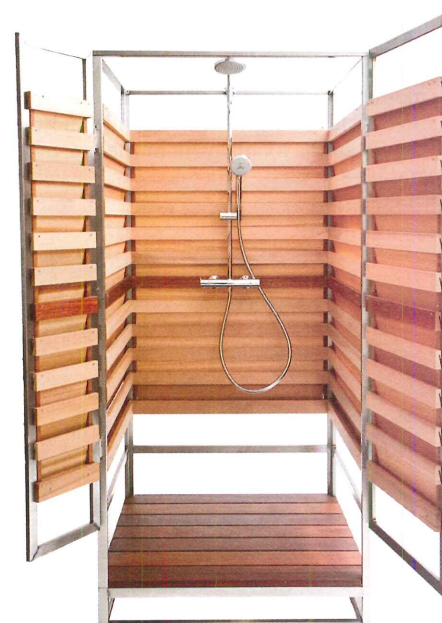
kone.us CIRCLE 243



The Cove

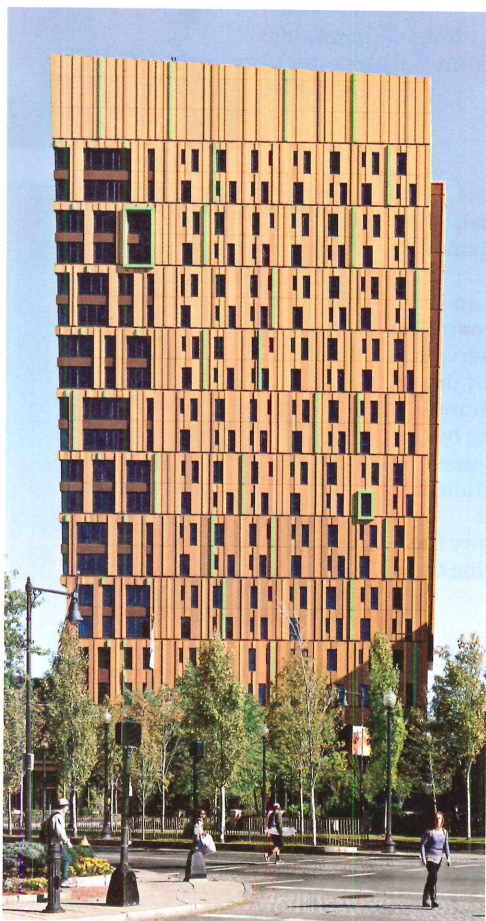
Framed in stainless steel, the Cove prefabricated outdoor shower from Oborain is as luxurious as it is practical. It is handcrafted in Massachusetts out of cedar clapboard with meranti wood accents, ipé or ash floor boards, and Hansgrohe or Axor fittings. Suitable for residences, resorts, and spas, the Cove is available in several sizes.

oborain.com CIRCLE 242



Editors' Choice 2013

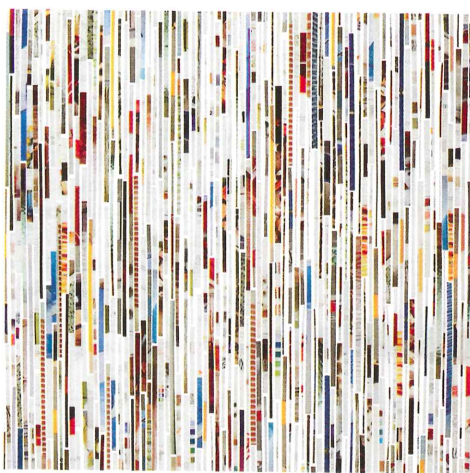
The editors combed through a year's worth of products featured in the magazine to present these favorites, from ceiling systems to kitchen and bath furnishings.



Alucobond Plus

Alucobond Plus, manufactured by 3A Composites USA, is an aluminum-composite material that is suitable for both interior and exterior cladding. Made of two sheets of .02" aluminum bonded to a lightweight, fire-resistant core, it is available in 50" x 196" or 62" x 196" sheets. Shown here cladding the Massachusetts College of Art and Design, Alucobond is easily customizable and available in a broad array of finishes including stainless, bone white, and zinc.

alucobondusa.com CIRCLE 250



Paper Lane Pattern for Varia Ecoresin Panels

Part of 3form's Varia Ecoresin line and Full Circle Program, Paper Lane employs the precision hand-cutting of craftspeople in Nepal to slice discarded 3form catalogs and arrange them in vertical striations. The result is a panel with vibrant, colorful fields. Varia Ecoresin is a polyester-based material containing 40% pre-consumer recycled content.

3-form.com CIRCLE 251



Kiora Sink

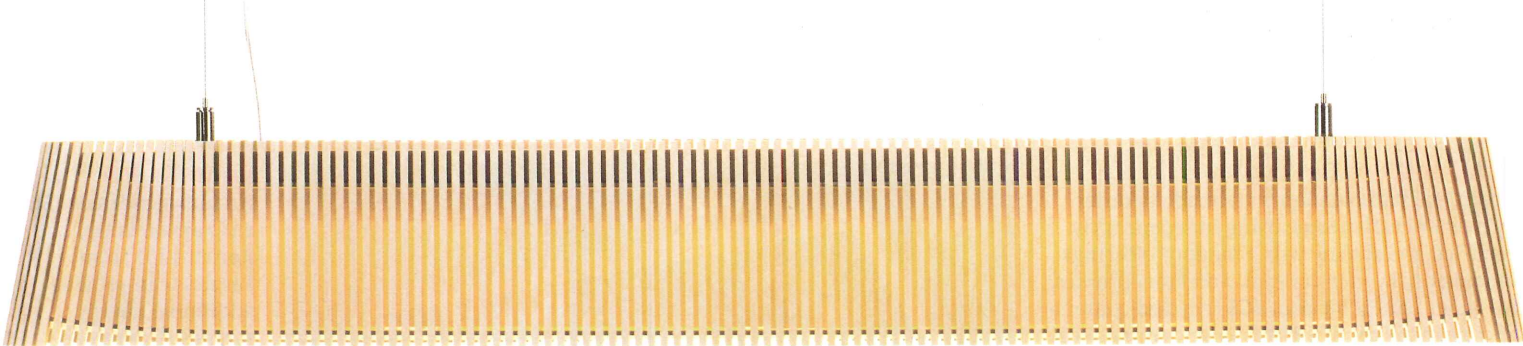
Sieger Design created the rectilinear Kiora sink for Duravit with a 2"-wide frame that provides splash protection and a slim, elegant appearance. The easy tilt of the drain board allows water to flow off plates, pots, and pans back into the sink. Kiora is available in surface-mounted and drop-in variations. The sink is reversible as a right- or left-handed bowl, thanks to the axial layout of the tap, overflow, and pop-up waste control. duravit.us CIRCLE 258



AR Series LED Architectural Troffer

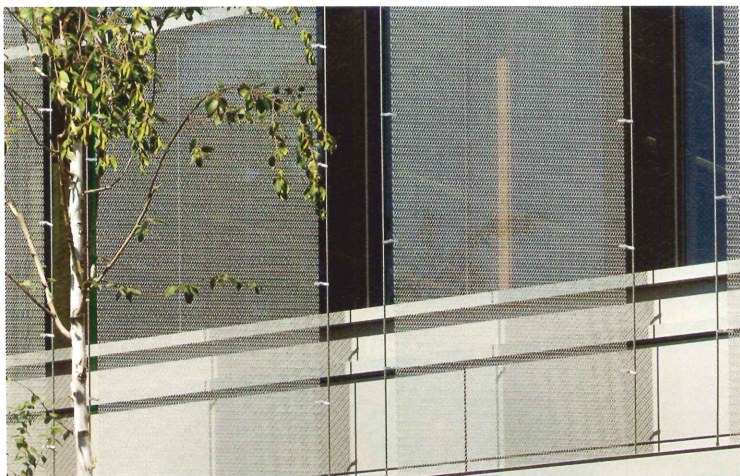
Cree's AR Series LED Architectural Troffer distributes high-quality light with the efficacy of 100 lumens per watt and a 33% energy savings versus standard T8 fluorescents. Its flush-mount white housing allows the AR Series to blend seamlessly into almost any ceiling design and softly illuminate a space through highly diffused performance optics. The troffers are available in two models and a range of color temperatures to match existing fluorescent technologies (3,500K and 4,000K). The series supports dimming down to 5% with industry-standard 0-10V controls.

cree.com CIRCLE 257



Owalo 7000 Pendant

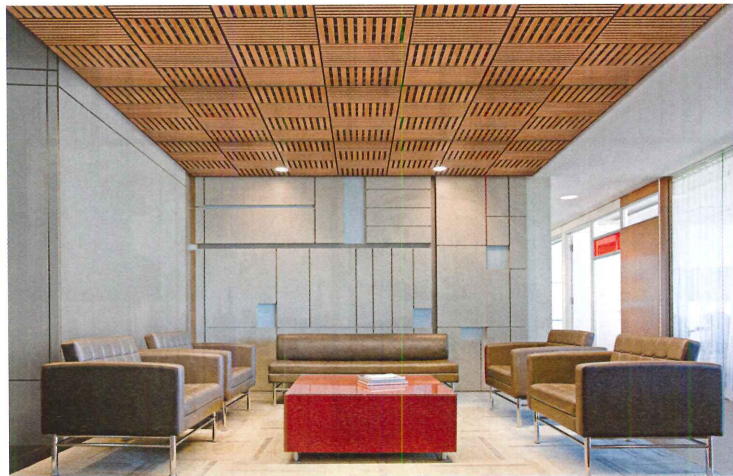
Finnish architect Seppo Koho draws on his national tree, birch, to design sophisticated wood lamp shades for lighting brand Secto Design Oy. His Owalo 7000 suspension lamp features a slatted oblong form specifiable in natural birch, walnut birch, and black or white laminated birch. The pendant measures 39½" long x 5¼" high x 3½" deep and utilizes LED or fluorescent lamplighting. globallighting.com CIRCLE 252



Woven-Metal Fabric Fins

Cambridge Architectural's woven-metal fabric fins come in a variety of open-area patterns for solar-shading purposes. Pictured here as cable-supported fins on the western elevation of the University of Oregon's Ford Alumni Center, the material limits solar heat gain while providing natural daylighting and views. This Mid-Balance pattern has an open area of 52% and is made of stainless steel.

cambridgearchitectural.com CIRCLE 256



WoodWorks Grille Ceiling Additions

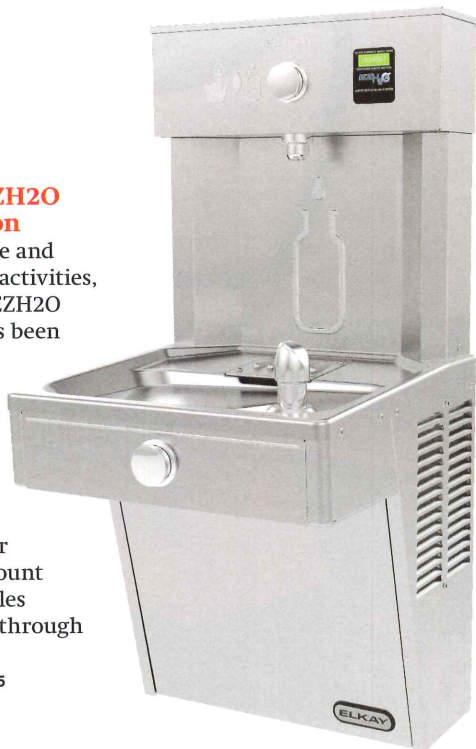
Armstrong's WoodWorks Grille ceiling-system line includes vertical and horizontal blade options and a Tegular edge for easy installation in standard suspension systems. WoodWorks Grille Tegular panels are offered in 2' x 2' and 2' x 4' sizes and standard finishes including maple, light cherry, dark cherry, and walnut.

armstrong.com CIRCLE 253

Vandal-Resistant EZH2O Bottle-Filling Station

To withstand destructive and common wear-and-tear activities, indoors or out, Elkay's EZH2O bottle-filling station has been enhanced with durable and tamper-free features such as an easy-to-use push-button, an inside-mount fountain spout, and a stainless-steel exterior. A monitor displays an estimated count of 20-ounce plastic bottles diverted from landfills through use of the filler station.

elkayusa.com CIRCLE 255



Terralite Cement

Terralite cement is a lightweight, thermally insulative material that delivers increased R values and performance over conventional lightweight concrete, according to the manufacturer. Appropriate for both interior and exterior applications, Terralite is 20% lighter than traditional concrete, making it ideal for roofs, walls, and geotechnical fill.

terrabonamaterials.com CIRCLE 254

Bamboo Door Collection

GreenLeaf bamboo doors are made to order by master craftspeople using independently certified green materials. Standard offerings include flush, stile-and-rail, and French styles. All inner panels have an SCS recycled-content and clean-air-certified MDF core covered with a solid bamboo veneer. The flush doors come with microbevel and inlays in stainless steel or brass. Bamboo grain can run vertically or horizontally. greenleafdoors.com CIRCLE 259



Round 4 I/D

An indirect-direct LED suspension lamp, Round 4 I/D from Peerless can provide additional energy savings through optional features such as an integrated sensor for daylight dimming and occupancy detection. The die-cast aluminum luminaire—also available with a white finish—comes in 4' or 8' sections, and the cylindrical units can be combined and squared off with L-shaped corner pieces to create continuous installations. peerlesslighting.com

CIRCLE 260

Lumenbeam Grande LED Projector

Lumenpulse's award-winning Lumenbeam family of exterior and facade lighting expanded this year with the addition of Grande. This largest version is a 100W LED luminaire with a 13 $\frac{3}{16}$ "-diameter face that can project anywhere between a 60° flood and narrow 6° beam. The fixture can be mounted on the ground, walls, or poles.

lumenpulse.com CIRCLE 267



Parallel 42 Bench

Michigan-based Landscape Forms repurposes lumber from its own manufacturing waste to create the slatted modular bench series Parallel 42. The indoor-outdoor units can be specified in isosceles trapezoid or parallelogram formats, which can then be combined to form linear, X, or T shapes, and a number of geometric configurations. The bench is constructed from unfinished Jarrah wood, which weathers naturally to a pewter gray, and steel supports that are powder-coated to protect against rusting, chipping, peeling, and fading.

landscapeforms.com CIRCLE 266





StickBulb Collection

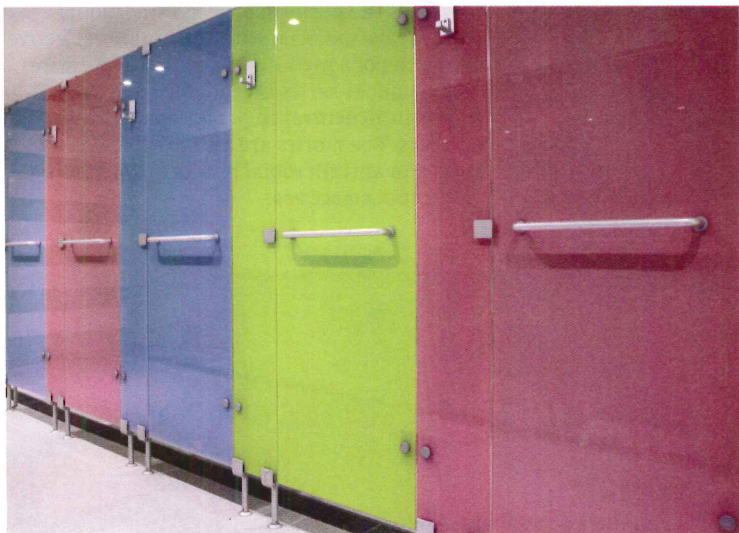
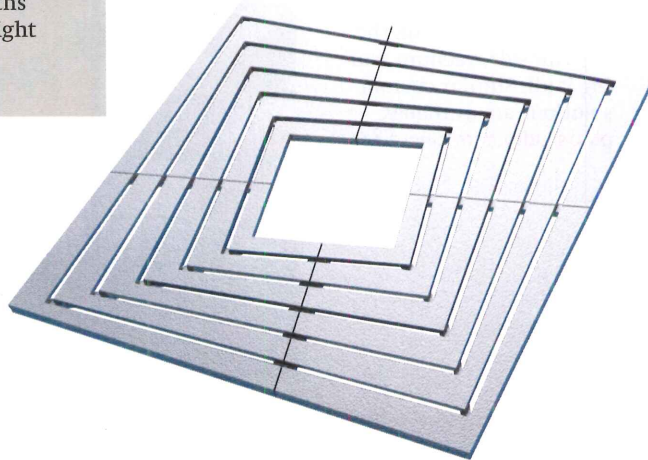
Rather than create a one-off lighting installation, the multidisciplinary design firm RUX of New York developed StickBulb, a modular “light-up erector set.” Using reclaimed materials, StickBulb is an LED strip housed within a sleek wooden beam. The bulbs come in lengths from 1' to 7' and can be displayed as a sconce, leaned against the wall as a minimalist light fixture, or mounted to the underside of a shelf to illuminate work surfaces.

stickbulb.com CIRCLE 261

Vertigo Tree Grate

Referring to the dizzying sensation and the Alfred Hitchcock film of the same name, Vertigo tree grates from Ironsmith feature a concentric square motif that torques as it radiates outward. Made of cast iron or aluminum, the grate comes in sizes ranging from 48" to 60" square, with tree openings starting at 14" square. Ironsmith also offers the design in a drain-grate version.

ironsmith.cc CIRCLE 262



Custom Shower and Toilet Stalls

Custom glass and hardware systems company Carvart offers solutions for a variety of architectural-interior needs, including frameless wet-space partitions such as shower stalls (shown) and toilet cubicles. This installation features Carvart's Color Line of tempered and laminated glass panels, which are attached to each other and the floor with anodized aluminum fittings.

carvart.com CIRCLE 263



XSM Vibrant Series LED Module

Light quality—and not necessarily brighter light—can deeply affect how viewers see color and texture, so Xicato has tuned color gamut areas to create its Vibrant Series, an LED solution that renders cleaner whites, more brilliant reds, pinks, and blues, and greater depth and detail. The 1¾"-diameter module can be used by curators, designers, and retailers to highlight particular displays without affecting the color temperature of the surrounding space.

xicato.com CIRCLE 265



Sensate Faucet

Kohler's touchless kitchen faucet uses a sensor that responds in 20 milliseconds for consistent on/off operation, without the need for users to tap or wave in front of the sensor; they just need to place a hand or utensil through the activation area to start or halt water flow. Sensate's small handle allows users to tweak the water temperature and flow. Optional manual operation ensures that the faucet works during power outages.

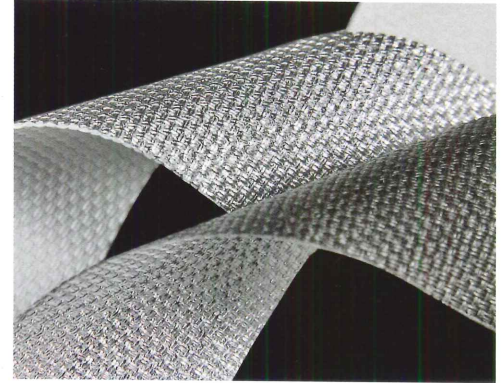
kohler.com

CIRCLE 264

Weil Studio Collection

To produce crisp graphics that are visible inside and outside of a building, Pulp Studio collaborated with photographer Amanda Weil to create custom installations. Shown here in a floral version for Bel Air Bar and Grill in California, the studio laminated a double layer of the imagery—with a frosted interlayer—onto Solarban glass, then added a further glass layer on the interior side, vacuum sealing it all. Similar custom solutions are available.

pulpstudio.com CIRCLE 268



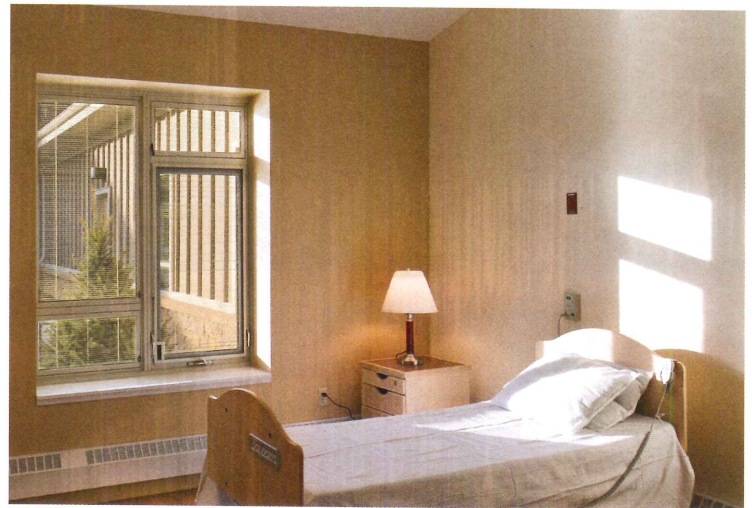
Interior Sun-Control Fabrics

Phifer's Style 2500, part of the Performance+ collection, is a 1% open basketweave fabric that combines the performance of a traditional SheerWeave material with the highly reflective properties of a metallized coating. The entire Performance+ series is available in 63" and 96" widths in 10 neutral colors for commercial interiors. The fabrics are also infused with Microban antimicrobial product protection.

phifer.com CIRCLE 269

ADA-Compliant Window Hardware

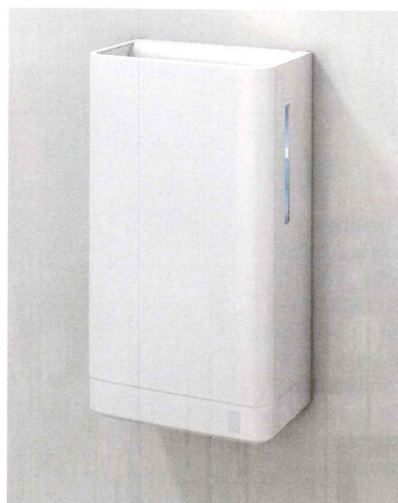
Most of Wausau's Invent Series window family and 4250-Z zero-sightline awning and casement insert vents now feature more accessible hardware options. These projected windows operate with one hand and require an operating force of 5 pounds or less to unlock, open, close, and lock without requiring a tight grip or twisting of the wrist. The designs can meet the operating-force and limited-motion requirements of ICC/ANSI A117.1. wausauwindow.com CIRCLE 272



Antimicrobial Copper Hardware

Rocky Mountain Hardware collaborated with Olin Brass, a developer of high-performance copper alloys, to produce antimicrobial copper surface hardware. Hundreds of styles from the company are available for casting in CuVerro, a copper that incorporates antimicrobial properties. Rocky Mountain also produces a series in CuVerro alloy specifically suited to health-care facilities.

rockymountainhardware.com CIRCLE 271



HDR120 Sensor Activated Clean Dry

TOTO's HDR120 hand dryer demonstrates that designing inside the box can also yield attractive results. Its simple white form measures a compact 12" x 21½" and conceals sensor-activated double-sided blowers that generate 208 mph of air speed. Side panels and a tray prevent excess water from dripping to the floor. The energy-efficient unit operates quietly—at 57dB.

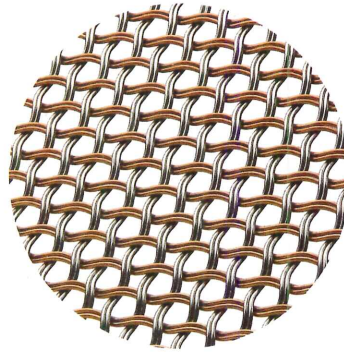
totousa.com CIRCLE 270



Kartell by Laufen

The Italian furnishings manufacturer Kartell and the Swiss bathroom specialist Laufen collaborated on a contemporary bathroom-furniture collection. Called Kartell by Laufen, it includes tubs, shelving, mirrors, drawers, sinks, toilets, and accessories in transparent polycarbonate and a new material, SaphirKeramik, which the company claims is thinner than and twice as strong as ceramic. Shown is a chest of drawers, a SaphirKeramik washbasin, and a transparent polycarbonate mirror frame and stool.

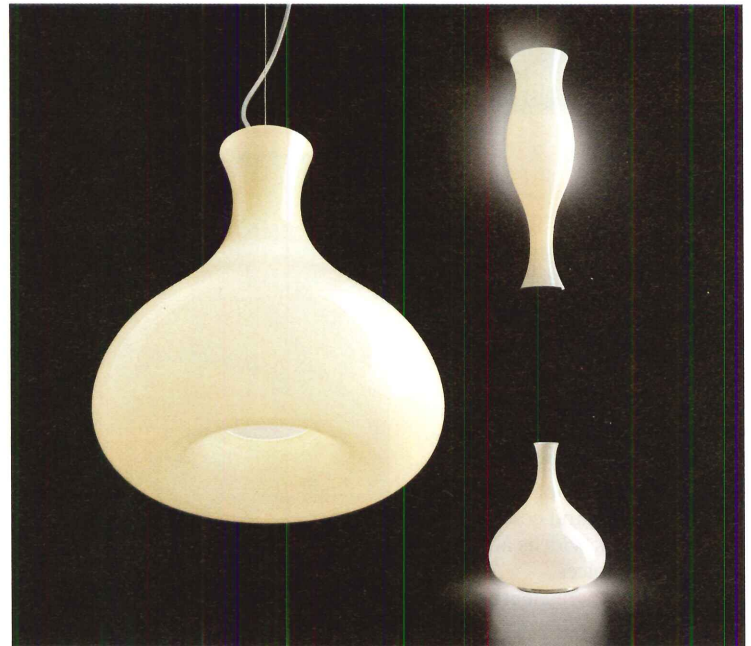
laufen.com CIRCLE 273



Circle Mesh

The first-ever woven metal fabric to feature circular patterns, Banker Wire's Circle Mesh is woven with the same wire as traditional architectural mesh, but is crimped by a spiral machine that allows for different sizes and percentages of open area. The material can be used on any scale and, as an added benefit, the weaving process of mesh produces very little scrap compared with the process of perforating metal.

bankerwire.com CIRCLE 274



Eva Zeisel Collection

The late designer Eva Zeisel's penchant for sensuous, feminine shapes informed a line of hand-blown Murano glass lighting for Leucos. The collection includes pendants, wall sconces, and table lamps in the rotund Summer design and the narrower Spring version.

leucosusa.com CIRCLE 275

2' x 2' FlatLight

Pixi Lighting's FlatLight recessed fixtures are designed to be LED replacement fixtures for existing luminaires. Available in 1' x 4' and now 2' x 2' configurations, they are ideal for under-cabinet, flush-ceiling, T-bar, drop-ceiling, and wall lighting, as well as dry and damp locations. FlatLight's internal power supply allows for TruFlat mounting, and its 90° bezel edge is suited for commercial applications. FlatLight is available in a 4,000K color temperature, is RoHS-compliant, and features a five-year limited warranty.

pixi-lighting.com CIRCLE 276





Radii Pendant

Part of Io Lighting's Radii fixture family, the pendant is adjustable by up to 45° and offers the ability to insert additional control media including a soft-focus beam, linear-spread lenses, and colored lenses. This 50,000-hour accent light delivers center-beam candlepower equivalent to a 100W ceramic-metal-halide lamp at one-third the watts. Available in two different light outputs (standard and high), three color temperatures (2,700K, 3,000K, and 5,000K), and three paint finishes: silver, black, and white. cooperindustries.com CIRCLE 277

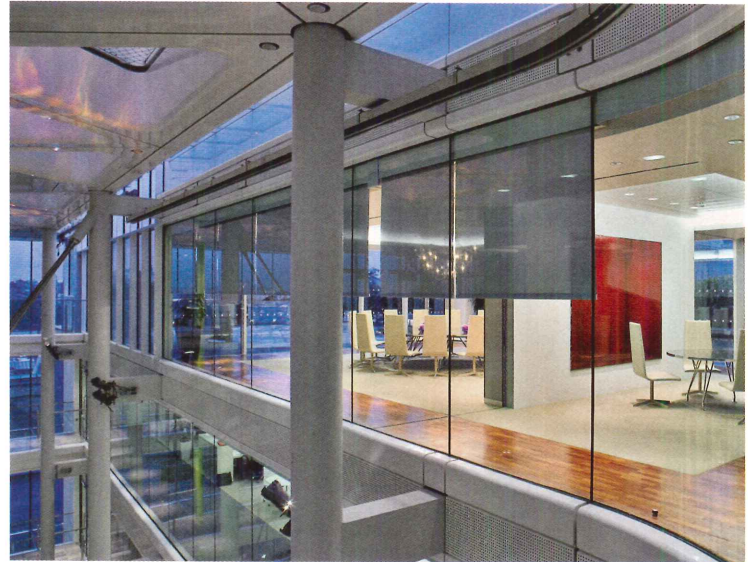
Timeline Color Series

Through a specially developed color process, Timeline created a sustainable alternative to reclaimed and conventional on-site wood finishing. Timeline products can contribute to LEED projects as a result of its water-based and low-VOC materials and FSC-certified wood. The Timeline Color Series offers 11 custom hues and comes in multiple plank widths and three edge choices. timelinewood.com CIRCLE 281



Magna T-Cell Ceiling System

Chicago Metallic's Magna T-Cell ceiling system is a modular design that can break up vast stretches of ceiling with staggered elevations. The system, shown here installed at Scioto Downs casino in Columbus, Ohio, can support lights, cameras, and diffusers. Two different cell patterns and custom colors are available. chicagometallic.com CIRCLE 280



LIFT

This automated shading innovation from Lutron offers an installed-cost savings of 30% per shade panel when compared with existing market solutions. Ideal for large commercial applications, the Roller 300 drive with Lutron Intelligent Facade Technology (LIFT) is capable of controlling 300 square feet of fabric from one low-voltage shade drive via in-room keypads or Lutron's Hyperion solar-adaptive technology. lutron.com CIRCLE 278

Monolithic Ceiling & Lighting System

USG and GE Lighting collaborated on an integrated monolithic ceiling system in which the mechanical components and lighting are incorporated into the ceiling plane. The sustainable system utilizes USG's highly reflective Logix ceiling with GE's energy-saving Lumination LED linear recessed luminaires. usg.com CIRCLE 279





Tagora

Artemide[®]

design lighting architecture

Contact your local Artemide sales office for more information.
Toll free: 1-877-Art-9111 • contractsales@artemide.net • www.artemide.net

CIRCLE 34

Performance Anxiety

Creating buildings that deliver on progressively more ambitious environmental goals will require energy simulations that reliably predict post-occupancy consumption. [By Peter Fairley](#)



LEWIS INTEGRATIVE SCIENCE BUILDING

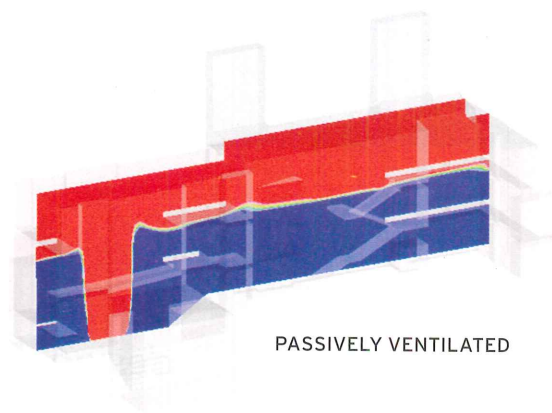
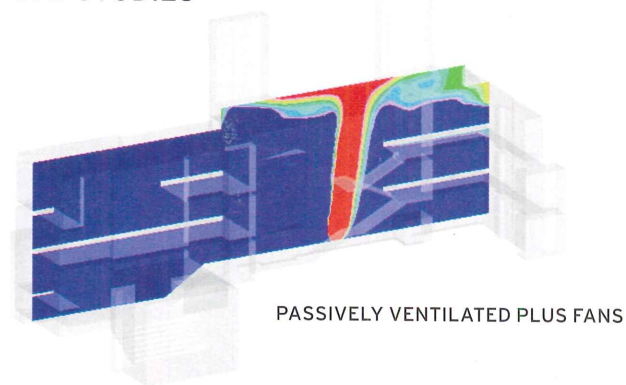
Scientists mix and mingle in the atrium of the Lewis Integrative Science Building (above) at the University of Oregon in Eugene. Energy modeling helped the facility's designers harness a natural updraft to passively ventilate the atrium and remove heat overnight, cutting the lab's energy budget by 16 percent. Computational fluid dynamics (CFD) studies, however, showed that passive ventilation alone (bottom right) could not clear smoke from the atrium during a fire, driving the addition of ceiling fans that provide extra lift (top right).

HIGHER ENERGY performance has evolved from an aspiration to an expectation. Owners of buildings—especially those certified under rating systems like LEED—increasingly count on an energy savings payback. And a wave of “net zero energy” buildings promises to generate enough energy on-site from renewable sources to equal or exceed demand. As a result, predictive energy models face new scrutiny. “In the last five years, energy modelers have learned that they will have to answer for their models,” says Laurie Canup, an associate with Portland, Oregon-based THA Architecture.

Energy modeling depends on physics-based simulation to predict how energy will flow through a building, taking account of mechanical systems, materials, control schemes, occupants, and weather. The software packages were created to help architects and engineers choose among competing design options, and they do that well. As Matthew Herman, an energy-modeling expert with engineering firm Buro Happold puts it: “The models are more than accurate enough to consistently drive design teams toward the right decision.”

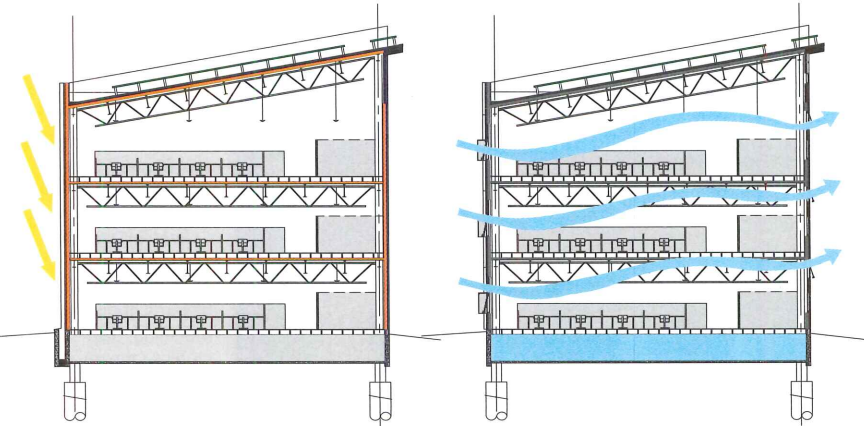
However, predicting the raw kilowatt-hours of electricity or cubic feet of heating fuel that a building will consume is

CFD STUDIES





THERMAL MASS DIAGRAMS



another story. Some recent projects show sizable gaps between prediction and performance. The primary problem is the unpredictable nature of humans. For example, users may occupy a building differently from how they were expected to, while owners routinely skimp on commissioning to find and fix faulty equipment. And building managers may reprogram controls, sacrificing energy performance for occupant comfort. “Modeling isn’t rocket science,” says Dennis Creech, executive director of Atlanta’s Southface Energy Institute. “It’s harder because there are people involved.”

In the past, some modelers exploited the resulting uncertainty by selecting assumptions that yielded trimmer energy predictions. Such “gaming” is on the decline, according to both architects and modelers. “There was a period where people were clearly greenwashing and making crazy claims,” says Herman. “A lot of that stopped during the recession.”

MODEL EARLY AND OFTEN

Despite the uncertainties and challenges involved, energy modeling has been riding an upswing over the past decade. Mitchell Dec has experienced that first hand. Dec was the only energy modeler at Glumac when he joined the Portland, Oregon-based engineering firm in 2005. In those early years, Dec was brought on to projects primarily after construction documents were already well advanced. His job was to assess whether a design could beat code-mandated performance to improve its LEED rating, and to tweak designs that fell short.

RESEARCH SUPPORT FACILITY

Modeling helped determine passive strategies for the National Renewable Energy Laboratory’s Research Support Facility in Golden, Colorado, such as elongated daylight-oriented wings (top) and cladding panels that store thermal energy (above). Combined with photovoltaics, these features allow the building to generate more energy than it consumes. Energy modeling’s role continues post-occupation: managers use an “as-built” model to spot equipment or occupants that are using more energy than expected.

“We’d count the beans. We were an afterthought,” he recalls.

Today Dec leads a 13-person energy-modeling group whose members engage at even the earliest stages of design. “Energy modeling early and often is the workflow for buildings that are 50 to 60 percent more efficient than code versus 15 to 20 percent better,” says Dec.

Stefano Schiavon, a modeling expert with the Center for the Built Environment at the University of California, Berkeley, agrees, adding that today’s highest-performing buildings could not exist otherwise. Without simulation, says Schiavon, it is impossible to predict the impact that largely passive energy-saving techniques such as natural ventilation and thermal storage will deliver.

The need to get these passive strategies right is driving software improvements. Older simulation packages such as eQuest are being eclipsed by more powerful tools. Commercial options include Virtual Environment, offered by London-based IES, and the TRNSYS code developed by the University of Wisconsin and applied most notably by German sustainable-design firm Transsolar. A new graphical user interface, meanwhile, is spurring adoption of EnergyPlus—an open-source upgrade of the U.S. Department of Energy modeling engines that underpin eQuest.

Schiavon says that the more sophisticated tools have enhanced capabilities for simulating daylighting and thermal properties and can model in two-to-three-minute intervals rather than hourly. This enables a more accurate understanding of the buoyancy effects that designers might exploit in atriums or solar chimneys, as well as better apprehension of the transfer of heat at work in features such as radiant floors.

High-performance buildings that meet or beat expectations show that models can accurately predict real energy use. Dec cites the 103,000-square-foot Lewis Integrative Science Building at the University of Oregon in Eugene completed in 2012, which was designed by THA, engineered by Omaha, Nebraska-based HDR, and modeled by Glumac.

One component that involved extensive modeling is the lab building’s glass-covered atrium, where scientists mix and meet. THA wanted to take advantage of buoyancy to condition the three-story space by drawing in air, along with excess heat and cooling from adjacent labs. Making it work required extensive computational fluid dynamics (CFD) analysis to predict air and smoke movements during a fire.

The CFD models showed that passive ventilation alone might not clear smoke from the top level, necessitating ceiling fans to supplement the buoyancy-driven airflow. Nevertheless, even with the fans, the atrium cut the building’s predicted annual energy use per square foot—its energy use intensity or EUI—by 33 kBtus (33,000 British thermal units). Predicted EUI for the entire facility was 168 kBtus per square foot per year—60 percent better than the national average for lab buildings in 2003 and thus meeting the goal of the Architecture 2030 Challenge, which seeks to make new buildings carbon neutral by 2030. After one year of occupation, performance is slightly ahead of expectations, with an EUI of 163.

Tucson-based architect Jerry Yudelson, coauthor of *The World’s Greenest Buildings: Promise Versus Performance in Sustainable Design*, points to the Research Support Facility at the National Renewable Energy Laboratory (NREL) in Golden, Colorado, which is making good on its net zero design goal.

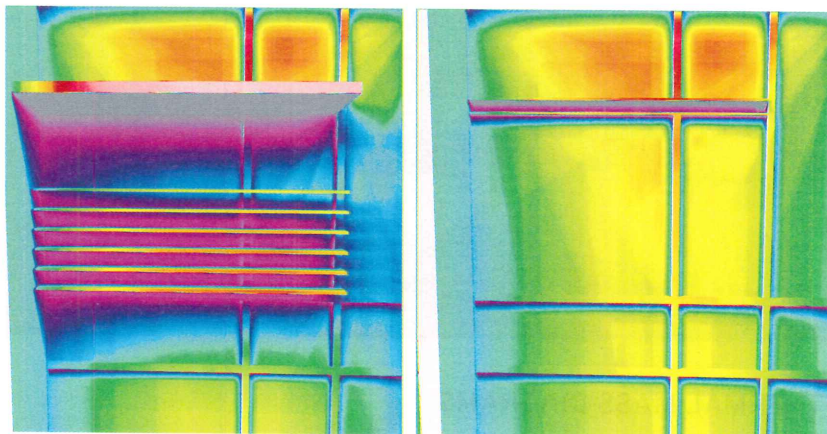
“They’re pretty much right on the money,” says Yudelson. For the support facility’s first phase, which came online in 2010, modelers at engineering firm Stantec predicted an EUI of 35.1 kBtus. It consumed 35.4 during the first two years of operation. The second wing, completed less than one year ago, is beating expectations.

REALITY BITES

While models can hit their marks, reality can also outwit simulation. Consider the 58,000-square-foot Health Professions and Student Services Building on the Danvers, Massachusetts, campus of North Shore Community College, which was one of the largest buildings to go for net zero energy when completed in 2011. Boston-based DiMella Shaffer was the architect, RDK Engineers designed the mechanical systems, and Buro Happold delivered energy modeling.

Modeling via EnergyPlus was supplemented with advanced

DAYLIGHT STUDIES



NORTH SHORE COMMUNITY COLLEGE

The Health Professions and Student Services Building (left) at North Shore Community College in Danvers, Massachusetts, exemplifies the hazards of predictive modeling. Daylighting studies (above) and energy models drove a selection of strategies such as shading fins that manage solar heat gain through the facade. But measured consumption is running at twice the modeled level, due in part to underperforming equipment.

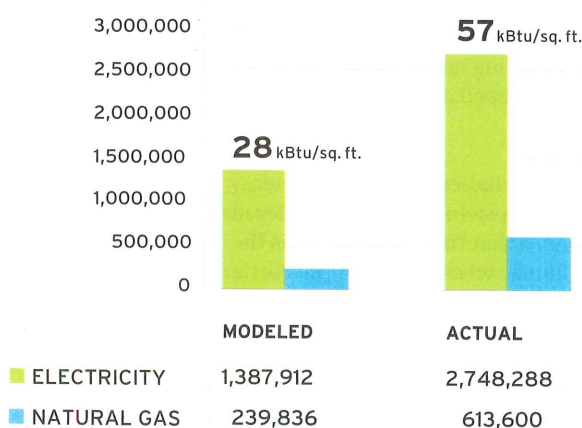
CFD and lighting simulation to evaluate a wide range of options that would maximize on-site energy production and minimize consumption. Modeling showed that a demand for acoustically isolated classrooms precluded passive ventilation, pointing the design team toward a geothermal system instead. The building’s heat pump exchanges thermal energy between 500-foot wells drilled under the parking lot and interior chilled beams.

Modeling also drove the clerestory windows in the upper walls. “Energy modeling proved that it was desirable to have more daylight and thus less electricity running artificial lights,” recalls DiMella Shaffer principal Peter Shaffer.

After two years of occupation, however, the building is not operating at net zero energy. It is consuming 57 kBtu per square foot per year, double the modeled EUI. Offsetting the unexpected consumption would require more than double the 342 kilowatts of photovoltaics (PVs) installed.

The primary issue, says Shaffer, is an inefficient geothermal

ESTIMATED VS. ACTUAL ENERGY USE





HAWAII PREPARATORY ACADEMY

Predictive inaccuracy can favor energy efficiency when occupants prove less needy than energy modelers assumed. Hawaii Preparatory Academy's Energy Laboratory in Kamuela, completed in 2010, is using just over half as much energy as its designers had predicted. The bulk of the savings stem from the occupants' choice to live with hotter conditions rather than turn on mechanical air-conditioning.

heat pump, which will be swapped out this winter. More chilled beams will also be installed to accelerate heating and cooling, in response to occupant complaints that prompted managers to keep the entire building conditioned overnight.

Peter Fourtounis, the project's lead architect and now at Boston's Elkus Manfredi Architects, adds that post-design decisions, including the addition of a computer lab and higher-than-expected plug loads, contributed to the performance gap. He also points out that the project had been designed for a PV array that was 15 percent larger.

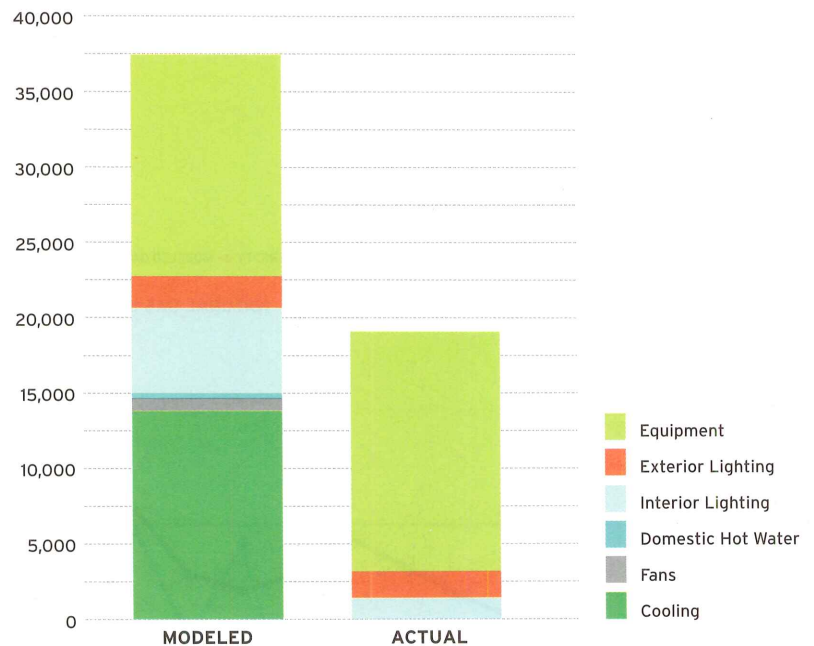
User behavior has had a more positive impact on energy use at Hawaii Preparatory Academy's Energy Laboratory in Kamuela, designed by Boston-based Flansburgh Architects, with energy modeling by Buro Happold. The building, completed in 2010, was shaped to enhance natural ventilation using CFD analysis. The structure backs into the prevailing wind, and air forced over its shed roofs creates negative pressure, pulling fresh air through automated louvers and windows. The results of that passive scheme, coupled with solar power, far exceed the building's net zero energy goal. The building is operating without any mechanical cooling and consuming just over half as much energy as predicted.

What did the modeling miss? The site's microclimate has been milder than Buro Happold's assumptions, which were based on weather data collected on-site during design and from the nearby airport. But the bigger piece, according to Herman, is that the occupants tolerate conditions that are hotter and more humid than those outlined in ASHRAE Standard 55, which defines a range of indoor thermal conditions acceptable to most people. "They just wear Hawaiian shirts all the time. Even up to 82 or 83 degrees, they are still perfectly comfortable and don't turn on the AC," he says.

Occupant behavior was also a surprise for the historic warehouse renovation in Portland, Oregon, that architects GBD and Ankrum Moisan designed for Danish wind turbine manufacturer Vestas. The LEED Platinum-targeted project, completed in 2012, is slightly ahead of modeled energy performance overall, but the pattern of use was unanticipated,

ESTIMATED VS. ACTUAL ENERGY USE

KILOWATT HOURS



says Dec at Glumac, the project's energy modeler: electricity consumption is about two thirds of what was modeled, while gas use runs 10 to 20 times higher in heating season.

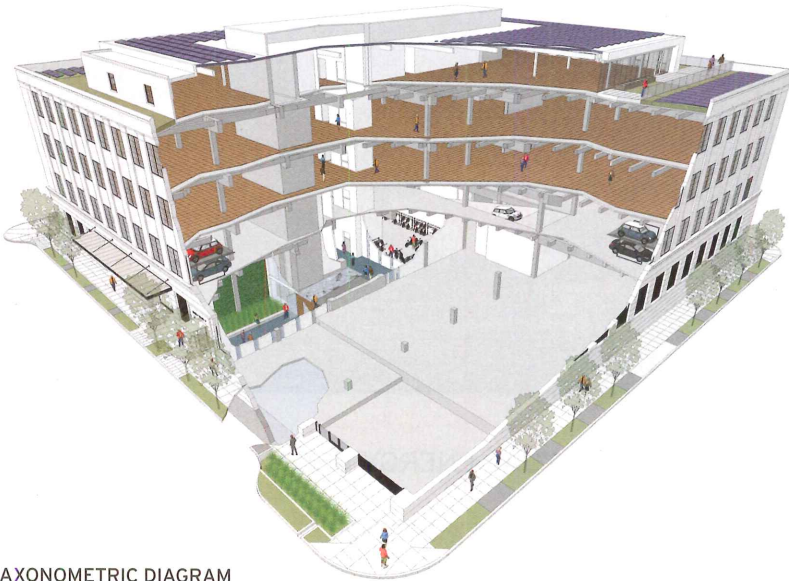
Dec attributes the low power use, in part, to the behavior of reflected light. It's a weak point for energy models, and the building's daylight atrium is simply directing more light into adjacent offices than predicted. But he says bigger savings come from the ever-increasing efficiency of office computing equipment, which he calls a moving target.

Better office equipment and less electric lighting help explain the increased gas use, says Dec. With lighting and



VESTAS'S NORTH AMERICAN HEADQUARTERS

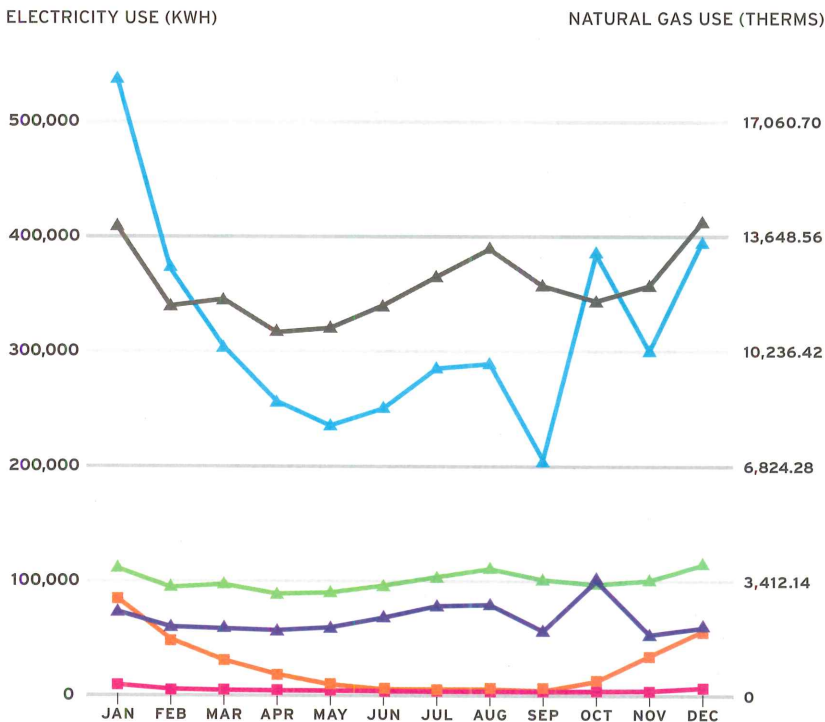
The news is mostly good at a historic warehouse in Portland, Oregon, which was recently converted into offices for a wind turbine producer. Electricity use is one third lower than modeled, thanks to a daylit atrium and efficient computing equipment. However, with less heat being dumped into open office spaces by electric lighting and equipment, the gas-fired heating system is running overtime.



AXONOMETRIC DIAGRAM

ESTIMATED VS. ACTUAL ENERGY USE

MODELED ENERGY ACTUAL ENERGY MODELED ELECTRICITY ACTUAL ELECTRICITY MODELED GAS ACTUAL GAS



machines contributing less heat in cold weather, natural gas-fired heating has to make up the difference.

FEEDING BACK

Vestas got lucky, since lower power use more than offsets their increased gas consumption. Assuring greater accuracy up front, however, will require a closer fit between the assumptions modelers make and the behavior that follows.

Last year the Seattle-based New Buildings Institute offered one solution: national guidelines for those parameters not already defined by codes or standards. Mark Frankel, the institute's technical director, says they based their COMNET guidelines on informed analysis of such factors as the number of computers in offices and how many stay on overnight.

Another accuracy-boosting strategy is to extend the model's use beyond the design process. Modelers can help tune control systems, educate building users, and identify equipment malfunctions. Extended modeling is one reason NREL's new structures are performing, says Tom Hootman, director of sustainability for Denver-based RNL, the project architect. Updated "as-built" energy models of each wing delivered by Stantec following construction give NREL what Hootman calls "a road map for net zero energy operation."

Future projects benefit too, since prolonged involvement creates a feedback loop for validation of modeling tools and assumptions. A growing number of designers argue that, at the very least, design and engineering contracts should require owners to share post-occupancy energy data. Yudelson notes that such feedback is one key to meeting the stringent goals of the Architecture 2030 Challenge. "There's a lot of learning that's got to take place in the next five years," he says. "This is serious stuff, and we're not treating it seriously." ■

Peter Fairley, a journalist based in British Columbia, covers energy and the environment for Technology Review and Nature.



Continuing Education

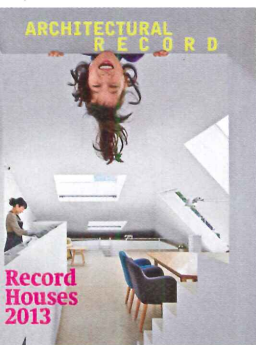
To earn one AIA learning unit (LU), including one hour of health, safety, and welfare (HSW) credit, read "Performance Anxiety" and complete the test, at no charge, at architecturalrecord.com. Upon passing the test, you will receive a certificate of completion, and your credit will be automatically reported to the AIA. Additional information regarding credit-reporting and continuing-education requirements can be found online at ce.construction.com.

Learning Objectives

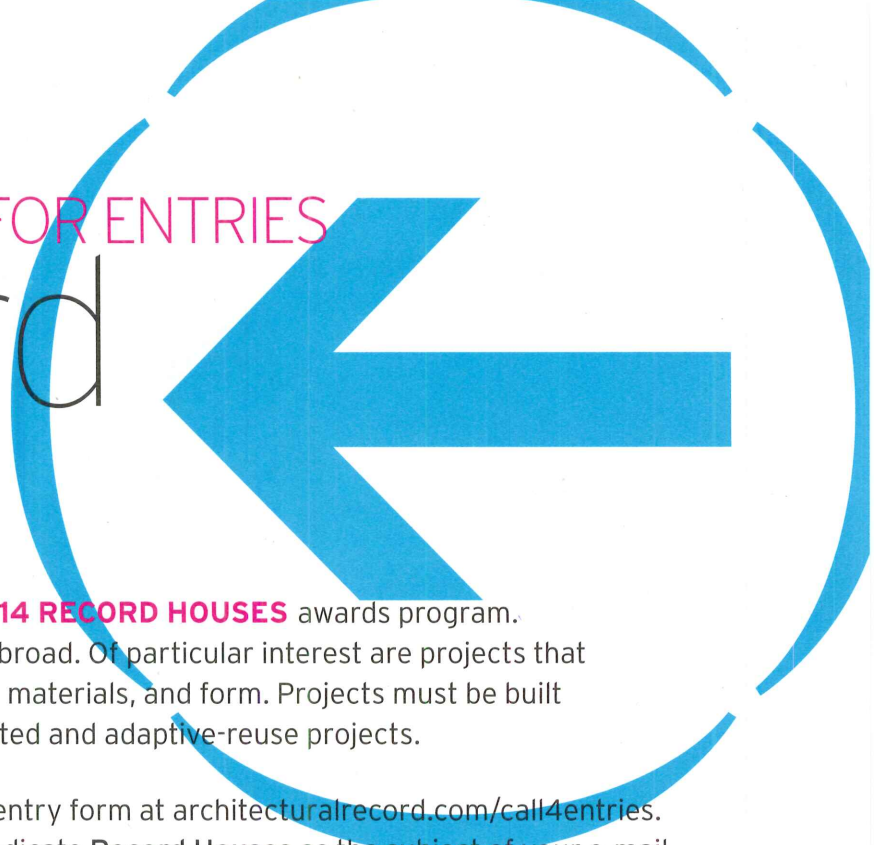
- 1 Discuss the reason why a building's actual performance often diverges from that predicted by its energy model.
- 2 Explain terms and concepts relevant to energy performance, including "EUI," "net zero," and "CFD."
- 3 Describe some recent improvements to energy-modeling tools.
- 4 Explain why post-occupancy use of an energy model can help owners tune building performance and help modelers improve the accuracy of their simulation tools.

AIA/CES Course #K1312A

FOR CEU CREDIT, READ "PERFORMANCE ANXIETY" AND TAKE THE QUIZ AT [CE.CONSTRUCTION.COM](http://ce.construction.com), OR USE OUR FREE ARCHITECTURAL RECORD CONTINUING-EDUCATION APP, AVAILABLE IN THE ITUNES STORE.



2014 **CALL FOR ENTRIES** Record Houses



The editors of **ARCHITECTURAL RECORD** announce the **2014 RECORD HOUSES** awards program. Entry is open to any architect registered in the U.S. or abroad. Of particular interest are projects that incorporate innovation in program, building technology, materials, and form. Projects must be built and inhabited. They may be new construction or renovated and adaptive-reuse projects.

The fee is US\$75 per submission. Download the official entry form at architecturalrecord.com/call4entries. E-mail questions to arcallforentries@mhfi.com. Please indicate **Record Houses** as the subject of your e-mail.

SUBMISSION DEADLINE: JANUARY 7, 2014

Good Design Is Good Business

CALL FOR ENTRIES

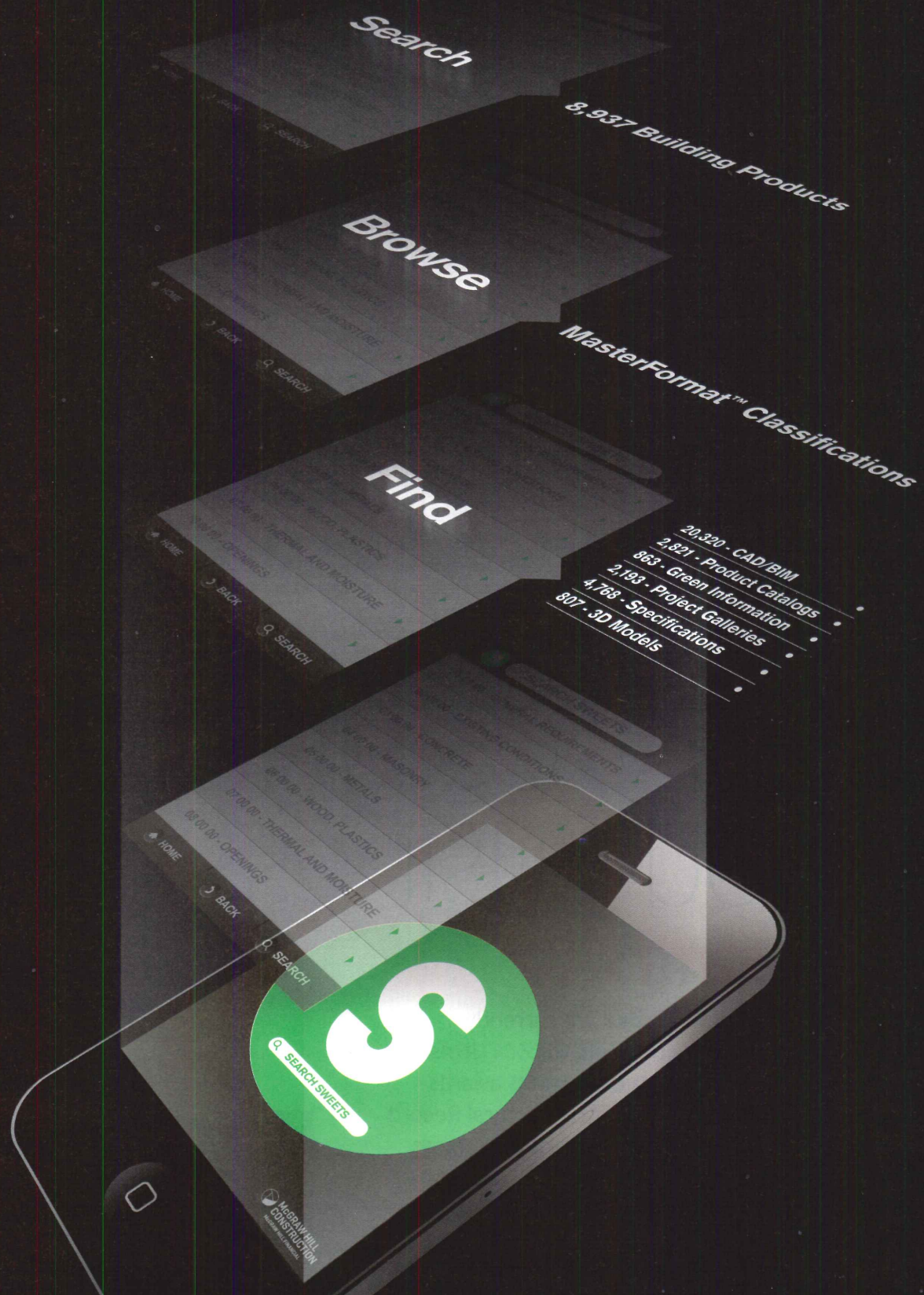
The editors of **ARCHITECTURAL RECORD** are currently accepting submissions for the **2014 ARCHITECTURAL RECORD GOOD DESIGN IS GOOD BUSINESS** awards program (formerly the BusinessWeek/Architectural Record Awards). Good design is a priority for leaders of business and industry looking to boost productivity, rebrand, and attract customers. The Good Design Is Good Business awards honor architects and clients who best utilize design to achieve such strategic objectives. Winners will be published in the June 2014 issue.

The fee is US\$150 per entry and \$50 for each additional project. Download the official entry form at architecturalrecord.com/call4entries. E-mail questions to arcallforentries@mhfi.com. Please indicate **GDGB** as the subject of your e-mail.

SUBMISSION DEADLINE:

February 14, 2014





Introducing the Sweets Mobile App

Download the Sweets Building Products App at the iTunes Store or Google Play.



CONTINUING EDUCATION

In this section, you'll find four compelling courses highlighting creative solutions for tomorrow's buildings—brought to you by industry leaders. Read the courses and then go to our Online Continuing Education Center at archrecord.com to take the tests free of charge in order to earn AIA/CES Learning Units (LUs).



Photo by Nic Lehoux courtesy of Bing Thom Architects

p135

Materials In Action

Wood, concrete and steel have an environmental impact on building construction, operation and end of life

Sponsored by reThink Wood

PM ST SU

CREDIT: 1 HSW, 1 GBCI CE HOUR



p140

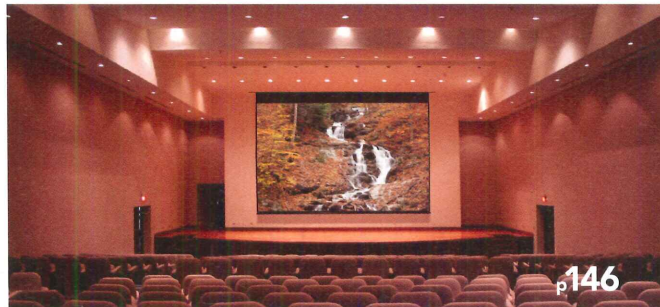
Using Built-in Appliances to Enhance Design

Kitchen and laundry areas can go beyond function to achieve their full design potential

Sponsored by Electrolux

PM RE SU

CREDIT: 1 HSW



p146

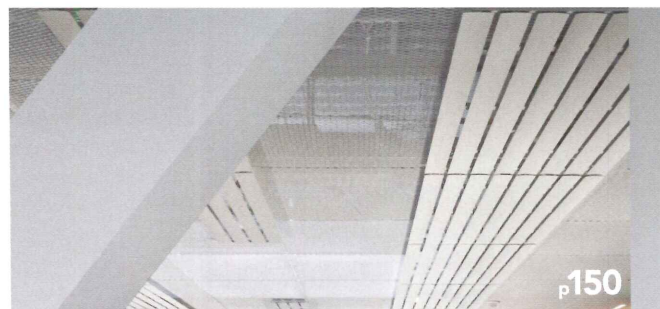
Projection Screens Made Simple

The basics of providing a maximum viewing experience

Sponsored by Draper Inc.

IN PM ST

CREDIT: 1 HSW



p150

Architects Warm to Chilled Ceilings

Radiant heating and cooling is sustainable and sculptural

Sponsored by Price Industries

IN PM ST

CREDIT: 1 HSW, 1 GBCI CE HOUR

CATEGORIES

IN INTERIORS

PM PRODUCTS AND MATERIALS

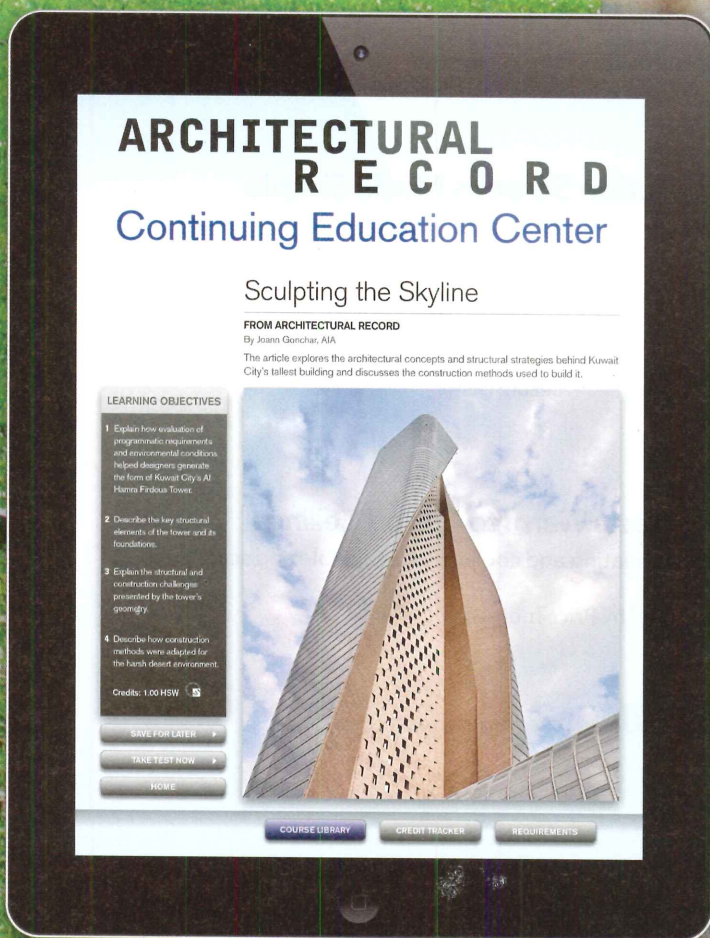
RE RESIDENTIAL

ST STRUCTURAL

SU SUSTAINABILITY

SCHOOLYARD.

Introducing the Architectural Record CEU App. The only app that allows you to fulfill credits and track your progress without Internet access.



Download free at iTunes. Sponsored by 

Photo by Nic Lehoux courtesy of Bing Thom Architects

Exterior of Arena Stage, Mead Center for American Theater, Washington, D.C. Hybrid wood, concrete, and steel structures are often good solutions in sustainable building.



Materials In Action

Wood, concrete and steel have an environmental impact on building construction, operation and end of life

Sponsored by reThink Wood

When an architect specifies a building material, that choice casts a long shadow. While most of the environmental effects from materials occur during the extraction and production phases, the building material influences a structure's environmental footprint well after, throughout the operations phase and beyond. What are the life cycle costs of the material? How durable is it? Is the material thermally efficient? Is it susceptible to moisture damage? Can it withstand seismic activity? What are the code considerations? Can it be recycled or reused, and at what cost to the environment? These are the kinds of questions that should be considered in the earliest project phases. The answers will determine, in part, a structure's sustainability quotient. This article will address, through research and facts, the differences between wood, concrete, and steel in

terms of basic material properties as well as their performance during the building operations phase. Topics will also include end-of-life issues, including the impacts of recycling and re-use, and code changes that have allowed the increasing use of wood in construction.

DESIGN CONSIDERATIONS

Prior to specifying a material, certain issues should be thoroughly investigated.

Durability

Good design and quality construction are important factors in a building's longevity, as is maintenance. "Any building of wood, concrete or steel could last an indefinite period of time, provided there is proper maintenance," says Scott Lockyear, Senior National Director for U.S. WoodWorks, an initiative of the Wood Products Council established to provide free technical

CONTINUING EDUCATION



EARN ONE AIA/CES HSW
LEARNING UNIT (LU)



EARN ONE GBCI CE HOUR FOR LEED
CREDENTIAL MAINTENANCE

Use the following learning objectives to focus your study while reading this month's Continuing Education article.

Learning Objectives

After reading this article, you will be able to:

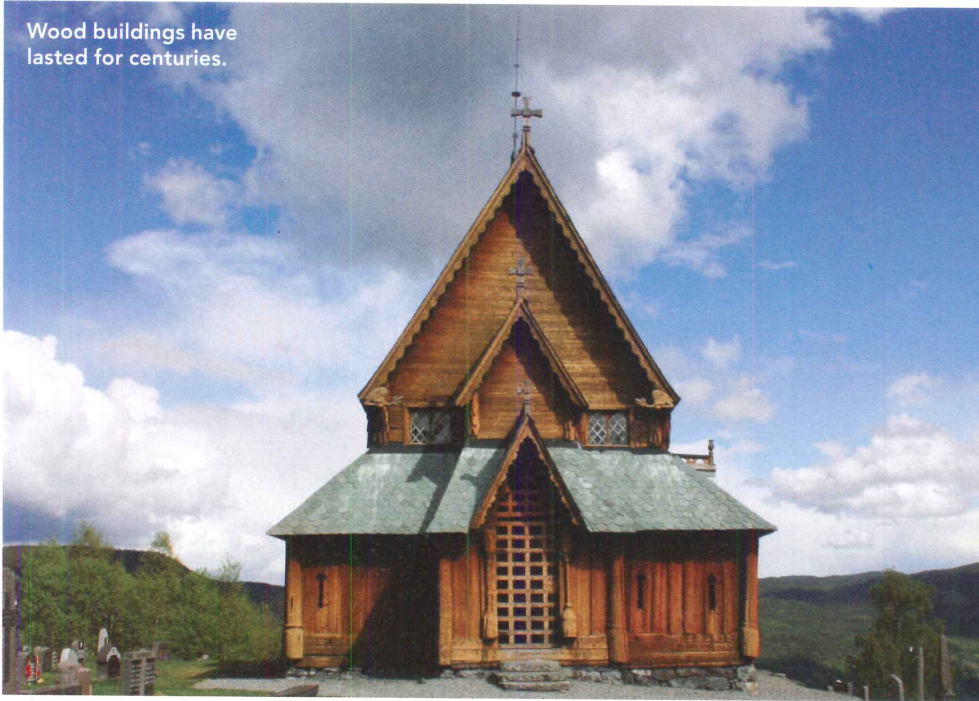
1. Evaluate the durability and versatility of wood, concrete, and steel.
2. Explain how current building codes permit the extended use of wood.
3. Articulate the importance of embodied and operating energy.
4. Discuss a building material's end-of-life issues.

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

AIA/CES COURSE #K1105C
GBCI COURSE #0090005936

This course is part two of a three-part series exploring the properties of key building materials and their environmental footprints.

Wood buildings have lasted for centuries.



support and education related to non-residential and multi-family wood buildings. “The critical thing is moisture control. Without it, concrete will spall, wood will decay, and steel will rust.”

Building materials tend to deteriorate and fail via well-known mechanisms. Fungi are the major cause of wood deterioration when wood is exposed to constant wetting without preservative treatment or the ability to dry. However, wood is relatively resistant to high humidity and many of the conditions and chemicals that adversely affect steel and concrete, such as corrosive salts, dilute acids and sea air. Provided its surface is protected from rust, steel can maintain its strength indefinitely. For construction steels, corrosion is the most common and expensive form of material degradation.

The most effective and common procedure for preventing or slowing corrosion is to eliminate contact with water, either by coatings or by protection within a building envelope. Steel studs and many other components are protected from water electrochemically by galvanizing, which does not eliminate contact with water. Although concrete itself does not corrode or decay, it almost inevitably cracks, and concrete cannot be used structurally without steel reinforcement. Cracking of concrete exposes concealed steel reinforcement to more moisture and corrosive chemicals which, in turn, further erodes the steel components and leads to further cracking and spalling of concrete.

Building materials can be durable but good design and consideration for future use are equally important. A study by FPInnovations¹ examined service lives of buildings in Minneapolis/St. Paul. The author investigated

building demolition in 227 residential and non-residential buildings. Some 66 percent of non-residential wood structures were over 50 years old, while a similar percentage of concrete buildings were under 50 years old, and nearly 90 percent of steel buildings were under 50. However, the most common reasons for demolition were not related to material degradation, but to changing land values, lack of suitability for current use, and lack of maintenance for non-structural components. The relative ease of expanding and modifying wood-frame structures may have contributed to their longer life.

Because of the unpredictability of future building needs, a design that lends itself to

renovation or adaptation can extend a building’s life span and reduce waste.

Wood is particularly versatile and flexible, which makes it an easy construction material for renovations. For example, Arden Craig House in Vancouver, British Columbia, comprises four townhomes designed within the framework of an existing heritage home and garage. Over 90 percent of the wood in the original structure was retained in adapting the house. Salvaged materials from deconstruction of the garage were used to construct a coach house behind the main structure. Salvaged framing members were used to strengthen roof trusses and increase the space available for insulation.

Strength

The strength of a building material refers to its ability to withstand an applied load without failure. Several types of load can be applied—tension, compression, torsion, bending, and shearing.

Steel is one of the strongest materials for tensile strength, the amount of stretching a material can take before breaking or failing. It is also one of the few materials that is equally strong in tension and compression. There are many different steel alloys, but they all have similar stress versus strain ratios. All steel alloys have the same modulus of elasticity, which refers to the material’s stiffness, or the ratio of the material’s allowable stress versus strain. Steel’s modulus of elasticity is 29 million pounds per square inch (psi), compared to concrete’s 5 million and wood’s 2 million. However, every steel alloy represents a different yield strength, which is the highest force a material can take before it deforms. The most common alloy, carbon steel, or ASTM A36, has a yield strength of 36,000 psi; ASTM A441 has a yield strength of 40,000 to 50,000 psi; ASTM A572 has a yield

STEPS TO DECADES OF RELIABLE SERVICE

To enable wood to have a long service life, the following four factors are critical:

MOISTURE CONTROL

Architects should fully understand moisture loading, including the source of water, how the water is transported, and how to control and remove it. Wood construction maintained at a moisture content of 19 percent or less will not decay. In fact, decay doesn’t generally occur until the moisture content reaches 26 percent or more. Protected from water or vapor condensation, exposed to normal atmospheric conditions, interior wood has a moisture content that rarely exceeds 14 percent.

TERMITE CONTROL

As termites thrive in wet environments, controlling moisture goes a long way toward

controlling termites. Soil and foundation barriers and bait systems can also help prevent infestation by insects.

USE OF DURABLE MATERIALS

Wood that comes into contact with the ground or certain climates may need greater protection; naturally durable wood species, such as yellow-cedar or Douglas-fir, or preservative-treated wood may be necessary.

QUALITY ASSURANCE

Where moisture and/or insects are an issue, quality control is critical in constructing building assemblies to resist negative effects, as is proper maintenance to keep the structure dry.

strength of 42,000 to 65,000 psi. Building codes provide an allowable stress between 33 percent and 75 percent of steel alloy's yield strength. The steel industry is creating new and stronger alloys. Common carbon steel, ASTM A36, for example, is slowly being replaced by ASTM A572 Grade 50, which is 77 percent stronger.

Concrete is one of the strongest materials for compressive strength; tremendous loads can be put on concrete without crushing it. Most concretes can handle 2,000 to 3,000 psi. The American Concrete Institute defines high-strength concrete as having a compressive strength greater than 6,000 psi, but the advent of high-strength concrete has pushed concrete's compressive strength up to 19,000 psi. Making high-strength concrete involves optimizing the use of basic concrete ingredients. Fly ash and silica fume, commonly used admixtures, provide additional strength, as do superplasticizers which, when combined with a water-reducing retarder, provide workability at low water-cement ratios, resulting in stronger concrete. Most often used in high-rise structures, high-strength concrete is specified where reduced weight is important, and because it carries loads more efficiently than conventional concrete, it can reduce the total amount of material needed, lowering overall building costs. On the other hand, high strength concrete may be more expensive than conventional concrete. According to the Portland Cement Association, one of the tallest concrete buildings in the United States is Chicago's 311 South Wacker Drive, which at 969 feet, uses concrete with compressive strengths up to 12,000 psi.

However, concrete doesn't have the same advantage when it comes to tensile strength. In building construction, rebar, or reinforcing steel bars, provides the tensile strength lacking in concrete. Concrete has a very low coefficient of thermal expansion, and as it matures, concrete shrinks. All concrete structures will crack to some extent, due to shrinkage and tension.

Wood's strength is dependent on loading direction—it is strongest in tension along the fibers and weakest in radial and tangential directions. When loaded longitudinally along the grain, wood can have a strength-to-weight ratio advantage relative to steel of 2:1. However, when wood is loaded in other directions, including radial and tangential to the grain, this advantage disappears. Wood's psi varies among species: western red cedar may have a psi of 7,500, Douglas-fir a psi of 12,400, and mahogany a psi of 25,400.

For decades, the wood industry has been evolving high-strength products in the form of engineered wood—plywood, oriented strand board, glulam beams, I-joists, and laminated veneer lumber, to name a few examples. Generally stronger than traditional lumber,

Photo: KK Law, courtesy naturallywood.com



EARTH SYSTEMS SCIENCE BUILDING, UNIVERSITY OF BRITISH COLUMBIA

LOCATION: Vancouver, British Columbia (Canada)

ARCHITECT: Perkins+Will Canada

This five-story building was built using a combination of massive timber systems including cross-laminated timber (CLT), composite laminated strand lumber/concrete floors, and glued laminated timber (glulam) heavy timber braced frames. CLT was used for the roof and exterior canopies.

engineered wood is often made from (among other things) chips, particles, fibers and wood from small-diameter trees not suitable for lumber—which is part of the reason the wood industry is able to utilize more than 99 percent of every tree harvested and brought to a mill.²

One innovative engineered wood product is CLT, a material widely used in Europe that is poised to significantly increase the possibilities

for North American wood buildings. CLT is comprised of boards stacked together at right angles and glued over their entire surface, creating a product that retains its static strength and shape, and allows the transfer of loads on all sides. Besides being dimensionally stable, it can span long distances and be erected rapidly.

Internationally, CLT has propelled wood construction to new heights, the most recent

Uihlein/Wilson Architects, Inc.



THE CROSSROADS

LOCATION: Madison, WI

ARCHITECTS: Uihlein/Wilson Architects, Inc.; EwingCole

For Promega, a leading biotechnology firm headquartered in Wisconsin, CLT and glulam met all of the architectural and engineering goals for its new

52,000-square-foot client and staff reception area known as *The Crossroads*. Architecturally, using CLT for the roof allowed exposed interior surfaces, which enhanced the glulam beam and column superstructure. From an engineering point of view, CLT allowed the team to increase deck spans while still supporting heavy snow loads.

example of which is the Forté, a 10-story apartment building in Australia. It offers the structural simplicity needed for cost-effective projects, as well as benefits such as rapid installation, reduced waste, energy efficiency and exceptional design versatility.

In North America, CLT is relatively new but quickly gaining momentum. In 2012, the American National Standards Association approved ANSI/APA PRG 320-2012 Standard for Performance-Rated Cross-Laminated Timber, a product standard that details manufacturing and performance requirements for qualification and quality assurance. Due to recently approved code changes, CLT is scheduled to be included in the 2015 International Building Code. In the meantime, a handful of innovative designers have already built CLT structures in the U.S. and Canada, having had them approved under the relevant code through an alternative or innovative solutions path.

Moisture Resistance

“All materials have challenges when it comes to moisture; however, when moisture is managed properly, wood exceeds expectations,” says Cheryl Ciecko, ALA, AIA, LEED AP, noting that wood acts as a moisture sink and a thermal break.

Lumber grading rules and many building codes require wood be dried to 19 percent moisture content or below—still substantially below the fiber saturation point of 28 percent, the level at which mold or decay can begin to thrive. Decay fungi feed on wood and require oxygen and moisture to thrive. Because damaging fungi affect wood primarily when the moisture content exceeds the fiber saturation point for a prolonged period of time, adverse effects can be prevented by avoiding direct contact between untreated wood and the ground or other moisture sources. Treating wood with preservatives will also protect it from undesirable fungi and insects.

All materials, including steel and concrete are susceptible to mold, since dirt or dust can be the food source, along with moisture. Bulk water, air infiltration and condensation can be a source of moisture in all types of buildings. While wood acts as a thermal break due to inherent insulating properties, steel, concrete and masonry are thermal bridges which can provide a cold surface on which warm, moist air can condensate, increasing the potential for deterioration or mold. “This moisture due to condensation can be a huge problem,” says Ciecko. “Wood can hold some moisture for short periods of time, acting as a moisture sink, without harm. However, steel cannot, making it potentially susceptible to corrosion with even small amounts of water contact.”

A study by FPIinnovations showed that interior wood paneling can reduce peak moisture loads in a typical Canadian house by 10 to 25 percent—a

Photo courtesy of Forestry Innovation Investment China



Wood-frame house from the earthquake stricken Sichuan Dujiangyan area in China still stands.

scenario that leads to both improved user comfort and reduced need for air conditioning.³

Fire Resistance

According to the National Fire Protection Association, property loss from fire was estimated at \$11.7 billion in 2011.⁴ While no building is completely fireproof, construction materials and systems can improve a building's fire safety. Concrete, and especially Insulating Concrete Form (ICF), is a good fire-resistant material. Unlike wood, concrete cannot burn; and unlike steel, it won't soften or bend. Since it doesn't burn, concrete doesn't ignite, nor does it release toxic fumes or smoke, nor melt when it is exposed. Concrete will only break down at temperatures of thousands of degrees Fahrenheit. Concrete's thermal mass properties—slow absorption and release of heat—help to mitigate fire risk, and it is able to achieve fire-resistance ratings without

additional fireproofing. However, concrete can be subject to severe spalling, particularly if it has an elevated moisture content. Fireproofing is available for concrete but this is typically not used in buildings. Instead, it is used in traffic tunnels and locations where a hydrocarbon fire is likely to break out.

Structural steel requires fireproofing to prevent the steel from weakening in the event of a fire. When heated, steel expands and softens, eventually losing its structural integrity and, under extreme conditions, melting. According to the National Institute of Standards and Technology, when exposed to fire, steel loses its strength and stiffness much faster than high-strength concrete. With a lower thermal conductivity, high-strength concrete will maintain its structural integrity for a longer period of time in a fire situation.

Although seemingly counter-intuitive, wood can be an excellent performer under fire

conditions. According to the Southern Forest Products Association, wood outperforms non-combustible materials in direct comparison fire tests. A 2x4 timber tie maintained more of its original strength under higher temperatures and for a longer period than did aluminum alloy or mild steel. This is because of wood's unique charring properties. When wood burns, a layer of char is created which helps to maintain the strength and structural integrity of the wood beneath—a scenario that enables an exposed heavy timber system to achieve a fire-resistance rating of up to 90 minutes.⁵ Properly designed wood-frame walls, floors and roofs using conventional wood framing, wood trusses and wood I-joists, can also provide fire resistance ratings for up to two hours.

See endnotes in the online version of this article.

➤ Continues at ce.architecturalrecord.com



The reThink Wood initiative is a coalition of interests representing North America's wood products industry and related stakeholders. The coalition shares a passion for wood and the forests it comes from. Innovative new technologies and building systems have enabled longer wood spans, taller walls, and higher buildings, and continue to expand the possibilities for wood use in construction. www.rethinkwood.com

Using Built-in Appliances to Enhance Design

Kitchen and laundry areas can go beyond function to achieve their full design potential

Sponsored by Electrolux | By Peter J. Arsenault, FAIA, NCARB, LEED AP

Designing residential kitchen and laundry areas involves a balance of function and form. Cooking, food storage, food preparation, and washing are essential functions in kitchens while clothes washing, drying, folding, and sorting are important to the function of laundry areas. Since both of these areas are used regularly and often, the design of these spaces receives a lot of well-deserved attention to be consistent with the overall design quality of the rest of the building. In the quest to achieve this needed balance between form and function, designers need to consider all of the elements that can contribute to, or detract from, both. This includes high-quality built-in appliances, which are well known for effectively providing many of the needed functions. In addition, with a proper understanding of options, they can also contribute significantly to the overall design of the spaces in which they are located.

CONTINUING EDUCATION



EARN ONE AIA/CES HSW
LEARNING UNIT (LU)

Learning Objectives

After reading this article, you should be able to:

1. Identify and recognize the characteristics of high-performance built-in appliances used in residential kitchens and laundry areas.
2. Determine the applicable ENERGY STAR® criteria and standards for built-in appliances.
3. Determine the applicable water-saving criteria and standards for built-in appliances.
4. Specify and design built-in appliance installations for new construction and renovation projects.

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 for free.

AIA/CES COURSE #K1312F

KITCHEN AND LAUNDRY DESIGN APPROACH

Many sources ranging from Architectural Graphic Standards to various kitchen and bath trade associations promulgate fundamental design principles related to residential kitchen and laundry planning and design.

Kitchen Design Principles

Foremost among kitchen design principles is the notion that there are essentially three distinct work areas within a kitchen that need to function individually and collectively. At the core of each of these three areas is a fixture or appliance around which the rest of the individual work area is built. All three of the work areas are focused on one or more aspects of addressing food such as receiving, storage, preparation, cleaning, cooking, or serving. And all require some additional storage space in the form of cupboards, shelves, or other means to accommodate items related to each work area such as pots, pans, dishes, utensils, small appliances, etc.

Let's look first at the work area for receiving and storing food. The common functional elements here include cabinetry or pantry type storage for keeping food at room temperature. For perishable food that must be kept cool or frozen to be stored, the main appliance is the refrigerator/freezer. In all cases, planning for the right quantity of food storage is important for both perishable and non-perishable foods. The determining factor here is the size of the household and occupant lifestyle. A single person or working couple that eats out often likely has very different food storage needs than a large family with a vegetable garden in the back yard. Allowing for adequate refrigerated storage as well as room temperature storage, perhaps with some flexibility to add more as needs change, is a basic first step in kitchen planning.

Next, the work area for food cleaning and preparation comes into play. A work surface near the food storage area is useful for unpacking, cutting, mixing, or otherwise processing food. But quite importantly, a sink is needed for cleaning, rinsing, or draining during



the food preparation process or for adding water when recipes call for it. Although a small dedicated food prep sink is sometimes used in larger kitchen layouts, it is more common that one sink is used for all cleaning and washing that take place in the kitchen. This means that washing of pots, pans, dishes, etc. will likely occur here and appliances such as a dishwasher and disposal will be logically located in this work area as well.

With the food taken from storage and appropriately prepared, it is now ready for cooking and serving. This third functional work area is extremely appliance centered with a diversity of choices in the type of cooking that can be done. Stove or range-top cooking is a time-honored tradition but can also include indoor griddle or grilling options. Ovens can be conventional or use convection fans to speed cooking times. And the ubiquitous symbol of modern busy lifestyles, the microwave oven needs to fit in somewhere appropriate to this work area. During and after cooking, adjacent work surfaces are needed to accommodate the addition of ingredients, place utensils or serving dishes, and generally support the cooking function of the appliances.

These three fundamental kitchen work areas, often appropriately referred to as the

All images courtesy of Electrolux



Top: A well-designed residential kitchen benefits from the enhanced functionality and integrated forms afforded by built-in appliances.

Right: Laundry appliances can be integrated wherever they are the most useful, consistent with occupant lifestyles.



refrigerator area, the sink area, and the cooking area, together form the basis of a successful modern kitchen design. However, it is obviously critical that the three of them work together, are balanced in location, and each sized appropriately to their anticipated use. Since the sink area often supports the functions of the other two areas, it is typically located between them. The refrigerator area is often located near the entry to the kitchen to facilitate food storage while the cooking center is often located closer to the dining area to facilitate serving. Of course, there are reasons for variations to

these typical conditions, some of which may include the addition of other work centers such as freestanding work islands or remote serving/staging areas. In all cases, however, the fundamental principle of the “work triangle” should be considered. Essentially, this approach acknowledges that a person working in a residential kitchen likely spends a good deal of time moving between the three core work areas, and more specifically, between the refrigerator, the sink, and the cooking appliances. Keeping the number of steps (i.e. the distance) between those three a minimum number means

efficiency is increased. Spreading them out too far creates a need for unnecessary walking, poor workflow, and usually unhappy clients.

Laundry Design Principles

The primary functions of a laundry area are to wash and dry clothes. Additionally, it may also include pre-washing in a sink, sorting, ironing, and folding of clothes. Allowing space for all of these activities is important and either needs to occur directly adjacent to the washing and drying appliances or in another appropriate place. The workflow of the room or area should account for these various functions and the order in which they normally occur.

Beyond the working functions of the laundry area, its location in relation to the rest of the house and living spaces is significant. While locating the laundry in the basement or an entry area near the garage has been done for decades, it is clearly not the most convenient place for it to be located since clothes likely will need to be carried to and from there. A case is often made for locating the laundry on the main floor, often near the kitchen where the people in the residence can readily access it during the regular course of a day. Of course that still means that clothes may need to be carried up or down stairs and space needs to be allocated for sorting, folding, etc. Others advocate for it to be located logically near the place where most of the clothes are kept—the dressing areas of the house or bedrooms. In some cases, putting the washer and dryer right in the main dressing room could be logical, particularly if there are only one or two people living in the residence. In all cases, the role of the designer is paramount in determining how to best integrate the functions and appliances of the laundry with the form of the full residence.

KITCHEN DESIGN ENHANCED BY APPLIANCES

With a basic understanding of the driving design principles in kitchens and laundry areas, let’s turn our attention to some of the key components of each—namely the appliances which dominate the attention of those using these spaces. We will start with kitchen appliances which enhance specific functions in all residential kitchens whether in new construction or renovation, single family or multifamily housing.

One of the distinctions to make right off the bat is the difference between appliances that appear to be “freestanding” and those that are “built-in.” The reality is that all appliances are separate, manufactured products that are installed into a kitchen. The distinction is whether or not they are secured in place to cabinetry or walls and trimmed out to look “built-in.” If so, then they are usually much

more visually integrated and consistent with the design of the kitchen. In some cases, door panels on appliances can be customized to match the appearance of surrounding cabinetry or finishes while in other cases it may be advantageous to retain the look of finished metal such as stainless steel. Obviously there are distinctions in the way that appliances are made to accommodate the “built-in” appearance but there are also usually more choices in sizes, features, and options than for those that are easily disconnected and appear less visually integrated into a space.

Refrigeration Appliances

The most common refrigeration appliance is a combination refrigerator/freezer with choices on door configurations, size, and overall capacity. When designing so this appliance achieves a built-in look, there are several standard dimensions to consider regardless of the manufacturer or brand name on the appliance. The standard width of most full-size refrigerator/freezers is a nominal 36 inches with a standard height of approximately 69 inches.

The variable which will directly affect cubic footage capacity is the depth of the appliance. The standard depth is roughly 28-½ inches (not counting the depth of the doors) which means it is deeper than a conventional 24-inch-deep kitchen cabinet or a standard 25-inch-deep countertop. Hence, for a built-in look that is closer to being flush with kitchen cabinetry, a counter-depth refrigerator/freezer is available which is approximately 23-½ inches deep. In this case, cabinetry can be framed around the appliance which will protrude less into the workspace.

The cabinet-depth appliances will logically provide less cubic footage (on the order of 20 to 25 cubic feet) than standard-depth units (25 to 32 cubic feet) but variations in models and manufacturing approaches will impact this. Hence it is best to compare carefully to be sure that the designed opening for the refrigerator/freezer will meet the capacity requirements of the occupant/user.

To complete the built-in look, adding a manufacturer-supplied trim kit around the sides and top of the unit will eliminate any gaps and give the unit a completely finished look. Note that air must circulate around the unit to allow the heat transfer to occur out of the appliance so it can perform as intended. Depending on the make and model, a louver may be required above the appliance for air flow in addition to whatever air flow is built in to the bottom kick plate area. Check the specifications, clearances, cut out sizes, and air flow requirements published by the manufacturer to determine what is needed in a given design situation.

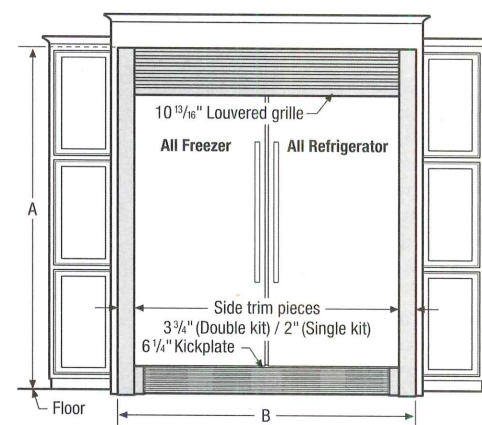


Separate full refrigerator and full freezer appliances can be built in to provide the clean appearance of one combined appliance.

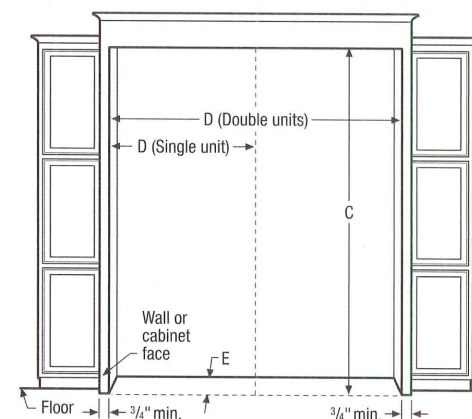
If a refrigerator/freezer appliance does not appear to meet the food storage needs of a user, then there are two fundamental options. Either increase the size to a larger unit or add supplemental refrigeration appliances. Generally, it is usually less costly and more energy efficient to run one larger refrigerator rather than two smaller ones. However, for design situations that call for a variety of notably different refrigeration needs including different temperature settings for significant quantities, then multiple units may be a logical choice.

Larger refrigeration appliances fall into two basic categories. First, a 6-inch-wider built-in refrigerator/freezer unit is commonly manufactured in a 42-inch nominal width. Typically, both the volume in the freezer and the refrigerator portions are increased, but direct comparisons between models is recommended to discern actual differences. Second, it is quite possible to select individual appliances that are all refrigerators or all freezers but each with the appearance of a standard refrigerator. These appliances are commonly narrower at a nominal 32 inches wide and a cubic volume less than 20 cubic feet, each. That is smaller than the total volume of the appliances described above, but when two units are used, it provides larger

Single & Double Trim Kit Dimensions



Single & Double Cutout Dimensions



Thoughtfully Designed.



Each Electrolux premium appliance is designed for optimal performance and aesthetically pleasing detail: racks move with the touch of a finger, cooking surfaces are unobtrusive and control panels disappear with the wave of a hand.

Learn More. Visit contract.electroluxconnect.com. **CIRCLE 52**
View our Continuing Education courses at ce.construction.com.





Cooking functions can be combined in a single appliance or separated into several built-in locations as needed to accommodate individual kitchen designs.

dedicated capacities for both refrigerator and freezer space. The two units can be separated in the kitchen based on workflow and convenience or they can be located next to each other to appear as one larger 64-inch-wide appliance.

The choice to use multiple sizes and types of refrigeration appliances often comes down to specific needs. General-use refrigerators are typically kept between 35 to 38 degrees Fahrenheit for best food storage and efficiency of operation. This is colder than would be needed or recommended for wine storage for example which is typically in the 50 to 60 degree range.

If wine cooling is needed, then it may be more energy efficient and practical to use a separate appliance such as an under-counter wine cooler which can be set to the best temperature for this purpose. This leaves room in the main refrigerator for other uses or may allow for a smaller size to become practical. Similarly separate, smaller, under-counter ice makers may also be logical in situations where they are needed only occasionally and can be turned off in between uses. For other remote locations such as a wet bar or serving area, a smaller built-in refrigerator drawer may be all that is needed rather than a second full-size unit.

Cooking Appliances

Very often, the cooking work center and associated appliances make up a significant part of a kitchen design and layout. Choices abound in size, style, finish, function, and operation while owners will have a range of desires and needs working into the final selection decisions.

The first decision to make is the energy source to be used for cooking. There is an emerging trend to look at the best-performing energy source for a specific cooking appliance, even if it is different from other appliances in the design. Many improvements in electrical cooking appliances can make them the preferred option for even heating in ovens and some types of cooktops. Some people prefer gas-fueled cooking appliances simply because they think they offer a greater level of control than some electric ones, particularly with cooktop and range-top burners.

In response to these varied preferences, manufacturers offer a variety of interchangeable and independent appliances that use either gas or electric energy as their source. Some even offer an integrated “dual fuel” option with a gas range-top and electric oven all in one appliance. The potential downside to gas cooking appliances, of course, is the indoor air quality effects of gas

combustion products. Therefore, including a ventilation fan that vents directly to the outside (not recirculating) becomes a significant component of gas cooking appliances. Keep in mind however, that selecting a conventional updraft hood or a downdraft hood can make a difference in the amount of make-up air that has to be heated or cooled to offset the exhausted air; downdraft hoods generally require several times more air than conventional updraft hoods.

The next fundamental design decision to make is whether to use a range-type appliance which combines the cooking surface with an oven or to separate the cooktop and the oven functions. The range is obviously a space-efficient solution that can be further enhanced by placing a built-in microwave oven above it. Range-type cooking appliances come in a variety of sizes and configurations. The variable in the size is the width of the range while the height and depth generally match standard cabinetry.

The most common width is 30 inches which generally allows for four burners plus an oven and some standard options. However, for cooking centers that require more capacity or more options, units are commonly available in 36-inch and 48-inch-wide sizes. The configuration of burners, ovens, and other features vary by manufacturer, brand, or fuel type so it is worthwhile reviewing the options compared to user needs. Obviously, the larger the unit, the more space is needed not only for the appliance but for the workspace around it.

Separating out the cooktop from the ovens allows for different types of cooking functions to occur in different specific locations, which may be appropriate for high-use kitchens. It also allows for ovens to be raised up to a higher and more convenient mounting height when built into cabinetry or walls. When considering cooktops, fuel type comes into play in a rather practical manner since the appliance size, installation method, and connections will vary based on that choice. Fundamentally, however, the common methods include either sliding the cooktop into a customized cabinet or dropping them into a deep sump type of opening in a countertop. Either way the intent is to create a built-in look that flows and coordinates with the rest of the kitchen.

Continues at ce.architecturalrecord.com

Peter J. Arsenault, FAIA, NCARB, LEED AP, is a nationally known architect, sustainability consultant, technical writer, and continuing education presenter. www.linkedin.com/in/pjaarch



Electrolux

Electrolux is a global leader in household appliances and appliances for professional use, selling more than 50 million products to customers in more than 150 markets every year. The company focuses on innovations that are thoughtfully designed, based on extensive consumer insight, to meet the real needs of consumers and professionals. www.electroluxappliances.com

WHY ARCHITECTS LOVE US TO PIECES

DATA I CAN'T FIND ANYWHERE ELSE

EARN THESE CEU CREDITS

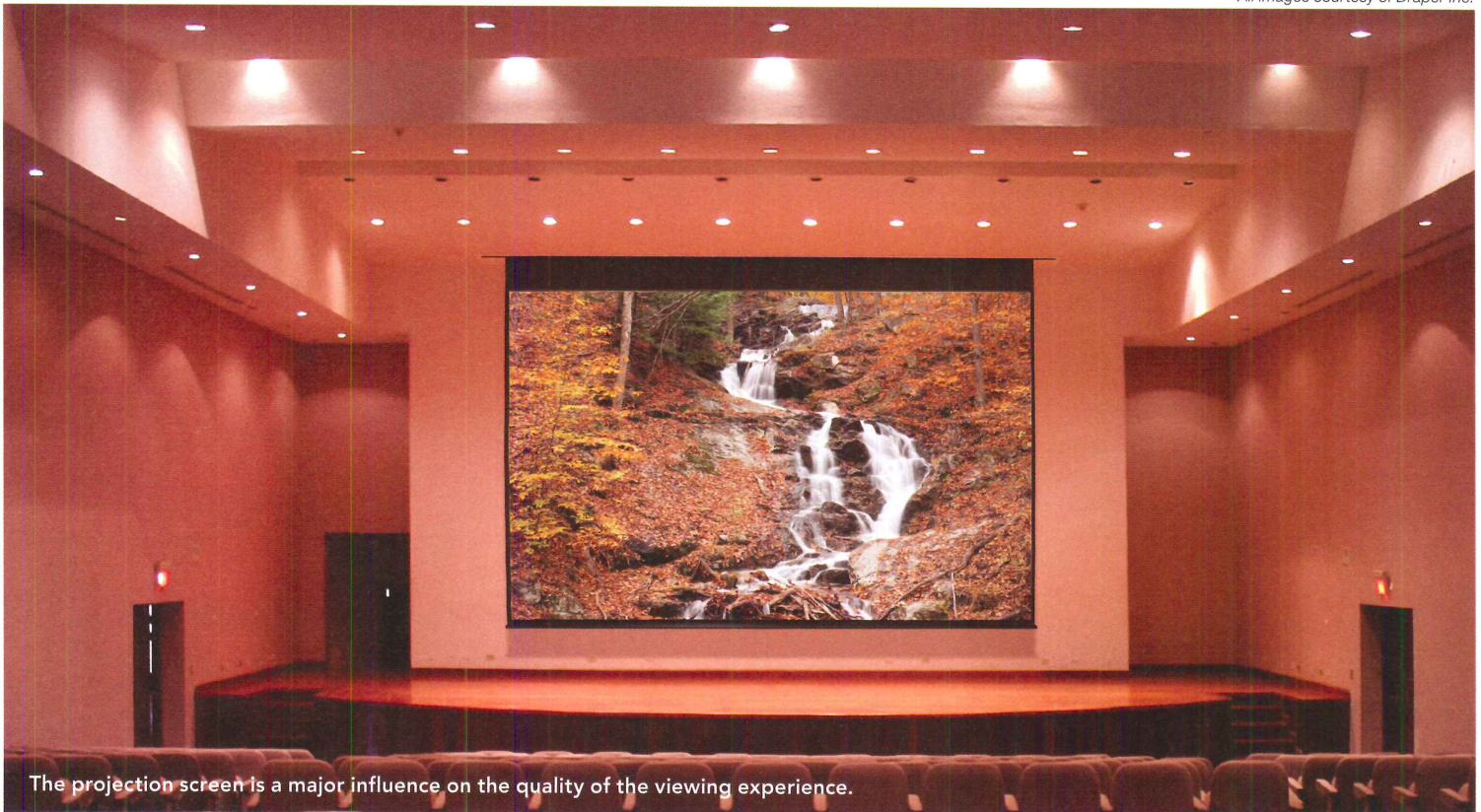
COOL NEW PRODUCTS

PRODUCTS IN MY AREA

GREEN PRODUCTS TO INVESTIGATE

GOOD ADVICE FOR NEXT PROJECT





The projection screen is a major influence on the quality of the viewing experience.

Projection Screens Made Simple

The basics of providing a maximum viewing experience

Sponsored by Draper Inc.

Audiovisual (AV) communication is critical in today's world. Business, medicine, entertainment, and education are just a few fields that depend on AV technology to inform, teach, and train their constituents. Rather than the traditional lecture model, AV creates a stimulating and interactive environment which is more conducive to learning. According to the U.S. Department of Labor OSHA Office of Training and Education, "retention of information three days after a meeting or other event is six times greater when information is presented by visual and oral means than when the information is presented by the spoken word alone."

Maximizing the learning potential of the AV experience involves designing an effective projection environment. Today, that environment depends heavily on the right projection screen, even more so than the type of projector. There are many types of projection screens on the market today, but effective screens share a common trait: They reproduce an image so that everyone in the room can see it—or read it—easily. Choosing the screen that can attain that objective can be a complicated

process however. This article will present an overview of projection screens and serve as a primer on the various factors that must be considered in selecting the appropriate screen for a given situation.

WHAT YOU NEED TO KNOW: THE BASICS

Effective purchasing decisions depend on a variety of factors, including budgetary considerations, the size of the room, type of presentation, as well as more technical concerns including the screen type, screen size, aspect ratio, screen model, and viewing surface for the application. Before a projection screen can be properly selected, systems designers must know what type of content will be viewed and if the system will be used in various ways. Other considerations include the seating configuration, ambient light levels around both the screen and the viewer, and the dimensions of the viewing room, including ceiling height.

SCREEN TYPES

Screen type is a basic building block of an effective projection environment. There are five basic screen types.

Electric Screens

Screens are motorized to facilitate lowering and retracting the viewing surface. There are two basic styles: recessed and surface mount. Recessed screens are installed above the ceiling with the bottom of the screen case flush with the finished ceiling. Some of these have trim flanges as part of the case construction that helps complete the installation. Certain models have trap doors to conceal the slot from which the fabric travels while other models are designed to have an open slot at all times. The units with trap doors have either gravity-operated doors or motorized doors. The screens with open slots will have smaller cases and are less expensive.

Some recessed electric screens have two-piece construction; the cases may be shipped, installed, and wired in advance of the viewing surface. The case can be installed during the construction phase without the possibility of damage to the viewing surface. The viewing surface can be added at a later date when the construction has ended.

Wall/ceiling models are surface mounted and are designed with a finished appearance that is aesthetically pleasing and designed to be seen.

To ensure a perfectly flat viewing surface, some models of electric screens are made with tab tensioning technology. This is a construction method that keeps tension on the viewing surface in all directions, ensuring a flat projection surface. This is particularly important when precise and detailed images are being shown. This method is more expensive than the traditional, non-tab tensioned construction. Non-tensioned screens continue to offer quality images at a lower cost for general viewing.

Electric screens have several control options. Typically they are supplied with a line voltage wall switch. Low-voltage control is an option with the low-voltage controller as either an external module or built into the screen motor. Low voltage can be used with a dry contact wall switch, Ethernet, serial communication, and infrared or radio frequency wireless remote. Third-party touch panels are also compatible with low-voltage systems.

Efforts should be made to order the screens with the proper amount of extra drop—additional material at the top of the screen surface—to ensure the best lay flat conditions. Screens are built and tested according to the amount of drop that is ordered. That can be adjusted slightly but adjustment may adversely affect the lay flat qualities.

Changing ceiling height or adding obstructions such as pendant light after screens are ordered could affect proper image height—the screen may not be able to adjust to those changes and in a worst case scenario may have to be replaced.

Manual Screens

Manual screens come in styles similar to those of electric models but typically have either a handle to pull them down, or a crank for tab-tensioned

models. Like electric screens, manual screens must be ordered with the correct amount of black drop so they will lay as flat as possible, and altering the ceiling height or adding obstructions may jeopardize the screen's effectiveness.

Fixed Screens

Permanently tensioned to the frame, fixed screens provide a contemporary, theatre-like appearance wherever a permanently mounted front or rear projection screen is required. The viewing surface is flat, which translates to superior picture quality. Because of their simple design and the fact that they are not being rolled up or motorized, fixed screens represent a less costly option. They are typically wall mounted or flown.

Rear Projection Screens

Rear projection screens work well in applications which afford high ambient light. The projection system is placed in a dedicated dark room behind the screen where there is no competing light. While the system achieves an image closer to a flat panel display, a considerable amount of real estate is required behind the screen. Screen surfaces can be either flexible or rigid with various tints of glass or acrylic. Mirror/frame systems are available where the manufacturer can design a custom frame for the application to help reduce the amount of space required behind the screen.

Portable Screens

Portable screens are available in a variety of types. Lightweight models can be carried and typically allow the screen material to be pulled up out of the case. For larger sizes there are folding models that require minimal assembly, with major events often featuring extra large models that require more complicated assembly by a team of people.

SCREEN SIZE

How large should a projection screen be? That is a key consideration, and specifiers should be aware that there are different ways of selecting the proper screen size for an application. Many designers use a few rules of thumb for commercial applications based on how the system is going to be used and what type of content will be viewed. Keeping the closest seat to no less than two times the image height will prevent the image from exceeding the audience's primary field of view. The distance to the farthest seat should be no more than six times the image height for presentations and basic video. The distance should be four times the image height for critical content, spreadsheets, and high-definition (HD) presentations. If there is an even mix of content, a distance of five times image height is recommended.

Film content is much wider than most commercial systems and will shrink vertically as in most flat panels used in the home. Consequently it is advisable to go up a size from what is initially calculated, or down in ratio. Many people try to use a flat panel as the primary display in a multipurpose room; however, flat panels are usually not large enough to meet the above-mentioned criteria. While flat panels may seem fine in a small room during video conferencing, for reading data and presentations the sizes are typically not large enough.

The diagram on the next page shows the recommended seating distance to image height ratios dependent on system use and nature of the content. The distance to the back seat is important



Manual screens may be either wall or ceiling mounted.

CONTINUING EDUCATION



EARN ONE AIA/CES HSW
LEARNING UNIT (LU)

Learning Objectives

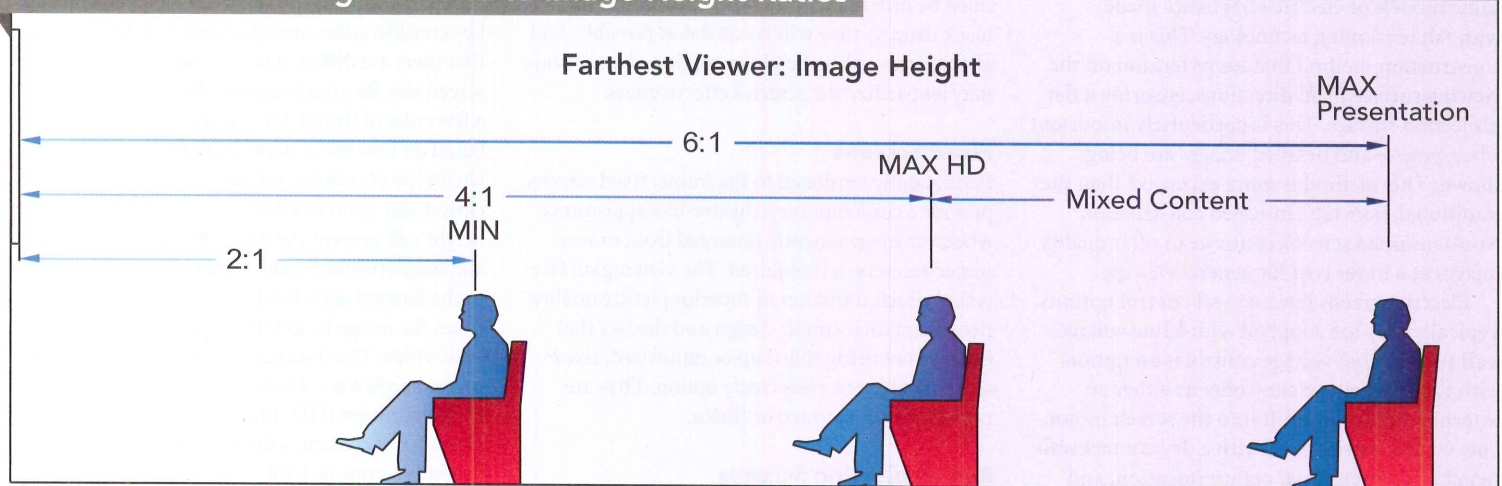
After reading this article, you should be able to:

1. Discuss the various factors that must be considered in selecting or specifying a projection screen for a specific project.
2. Identify four viewing categories that conform to standardized ANSI/INFOCOMM 3M-2011.
3. Explain the implications of the relationship between the gain of the screen surface and the projector throw distance ratio on image quality.
4. Specify the correct screen format, size, model, and viewing surface for a given type of presentation.

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 for free.

AIA/CES COURSE #K1312D

Recommended Seating Distance to Image Height Ratios



as it determines the size of the screen. In many conference rooms, the top executive takes a seat at the back of the conference table. If there is a flat panel that is not large enough to allow the data to be read comfortably, the person at the back will have difficulty in following the presentation.

Another issue involved in selecting the proper size of the screen is aspect ratio. The aspect ratio of an image describes the proportional relationship between its width and its height, and is commonly expressed as two numbers separated by a colon, as in 16:9. The aspect ratio of the screen is dependent on the content used most often for the application and the native aspect ratio of the projector. If there will be mostly HD content, then a 16 by 9 screen and projector would be recommended. Typically, it is best to match the aspect ratio of the screen to the aspect ratio of the projector. A wider aspect ratio screen will allow more source content to remain at constant height, without shrinking vertically. Many colleges that provide film studies in auditoriums use digital-cinema model projectors for the widest aspect ratios possible. This is optimal for film content. Digital-cinema model projectors are designed and optimized for movie theaters, but some models can be purchased for applications where film content is important.

The “Ceiling Height and Obstructions” diagram in the online version of this article illustrates three popular applications for electric ceiling-recessed, electric wall-mounted, and fixed-frame projection screens. Most designers prefer the image in commercial applications to be at least 48 inches above the finished floor, leaving a set amount of space to the ceiling for image height, black drop, screen case, or screen frame. For roller type screens, specifying too much black drop will change the way the screen is manufactured. Large adjustments to shorten the screen height will have a negative impact on the ability of the screen to lay flat. Adjusting the screen downwards could cause problems with flatness and could even pose a safety hazard, if

there is inadequate fabric wrap around the roller for safety. It is important not to lower a screen so far that the audience can't see it comfortably.

SCREEN SURFACES

There are several variables which affect the selection of the proper screen surface for a given application. Each variable must be carefully considered.

The impact of screen tint should be considered when selecting a screen surface. As a rule of thumb, white surfaces are best for dark rooms and wide seating areas and grey surfaces are best for rooms with ambient light.

Matte white is a highly diffusive white surface with minimal ambient light rejecting properties.

Grey surfaces help to reject ambient light. These surfaces absorb more stray light with their darker tint, and help to improve the blacks on the screen. However, these surfaces benefit from more projected brightness since these darker surfaces absorb more whites and bright colors to improve blacks in the image. Selecting a brighter projector will compensate for this while still achieving the benefits of improved blacks.

High-performance screen surfaces are typically a dark grey tint to help absorb stray ambient light and deepen black levels even more than light grey surfaces. They typically reflect light from the projector back to the viewers, while reflecting off-axis ambient light away from the viewers. High-performance screen surfaces may also have a lens structure that can block off-axis ambient light from reflecting toward the viewers—this is most important when light fixtures in the ceiling have been mounted too close to the screen surface. It is always recommended to install light blocking shades at windows.

Retro-reflective surfaces are ultra reflective and typically have higher gains to help increase brightness of older model projectors. These surfaces are designed to reflect light directly back to the light source. They have very narrow off-axis viewing and can tend to hot-spot on many new model projectors.

Recyclable Material

Currently most screen materials are vinyl based and are not recyclable. However, screen materials are available that are recyclable, PVC free, and cradle-to-cradle certified. With many projects striving for LEED certification, specifiers should be aware of the more sustainable options.

Aspect Ratio

Most Popular Aspect Ratios:

- 1.33:1 (4x3); Standard Definition video and older format data
- 1.60:1 (16x10); Wide Format data (WXGA & WUXGA)
- 1.78:1 (16x9); High Definition video and wider format data
- 1.85:1 (17x9); Widescreen/Digital Cinema format
- 2.35:1 (Scope); CinemaScope/Digital Cinema format

4:3
or 1.33:1
NTSC Video

16:10
Format

16:9
or 1.78:1
HDTV

1.85:1
Widescreen

2.35:1
CinemaScope

Rear Projection Screens

System specifiers should note that flexible rear projection screens are attractive for retrofit projects, as the material can be rolled up, and the frame can ship in pieces for installation on site at reasonable cost. However, there are drawbacks. Designers must allow for proper pressure equalization between the audience space and the rear projection space so that when a door is opened or shut the screen surface does not bounce back and forth. Further, because the material is so thin, the projector fan noise may be heard from the audience, and there are comparatively fewer options in materials. White materials allow short throw distances for smaller spaces, but do not perform well in ambient light. Grey materials work well in ambient light, but need longer throw distances. Rigid materials available in either glass or acrylic, however, do not have issues with pressure equalization and because they are thicker, have good acoustic isolation. Because a film is applied to a substrate, rigid materials offer more choices—films can be customized in tint and combined with shades of glass or acrylic for even more options. These materials, however, are more expensive and unwieldy. Glass is used more widely than acrylic, as the latter is more susceptible to the effects of humidity and can bow. A new thinner “semi rigid” acrylic screen substrate can be rolled for shipment, solving some of the issues with delivery and installation of large rigid rear screens.

Screen Gain

Specifiers must also examine screen gain in selecting a proper screen material. Screen gain is a measure of brightness compared to light reflecting off a block of magnesium carbonate or barium sulfate. This serves as the industry’s standard for a gain of 1.0. Screen



In terms of proper lighting, less than five foot candles is best for commercial projection.

surfaces typically have a gain of between 0.7 -3.0 depending on application. Screen gain can help increase brightness, but typically reduces off-axis viewing. Matte white is a very common choice with a screen gain of 1.0.

A screen half gain angle is a material spec stating the angle off axis from the center perpendicular at which the image brightness becomes half that of straight on. In the accompanying diagram, material A has a half gain angle of 80°. But if more brightness is needed, material B, which has a half gain angle of 60°, covers the audience well, but steers more light into the primary viewing cone.

Throw Distance

Another consideration in optimal viewing is the projector throw distance, which is the distance from the screen surface to the

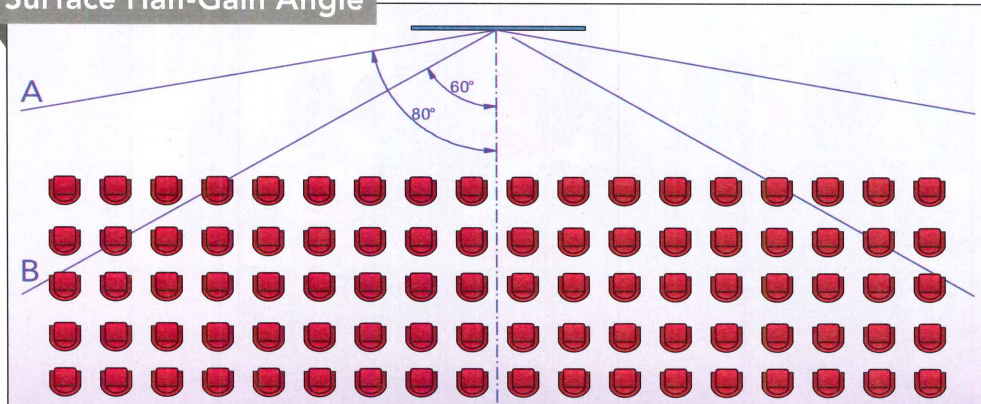
projector lens. The throw distance ratio is the ratio between the throw distance and the image width and is also called the lens ratio which indicates the type of lens that may be needed with the projector. A typical throw distance ratio when using a projector with a “standard zoom lens” is approximately 1.8:1. Some model projectors can be ordered having various lenses with ratios ranging from 0.67:1 – 7.0:1.

Hot Spotting

There is a relationship between the gain of the screen surface and the projector throw distance ratio. If they are not matched properly, hot spotting could occur. “Hot spotting” means that the image appears overly bright in the center, and dark near the edges. In this situation, the light hitting the outside of the screen is at a shallow angle reflecting light away from the viewers so the outside of the image is less bright than the middle of the image, and a hot spot is created. A good rule of thumb to avoid hot spotting on a white screen is that the gain should never be greater than the throw distance ratio. Grey screens and high-performance screens require even longer throw distances due to their higher transmission of light to the viewer in both front and rear projection scenarios.

The problem is easily corrected by either dropping the screen gain or increasing the throw distance.

Surface Half-Gain Angle



► Continues at ce.architecturalrecord.com



Draper, Inc., is a Spiceland, Ind.-based manufacturer of projection screens, lifts for projectors and flat panel displays, video conferencing solutions, and window shades. Draper has more than 50 years of experience in the audiovisual industry. www.draperinc.com

Architects Warm to Chilled Ceilings

Radiant heating and cooling is sustainable and sculptural

Sponsored by Price Industries | *By Julian Rimmer, P.E., LEED AP and Jerry Sipes, Ph.D.*

As sustainability continues to be a goal of the building industry, designers are constantly looking for new ways to add energy efficiency and environmental integrity to their projects, particularly when it comes to heating, ventilating, and air-conditioning. While these activities are key to maintaining comfortable, healthy, and productive spaces, collectively they account for approximately 40 percent of the electricity used in commercial buildings, according to statistics published by the U.S. Small Business Administration.

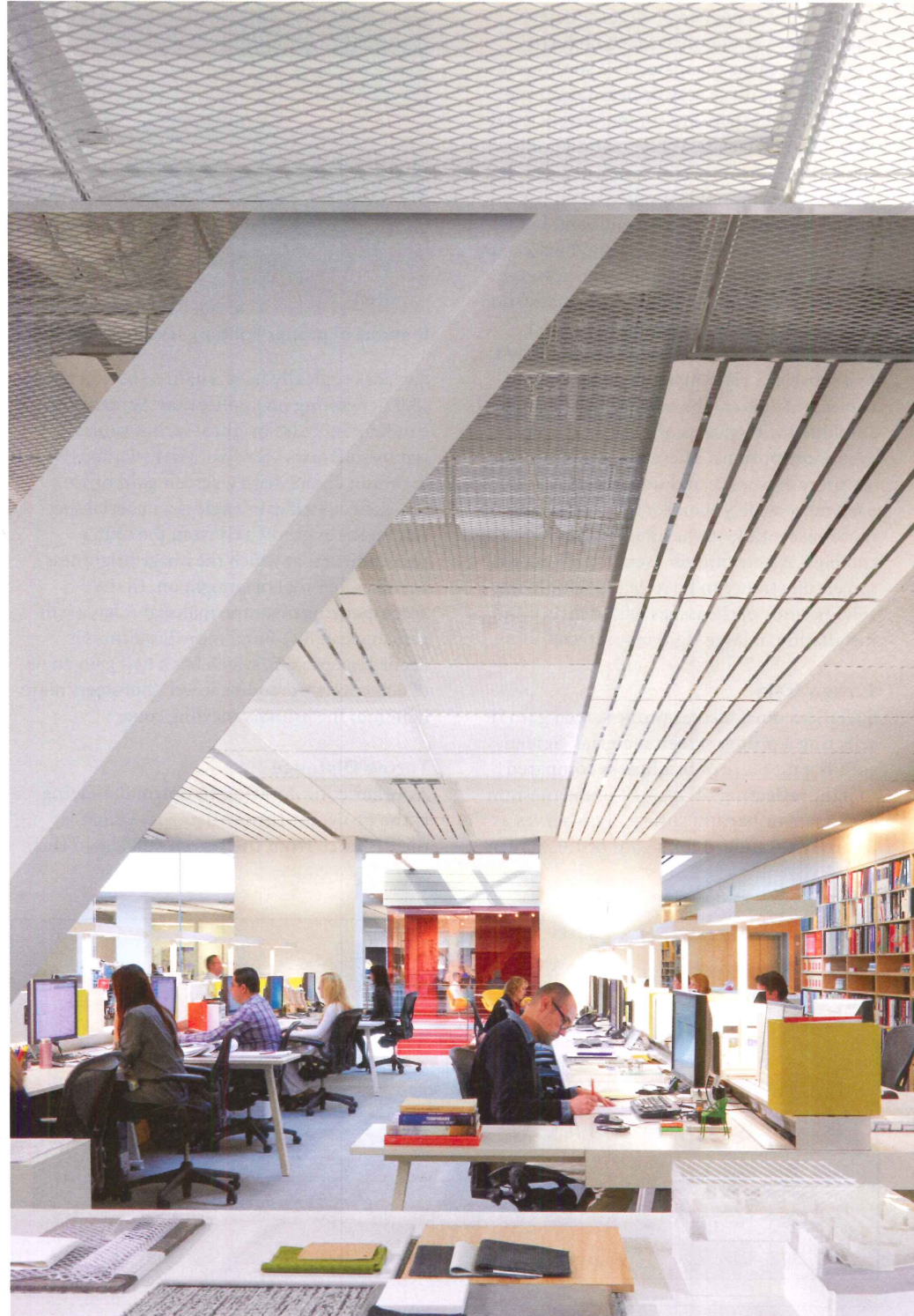
One key way to improve energy performance and boost energy savings is through radiant heating and cooling, a technology that has been used in commercial spaces in Europe for more than three decades. Radiant systems have also been used throughout the U.S. and Canada, but in a limited manner, primarily for perimeter heating. Radiant panels used for heating and cooling meet metrics of high-performance building operation from the standpoint of energy use and cost effectiveness, and they provide design flexibility, easily being incorporated into the architectural finish in a manner that provides both function and architectural appeal.

Of particular interest is the use of chilled ceilings and chilled sails due to the potential for efficient design and increased occupant thermal comfort. This article will explore the environmental and operational characteristics of both chilled ceilings and chilled sails, with special attention to architectural applications in a variety of commercial spaces, including large spaces and specialized boutique projects.

THE PRINCIPLES OF RADIANT HEATING AND COOLING

Radiant systems provide heating or cooling directly to occupants and the occupied space. The systems depend on the principle of radiant heat transfer—the delivery or removal of thermal energy directly from one surface to another including the people and objects in the room. Because thermal conditioning is delivered directly to occupants, rather than via forced air movement, radiant systems offer improved comfort and greater energy efficiency than forced air systems. This higher efficiency results in significant energy savings. When used as the primary means of cooling and heating,

Photo ©Ryan Gobuty / Gensler



Radiant technology is a sustainable, aesthetically pleasing method of heating and cooling a space. Gensler, one of the world's leading architecture firms, utilizes chilled sails in the firm's Los Angeles office.

Photo ©Ryan Gobuty / Gensler

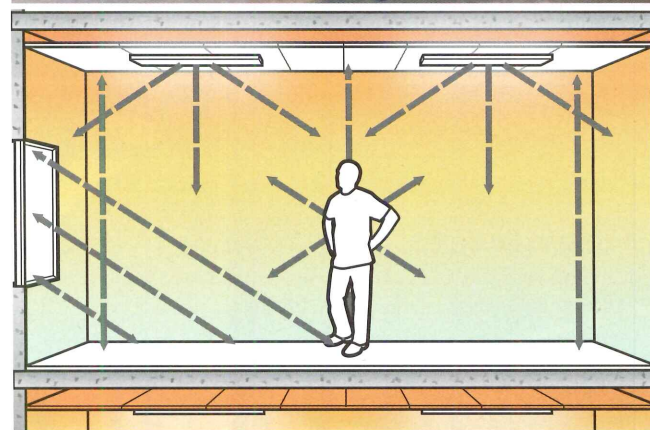
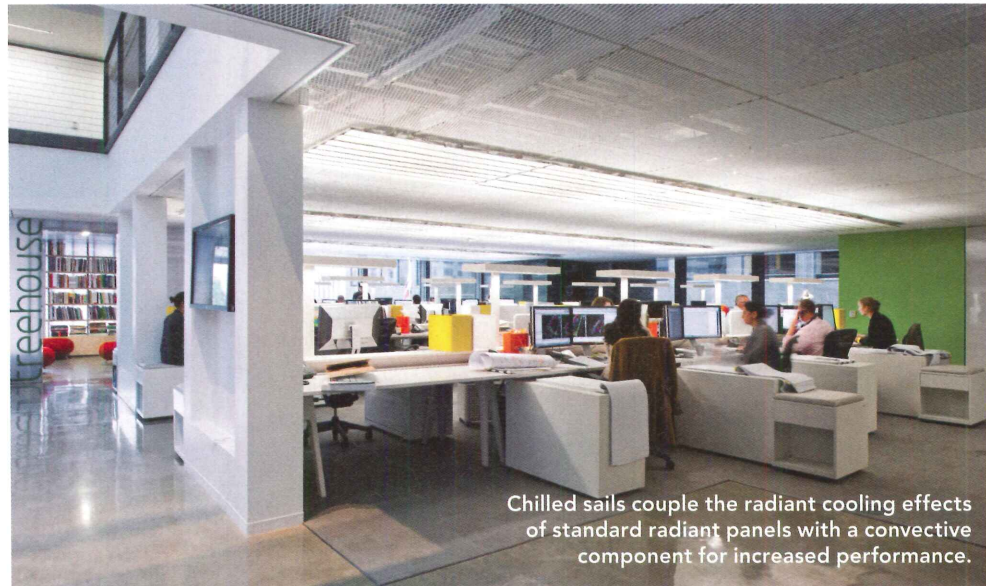


Image courtesy of Price Industries

a chilled ceiling system occupies a significant percentage of the overall ceiling. Because of this, it is typical for the chilled ceiling system design to be informed as much by the architectural team as the MEP consultant, in some cases more. It is not unusual for a ceiling to be integrated with the lighting and other services to offer a tailored solution on a project-by-project basis.

Functionally, the chilled ceiling system can be split into two general types: the cooling only panels for the majority of the building core, and cooling and heating panels to help condition the building envelope. In winter, the radiant ceiling, or sails, along the building perimeter transfer heat to the outer walls, raising the surface temperatures, which reduce the radiant heat loss from the occupants to these surfaces and avoiding discomfort. During summer months, these same panels will absorb sensible heat from these surfaces and the occupants, dissipating heat directly to the radiant ceiling in the same manner as the cooling panels in the core manage the load year-round. This can lead to greatly reduced volumes of heated or cooled supply air over convective systems, leading to fewer

thermal comfort complaints.

Historically, exterior heat by hot water systems used standalone radiators, while modern commercial systems are typically incorporated into floors or ceilings. There are three primary types of radiant heating systems. Electric heating panels are ceiling or wall mounted. Often, occupant sensors or timers are used to turn on the electric heating panels. These panels come with a range of radiant heat output. Low-intensity panels are lightweight and often placed into T-Bar ceilings, or attached to surfaces, such as under an occupant's desk. Higher intensity panels may require more extensive installation steps due to the weight and dimensional aspects of the panels.

The second type, electrically resistance cables, are generally used by being attached to the underside of wood floors, embedded in a material such as gypcrete or tile substructures, or in wall cavities. These typically offer good thermal capacity and consistent room surface temperatures, though this system can be slow to respond to temperature changes due to the thermal mass of the material they are attached or embedded into.

The third type is hydronic or water-based systems. Hydronic radiant heating systems pump heated water from a boiler through tubing embedded into floors or ceiling materials, or through baseboard fin tube heaters. Wall- and ceiling-mounted radiant panels are usually made of aluminum and have water tubing attached to the back of the panel.

WAYS TO HEAT AND COOL A BUILDING: RADIANT TECHNOLOGY VS. ALL-AIR

Management of heat loads can be classified into two different types: all-air HVAC systems and hybrid systems. All-air systems have been the most prominent in North America during the 20th century and have been in use since the advent of forced air conditioning. The majority of commercial spaces are still heated and cooled by conventional HVAC, which typically has a central air handling unit, or rooftop unit, that delivers cool or warm air to satisfy the building load and maintain the desired thermal conditions in the occupied zone. These conventional systems use high-volume air flows, bring them to the supply air temperature required to maintain the zone set point, and distribute the conditioned air throughout the building via ducts. Air diffusers are mounted in the zone to distribute the supply air. In most cases, the volume of supply air required to cool or warm the space is higher than the ventilation requirements in order to properly mix the occupied space to obtain the uniform temperature in the occupied zone. Draft is not uncommon and is often the primary complaint from occupants. Draft complaints are common when the supply air volume is the minimum due to low thermal loads in the occupied space.

Hybrid systems often have two components: an air-side ventilation system and a water-side heating/cooling system. The air side is typically designed to meet the ventilation requirements

CONTINUING EDUCATION



EARN ONE AIA/CES HSW LEARNING UNIT (LU)



EARN ONE GBCI CE HOUR FOR LEED CREDENTIAL MAINTENANCE

Learning Objectives

After reading this article, you should be able to:

1. Explain radiant heating and cooling systems in terms of energy efficiency and green building goals.
2. Compare the operational principles of all-air and radiant heating and cooling.
3. Identify suitable applications for chilled ceilings and chilled sails with regard to sustainability, cost, and aesthetic issues.
4. Discuss the pros and cons of mixed flow, displacement, and natural ventilation systems as a supplement to radiant systems.

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

AIA/CES COURSE #K1312E
GBCI COURSE #0090010785

for the occupied space, as well as satisfy all latent loads. Ideally, it is a 100 percent outside air system and simply provides the volume of air required for ventilation and dehumidification. The water side is designed to meet the balance of the sensible cooling and heating loads. These loads may be handled by water-based products, such as radiant panels, which transfer heat mainly by thermal radiation, and chilled sails, which transfer heat using a combination of thermal radiation and natural convection. Because these radiant systems use water to condition a space's sensible load, and rely on a separate ventilation system to provide ventilation and satisfy latent loads, there is a greatly reduced supply air volume requirement and a significant reduction in break horse power due to the energy density of water compared to air. Using water takes less energy to move the same amount of thermal energy into and out of the occupied space when compared to an all-air system.

Radiant Ceilings

Chilled ceilings are a radiant technology that can be used to provide both cooling and heating. Generally, chilled ceilings are configured as a flat metal panel with a water pipe attached to one side in a serpentine pattern. Chilled or hot water is circulated through the water pipe. The thermally conditioned water transfers energy (heating or cooling) to the panel, which in turn transfers this thermal energy to the occupied space. The pipes heat or cool the metal panel, which then radiates that energy toward the building occupants.

The thermal comfort and high efficiency achieved with radiant heating and cooling, as well as the flexibility and customization of the product, make it suitable for use in almost any application. Radiant panels are designed with a low profile to integrate into a variety of installations, from standard suspended ceiling systems to free hanging applications and surface-mounted applications on walls or ceilings. The panels are typically installed along perimeters, corridors, hallways, and aisle ways, or in interior spaces, with exposed linear panels provided when the ceiling space is not available, when a radiant panel installed or recessed into the ceiling is not feasible, or when the radiant panel is to be placed in an area with high ceilings.

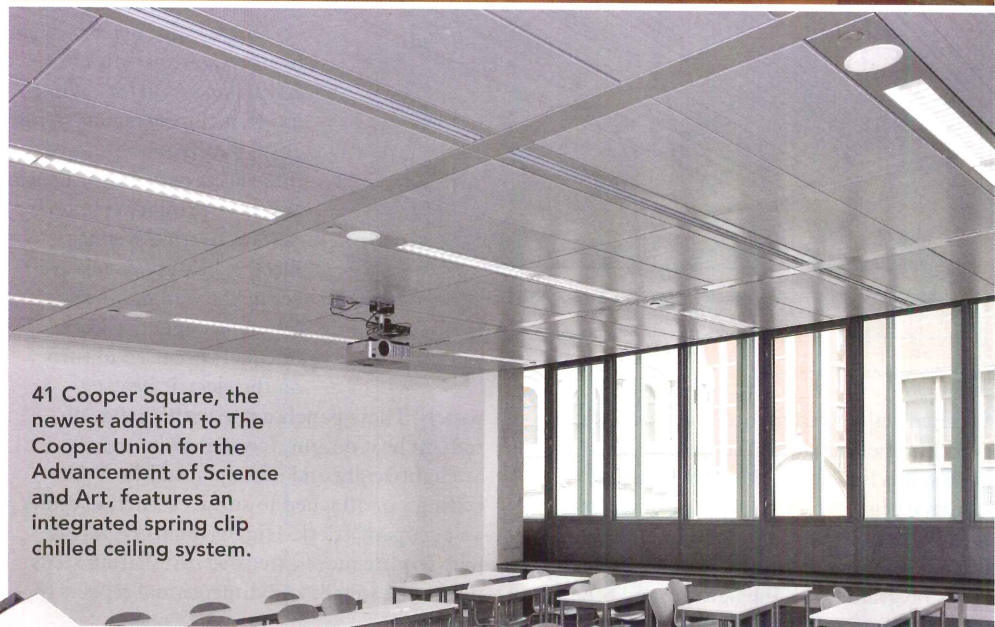
Chilled Sails

Originally developed in Europe in the late 1990s, chilled sails are a relatively new technology in North America. Sails couple the radiant cooling effects of standard radiant panels with a

Photo courtesy of Price Industries

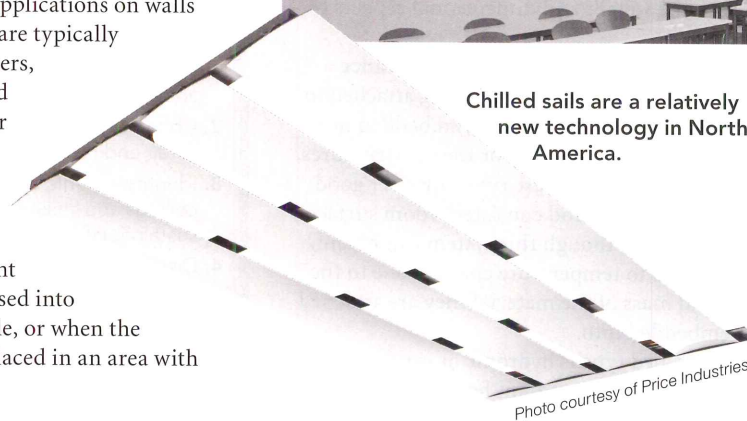


Radiant heating and cooling systems at TELUS Spark: the New Science Center feature an "architectural cut in," a panel cut to integrate into the structural elements.



41 Cooper Square, the newest addition to The Cooper Union for the Advancement of Science and Art, features an integrated spring clip chilled ceiling system.

Photo courtesy of Nelson Industrial Inc.



Chilled sails are a relatively new technology in North America.

convective component in cooling for increased thermal performance. The sails' unique shape gives them more surface area than a traditional radiant panel, increasing their radiant capacity and still achieving the high comfort of radiant

systems. They allow air that has been cooled by contact with the sails to pass through openings between the blades, thus increasing the capacity of the unit and providing an effective means of dealing with the sensible cooling load.

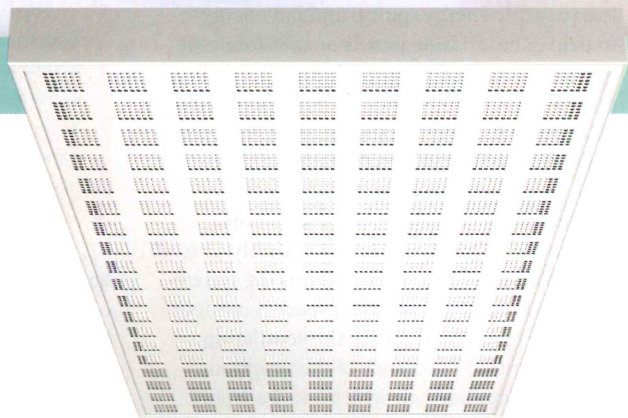
The heat transfer between the sail to the room has two components: natural convection with the room air and thermal radiation with the room surfaces.

In cooling mode, a significant amount of the heat transfer occurs via natural convection as warm air rising due to natural buoyancy forces, passes over the chilled sails, cools and then sinks down into the occupied zone. As the air falls into the occupied zone, the convective cooling capacity of the sail is coupled with the radiant capacity of the cool sail surface, resulting in a

Photo courtesy of Price Industries



PROJECT: TELUS Spark - Creative Kids Museum | ARCHITECT: Dialog



INCREDIBLE **COMFORT.** INSPIRING **SPACES.**

LINEAR RADIANT PANELS

TELUS Spark uses radiant panels in collaboration with displacement ventilation to help achieve energy savings 44% better than the ASHRAE 90.1-1999 baseline. Just as importantly, these technologies create a quiet and comfortable space that will inspire the next generation of thinkers, inventors, and dreamers.

WHY USE RADIANT PANELS?

- + **Energy Efficiency:** Substantial energy savings.
- + **Indoor Environmental Quality:** Quiet & Comfortable.
- + **Design Flexibility:** Reduced mechanical footprint.
- + **Customizable:** Endless design & finish options.



See why we are the supplier of preference for air distribution. Visit price-hvac.com or call 1.866.430.0969.

cooling capacity greater than that of standard radiant panels. In cooling, the approximate breakdown of heat mode transfer of chilled sails is 30 percent by thermal radiation and 70 percent by natural convection.

Like radiant panels, sails can only handle the sensible portion of a building load and must be paired with a fresh air system for ventilation and latent load removal.

Characteristics

Chilled ceilings and chilled sails share several beneficial characteristics.

Architectural appeal. Chilled ceilings and chilled sails can add design elements into a space to provide both a practical function and aesthetic appeal. Available in a variety of surface finishes, profiles, and services, radiant panels and chilled sails offer a sleek, streamlined profile that complements today's modernistic architectural designs while dovetailing with current green building goals. Chilled panels also offer architects sound-dampening qualities as they can integrate acoustic damping, or they can be silk screened to match acoustical tiles. In some instances, the chilled ceiling can even become a primary architectural feature in the building, essentially being a functional sculpture.

Energy efficiency. Radiant systems require less parasitic energy (pump and fan energy) to deliver heat. Using panels or sails to satisfy sensible room loads instead of all-air systems, greatly reduces the supply air volume required by as much as 60 to 80 percent, with the result of decreased fan power requirements and associated energy savings.

Indoor air quality. Depending on the application, under maximum load, only 15 to 40 percent of the typical overhead mixing system supply air volume in a typical space is outdoor air and is required to satisfy the ventilation requirements. The balance of the supply air flow is re-circulated air which can transport pollutants through the building from one space to another. Radiant systems transfer heat directly to/from the zone and are often used with a 100 percent outdoor air system which exhausts polluted air directly to the outside, reducing the opportunity for VOCs and biologically active airborne material such as flu to travel between air distribution zones. This characteristic makes radiant systems an ideal choice in buildings or rooms where air quality is critical.

Thermal comfort. Radiant heat transfer

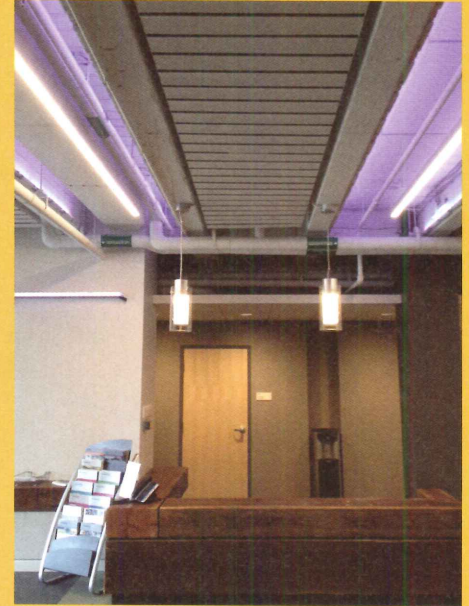
RADIANT SYSTEMS IN BOSTON'S BUILDING TECHNOLOGY SHOWCASE

Fraunhofer's Building Technology Showcase (BTS) represents the future of sustainable design. Completed in 2013 in Boston's fast-growing innovation district, the BTS is a deep energy retrofit of a 100-year-old building that serves as a living laboratory for R&D of advanced sustainable energy technologies. Radiant technology figures significantly in the building's energy-saving strategy. In the lobby reception area and gallery, chilled sails are installed in the ceiling between the support struts. Displacement ventilation is installed along the wall. The controls setup runs displacement as the first stage of cooling, and uses chilled sails as a second stage of cooling under normal operating conditions. The chilled sails rely on the displacement system to provide ventilation and satisfy latent loads, which results in a greatly reduced supply air volume requirement, making this hybrid solution extremely energy efficient when compared to a traditional all-air system.

The entire central section of the sixth floor is dedicated to the BEEG Workshop, where radiant panels complement the natural ventilation system. When appropriate exterior and interior temperature and humidity conditions exist, the system will satisfy occupied space conditions using the natural

ventilation system. The system also provides supplemental cooling when necessary using the radiant panels. When the occupied space conditions cannot be maintained using natural ventilation and radiant panels, the mode of operation changes to mechanical cooling using fan coils.

Photo courtesy of Price Industries



The chilled sails were built with a service border to accommodate installed lighting. The displacement ventilation is installed along the outer wall of the room. The controls in this space run displacement ventilation as the first stage of cooling, and chilled sails as the second.

has been shown to condition a space more comfortably than convection. Since radiant heating/cooling uses minimum primary air quantities, air velocities are lower in the occupied space, minimizing draft risk.

Quiet operation. Because radiant panels and chilled sails have no moving parts, the only noise they produce comes from water moving through the copper piping. At typical water velocities, the noise produced by the system is nearly imperceptible. This allows radiant ceilings to operate more quietly than traditional all-air systems. Radiant panels and sails are also commonly integrated with acoustical panels, which can further reduce noise levels in a space.

Smaller services footprint. The reduced supply air volume of a hydronic system reduces ductwork requirements, resulting in the ability to reduce plenum heights. This allows radiant systems to be installed in tight spaces, and creates the potential for lower construction costs, higher ceilings, and more usable floor space. In addition, the air handling equipment is often downsized—saving cost and providing more flexibility in locating the equipment.

Reduced maintenance. Due to the reduction in moving parts and mechanical equipment associated with radiant panels, these systems have lower maintenance costs than all-air systems.

Continues at ce.architecturalrecord.com

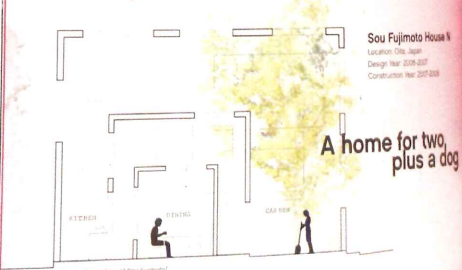


Price Industries is the leading manufacturer of air distribution products in the North American market, and works to bring about the vision of the design community by collaborating on high-quality, high-performing, and customizable air distribution solutions. www.price-hvac.com

NATIONAL BUILDING MUSEUM

Space and Section

Exploration within projects
of Sou Fujimoto



Sou Fujimoto House N
Location: Ota, Japan
Design Year: 2008-2007
Construction Year: 2007-2008

A home for two,
plus a dog

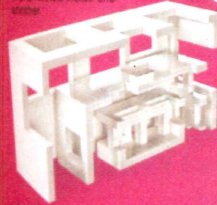
The house itself consists of three shells nested inside one another. The outermost shell covers the entire premises, creating a covered, semi-outdoor garden. The second shell encloses a limited space inside the covered outdoor space. The third shell creates a smaller interior space. Residents build their life inside this gradation of domain.

This is a presentation of an ultimate house in which everything from the original idea to a specific house is conceived to

Sou Fujimoto House N

© 2007 Architectural Record

This image shows the longitudinal section made by cutting through the longest part of the building, where you can clearly see the three shells nested inside one another.

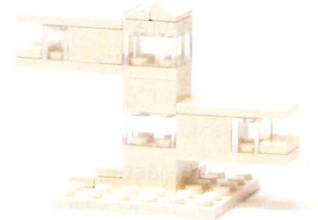


This image shows the transverse section, made by cutting at a right angle.

© 2007 Architectural Record



With no deadlines, clients, bosses, or meetings, the possibilities are truly endless.



What will you build?



Bring your architectural visions to life with the LEGO® Architecture Studio. This amazing set includes more than 1,200 LEGO® bricks and a guidebook filled with 272 pages of tips, techniques, features, and intuitive hands-on exercises endorsed by leading design houses. Now available at the National Building Museum Shop and online at www.nbmshop.org.



nbmshop.org
401 F Street NW Washington, DC

Your Museum Shop purchases support the National Building Museum's exhibitions and programs.

Get Free Information

from our advertisers! Fill out this Reader Service Card and send back today
or go to ArchRecord.com > Products tab > Reader Service



Advertisers Index

Reader Service #	Advertiser	Page	Reader Service #	Advertiser	Page	Reader Service #	Advertiser	Page
54	⑤ Advance Lifts <i>advancelifts.com</i>	163	52	Electrolux <i>contract.electroluxconnect.com</i>	143		Skyscraper Museum, The <i>skyscraper.org</i>	163
44	⑤ ALACO Ladder Company <i>alacoladder.com</i>	104	72	Electrolux <i>electroluxappliances.com</i>	140-144	24	⑤ Sloan <i>sloanvalve.com</i>	31
27	⑤ AMICO <i>amicoarch.com</i>	34	35	⑤ Elmes Door Hardware <i>elmesworld.com</i>	110		SNAP <i>sweets.com</i>	145
	Architectural Record Continuing Education App <i>archrecord.com</i>	134		Frank Lloyd Wright Foundation <i>franklloydwright.org</i>	158	41	Specialty Doors <i>barndoorhardware.com</i>	160
14	⑤ Armstrong <i>armstrong.com/woodworks</i>	cv2-1	26	⑤ Hawa Americas Inc. <i>hawa.com</i>	22	23	State Farm Insurance <i>st8.fm/bizinsurance</i>	cv3
34	Artemide, Inc. <i>artemide.net</i>	125	17	Headwaters Resources <i>flyash.com</i>	163	16	Steel Institute of New York 2 <i>siny.org</i>	
19	⑤ Belden Brick <i>beldenbrick.com</i>	13	62	Ironsmith <i>ironsmith.biz</i>	39	31	Sun Valley Bronze <i>svbronze.com</i>	159
45	Benjamin Moore & Co. <i>benjaminmoore.com</i>	25	29	Kim Lighting <i>kimlighting.com</i>	52		Sweets Mobile App <i>sweets.com</i>	132
61	Bluebeam Software Inc. <i>bluebeam.com/workaround</i>	45	18	Lutron Electronics Co., Inc. <i>lutron.com/redo</i>	cv4	39	TAKTL <i>taktl-llc.com</i>	100
60	Bluworld of Water <i>bluworldusa.com</i>	51	37	Millennium Tiles <i>zalmag.com</i>	161	51	Technical Glass Products <i>tgpamerica.com</i>	162
20	Bobrick <i>bobrick.com</i>	29	42	modularArts <i>modulararts.com</i>	162	32	⑤ ThyssenKrupp Elevator Corporation <i>thyssenkruppelevator.com</i>	9
30	CaptiveAire <i>captiveaire.com</i>	114		National Building Museum <i>nbm.org</i>	155	55	Trex <i>Trex.com</i>	17
53	Cascade Coil Drapery <i>cascadecoil.com</i>	163	48	Ornamental Metal Institute of New York <i>ominy.org</i>	4	38	Umicore Building Products USA Inc. <i>vmzinc-us.com</i>	116
36	ClimateMaster, Inc. <i>climatemaster.com</i>	36	40	PCI Precast/Prestressed Concrete Institute <i>pqi.org/hpprecast</i>	14	25	Underwriters Laboratories Inc. <i>ul.com/newscience</i>	6
21	⑤ Construction Specialties, Inc. <i>c-sgroup.com</i>	21	57	Price Industries <i>price-hvac.com/sustainable</i>	153	33	Unilock <i>unilock.com</i>	32
	DODGE <i>DodgeBuildsBiz.com</i>	12	70	Price Industries <i>price-hvac.com</i>	150-154	22	U.S. Concrete <i>us-concrete.com</i>	102
59	Doug Mockett & Company, Inc. <i>mockett.com</i>	16	43	Prodema <i>prodema.com</i>	26	15	VICWEST <i>vicwest.com</i>	18
71	⑤ Draper Inc. <i>draperinc.com</i>	146-149	73	reThink Wood <i>rethinkwood.com</i>	135-139	50	Waste Management <i>wm.com</i>	30
58	DuPont Building Innovations <i>surfaces.dupont.com</i>	40	56	Rocky Mountain Hardware 3 <i>rockymountainhardware.com</i>				
28	⑤ E. Dillon & Company <i>edillon.com</i>	5	49	⑤ SAFTI Fire Rated Glass <i>safti.com/ar</i>	11			
46	EarthWerks <i>earthwerks.com</i>	74	47	Scofield <i>scofield.com</i>	19			

PRODUCT SPOTLIGHTS

Advertisement

DOORS, WINDOWS

FIRE-RATED GLASS CERAMIC

WR

Technical Glass Products

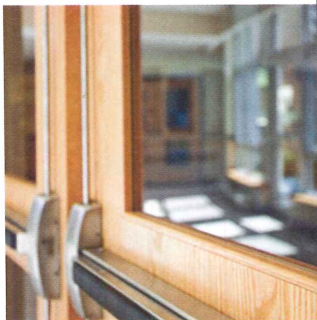
▲ FireLite® family of products from Technical Glass Products is UL listed and labeled and offers fire ratings up to 3 hours.

Product Application:

- Post Road Elementary School, White Plains, NY
- Seattle-Tacoma International Airport, Seattle, WA
- Shaklee Corporate Headquarters, Pleasanton, CA

Performance Data:

- High impact safety ratings
- Clear and wireless



www.fireglass.com
800.426.0279 | Contact: sales@fireglass.com

Circle 150

DOORS, WINDOWS

ONE-PIECE HYDRAULIC & LIFT-STRAP BIFOLD DOORS

Schweiss Doors

▲ Schweiss Doors manufactures unique custom doors. One-piece hydraulic doors and patented Lift-Strap opening/closing bifold doors.

Product Application:

- Moving doors and walls
- You think it, they build it
- Custom-designed storefronts and more

Performance Data:

- One-piece hydraulic doors
- Faster, safer operation, zero lost headroom, superior design that keeps working



www.schweissdoors.com
800.746.8273

Circle 151

MATERIALS

STEEL DECK FRAMING

WR | G | NEW

Trex

▲ Trex Elevations® Steel Deck Framing—stronger, straighter, smarter. Because a world-leading deck brand deserves one of the world's most amazing deck frames.

Performance Data:

- Stronger, safer than pressure-treated lumber; low-maintenance like Trex decking products; non-combustible and rust-resistant; spans longer distances, so fewer posts; 25-year limited residential warranty



www.Trex.com
800.BUY.TREX | Contact: Leslie Adkins

Circle 152

MECHANICAL SYSTEMS, HVAC, PLUMBING

COLLECTION BY MODERN DESIGN ICON

WR

Infinity Drain

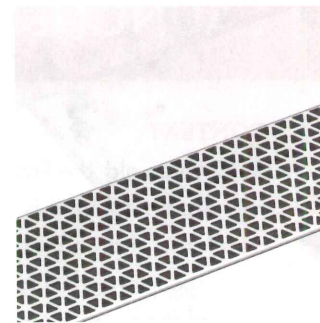
▲ Introducing a collection of exclusive linear drain covers by Marc Newson, an icon of modern design.

Product Application:

- Suited for both residential and hospitality applications
- Works with any type of waterproofing technique

Performance Data:

- Available in five finish options including Matte White and Matte Black
- Constructed of substantial 14-gauge stainless steel
- Made in USA



www.InfinityDrain.com
516.767.6786 | Contact: info@InfinityDrain.com

Circle 153

ROOFING, SIDING, THERMAL & MOISTURE PROTECTION

ARCHITECTURAL CONCRETE CLADDING

WR | G | NEW

Easi-Set Worldwide

▲ Ultra Hi-Performance Slenderwall is a 28 lb./sf award-winning architectural precast concrete and steel-stud exterior panel system wind-load tested to 226mph.

Product Application:

- BioInnovation Center, New Orleans, LA
- Hilton Gardens, Montreal, Quebec, Canada
- Westin Luxury Hotel, Virginia Beach, VA

Performance Data:

- Continuous closed-cell foam insulation and optional factory-installed windows
- H2Out Pressure Equalized Joint Rainscreen



www.slenderwall.com
800.547.4045 | Contact: Arthur Miles

Circle 154

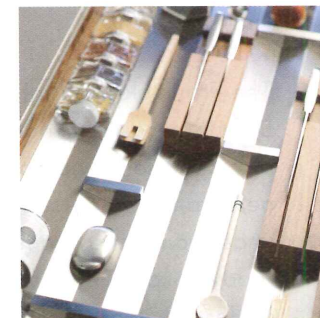
SPECIALTY PRODUCTS

INTERIOR FITTING SYSTEM

WR | NEW

bulthaup corporation

▲ bulthaup kitchens are revered for their clean lines, ergonomic layout, and precision engineering. The new interior fitting system allows users to customize living spaces.



www.bulthaup.com
800.808.2923 | Contact: Charlotte Myhr

Circle 155

CLASSIFIEDS

POSITION VACANT

WWW.SMPSCAREERCENTER.ORG

Find marketing/BD professionals with A/E/C experience. Call 800-292-7677, ext. 231

ARCHITECTURAL RECORD

To view Architectural Record online visit:
www.architecturalrecord.com

ARCHITECTURAL RECORD

To obtain information or to reserve space contact:

Diane Soister at Tel: 212-904-2021
or call 1-800-251-5176
Email: diane.soister@mhfi.com



FRANK LLOYD WRIGHT SCHOOL OF ARCHITECTURE LAUNCHES SEARCH FOR NEW DIRECTOR

CONTEXT

At 82 years old, the Frank Lloyd Wright School of Architecture has reached a stage most schools only dream about: it is venerable, fully accredited, and comfortably in step with contemporary standards of architectural education. Fortunately, we're not most schools. Frank Lloyd Wright started our program to challenge normative educational models, not emulate them. Given the state of the profession, and architectural education in particular, we think it's time to renew that commitment. Therefore, in the spirit of Wright, a grand master of re-invention, we are remaking the Frank Lloyd Wright School of Architecture. And when we're done, it will again be like no other. We're looking for a Director with the energy and vision to help us make that happen.

THE CHALLENGE

The Frank Lloyd Wright School of Architecture seeks a Director who, like Wright, relishes invention, challenge, and discovery; someone who is excited to chart architecture's next frontier; a person who in a time of conformity understands the beauty of idiosyncrasy; a leader who is ready to speak enthusiastically and persuasively to a profession in need of direction. We don't want someone who designs like Wright. We want someone who can think as boldly as he did.

POSITION SUMMARY

The Director will be the Chief Academic Officer of the Frank Lloyd Wright Foundation, responsible for the School of Architecture's pedagogical direction, academic programs, personnel, students, finances, and reputation. The Director will play a strong leadership role in the broader programs of the Foundation. (More detailed responsibilities available at www.franklloydwright.org) The School and position are based at Taliesin West in Scottsdale, Arizona—with summer activities at Taliesin in Spring Green, Wisconsin.

QUALIFICATIONS

The ideal candidate will demonstrate significant leadership experience in the profession, academia, or the public sector. He or she should have direct experience with architecture and design, an advanced academic degree, peer-recognized achievement in their area of endeavor, clear communication and listening skills, and familiarity with budget and personnel management. This person must be invigorated by challenge and enthusiastic about possibility. This is an extraordinary opportunity, and we are looking for an extraordinary person to grab it.

LEARN MORE AND APPLY

Detailed responsibilities and more information about the school can be found at www.franklloydwright.org.

To apply please send letter of interest and resume to HR Manager Courtney Larsen at clarsen@franklloydwright.org. Review of applications will begin on January 6, 2014, and will continue until the position is filled. Principals only, please. The Foundation is an equal opportunity employer.

dates&events

Ongoing Exhibitions

Urban Ecologies in the Aerial Age

Cambridge, Massachusetts

Through December 19, 2013

Airport Landscape claims the airport as a site of and for landscape. Airports have never been more central to the life of cities, yet they remain peripheral in design discourse. In spite of this, landscape architects have recently reasserted their historic claims on the airfield as a site of design. The exhibition features work by a range of leading landscape architects and designers including James Corner Field Operations, Stoss Landscape Urbanism, and Workshop: Ken Smith Landscape Architect. For more information, visit gsd.harvard.edu.

Calder Shadows

New York City

Through December 21, 2013

Sculptor, painter, illustrator, printmaker, and designer, the American artist Alexander Calder (1898–1976) was above all a master engineer of shifting lines and dancing shadows. Focused on Calder's work, this exhibition at Venus Over Manhattan was designed uniquely to explore the exquisite "manner of reacting" that sets the artist's work apart. A group of a dozen rare Calder mobiles and stabiles, created between 1929 and 1974, are presented in darkness, but each sculpture lit so that its shadows become the exhibition's subject. For more information, visit venusovermanhattan.com.

100 Urban Trends from the BMW Guggenheim Lab

New York City

Through January 5, 2014

This exhibition is the culmination of the experiences and concepts generated during the two-year run of the BMW Guggenheim Lab. The Lab—an urban think tank, community center, and public gathering space that traveled to New York, Berlin, and Mumbai—inspired innovative ideas about urban life and cities. Tens of thousands of participants engaged with the Lab's free public programs, urban projects, and research initiatives, both on-site and online, which informed and helped shape the exhibition. At the Solomon R. Guggenheim Museum. For more information, visit guggenheim.org.

Projects in Contemporary Art & Architecture

New York City

Through January 15, 2014

Featuring work by world-renowned architects, including Moshe Safdie, Bruce Fowle, and Alighiero Boetti, this show at the National Academy exhibits projects by architects of schools, museums, art galleries, and cultural spaces via models, photos, prints, and drawings. The exhibit also features work by National Academy students and faculty inspired by architectural forms and interiors. For more information, visit nationalacademy.org.

Practical Utopias: Global Urbanism in Hong Kong, Seoul, Shanghai, Singapore, and Tokyo

New York City

Through January 18, 2014

Over the past 20 years, the pace and scale of urbanization in Asia has been unprecedented in both the emerging and maturing economies of the region. This exhibition explores new cities built up just outside, immediately adjacent to, or even within the old. Conceived as extensions or embellishments of existing capitals of finance and culture, these



SUN VALLEY BRONZE
Fine Solid Bronze Architectural Hardware

208.788.3631 • www.sunvalleybronze.com

Made in the USA

CIRCLE 31

new cities within cities serve as focal points for future visions and global ambitions. At the Center for Architecture. For more information, visit aiany.org.

Palaces for the People: Guastavino and America's Great Public Spaces

Washington, D.C.

Through January 20, 2014

Palaces for the People sheds light on the story of Rafael Guastavino Sr. (1842–1908), arguably the most influential architectural craftsman working in late-19th- and early-20th-century America. An established master builder in Barcelona, Guastavino patented a tiling system—based on a centuries-old Spanish building method—enabling the construction of self-supporting arches that were simultaneously lightweight, virtually indestructible, fireproof, and attractive. For more information, visit nbm.org.

Global Citizen: The Architecture of Moshe Safdie

Los Angeles

Through March 2, 2014

Global Citizen explores the evolution of Moshe Safdie's work and the humanistic design philosophy that he has demonstrated

throughout his nearly 50-year-long career. Through the presentation of models, displays, sketches, photos, and videos, the exhibition traces the journey from Safdie's groundbreaking project *Habitat for Expo '67* in Montreal to the firm's most recently completed and current projects from Marina Bay Sands in Singapore to the United States Institute of Peace in Washington, D.C. At the Safdie-designed Skirball Cultural Center. For more information, visit skirball.org.

In Focus: Architecture

Los Angeles

Through March 2, 2014

The long, interdependent relationship between photography and architecture is the subject of this survey drawn from the Getty Museum's collection. Spanning the history of the medium, the exhibition features 24 works by such diverse practitioners as William Henry Fox Talbot, Eugène Atget, Walker Evans, Bernd and Hilla Becher, and Ryuji Miyamoto. Seen together, the varied photographic representations of secular and sacred structures on display reveal how the medium has impacted our understanding and perception of architecture. For more information, visit getty.edu/museum.

Overdrive: L.A. Constructs the Future, 1940–1990

Washington, D.C.

Through March 10, 2014

The first comprehensive survey of the architecture of mid- to late-20th-century Los Angeles, *Overdrive* sheds new light on well-known landmarks, uncovers hidden jewels, and explores the architectural soul of one of America's most complex cities. Visitors can get an in-depth view of the free-spirited, often experimental architecture of post-World War II Los Angeles, from its ambitious freeway network, sleek corporate towers, and whimsical coffee shops to popular shopping malls, refined steel-and-glass residences, and eclectic cultural institutions. For more information, visit nbm.org.

The Playground Project

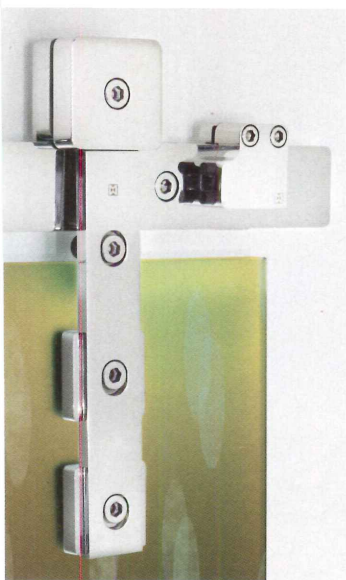
Pittsburgh

Through March 16, 2014

The Playground Project presents some of the most outstanding and influential playgrounds from Europe, the U.S., and Japan from the mid- to late-20th century in order to prompt a reconsideration of our time and the way we approach childhood, risk, public space, and education. The project, on view at the Heinz Architectural Center at the Carnegie Museum

AVAILABLE THROUGH SPECIALTY DOORS

THE WORLD'S FINEST SLIDING DOOR HARDWARE
AS WELL AS ROLLING LIBRARY LADDERS



HAND CRAFTED IN GERMANY

MWE[®]
Edelstahlmanufaktur GmbH

CIRCLE 41

SPECIALTY DOORS 866-815-8151

WWW.BARNDOORHARDWARE.COM

WWW.MODERNSTAINLESSLADDERS.COM



of Art, puts the concept of play into the foreground as an important way of thinking. A recently added Lozziwurm—a play sculpture designed in 1972—is on display in front of the museum. For more information, visit ci13.cmoa.org.

James Turrell: A Retrospective

Los Angeles

Through April 6, 2014

This Los Angeles County Museum of Art retrospective explores nearly 50 years in the career of James Turrell. The exhibition includes early geometric light projections, prints and drawings, installations exploring sensory deprivation and seemingly unmodulated fields of colored light, and recent work with holograms. One section is devoted to the Turrell masterwork-in-process, *Roden Crater*, a site-specific intervention in the landscape just outside Flagstaff, Arizona, which will be presented through models, plans, photographs, and films. The exhibition includes a separately ticketed experience, *Light Reignfall*, from the artist's *Perceptual Cell* series, with a limited number of tickets available. For more information, visit lacma.org.

Lectures, Conferences, and Symposia

Shenzhen & Hong Kong Bi-City Biennale of Urbanism/Architecture

Shenzhen, China, and Hong Kong

December 6, 2013–February 28, 2014

The only biennale hosted by two cities, this program of exhibitions, lectures, and events stretches across part of the Pearl River Delta from the boomtown of Shenzhen to the former British colony of Hong Kong. In Shenzhen, two different teams of curators have assembled shows: at an abandoned glass factory Ole Bouman is presenting *Biennale As Risk*, which reimagines China's industrial heritage for the 21st century, while at a warehouse near the Shekou Ferry Terminal, Jeffrey Johnson and Li Xiangning examine *Urban Borders*. The Hong Kong portion has been curated by Colin Fournier and addresses the theme *Urban Edge*. For more information, visit szhkbiennele.org.

2014 International Roofing Expo

Las Vegas

February 26–28, 2014

The International Roofing Expo brings all segments of the roofing construction and maintenance industry together for three days of face-to-face interaction, product review, education, and networking. The show will feature 450 exhibitors in 1,000 booths and draw 9,000 people in total attendance. Show highlights include 44 educational sessions, the Product Showcase, the Technology & Business Services Pavilion, the Metal Marketplace, and Exhibitor Product Clinics. At the Mandalay Bay Convention Center. For more information, visit theroofingexpo.com.

Coverings 2014

Las Vegas

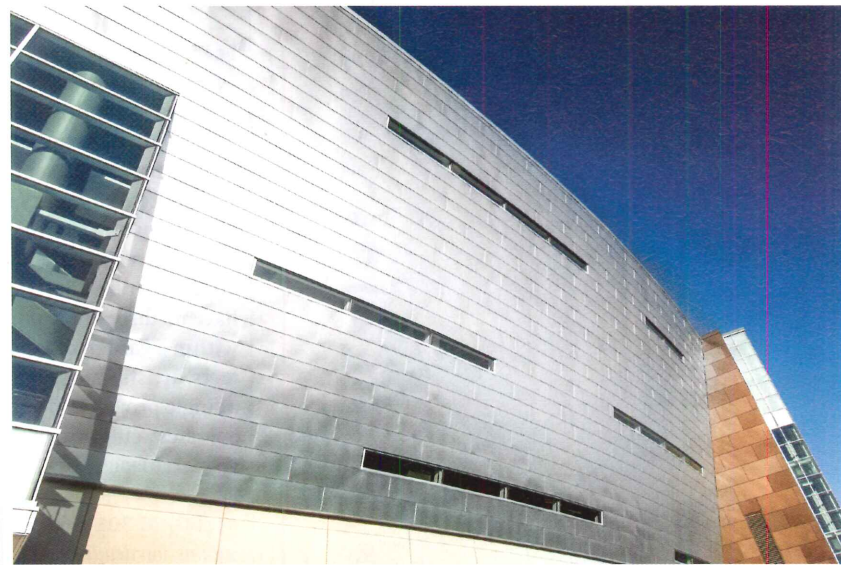
April 29–May 2, 2014

The largest international tile and stone exposition and conference, Coverings is anticipated to offer more than 900 exhibitors representing more than 35 countries, in addition to a robust program of CEU-accredited seminars, demonstrations and networking opportunities—all at no cost. The exposition provides a wealth of information and the business-building resources that companies need to be successful when it comes to the tile and stone industry. For more information, visit coverings.com.

ZALMAG®

THE SOLUTION TO ZINC

ACHIEVING THE BEAUTY OF ZINC AT AN AFFORDABLE PRICE



PATINA, STRENGTH AND EASE
OF INSTALLATION WILL BRING
ELEGANCE TO YOUR DESIGN

Millennium
tiles

CIRCLE 37

262.723.7778 | WWW.ZALMAG.COM

WALL SCULPTURE

© 2011 modularARTS, Inc.



modulararts®

***InterlockingRock®**

CRUSH

Feature walls in manageable self-aligning modules.

CIRCLE 42

modulararts.com 206.788.4210 made in the USA

dates&events

Competitions

Queensway Connection: Elevating the Public Realm

Submission deadline: January 6, 2014

This competition supports Friends of the Queensway and the Trust for Public Land in their efforts to transform an abandoned rail right-of-way into a greenway serving diverse neighborhoods in central and southern Queens, New York. This competition seeks to supplement the ongoing feasibility study for the railway's transformation by proposing uses in addition to recreation and leisure for the future park. For more information, visit enyacompetitions.org.

New Practices New York 2014

Submission deadline: January 6, 2014

New Practices New York is a biennial juried portfolio competition sponsored by the New Practices Committee of the AIA New York Chapter. The competition identifies firms with unique and innovative strategies in both projects and practices. Architecture and design firms founded since 2004 and located within the five boroughs of New York City are encouraged to submit a practice narrative and a mini-portfolio of built, unbuilt, or theoretical work. For more information, visit aiany.org.

Folly 2014

Submission deadline: January 7, 2014

Socrates Sculpture Park in Queens, New York, and the Architectural League welcome proposals for large-scale projects and installations that explore contemporary interpretations of the architectural folly. Especially popular among the Romantics of the 18th and 19th centuries, architectural follies are structures that often have no discernible purpose and are placed within a garden or landscape. A jury of architects, artists, and arts administrators will select a single project to be built on the grounds of Socrates Sculpture Park. For more information, visit archleague.org.

perFORM 2014

Submission deadline: March 24, 2014

The perFORM 2014 house-design competition asks emerging architectural professionals (students and interns) to design a single-family house to be located in Seattle that showcases how high energy performance can complement high design. A panel of leading Pacific Northwest architects, educators, and builders will judge entries based on resourcefulness, applicability, and beauty. For more information, visit hammerandhand.com.

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

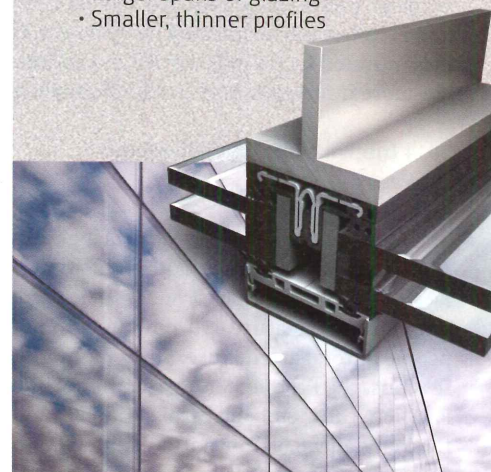
TGP.
IT'S PERSONAL.

Seeking long-term relationship with smooth, open-minded, creative type not into boundaries. Don't box me in. You should be strong, yet refined. Must hold transparent, clear views of the world and always be open to a broader perspective. Looking for beauty on the inside and out. Email me sales@tgpamerica.com

SteelBuilt Curtainwall® Systems

Get to know this attractive curtainwall system that expands your design options. SteelBuilt Curtainwall® Systems allow you to build openings with more glass, less framing and smaller profiles than traditional aluminum systems.

- Superior thermal performance
- Larger spans of glazing
- Smaller, thinner profiles



STEELBUILT
CURTAINWALL SYSTEMS

TGP ARCHITECTURAL
one source. many solutions.®

tgpamerica.com

CIRCLE 51



DELIVERING SUSTAINABLE SOLUTIONS

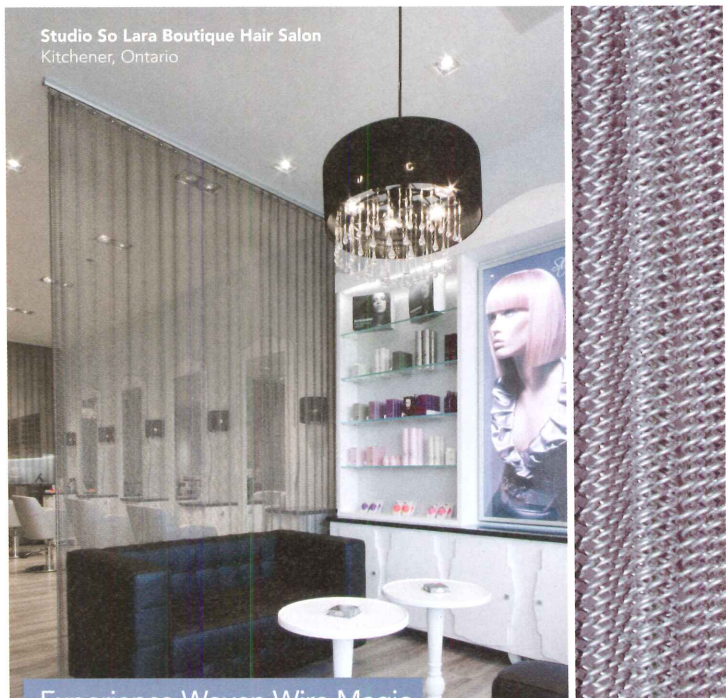
After water, concrete is one of the most sustainable and widely used materials in the world.

Fly ash plays an important role in increasing the sustainability of concrete. Headwaters Resources is the nation's leader in supplying quality fly ash. We can help you discover how to improve the performance of your concrete while simultaneously improving its environmental profile.

Visit www.flyash.com for answers to the most common questions about fly ash. You can also contact your expert Headwaters Resources technical support representative for advice on your specific sustainability opportunities.

www.flyash.com

CIRCLE 17



Experience Woven Wire Magic

Add some glamour to your next project with Cascade Coil Drapery's unique woven wire mesh products. Choose from an exciting array of finishes to provide the look and feel you need to put the finishing touch on your space. Experience our wide range of decorative solutions and add some woven wire magic to your vision today!



www.cascadecoil.com | 800-999-2645

CIRCLE 53

THE SKYSCRAPER MUSEUM

SKY HIGH

the logic of luxury

through 4.19.14

111 West 57th Street
Image courtesy of
SheP Architects PC
39 Battery Place, NY, NY 10280 | Wed.-Sun., 12-6

For more info, visit:
www.skyscraper.org

DOCK LIFTS

EVERY DOCK NEEDS A LIFT

MAXIMUM VERSATILITY
AN ADVANCE DOCK LIFT IS THE ONLY EQUIPMENT THAT CAN SERVICE ALL TRUCKS.

Full line of dock lifts including:

- ▶ Portable
- ▶ Top Of Ground
- ▶ Pit Mounted

AVOID BACK INJURIES

INCREASE PRODUCTIVITY

We can tailor a dock lift to fit your needs and budget.

ISO UL made in USA

ENGINEERED FOR THE MOST LIFE PER \$ SPENT

1-800-THE DOCK
www.advancelifts.com

CIRCLE 54



MARC FORNES'S NonLin/Lin Pavilion appears lacy and delicate. But the coral-like self-supporting aluminum structure, which is perforated with thousands of star-shaped holes, is strong enough for someone to stand on, says Fornes, one of RECORD's 2013 Vanguard designers (see page 86).



good state



better state

You've built this business from the ground up. A State Farm[®] agent can tailor your business insurance to help protect your unique needs. Select the right coverage from a local business owner who understands what it takes to grow. Visit st8.fm/bizinsurance or contact a State Farm agent today.

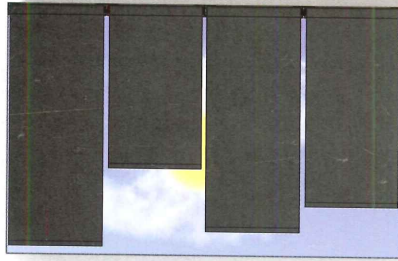
Get to a better State[®]. Get State Farm.

 **State Farm[®]**

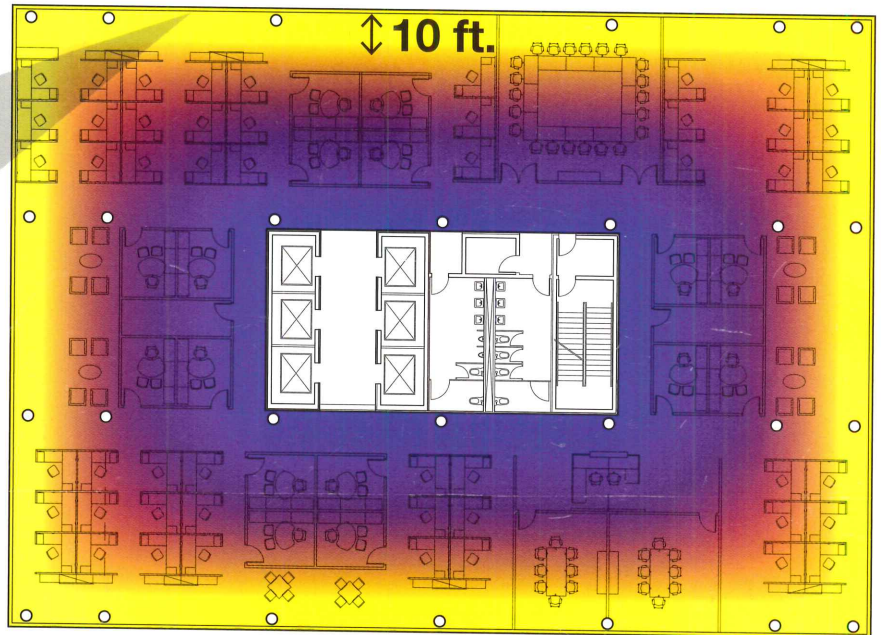
Daylight autonomy made possible by Lutron

Use Lutron Hyperion® shading solutions to maximize the use of daylight in a space — improve occupant well-being, employee productivity, and team collaboration.

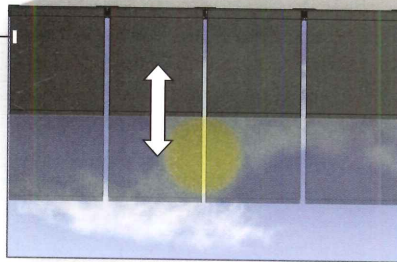
Manual shades provide a useful daylight zone up to only **10 ft.**



Manual shades are rarely adjusted and usually misaligned.

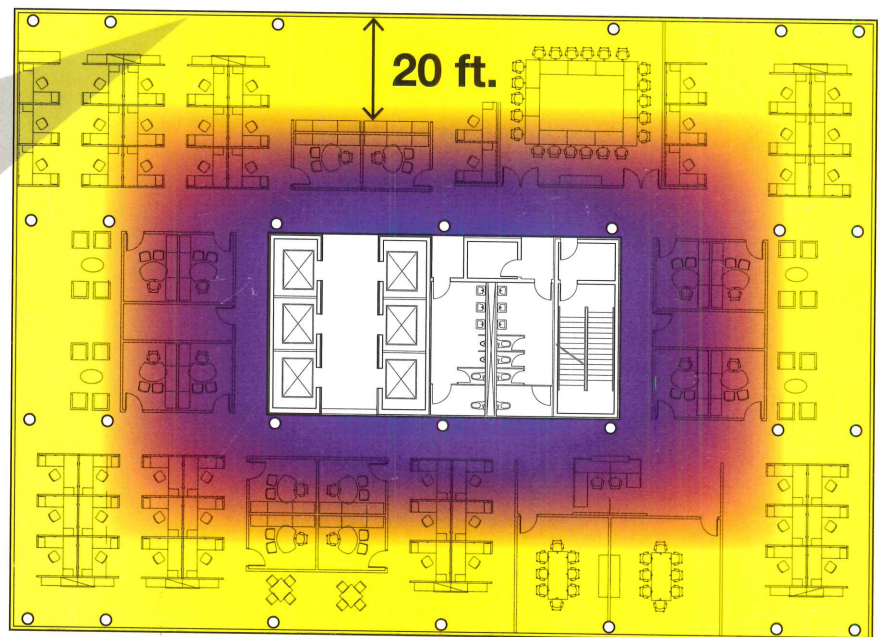


Lutron shading solutions extend the useful daylight zone up to **20 ft.**



Sensor adjusts automated shades according to daylight conditions.

Maximizes useful daylight entering a space, reducing electric light usage.



Wireless window sensor (discreet mullion mount)

Daylight autonomy can contribute to LEED credits
See how it works — www.lutron.com/daylightautonomy

