

ARCHITECTURAL RECORD

CELEBRATING 125 YEARS

bnp
Media

08
2016

\$9.95
www.architecturalrecord.com



Tippet Rise in Montana
+ The Workplace





BE UNDEFINED

BECAUSE YOU'RE ON ANOTHER LEVEL.

The Fireframes ClearFloor® System from Technical Glass Products is a clear departure from the expected. Bring daylight deep into building interiors, creating dramatic visual effects between levels. This innovative, UL-classified system, combines steel framing and Pilkington Pyrostop® glass for impact resistance and a 2-hour fire-rating.

Find out more about this groundbreaking floor at

fireglass.com/clearfloor

fireglass.com | 800.426.0279

Pilkington Pyrostop®

fireframes
CLEARFLOOR® SYSTEM

TGP  **FIRE RATED**
one source. many solutions.®

Architect: Pei Cobb Freed & Partners



Curve Appeal

With its innovative conical indentations, the luminous stainless steel and glass curtain wall of **Pei Cobb Freed & Partners' 7 Bryant Park** becomes an extension of the city's green space. From inside, occupants have a bird's-eye view of surrounding park, while outside, passersby appreciate its reflections. Terminating in a floating canopy sheltering a new plaza—the curved motif successfully underscores this private building's public gesture to the neighborhood around it. Read more about it in **Metals in Construction** online.

 **Ornamental Metal Institute of New York**

WWW.OMINY.ORG

CIRCLE 12

ARCHITECTURAL RECORD

EDITOR IN CHIEF	Cathleen McGuigan, mcguigan@bnpmedia.com
MANAGING EDITOR	Beth Broome, broomeb@bnpmedia.com
DEPUTY EDITOR	Suzanne Stephens, stephenss@bnpmedia.com
FEATURES EDITOR	Josephine Minutillo, minutilloj@bnpmedia.com
SENIOR EDITORS	Joann Gonchar, AIA, LEED AP, goncharj@bnpmedia.com Linda C. Lentz, lentzl@bnpmedia.com
PRODUCTS EDITOR	Julie Taraska, taraskaj@bnpmedia.com
NEWS EDITOR	Anna Fixsen, fixsena@bnpmedia.com
WEB EDITOR	Miriam Sitz, sitzm@bnpmedia.com
EDITORIAL ASSISTANTS	Sam Furnival, Jake Bittle
COPY EDITOR	Anna Shapiro
ART DIRECTOR	Michael T. Powell, powellm@bnpmedia.com
ASSISTANT ART DIRECTOR	Kaylee Foster, fosterk@bnpmedia.com
CONTRIBUTING ILLUSTRATOR, PRESENTATION DRAWINGS	Peter Coe
CONTRIBUTING EDITORS	Sarah Amelar, Fred A. Bernstein, Robert Campbell, FAIA, C.J. Hughes, Blair Kamin, Jayne Merkel, Clifford A. Pearson, David Sokol, Michael Sorkin, Sarah Williams Goldhagen
SPECIAL INTERNATIONAL CORRESPONDENT	Naomi R. Pollock, AIA
INTERNATIONAL CORRESPONDENTS	David Cohn, Tracy Metz, Aric Chen, Chris Foges
CONTRIBUTING PHOTOGRAPHERS	Iwan Baan, Roland Halbe

ARCHITECTURAL RECORD (ISSN: Print 0003-858X Digital 2470-1513) August 2016, Vol. 204 No. 8. Record is published 12 times annually, monthly by BNP Media II, LLC., 2401 W. Big Beaver Rd., Suite 700, Troy, MI 48084-3333. Telephone: (248) 362-3700, Fax: (248) 362-0317.

ANNUAL RATE FOR PRINT, DIGITAL AND COMBO SUBSCRIPTIONS TO INDIVIDUALS IN THE U.S.A.: Print \$72.00, Digital \$18.00 and Print Digital Combo \$81.00. Annual rate for subscriptions to individuals in Canada: Print \$129.00, Digital \$18.00 and Print Digital Combo \$138.00 (includes GST & postage); Annual rate for individuals outside of U.S.A.: Print \$199.00, Digital \$18.00 and Print & Digital Combo \$208.00. Payable in U.S. funds. All rates are in USD. Single Copy sales \$9.95; Foreign \$11.00.

Printed in the U.S.A. Copyright 2016, by BNP Media. All rights reserved. The contents of this publication may not be reproduced in whole or in part without the consent of the publisher. The publisher is not responsible for product claims and representations.

Periodicals Postage Paid at Troy, MI and at additional mailing offices.

FOR SINGLE COPY SALES OR BACK ISSUES ONLY: contact Ann Kalb at (248) 244-6499 or KalbR@bnpmedia.com.

POSTMASTER: Send address changes to: ARCHITECTURAL RECORD, P.O. Box 16387 North Hollywood, CA 91615.

CANADA POST: Publications Mail Agreement #40612608. GST account: 131263923. Send returns (Canada) to IMEX Global Solutions, P.O. Box 25542, London, ON N6C 6B2.

CHANGE OF ADDRESS: Send old address label along with new address to ARCHITECTURAL RECORD, P.O. Box 16387 North Hollywood, CA 91615.

FOR SUBSCRIPTION INFORMATION OR SERVICE, PLEASE CONTACT CUSTOMER SERVICE AT:
Phone: 877-876-8093 (USA only) or 818-487-2077 (outside USA).

EDITORIAL OFFICES: 646/849-7124. 350 Fifth Avenue, Suite 6000, New York, NY 10118. **WEBSITE:** architecturalrecord.com.



BNP Media Helps People Succeed in
Business with Superior Information



PRINTED IN USA

Tested. Proven. Guaranteed.

Protect your building and your reputation

With every structure you build, you're also building a reputation. That's why **Owens Corning® Enclosure Solutions** are designed for optimum durability and energy performance that meet today's standards and anticipate tomorrow's.

Choose from a range of options for different construction types with customizable components that best fit your project, all supported by the expert advisors and technical resources of Owens Corning.

Learn more at owenscorning.com/enclosure

North Quad at the University of Michigan, Ann Arbor, MI

OWENS CORNING® ENCLOSURE SOLUTIONS



OWENS CORNING INSULATING SYSTEMS, LLC
ONE OWENS CORNING PARKWAY
TOLEDO, OHIO, USA 43659

1-800-GET-PINK®
www.owenscorning.com

Printed in U.S.A. April 2016.
THE PINK PANTHER™ & © 1964–2016 Metro-Goldwyn-Mayer Studios Inc. All Rights Reserved. The color PINK is a registered trademark of Owens Corning. © 2016 Owens Corning. All Rights Reserved. © 2016 Thermafiber, Inc. All Rights Reserved.

#GREATMINDSTHINKPINK

CIRCLE 165

Architects: Renzo Piano Building Workshop with Cooper Robertson
Structural Engineer: Robert Silman Associates
Photograph: Nic Lehoux

ARCHITECTURAL RECORD

PUBLISHER

Alex Bachrach
bachracha@bnpmedia.com

ADVERTISING SALES

NEW ENGLAND AND PA: Joseph Sosnowski
(610) 278-7829, Fax: (610) 278-0936, sosnowskij@bnpmedia.com

SOUTHEAST, MID-ATLANTIC: Wesley Loon
(859) 414-3795, Fax: (248) 502-9104, loonw@bnpmedia.com

MIDWEST (IA, IL, MN, MO, WI): Elizabeth Tuke
224-216-7836, tukee@bnpmedia.com

MIDWEST (IN, MI, OH), TX, OK, EASTERN CANADA: Lisa Zurick
(513) 345-8210, Fax: (513) 345-8250, zurickl@bnpmedia.com

WEST, WESTERN CANADA: Bill Madden
(503) 260-9679, Fax: (503) 557-9002, bill@maddenandassociates.net

FL, KS, NE, ND, NY, SD: Risa Serin
(212) 904-6041, Fax: (212) 904-4652, serinr@bnpmedia.com

WORKFORCE/RECRUITMENT: Diane Soister

(646) 849-7137, Fax: (248) 502-2046, soisterd@bnpmedia.com

CONTINUING EDUCATION

CONTINUING EDUCATION GROUP MANAGER

Brittanie Wilson
wilsonb@bnpmedia.com

CONTINUING EDUCATION PROJECT COORDINATOR

Stephanie Costigan
costigans@bnpmedia.com

CUSTOM CONTENT EDITOR

Samantha Meux
meuxs@bnpmedia.com

Permanent Connection

Elevated above Gansevoort Street in Manhattan's Meatpacking District, the **Whitney Museum of American Art's** new home by **Renzo Piano Building Workshop** and **Cooper Robertson** creates a lasting connection with the city around it. Its steel structure taps into the High Line's energy on one side, while column-free galleries frame Hudson River views on another—ensuring that, whichever way they look, visitors get the big picture. Read more about it in **Metals in Construction** online.

 **Steel Institute of New York**

WWW.SINY.ORG

CORPORATE DIRECTORS

PUBLISHING
John R. Schrei
CORPORATE STRATEGY DIRECTOR
Rita M. Foumia
INFORMATION TECHNOLOGY
Scott Krywko
PRODUCTION
Vincent M. Miconi
FINANCE
Lisa L. Paulus
CREATIVE
Michael T. Powell
HUMAN RESOURCES
Marlene J. Witthoft
EVENTS
Scott Wolters
CLEAR SEAS RESEARCH
Beth A. Surowiec

AUDIENCE MARKETING

AUDIENCE MARKETING PROJECT MANAGER
Cassandra Kerby
CORPORATE INTEGRATED MEDIA MANAGER
Megan Neel
CORPORATE AUDIENCE AUDIT MANAGER
Catherine M. Ronan
ONLINE DEVELOPMENT DIRECTOR
Nikki Smith
DIRECTORY DEVELOPMENT MANAGER
Erin Mygal

LIST RENTALS

SENIOR ACCOUNT MANAGER
Kevin Collopy
(402) 836-6265,
kevin.collopy@infogroup.com
SENIOR ACCOUNT MANAGER
Michael Costantino
(402) 836-6266,
michael.costantino@infogroup.com

BNP MEDIA: (248) 244-6400

WEBSITE: architecturalrecord.com. **SUBSCRIBER SERVICE:** 877/876-8093 (U.S. only); 818/487-2077 (outside the U.S.). Subscriber fax: 712/755-7423. E-mail: AR@pubservice.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, Suzanne Stephens; Lighting and Interiors, Linda C. Lentz; Architectural Technology, Joann Gonchar; News, Anna Fixsen. **REPRINTS:** architecturalrecord@theygsgroup.com.



BNP Media Helps People Succeed in
Business with Superior Information





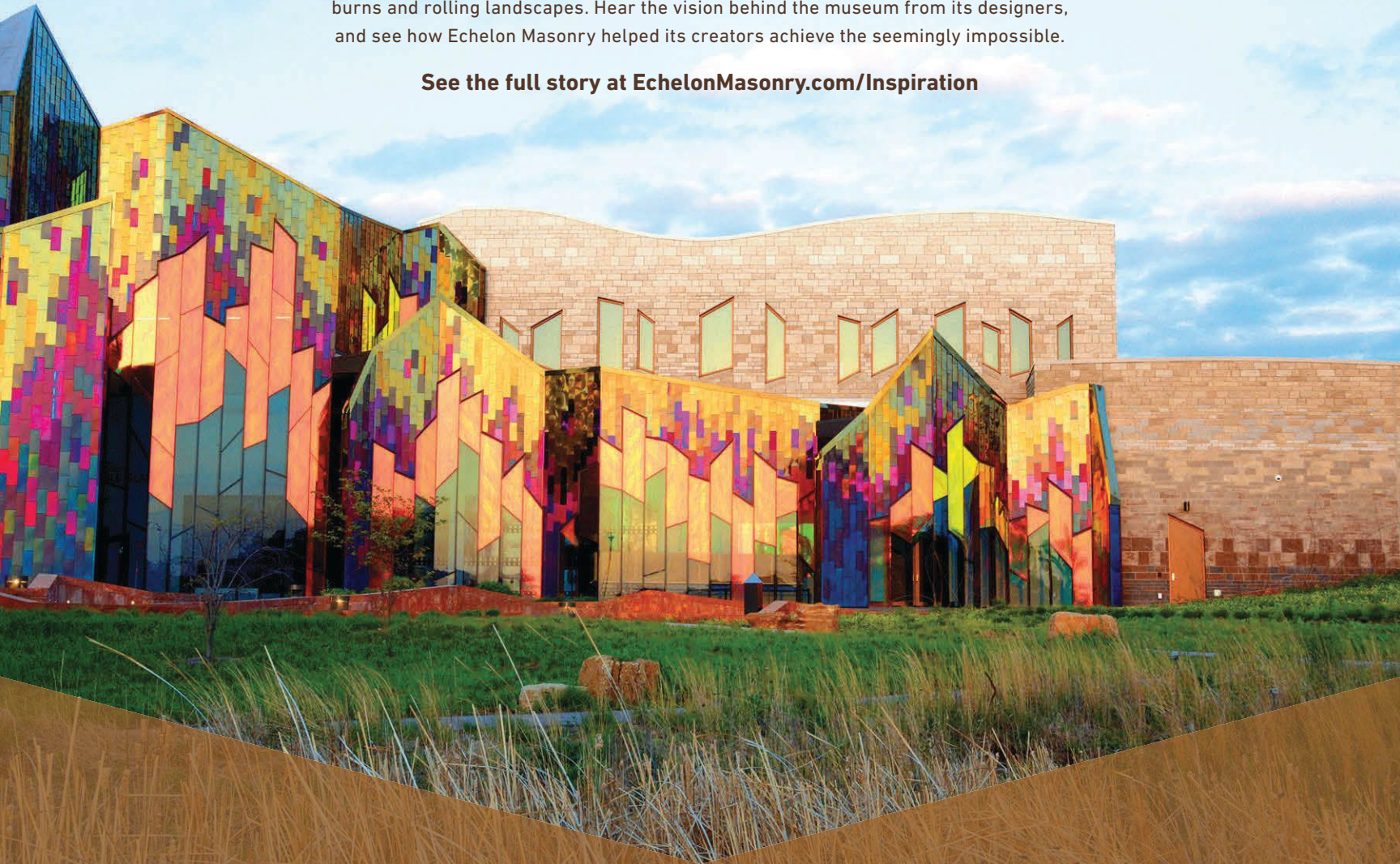
ECHELON™

IDEAS IGNITE

with the next generation of masonry

The Museum at Prairiefire honors the region's most prominent features—its prairie fire burns and rolling landscapes. Hear the vision behind the museum from its designers, and see how Echelon Masonry helped its creators achieve the seemingly impossible.

See the full story at EchelonMasonry.com/Inspiration



PRODUCTS USED

Artisan Masonry Veneers® Cordova Stone | Kansas Limestone | Dichroic Glass

MASONRY PRODUCTS FROM

 **Oldcastle** Architectural

CIRCLE 236

© 2016 Oldcastle. Echelon is a registered trademark of Oldcastle. Oldcastle Architectural is a registered trademark of Oldcastle. All rights reserved. ECH16-037



WE MAKE HISTORY. BETTER.

✕ MONUMENTAL OPERABLE WINDOWS

✕ HISTORICALLY ACCURATE DESIGN

✕ BROAD CUSTOM CAPABILITIES

WINDOWS • STOREFRONTS • CURTAIN WALLS • ENTRANCES

Preserve History. Conserve Energy. With Pella.

Pella provided historically accurate wood windows and trim for the headquarters of Utilicorp, a multinational energy company. While maintaining the original windows' aesthetic, we enhanced the windows' thermal efficiencies to address Utilicorp's commitment to energy conservation. Window elevations with curve-top openings re-created the elegance of the building's neo-Romanesque design while also allowing natural ventilation. Let Pella help you make history with your next project.



COMMERCIAL
SOLUTIONS

**CHALLENGE US WITH YOUR
NEXT PROJECT.**

pecsAR.com • 800.591.7777

Utilicorp United World Headquarters • Kansas City, MO • Architect: Gastinger Walker Harden Architects

© 2016 Pella Corporation

CIRCLE 242

ARCHITECTURAL RECORD 125 years



08 2016

NEWS

- 13 NEW RULES REDEFINE OVERTIME PAY FOR ARCHITECTS *By Ronda Kayesen*
- 16 TOP 300 ARCHITECTURE FIRMS 2016 *By Jake Bittle*
- 18 TOD WILLIAMS AND BILLIE TSIEH TO DESIGN OBAMA LIBRARY *By Anna Fixsen*
- 20 ARCHITECTURE FOR HUMANITY SUED FOR \$3 MILLION *By Jenna M. McKnight*

DEPARTMENTS

- 10 EDITOR'S LETTER: THE WAY WE WORK
- 23 HOUSE OF THE MONTH: CARLOS JIMENEZ'S HOUSE IN HOUSTON *By Miriam Sitz*
- 25 INTERIORS: ISAY WEINFELD'S CASA VERDE *By Tom Hennigan*
- 27 FIRM TO WATCH: MAIO STUDIO *By Miriam Sitz*
- 29 GUESS THE ARCHITECT
- 31 BOOKS: GUY NORDENSON'S *READING STRUCTURES: 39 PROJECTS AND BUILT WORKS* *Reviewed by Josephine Minutillo*
- 32 125 YEARS OF ARCHITECTURAL RECORD: FRANK LLOYD WRIGHT'S LARKIN BUILDING *By Jack Quinan*

- 36 FIRST LOOK: COMMUNITY HUBS BY SELGASCANO AND ÁLVARO ROJAS *By Jake Bittle*
- 42 IN FOCUS: TIPPET RISE ART CENTER *By David Hill*
- 46 PRODUCTS: WALLS *By Julie Taraska*
- 50 PRODUCTS: LANDSCAPE *By Julie Taraska*

BUILDING TYPE STUDY 973 THE WORKPLACE

- 53 INTRODUCTION
- 54 MUSICAL CHAIRS *By Jerry Adler*
- 56 VACHERON, GENEVA BERNARD TSCHUMI ARCHITECTS *By Suzanne Stephens*
- 62 EDP HEADQUARTERS, LISBON AIRES MATEUS AND ASSOCIATES *By Ana Martins*
- 68 PINTEREST HQ, SAN FRANCISCO IWAMOTOSCOTT ARCHITECTURE *By Lydia Lee*
- 74 THE EDGE, AMSTERDAM PLP ARCHITECTURE *By Tracy Metz*
- 80 LEBLON OFFICE BUILDING, RIO DE JANEIRO RICHARD MEIER & PARTNERS *By Tom Hennigan*
- 86 MULLENLOWE, NORTH CAROLINA TPG ARCHITECTURE *By Anna Fixsen*

ARCHITECTURAL TECHNOLOGY

- 98 DESIGNING FOR THE DARK ARCHITECTURAL AND LANDSCAPE LIGHTING CAN BE DESIGNED SO THAT IT IS SENSITIVE TO THE NIGHT SKY AND ECOSYSTEM YET STILL RESPONDS TO CLIENTS' REQUIREMENTS. *By Joann Gonchar, AIA, and Linda C. Lentz*
- 112 PRODUCTS: LIGHTING *By Linda C. Lentz*

- 145 READER SERVICE
- 146 DATES & EVENTS
- 152 SNAPSHOT: CHRISTO AND JEAN-CLAUDE'S FLOATING PIERS *By Josephine Minutillo*

THIS PAGE: THE EDGE, BY PLP ARCHITECTURE. PHOTO BY RAYMOND WOUDA.

COVER: BEARTOOTH PORTAL AT TIPPET RISE ART CENTER, BY ENSAMBLE. PHOTO BY IWAN BAAN.

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

SEE ONLINE CONTENT PAGE 8.

architecturalrecord.com

VISIT US ONLINE FOR EXPANDED SLIDE SHOWS, PRODUCT SPECIFICATIONS, AND MORE.



THE OGUA A FOOTBALL FOR HOPE CENTER IN CAPE COAST, GHANA, BY ARCHITECTURE FOR HUMANITY FELLOW DAVID POUND.

ARCHITECTURAL RECORD 125 years

VINTAGE COVER GALLERY

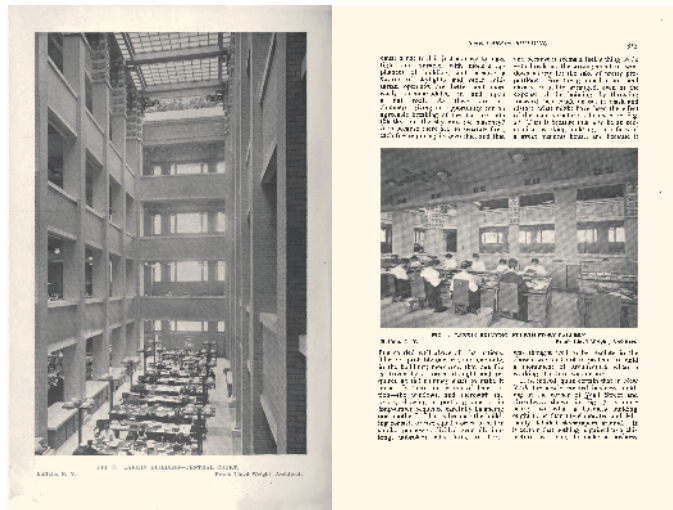
This month, view RECORD covers from the 1970s and early 1980s.

FROM THE VAULT

Read the April 1908 article by Russell Sturgis on the Larkin Building in Buffalo, and see the original archival pages.

SURVEY: PICK THE WORST BUILDINGS

For our special anniversary issue in September, RECORD is convening an independent panel to select the best 125 buildings of the last 125 years. But for bad buildings, we turn to our readers. Complete our online survey by August 10 to share your picks of five of the worst buildings constructed since 1891. Visit architecturalrecord.com/worst-buildings.



THE CENTRAL COURT (ABOVE, LEFT) AND FOURTH-STORY GALLERY (ABOVE, RIGHT) OF FRANK LLOYD WRIGHT'S LARKIN BUILDING.

HIGHLIGHTS

ARCHITECTURE FOR HUMANITY LAWSUIT

Read our expanded story about the \$3 million lawsuit against the nonprofit organization. [NEWS]

CONSTRUCTION FOOTAGE: TIPPET RISE

Watch time-lapse videos of the construction and installation of the massive concrete sculptures at Tippet Rise Art Center. [PROJECTS]

FEATURED HOUSES

Find photos, credits, and specifications for new residential projects in this monthly online-only feature. [HOUSES]

PODCAST

Listen to 99% Invisible's recent episode "The Mind of an Architect" about the 1950s personality study to hear the voices of Eero Saarinen, Philip Johnson, and more. Then revisit our essay by Pierluigi Serraino and read excerpts from his new book, *The Creative Architect: Inside the Great Midcentury Personality Study*. [NEWS]



INVERTED PORTAL BY ENSEMBLE STUDIO UNDER CONSTRUCTION AT TIPPET RISE ART CENTER IN MONTANA.



SUBSCRIBE TO ARCHITECTURAL RECORD TABLET EDITION. DOWNLOAD THE APP FROM ITUNES.

Follow us on Twitter at @ArchRecord

Like us on Facebook.com/ArchitecturalRecord

Join our LinkedIn group

Follow us on Instagram at @ArchRecordMag

Long
live your
design™

P360-6^D
Fresh Apple

We're more than just a paint company

You designed an amazing interior space. As an Architect, your reputation is on the wall, right down to the coatings you specify, so you need to have confidence that the products you choose will match your vision, and will endure.

We offer coatings that meet stringent GREENGUARD® Gold and MPI® certification standards and earn points toward LEED®* Certification.

And to meet all your project needs, our team of Behr Architectural Reps provide **professional support you can rely on**. We invite you to discover what the Behr National Architectural Program can do for you.

BEHR
beh.com/architect

CIRCLE 253

To receive your complimentary state-of-the-art, limited-supply Architectural Color Box, visit **BehrColorBox.com**

GREENGUARD is a registered trademark of UL LLC. MPI is a registered trademark of Master Painters Institute. *See usgbc.org/LEED for details.

The Way We Work

Say good-bye to cubicles—and even your own desk—in the activity-based office of the future.

I AM WRITING this letter in a setting that is soon to be obsolete—a small private office assigned just to me, sitting at an L-shaped desk, with a few photographs, mementos, and the odd quotation pinned to the wall. I also confess to having quite a few magazines, folders, and books strewn about, which seems normal and cozy to me.

Yet according to Unispace, a workplace design firm in Sydney, the traditional desk could go the way of the typewriter in the next few years, as workers become increasingly transient—even when they are in their employer's offices. Of course, the open plan has been around at least as far back as Frank Lloyd Wright's 1906 Larkin Building (page 32). But the recent trend away from working in a designated cubicle—to grabbing a seat at a bench or plopping into a lounge chair with a laptop—is accelerating: more full-time employees no longer have assigned desks at their companies, as rising real-estate costs and evolving work styles make the idea of an individualized work space both a luxury and an anachronism.

In an essay called “Musical Chairs” (page 54), writer Jerry Adler explores this trend and its impact on design—and on users. The space allotted for each worker has plunged from 200 square feet 15 years ago to 100 today and is on its way down to 60 square feet, according to one source. The good news: as personal work space has shrunk, the amount of shared space—conference rooms, huddle rooms, informal lounges, phone booths, cafés, fitness centers—has quickly expanded.

“Activity-based working” is guiding architects in the design of many of today's offices. In the U.S. Workplace Survey 2016 published by Gensler, the most innovative workers were most likely to have the choice of where (and when) to work—and to have access to such amenities as cafés and outdoor space at the office. (Gensler, by the way, leads the Top 300 architecture firms in revenue, for the fifth year in a row. See page 16.)

While the office plans of many enterprises are still based on hierarchies—with C-suite executives or senior law partners cocooned in their own spaces—most of the workplaces featured in this month's issue reflect the democracy of current trends. The new offices for Pinterest in San Francisco, for example, echo the sharing culture of the digital platform itself, with lots of casual lounge spaces and long tables for eating and meeting (page 68). A central stair, linking four floors in what was once a warehouse, departs from the trite stadium-style steps of many other contemporary offices and instead is a luminous sculptural element that also fosters serendipitous encounters. Transparency is a big buzzword in office design today, and the way glass is used for Pinterest's meeting rooms means “there's no FOMO (fear of missing out),” says Lisa Iwamoto, a founding partner of IwamotoScott, architects of the project.



The Edge, a new 15-story office building in Amsterdam, designed by the London-based firm PLP Architecture, exemplifies all the hallmarks of the workplace of the future (page 74). It is radically energy-efficient (a sustainable office can be a powerful recruiting tool to lure young talent), with state-of-the-art digital technology throughout. Work spaces overlook a vast skylit atrium—flooded with natural light even on gray days—that is packed with informal areas to gather, eat and drink. There are no assigned desks for the staff of the main tenant, Deloitte: the international accounting firm estimates that only 25 percent of its employees are at a desk at any one time. With its highly flexible design, the offices don't define the work culture. “While the physical building is finished,” points out Ron Bakker of PLP, “socially, it is still developing.”

But despite the longer hours that most people now work—and all the amenities and diversions that tie them to today's office—everyone should take a vacation. It's August, and if by chance you're headed to Montana, do stop at Tippet Rise Art Center, a private sculpture park and music venue in the midst of a ruggedly beautiful ranch. Massive poured-concrete formations called “Structures of Landscape,” designed by the architecture studio Ensamble (2004 RECORD Vanguard winners), were fabricated on-site, in the earth, and then craned into place (page 42). In a world where the only constant is change, these amazing creations look as timeless as Stonehenge.

Cathleen McGuigan

Cathleen McGuigan, Editor in Chief

We feel your pain— we just don't show it.

Yes, our door is virtually indestructible, but what about the frames? They get bashed up, too.

Introducing the C/S Acrovyn® Frame System, the new solution against ugly damaged frames. Available in solid colors and Chameleon patterns, this system matches our doors in legendary performance and beautiful aesthetics. So frames can now be seamlessly coordinated with various interior finishes to create a stunning overall effect. For more information, visit www.c-sgroup.com/door or call (800) 972-7214.

CIRCLE 215

Acrovyn Frame

**Painted
Steel Frame**



CS™ Acrovyn® Doors

Earn your continuing education credits free online on ce.architecturalrecord.com or with *Architectural Record's* Continuing Education App!*

IN THIS ISSUE



Providing Thermal, Moisture, and Fire Barriers In Harsh Conditions

Sponsored by Acexpress, Epro, Inpro, and Tremco Commercial Sealants & Waterproofing
Credit: 1 AIA LU/HSW

Image courtesy of Tremco Commercial Sealants & Waterproofing and BARA (Balfour Beatty Construction, Austin Commercial, H.J. Russell & Co., Azteca Enterprises)

Page 118



Prefabricated Ornamental Railings

Sponsored by AGS Stainless, Inc.
Credit: 1 AIA LU/HSW

Photo courtesy of AGS Stainless, Inc.

Page 130



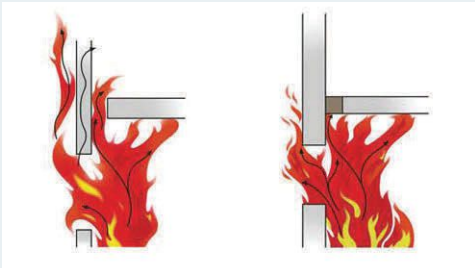
Architectural Millwork: Molded vs. Fabricated

Sponsored by Spectis Moulders Inc.
Credit: 1 AIA LU

Photo courtesy of Spectis Moulders Inc.

Page 134

NEW ONLINE AT CE.ARCHITECTURALRECORD.COM



Managing the Elements of Fire Through Thoughtful Wall Assembly in Multistory Buildings

Sponsored by Owens Corning
Credit: 1 AIA LU/HSW

Image courtesy of Owens Corning

ALSO ONLINE AT CE.ARCHITECTURALRECORD.COM

Optimizing Stucco Performance

Sponsored by BASF Corporation – Wall Systems
Credit: 1 AIA LU/HSW

The Benefits of Metal Building Systems From a Whole Building Perspective

Sponsored by Metal Building Manufacturers Association
Credit: 1 AIA LU/HSW

Life-Cycle Assessments for Appliances

Sponsored by Whirlpool Corporation
Credit: 1 AIA LU/HSW; 1 GBCI CE Hour

Thin, Large Format, Porcelain Tile

Sponsored by Florida Tile
Credit: 1 AIA LU/HSW; 0.1 IDCEC CEU

Managing Daylight with Automated Solar Control

Sponsored by Draper, Inc.
Credit: 1 AIA LU/HSW; 1 GBCI CE Hour; 0.1 IDCEC CEU

Cutting-Edge Elevator Technology

Sponsored by Schindler Elevator Corporation
Credit: 1 AIA LU/HSW

Innovate with Sliding Door and Wall Systems

Sponsored by Hawa Group Americas Inc.
Credit: 1 AIA LU/HSW; 0.1 IDCEC CEU

The Best of Both Worlds

Sponsored by Space Plus, a division of The Sliding Door Company
Credit: 1 AIA LU/HSW; 0.1 IDCEC CEU

Delivering Performance With Closed-Cell Spray Foam

Sponsored by Honeywell
Credit: 1 AIA LU/HSW

Improving Concrete Durability and Aesthetics with High Reactivity Metakaolin

Sponsored by BASF Corporation – Kaolin
Credit: 1 AIA LU

Creating Safer Spaces in Healthcare

Sponsored by nora systems, Inc.
Credit: 1 AIA LU/HSW; 0.1 IDCEC CEU; 0.1 IACET CEU; 1 EDAC CEU

Redwood: A Sustainable Building Product

Sponsored by Humboldt Redwood Company
Credit: 1 AIA LU

Fenestration: Solving Renovation Issues

Sponsored by EXTECH/Exterior Technologies, Inc., Firestone Building Products, Graham Architectural Products, Guardian Industries Corp., Menck Windows, Pella EFCO Commercial Solutions, and Technoform North America
Credit: 1 AIA LU/HSW; 1 GBCI CE Hour

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.

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

DAILY UPDATES

architecturalrecord.com/news
twitter.com/archrecord

perspective

I have very little in common with the arguments of the Leave Campaign . . . However, I welcome Brexit as offering an enhanced ability and chance to experiment with new policies that dare more economic freedom. —Patrik Schumacher, director of Zaha Hadid Architects in London, in a July 8 op-ed on Archinect.



SOM employees in the Chicago office in 1958. New overtime rules, effective December 1, will require many businesses, including architecture firms, to pay low-wage staff time-and-a-half if they put in more than 40 hours a week.

New Federal Rules Will Redefine Overtime Pay for Architects

BY RONDA KAYSEN

LOOMING CHANGES to federal overtime rules could have a lasting impact on the architectural industry, particularly among firms that expect junior employees to work long hours for low salaries.

Beginning December 1, salaried workers who earn up to \$47,476 a year must be paid time-and-a-half if they work more than 40 hours during the week. The previous cutoff was \$23,660 a year. The new rule applies to companies of all sizes, affecting most employees, including those working in creative fields like architecture.

The changes could rattle industries that have long used a federal exemption for so-called “creative professionals” to avoid paying some workers overtime. The Labor Department currently gives businesses wide latitude in deciding who meets the criteria. But under the new rules, no one making less than \$47,476

a year could be considered a creative professional exempt from overtime.

Critics worry that the changes could unfairly burden businesses, particularly smaller ones with less financial flexibility. But supporters insist that overhauling outdated labor rules will improve working conditions and ultimately encourage firms to think more carefully about how they run their businesses.

“Architecture is but one of many industries that for decades has gotten a free ride because of the weakness of the regulations,” says Judy Conti, the federal advocacy coordinator at the National Employment Law Project. “This new regulation is going to set a salary guideline that is much more in line with a professional salary.”

In 2015, the median annual salary for a first-year intern architect was \$42,000, and \$46,000

for a second-year intern, according to a survey by the American Institute of Architects. To comply with the law, employers will have to give employees raises, start paying overtime, or scale back hours. “People are going to get either more money or more hours of their lives back,” says Conti. “Both of those are good things.”

In 2013, Alexandre Hamlyn earned \$2,000 a month working 50 hours a week at a large architecture firm in New York. Teams working on competitions put in 90-hour weeks, without additional pay, he said. “Because you don’t get overtime, then the time is not really valued,” says Hamlyn, 27. “So they just make you work and work and work.” Hamlyn, who is now an intern architect in Montreal and paid hourly, requested that the name of the firm be withheld, since he considers the problem endemic to the industry.

Firms may soon have to pay more attention to how their businesses operate, scrutinizing how much they charge clients and how late employees stay at the office. “If you don’t have



On March 14, 2014, President Barack Obama signed a memorandum calling on the secretary of labor to update overtime pay laws. The new rules go into effect December 1.

labor laws, you're not going to understand how labor actually figures into your business plan," says Peggy Deamer, professor at the Yale School of Architecture and a principal at Deamer Architects. "That kind of loose, naive take [on labor] goes hand in hand with a discipline that doesn't see itself as a business, but sees itself as an art."

But other architects interviewed for this story say few of their colleagues are discussing the changes, and some are unaware that labor laws even apply to salaried employees. Several firms declined to comment, including Kohn Pedersen Fox Associates, Skidmore, Owings & Merrill, and Robert A.M. Stern Architects. "Folks at firms aren't too enthusiastic about

sharing their thoughts on the potential impact of the new rule," Matthew Tinder, a spokesperson for AIA, said in an e-mail. The AIA declined to comment any further.

Critics of the changes argue that architecture salaries are often lower than other skilled professions because of the nature of the business. "Our clients don't want to pay the higher fees," says Craig Williams, the chief legal officer of HKS Architects, describing the new rules as a government intrusion on the private sector. Some firms will have to raise client fees, potentially making it difficult to compete against firms that can absorb higher labor costs. "There is always someone down the street who's willing to take a project on for a lower fee," Williams said.

But clients might be willing to pay more, particularly in a heady real-estate market where architecture is in demand. By giving employees a raise, firms might end up getting one too. Rena Klein, the principal of RM Klein Consulting, which works with small architecture firms, says: "Along with people being underpaid, people are undervaluing themselves in the marketplace." ■

PHOTOGRAPHY: © THE WHITE HOUSE/LAWRENCE JACKSON

THE SKYSCRAPER MUSEUM

Photographer: Christian Errol

GARDEN CITY MEGA CITY

WOHA rethinks cities for the age of global warming

39 Battery Place, New York | Wed – Sun, Noon – 6 pm | www.skyscraper.org



BEGA

LED Pole Top luminaires
Pedestrian scale glare-free illumination
Translucent white or clear acrylic diffuser.



www.bega-us.com
(805) 684-0533
No. 149

CIRCLE 211

Top 300 Firms: Gensler Leads Revenue for Fifth Year Running

BY JAKE BITTLE

GENSLER HELD first place for the fifth consecutive year in RECORD's annual Top 300 Architecture Firms list. The list ranks companies based on their earnings in the previous year. Gensler, which surpassed \$1 billion in revenue in 2014, increased revenue by more than \$100 million in 2015. In response to the news, Gensler's co-CEOs Andy Cohen and Diane Hoskins expressed a commitment to maintaining a seamless practice across the firm's 46 international offices, and attributed the company's success to its "talented global network of employees—Gensler's constellation of stars."

Los Angeles-based AECOM Technologies, taking the No. 2 spot on the list for the second year in a row, saw its revenue increase by more than 30 percent, jumping from \$605 million in 2014 to \$801 million in 2015. Executive Vice President Rebecca Nolan explained that this jump is largely due to AECOM's recent \$6 billion acquisition of the engineering and design firm URS Corporation, a move that made AECOM the largest publicly traded company in the Los Angeles area. Nolan also

2016
ARCHITECTURAL
RECORD
TOP
300

highlighted the Golden 1 Center stadium in Sacramento as a standout project from the past year.

Meanwhile, Perkins+Will ranked third, climbing the chart from fourth last year and fifth the year before that. CEO Phil Harrison cited the company's strategic focus on retail and transit projects as well as the launch of an internal research program as key factors in this consistent revenue increase.

See the chart below for a list of the top 25 firms, their annual revenue in 2015 in millions, and some of their notable recent projects. The entire Top 300 list can be viewed at architecturalrecord.com. ■

TOP 25 U.S. ARCHITECTURE FIRMS OF 2016

Companies are ranked by revenue (in **millions of dollars**) for architectural services performed in 2015. These data also appear in *Engineering News-Record's* "Top 500 Design Firms" list, which, unlike our ranking, also includes firms that do engineering exclusively.

RANK		FIRM, U.S. HEADQUARTERS	TYPE OF FIRM	TOTAL ARCHITECTURAL REVENUE
2016	2015			
1	1	Gensler, San Francisco	A	\$1,181.03
2	2	AECOM, Los Angeles	EA	\$605.12
3	4	Perkins+Will, Chicago	A	\$484.24
4	3	Jacobs, Pasadena, CA	EAC	\$420.00
5	5	Arcadis North America/CallisonRTKL, Highlands Ranch, CO	EA	\$411.00
6	8	HOK, St. Louis	AE	\$401.80
7	9	HKS Inc., Dallas	A	\$363.80
8	6	CH2M, Englewood, CO	EC	\$334.99
9	7	HDR, Omaha	EA	\$314.80
10	13	Bechtel, San Francisco	EC	\$281.00
11	10	Skidmore, Owings & Merrill, New York City	AE	\$245.19
12	16	Stantec, Irvine, CA	EAL	\$214.78
13	47	IBI Group, Irvine, CA	AE	\$205.15
14	12	Perkins Eastman, New York City	A	\$195.00
15	11	Kohn Pedersen Fox Associates, New York City	A	\$184.50
16	15	Woods Bagot, New York City	A	\$165.00
17	14	NBBJ, Seattle	A	\$154.00
18	19	ZGF Architects, Portland, OR	A	\$150.06
19	18	CannonDesign, Grand Island, NY	AE	\$144.60
20	17	Populous, Kansas City, MO	A	\$137.90
21	20	SmithGroupJJR, Detroit	AE	\$133.05
22	29	Corgan, Dallas	A	\$128.58
23	21	DLR Group, Omaha	AE	\$120.80
24	22	EYP, Albany, NY	AE	\$114.16
25	24	Hammel, Green and Abrahamson, Minneapolis	AE	\$108.86

Key to firm types

A Architect **AP** Architect Planner **AEC** Architect Engineer Contractor
AE Architect Engineer **EAL** Engineer Architect Landscape (not all combinations listed)



Shanghai Tower | Shanghai | Gensler



LaGuardia Airport Redesign | HOK | New York



Stanford Energy Facility | ZGF | Stanford, CA



Sacramento Kings Stadium | Sacramento, CA | AECOM



10 Hudson Yards | KPF | New York



Janet Wallace Fine Arts Center | Saint Paul | HGA



THE POSSIBILITIES ARE **ENDLESS.**

Our team has been trusted for over 40 years to provide technical expertise and project support in the exploration of segmental paving product options.

Optimizing color, finish, texture and size, we have what it takes to bring your vision to life.

PROJECT: Halifax Central Library. Halifax, NS
DESIGN: Gordon Ratcliffe Landscape Architect
Fowler Bauld & Mitchell Ltd. / schmidt hammer lassen architects
PRODUCT: Series 3000®

Contact your Unilock Representative for samples, product information and to arrange a Lunch & Learn for your team.

CIRCLE 203

UNILOCK
DESIGNED TO CONNECT.

UNILOCK.COM 1-800-UNILOCK

Tod Williams Billie Tsien Architects to design Obama Library

BY ANNA FIXSEN

BARACK OBAMA'S presidency may be drawing to a close, but work on his presidential library in Chicago is just beginning: on June 30, the Barack Obama Foundation announced that New York firm Tod Williams Billie Tsien Architects|Partners (TWBTA), joined by Chicago firm Interactive Design Architects (IDEA), will design the Obama Presidential Center and Library.

"It is a joy, an honor, and a responsibility to create a place that reflects the optimism and integrity of the President and the First Lady," firm partners Tod Williams and Billie Tsien said in a joint statement.

But what and where the library will be, exactly, remain a mystery. The Foundation is still deliberating between two historic parks on Chicago's South Side designed by Frederick Law Olmsted and Calvert Vaux: Jackson Park—the site of the 1893 World's Columbian Exposition—and Washington Park.

Tod Williams and Billie Tsien will design the Obama Presidential Center and Library planned for the South Side of Chicago. In 2012, the pair completed the Logan Center for the Arts at the University of Chicago, where they are pictured (right).



The building design itself is also unknown. Foundation chairman Martin Nesbitt said that the competition process was "an exploration of chemistry between the architects and President and First Lady." Added competition advisor, architecture critic Paul Goldberger, "It's really a blank slate." According to Nesbitt, the Foundation hopes to complete the library by 2021.

Last August, the Foundation received 144 responses to its initial RFQ. Seven finalists were announced in December, including Renzo Piano Building Workshop, David Adjaye

Associates, Snøhetta, Diller Scofidio + Renfro, SHoP, and John Ronan Architects.

"I think [Tod Williams and Billie Tsien] are among the greatest architects of our time and among the most thoughtful," Goldberger said.

The Library won't be TWBTA's first project on the South Side. In 2012 they completed the well-received Reva and David Logan Center for the Arts for the University of Chicago in Hyde Park. Among the firm's best-known works are the Barnes Foundation in Philadelphia and the now-demolished American Folk Art Museum in New York. ■

PHOTOGRAPHY: © JASON SMITH

Feeling inspired?

Introducing the next big thing in lighting! B-K Lighting gives you complete control to match your environment at your fingertips. The INSPIRATION Control System™ iOS® App enables control of B-K Lighting's Bluetooth® Wireless Technology featuring BKSSL® Power of 'e' with Adjust-e-Lume® Nite Star™ and Power of C™ with Color Tuning Technology Denali Series™ floodlights.



Inspiration in the palm of your hand!



B-K LIGHTING.com

A new exterior sheathing that resists water
and breathes like your skin? No sweat.

**Breathe easy with the
new DensElement™
Barrier System.**

Introducing patent-pending
DensElement™ Barrier System
with AquaKOR™ Technology –
the revolutionary new wall
system that provides a built-in
water-resistive and air barrier
while still maintaining high
vapor permeability. Finally,
it's no sweat to build a better
wall. Visit DensElement.com

PROSOCO R-Guard FastFlash,
a liquid flashing, is approved for use
with the DensElement™ Barrier System.



©2016 Georgia-Pacific Gypsum LLC. All rights reserved. DENS,
DENSELEMENT, AQUAKOR, the color GOLD, GEORGIA-PACIFIC
and the GP and DENSELEMENT logos are trademarks owned
by or licensed to Georgia-Pacific Gypsum LLC. R-GUARD,
FASTFLASH, PROSOCO and the PROSOCO logo are registered
trademarks of PROSOCO, Inc. Used with permission.

Architecture for Humanity Sued for \$3 million

BY JENNA M. MCKNIGHT

IN 2015, Architecture for Humanity (AFH), a U.S.-based nonprofit organization with more than 60 chapters worldwide, abruptly closed and declared bankruptcy, leaving many to wonder what exactly went wrong. AFH's founders and board members are being sued for alleged mismanagement of funds. RECORD first reported the story July 11.

On June 10, a court-appointed trustee filed a complaint against the group's founders, Cameron Sinclair and Kate Stohr, who were paid employees, and 10 members of the board of directors, who served as volunteers.



In 2007, Architecture for Humanity and architect Susi Jane Platt completed the Yodakandyia Community Centre in Sri Lanka for families affected by the 2004 tsunami.

The lawsuit, filed in the San Francisco division of the U.S. Bankruptcy Court, alleges that the defendants acted with gross negligence and breached their fiduciary duties between July 21, 2012, and December 31, 2014. Specifically, the suit accuses the AFH founders and board members of improperly using "restricted funds"—charitable contributions with specific requirements—and violating agreements with donors.

The trustee, Janina M. Hoskins, is seeking \$3 million in damages, the approximate portion of the restricted funds believed to have been improperly spent. The money would be distributed to 170 creditors, including companies like Amazon and Nike, universities such as Purdue and Carnegie Mellon, as well as various governmental agencies.

Defendants are expected to answer a summons by August 15. A status conference is scheduled for August 26, at a San Francisco courthouse.

The lawsuit is a dark spot on the history of AFH, an influential nonprofit founded in 1999 by Sinclair, a U.K.-born architectural designer,

and Stohr, an American journalist. During its 15 years in operation, AFH evolved into a leading charitable organization that helped design and build projects in distressed communities worldwide. In its later years, the group became known for its work in regions devastated by natural disasters, including Haiti and Japan. Both Sinclair and Stohr left the organization in 2013, during the period when the alleged mismanagement of funds was taking place.

Starting in 2009, AFH experienced a sharp increase in its revenues, according to the lawsuit. Its gross revenue—reportedly generated from public and private donations—

climbed from \$1.7 million in 2009 to \$12 million in 2013. Most of the gifts AFH received were restricted funds, the lawsuit claims. For instance, in January 2013, AFH received a \$1 million grant from Nike USA to put toward rebuilding efforts after Hurricane Sandy on the East Coast. Only 15 percent of the grant was allowed to be used for overhead; the rest was to be applied directly to the project, according to public records.

Meanwhile, AFH's overhead and administrative expenses were growing, due to "payment for fundraising services, executive compensation, the purchase of a building, and staff expenses," the complaint states. These expenses typically needed to be paid with unrestricted funds, but by July 2012, the organization was running a deficit. By the end of the 2013 fiscal year, that shortfall in unrestricted funds had grown to \$1.1 million, according to a 2014 auditor's report.

According to the lawsuit, the organization "began a wholesale looting of the 'restricted' funds" to cover overhead costs. Moreover, the lawsuit alleges, AFH continued to solicit dona-

tions and misappropriate funds, despite cautionary reports from its auditor and lawyer.

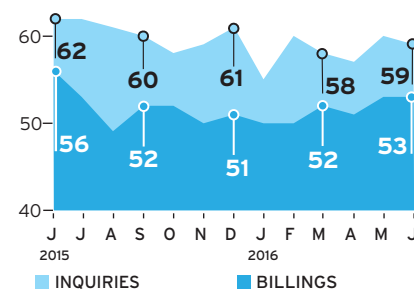
AFH's board tried to remedy the problem by reducing payroll and selling its headquarters building in San Francisco in 2014. In January 2015, however, the board announced it had voted to close AFH and laid off approximately 30 employees.

There are laws that protect paid and volunteer directors from being personally liable for an organization's debt if decisions were made in "good faith," among other requirements. But the AFH lawsuit alleges that the defendants "acted with such a degree of carelessness . . . as to constitute gross negligence."

"We were saddened by the news," Sinclair told RECORD in an e-mail. "We are working with our attorneys to understand the decisions that were made during and after our transition. We hope the case will be dismissed and are glad the chapters are continuing the good work."

While AFH's legal issues remain unresolved, its mission endures. In the wake of AFH's closure, dozens of local chapters banded together to form the Open Architecture Collaborative (OAC). The new organization's executive director, Garrett Jacobs, who worked for AFH, hopes OAC can build on AFH's work, but "with a much more grassroots, locally based focus." Jacobs was astonished at how quickly AFH was dismantled. "I had an inside view, so I felt it coming," he said in an e-mail. "But I was shocked at the way it unfolded." ■

ABI Holds Steady



After a strong uptick in May, the American Institute of Architects' monthly Architectural Billings Index (ABI) remains in positive territory for the fifth month. The June ABI scored 52.6 (any score above 50 indicates an increase in billings) while the new projects inquiry index was 58.6. AIA economist Kermit Baker says high residential demand "suggests strong future growth for housing in the coming year."

WHEN THE BEST WANT THE BEST

TWO HOUR FIRE RESISTIVE CURTAIN WALL

2 HOUR FIRE RESISTIVE GLASS
INTERIOR/ELEVATOR ENCLOSURE
WITH SUPERLITE II-XL 120
IN GPX CURTAIN WALL FRAMING



Architect:
Sieger Suarez Architects
General Contractor:
Coastal Construction Group
of South Florida Inc.
Glazing Contractor:
Continental Glass Systems

RENDERING COURTESY OF METROSTUDIO.COM

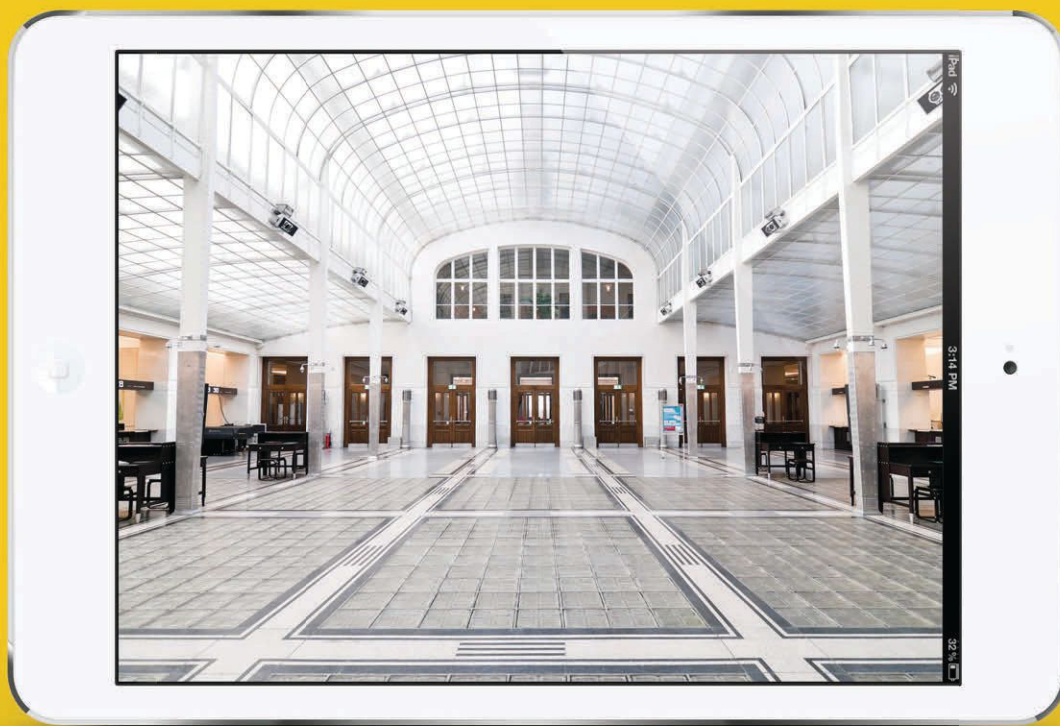
SIEGER SUAREZ ARCHITECTS
60-STORY PORSCHE DESIGN TOWER

888.653.3333
WWW.SAFTI.COM

 **SAFTIFIRST**[™]
SAFETY AND FIRE TECHNOLOGY INC.



GUESS THE ARCHITECT WIN AN IPAD MINI



PHOTOGRAPHY: © MAGGIE JEAN LEE

TAKE A LOOK ON PAGE 29 ►

ENTER @ ARCHITECTURALRECORD.COM/GUESSTHEARCHITECT

ARCHITECTURAL
RECORD

Guess the Architect Contest

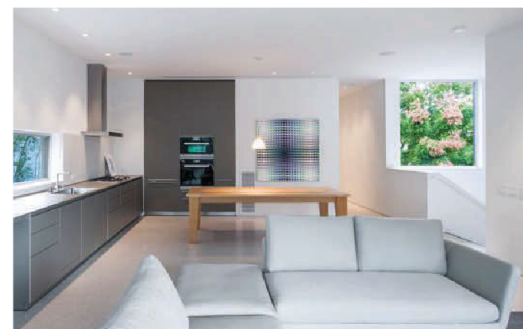
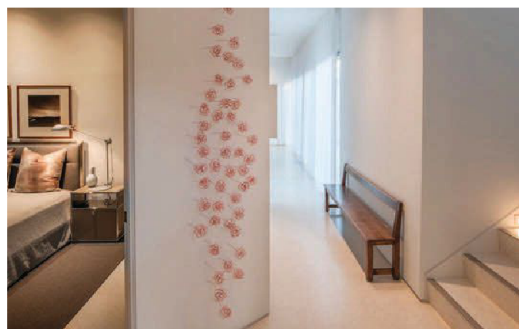
FOR COMPLETE RULES AND REGULATIONS GO TO ARCHITECTURALRECORD.COM/GUESSTHEARCHITECT

perspective house of the month

AN URBAN HOME CREATES A MICRO-COMMUNITY IN THE HEART OF THE CITY. BY MIRIAM SITZ

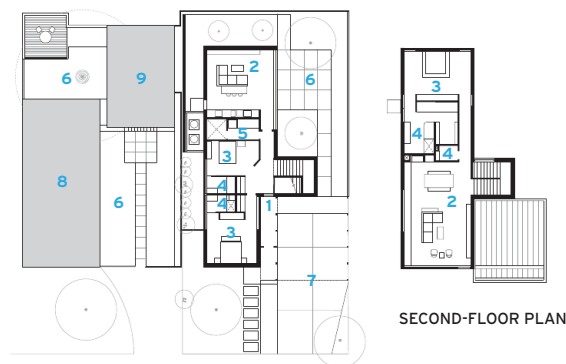


"THESE OLD bungalows had an insightful way of carving out a community in a sprawling city like Houston," says architect Carlos Jimenez, looking down Willard Street in the eccentric inner-loop neighborhood Montrose, where new site-maximizing townhouses threaten to outnumber the original single-family cottages. "Their porches create a collective, a way of understanding a city street. We have to reinterpret that in contemporary ways." On the block where he works and lives, the architect has created a "small urban community of three," comprised of his own home, his architecture studio with an attached apartment, and, most recently, a new residential project.



Jimenez designed the 3,000-square-foot, wood-framed, two-unit house for a longtime friend on the lot next to his architecture studio. The building's slate-colored brick facade rises above a trellis-like curtain of aluminum infill panels that form the door for Jimenez's sophisticated take on a carport. ("Garages create bad habits," he says. "You start accumulating too many things when they're out of sight.") Breezes pass through the south-facing metal scrim, which, when retracted, reveals a wide connection from the street to gardens that wrap around the side and back of the house. A gate of the same panels encloses the passage to the front door, providing an added measure of security while preserving a sense of openness.

Tungsten in the bricks lends a lavender-gray hue (top, both). A sculpture by Houston-based artist Gail Peter Borden adorns a ground-floor hallway (above, left), while upstairs one of her paintings hangs in the dining area (above) near a custom wood dining table by Joey Benton of Marfa, Texas.



- GROUND-FLOOR PLAN
- 0 15 FT. 5 M.
- 1 MAIN ENTRY
 - 2 LIVING/DINING/KITCHEN
 - 3 BEDROOM
 - 4 BATHROOM
 - 5 UTILITY
 - 6 COURTYARD/GARDEN
 - 7 CARPORT
 - 8 ARCHITECTURE STUDIO
 - 9 APARTMENT

The linear two-story house's lower and upper units (occupied part time by the client and his son, respectively) share a staircase and front door but can function independently. On the ground floor, two bedrooms each have their own bath. "The downstairs is almost like a small hotel," says Jimenez, whose firm recently completed the Hotel Saint George in Marfa, Texas. The entry hall leads to a small kitchen and common room which, in turn, opens through large sliding glass doors to the landscaped courtyard. Upstairs, an elongated

loftlike space spans the full length of the house, roughly defined by open-plan kitchen, living, and dining areas and a sizable bedroom, separated from the other spaces by a master bath and closet. Clean lines and refined material choices throughout—terrazzo flooring, Portuguese travertine countertops—unify the minimalist interiors.

Through strategic window placement, Jimenez curated the views to engage with the outdoors while maintaining privacy. "It's a void of landscape and color," he says, noting how a low, wide window on the western wall of the upstairs kitchen looks out on an elm tree and the cornflower blue cinderblock wall of his studio next door. According to Jimenez, "Windows are opportunities to make you forget the architecture." ■

PHOTOGRAPHY: © PAUL HESTER/HESTER + HARDWAY PHOTOGRAPHY

Nothing drives home the value of
speech
like finding a space to discuss ceiling solutions for **privacy**



Ecophon® Solo™ Hexagon | CertainTeed Open Collaborative Area

© 2016 CertainTeed Corporation

In today's commercial and medical spaces, collaboration is important. So are privacy and noise reduction. At CertainTeed, we understand how advanced acoustics and inspired design can enhance focus and performance – because our headquarters is a living lab of our own acoustic ceiling and wall products. We experience our solutions as occupants so we can improve them as experts.

CertainTeed
SAINT-GOBAIN

Discover more ceiling design possibilities
at [CertainTeed.com/SpeechPrivacy](https://www.certainteed.com/speechprivacy)



Diners are treated to a gracious, residential atmosphere, complete with garden, while dining on elegant vegetarian fare at Green Spot.

Casa Verde

Isay Weinfeld imparts a refined informality to a Barcelona restaurant.

BY TOM HENNIGAN

WHEN SPANISH restaurateur and hotelier Tomás Tarruella decided to open Barcelona's first upmarket vegetarian eatery, he once again turned to Brazilian architect Isay Weinfeld to design the interior.

It was a reunion for the team responsible for the Juana la Loca restaurant in the Colombian capital of Bogotá, quickly hailed as the city's most beautiful dining space when it opened in 2014. For Green Spot, located in a previously abandoned building in the Barceloneta neighborhood, the client wanted an informal and

intimate space that, says Weinfeld, "did not just appeal to the vegetarian public."

Working with Lucas Dualde Jimeno, a Spanish architect in his São Paulo office, Weinfeld turned what he describes as "a large, difficult space filled with columns" into a series of cozy niches by carving a vaulted ceiling out of the low, arched room. The design team used materials found in Barcelona architecture. "I never enter a place without knowing where I am," says Weinfeld, emphasizing his respect for local characteristics.

A long, oak-lined entrance hall passes by a copper-topped bar at table height. Here, seated guests are served by bar staff standing on a sunken floor. The path then leads into the dining area, where traditional Catalan glazed earthen floor tiles and European walnut set a relaxed and comfortable tone. Rough linen, used for the upholstered seating, enhances the room's acoustics; and an eclectic variety

of chairs, tables, and light fixtures lend the sense of bonhomie requested by the client.

The architects penetrated the walls at strategic points to create glazed openings on to a garden located in the building's interior courtyard, its lush green perfectly offset by the interior's earth tones. According to Weinfeld, "I do not like to undertake projects that do not involve comfort. I cannot do something that is only beautiful but does not call out to people, that does not leave them with the desire to come and frequent a place."

The architect, recently selected by the owners of the Four Seasons restaurant in New York to design its new location (RECORD, July 2016, page 48), aims to craft a similarly inviting, albeit more luxurious, aura for that iconic establishment when it reopens late next year. He hopes, he says, "to achieve the same refinement and understated elegance that dazzled people for so many decades." ■

A TWO-MAN JOB JUST GOT



ONE-MAN EASIER.



ZIP it fast, ZIP it tight, ZIP it right.™

ZIP System® sheathing and tape is an innovative structural roof and wall system with an integrated water resistant and air barrier that streamlines the weatherization process and transforms it with a simple two-step installation. Just put up the panels and tape the seams. ZIP System™ tape is so easy it turns taping into a one-man job; and so fast, **it installs 40% quicker** than housewrap.

Watch ZIP System® sheathing and tape go head-to-head with regular housewrap at ZIPSystem.com/record19

CIRCLE 19

ZIPsystem™
SHEATHING & TAPE



FROM THE
CREATORS OF



©2015 Huber Engineered Woods LLC, ZIP System, the accompanying ZIP System logo and design and AdvanTech are trademarks of Huber Engineered Woods LLC. Huber is a registered trademark of J.M. Huber Corporation. Huber Engineered Woods products are covered by various patents. See ZIPSystem.com/patents for details. This product's Environmental Product Declaration (EPD) has been certified by UL Environment. HUB 3302 07/15

Unfinished Business

MAIO Studio's flexible designs let spaces define themselves.

BY MIRIAM SITZ

ACCORDING TO the four designers behind Barcelona-based MAIO Studio, a completed project isn't necessarily finished that demands someone else take over," says Anna Puigjaner, one of the founders. "It's about designing up until a certain moment to engage the user."

Puigjaner and her colleagues Maria Charneco, Alfredo L rida, and Guillermo L pez established the firm in 2005 and have since relocated to a linear, one-story building in Barcelona's Gracia district. (MAIO renovated the building—formerly a laundry and later a metalworking shop—to create a multidisciplinary coworking space.)

From a 40-foot-long worktable, the team designs buildings, public spaces, exhibitions, interiors, and furniture.

This past May, Harvard's Graduate School of Design awarded Puigjaner the 2016 Wheelwright Prize, a \$100,000 travel

fellowship. Her winning proposal, *Kitchenless City: Architectural Systems for Social Welfare*, investigates different approaches to distributing domestic spaces like kitchens, dining rooms, and lounges in multifamily residential buildings.

Puigjaner's proposal reflects the firm's interest in flexible spaces, which they explore in their largest and most recent project, a five-story residential building in Barcelona, slated to finish construction this month. "The market, the concept of family, the need for housing in Barcelona—they're all changing so fast," says Puigjaner. "The client wanted a design he could adapt over time, depending on demand." MAIO delivered a scheme for a 30,000-square-foot building. Currently divided into 22 units, the flexible 110-room building could be reconfigured into as few as seven or as many as 40 dwellings.

"What defines a space is what you put inside it," says Charneco, neatly summing up one of the firm's guiding principles while explaining how the apartments are designed to allow the user to determine the program. "If you put a bed in one of the rooms, it's a bedroom."

The studio has taken this conceptual position in many past projects and exhibitions. In 2014, MAIO and Brooklyn-based Fake Industries Architectural Agonism collaborated on *Rooms: No Vacancy*, a finalist in the MoMA PS1 Young Architects Program, which proposed a series of small spaces.

"Parties are about corners, corridors, rooms—spaces that allow you to hide yourself, meet certain people and not others, open and close doors," says Puigjaner. "We wanted to transform the PS1 space into small individual parties." Similarly, for the exhibition *Species of Spaces* at Museu d'Art Contemporani de Barcelona (MACBA), which ran from July 2015 through this April, MAIO created a display system for a circular gallery organized by a grid of small, square rooms painted in a range of pinks. "We defined a set of equal rooms that changed atmosphere depending on the works of art inside," says Puigjaner.

Bar Nou, an interiors project the firm completed in January 2015, also illustrates MAIO's interest in repetitive structures. Here the team created a replicable and recogniz-



L rida, L pez, Puigjaner, and Charneco (left) created the exhibition for *Species of Spaces* at MACBA (above). The firm designed furniture and light fixtures (bottom, right), plus a vaulted ceiling, for Bar Nou (bottom, left).

able visual brand for the Catalan restaurant. "When we design spatial systems, we always make rules that can be repeated in other contexts," says Puigjaner. "In the case of Bar Nou, the client's aim was to open other venues around the city." Through the addition of a vaulted wood ceiling and custom lighting fixtures, tables, and chairs, the architects created a striking and distinct interior.

This summer, the studio is taking part in concurrent exhibitions on different continents. For *Sharing Models: Manhattanisms*, which opened in mid-July at Storefront for Art and Architecture in New York, MAIO examines how the sharing economy will affect the Uptown Manhattan neighborhood of Washington Heights in the future. And just two weeks later, at the end of July, they reunited with Fake Industries for *Occupied* at Royal Melbourne Institute of Technology University's Design Hub in Australia, bringing to life a room from their 2014 proposal for MoMA PS1. The multitalented firm was also selected to design the party for the show's opening. Says Puigjaner, "Now we're architects and party planners!" ■





Because
**YOUR VISION
COMES
FIRST**



Product for Every Project / 3rd-Party Certifications / Expert Architectural Representatives
The World Leader in Paint & Coatings / Available At More Than 2,400 Locations Nationwide

Visit ppgpaints.com to start making your vision come to life.

CIRCLE 255

©2015 PPG Industries, Inc. All Rights Reserved.
PPG PAINTS™ is a trademark of PPG Industries Ohio, Inc.
Because Every Job Matters is a registered trademark
of PPG Architectural Finishes, Inc.

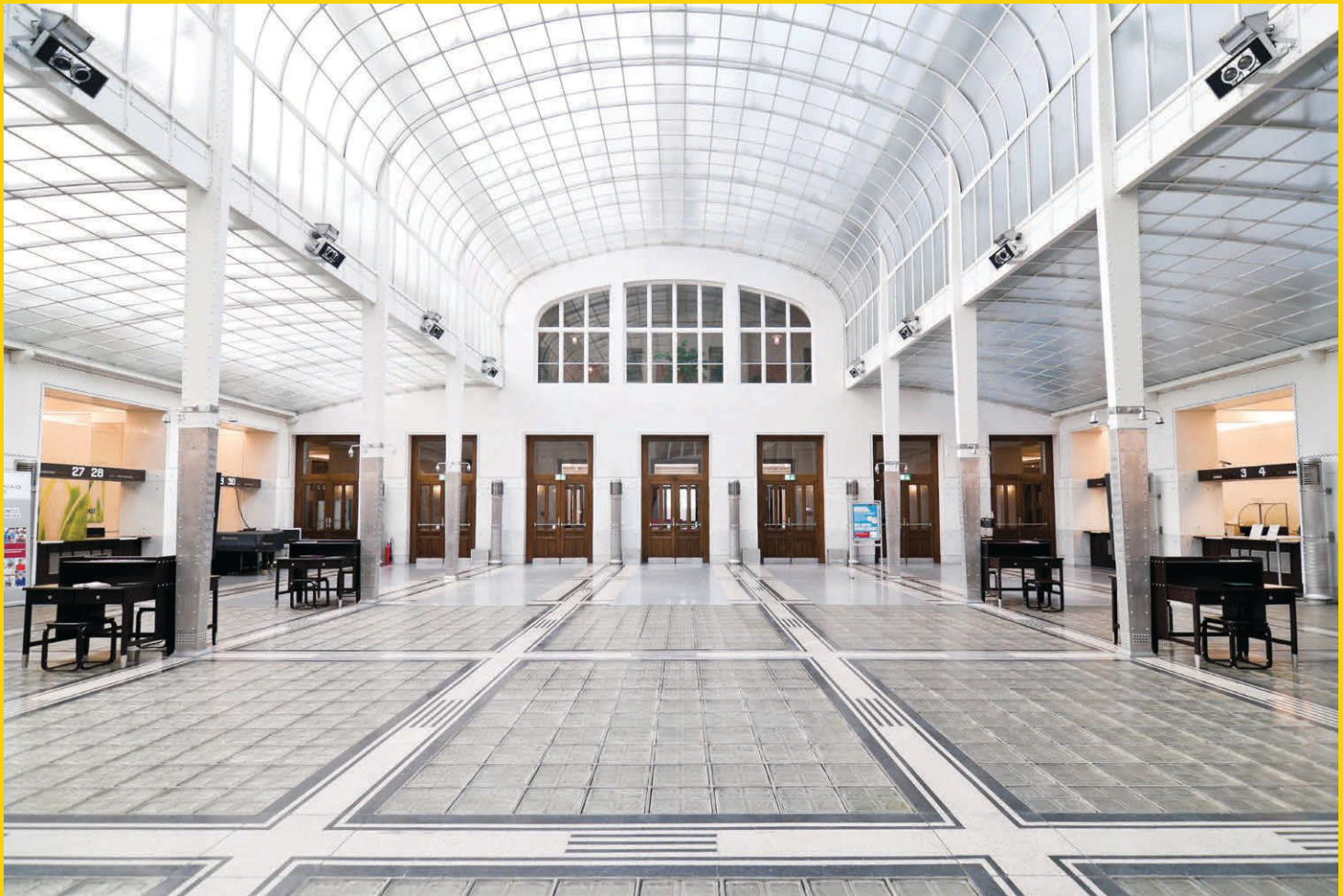


BECAUSE EVERY JOB MATTERS

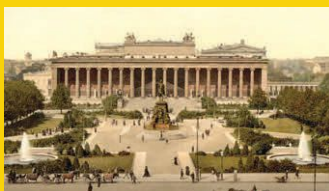
ARCHITECTURAL RECORD

Guess the Architect Contest

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



CLUE: THE MAIN HALL OF THIS BASILICA OF COMMERCE FEATURES A GLASS ROOF WHERE LIGHT BOUNCES OFF ALUMINUM FITTINGS AND PASSES THROUGH ITS TRANSLUCENT GLASS-BLOCK FLOOR. THE PROTO-MODERN CONCRETE STRUCTURE NOW INCLUDES A MUSEUM HONORING ITS VISIONARY ARCHITECT.



The answer to the July issue's Guess the Architect is **KARL FRIEDRICH SCHINKEL**, who designed the first public museum on what is now Berlin's Museum Island. His Altes (Old) Museum, which opened in 1830, houses a collection of antiquities befitting the exemplary neoclassical architecture.

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

See the complete rules and entry form online at architecturalrecord.com/guessthearchitect.



DESIGN + PERFORMANCE

Sunbrella is a registered trademark of Glen Raven, Inc.

The world's most beautiful, innovative and versatile performance fabrics. FUTUREOFSHADE.COM

Quasicrystals by Alberto Adolfo Fernández González and Carlos Benjamin Fernández González, architects Santiago, Chile

It's All in the Details

Reading Structures: 39 Projects and Built Works, by Guy Nordenson. Lars Müller Publishers, January 2016, 375 pages, \$60.

Reviewed by Josephine Mimitillo

AS A PRACTICING structural engineer, Guy Nordenson has been involved in the design of some of the most notable buildings of recent decades, including Steven Holl's carved-block Simmons Hall Residence at MIT (2002), Richard Meier's curve-walled Jubilee Church in Rome (2003), and SANAA's precariously stacked New Museum in New York (2007). He writes about those projects alongside bigger, smaller, and lesser-known ones in *Reading Structures: 39 Projects and Built Works*.

The tome is not merely a textbook on how these buildings are put together—even if it does include plenty of information about that. It also incorporates in-depth discussions about slip-formed concrete, friction pendulums, torsional buckling, tensegrity structures, and similar

topics of interest to engineers. In one example, for Yoshio Taniguchi's MoMA expansion in New York (2004), Nordenson explains how, upon a museum trustee's expressing concern, the design team was able to eliminate the only two columns in the addition's largest space, the 21-foot-tall contemporary-art gallery, by hanging the floors above it from a belt truss. In another, he discusses the evolution of the "grillage" system of steel girders and beams for the roof—intended to be as thin as possible—of the Toledo Museum of Art Glass Pavilion (2006), also by SANAA.

Smaller projects are a chance to test age-old techniques on new materials. For a series of staircases, first in a private loft in New York and later in Ferragamo shops in Bologna and Venice, Italy, Nordenson adapted the principles behind the "cantilever" stair to glass, metal, and wood. It was originally developed during the Italian Renaissance, for stone.

Some of the more fascinating details, however, make up the backstories to these works, not least of which is a series of projects at the

World Trade Center following the September 11 tragedy. In other cases, intriguing elements stem from the personal stories. Nordenson's first encounter with Meier, for instance, had to do with the 1989 competition to design the French National Library. Meier had wanted to work with famed engineer Peter Rice of Ove Arup & Partners, who, it turned out, was already teamed up with another architect competing for the library. Meier, Nordenson writes, "was not at first pleased to be handed off to what he saw as the New York 'branch office' of Arup." (In 1987, Nordenson helped establish the New York office, before founding his own firm, Guy Nordenson and Associates, in 1997.) Eventually, Meier came around and went on

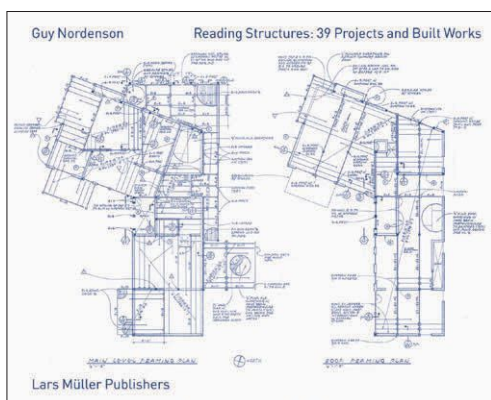
to work with Nordenson again on the Jubilee Church.

Nordenson calls his relationship with the much-admired Rice "pleasurable, if distant." The pair worked side by side only briefly but never completed a project together. Yet, in many ways, Nordenson's style, or more appropriately his lack of one, is similar to that

of Rice, who emphasized collaboration and, like Nordenson, formed a "crafts-based practice."

Nordenson's recounting of these 39 projects, selected from nearly 200 since the start of his career in 1979, is, in fact, a story of collaboration. None is more notable than that with Holl, which dates back to the early 1980s. Holl's buildings—which, aside from Simmons Hall, include the 2 million-square-foot Linked Hybrid complex in Beijing (2009) and several museums in the U.S., Europe, and China—compose a fifth of the book.

Divided into three sections—Engineering Ephemera, Simply Supported, and Building History—the book delves into details without being dry or difficult to understand for the reader who doesn't happen to be an engineer, or an architect, for that matter. Even for the lay person, *Reading Structures* offers incredible insight—from inspiration to design to politics—into how buildings, pavilions, parking garages, bridges, and follies get built, or don't. And, maybe more important, how they stand up. ■



FUTURE OF SHADE

If you can dream it, invent it or sketch it,
we can help you bring it to life.

FUTUREOFSHADE.COM/BUILD

Soap Opera

Frank Lloyd Wright's Larkin Building in Buffalo was a singular achievement in architectural history, if underappreciated.

BY JACK QUINAN

ARCHITECTURE WAS an all-encompassing endeavor for Frank Lloyd Wright, and the creation of his persona an ongoing project synonymous with his work. His penchant for self-promotion was clear in his long relationship with certain publications: Wright's first recognition by *RECORD* occurred in April 1904 (page 361), which singled out architects in the West, including Louis Sullivan and the "very able" Wright for their "departure from traditional European forms." No wonder the subsequent publication in *RECORD* of Russell Sturgis's negative review of the architect's Larkin Building (his first commercial structure) in April 1908 was a shattering moment in his developing career—but more about that later.

Following his departure from Adler & Sullivan in 1893, Wright had turned to domestic architecture with considerable success. Commissions, mostly in the greater Chicago area, inundated his office. When *Ladies Home Journal* published his scheme for "A Home in a Prairie Town" in 1901, he won more national attention. Soon word of Wright reached the Larkin Company in Buffalo through William Heath, who had joined the company in 1899. The businessman had learned of the modern pioneer through his brother-in-law, a contractor, then building Wright's J. J. Walser house in Chicago in 1903. Because of Heath and Darwin Martin, prospective clients and Larkin executives, Wright was able to convince the mail-order soap company to let him design its new headquarters. The Larkin office commission offered powerful incentives to the architect: large in scale and lucrative, it promised exposure to untapped eastern U.S. markets.

Completed in November 1906, the Larkin Building radically departed from the conventions of office buildings at that time. Wright's essay for *The Larkin Idea*, a publication for its customers (circulation 600,000), explained the innovations in the steel-framed structure, which was clad in red brick with red sandstone trim. Wright arranged the office areas in and around a five-story light court surrounded by balconies, where secretaries and typists answered mail, and placed the executives on the main floor of the atrium in full view of the 1,500 workers. Wright met the company's principal concerns about fire safety and worker satisfaction by designing custom metal office furniture and trimming interior surfaces with magnesite (for sound reduction) throughout, as well as installing one of the first air-conditioning systems in a business building in the country, to seal out the pollution from its industrial surroundings. He also provided dining facilities atop the light court. In a bi-nuclear plan, the architect separated business functions in the main block from the various social spaces in the annex, where a branch library, a classroom, locker and restrooms, and a lounge were located.

But what really distinguished the building was the architect's articulation of its major functional elements—the main building and the annex, the six corner stair towers, the intake and ventilation stacks, and the piers containing air-circulation ducts—meticulously proportioned, unadorned masses that expressed the power of a major American company. For Wright, the Larkin Building was an opportunity to contradict the horizontal open quality that characterized his prairie houses and to demonstrate that he was capable of just about any architectural challenge.



The Larkin Building, completed in 1906 in Buffalo, New York, represented a major commercial commission for Frank Lloyd Wright. The soap company publication shows the building in the foreground of the factory (above). *Record* published a critique in April 1908 (opposite, top). Nevertheless, the inward-turning interior (opposite, bottom, left and right) made history.

Critical response was meager, however. Charles Illsley gave the building a lukewarm reception in the *Inland Architect* in 1907, and the *Architectural Review* (Boston) cited portions of Illsley's article, though adding, "This sort of thing is absolutely in the line of creative architecture." Perhaps this is why the review by Sturgis was so devastating. Wright's expectations had been high: after *RECORD*'s early mention of him in 1904, the magazine came out with an appraisal in "Work of Frank Lloyd Wright—Its Influence" in July 1905, which pointed to the "more truthful relationship between structure and design, and the frank expression of the quality of material." This piece set the stage for the magazine's unprecedented 66-page presentation titled "In the Cause of Architecture," in March 1908, where Wright himself presented the principles guiding his architecture ("more truly simple; more expressive," as well as "more plastic; more fluent, although more coherent; more organic"). His essay was accompanied by 87 illustrations of his work, including the Larkin Building.

Wright had little time to enjoy that crowning moment before Sturgis's critical blast, "The Larkin Building in Buffalo," appeared in the magazine the following month. Sturgis, who worked only from

The Larkin Building in Buffalo

This business building, the architectural creation of Mr. Frank Lloyd Wright of Chicago, is represented in many excellent photographs, some of which will be shown in this article and others in the March number of the *Architectural Record*. From among these I select Fig. 1 as the most capable of giving a general idea of the design. The plan given in Fig. 6 shows the purpose of each member of the building, and the scale can be estimated as to the heights, on the basis afforded by the steps of the entrance doorways, checked by the height of the doorway (seen in Fig. 1) themselves, and by comparison with the plan. It is not safe to stike the courses of brick in this way, because their height is uncertain; the bricks may be of unusual dimensions or laid with unusually wide joints. The nearest tower-like mass in Fig. 1 that against which the telegraph pole is seen relieved—is about 90 feet high. The broader mass behind it would be, then, about 210 feet high, and this appears to be the highest level of the walls. A perspective draughtsman can easily determine the relative proportions, as with compared to height, etc., but this front may be taken, in the absence of any figure dimensions on the plan, roughly as 90 to 95 feet in width, not, of course, including the north wing seen in Fig. 2.

That front shown in Fig. 1 is called in this paper the east front. The longer side, showing in the same picture seven window-lays divided by square buttress-piers, is called here the south flank. It is possible to gain some knowledge of the character of the building by means of photos of the interior. Twenty excellent interior views are found in the collection above mentioned, and Fig. 3 shows how the building has a nave and aisles—the nave shown in the illustrations having windows at the ends, and a skylight overhead; each aisle is divided up into four lofts or stories of 16 to 17 feet each, in the clear. The broad end windows, seen in Fig. 3 at the end of

the great hall, are the same windows that show in Figs. 1 and 2 between the buttresses, and they correspond with the arrangement of the north front, as in Fig. 1—out the four stories of broad windows flanked by narrower ones, which are seen within and without alike. One relation between exterior and interior is seen in this—the square brick piers within divide what we here call the nave from the galleries at each side a long double row of them are on the same axes as the buttress-like piers crowned by globes and human sculpture, in Figs. 1 and 2.

In Fig. 2 there are partly seen the large galleries, at the left and at the right hand of the central skylighted nave. These halls are of only moderate height—one story of windows on each, as seen in Fig. 4, which gives the structure of the fourth story, south side. Each one, as well as the floor of the high nave, is filled rather closely with desk tables, at which are seen seated clerks fully occupied in their employ. In this view, we are looking eastward, the window on the left and in face of us are those seen from outside in Fig. 1, and the central nave is north of us, on our right.

The western end of the building is very closely like the east front; but the northern side, as shown in Fig. 2, is masked by projecting masses of building which include a great vestibule with entrance doorways to east and west. In the northern detail view, Fig. 5, the doorway at the head of the steps where a young man is standing is one of those two entrances; it has the firm name on the large fan light, and is probably the working entrance. The plan shows a similar doorway at the west of this one, and opposite to it. The houses of the town and a church crowd the site rather closely on the northern side.

The square towers at either end and flanking the entrance in Fig. 5 are about 18 feet in horizontal dimension. That one seen in Fig. 5 has the overplus of water very skilfully treated as a *rococo*

312 THE ARCHITECTURAL RECORD.

with a sculptural setting. The two outer towers, seen in Fig. 1, have small doorways, with steps of approach. These are radiator and stairway towers, and that with the fountain contains also a staircase.

In tracing the analysis of this build-



FIG. 1. LARKIN OFFICE BUILDING EXTERIOR. Frank Lloyd Wright, Architect. Buffalo, N. Y.

ing through of this pile of photographs, and in setting down, as above, its scheme, we have also partly prepared ourselves to judge of it as a work of architecture. The lover of architecture who looks, perhaps for the first time, at a building so entirely removed as this

one from the traditional styles and schools feels a shock of surprise, and this a surprise which is the reverse of pleasant. For persons who have seen the great monuments of the past, or adequate photographs of them; who have lived them and have tried to surprise their

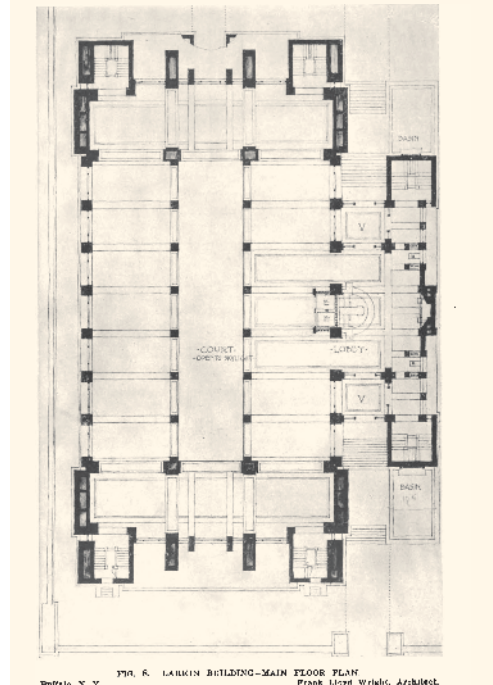


FIG. 6. LARKIN BUILDING—MAIN FLOOR PLAN. Frank Lloyd Wright, Architect. Buffalo, N. Y.

PHOTOGRAPHY: COURTESY COLLECTION OF THE BUFFALO HISTORY MUSEUM





UNIFORMITY HAS NEVER BEEN SO **EXTRAORDINARY.**

We make predictability a real art form.

When you choose Sherwin-Williams paint, your designs are powered by ColorSnap Precision, our exclusive system for delivering exceptional gallon-to-gallon color accuracy to thrill both you and your clients. Count on Sherwin-Williams to create paint that matches the most important thing of all — your vision.

Find out more at swcolorsnap.com.





Wright designed a bi-nuclear plan, where the main building has offices arranged around a five-story light court, and the entrance and various services are in the adjoining annex.

photographs due to declining health, began with a lengthy, error-filled description that concluded with, “Few persons . . . will fail to pronounce this monument . . . an extremely ugly building. It is, in fact, a monster of awkwardness.” Sturgis then equivocated with an acknowledgement that “the fine arts have nothing to do with the hustle and bustle of daily bread-winning operations.” In conclusion, he suggested how the building might be improved with greater attention to light, shade, moldings, a Ruskinian color palette, and picturesque massing—all formalist-historicist principles antithetical to Wright’s vision.

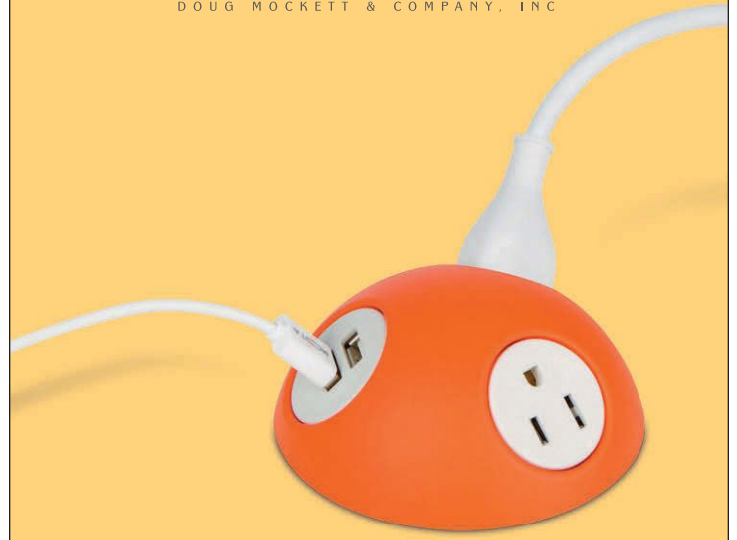
In a letter to *RECORD*’s editors, Wright took apart Sturgis’s essay point by point and castigated him for working from photographs, some of which he deemed “murderous, wide-angled slanders.” Wright’s defense of the building’s formal abstraction was combined with an underlying anger that led to an ad hominem attack: “To see an eminent architectural critic picking over, bit by bit, his architectural rag-bag for architectural finery wherewith to clothe the nakedness of the young giant whose very muscularity offends as it confronts him is pathetic.” He further ridiculed Sturgis as “the man who, startled, clutches his lifeless traditions closer to his would-be-conservative breast and shrieks, ‘It is ugly!’”

RECORD declined to publish Wright’s reply out of deference to Sturgis, who died in February 1909, but the Larkin Company did come out with its own thin volume in 1909 that included Wright’s essay, “In the Cause of Architecture,” along with the Sturgis review and obituary. Sturgis’s critique was an unfortunate setback for Wright, but the Larkin Building was again depicted in the 1910 Wasmuth Portfolio in Berlin with five lithographic Larkin plates: they excited the enthusiasm of H.P. Berlage, Mies van der Rohe, Erich Mendelsohn, and many other European architects. Indeed Wright never abandoned his belief in the Larkin Building: he rightly said upon hearing of its demolition in 1950—by the city of Buffalo, which then owned the building, in what had become an increasingly run-down part of town—that “it had taken its place in the thought of the world.” ■

Jack Quinan is an historian based in Boulder, Colorado, and the author of Frank Lloyd Wright’s Larkin Building: Myth and Fact (1987).

PHOTOGRAPHY: COURTESY BUFFALO HISTORICAL SOCIETY ARCHIVES

MOCKETT
DOUG MOCKETT & COMPANY, INC.



PCS74
Dome



“Fine
Architectural
Hardware
for Your
Fine
Furniture”®

www.mockett.com • 800-523-1269



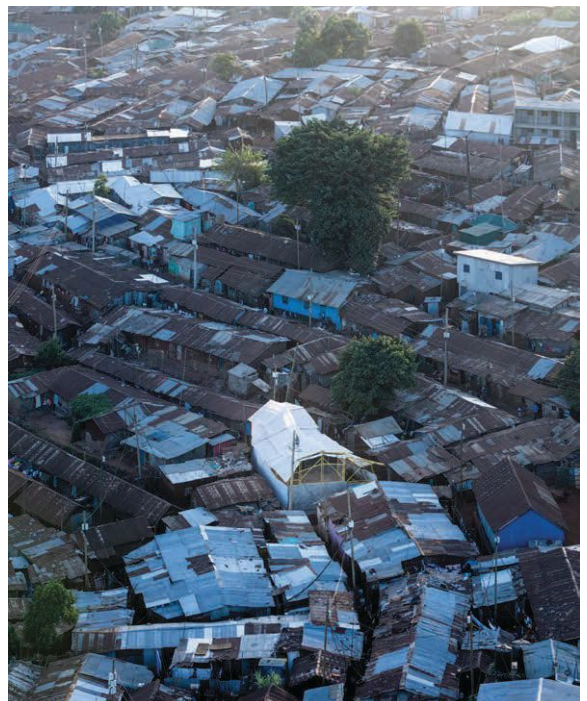
Small Scale, Big Change

Two community hubs work within tight constraints to give locals a place to gather.

BY JAKE BITTLE

A NEW SCHOOL in the sprawling Nairobi slum of Kibera stands in striking contrast to the informal settlement that surrounds it: the building's white polycarbonate roof and colorful steel-pipe structure suggest a jungle gym more than an educational facility, and give it a profile that's easy to spot among thousands of weathered metal roofs. Designed by Madrid-based SelgasCano and Boston-based helloeverything, the fanciful building replaces a dilapidated school that formerly occupied the site.

José Selgas and Lucía Cano were introduced to Kibera when they visited Kenya for a different project, a vaccination clinic in the Turkana region they designed in collaboration with their students at MIT (RECORD, June 2015, page 94). So when the Louisiana Museum in Denmark approached the architects and





their former students (who had since founded helloeverything) in late 2014 and asked them to recreate the Turkana clinic as a pavilion for their campus, the architects decided to use the commission as an opportunity to model a new project instead. This would not just be a folly but a structure that could be disassembled and transported elsewhere, to be put to use after the exhibition was over. For the project, the team used the same scaffolding components they had employed in Turkana—materials similar to those used in domestic constructions across Africa—to create their pavilion and future primary school in Kibera. The firms coordinated the replacement with Nairobi-based architect

Abdul Fatah Adam and the Kibera Hamlets community organization.

In order to fit the required amount of classroom space onto the tiny site, the architects followed the two-level construction of the previous school, but, instead of having a shaky ladder connecting the levels, they built a broad staircase. A double-sized classroom and a balcony on the second floor create a range of different learning environments, while a covered courtyard below can host activities involving greater numbers. Crowned by translucent corrugated polycarbonate sheets—whose haphazard-looking arrangement mimics that of neighboring metal roofs—the facility is

GIMME SHELTER

The school rises above the surrounding informal settlement (opposite, top). Its polycarbonate roof is a bright spot amid the sea of weathering tin (opposite, bottom) and shelters two levels of classroom space, as well as a courtyard for group activities (above).



drenched in light, while also spared significant heat gain. Two of helloeverything's principals supervised construction, while all workers and craftsmen came from the neighborhood around the site.

Helloeverything partner Austin Smith says the team wanted to tap into the expressive and even playful potential of commonly used scaffolding materials, but the components also provided a functional advantage. Rebuilding the school proved harder than anticipated—the site was off-level, for example, but the versatility of the materials allowed for easy on-the-fly adjustments.

“We weren’t trying to express anything particular with the form—we just wanted to improve on the school that was there however we could,” said Selgas. “There was no budget for the materials, which, in the end, led to a building that looks very different, almost iconic, something people in the neighborhood can recognize.”

Not only did the pipe-and-polycarbonate-panel kit of parts rise to the challenge during the construction process, it also proved reliable during transportation: the simple pieces were easy to dismantle and pack up. The only hiccups in the shipping process, says Smith, were on the legal side: the container was held by the Kenyan port authority for weeks because no one could figure out how to classify it; it’s not every day you ship a building across continents, the architects noted.

BEACON OF HOPE Students and community members enter the covered courtyard off the settlement's network of labyrinthine pathways (top). The pink pipe structure reflects Kibera's improvised building materials (above).



IN AND OUT
 A balcony provides views of Kibera and a place for students to gather in informal groups (above), while boxlike spaces on the lower level are oriented toward traditional classroom learning (left).





OVER HEAD Gaps between the roof panels and the lattice-like brickwork cause the structure to glow at night (opposite, top). An orthogonal ancillary building links to the main circular one (opposite, bottom). Inside the drum, the layered roof panels and steel structure create elegant patterns (this page).

Thousands of miles from the densely packed streets of Kibera, in rural Costa Rica, a local mayor asked architect Álvaro Rojas to build a community center for the rural town of El Rodeo, 10 miles west of San José and with a population of around 600. Rojas quickly understood that the commission was a tall order, despite the small size of the proposed project, about 8,000 square feet. For one thing, community centers in Costa Rica serve a wide variety of functions, as classrooms, recreational spaces, and forums for political and civic gatherings. This facility would also be adjacent to a soccer field and have to provide changing rooms and a kitchen to serve players and spectators. Furthermore, Rojas and his team would have to pull all this off with a budget of just \$185,000—“less than a third of the budget typically required,” says the architect. “So the financial reality of the project was a major point of decision in how to approach the design.”

In response, Rojas and his wife and partner, architect Sylvia Fournier, have designed a facility that not only maximizes efficiency and provides a flexible, functional space, but also one that gives the people of El Rodeo a unique and compelling place to gather. The circular form of the main building underscores its role as a unifying, democratic place for meetings and social events, and the layered roof structure yields a soaring interior while making a bold pronouncement in the landscape.

The multipaneled roof, which is structurally independent of the volume, flies above the building on steel trusses and beams supported on slender concrete columns, lightening the load on the drum to help make it seismically sound. Corrugated fiber-cement roof panels mimic the steel roofs of many Costa Rican buildings. They also provide thermo-acoustic insulation, preventing the interior from overheating and muting the sound of the region’s heavy rains. In order to reduce the amount of concrete needed for the drum, while also facilitating cross ventilation, the architects used locally fabricated masonry to fill in most of the walls with open brickwork. An ancillary building, rectangular and made of concrete, holds restrooms and a kitchen. Much of it is clad in mosaics of broken tiles donated by a local distributor, another way the team kept costs down while bringing a rich texture to the surfaces.

The Community Center of El Rodeo, which opened in January of 2015, is already used during soccer games and other sporting events, as well as by a local university for classes and recreation. But the building is also equipped to provide shelter for up to a hundred people in the event of a natural disaster. Living up to its charge of meeting a wide range of needs, Rojas and Fournier have conceived a building that will serve the community during times both of challenge and celebration. ■



Balancing Act

On a majestic landscape in Montana, Ensemble Studio creates a group of enigmatic sculptural works for Tippet Rise Art Center.

BY DAVID HILL

IN THE summer of 2013, when the architects Antón García-Abril and Débora Mesa first visited the 11,500-acre Montana cattle and sheep ranch that's now home to Tippet Rise Art Center, an hour southwest of Billings, they thought it looked like a lunar landscape. Beautiful, yes, but harsh, with few trees, rolling hills, and snow-capped mountains off in the distance.

The husband-and-wife team, principals of the Madrid- and Boston-based firm Ensemble, a 2004 RECORD Vanguard winner, had been asked by Tippet Rise's founders, Cathy and Peter Halstead, and its director, Alban Bassuet, to create site-specific works for the sculpture park and music venue, which opened on June 17. But the task was daunting. How could any manmade object compete with such a vast natural setting? "We couldn't find any references, any orientation, to hold and start working with," García-Abril says. "It was very scary and very creative at the same time."

In response, they designed pieces that seem to emerge from the landscape. *Beartooth Portal* comprises two poured-in-place concrete forms that lean delicately against one another. It's 25 feet tall and set on top of a barren mesa, like some kind of prehistoric monument. Nearby are the similarly designed *Inverted Portal* and the massive *Domo*, a 98-foot-long sculpture with a flat top and three "legs" that form caverns for music performances. (Tippet Rise is also home to works by Mark di Suvero, Stephen Talasnik, Patrick Dougherty, and two pieces on loan from the Hirshhorn Museum and Sculpture Garden by Alexander Calder.)

García-Abril and Mesa call their creations "Structures of Landscape." "We like the ambiguity of the works," Mesa says. "We like that they look natural, like found objects, but at the same time, you have this impression that they are artificial."

The sculptures appear to have been designed as they were being built, but, in fact, they were conceived in advance using mockups and computer modeling. Structural engineer Matt Hubbard, of the Bozeman firm Beaudette Consulting Engineers, worked out the complicated construction process.

For *Beartooth*, the team brought in truckloads of gravel to form two side-by-side pads. Next, a backhoe scooped out some of the gravel to create oblong forms, which were filled with intricate rebar armatures. A crane then lifted the rebar so the holes could be lined with two layers of plastic membrane. After a partial concrete pour, the rebar was reinserted, followed by more concrete and a top layer of dirt and rocks, shoveled by hand. Once the concrete had cured, two cranes

Inverted Portal is one of three completed sculptures by Ensemble Studio on the grounds of Tippet Rise. The piece is comprised of two giant slabs of site-cast reinforced concrete that appear to be balanced against each other.

PHOTOGRAPHY: © IWAN BAAN, EXCEPT AS NOTED





lifted the 425,000-pound slabs upright and delicately leaned one against the other.

"It's like an advanced form of stacking two cards against each other," says Hubbard, who helped calculate the precise angle of the slabs. Unlike cards, however, the pieces sit on 2-foot-deep concrete footings anchored to bedrock. The slabs are further stabilized by a concrete "cap," which is hidden by layers of dirt.

The rounded exterior surfaces are smooth, with fabric-like folds and wrinkles created by the plastic liner during the concrete pour. The flatter inside surfaces are rougher, covered with dirt and rocks. The entire process was repeated for *Inverted Portal*, but with the rough side of the slabs placed on the outside.

Guests generally travel the three miles from the visitor center to the portals in electric vans, but may also walk or bike. They see the sculptures and wonder, "How the hell do those things hold together?" says Bassuet, who worked as an acoustician and concert-hall designer for Arup before joining Tippet Rise as its first director. "It's pure equilibrium."

For *Domo*, García-Abril and Mesa deployed a construction technique that was similar to the one used for the portals but did not require any lifting. They formed a mold in a built-up gravel bed for the entire piece, filled it with rebar and concrete, and then—after a month of curing—excavated gravel from underneath. The result is a kind of off-kilter three-legged table, nearly 100 feet long and weighing more than 4 million pounds.

Domo's acoustic qualities were revealed in a recent performance by pianist Christopher O'Riley (Tippet Rise's music director) and soprano Emily Helenbrook. They performed works by García-Abril's father, Spanish composer Antón García Abril, within the 16-foot-tall sculpture's interior.

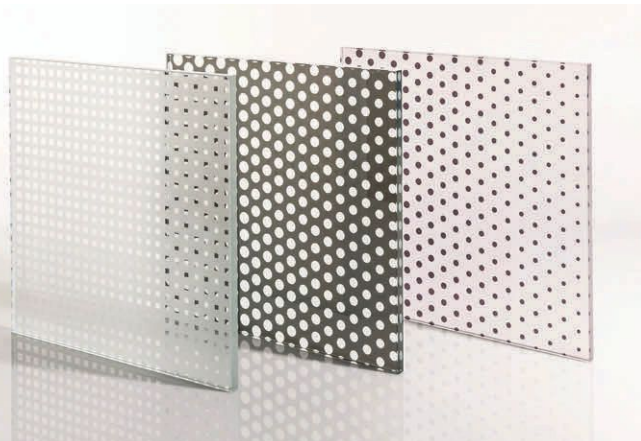
Mesa says that, despite all the planning, there was still a level of uncertainty in the construction process. The surface wrinkles, for example, were completely dependent on how the plastic sheeting was placed in the mold before the concrete was poured. And, given their exposure to Montana's harsh climate, the pieces will continue to change over time. "That's OK," Mesa says. "We want nature to take over." ■

David Hill, a journalist based in Denver, writes frequently about architecture, design, and urban planning.

To build *Beartooth Portal* (all images this page), as well as *Inverted Portal* (opposite, bottom), Ensemble scooped out molds from mounds of gravel, built a rebar armature within each mold, then lifted the reinforcing out in order to line the mold with plastic membrane. The armature was reinserted once the concrete pour was under way.

Like the *Beartooth* and *Inverted portals*, *Domo* (this photo) is made of reinforced concrete cast on-site. The piece, which is 100 feet long and weighs more than 4 million pounds, has a cavernlike interior that is 16 feet high.





Glass Gradients

For these partitions suited for residential and contract interiors, Dutch duo Scholten & Baijings played with geometry and opacity, creating single-color and two-tone options. The square and dot patterns may be etched or digitally printed onto the low-iron Starphire glass, which comes in thicknesses ranging from ¼" to ¾".

skydesign.com

CIRCLE 100

Divide and Conquer

The latest partitions minimize visual distractions, dampen sound, and carve out zones of privacy.

By Julie Taraska



Sipario

These lightweight triangular panels contain layers of densely woven polyester fiber that absorb high, middle, and low sound frequencies, achieving an NRC of up to 1.0. The frameless, double-sided design may be freestanding or ceiling- or wall-mounted. Fire-resistant and 100% recyclable, Sipario is Greenguard Gold-certified.

snowsoundusa.com

CIRCLE 101



Luminous Patterns

This soup-to-nuts solution for producing illuminated architectural surfaces comprises designing a custom pattern for the client, laser-cutting and/or digitally printing it onto steel panels, and then fitting the panels with dynamically programmed Color Kinetics Flex LEDs. Five light effects are standard; 10 preset panel designs are in the works.

philips.com

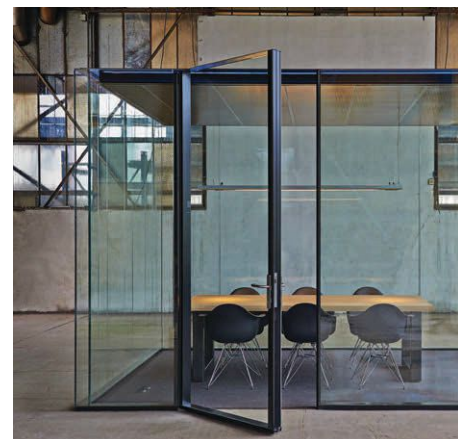
CIRCLE 102

Legola

Assembled without tools, these double-sided upholstered panels link via a button-like connector; it slots into the channel bifurcating each unit. This joint also allows the panels to support numerous types of seating, backrests, shelves, and work surfaces, all of which may be reconfigured repeatedly. Featuring a hard core of foam on the inside, Legola panels are 27½" wide and come in two heights.

viaseating.com

CIRCLE 103

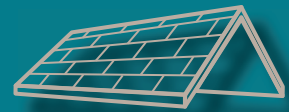
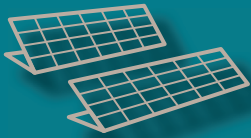


LineaCube

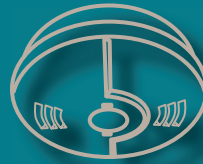
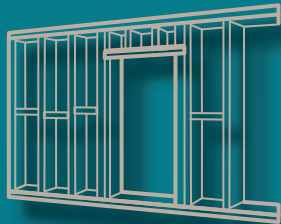
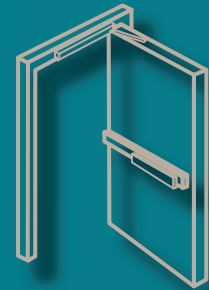
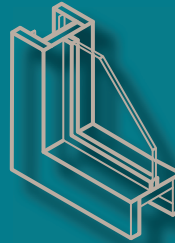
LineaCube provides an autonomous workspace equipped with its own ventilation, power, audio, and lighting systems, each integrated into the suspended ceiling. The minimalist glazed structure, which is free of vertical profiles, is visually transparent but acoustically opaque, offering a noise insulation value up to 53 decibels. Units may be specified in heights up to 10' and widths up to 13'.

maarslivingwalls.com

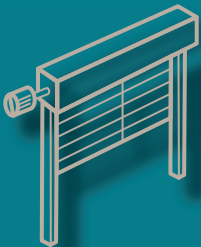
CIRCLE 104



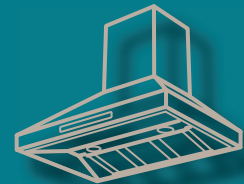
FIND IT



SPEC IT



VERIFY IT



UL.COM/PRODUCTSPEC

For certified products and code compliant installations, including green codes—**UL PRODUCT SPEC™** gives you everything you need to find, spec, and verify it's certified.

CIRCLE 223

UL, the UL Logo and UL PRODUCT SPEC are trademarks of UL LLC © 2016 BDI 51115



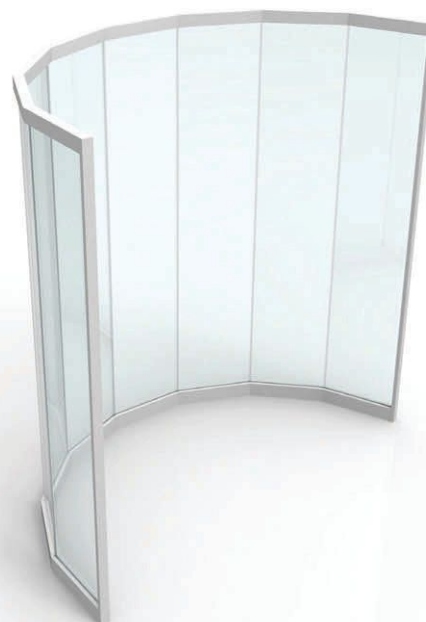


Clubhouse

This freestanding aluminum structure provides a semiprivate meeting space in open-plan offices. The standard module features soft seating and a frame fitted with translucent screens; add-ons include work surfaces, media walls, consoles, storage units, and electrical integration. Clubhouse comes in two heights, each offered in seven configurations.

allsteeloffice.com

CIRCLE 105

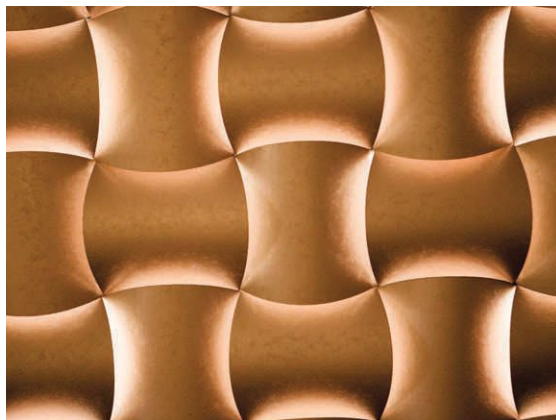


Freeform

The latest addition to KI's preassembled butt-glazed Lightline architectural wall system allows designers to use standard panels to create curves and angles measuring 90° to 180°. Clear dry-seal connections maintain the unit's transparency and preserve its adjustability for uneven floors and ceilings. The module's 1/2"-thick glass also provides a sound transmission class rating of 36 to 39.

ki.com

CIRCLE 106



Elemental

Fabricated from post-consumer recycled paperboard, this flexible material comes in five metallic colorways and may be used in four of 3form's popular sculptural screen systems (Wovin Wall in galvanized copper, shown). The textural, bio-based Elemental is also Cradle-to-Cradle-certified.

3form.com

CIRCLE 107



Parentesit Freestanding

Inspired by minimalist art and classic Japanese interiors, these movable modular screens with black metal frames come in multiple square and circular motifs. Each is available in Arper's full range of Kvadrat and Fidivi fabric options.

arper.com

CIRCLE 108



GlassScreens

Part of Carvart's Contract collection, this line of low-iron, tempered-glass privacy screens offers a multitude of heights (low to high), forms (sliding, fixed, and movable), and surfaces (smooth, etched, or writable on one side or two). Each may be specified in three or more standard widths. Pictured is a fixed full-height screen with a smooth opaque finish.

carvart.com

CIRCLE 109

A PIECE OF EUROPE—MADE IN AMERICA

THE NEW ASI ALPACO™ COLLECTION



Introducing the ASI Alpaco™ Collection—a marriage of European design and engineering with the American manufacturing ingenuity you have come to expect from ASI—with the shortest lead times in the industry. The Collection is made from Phenolic and offers sleek hardware, robust construction and zero sightline doors and pilasters that meet in a flush finish with routed, overlapping closures for guaranteed privacy. And don't let Alpaco's looks fool you, the collection offers an exceptional value. **706.827.2700 • asi-accuratepartitions.com**

ASI® *Accurate
Partitions*

Take It Outside

These outdoor amenities offer a breath of fresh air.

By Julie Taraska



LiniLED Marker Lights

Available in three round and two square sizes, these in-ground accent luminaires create diffused spots of illumination on walkways and streetscapes. Each flush-mounted fixture produces light in a choice of five hues (white, amber, and RGB) and five color temperatures (2400K to 6500K). Cast-polyurethane resin encapsulates the light engines, which use 1W to 3W of energy and can be interconnected to a single 24-volt driver.

organiclighting.com

CIRCLE 111



Veloport

This storage shed with a galvanized-steel frame houses two bikes; each sits on its own interior tray and is secured to the door via U-lock, padlock, or a keyed option. Laser-cut ventilation holes modulate temperature within the structure and provide sight lines into its contents. The units, which are surface-mounted with wedge or Titen anchors, may be specified in over 250 TGIC powder-coated colors.

dero.com

CIRCLE 112



Strata Beam Bench

A twist on classic public seating, this bench features subtly faceted cast end pieces made of the manufacturer's proprietary Meldstone ultra-high-performance concrete. Continuous spans of wood bridge the gap and slot into the seat ends. Pictured is the backed version of Beam with powder-coated end arms; backless, armless, center-arm, and four-arm models are also available.

landscapeforms.com

CIRCLE 113

PlayCubes

Designed in the 1960s by architect Richard Dattner, these colorful geometric elements have been updated for the times, now featuring varying planes, handholds, and recesses that encourage climbing and exploration. The rotomolded plastic cubes come in single models suited to kids ages 2 and up and four preset configurations for those 5 and older.

playworld.com

CIRCLE 114





noraplan® **valua**

FLOORING INSPIRED BY NATURE.
PERFORMANCE PERFECTED FOR HEALTHCARE.

Transform patient-centered environments with the nature-inspired aesthetic offered by noraplan® valua rubber flooring. A soothing color palette brings the harmony of nature indoors while meeting facility performance demands and fostering the well-being of every patient.

Take a closer look. www.nora.com/us/valua

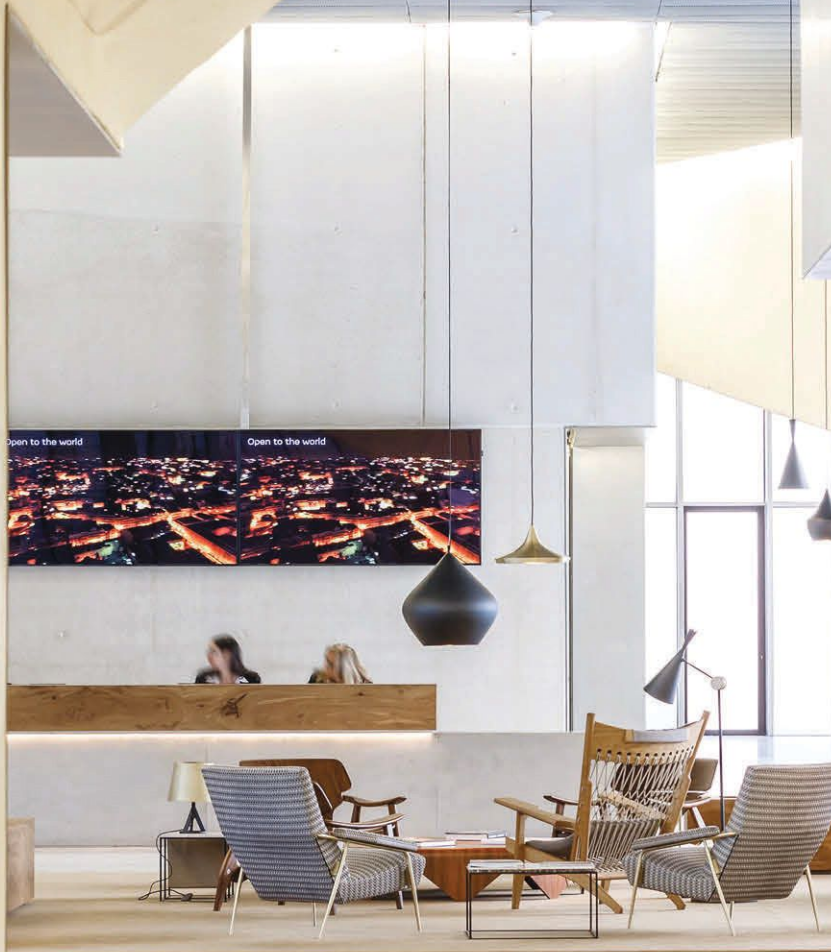


CIRCLE 186

National Terrazzo & Mosaic Association
www.NTMA.com
800.323.9736



An NTMA contractor has the training, skill, and experience to understand that their job is a part of the big picture—bringing your job to a successful completion.



THE WORKPLACE

The modern office used to mean working at a desk. But in the wake of the digital revolution—now many tasks can be performed almost anywhere—the office is becoming a place where people get up out of their seats and move around, if they even *have* an assigned station. The workplaces on the following pages focus less on personal space and, instead, dedicate more square footage to a range of areas for collaboration, spontaneous interaction, quiet work, or taking a break. Just as shifting trends in how we do business have irrevocably affected interior planning, the design of the workplace will continue to shape office culture into the future, changing it in ways we cannot even anticipate.

Musical Chairs

The office of the future offers many places to sit and work, but no place to call your own.

BY JERRY ADLER

IN THE 1980s, the owner of *Newsweek*, Katharine Graham, reviewing plans to renovate the headquarters of the magazine, where I worked, questioned the necessity of private offices for the dozens of writers and editors. “I have a city room full of Pulitzer Prize–winners at *The Washington Post*,” she is rumored to have said. “Why does everyone here need a private office?”

If asked, I could have explained to Mrs. Graham that my infant son woke me most mornings at 5, and a city room was an extremely uncomfortable place to nap. But her question seems almost quaint today, as designers confront the paradox of the modern office, which has grown increasingly functional in its furnishings and materials, even as it is being pressed into service for uses never imagined by the early efficiency expert Frederick Taylor: as a substitute home for employees whose days seldom end at 5 p.m., as a statement of the organization’s environmental and social values, and, of course, as an amenity to attract talent to the company’s ranks.

As it has for at least a decade, the struggle to define the office of the future will be played out in the context of the open floor plan, a partitionless space with desks in facing rows or clusters of four, six, or eight. It would be reductive to blame *Dilbert*

for the death of the semi-enclosed cubicle, but the name of the comic strip, which came up frequently in interviews for this essay, serves as a convenient shorthand for everything workers, especially young ones, find soul-crushingly oppressive about traditional office design. Some variation of the open plan is the overwhelming choice for organizations with any pretense of hipness—which today is almost all of them, from Brooklyn start-ups to the General Services Administration, whose million-square-foot headquarters in Washington is being renovated (by Shalom Baranes, with Gensler doing interior design) to achieve what Janet Pogue, Gensler’s head of global workplace research, describes as “a more open and energetic workspace reflective of GSA’s sense of transparency and shared organizational culture.”

Energy, transparency, and collaboration are buzzwords associated with the open plan, which gained tremendous prestige because of its connection with successful entrepreneurial organizations from those

in Silicon Valley to the New York home of the Bloomberg empire. But its real attraction for many companies is that it can accommodate approximately twice as many workstations in the same space as a cubicle plan. “Over the past 15 years we’ve seen offices move from 200 square feet per person to 100, on average,” says Simon Pole, global design director of the Australia-based Unispace. Marc Campolongo, who consults on New York–area real estate for Staples Business Advantage, says that figure is headed down to 60 feet, and he’s not prepared to call a bottom—although in existing buildings, the capacity of elevators, exit stairs, and HVAC may impose one.

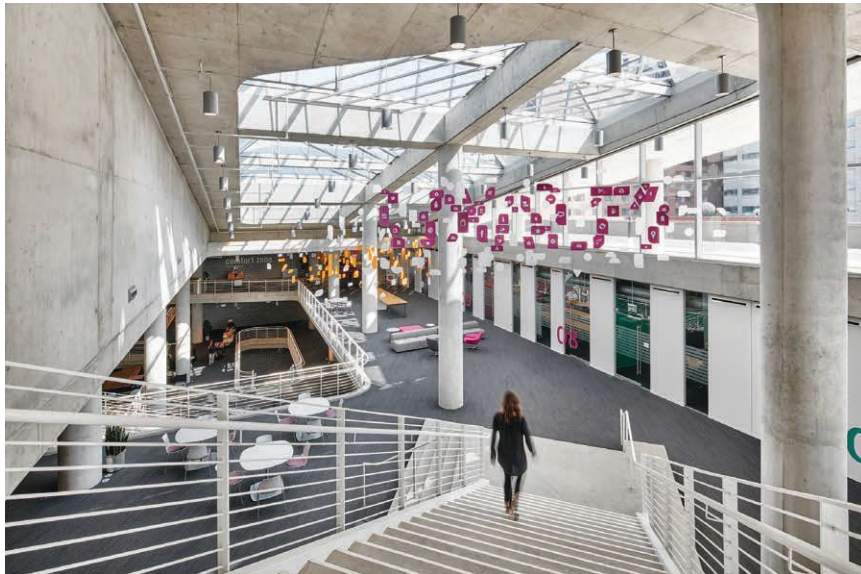
Fitting 700 or so office workers into an acre of floor space is pre-

misised on the reality that not every desk is occupied at all times; in fact, by various estimates, at any given moment, around half of all office workers won’t be at a desk at all. They will be out of the office on business, or working from home—or actually in the office, but not at a desk. The renovated GSA building has 2,200 desks for exactly twice as many employees. Increasingly, companies are leveraging their space to take advantage of the fact that most of what people do at a desk—type on a computer and talk on the phone—can now be done anywhere.

Architects call this “activi-

ty-based working,” which leads to providing dedicated spaces for a variety of tasks. The old office had desks and meeting rooms; the future will hold a proliferating array of “team project spaces”; “huddle rooms” for on-the-fly meetings; “collaboration rooms” for scheduled conferences; pods and booths for making phone calls; “focus rooms” for quiet concentration; and a variety of alcoves, benches, and café tables that can be used for various work-ish activities.

More and more, architects are seeking productive uses for underutilized spaces such as lobbies, rooftops, and the circulation within and between buildings. At the Steelcase headquarters in Grand Rapids, Michigan, “30 to 40 percent of us have assigned desks,” says global director of research communications Chris Congdon; “the rest choose where we want to work on a given day.” And Steelcase is a company that *makes* desks. In the past, offices allocated one break room or public-area seat for every 16 employees, but that ratio is



Gensler’s facility for the tech company 84.51° in Cincinnati maximizes circulation spaces.

being driven to one per four, according to research by Herman Miller presented in June at the NeoCon exposition in Chicago. Among the other findings from a two-year study for the company's "Living Office" concept: circulation and other unallocated space, which as a rule of thumb used to account for 33 percent of floor area, is now averaging up to 47 percent—at which point, says Joseph White, director of workplace strategy design and management, "the facilities planner's head explodes."

Even the definition of a desk as a place where you sit to do work is changing; standing desks are becoming ubiquitous, part of a trend toward "wellness" in the office.

Architects who have mastered LEED specs will soon be studying the requirements for "Fitwel" certification by the Center for Active Design—a new program to measure how work environments affect employees' health. The details are still being fleshed out for a launch in 2017, but Lisa Pool of Perkins+Will—which designed its new Minneapolis offices with Fitwel certification in mind—says it will probably measure parameters such as the availability of healthy food, natural light, and a design that encourages or

requires workers to use stairs or to walk to printers or supply rooms that are intentionally located at a distance. (The firm's space, 11,000 square feet in the 1972 IDS Center by Philip Johnson, was also designed for minimal environmental impact, using only five nonstructural materials: glass, fiberboard, aspen plywood, carpet, and steel marker board.)

The other challenge designers face is maintaining a minimum standard of privacy. Numerous studies have found, as Jungsoo Kim and Richard de Dear wrote three years ago in the *Journal of Environmental Psychology*, that "open-plan layouts are widely acknowledged to be . . . disruptive due to uncontrollable noise and loss of privacy." Research, as well as everyday experience, has shown that the greatest distraction comes from intelligible conversation within hearing range; the reason any work got done in a newspaper city room was precisely because the sounds of ringing phones, clacking typewriters, and muttering reporters merged into an undecipherable hubbub. The acoustical engineer is an increasingly important member of the design team, deploying sound-absorbing materials and machines that muffle speech with random white noise or its more effective version, "pink" noise (which is tuned to the frequencies best at muffling human speech) and even "smart" noise (an active system that detects and plays back ambient sound in scrambled form). Pogue boasts that the GSA renovation has shrunk the intelligibility of coworkers' conversations from a radius of 50 feet (in the old building) to 15.

Furniture is also being enlisted in this effort. The high-end office of the future might have Steelcase's Brody WorkLounge Modular Workstations, a recliner with a color-coordinated footstool and lap desk in a wraparound shell that creates what Congdon calls "a co-

coon effect, like a first-class airline seat," allowing the user to avoid eye contact with random passersby. The company is rolling out an app that will keep track of how and when they are used, for employees to know if their favorite pod is available. Or it might be furnished with the Herman Miller "Resolve" line, which offsets desks at the 120-degree angle "commonly found in nature" (as the company website notes) to let workers sit across from one another without quite facing. Perhaps they will work in a space defined by "Metaform" blocks, barriers of varying heights that are light enough, at around 18 pounds, for any office worker to pick up and move around (and

maybe earn points toward Fitwel certification as a bonus).

So the open-plan office, far from making architecture superfluous, actually represents a new set of challenges and opportunities. "It puts the architect in a more powerful position," says Todd DeGarmo, CEO of Studios Architecture. "No client can tell you the program now. We have to help them imagine what they need."

Anyone can fill a big floor plate with endless rows of desks, but then nobody would want to work there. Much of what DeGarmo is talking about can be seen at Studios' new



Perkins+Will's own office in Minneapolis has break-out pods and casual meeting areas.

headquarters for Time Inc. on six large floors of Brookfield Place in downtown Manhattan, housing 3,000 employees across 24 brands (or "magazines" as they used to be known). The old Time-Life-Fortune offices were designed to impress visitors with their weighty significance; the new design by Studios' Joshua Rider projects a much more engaging and up-to-date image, with a glass-walled reception area that looks out on the test kitchen and video control room. What were originally 100,000-square-foot trading floors in the 1980s complex now are bisected by "boulevards" for circulation and broken into manageable "neighborhoods" of dozens, not hundreds, of desks. There are lounges and snack stations on every floor, and a large cafeteria but no formal dining room, and even as august a personality as the managing editor of *Time* occupies a glass-walled 120-square-foot interior office that in the old *Time*—or *Newsweek* in my day—would have been considered adequate for a junior researcher.

For the record, Katharine Graham kept the private offices in the 1980s, though they were radically altered in the 21st century. The office of the future will serve many purposes—as a corporate branding statement, multimedia hub, fitness center, think tank, and playroom—but its function as private refuge and status symbol are long gone. Driven by technology, the ruthless economics of globalization, and the delicate balance between the need for squeezing 12-hour days out of employees and keeping them alive and productive, the workplace will no doubt change as much in the next 25 years as it has in the past. Architects—who, after all, inhabit these spaces themselves—are leading the way. ■

Jerry Adler is a former writer and editor at Newsweek and the author of High Rise, a book about the construction of a skyscraper in New York.

Vacheron Constantin 2 | Geneva | Bernard Tschumi Architects

TIME WARP

Bernard Tschumi expands on his immaculately designed headquarters for a prestigious watchmaker.

BY SUZANNE STEPHENS

PHOTOGRAPHY BY PETER MAUSS/ESTO





Adding on to a successful work of architecture is hard enough. It can be even harder if you designed the original project yourself. How do you make a new, distinctive statement that doesn't overwhelm the first? Bernard Tschumi, who keeps offices in New York and Paris, faced this problem with his recent commission to provide a 110,000-square-foot addition to his Vacheron Constantin Headquarters and Watch Factory in Geneva (RECORD, June 2005, page 99).

The architect's original curved stainless-steel building, completed about 10 years ago, rises elegantly above the industrial park at Plan-les-Ouates on the outskirts of the city—a talisman of the 260-year-old business so effective that the management once again turned to Tschumi when it came time to expand. The company's CEO, Juan-Carlos Torres, just said to the architect, "I'm in love with the original building—don't compete with it." Since Geneva is the home to such Vacheron rivals as Rolex, Patek Philippe, and Piaget, Torres wanted to make sure the architecture retained its singular image.

For his earlier commission, Tschumi designed a 130,000-square-foot, four-story building with executive offices for 90 and an attached factory for 80. This time, he needed to provide offices and workshops for 375 employees, along with dining facilities for both buildings and additional parking.

With the new building, the architect responds to his first scheme by gracefully riffing on its vocabulary of materials and form—such as the perforated stainless-steel cladding that curves around the headquarters—without replicating or dominating the original.

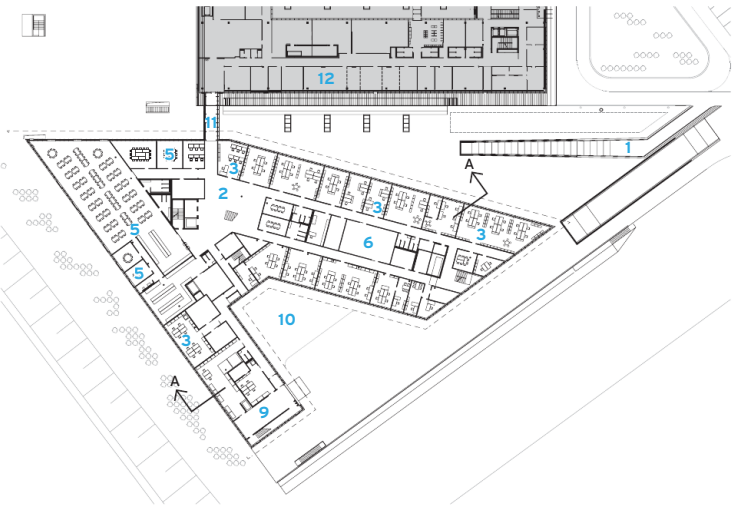
Yet the footprint of Vacheron 2 varies dramatically from its predecessor: it takes on the form of an irregular V in plan, determined partially by the external roadways that bound the seven-acre site. At one point toward the rear, where the



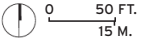
THE GLEAMING Perforated stainless steel clads both the original four-story Vacheron building and its neighboring two-level expansion (left). Between the two, a glazed shed covers a stairway/ramp angling down to a below-grade entrance and changing rooms for employees. A driveway in front of the two arms of the expansion (above) leads down to the garage.



CRANKED GEOMETRIES The boundaries of the site determine the addition's distorted-V plan (left). Inside, a central atrium, topped by a circular skylight, links the three levels via an angular stair (opposite, top). On the second level, the curved end of one arm of the V creates an unusual space lined with cherrywood for informal gatherings (opposite, bottom).



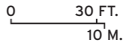
GROUND-FLOOR PLAN



UPPER-LEVEL PLAN



SECTION A - A



- | | | |
|----------------|---------------|---------------------------|
| 1 ENTRANCE | 5 DINING | 9 DELIVERY |
| 2 LOBBY/ATRIUM | 6 STORAGE | 10 OPEN COURT |
| 3 OFFICE | 7 LOCKER ROOM | 11 LINK TO FIRST BUILDING |
| 4 PRODUCTION | 8 MEETING | 12 VACHERON 2005 |

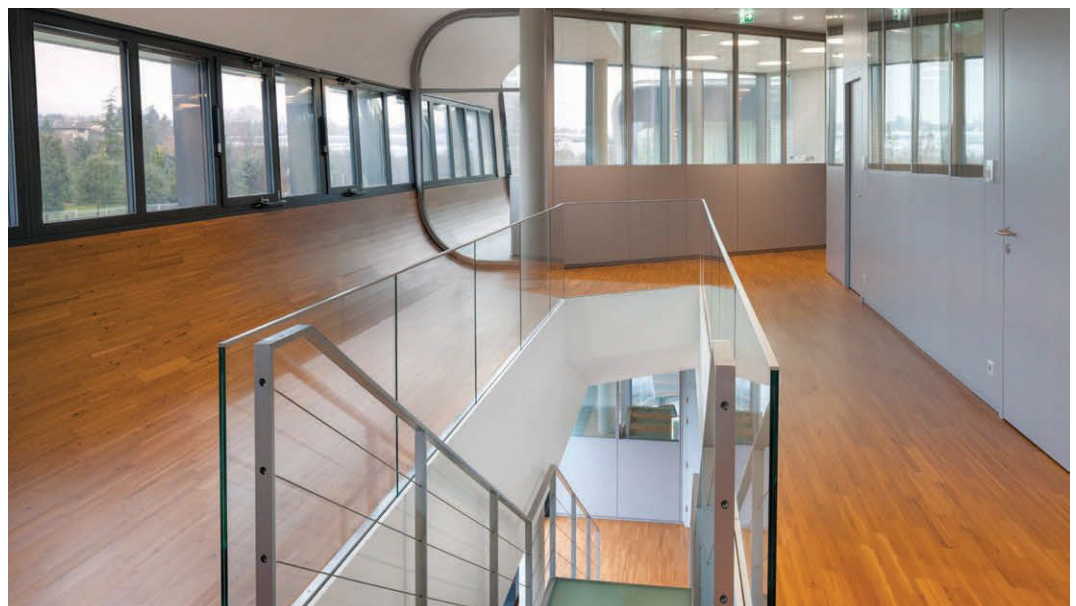
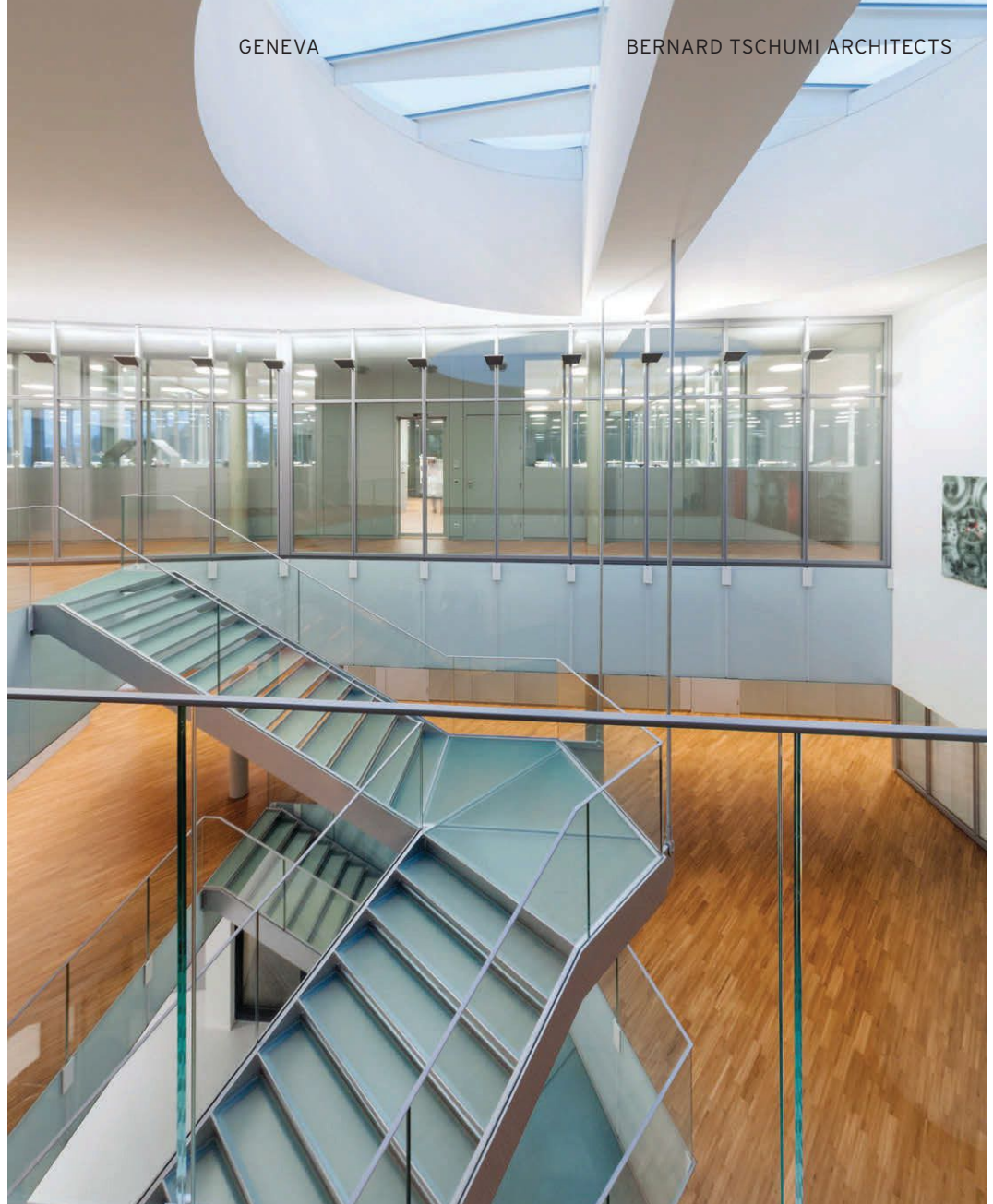
two buildings almost touch, Tschumi connects them with a glazed link.

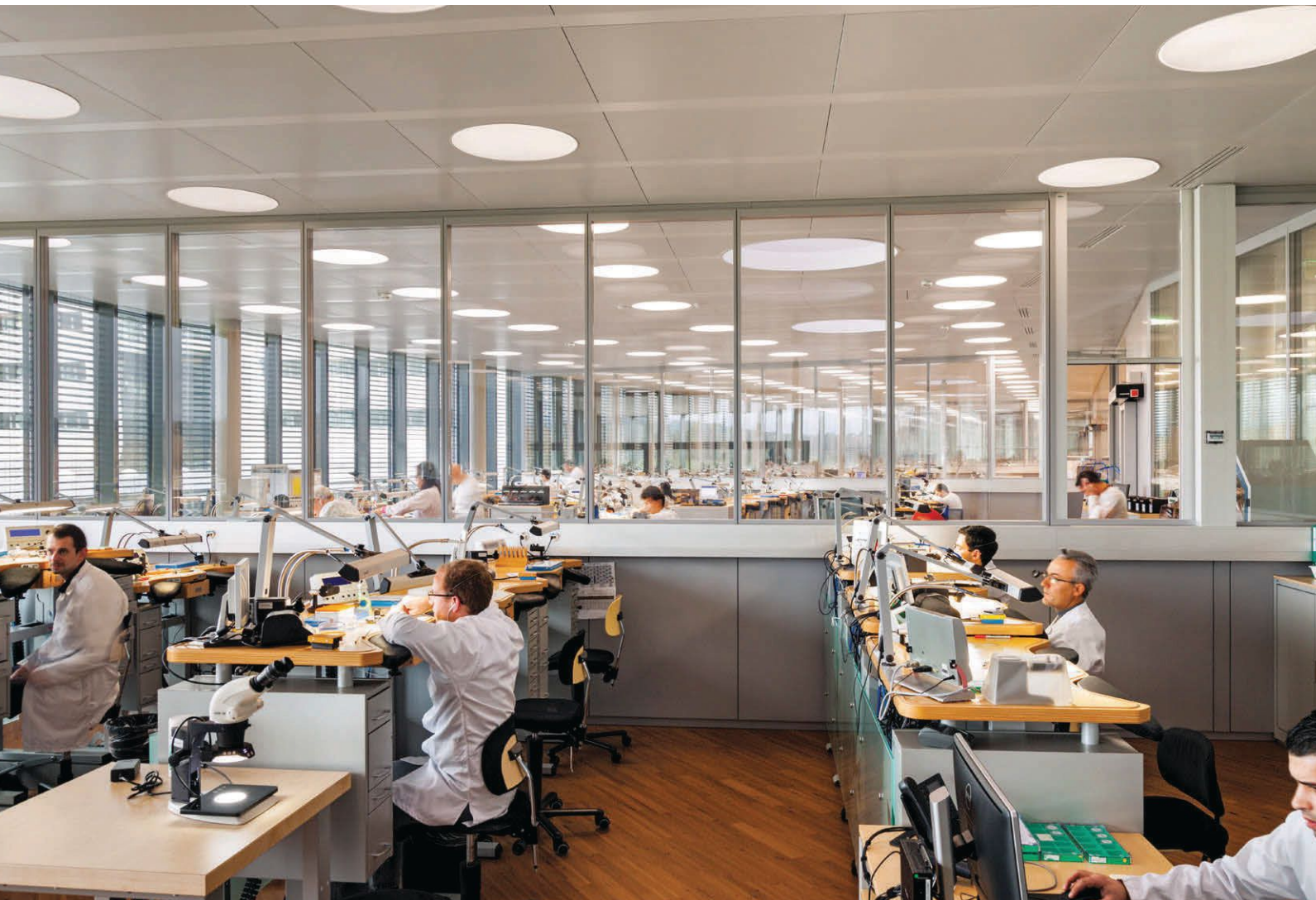
While the V shape creates a number of acute angles, Tschumi conceals the sharpness along the front of the complex—where the two arms of the new structure jut forth—by wrapping those wings, on the second level, with bull-nosed, perforated stainless-steel hoods. This formal gesture, echoing the contours of the original Vacheron, effectively unites the old and the new for those entering the gate to the complex.

On a lawn between the older structure and its addition, Tschumi has placed an elongated glazed shed covering a stepped entrance ramp that angles down to the poured-concrete underground level. Here, the watchmakers arrive each day and change into lab coats and special shoes next to parking for workers' cars and bikes.

Trucks delivering materials and picking up goods stop at an open court in the notch between the two arms of the V. One arm even allows trucks to roll inside for protected unpacking and loading. While fewer than 30,000 watches a year are made by Vacheron, they range in price from \$13,000 to \$242,000, which requires a vigilance against theft. A security firm reviewed Tschumi's plans; following the firm's recommendations, the team placed freestanding poured-in-place-concrete walls just inside the truck loading bay—barely visible behind the glass window walls—to protect against the possibility of rogue trucks' ramming through the building. Offices occupy the other arm at ground level, while at the back of the V—where both wings are joined—the cafeteria and dining rooms open out to a lawn.

At the core of the building, at the juncture of the two arms, Tschumi has carved out an atrium with a cranked stairwell topped by a large skylight. This lobby space not only provides added top light but helps unite the two levels with the one below ground. Tschumi found this formal strategy helped resolve the meeting of its two arms, while acting as an orientation point for those unfamiliar with the plan. The interior effect does not have the gracefulness of the exterior swerves: there is a certain dissonance in the way the angular stairs lurch up to the circular oculus, even with the





credits

ARCHITECTS: Bernard Tschumi Architects (New York), Bernard Tschumi Urbanistes Architectes (Paris) – Bernard Tschumi, principal; Paul-Arthur Heller, Clinton Peterson, Nicolas Grille, Pierre-Yves Kuhn, Joel Rutten (New York team); Véronique Descharrières, Rémy Cointet, Emmanuel Desmazières (Paris team)

ASSOCIATE ARCHITECT: Glauco Lombardi

ENGINEERS: MDI (structural); Amstein + Walthert Genève (m/e/p); Scherler (electrical)

CONSULTANTS: BCS (facade); Securiconcept (worker safety and accessibility)

CLIENT: Vacheron Constantin; Compagnie Financière Richemont

SIZE: 110,000 square feet

COST: withheld

COMPLETION DATE: October 2015

SOURCES

PRECAST CONCRETE COLUMNS, MASONRY: Rampini
METAL PANELS, METAL AND GLASS CURTAIN WALL, RAINSCREEN, GLASS, SKYLIGHTS: Hevron

ACOUSTICAL CEILINGS: Trisax
PAINTS AND STAINS: Léman Group
LIGHTING: Badel

ENERGY MANAGEMENT SYSTEM AND VENTILATION EQUIPMENT: Tech-Building

COMING INTO LIGHT A stepped concrete ramp covered by structural glass fins and panels ascends from the garage to the front of the complex (right). Workshops (opposite, top) have skylights and glimpses of the Alps. The ground-floor dining facility (opposite, bottom) opens out onto a lawn, while its interior defers to nature via American cherrywood ceilings and larch wood floors.

finely crafted detailing of the steel framing for the translucent glass treads and clear glass balustrades.

The upper level offers dramatic views of the Alps for the watchmakers, who work at chin-high desks in air-locked dust-free and humidity-controlled studios. To provide employees with the soft, even illumination required for their painstaking tasks, the architects inserted circular skylights alternating with smaller circular ceiling fixtures that float above the work stations. Glazed interior walls also help transmit light.

Because of the expansive use of glass, Tschumi installed a movable louvered blind system. In the older structure, he placed the adjustable blinds between an outer panel of glass and interior double-layered glass, which meant the outer panel had to be removed for cleaning the glass inside. In the new building, the architect installed black aluminum blinds outside, which still cut solar gain while nicely articulating the exterior surfaces.

Other stalwart features of sustainable buildings, such as operable windows and natural ventilation, are missing, in large part because the workshops must adhere to strict temperature and humidity requirements. But the design team did install 15,000 square feet of solar panels on the roof, which provides about 10 percent of the building's energy needs.

Seeing the watchmakers carefully assemble their ornate timepieces—one workshop is named Studio des Grandes Complications—in these calm, clean aeries, you note that the abstract, sleek, and precisely detailed architecture echoes the qualities of the watches created within. Tschumi has reinvented his own vocabulary of curved, glinting metallic forms that encase a concrete structure. While relying on the architectural DNA of the first building, Tschumi's second take gives it a different twist. It brings something familiar but entirely new to the Vacheron campus. ■



EDP Headquarters | Lisbon | Aires Mateus and Associates

RAMP IT UP

Two office towers energize Lisbon's waterfront and embrace the changing workplace.

BY ANNA MARTINS

PHOTOGRAPHY BY YOUNES BOUNHAR





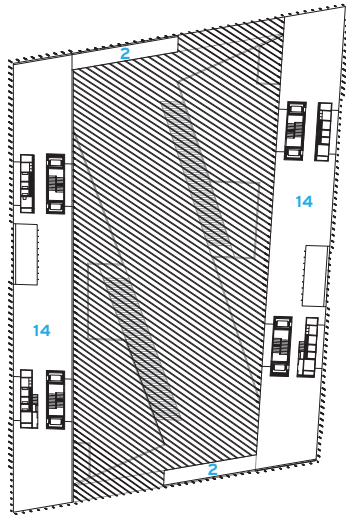
Already a landmark on Lisbon's skyline, the new headquarters of Energias de Portugal (EDP) was born out of the company's desire to achieve certain goals: increased efficiency, higher productivity, and improved communication between its employees and the public. With 16 offices scattered around the Portuguese capital, the 40-year old energy company decided to concentrate administrative departments into a single building in Aterro da Boavista, a burgeoning area of the city's once-industrial riverfront.

In 2008, EDP launched an invited competition, not only for the architectural design of the headquarters but also for the master plan of its surroundings. While the atelier of Carrilho da Graça won the planning commission, Lisbon-based architects and brothers Francisco and Manuel Aires Mateus developed the winning proposal for the architectural design. Their solution thoughtfully addresses the brief as well as responding to the riverfront location as it continues to develop housing and tourism and restore industrial buildings.

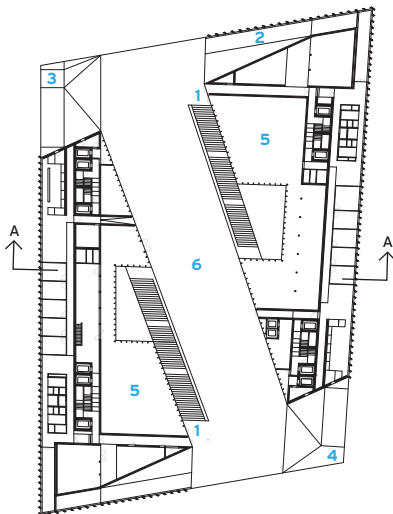
Manuel explains the reasoning behind the project as if it could not have been done any other way. First, to avoid blocking the connection to the city on the north and the river on the south, he and Francisco placed all the large programmatic elements underground, including parking, the entrance lobby, and an auditorium. The workspaces are grouped in two slender eight-story towers. To emphasize the sense of flow, transparency, and continuity at ground level, the team created a public square shaded by a lattice-like structure linking the east and west towers. Pedestrian bridges gently lift above the square to connect the towers on the site's southern and northern edges. Finally, the desire for open, flexible offices, with light and views for EDP's corporate and administrative departments, led the architects to create a glass facade



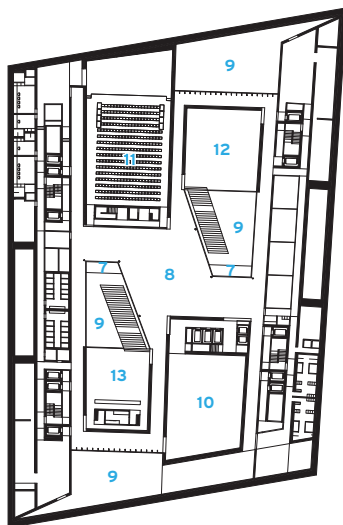
SEASIDE VIEW Two glazed ramps at the front and rear of the EDP building link the office's twin towers (left). The complex faces south onto the waterfront, with the city of Lisbon rising behind it (above).



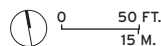
LEVEL TWO



GROUND LEVEL

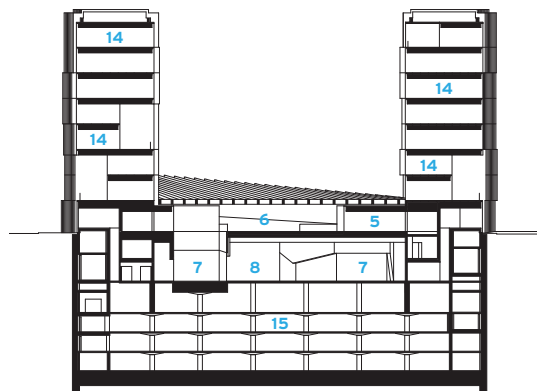


MAIN LEVEL -2

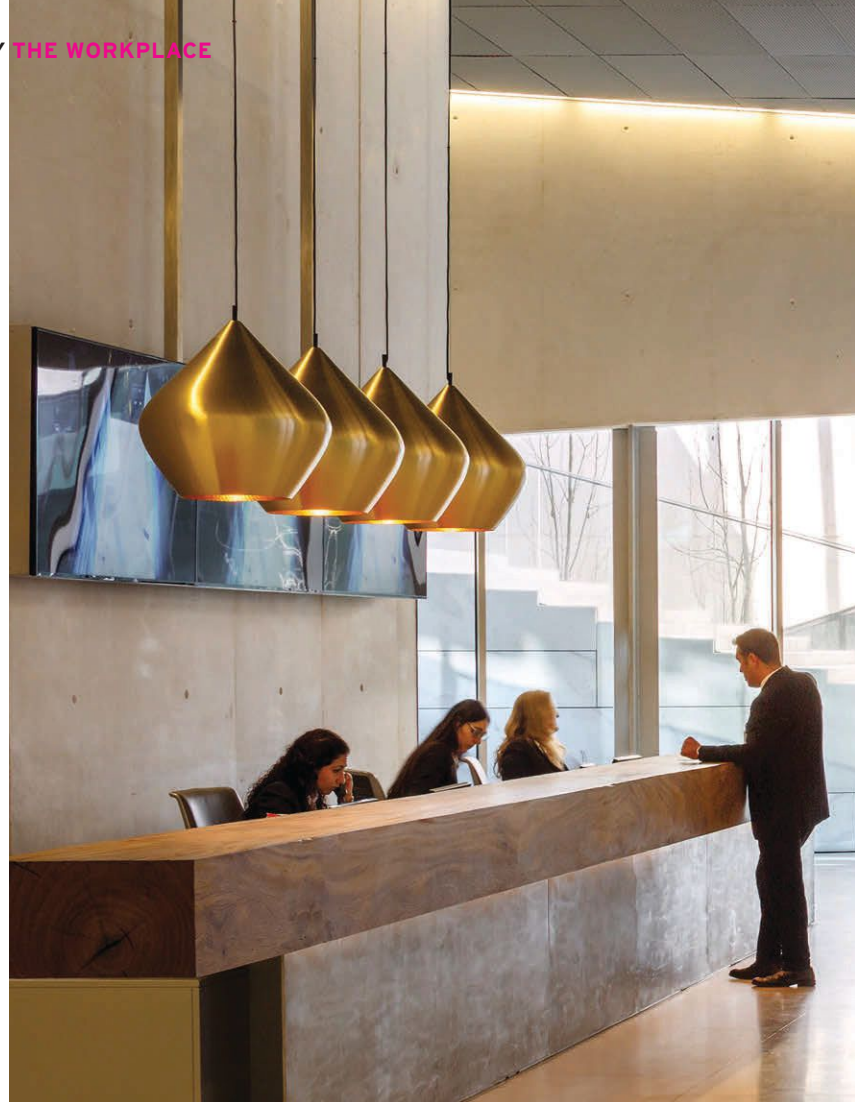


DOWN UNDER
Visitors enter the complex by taking the stairs down to a lower-level reception area and lobby, where other services also are located (right). The upper levels of both towers are devoted to open-plan offices (opposite, bottom).

- 1 ENTRANCE TO LOWER-LEVEL LOBBY
- 2 GLAZED RAMP
- 3 PARKING ENTRANCE
- 4 PARKING EXIT
- 5 COMMERCIAL SPACE
- 6 PLAZA
- 7 VESTIBULE
- 8 LOBBY
- 9 GARDEN
- 10 MEETING
- 11 AUDITORIUM
- 12 SHOP
- 13 CAFÉ
- 14 OPEN OFFICE
- 15 PARKING



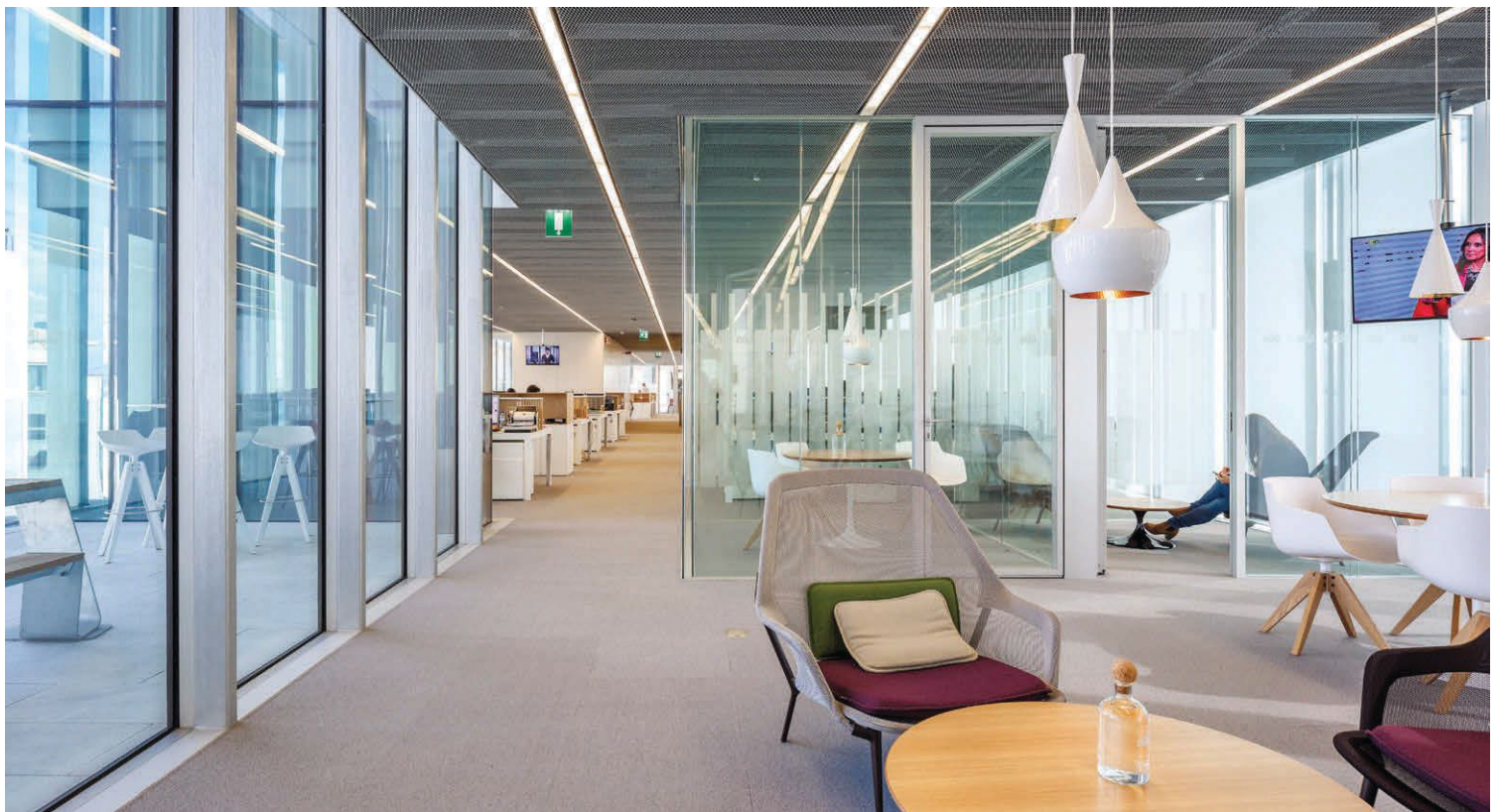
SECTION A - A

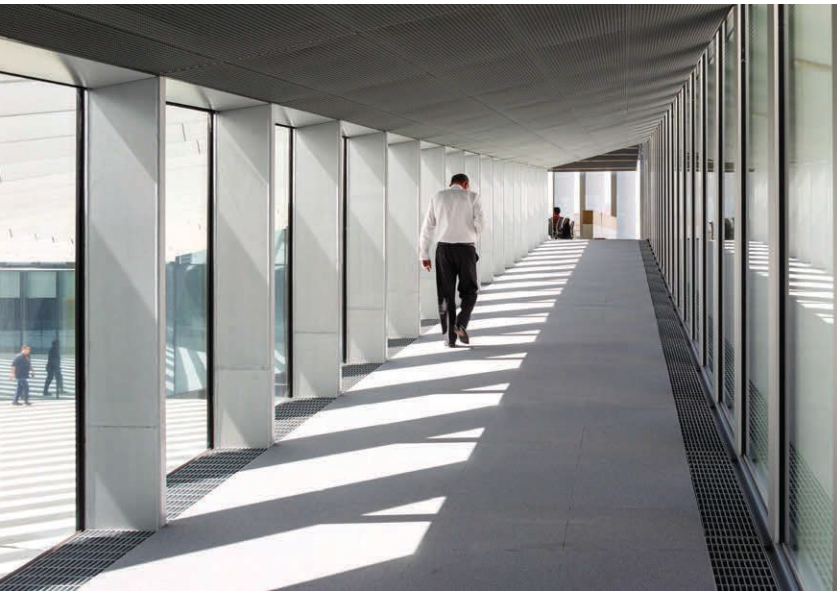


supported by a complex structure of steel columns coated in white prefabricated GRC elements. These vertical finlike forms both shade the interior and lend the building its distinctive, ever-changing appearance.

The architectural design shows an apparently effortless rationality underpinning the building's steel and concrete structure. Yet the rigorous calculations were as much cultural as mathematical. In order to reaffirm EDP's profile as a supporter of the arts, the company invited several internationally renowned architects and designers to execute the interiors. Marcio Kogan of Studio MK27 in São Paulo was responsible for the reception area as well as the workspaces; London-based Universal Design Studio took on the communications lounge, to be completed in the future; Shanghai-based Neri & Hu designed the business lounge, now under construction; British designer Jasper Morrison is commissioned to do the restaurant soon to be built; and Miguel Vieira Baptista of Lisbon masterminded the foyer cafeteria, already open to the public. In addition EDP has placed artworks throughout the public areas.

Employees and visitors arriving on foot descend to the entrance foyer via two sym-





metrical staircases located in the plaza beside each tower. There they find the reception area, the auditorium, a public cafeteria, meeting rooms, a gym, and—eventually—the business and communications lounges. From the first to the seventh story, the towers' flexible open plan spurred MK27 to provide modular furniture that can easily be rearranged according to the needs of each department. In some cases, rows of open desks are divided by low storage furniture; in others, larger workstations allow impromptu meetings. Private offices for department heads, meeting rooms, and smaller rooms for more sensitive conversations also appear on every floor. Yet the main characteristic of EDP's new interpretation of workspace gives center stage to areas that were once hidden at the back of the offices. Pantries, lounge areas, work cafés, and the outdoor balconies—where employees can take a break, confer in groups, or conduct meetings—have received prominent locations. Standing desks, and picnic-style tables, as well as lounge chairs, are part of the office landscape.

While not yet “at the level of businesses like Google,” as EDP's real-estate administrator and engineer José Santos Pires puts it, the company had a very clear goal of changing its own office culture through the reorganization of the workplace. To help the staff break away from rigid policies that previously determined in-office behavior, the design offers myriad new informal settings. Leaving the desk for a midmorning snack or working on the terrace encourages increased communication among employees. Surprisingly, noise levels due to office chatter have dramatically decreased in response to the open-space environment.

Workplace organization had to be adapted to EDP's particular needs and objectives as well as taking into account its conservative past, since the management feared radical changes would undermine efficiency and productivity. Therefore, the top floors of each tower, home to the company's executive, general, and supervisory boards, abandon the open plan. Instead, large private offices, sumptuously furnished, and lounge areas—plus generously sized board meeting rooms—reflect ties to the old ways of doing things.

Because of this incremental approach, employees have already adapted with relative ease to the new environment. Now, as team leaders actively encourage staff to take advantage of the wide range of task spaces available, the architecture and design of its numerous facilities can truly begin to contribute to the company's aspirations. ■

credits

ARCHITECT: Aires Mateus and Associates
— Manuel Aires Mateus and Francisco Aires Mateus, principals; Francisco Caseiro, Ana Rita Rosa, Pedro Ribeiro, project leaders; Marian Barbosa Mateus, Vania Fernandes, Paolo Agostini, Francesca Lupo, Marco Campolongo, João Ortigão Ramos, project team

ENGINEER: AFA Consult (structural, m/e/p)

GENERAL CONTRACTORS: Mota Engil, HCI

CLIENT: Energias de Portugal

SIZE: 497,530 square feet

COST: \$61.8 million

COMPLETION DATE: November 2015

SOURCES

STEEL FRAMES, CURTAIN WALL: Martifier

GLASS: Saint-Gobain Glass

PRECAST CONCRETE: Mota-Engil Prefabricados

CARPETING: Decoresse, Vorwerk

MOISTURE BARRIER: Mapei Basf

METAL DOORS: Dictator

ACOUSTICAL CEILINGS: Castelhana-Ferreira

DEMOUNTABLE PARTITIONS: Divilux

LIGHTING: Flos

LIGHT AND SHADOW

Covered bridges look out onto a central plaza between the two shafts (opposite, top). A double-height balcony on the east tower offers views of the Lisbon harbor (opposite, bottom). The sun creates dramatic stripes of light and shadow through the latticework over the central plaza (this page).





Pinterest HQ | San Francisco | IwamotoScott Architecture

PIN-WORTHY

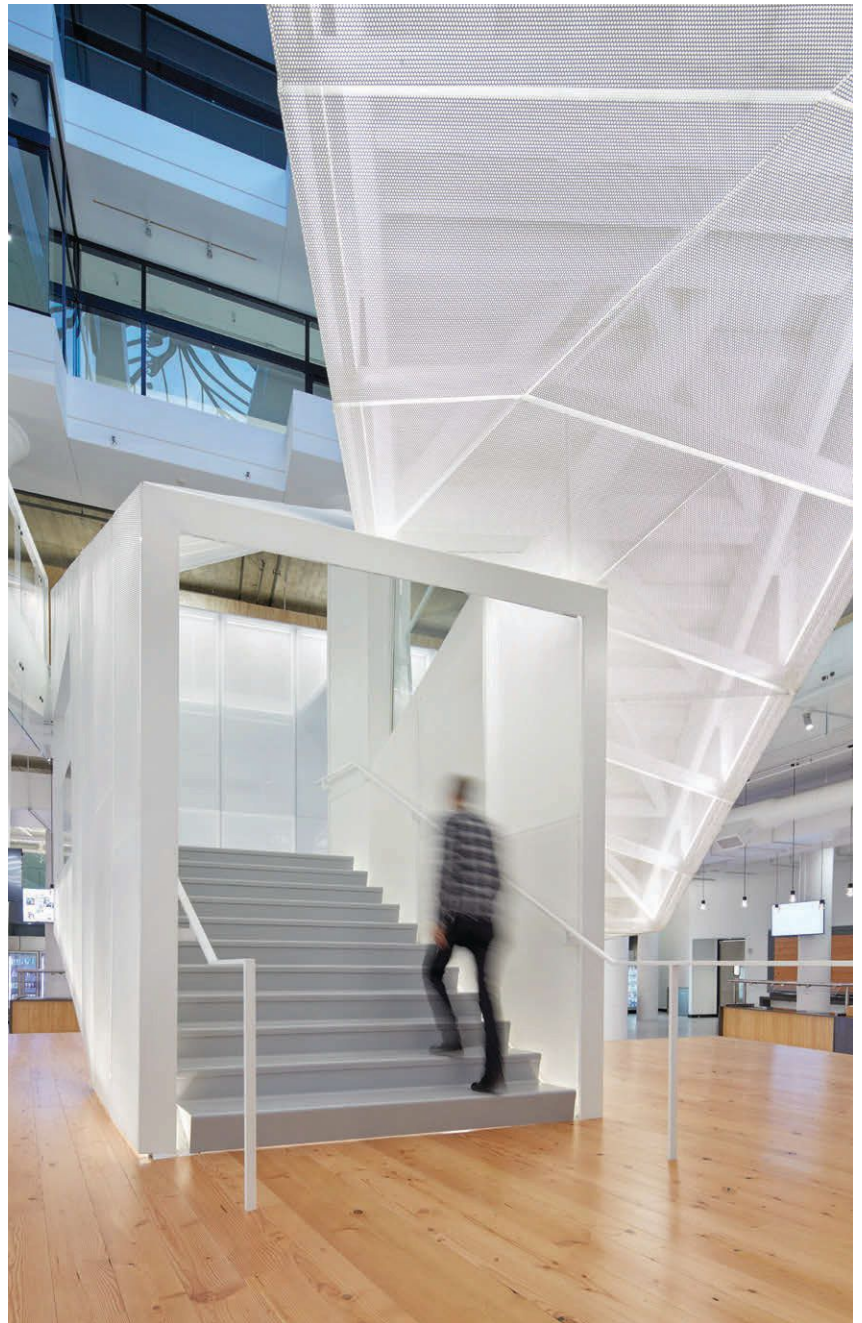
A technology company with design roots refines its ideal workspace.

BY LYDIA LEE

PHOTOGRAPHY BY BRUCE DAMONTE

How does a startup still feel cozy and cohesive when it has ballooned into an 800-person organization? Many architects in the San Francisco Bay Area have been enlisted by tech companies to foster a sense of communal purpose—that all-hands-on-deck excitement—within corporate-scale digs. A new office for the design-focused company Pinterest, which allows users to create and share digital inspiration boards, is a refined example of how to steer people toward each other.

“Pinterest is about a grid that structures all the ideas and images, and architecture provides the grid in building,” says cofounder and chief creative officer Evan Sharp, who studied architecture at Columbia. “We wanted to set up the right architecture to shape circulation and the

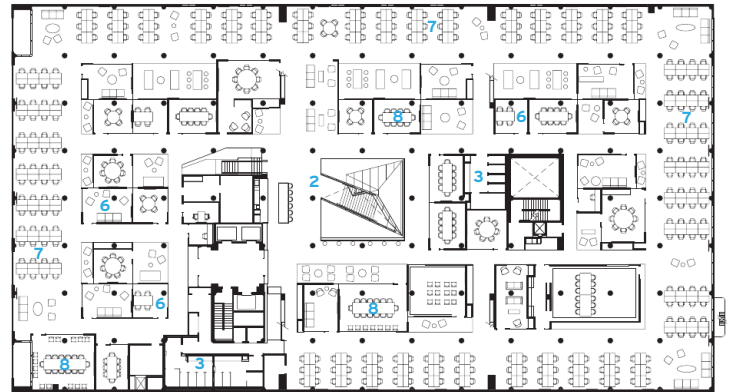


qualities of the working environment to reinforce collaborative behavior.”

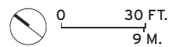
It’s the second time that Pinterest has tackled the design of a workspace. Its first headquarters, which it continues to occupy, is just down the street from the new offices in San Francisco’s South of Market neighborhood. For this expansion, it tapped local firm IwamotoScott Architecture to design roughly 100,000 square feet of space, taking up the lion’s share of an existing four-story building. The small design firm, led by Lisa Iwamoto and Craig Scott, has other notable offices to its credit, including Bloomberg’s Tech Hub (RECORD, September 2015, page 88); in this case, they collaborated with larger firm Brereton Architects. The new office brings Pinterest’s software engineering group under one roof and is designed to accommodate up to 700 staffers.



LIGHT STEP
Four tiers of office bleachers provide a casual seating area around the luminous stairwell (opposite), itself made from two layers of steel mesh in different grades (above). The office is housed within a 1911 John Deere tractor factory building (left).



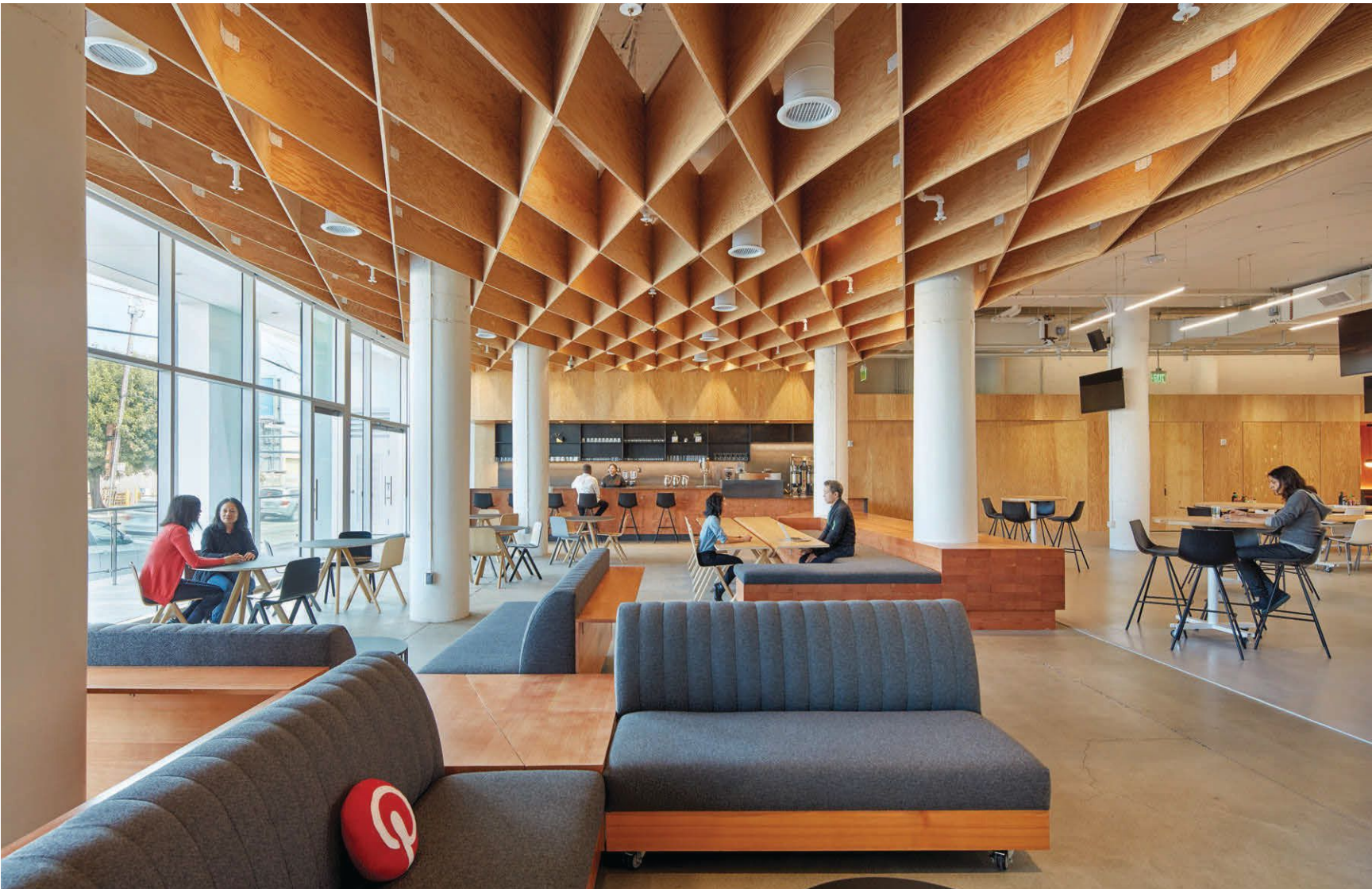
GROUND-FLOOR PLAN



SECOND-FLOOR PLAN

- 1 ENTRANCE
- 2 CENTRAL STAIR
- 3 RESTROOM

- 4 DINING HALL
- 5 RECEPTION AREA
- 6 MEETING
- 7 OPEN OFFICE
- 8 CONFERENCE



For Pinterest and other tech startups, one of the most desirable attributes of a building is big, open floor plates, the better to accommodate more people on one floor. The building they selected, originally a John Deere tractor factory built in 1911, had 30,000-square-foot floors, good-sized bays defined by concrete mushroom columns, and a large central atrium. Unfortunately, the atrium only came down to the second floor, and the ground floor was oppressively dark.

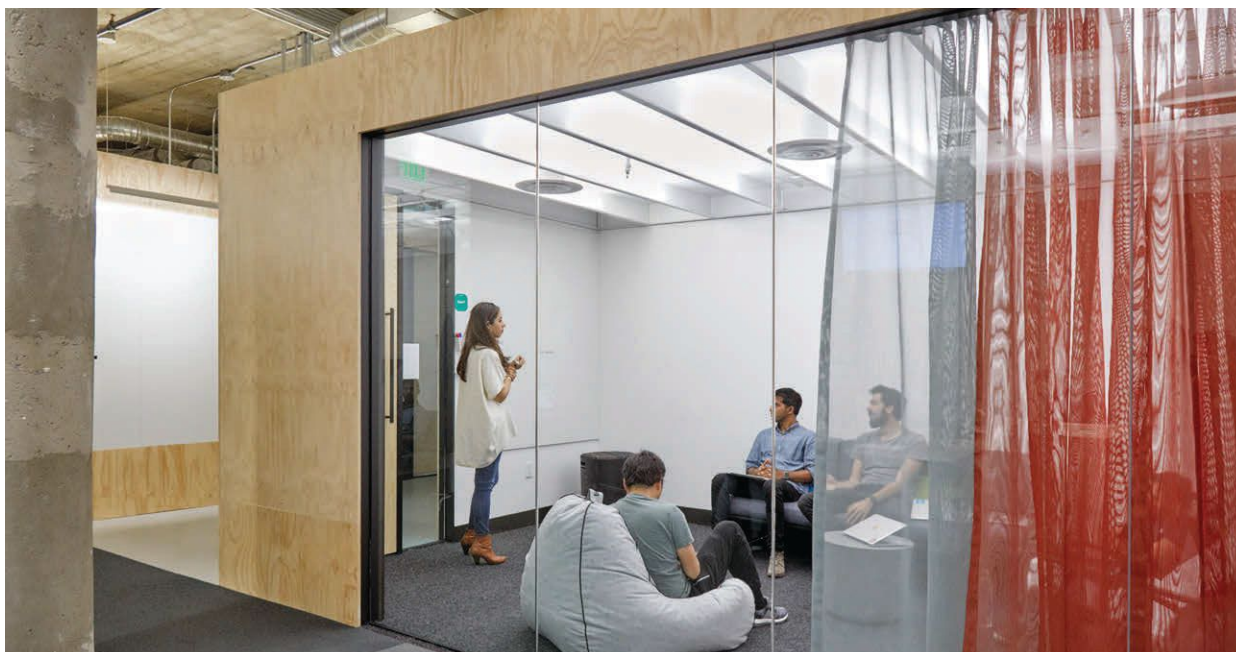
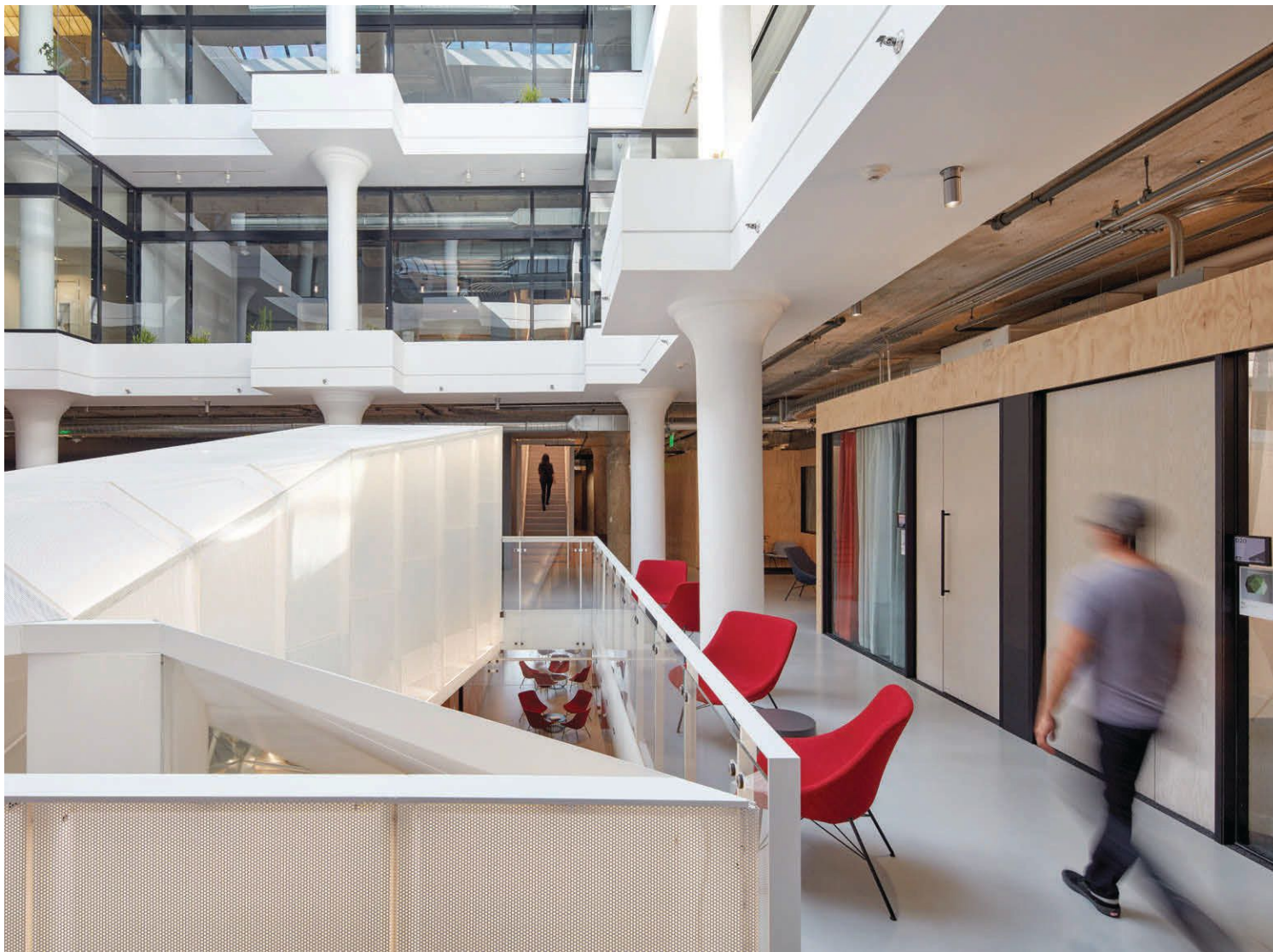
As part of the renovation, the design team extended the atrium the extra distance to the ground level to bring in much-wanted natural light. They took delightful advantage of the opportunity to add a sculptural stairwell in the center that connects the ground floor to the second level. Clad in white steel mesh and glowing with daylight, the luminous portal is the focal point. It is also replete with interesting angles; the architects designed the two stair runs to cross slightly to create an abstract representation of knitting (a favorite term in the Pinterest lexicon, used to describe its company culture and how various disciplines intersect). Smaller versions of the stair, wrapped in the same perforated steel but outside the atrium, connect the other floors farther up.

The now-bright ground floor is devoted primarily to social areas: spacious front and back lounges flow into a large open dining hall,

which doubles as a forum for all-hands meetings. On the three floors above, the work areas are arranged strategically in circles around the atrium, in a natural progression of public to private. The most personal spaces, the individual workstations, are located at the periphery of the building, by the windows; the next ring contains the team meeting rooms, which are assigned to groups for their specific use and cannot be booked; and, closest to the atrium, are the reservable conference rooms.

To create a collegial sense of intimacy, adjustable-height desks are shorter than average and tightly packed. A “library” is outfitted with carrels, casual lounges, and small meeting rooms to accommodate different work styles and situations. Reflecting the current trend in office design, there is a generous allowance of meeting rooms within the open-plan office. They are arranged in a checkerboard fashion, alternating enclosed spaces with open lounges for a more relaxed feel. Eighteen-inch-wide glass panels at the corners where the rooms touch provide a glimpse of what is going on.

MASS APPEAL Flip-up tables in the dining hall are designed to be stored away behind the plywood panels, so the room can accommodate all-hands meetings and other large events (opposite). In the reception area, deep plywood slats in a diamond grid form a contemporary version of a coffered ceiling (above).



WORK IT
Pinterest takes up the lion's share of the four-story building (above). Meeting rooms are arranged in a checkerboard fashion, alternating enclosed spaces (left) with open lounges (opposite, right). At the corners, 18-inch-wide glass panels where the rooms touch provide a glimpse into other spaces (opposite, left).



“There’s no FOMO [fear of missing out],” says Iwamoto, mindful of Pinterest’s youthful demographic.

The office is finished with extensive expanses of that DIY favorite, plywood, used in some ingenious ways. The reception area’s ceiling treatment is sharp: deep plywood slats in a diamond grid form a contemporary version of a coffered ceiling. Walls of black-stained plywood and gypsum board painted dark gray, in addition to polished-concrete floors and carpeting in varying shades of gray, create a calm backdrop for the work at hand. “It’s a simple, clean aesthetic, but not minimalist,” says Iwamoto. “We wanted to create a richness through materials, spatial and volumetric elements, and architectural detailing, instead of using appliqué or surface treatments.”

Indeed, in keeping with Pinterest’s mission to promote creativity, the space is designed to be a plain canvas that the occupants can make their own over time. The staff has a tradition of “makeathons” and have yarn-bombed structural columns and created art installations in their other offices. “It’s important for employees to feel ownership. It shouldn’t feel like you’re renting someone else’s space—you should be able to paint the walls,” says Sharp. And, in this case, also turn the stairwell different hues by putting colored lenses on the skylight, which employees have already had the fun of doing. ■

credits

ARCHITECT: IwamotoScott Architecture

EXECUTIVE ARCHITECT: Brereton Architects – Donna Kim Cook, principal in charge

ENGINEERS: Amit Wadhwa & Associates (m/e/p); Forell/Elsesser Engineers (structural)

CONSULTANTS: Niteo Lighting (lighting); Charles M. Salter Associates (acoustical); The Fire Consultants (code)

GENERAL CONTRACTOR: Novo Construction

CLIENT: Pinterest

SIZE: 100,000 square feet

COST: withheld

COMPLETION DATE: December 2015

SOURCES

METAL PANELS (STAIR): McNichols

ACOUSTICAL CEILINGS: Polymax, Ecoustics

CUSTOM WOODWORK: Mission Bell, Complete Millwork

SOLID SURFACING: Caesarstone, DuPont, Bedrosian

DOWNLIGHTS: Lucifer

INTERIOR AMBIENT LIGHTING: A Light

LIGHTING CONTROLS: Crestron

CARPET: Interface

The Edge | Amsterdam | PLP Architecture

THE NEXT WAVE

A SMART BUILDING RAISES THE BAR FOR TECHNOLOGY, INNOVATION, AND SUSTAINABILITY

BY TRACY METZ





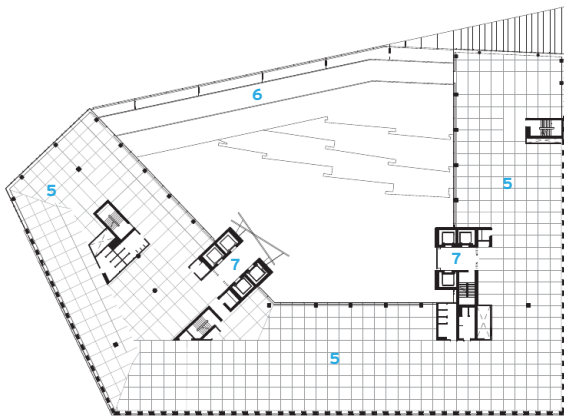
CLEAR CUT A paradigm of 21st-century transparency, The Edge was designed to advance workplace standards with an energy-neutral building that not only lowers the cost and environmental impact of power consumption but also enhances the occupant experience.

Amsterdam's Zuidas financial district is distinguished by the work of an impressive roster of architects, such as Toyo Ito, Rafael Viñoly, and Pei Cobb Freed, all of whose designs fit into a traditionally corporate atmosphere. But a new office building, completed in 2015, has a different agenda: The Edge, by developer OVG and PLP Architects, applies both sustainability and state-of-the-art digital technology to the creation of an innovative and, above all, congenial workplace. This multi-tenant, 15-story concrete structure is energy-neutral and was awarded a BREEAM "Outstanding" new-construction certification with a score of 98.4 percent, the highest since the UK-based Building Research Establishment began its Environmental Assessment Method program in 1990. It was also dubbed "possibly the smartest building on the planet" by Bloomberg BusinessWeek. But sustainability in itself is not interesting, says architect Ron Bakker of the London-based firm PLP. "What people respond to here is the connectedness between the building and the occupants who work here. The building is now part of their team."

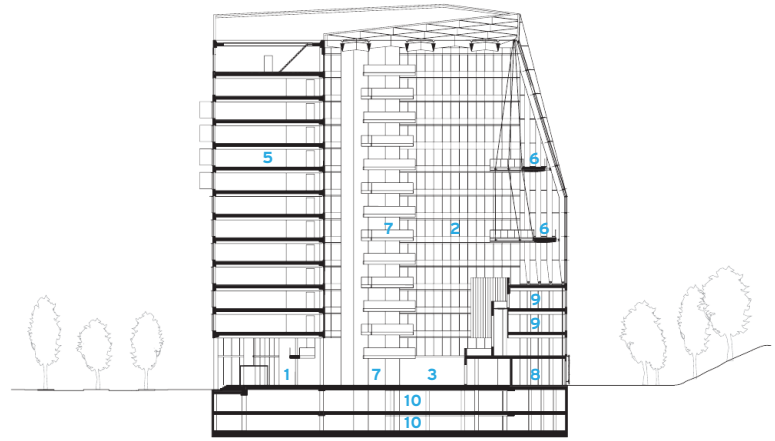
The 430,000-square-foot building's north-facing atrium is a far cry from the typical marble lobby. The soaring volume, filled with daylight even on gray days, offers welcoming amenities such as a coffee bar cum informal meeting area on broad terraced steps, a restaurant on the second floor, and a generous internal terrace on the fourth floor with a long communal table, armchairs, and tall, green tuxedo-style settees for private conversations. Everywhere you look during a workday there is



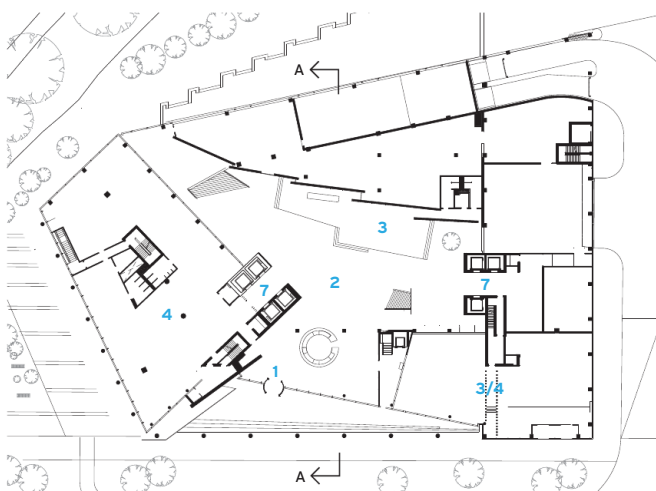
LIGHT MOTIFS The building's atrium faces north to benefit from indirect sun (above). Inside (opposite), the soaring volume shares its ample daylight with the surrounding glazed offices and elevator lobbies (which face it with fritted glass balconies).



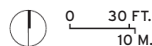
SIXTH FLOOR PLAN



SECTION A - A



GROUND FLOOR PLAN



- | | |
|-------------------|----------------|
| 1 ENTRANCE | 7 ELEVATOR |
| 2 ATRIUM | 8 PRESENTATION |
| 3 CAFÉ | 9 MEETING |
| 4 CONFERENCE AREA | 10 PARKING |
| 5 OFFICE | |
| 6 BRIDGE | |





some kind of interaction going on. Even the elevator lobbies above ground level have glazed balconies overlooking the atrium. Bakker compares the atrium to a campfire or, in more modern terms, a “social condenser” or nucleus. “How and where we work is changing,” he says.

The building’s client and main tenant, Deloitte, occupying 60 percent of the space, was previously spread over a number of locations. The international accounting firm wanted to consolidate its Dutch operations in a smart building that would serve as a catalyst for the company’s transition into the digital age—but with the knowledge that only 25 percent of their employees are actually at a desk at any given moment. Another 10 percent are at in-house meetings; 35 percent are working from home; 10 percent are traveling; and 20 percent are at meetings with clients. Deloitte wanted working spaces that are flexible and social, as well as physically and virtually interconnected.

At The Edge—which has two underground parking levels and 1,100 workstations for the 2,800 employees of Deloitte and the five other tenants—there are no assigned desks. The digital and physical meet in a smartphone app, through which occupants can locate colleagues, reserve a room or desk, see a train schedule, and order healthy groceries from an in-house food shop. They can also manage the lighting and temperature of their work zone.

This is the one of the first buildings in the world to use a connected lighting system, where more than 6,000 LED fixtures—each with its own IP address and every second luminaire equipped with sensors—link to user smartphones through visible light technology and connect to the building’s IT network via Power-over-Ethernet (PoE) switches. The system senses daylight, ambient temperature, CO₂ levels, occupancy, and motion. In addition to potential energy savings, this technology provides data that improve building efficiency and management—for example, collecting information about which coffee machines need to be replenished and which are the popular restrooms.

Folded on the diagonal, the facade of the north-facing atrium comprises 70 percent glass, allowing the interior to benefit from indirect sunlight without overheating. The offices are located in a U-shaped block on the building’s east, south, and west sides, their large floor plates arranged around the atrium for maximum daylight penetration throughout. Striped with horizontal rows of solid aluminum-paneled spandrels,

credits

ARCHITECT: PLP Architecture – Ron Bakker, founding partner

ARCHITECT OF RECORD: OeverZaaijer

ENGINEERS: Van Rossum (structural); Deerns (m/e/p)

CONSULTANTS: Fokkema & Partners (interior design); C2N Bouwmanagement (sustainability); LBP Sight (building physics); Delta Vorm Groep (landscape design)

GENERAL CONTRACTOR: G&S Bouw

CLIENT: OVG Real Estate

SIZE: 430,000 square feet

COST: \$86 million

COMPLETION DATE: May 2015

SOURCES

FACADE: Rollocate (metal panels, glass curtain wall, solar panels)

GLASS ROOF AND SKYLIGHTS: Brakel Atmos

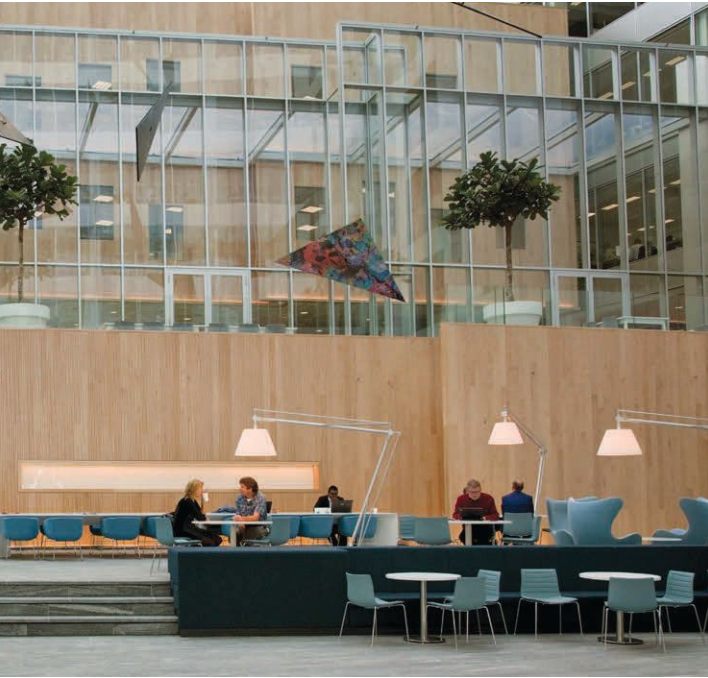
INTEGRATED BLINDS: M&N Projecten

LIGHTING: Philips (Power over Ethernet system); Axo, Flos, Secto, Diesel, Moooi, Hollands Licht (decorative)

BUILDING CONTROLS: Johnson Controls (energy management); Blinq Systems (mobile app)

WORKSTATIONS: Vitra, Fritz Hansen, B&B Italia, Arper, Hay, Ahrend

INTERIOR SURFACES: Maars Living Walls (green wall); Desso, LEOOX (carpet); Danskina (rug); Forbo (linoleum)



9 TO 5 Employees do not have assigned desks but do have views of the lively atrium (opposite, bottom). Within the atrium there is a terrace on the fourth level with a communal table and comfortable seating (opposite, left), a coffee bar cum informal meeting area at grade (above), and bridges that cut across the large space (right).

the east- and west-facing facades are composed of 45 percent glass balanced by 55 percent concrete, which provides thermal mass. Similarly, the south-facing facade is 40 percent glass but the concrete on that elevation is clad with photovoltaic panels. Electricity is also provided by 65,000 square feet of solar panels on the roof, as well as on rooftops at the University of Amsterdam, which partnered with OVG. The PVs supply the grid, offsetting any additional electricity The Edge might require.

The Edge is said to consume half the energy for cooling as a typical Dutch office building. According to Bakker, “The way the energy calculation works is that it measures the amount of energy used by the building (heating, cooling, and lighting) and balances this against the amount of energy generated.” The building also produces enough electricity to drive the pumps that circulate fresh air, as well as the hot and cold water from the groundwater aquifer 300 feet below the building. The fresh air is cooled, filtered, and dehumidified before being pumped into the offices. The spent air then transfers out through slits above the windowsills into the atrium, where it rises and is sucked out through grills at the top. Developer OVG claims that over a period of 10 years, The Edge will save 42 million kilograms of CO₂ as compared with a “normal” office building.

“While the physical building is finished,” says Bakker, “socially it is still developing.” The workplace is now shaped by layers of technology that alter how people interact with their environment. Architects are looking for ways to use these virtual frameworks to stimulate collaboration and social encounters. Says Bakker, “This is the new role of architecture.” ■



Leblon Office Building | Rio de Janeiro | Richard Meier & Partners

CONSCIOUS UNCOUPLING

Dividing a building in two increases daylighting and creates lush outdoor spaces.

BY TOM HENNIGAN

PHOTOGRAPHY BY ROLAND HALBE

It was while visiting Rio de Janeiro in 2007 to celebrate the 100th birthday of his friend Oscar Niemeyer that Richard Meier met the clients who would commission his first ever project in South America. Now, nine years later, with the completion of Leblon Offices, for Brazilian investment firm Vinci Partners, the Pritzker Prize-winning architect has delivered a sleek, sun-drenched building whose white aluminum-louvered facade perfectly captures the tony beachside ambience of its well-heeled Leblon neighborhood. At its rear, a concrete volume stands in dialogue with the best of Brazil's modernist tradition.

The major challenge for the design team was to maximize a tight site in a densely occupied part of Rio, home to some of the country's most expensive real estate, without sacrificing light. Many neighboring buildings, which only receive natural illumination through their front windows, are notorious for their gloomy rear interiors. The solution was to pull the building away from the site's back party wall, where there is a small service volume that houses the elevators and stairs. The clever move allows daylight to bathe the rear of the main building, making the 70,000 square feet of mostly open-office workspace significantly more attractive. It also creates two internal

courtyards on either side of a bridge that connects the seven-story building to the rear service component and gives it a permeable quality that captures the spirit of Rio's outdoor ethos.

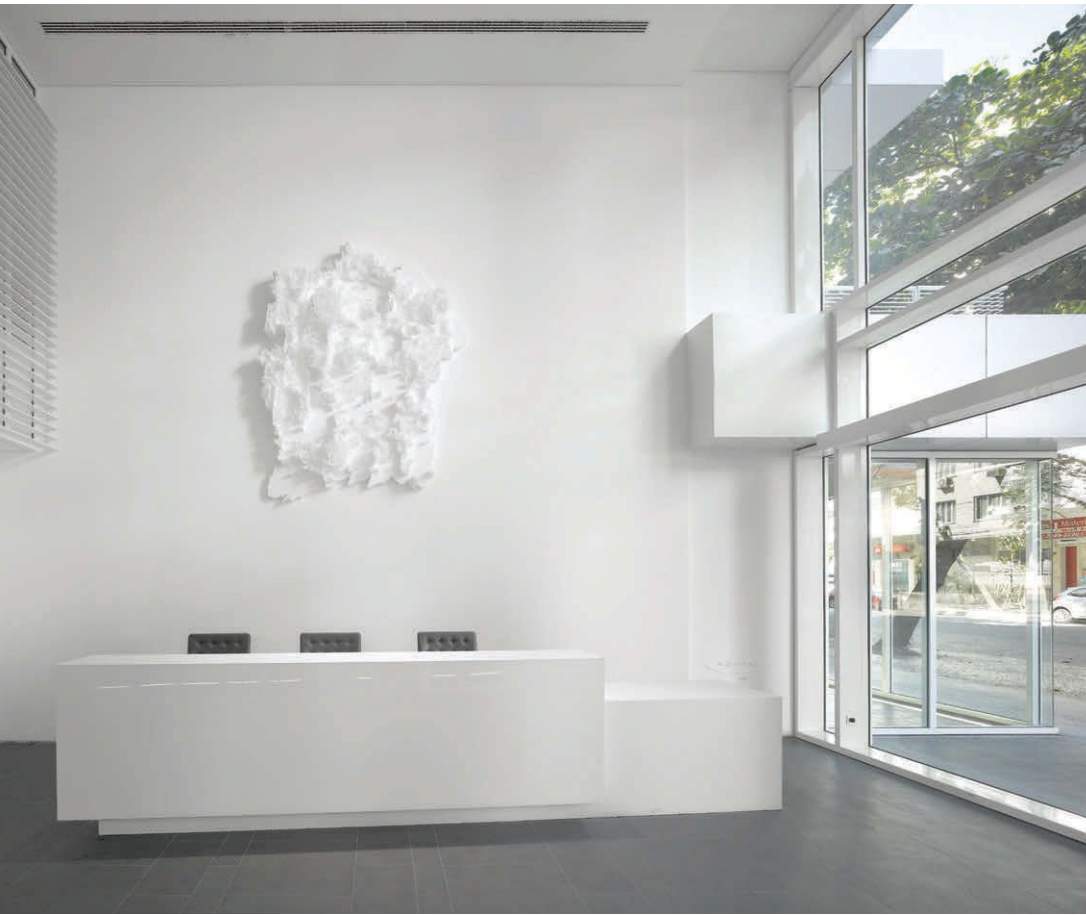
"The company is avant-garde in the way it does things," says Meier. "They are very open and wanted a building that had the spirit where people communicate easily, where they are able to take an interest in each other's work and improve their own. They wanted a building that facilitated this openness and communicated the transparency that they foster."

The front, concrete-framed building is clad in white aluminum and a combination of transparent and translucent glass. This material treatment contrasts with the beautifully raw, exposed concrete of the rear volume, which was inspired by the abundant use of high-quality concrete in Brazilian construction. Initially, the bridges connecting the two parts at each level were to be of glass in order to accentuate the permeability gained by opening up the back of the site. But that plan fell foul of Rio's labyrinthine zoning and fire codes. Instead, they are made of concrete and clad in the



PUBLIC FACE The building's glass and aluminum main volume (left) has an urbane street presence. To bring in more daylight, the architects pulled the building away from the site's back party wall to create two inner courtyards on the second level (opposite) with a small concrete service volume at the rear.





LESS IS MORE The principal lobby (above) and bridge linking the main building with the service volume (below) highlight Meier's trademark cool, clear lines. A concrete stair in the rear volume (opposite, right), leads up from a vertical garden (opposite, left) that echoes tropical vegetation throughout Rio.



same dark Brazilian granite found throughout the interiors, whose floor-to-ceiling glass provides generous views onto the courtyards. The walls of these protected spaces are shrouded by vertical gardens that echo the ever-present tropical vegetation found in the city beyond and make them welcoming spots in which to relax. The plantings, installed by specialists from São Paulo, also define a distinct transition between the aluminum-and-glass volume and the concrete one.

If refined concrete is the star of the rear of the building, the front facade's louvers take credit for having a dramatic impact on Bartolomeu Mitre Avenue, one of the neighborhood's main thoroughfares. They determine the public face of the building while creating privacy for its occupants and shading from Rio's abundant sunshine. This urban gesture is further enhanced by a series of terraces, which allow for a direct connection between tenants and the street.

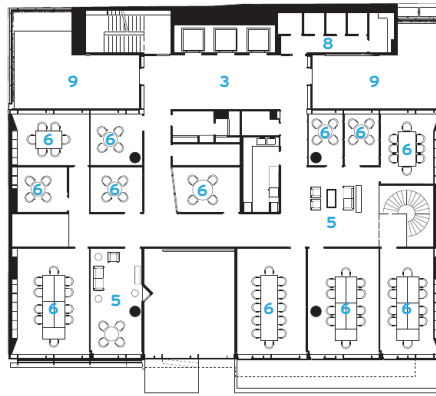
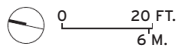
A double-height main lobby is integrated with the entrance to the building's three-level subterranean garage, which makes for a practical if somewhat awkward introduction to the interior. But this leads to a more intimate second, ground-floor lobby and meeting space for anchor tenant Vinci Partners. Here Meier's discreet, clean lines perfectly offset an elegant spiral staircase, which grants visitors access to meeting rooms on the floor above without having to return to the elevator bank in the main lobby.

The five top levels all employ the type of open floor plan favored by investment firms around the world, (with one level hosting perimeter executive suites enclosed in glass). As the entire main volume is supported on just four columns, each floor enjoys an expansive, uninterrupted sense of space. The open plan also provides the flexibility required by the client, which is leasing several floors to other boutique investment firms. From the elevators, visitors can access the main volume from the left or right, providing the potential for easy subdivision.

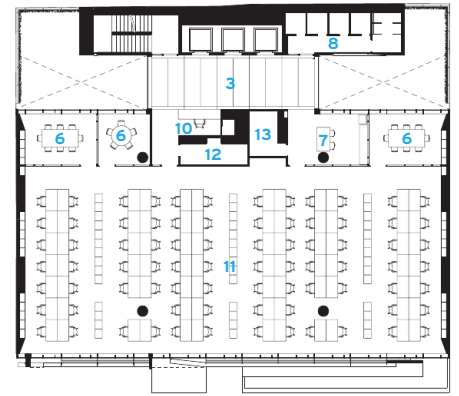
The building's overall effect is a successful series of contrasts—between front and rear, aluminum and concrete, public and private—that are unified by a ferocious attention to detail, evidenced by such features as the beautifully lit back staircase. Here, in what would in many buildings be a little-used emergency fire escape, the exposed concrete walls are studded with glass tubes that let daylight from one of the courtyards penetrate the vertical circula-



GROUND-FLOOR PLAN



SECOND-FLOOR PLAN



TYPICAL OFFICE FLOOR PLAN

- | | | |
|------------------|--------------|----------------|
| 1 ENTRANCE | 6 MEETING | 11 OPEN OFFICE |
| 2 MAIN LOBBY | 7 KITCHEN | 12 MAINTENANCE |
| 3 ELEVATOR LOBBY | 8 RESTROOM | 13 IT |
| 4 GARAGE ACCESS | 9 COURTYARD | |
| 5 LOUNGE | 10 RECEPTION | |



tion, transforming it into another social space. With the completion of Leblon Offices, Richard Meier has most sympathetically introduced his signature style to South America. ■

Tom Hennigan is the South America correspondent for The Irish Times, based in São Paulo.

credits

ARCHITECT: Richard Meier & Partners Architects – Richard Meier, managing partner; Bernhard Karpf, design partner; Parsa Khalili, Anne Strüwing, project architects; Brandt Knapp, Ian Lotto, project team

**ARCHITECT OF RECORD/
INTERIORS:** RAF Arquitetura

CONSULTANTS: Projest Consultoria e Projetos, Bruno Contarine (structural); Cemope Engenharia (m/e/p); MN Consultores Associados (facade); Quadro Vivo (vertical garden)

GENERAL CONTRACTOR: Construtora Santa Isabel

CLIENT: Vinci Partners

SIZE: 75,700 square feet

COST: withheld

COMPLETION DATE: May 2016

SOURCES

CLADDING: Alucomaxx

CEILINGS: OWA

PAINTS AND STAINS: Coral

RESILIENT FLOORING: Tate

SOLID SURFACING: Corian

FURNISHINGS: Knoll, Vitra, Herman Miller

LIGHTING: Artemide, Trilux, Lumini, iGuzzini, Targetti

ELEVATOR: OTIS



WARM RECEPTION
A glass and steel spiral stair (left) leads from Vinci Partners' intimate ground-floor reception area (above) to meeting rooms one level up (opposite, top). An open-plan workspace looks out to the city through the louvered front facade (opposite, bottom).



MullenLowe | Winston-Salem, North Carolina
TPG Architecture

INDUSTRIAL STRENGTH

TPG Architecture converts a tobacco factory into a versatile office space for an advertising agency.

BY ANNA FIXSEN

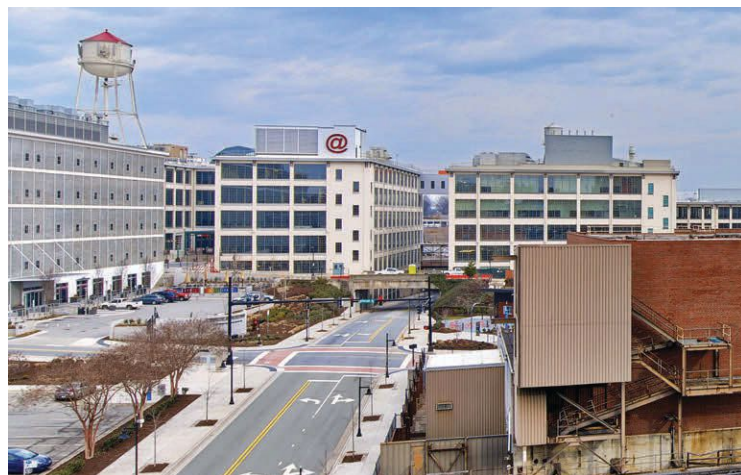
PHOTOGRAPHY BY ERIC LAIGNEL

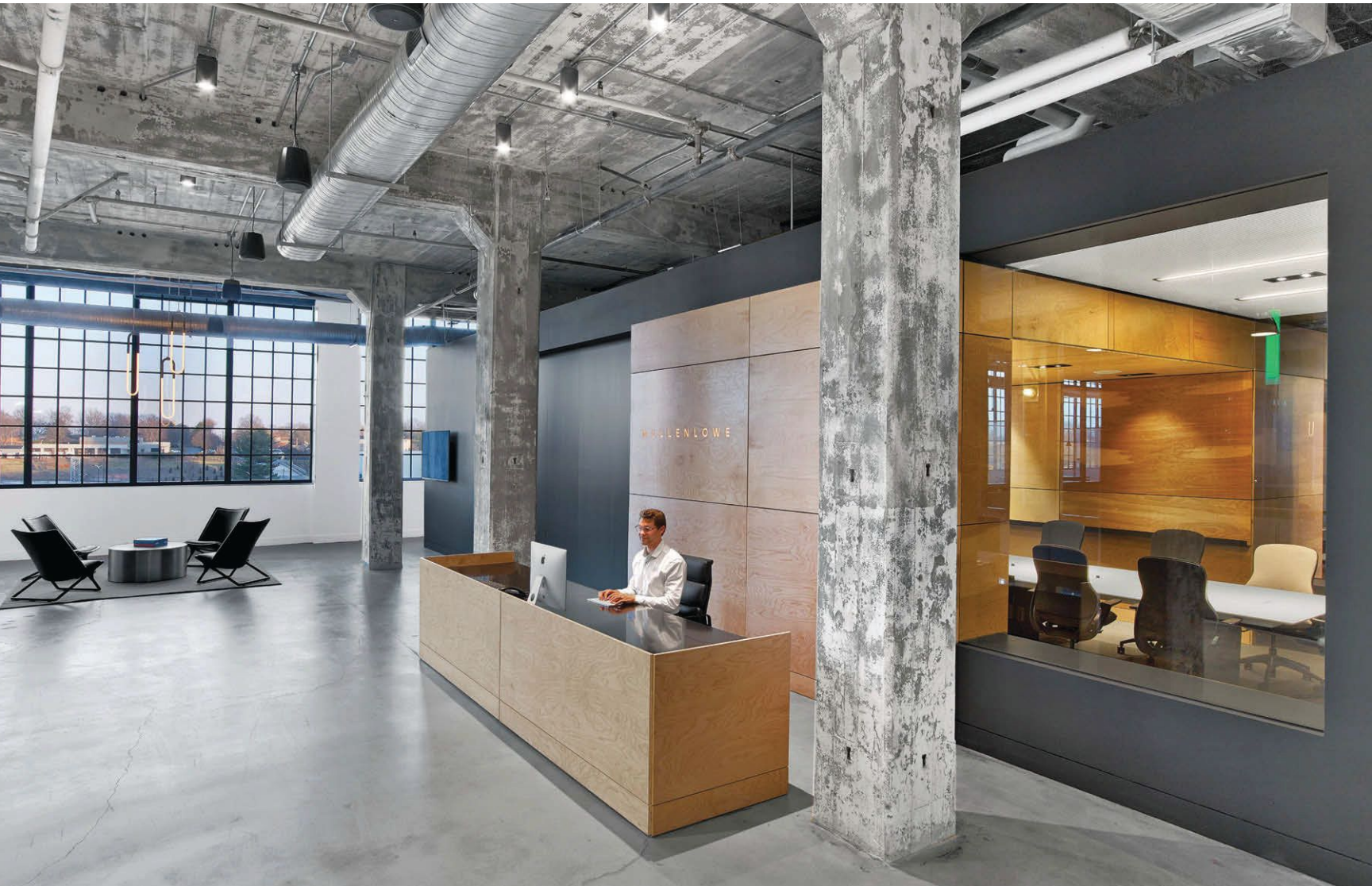
Cigarettes built Winston-Salem, North Carolina, just as much as bricks and mortar. By 1916, four decades after an entrepreneurial 20-something named R. J. Reynolds established a tobacco venture there, his company imported so much Turkish tobacco and French rolling papers for its blended varieties that the city became the eighth-largest port of entry in the United States—despite being 200 miles inland.

The metropolis is still known as Camel City for its hit brand of smokes, though the cluster of factories that once produced them by the billions is now evolving into spaces for biotech startups, research institutions, and creative firms. TPG Architecture recently breathed fresh (and nicotine-free) air into the third floor of one of these 1920s-era buildings for the advertising agency MullenLowe. Rather than conceal what remained of the building's gritty industrial past, the New York-based architects worked with its brawny, poured-in-place-concrete structure and peeling surfaces to foster a flexible and creative workplace for an office of 185 people—without the feel of the oft-replicated techie playground.

“A lot of the advertising firms I work for want to be the next Google, with different themed spaces and different colors,” says Carly Jacobson, the lead project designer. Jacobson, who also completed MullenLowe's Boston office in 2009, continues, “This building had an overwhelming

FACTORY OUTLET Last winter, the advertising firm MullenLowe moved into an office inside a renovated tobacco-processing factory in Winston-Salem. The building, once a part of R.J. Reynolds Tobacco Company's cigarette-manufacturing campus, is now part of a burgeoning technology park called the Wake Forest Innovation Quarter (right). The new space has a number of environments for impromptu meetings and collaborations, including high worktables near the oversized windows (this image).





number of assets, so our approach was to make it feel as if we didn't touch anything."

To accomplish this, the architects inserted a series of three sleek, geometric volumes within the existing structure. This "box within a box" scheme breaks down the L-shaped, 37,500-square-foot floor office by creating spaces for meetings, while still maintaining open, non-hierarchical work areas.

From a glazed atrium, visitors enter a reception area at the crook of the L. It is a cool respite from the Carolina humidity, all exposed concrete and subdued colors. Here, behind the reception desk, Jacobson and her team located the first box, a freestanding T-shaped volume containing a boardroom and three smaller meeting spaces. "They have these intersecting relationships, as if they are puncturing each other," explains Jacobson, pointing to where an 11-foot, 6-inch-tall drywall volume collides with 10-foot-tall one clad in plywood. The boxes seem to have been slid into the space like ships into a bottle, allowing for just 1 foot of clearance between some of the columns and as little as 2½ feet below the ceiling slab.

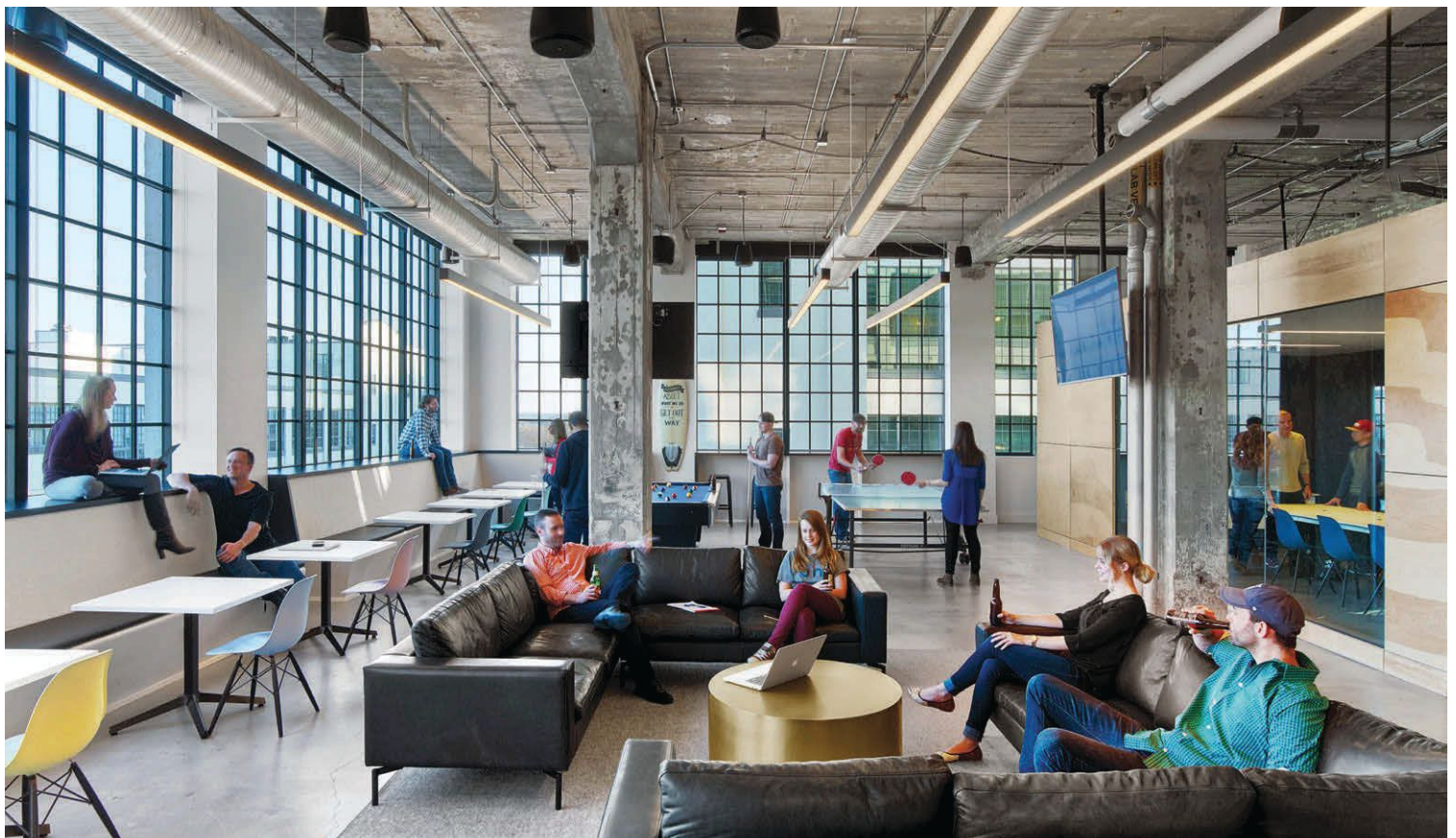
Inside the main conference room, inviting finishes provide a counterbalance to the raw industrial surroundings: slate-colored walls are juxtaposed with white acoustical ceiling panels and tawny birch. Neutral-hued modern furnishings echo existing colors in the factory's

CONCRETE IDEA TPG Architecture inserted three independent enclosures to create meeting spaces. One (above) is located behind the reception area. These boxes also demarcate zones for various open-plan departments (opposite, top) and link common spaces. A combined lounge and pantry has become a natural gathering point for employees (opposite, bottom), with window sills that double as seating.

walls and columns. Glazed openings in the boxes allow views directly to the factory's new perimeter windows, while a hefty 10-foot-tall sliding panel opens the boardroom to the reception area for company meetings and celebrations.

The boxes also solve another challenge: how to unify the creative and business sides of the agency. MullenLowe Winston-Salem president Taylor Bryant says ruefully, "Agencies are composed of diverse people—and those people are not necessarily drawn to work together."

The placement of the independent containers creates natural neighborhoods for different disciplines. Open-plan workspaces with long rows of shared desks for employees on the business side surround another T-shaped set of conference rooms on the south end of the building. ("They sit here because it's the more private space," Jacobson explains.) The creative team abuts a smaller volume on the north side. This end of the office includes amenities that the company's previous space—a converted bank—lacked, including a 30-person screening room with stadium seating, a photo studio, a sound booth, a printing room,





BENCH WARMER At the end of some of the boxes, TPG Architecture added booths and seating, oriented toward the new factory windows (left). The designers used muted finishes and sandblasted the existing walls and ceilings to reveal decades-old textures.

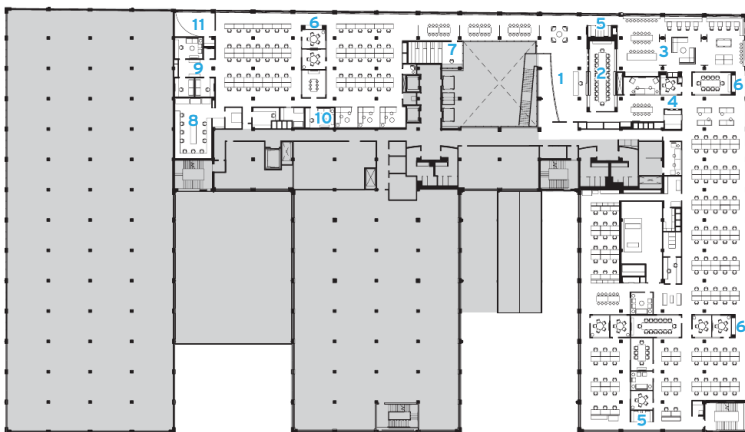
and several editing suites. In these dedicated spaces, MullenLowe can seamlessly develop campaigns for clients ranging from Hanes to a local microbrewery.

Both ends of the office are punctuated by social spaces that include a coffee bar and lounge, a daylight-filled corner “town hall,” and a kitchen. The design team also placed high work tables (hemmed by perforated screens that cleverly double as pinup boards) near the windows to facilitate impromptu meetings and to allow staff members to have a change of scene from their desks.

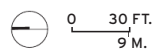
“We felt the old space was sucking the energy out of people, because everyone was in their own little world,” says Bryant of the former office’s cubicle configuration. “Now you see three people have spun their chairs around. They wouldn’t necessarily call it a meeting, but they are sharing ideas.”

By Bryant’s metric, meetings abounded on a recent afternoon this summer: a group gathered in the lounge to play a round of pool, while others chatted over their microwaved lunches. A full-time barista (brought in from Krankies, a neighborhood coffee shop) made caffeinated beverages for a line of employees. Across the office in the printing room, an employee displayed a freshly inked poster for a staff Tiki party.

They are blissfully oblivious of the subtle particulars that went into creating their industrial-chic habitat. Jacobson and her team, for instance, carefully oriented ductwork over the conference room boxes and rows of desks to emphasize both the volume of the architectural insertions, and to create strong perspectival lines across the work floor. As a finishing touch, the painted concrete columns were lightly sandblasted and sealed to reveal nearly a century’s worth of chipped layers; the effect is something like an abstract expressionist painting. Even with the new additions and new program, the soul of the original Camel City factory still burns bright. ■



FLOOR PLAN



- | | | |
|--------------|-----------------|------------------------|
| 1 RECEPTION | 5 HUDDLE BOOTH | 9 EDIT BAY/SOUND BOOTH |
| 2 BOARDROOM | 6 SEATING NICHE | 10 SOUND ROOM |
| 3 CAFÉ | 7 THEATER | 11 PHOTO STUDIO |
| 4 COFFEE BAR | 8 STUDIO | |

credits

ARCHITECT: TPG Architecture – Larry Berger, studio director; Carly Jacobson, lead designer; Megan Adams, designer; Omar Bustamante, project manager; Pablo Almeida, project professional
ENGINEERS: Kibart (m/e/p); Pippin Engineering (structural)
GENERAL CONTRACTOR: Landmark Builders
CONSULTANTS: Onelux (lighting); Spectra (audiovisual)

SOURCES

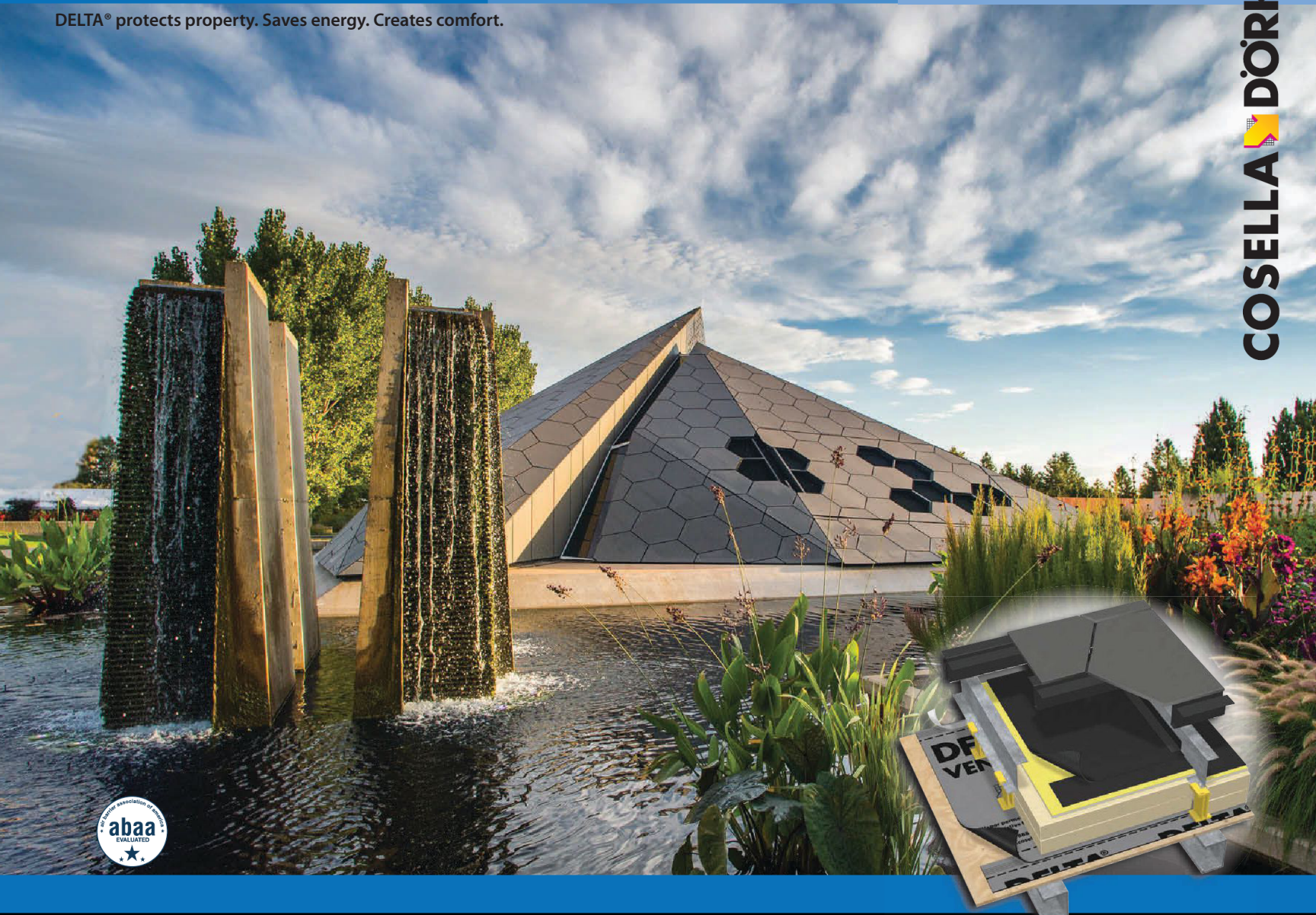
CUSTOM DOORS: CKS Architectural Millwork
ACOUSTICAL CEILINGS: Green Acoustics Building Products
SOLID SURFACING: Dupont Corian
PLASTIC LAMINATE: Wilsonart; Formica
CARPET: Interface
FURNISHINGS: Knoll; Herman Miller; Bernhardt

CLIENT: MullenLowe

SIZE: 37,500 square feet

COST: withheld

COMPLETION DATE: January 2016



Creative Building Design Requires High-Performance Membrane Solutions.

The Denver Botanic Gardens Science Pyramid presented a unique air and moisture challenge. The pyramid shape, usage, and open cladding multiply the complexity of maintaining a watertight exterior while managing the moisture generated within.

Two air and moisture barriers, DELTA[®]-VENT SA and DELTA[®]-FASSADE S ensure an airtight and watertight enclosure that manages moisture in a complex Colorado climate. The UV-resistant, matte black DELTA[®]-FASSADE S adds depth and dimensionality to the open cladding, heightening the striking appearance of this landmark building.

When architects want to push the boundaries of building design, one of the biggest complications is moisture control. High-performance solutions like DELTA[®] products will allow architects full artistic freedom while giving them the confidence of a leak-free building. If you are designing a unique structure, don't hesitate to contact DELTA[®] to protect you from future moisture issues.

CIRCLE 206

DELTA[®]-VENT SA

Vapor permeable self-adhered water-resistive barrier & air barrier.

DELTA[®]-FASSADE S

UV-resistant water-resistive barrier for open joint claddings.

1-888-4DELTA4 (433-5824) - www.cosella-dorken.com





Pilkington **Solar-E™** Plus

Pilkington **Solar-E™** Plus low-e coating provides the lowest solar heat gain coefficient of any pyrolytic family of products. With a slightly deeper tint and a lower solar heat gain coefficient, the Pilkington **Solar-E™** Plus tints are perfect for any new commercial building project or renovation needing improved solar performance.

- Improved solar performance
- Durable pyrolytic coating
- Virtually unlimited shelf-life
- Can be laminated, toughened, bent and enameled using standard techniques.

800.221.0444 • buildingproducts.pna@nsg.com • www.pilkington.com/na



Parallel path calculation method.
NYS ENERGY CODE REVISION 2,356.2.5
For chart 43e on page 34.3 the Intern
Energy Conservation Code (IECC) and
Department of Energy (DOE) mandat
sealing of foundations,
subfloors and bottom plates with
material in accordance with manufa
tions and air provisions (checklist)
infiltration and leaks based on the
plumbing, electrical, ventilation, co

53 | ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE

Understanding Energy Code is now easier.

KNOW YOUR ROLE. KNOW THE CODE.

There's no question, with continuous updates, additions and revisions, the New York State Energy Code can be very confusing. But at the same time, compliance can be very beneficial to your business. That's where NYSERDA and its partners can help. Together, we will cut through the clutter, identify the portions of the Code that apply to you, and then unlock and leverage their benefits in ways that make you more productive and profitable. **To learn more visit nyserdacodetraining.com/overview today.**



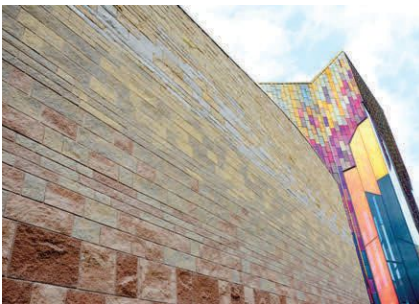
NEW YORK
STATE OF
OPPORTUNITY.

NYSERDA

Stone and Fire: The Museum at Prairiefire

ARTISAN MASONRY VENEERS® CORDOVA STONE™ ECHELON MASONRY

The Museum at Prairiefire in Overland, Kansas, rises from the prairie landscape in fiery sparks of color reminiscent of prairie fires used for land management. This LEED Silver-rated creation was the vision of Jonathan Kharfen, AIA/LEED senior associate, Verner Johnson Architects. Covering 41,000 sq. ft., Kharfen used regionally-sourced natural limestone and Cordova Stone—a manufactured stone veneer from Oldcastle Architectural's Echelon brand. "The use of Cordova Stone allowed this project to come in on budget and under a very tight timeframe," said Kharfen. "Natural stone alone was cost-prohibitive, so it was critical to have a stone veneer that looked as realistic as possible."



Artisan Masonry Veneers® Cordova Stone™, part of Oldcastle Architectural's Echelon brand, was selected by The Museum at Prairiefire for its realistic look similar to limestone.

PRODUCT

Artisan Masonry Veneers®
Cordova Stone™

COMPANY

Oldcastle Architectural,
Echelon Masonry

PRODUCT APPLICATION

Masonry veneer, interior and exterior, natural looking manufactured stone

PERFORMANCE DATA

- Color throughout unit
- Repels water and resists mold
- Available in ground, rock, texture face or chisel face and multiple colors and finishes
- Custom sizes and shapes
- Minimum compressive strength 1900 psi
- Maximum absorption by weight 13 lbs./cu. ft.
- ASTM C90-11b standard specification for load bearing concrete masonry units

CONTACT INFORMATION

Oldcastle Architectural,
Echelon Masonry
900 Ashwood Parkway, Suite 600
Atlanta, GA 30338
800-899-8455
EchelonMasonry@Oldcastle.com



ECHELON™
Quality Masonry Products from Oldcastle®

www.EchelonMasonry.com

Building Envelope Materials

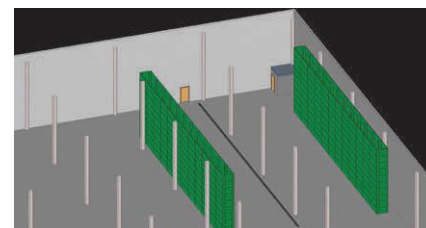
CURTAIN WALL MOCK-UP TESTING

UL

UL's curtain wall mock-up testing helps architects, manufacturers, contractors, consultants, building owners and regulatory authorities validate the design, workmanship, materials selection, and performance of exterior wall system designs. Testing mock-ups prior to construction can save considerable time and money by studying construction and installation details and allowing time for changes and/or remediation prior to construction. UL is a single source solution provider for all Performance Testing needs for the building envelope – helping to ensure performance of products, systems, and building structures. Our unmatched technical expertise provides a complete suite of testing services for windows, curtain walls and all commercial and residential fenestration products.



Dynamic wind driven rain testing



UL's indoor curtain wall mock-up test facility accommodates up to 200 linear feet of curtain wall specimens to 30' in height, while our outdoor curtain wall test facility will build to suit your largest mock-up needs.



SERVICE

Performance Testing

SERVICE APPLICATION

Curtain walls, doors, exterior wall systems, glazing materials and systems, garage doors, storefronts, windows

PERFORMANCE DATA

Applicable standards: AAMA 501.1, ASTM E283, ASTM E331, ASTM E330, AAMA 501.4, AAMA 501.5, AAMA 501.6, ASTM E 1886, ASTM E1996, TAS 201/202/203

CONTACT INFORMATION

UL
750 Anthony Trail
Northbrook, IL 60062
877.854.3577
BuildingEnvelopeQuote@ul.com



ul.com/buildingenvelope

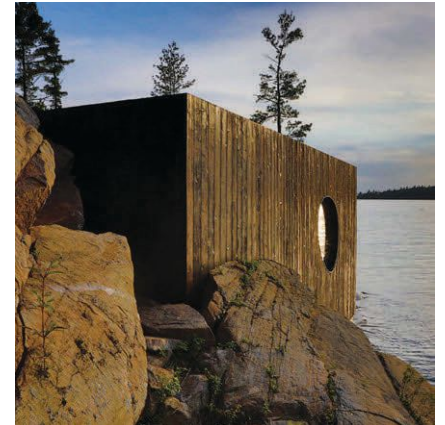
Creative Architecture

DELTA®-FASSADE S

COSELLA-DÖRKEN PRODUCTS Inc.

THE GROTTO SAUNA, perched on a private island in Lake Huron, drew inspiration from the historical definition of a grotto – a secret water filled cave, concealed within unexpected rock formations.

DELTA®-FASSADE S, a water-resistive barrier (WRB), accommodates the extreme temperature changes occurring inside and outside of the Grotto Sauna. It has high vapor permeability, allowing for the moisture vapor that accumulates inside to escape. On the exterior, DELTA®-FASSADE S acts as a durable drainage plane, channelling water from wind-driven rain and snow to the outside of the structure. It will provide sustainable moisture and UV protection behind the open joint cladding for many years to come.



DELTA®-FASSADE S has a matte black coloring that creates a deep 3D effect making the red Cedar panels visually “pop” forward from the black background.

PRODUCT

DELTA®-FASSADE S

COMPANY

Cosella-Dörken Products Inc.

PRODUCT APPLICATION

DELTA®-FASSADE S is a UV-resistive water-resistant barrier specifically designed for open joint cladding systems.

PERFORMANCE DATA

DELTA®-FASSADE S has excellent stability against ultraviolet light. It provides sustainable moisture and UV protection behind open joint claddings.

CONTACT INFORMATION

Cosella-Dörken Products Inc.

1-888-4DELTA4

info@cosella-dorken.com

COSELLA DÖRKEN

DELTA®

www.cosella-dorken.com

Philadelphia Dilworth Park

Pilkington **Optiwhite™**

PILKINGTON NORTH AMERICA, INC.

More than 30,000 square feet of Pilkington **Optiwhite™** was used to create a stunning glass entrance in Philadelphia's Dilworth Park. The glass provides a bright and welcoming walkway to the city's public transit, allowing light to flood into the concourse.

The glass was cut, edged and tempered by General Glass International (GGI), laminated by European Glass Laminators, and installed by APG International. The glass pavilions are 17 feet wide and curve upwards to almost 20 feet high. The pavilions include a total of more than 90 laminated lites of glass - each one a different shape.



Philadelphia Dilworth Park
Photos: APG International

PRODUCT

Pilkington **Optiwhite™**

COMPANY

Pilkington North America, Inc.

PRODUCT APPLICATION

Glass Structure

PERFORMANCE DATA

5 laminated lites of 3/8" Pilkington **Optiwhite™** for the vertical wall panels. 7 laminated lites of 3/8" Pilkington **Optiwhite™** for the roof panels. European standard jumbo lites (6-by-3-meters or 20-by-10-feet) were needed for this project.

CONTACT INFORMATION

Pilkington North America, Inc.
811 Madison Ave.
Toledo, Oh 43604-5684
800.221.0444 / 419.247.4573



PILKINGTON

www.pilkington.com/na

Designing for the Dark





Light pollution hides views of the cosmos and causes a host of environmental problems. But architectural and landscape lighting can be designed so that it is sensitive to the night sky and ecosystems yet still responds to clients' requirements. On the following pages, RECORD explores projects that do just that.

By Joann Gonchar, AIA, and Linda C. Lentz

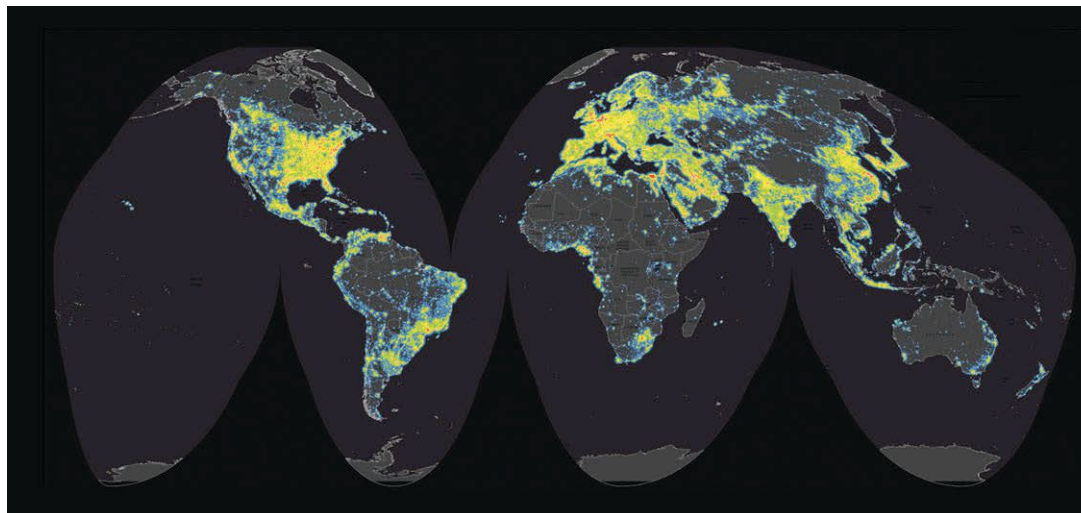
ELECTRIC LIGHTING has allowed us to transform the night. It extends our workday and permits us to punctuate the nighttime landscape with illuminated buildings. Roadway lights allow us travel on foot and by car safely from point A to B. And illuminated signs and advertisements help businesses sell their products and services.

But too much outdoor lighting can have deleterious effects. One of the most obvious is that it masks our view of the stars. An international group of scientists recently attempted to quantify the magnitude of this long-acknowledged problem with an in-depth study that relied on high-resolution satellite data and sky brightness measurements to map the impact of light pollution around the globe. Their research, published in June in the journal *SciencesAdvances*, determined that the Milky Way is invisible to more than one-third of the world's population, including 60 percent of Europeans and nearly 80 percent of North Americans.

However, masking the stars and other celestial bodies from humans is only one of the consequences of light pollution. It can also affect both wildlife and ecosystems.

Bright beachfront lights can attract just-hatched sea turtles, drawing them inland rather than toward the water, making them easy marks for predators. City lights can disorient migratory birds, causing them to fly off course or crash into over-illuminated buildings. Light pollution can even interfere with the tiniest of creatures, including *Daphnia*, a type of zooplankton that helps keep algae blooms in check. The marine organisms, which dwell deep below the surface of the water during the day, float up at night to consume the algae. Nighttime light can prevent them from doing so. There is also research suggesting that too much exposure to certain types of artificial light can negatively affect human health by disrupting the production of melatonin, a hormone that regulates our circadian rhythms and adjusts our internal clocks.

What is light pollution? Mark Major, principal of London-based lighting design firm Speirs + Major, explains simply that since illumination is a byproduct of energy, if you are using more than is required, or you are putting it where it isn't desired or necessary, "by definition, that is pollution."



Flagstaff, Arizona (left), was the first city to be recognized as a Dark-Sky Community, in 2001. Since then, 65 other locations around the world have been designated Dark-Sky Places by the IDSA for their outdoor-lighting policies. An international group of scientists recently quantified the magnitude of the light-pollution problem, creating a series of maps. In the one above, the natural sky, or the Milky Way, is not visible from areas that are yellow, red, or white.



In only slightly more technical terms, light pollution is the excessive or inappropriate use of artificial illumination. A few of its manifestations are urban sky glow, which is a brightening of the night sky over inhabited areas; glare, or brightness that causes visual discomfort or loss of visibility; and light trespass, the term for light cast where it is not wanted or needed, such as illumination from a streetlight cast into a bedroom, making it difficult to sleep.

Not surprisingly, professional and amateur stargazers were among the earliest proponents for controlling light pollution. One example is the International Dark-Sky Association (IDSA), which was founded in the late 1980s by astronomers. The Tucson-based nonprofit organization advocates for smart lighting laws and policies and has an outdoor-fixture-certification program, as well as an initiative that recognizes towns, parks, and developments for responsible lighting practices. “We are not about

806 House Borrego Springs, California

A two- to three-hour drive from the bright lights of Southern California’s largest cities, Borrego Springs—a small town bordering the Anza-Borrego Desert State Park in northern San Diego County—became the world’s second official Dark-Sky Community in 2009. Drawn to the area’s austere beauty and beautiful night sky, L.A. transplants Richard Orne, an architect, and his wife, Susan Hancock, a landscape designer and color consultant, bought 10 acres five miles from the center of town and built a sustainable house. The glazed moment-frame structure is 142 feet long by 28 feet wide, with deep overhangs on the northeast and southwest sides. In compliance with the community’s guidelines, derived from county codes and International Dark-Sky Association lighting basics, Orne used as little lighting as possible. He limited the outdoor fixtures to shielded 2700K downlights under the overhangs and over four decks on the building’s northwest. These are tied to photosensors programmed to turn them on at dusk and off at dawn. (A manual override allows them to be shut anytime.) The interior, divided into five sections along its length, is illuminated by recessed 2700K to 3000K LEDs on dimmers. In the evening, when a particular zone is not in use, it remains dark. “Very little light escapes from the house,” says Orne. “It’s more like a low-glowing lantern.” There are even nights they turn all of the lights off. During a full moon, he adds, there is plenty of light without them.



suspenders™

Suspenders™ is a delicately scaled, modular system of interconnected elements and suspended LED luminaires. Dramatically powerful in its message of utility and simplicity, Suspenders can be configured as individual lighting sculptures or as a tiered web of infinite scope and variety. Explore the possibilities at sonnemanawayoflight.com.

www.sonnemanawayoflight.com

Multiple U.S. and foreign patents pending

CIRCLE 143

SONNEMAN®
A WAY OF LIGHT

The Light.



PANOS | Downlight

PANOS delivers unparalleled LED lighting quality, efficiency and precision with compound material construction inspired by space technology. Installation time is twice as fast as traditional downlights – no housing required.

zumtobel.us/panos
CIRCLE 84

 **ZUMTOBEL**



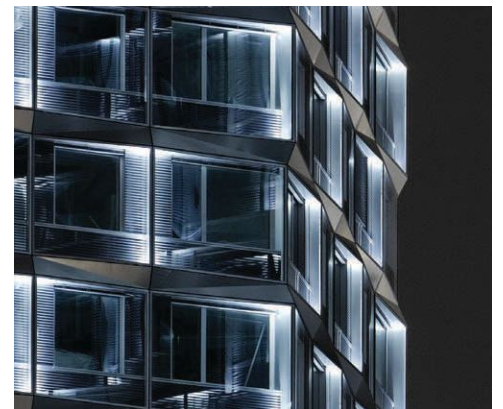
turning out the lights,” says Pete Strasser, the organization’s technical director. “We are about doing lighting appropriately.”

The outdoor lighting strategies recommended by IDSA include luminaires that are shielded to direct light downward rather than up into the sky, are only as bright as necessary, and shut off or dim after hours. Strasser sums up the basics of outdoor lighting as “light where you need it, when you need it, and no more. Everything else is just waste.” The organization estimates that 30 percent of outdoor lighting in the U.S. is wasted, amounting to \$3.3 billion and 21 million tons of carbon dioxide emissions per year.

Proponents of turning down the volume on outdoor light point out that more illumination doesn’t necessarily mean greater security. For instance, bright lighting that causes glare is likely to have the opposite

Citylights Paris

Located in a previously industrial part of Paris, the 1975 Pont de Sèvres Towers, designed by Badani and Roux-Dorlut, have been reimagined by French architect Dominique Perrault. Renamed Citylights, the once detached office complex now embraces the city with sustainable prism-shaped buildings that illuminate the rapidly developing district (dubbed Trapèze) with a gentle luminosity. The design team’s goal was to enhance the towers with discreet yet precise lighting that respects area residents and the ecosystem of the Seine’s riverbanks. To do this, they encircled one-third of the aluminum facades, at different heights, with a “bracelet” comprising folded modules (above) made of pronounced metal aprons, two layers of glass (an extra-clear, single-glazed pane forming an outer skin and a double-glazed window within), and an LED system. Sandwiched between the glass, recessed LEDs radiate toward the lintels and metallic facade, which then casts indirect light toward the mullions. Passersby are never dazzled. They see only luminous reflections that, within this urban context, bring a human scale to the architecture.



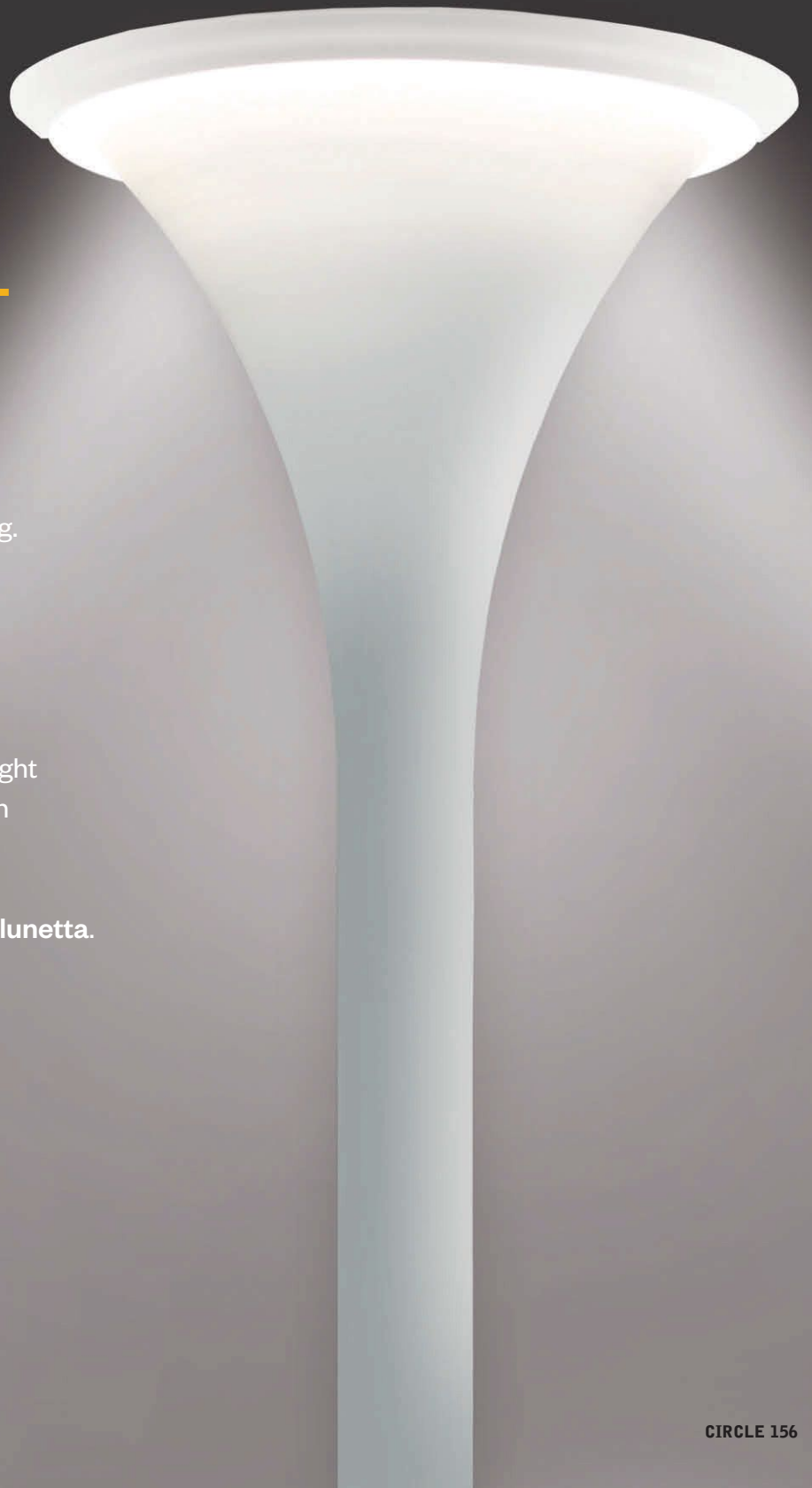
Amerlux® Lunetta

A beautiful revolution.

Lunetta is the new, pedestrian-scale exterior luminaire that changes everything. Unlike traditional, segmented pathfinding lights, Lunetta's entire body appears to illuminate from the top down, creating a seamless, sophisticated visual effect. Lunetta's hidden LEDs create a graded effect, and soft, lambertian ground level light distribution. For form, function, and design creativity, Lunetta owns the night.

For more information, visit amerlux.com/lunetta.

Follow us on Twitter [@AmerluxLighting](https://twitter.com/AmerluxLighting).





Queen Elizabeth Olympic Park London

After the London 2012 Summer Olympics, lighting design firms Speirs + Major and Michael Grubb Studio worked with landscape architect James Corner Field Operations to transform what had been an open concourse in the Olympic Park into a 1,600-foot-long promenade. To illuminate the path, the team created 56 galvanized 3-foot-diameter metal spheres hung from a catenary wire. These spheres are perforated with almost 800 holes of three different sizes and fitted with a custom LED module that includes a diffuse lens. The LEDs illuminate the interior surface of the balls—each of which is powder-coated in a different hue of blue or green—and shine through the holes to create a dappled effect reminiscent of sunlight filtered through a tree canopy. The spheres are connected to a site-wide lighting control system that dims promenade lighting levels from approximately 15 lux during prime hours of occupancy to about 10 lux later at night. The scheme, says Mark Major, Speirs + Major principal, is so effective because it “uses darkness as well as light.”

PHOTOGRAPHY: © JAMES NEWTON (2)

effect and make occupants feel unsafe, points out lighting designer James Benya, a principal and partner at Benya Burnett Consultancy in Davis, California. And the IDSA maintains that there is no clear correlation between increased outdoor illumination and crime deterrence. It cites research including a 2015 study of street lighting in England and Wales that found little evidence of increased collisions or crime when lights were dimmed, turned off at certain hours, or

replaced with more energy-efficient fixtures.

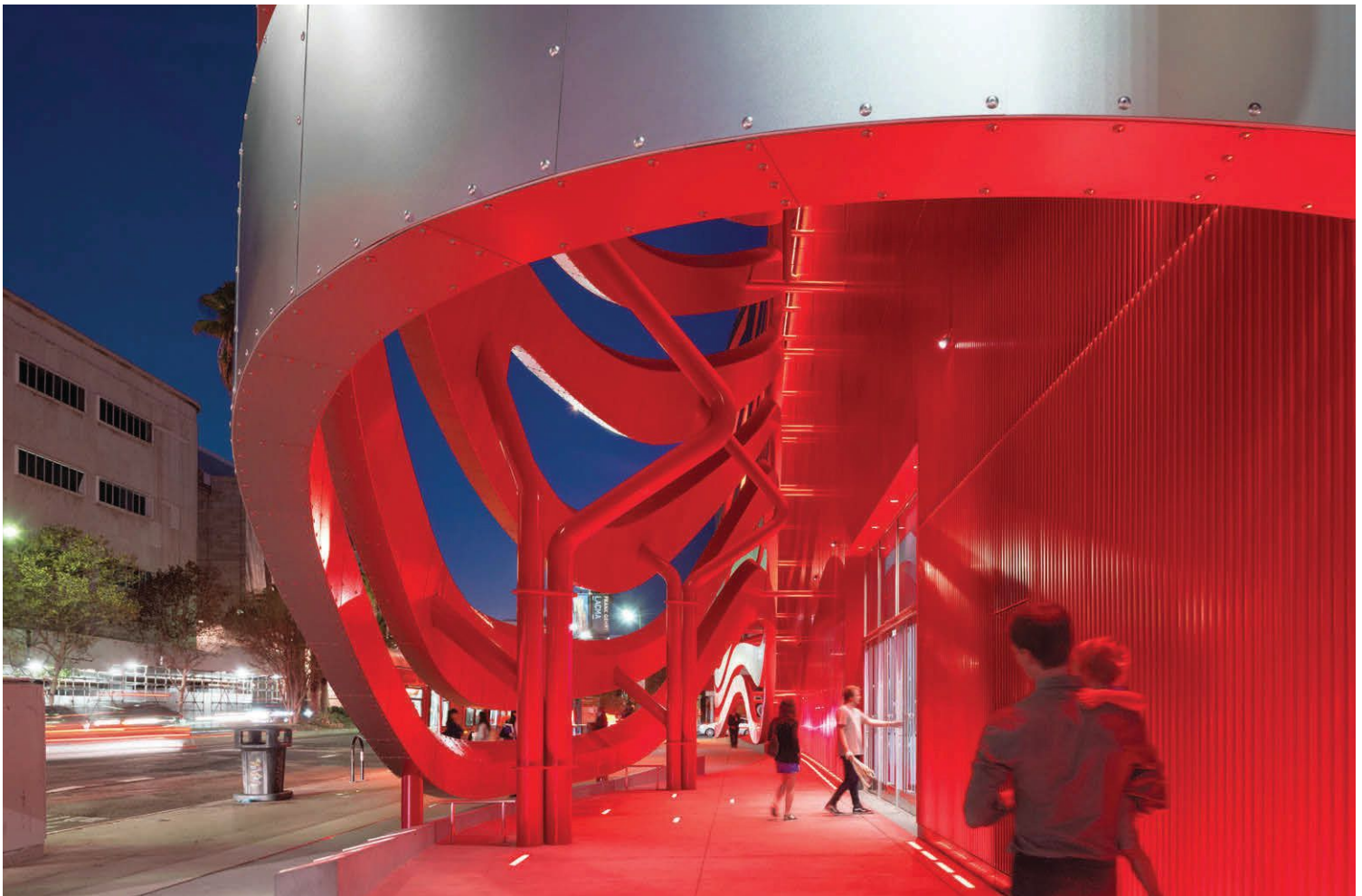
To encourage lighting that protects the night sky and is energy efficient but also provides sufficient illumination levels to make users feel comfortable and secure, IDSA and the Illuminating Engineering Society of North America (IES) developed a model lighting ordinance (MLO) that communities can adopt in whole or in part. The document is intended to address inconsistencies in lighting ordinances across the country

that vary in technical quality and often use outdated or incorrect terms, says Nancy Clanton, president of Boulder, Colorado-based lighting design firm Clanton & Associates. “Since they are different everywhere, designers don’t know how to comply,” explains Clanton, who chaired the MLO development committee with Benya.

Among the MLO’s key features is the use of five different lighting-zone categories. These range from wilderness, preserves, and unde-

Petersen Automotive Museum Los Angeles

The steely body of KPF's new shell for this museum's existing structure is vibrant, yet the lighting was configured to minimize light pollution. This is largely due to the California Title 24 CalGreen section, which limits the amount of uplight per fixture to discourage facade uplighting, floodlighting, or other potentially invasive illumination sources. Horton Lees Brogdon lighting designer Clifton Manahan says, "The brief was to create something mysterious that hints at movement inside the building." So the team employed dynamic color-changing LEDs, working with one manufacturer for consistent quality. For a wide range of colors and effects, he opted for four-color RGBW LEDs with optics that provide maximum light spread across the facade while minimizing glare. The output of each uplight was coordinated with the architectural shell, which serves as shielding to ensure the state's limits were met. "Saturated-color light is more visible to the human eye than just white light," says Manahan. "So the measured output of the fixtures and brightness of the building are fairly low but still visible." This gives it a strong identity yet also curtails glare and light pollution.



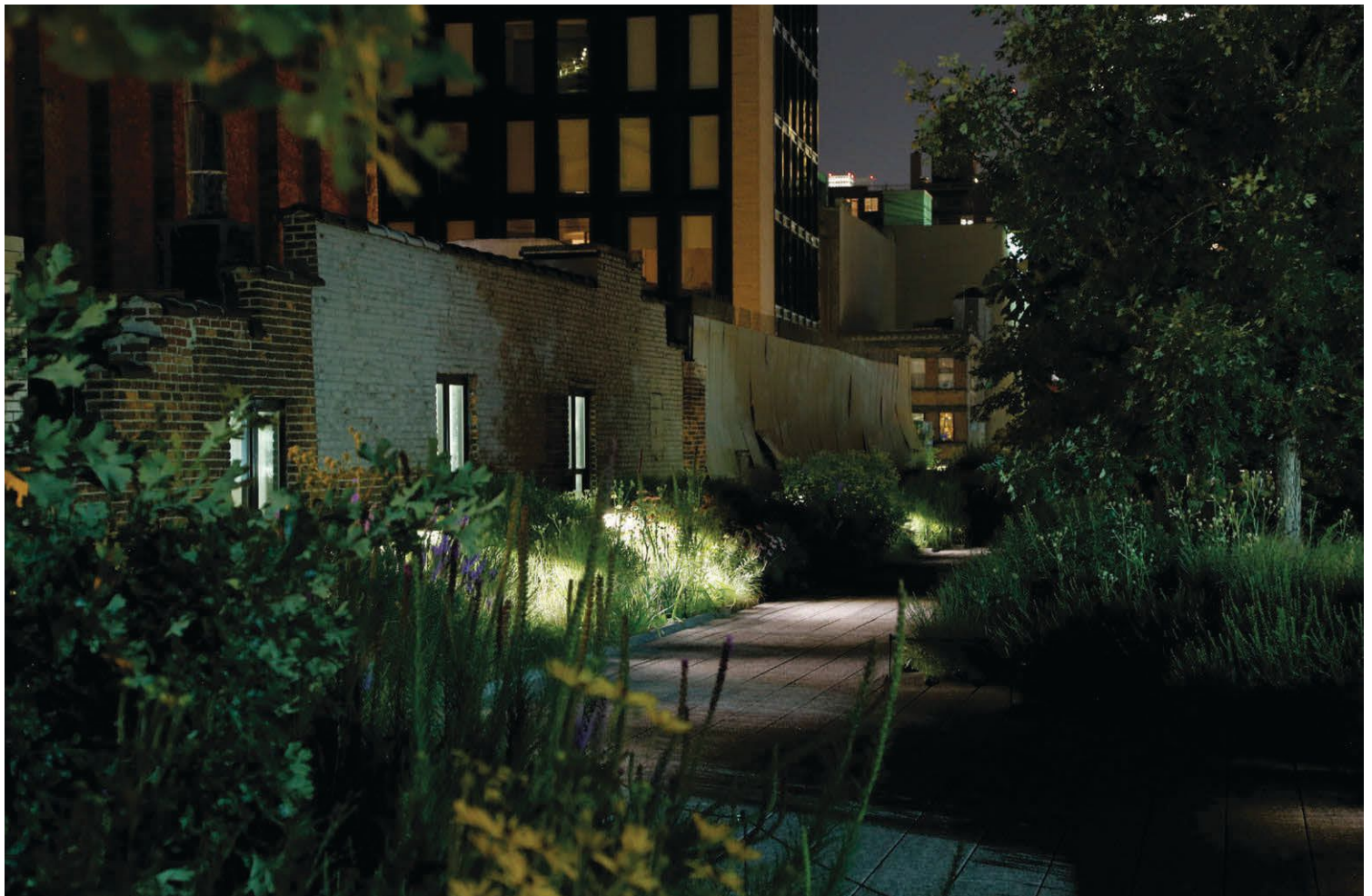
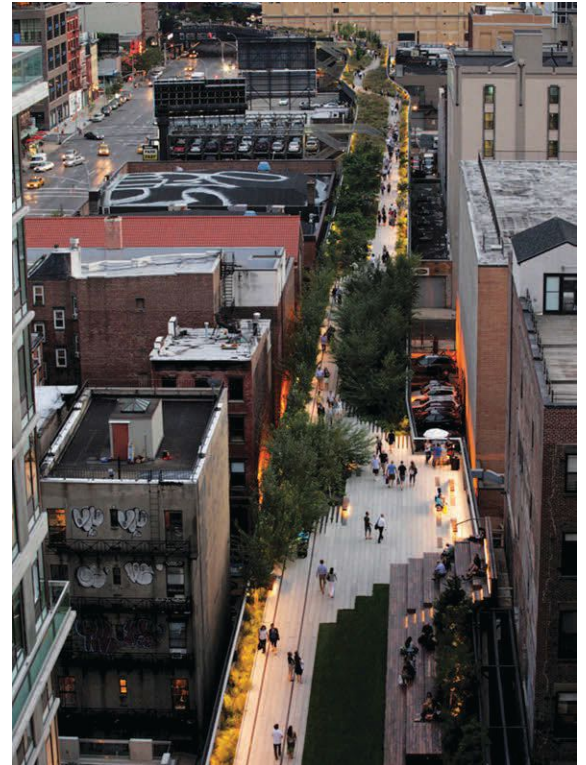
veloped rural areas, which would be the darkest, to areas that could have very high ambient light levels, such as an entertainment district. The zones provide planning officials with a tool for varying the stringency of lighting restrictions depending on the sensitivity of an area or the preferences of the community. The MLO also relies on a method for rating luminaires, known as BUG (for backlight, uplight, and glare).

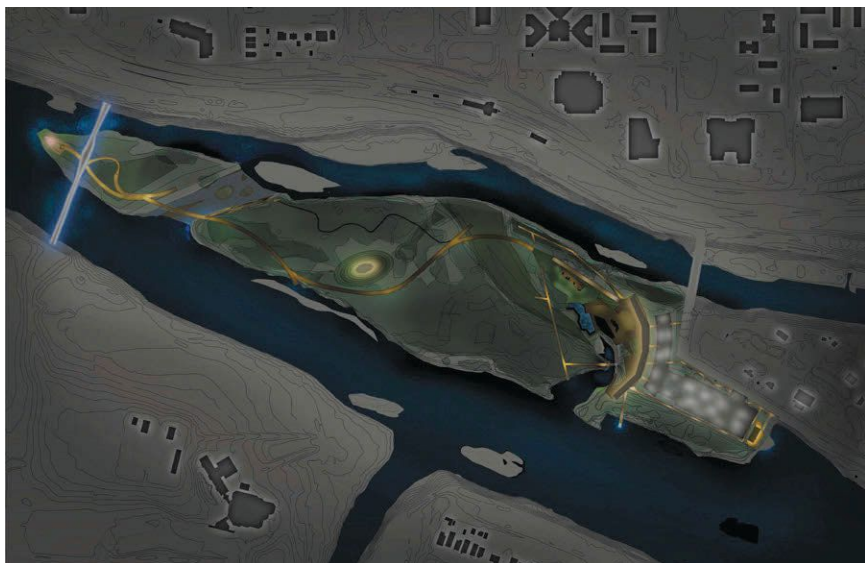
Although the MLO has not been widely adopted since its release in 2011, its language, including the lighting zones and the BUG rating system, has been incorporated into a LEED credit for light-pollution reduction, helping focus project teams' attention on responsible outdoor-lighting design. "It has created an awareness of the problem," says lighting designer Glenn Heinmiller, a principal at the lighting-design firm Lam Partners in Cambridge, Massachusetts.

One aspect of outdoor lighting that isn't covered by either LEED or the MLO is the color of the light source. But color is an increasingly controversial topic, especially as traditional halogen sources are replaced with

The High Line New York City

"The idea was to create a ribbon in the middle of the canyon," says Hervé Descottes, principal of L'Observatoire International, about the High Line project. His firm worked with the team leader, landscape architect James Corner Field Operations, architect Diller Scofidio + Renfro, and plant designer Piet Oudolf to convert an abandoned freight line on Manhattan's far west side into the wildly popular 1½-mile-long elevated park, completed in stages between 2009 and 2014. New York has no restrictions on uplight, as many cities do, according to Descottes. But here the light sources—a combination of metal-halide lamps and LEDs for the first phases and all LEDs for later ones—are hidden, directed downward, and placed low to the ground. "The approach makes the landscape appear to glow all by itself."





The rendering (above) illustrates Tillett Design Associates' discreet distribution of light throughout Calgary's St. Patrick's Island Park, a strategy conceived to sustain the island's wildlife population.

more energy-efficient and longer-life LEDs, which, at least until recently, tended to be cooler or seemingly whiter. In mid-June, the American Medical Association (AMA) released a statement warning of potential health hazards associated with high-intensity bright-white LED streetlights. According to the report, such a lamp "is at least five times more powerful in influencing circadian physiology than a high-pressure sodium light, based on melatonin suppression." The statement cited recent studies that found that greater residential nighttime lighting is associated with such ill effects as reduced sleep time, dissatisfaction with sleep quality, impaired daytime functioning, and even

obesity. The AMA's recommendations include use of shielded streetlighting, with a correlated color temperature (CCT) of 3000K or lower. (CCT is a specification of the color appearance of light emitted from a lamp measured in degrees Kelvin. Lamps with a higher CCT rating are considered cooler.)

Although the IDSA called the report "groundbreaking" on its website, not all lighting professionals are as enthusiastic. Mark Rea, the director of the Lighting Research Center at Rensselaer Polytechnic Institute, in Troy, New York, says that the AMA analysis is "oversimplified." Rea and Mariana Figueiro, the research center's program director, issued a response that



St. Patrick's Island Park *Calgary, Alberta*

When the Calgary Municipal Land Corporation tapped Civitas and W Architecture & Landscape Architecture to create a nature-based park on a 31-acre island in the city's Bow River, the landscape architects called upon Tillett Lighting Design to provide contextual illumination with the delicate touch for which the firm is known. St. Patrick's Island had been a park for over a century but suffered from neglect and disuse in recent decades. One of the goals of the design team was to maintain a viable habitat for birds, bats, and other wildlife. To achieve that, principal Linnaea Tillett and her team first identified how much of the park they could reserve as dark space. They layered this approach by also looking at how little light they could use, and only where it was essential for people using the park at night so that they would feel at ease and be able to find their way out. The lighting designers used a warm 3000K CCT for all the lamping, defining a major path (above) through the length of the park with well-shielded metal halide fixtures on tall wood poles. With two 50-foot-tall poles, each supporting four shielded adjustable metal-halide floodlights, the designers cast a moonlike glow on a central berm (opposite, top), used for nighttime sledding. Typically, the floodlights are shut off when the area is not in use. They also scattered low-level LED luminaires along secondary paths and LED wood bollards (right) in more open areas. Says Tillett, "We absolutely minimized our participation to maximize the territory left light-free for the birds."





Msheireb Doha, Qatar

Msheireb Properties is revitalizing Doha with an eponymous new downtown that has an ambitious sustainable agenda. Asked to create a master plan for the lighting of the 77-acre development, Arup worked with architectural master planner Allies and Morrison to create standards that are compatible with the desired Qatari building style and minimize the number of illuminated facades throughout the project's various zones—mixed-use and residential, business, retail, heritage, and government. Employing the LEED light-pollution-reduction credit as a reference, lighting designer Emily Dufner and her team devised a concept called Light, Dark, Light that illuminates rooflines—comprising roof terraces and shade structures—as well as ground-level colonnades with shielded downlights, leaving the facades dark. All of the utilitarian luminaires, such as streetlights, are full-cutoff. LEED does allow a certain percentage of uplighting, however, so allowances were made for landmark buildings, structures on key public spaces, and decorative lighting. In all these cases, controls play a critical role in shutting them off at predetermined times. “Sustainability and the reduction of light pollution is inherent in our approach,” says Dufner, “but in this project, it was client-driven.”

criticized the AMA report on a number of fronts, but one of the main arguments is that CCT is not appropriate for characterizing the potential health impacts of lighting since the metric “is independent of nearly all of the important factors associated with light exposure, namely its amount, duration, and timing.”

Meanwhile, Lam's Heinmiller calls the issue of circadian rhythms “huge and important,” but says the focus on CCT is “missing the forest for the trees.” He points out that converting street lamps to 3000K will not by itself solve the problem. “If we are still over-

illuminating the environment, we will be creating light pollution.”

Clearly, the science behind outdoor lighting and its environmental and human health implications is complex. But aesthetics should not get lost in the debate, say advocates of sensitive nighttime illumination. Architects and lighting professionals should not think of lighting after the sun sets as an extension of the day, says Travis Longcore, assistant professor of architecture and spatial sciences at the University of California, Los Angeles. Instead, he says, their goal should be “nocturnal place-making.” ■

Continuing Education



To earn one AIA learning unit (LU), including one hour of health, safety, and welfare (HSW) credit, read “Designing for the Dark,” review the supplemental material at

architecturalrecord.com, and complete the online test. 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 continuingeducation.bnpmmedia.com.

Learning Objectives

- 1 Define light pollution and related terms, such as sky glow, glare, and light trespass.
- 2 Discuss the ecological and human-health consequences of light pollution.
- 3 Discuss policy efforts aimed at reducing light pollution.
- 4 Discuss the methods used to minimize light pollution in recent outdoor lighting projects.

AIA/CES Course #K1608A

FOR CEU CREDIT, READ “DESIGNING FOR THE DARK” AND TAKE THE QUIZ AT CONTINUING-EDUCATION.BNPMEDIA.COM, OR USE OUR ARCHITECTURAL RECORD CONTINUING-EDUCATION APP, AVAILABLE IN THE ITUNES STORE.

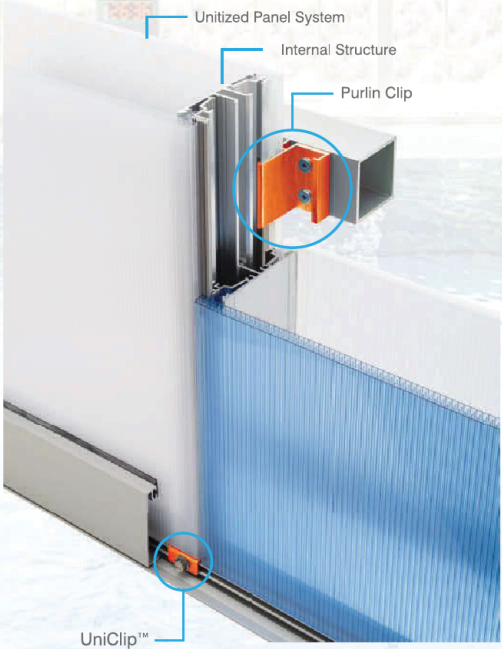


What's Your Next Bright Idea?

UniQuad®

UniQuad® - a unitized translucent panel system developed for high-performance building envelopes. This comprehensive system offers superior thermal performance and exceptional design versatility. UniQuad enables you to redefine daylighting and highlight your creativity, without sacrificing performance. Explore what's possible when imagination meets innovation.

► Completed in March 2016, the \$55 million project features 12,700-sq.-ft. of UniQuad® translucent glazing panels - some as large as 50 ft. tall. The translucent facade provides an even distribution of glare-free, diffused daylight throughout the facility.



Grandview Heights Aquatic Centre | HCMA Architecture + Design | Surrey, BC
© Ema Peter Photography

**HWM11 Taos**

Approved by the International Dark-Sky Association (IDA), this dimmable wall-mount luminaire has an interchangeable 2, 4, or 6W LED module that delivers a brilliant downward beam in a compact body only 1¾" in diameter. Options include solid brass or solid copper housing with or without 60° or 90° shrouds.

auroralight.com

CIRCLE 115

Gentle is the Night

Dark-sky-friendly LED luminaires provide light where it's needed, without glare and upward spill.

By Linda C. Lentz

**Invue Arbor**

Featuring an organic design, this fully controllable collection of shielded outdoor luminaires features the company's WaveStream LED optics, which provide precise, pixilation-free light distribution with reduced glare for area and pedestrian applications. The post top, bollard, and wall-mounted models are available in custom and standard TGIC-based polyester powder-coated finishes, and with a 4000K or optional 3000K CCT.

eaton.com/lighting

CIRCLE 116

**RSW Series with WaveMax Technology**

This lightweight, dimmable roadway luminaire delivers the light where it needs to be with topnotch efficacy (up to 115 lumens per watt). Designed to minimize glare and any halo effect, this new series is available at a warm 3000K CCT with an 80 CRI—making it a more welcome and dark-sky-friendly option for cities, residential communities, country roads, and parkland settings.

cree.com

CIRCLE 117

**Inula Bollard**

This Dark-Sky-compliant pathway/area luminaire was recognized as a Next Generation Luminaire (NGL) at this year's Lightfair for its good glare control, light distribution, and vandal resistance. A proprietary optic provides clean patterns of illumination with neither striations nor uplight. It comes with IDA-approved 3000K CCT or Amber LED options.

selux.us

CIRCLE 118

**ALED360**

RAB's new area luminaire for pole, slipfitter, and wall, has improved thermal performance. Options include a 3000K CCT and proprietary wireless control system and service, operable via computer or mobile device. This allows for a range of tasks, from the dimming of individual fixtures to the illumination of entire zones.

rabweb.com

CIRCLE 119

**Kick**

Engineered with a recessed, fully shielded optical system, this contemporary luminaire cum pole eliminates glare from most viewing angles with 0% uplight. Wireless-ready, to provide maximum control, Kick is ideal for pedestrian-scale paths and building entrances. It comes in 3000K CCT, as well as cooler 4200K and 5100K, in a variety of sizes, finishes, and configurations.

aal.net

CIRCLE 120

Subscribers:
Get
**ARCHITECTURAL
RECORD**
delivered free to
your tablet!



Download today. Visit
the iTunes App Store
or Google Play from
your tablet and search
"Architectural Record
Digital Edition."

Sponsored by



The look that works
in British Columbia.



Guildford Town Centre Expansion, Phase II, Surrey, British Columbia
ARCHITECT: Musson Cattell Mackey Partnership, Vancouver, British Columbia
THE LOOK THAT WORKS: An innovative, custom-designed mounting system
allowed for easy installation of the 88 flat louver sections on a curved surface.

Architects, builders and building owners across North America rely on Aiolite for innovative, effective product solutions that make a unique visual statement while performing critical functions. Our products ventilate, illuminate, reduce glare, prevent water penetration, save energy, provide visual screens and add security for new and renovated buildings. For well-crafted products, assembled in America and delivered on time, let's partner on your next project.



715.841.8757 | aiolite.com

Workmanship. Partnership.
Leadership.

CIRCLE 17

©2016 Aiolite

LOUVERS | SUN CONTROLS | GRILLES

CIRCLE 17



Three big challenges.

One ideal solution.

381 Enormous Windows...Hurricane Resistant and NPS Approved.

Conventional wisdom says that when windows are this big - over 10 feet tall - they can either meet hurricane impact requirements or satisfy National Park Service standards for historic replication...but not both. The Cigar Factory, built in 1881 and one of Charleston's last remaining Victorian-era industrial buildings, now features 381 windows that meet the code and earned NPS approval, thanks to Graham Architectural Products.

Learn how Graham met this challenge: www.grahamwindows.com/REhistoric

CIRCLE 189

YOUR VISION. OUR EXPERIENCE.



grahamwindows.com 800-755-6274

Architectural Windows | Window Wall | Curtain Wall | Doors

Architect: Stevens & Wilkinson Photo by: Jeff Holt

ARCHITECTURAL RECORD **COCKTAIL NAPKIN** SKETCH CONTEST 2016

2 GRAND PRIZE
WINNERS
WILL RECEIVE AN

**APPLE
WATCH
SPORT!**

CALL FOR ENTRIES

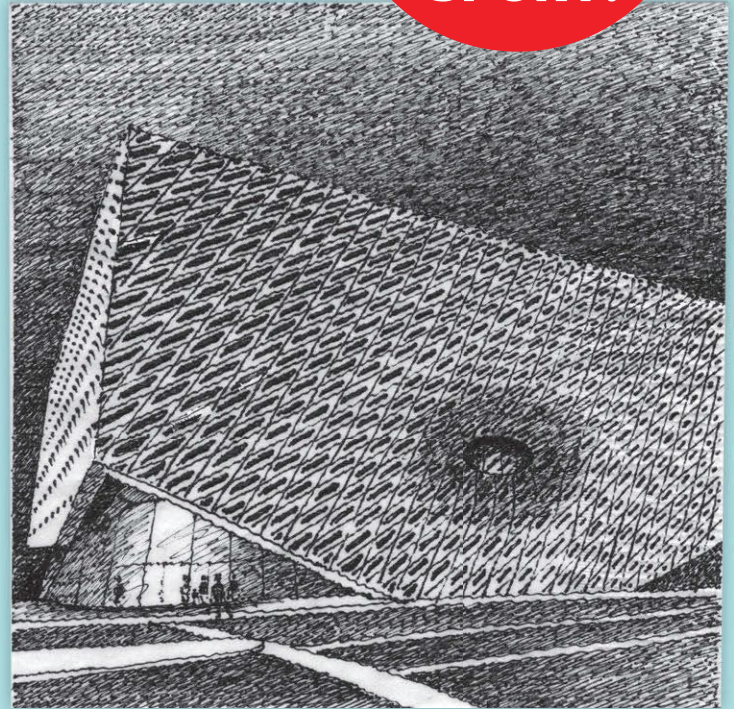
If you are a licensed architect or related professional who practices in the United States, you can enter this remarkable contest.

All you need is a white cocktail napkin and pen to demonstrate that the art of the sketch is still alive. Two grand prize winners will be chosen (1 licensed architect, 1 related professional). Grand prize winners will receive an Apple Watch Sport and a box of cocktail napkins with their winning sketch printed on it!

The sketches of the winners and runners-up will be published in the November 2016 of *Architectural Record* and shown online in the ArchitecturalRecord.com Cocktail Napkin Sketch Gallery.

HOW TO ENTER:

- ▶ Sketches should be architecture-oriented and drawn specifically for this competition.
- ▶ Create a sketch on a 5-inch-by-5-inch white paper cocktail napkin.
- ▶ Use ink or ballpoint pen.
- ▶ Include the registration form below or from the website.
- ▶ You may submit up to 6 cocktail napkin sketches, but each one should be numbered on the back and include your name.
- ▶ All materials must be postmarked no later than September 9, 2016.



"The Broad Veil on Grand" by Daniel Sauerbrey, 2015 runner-up

DEADLINE: September 9, 2016. ENTER NOW!

For more information and official rules visit: architecturalrecord.com/cocktail-napkin-sketch-contest

ARCHITECTURAL
R E C O R D 125 years

Founding sponsor



SEND ALL SUBMISSIONS
IN ONE ENVELOPE TO:

Cocktail Napkin Sketch Contest
Architectural Record
350 5th Avenue, Suite 6000
New York, NY 10118

For more information,
email: ARCallforEntries@bnpmedia.com
with the subject line "Cocktail Napkin"

NAME OF ARCHITECT

FIRM

ADDRESS

NUMBER OF YEARS IN PRACTICE

TELEPHONE

EMAIL

What is your job function? (check one)

ARCHITECT

DESIGNER

FACILITIES MANAGER

SPECIFICATION WRITER

CONTRACTOR

OTHER

Are you registered?

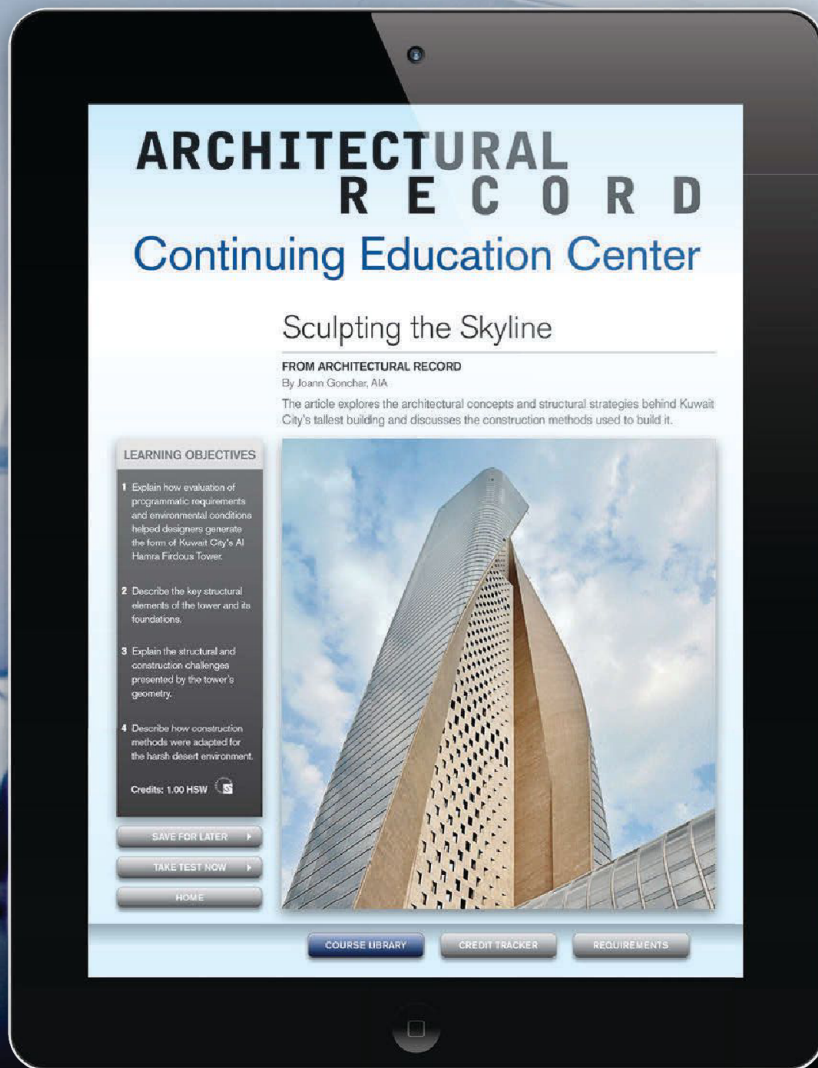
YES NO

Are you an AIA member?

YES NO

LECTURE HALL.

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
reTHINK
WOOD®



CONTINUING EDUCATION

CONTINUING EDUCATION

In this section, you'll find three 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 ce.architecturalrecord.com to take the tests free of charge to earn AIA Learning Units (LUs) and Health Safety Welfare (HSW) credits.

Image courtesy of Tremco Commercial Sealants & Waterproofing and BARA (Balfour Beatty Construction, Austin Commercial, H.J. Russell & Co., Azteca Enterprises)



p118

Providing Thermal, Moisture, and Fire Barriers In Harsh Conditions

Sponsored by Acexpress, Epro, Inpro, and Tremco Commercial Sealants & Waterproofing

BE LS PM

CREDIT: 1 AIA LU/HSW

Photo courtesy of AGS Stainless, Inc.



p130

Prefabricated Ornamental Railings

Sponsored by AGS Stainless, Inc.

ACC PM RE

CREDIT: 1 AIA LU/HSW

Photo courtesy of Spectis Moulders Inc.



p134

Architectural Millwork: Molded vs. Fabricated

Sponsored by Spectis Moulders Inc.

PM RE RR

CREDIT: 1 AIA LU

CATEGORIES

- ACC ACCESSIBILITY
- BE BUILDING ENVELOPE DESIGN
- LS LIFE SAFETY AND CODES
- PM PRODUCTS AND MATERIALS
- RE RESIDENTIAL
- RR RENOVATION AND RESTORATION



Critical air, water, and fire barrier systems in buildings need to be designed and installed correctly in order to protect both the building and its occupants, as shown here at the Parkland Hospital in Dallas, Texas.

Image courtesy of Tremco Commercial Sealants & Waterproofing and BARA (Balfour Beatty Construction, Austin Commercial, H.J. Russell & Co., Azteca Enterprises)

Providing Thermal, Moisture, and Fire Barriers In Harsh Conditions

Critical building systems need to hold up to multiple rigors and demands

Sponsored by Acexpress, Epro, Inpro, and Tremco Commercial Sealants & Waterproofing | By Peter J. Arsenault, FAIA, NCARB, LEED AP

All buildings are designed using a combination of materials, products, systems, and components. Each part is selected and specified to do a particular job, serve a particular purpose, or meet specific criteria. Some are driven by design and aesthetic priorities, while others are driven by functional and performance requirements. The most successful designs are those that allow all of these parts and pieces to work together such that the use of one does not compromise the use of another. In fact, the ideal situation is one where products or components can enhance other materials or systems that are part of the larger building.

This premise is particularly true where thermal, moisture, and air barriers are involved. By their nature, buildings create a barrier or separation between indoors and outdoors. That separation involves restricting or eliminating the passage of unwanted air or water and controlling unwanted heat transfer. The types of products and systems used to accomplish that separation will determine the effectiveness of the exterior enclosure of a building. But more importantly, the attention to all of the areas where those barriers have seams, connections, penetrations, or irregularities determines the ultimate performance and effectiveness of truly

CONTINUING EDUCATION



1 AIA LU/HSW

Learning Objectives

After reading this article, you should be able to:

1. Identify the aesthetic and performance aspects of flat and three-dimensional cladding as the first exterior barrier of a wall system.
2. Assess the need to maintain coordinated, continuous air and water barriers in buildings for energy efficiency, indoor air quality, and sustainability.
3. Explain the importance of proper waterproofing systems for foundation and floor decks suitable to the level of protection required.
4. Determine the most appropriate fire barrier expansion joint system to use based on building project conditions, safety concerns, and durability requirements.

To receive AIA 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 COURSE #K1608B

Photos courtesy of Acpexpress

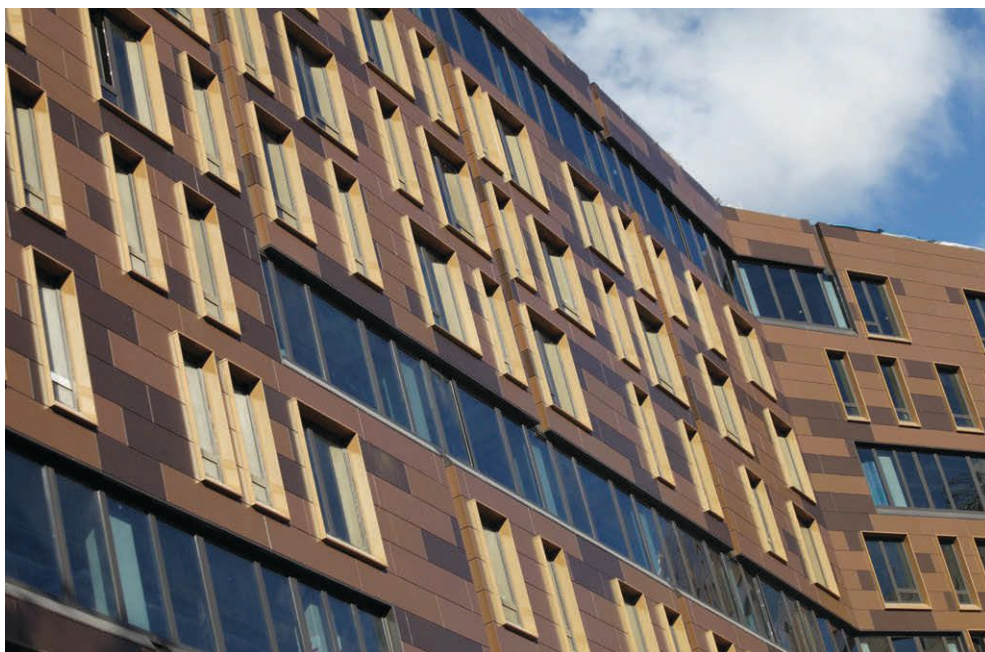
continuous barriers. This is true not only in building exterior enclosures for thermal and moisture protection, but also within a building, where fire barriers are required to protect human life and safety. Walls, floors, and ceilings may be tested and rated, but if the construction is not truly continuous due to openings, joints, or other features, then the effectiveness of the barrier is compromised.

There is one other concern for the long-term integrity of barriers in buildings, namely the conditions they will face over the life of the building. Most of the manufactured barriers or systems available are tested and rated based on typical, or average, conditions. But, depending on their location and use, buildings may experience more difficult or challenging conditions. Some locations constitute harsh environments due to regular exposure to salt water, high winds, or heat and cold. Others are in active seismic zones that can impose numerous stresses from multiple minor earthquakes over the life of the building. Hence, the long-term safety and durability of these barriers, and the buildings and people that they protect, are directly dependent on their capabilities to hold up and function in all of these conditions.

To illustrate these points, we will look at four types of barriers and the issues related to their performance under normal and harsh conditions. Specifically, we will address exterior cladding, air barriers, moisture barriers, and fire barriers.

ENHANCED EXTERIOR CLADDING

The first line of air and moisture defense on any exterior wall system is the outermost cladding material. Generically, any type of material can constitute cladding, ranging from masonry, stone, metal, wood, or composites. Its purpose is to provide the visible skin of opaque areas of the building and deflect wind, rain, sun, and heat. As such, it needs to be very durable to hold up over time and retain both its appearance and performance characteristics. Usually, this cladding layer is not considered to be air or water tight. Rather, it is intended to take the brunt of weather and sun exposure and protect the building materials and systems behind, while allowing for the management of air and water to drain away. While most cladding materials are up to the challenge, their useful life and need for maintenance will vary by material. Painted surfaces will need repainting, masonry and stone may need repointing, and applied coatings may need recoating. It is not surprising then that factory-finished metal or composite panel systems have become popular for cladding since they often require less maintenance, can be more durable over time, and are lighter weight than some other alternatives.



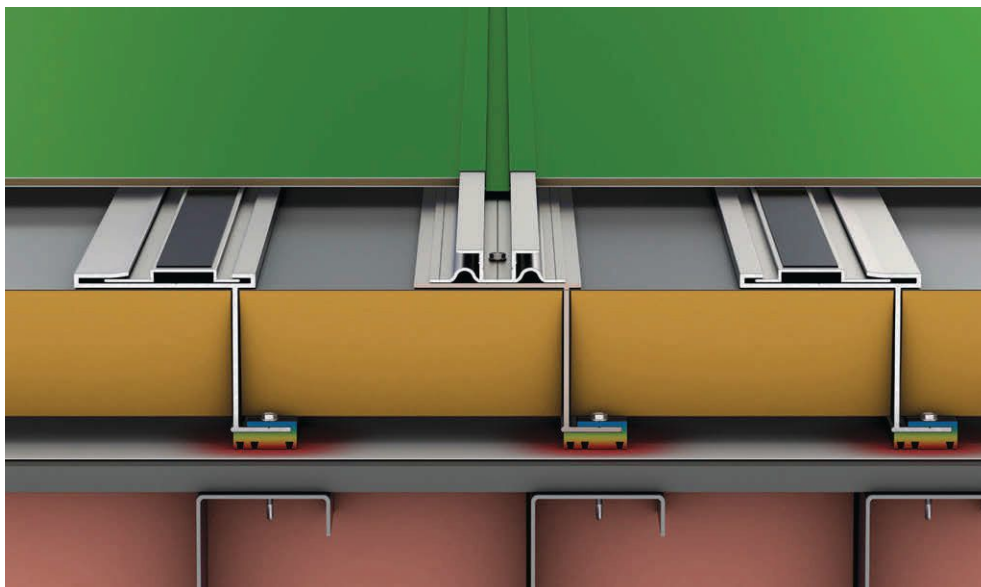
Exterior ACM cladding examples include the Brooklyn Bridge Pierhouse (left) in Brooklyn, New York, and 92-77 Queens Boulevard (right) in Queens, New York.

When thinking about cladding panels, it is common to think of the industry-standard flat panel installations. These may be appropriate for many situations, but their rigidity and ability to withstand high winds or other forces will be directly dependent on the inherent strength of the panel material. If the panel is surface applied directly to a substrate, that may help, but most are designed to be held away from the substrate, creating an intentional drainage space behind

the cladding. In fact, the increasingly popular rainscreen systems are specifically designed to perform based on creating just such a space that anticipates water penetrating the cladding joints and being allowed to drain away harmlessly.

An alternative to flat panels is to use metal or aluminum composite material (ACM) panels in three-dimensional (3-D) panel shapes that easily install on building walls. The 3-D shape helps with the rigidity of the panel and avoids distortions.

Image courtesy of Acpeexpress



This ACM cladding system shows thermal break pads, insulated Z-furring, base attachment, stiffener attachments, and un-routed ACM panels. In this case, finishing caps are used to hide the attachment joints.

tion or “oil canning” that can occur on some flat panels. Most, if not all, of these products have been independently tested for conformance with ASTM standards for structural load, water penetration, and air infiltration. The test results confirm that these external cladding systems can provide the rain, salt, and wind protection needed for buildings located in harsh environments. Manufacturers of 3-D panels provide a wide array of ACM product offerings, including convex or concave shapes, allowing architects and designers to work creatively.

The primary point of differentiation between fabricators of ACM panels is the attachment systems that each provide, usually made of aluminum or rigid PVC channels and clips. Some attachment systems are based on panels coming together in a butt-joint approach that is designed for interior installations but not for exterior facades. Others are based on a removable panel system that allows an ACM panel to be removed and a new panel installed into the same attachment clips, all in a matter of minutes. This can be very useful when sporadic, severe conditions are anticipated and replacements are needed in case of damage, vandalism, etc.

More sophisticated systems remove the need for routed returns on the panels by using the design of the panel and attachment system to join panels together securely. Such systems secure the panels to the building wall without the need for screws, rivets, or caulk. This means that the fabrication and installation process is radically simplified, reducing the overall cost of the installed system and shortening the lead time for getting the panels onto a building. Such systems can be enhanced with thermal break

pads that can isolate the aluminum attachments from the building wall, effectively stopping the thermal transfer of energy through the cladding. The thermal break pads commonly available are made from a material called polyamide and are designed to easily affix to the aluminum attachment systems. Polyamide has been found to be very effective at stopping thermal transfer of energy between interior and exterior surfaces. This heat transfer control can be further enhanced using rigid insulation behind the cladding that is penetrated only with Z-channels or hat channels to secure the cladding in place. The combination of thermal break pads and continuous insulation helps provide high R-values for ACM panel installations.

Pablo M. Ipucha, Associate AIA, a senior project manager with Gene Kaufman Architect PC, has experienced the use of such a system, and here is what he has to say about it: “Incorporating ACM panels into a building envelope has benefited us in drastically reducing the width of the exterior wall, while meeting the R-value requirements. We were able to add 6 inches of usable real estate to the floor plans all around.”

COMPLETE, COORDINATED AIR AND WATER BARRIER SYSTEMS

Behind a cladding system, the rest of a wall assembly needs to be covered with air and water barriers. In some cases, that can be the same material; in others, it is two different products or materials. Generally, conventional wisdom suggests that the fewer the layers the better for simplicity and cost effectiveness. However, there are other considerations. First is the need for a complete, continuous barrier. That means it is

not just about the material itself, but the means to attach it, the connections at seams or joints, and the treatment around penetrations, such as piping, wires, or sleeves. Just one small gap can lead to major problems from air and moisture infiltration, and those gaps can occur in a lot of different ways. The drawings and specifications, for example, may not be all encompassing enough to address different design details. On-site construction conditions might leave wide joints that are impossible to seal with a sealant. During occupancy, differential movement of materials can lead to joint failure. All of these situations need to be considered to achieve a truly durable and continuous system.

Second, the transitions of the barrier systems to other types of construction need to be taken into account. While the window-wall transition is where most problems occur, connections at roof to wall, foundation to wall, corners, penetrations, drift joints, and floor deflection joints are also critical connections with the potential for increased performance problems, not to mention professional liability. All of this underscores the need for continuous, compatible product systems that address all of the connections on the building envelope where most failures occur, especially under harsh conditions, such as thermal and seismic movement, hurricane forces, and blast resistance.

Continuous connections and transitions throughout the building envelope are key to the longevity of the structure and its structural components, energy consumption, indoor air quality, and maintenance. Specifications left to “others” for these connections lead to uncertainty, interpretation on the job, and trial and error. Traditional methods may not work, particularly over the long term after continual exposure to thermal or dynamic movement. Depending on the conditions, they may not even work at the outset if existing conditions leave unsupported gaps that cannot be addressed by sealants, foams, or peel-and-stick flashing membranes.

Fortunately, products are available from single-source manufacturers that are complete, coordinated, and effective. Some have created innovative, engineered solutions for critical connections that provide visible assurance of a secure, continuous seal without voids. For example, one system consists of pre-engineered, finished aluminum and silicone materials that are assembled and attached to a window or wall assembly. These assemblies provide a more secure and flexible option for sealing connections, notably improving air and moisture management at critical transitions. This type of solution also allows for greater movement and deflection beyond what sealants or self-adhered membranes can provide, particularly where dissimilar materials, such as curtain wall and various assemblies, connect—all while main-



**Danger.
Destruction.
Devastation.
Disaster.**

CIRCLE 251

FIRELINE 520™
AN INPRO® COMPANY

Your Building Faces Serious Threats.

Which is why we obsessively engineered our Fireline 520™ Fire Blanket to help protect your building and the people inside from smoke and fire disasters. From factory fabricated transitions to drop-in installation, Fireline 520™ Fire Blankets are made to prevent the usual gaps in fire protection that can leave your building vulnerable. With lives on the line, do you know what's in your joint?

Contact us today to learn more about protecting your building.

• **JOINTMASTER™**
EXPANSION JOINT SYSTEMS

inprocorp.com/fireline520
877.780.0034

taining water and air tightness. The system's design absorbs thermal movement and wind-loading stresses. The use of translucent, formed silicone gaskets allows the installer and/or inspector to see through the gasket to verify the recommended amount of sealant is properly applied, while ribs in the gasket ensure a minimum sealant thickness. This type of solution also addresses the problems with compatibility in the connection from the air barrier to the wall system. By using a compatible silicone sealant to serve as an adhesive and wet seal to an air and water barrier system, a turnkey solution can be specified and obtained. It should be required that the manufacturer submits proof that the complete system has been developed and tested for compatibility and long-term air and moisture protection.

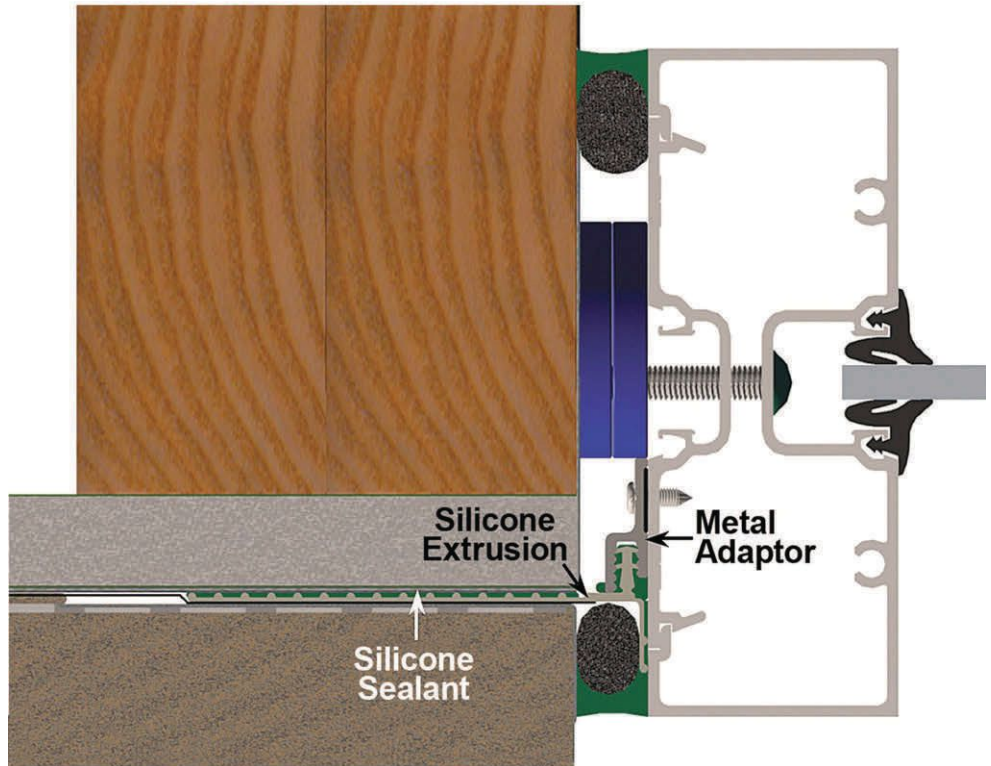
Architects and others who seek to work with an air and water barrier company during design may be pleased to discover that some offer significant assistance related to the most successful ways to use their integrated systems. These companies are as interested as the design team is in mitigating risk by working to prevent barrier failures during construction or occupancy. Such design assistance may include a full review of the building enclosure system, suggestions for integrated product and connectivity solutions, and even project-specific 3-D CAD details with installation instructions. During construction, they can assist with mock-ups to document performance, quality assurance through pre-construction coordination, applicator training, plus inspection and on-site testing, if desired. In some cases, they can even assist with full building enclosure commissioning in addition to providing full-system performance warranties.

APPROPRIATE LEVELS OF WATERPROOFING

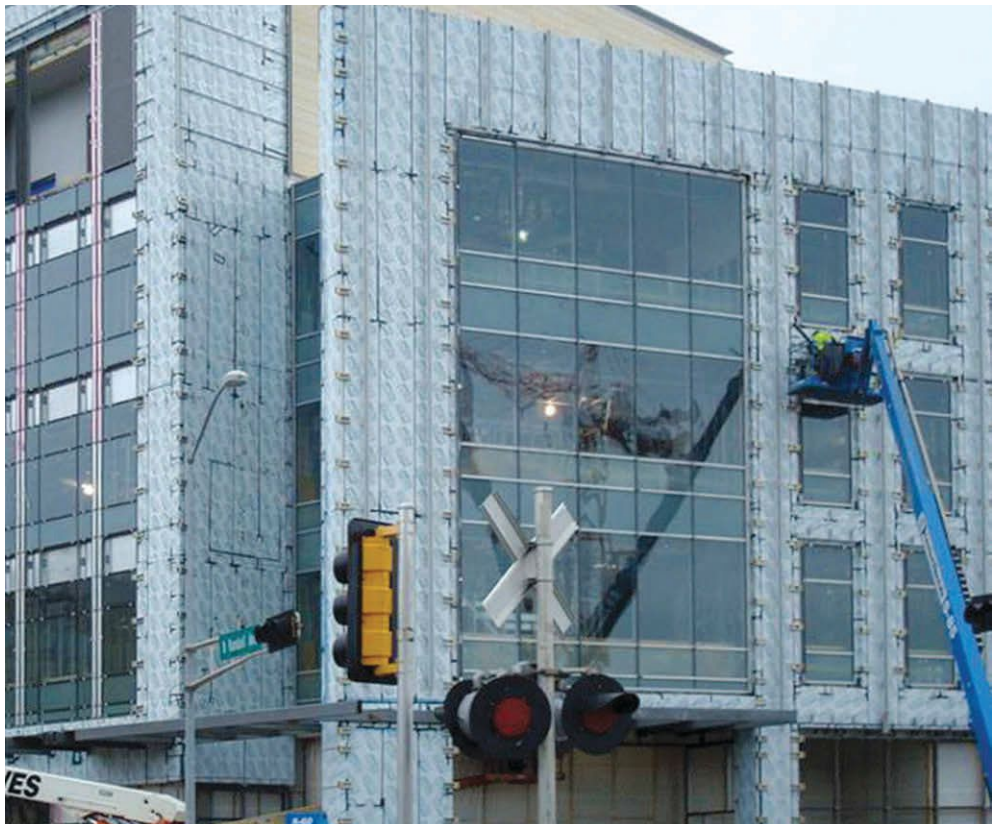
Some portions of a building need more than air and moisture protection—they need full waterproofing protection. This is true in low-slope roofing systems, but it can also be true in more severe conditions both above grade and below grade. Anywhere the potential exists for bulk water to collect or build up against a wall or floor system, then waterproofing is needed to protect it. There are, of course, multiple ways to achieve such waterproofing, and sometimes the choices can be confounding in terms of determining what is best for a particular project. Further, it is not always appropriate to assume that a standard solution that worked well for one building is appropriate for another.

One approach to determining the most appropriate solution is based on a concept called “redundant field-fabricated composite design,” which is the integration of multiple waterproofing types into one organized

Images courtesy of Tremco Commercial Sealants & Waterproofing



Redesigned Connection



Continuous air and water barriers need to address the application of the material plus the details of seams, transitions, and connections, particularly around doors and windows.



CLADIATORS™
ADVANCED ENGINEERING



Cladiators™ Calor™ = Save

Save Energy

- Thermally isolated aluminum composite metal panel system
- Isolated to prevent thermal transfer of energy through building

Save Material

- Reduces fabrication time and material
- Eliminates wasted material

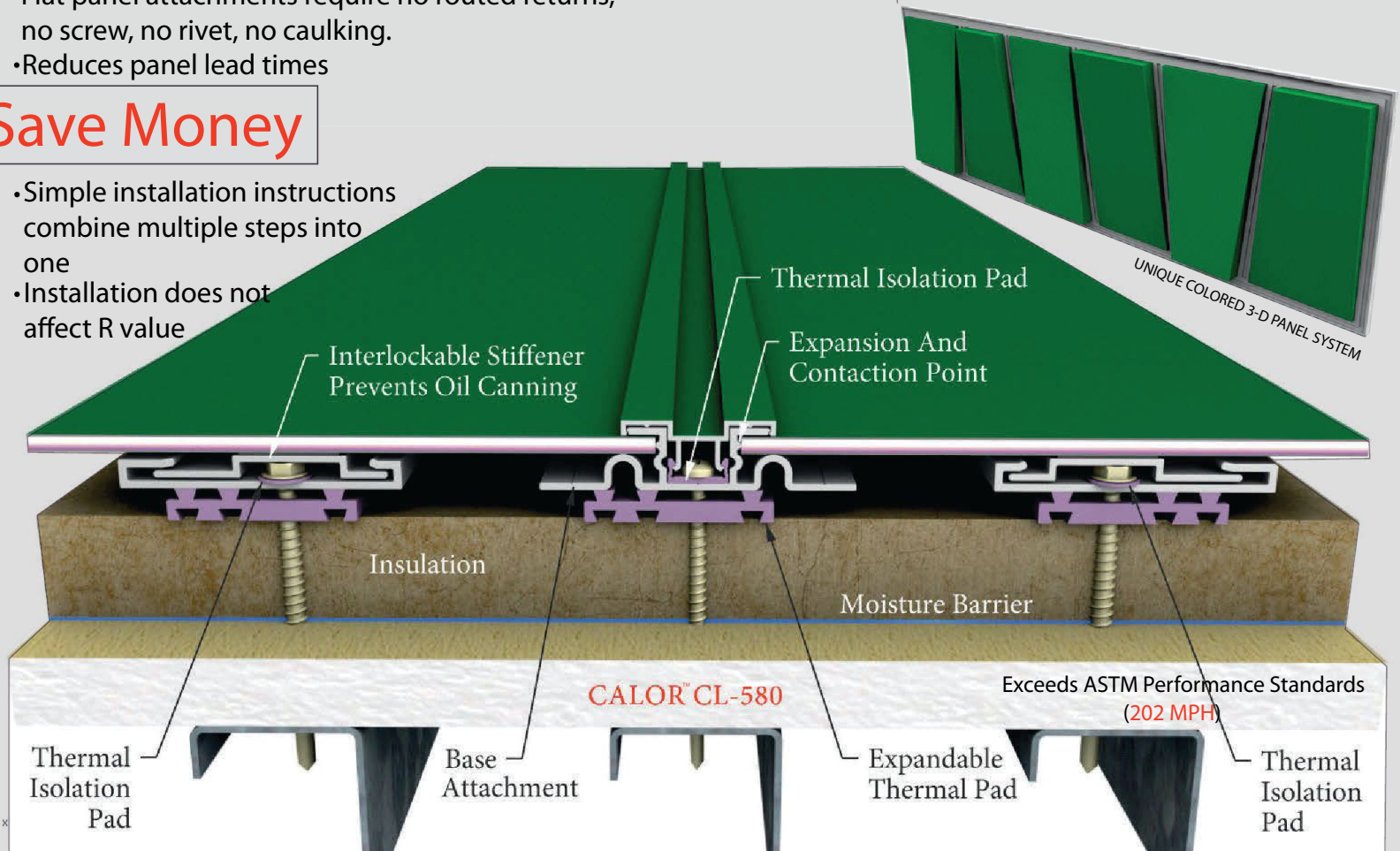
Save Time and Labor

- Flat panel attachments require no routed returns, no screw, no rivet, no caulking.
- Reduces panel lead times

Save Money

- Simple installation instructions combine multiple steps into one
- Installation does not affect R value

CIRCLE 249



Photos courtesy of Epro



Complete waterproofing based on the concept of redundant field-fabricated composite design provides below-grade walls and decks the degree of protection needed based on the choices made for individual component layers.

system. This concept allows architects and designers to customize the system, protecting their structure based upon the site conditions, performance expectations, and budget considerations of the project team. It also allows for an assessment of the severity of the waterproofing needs and allows for a system to be selected based on that need. Essentially, the approach is to be sure that the products and system used will keep building structures dry and safe, but to use the appropriate level of protection needed—not overdue it unnecessarily, nor come up short on meeting the true waterproofing need.

Some manufacturers recognize this approach to waterproofing and have made it easier to understand the differences between different layers or types of protection using their commercial waterproofing products. Essentially, they provide a “good, better, best” approach to waterproof protection through different system configurations that are suitable to protect below-grade foundations and exposed decks. Such field-installed composite waterproofing systems are defined by multiple layers. The first layer is a spray fluid-applied membrane that covers concrete or masonry. Commonly, this is a water-based polymer modified asphalt (PMA)

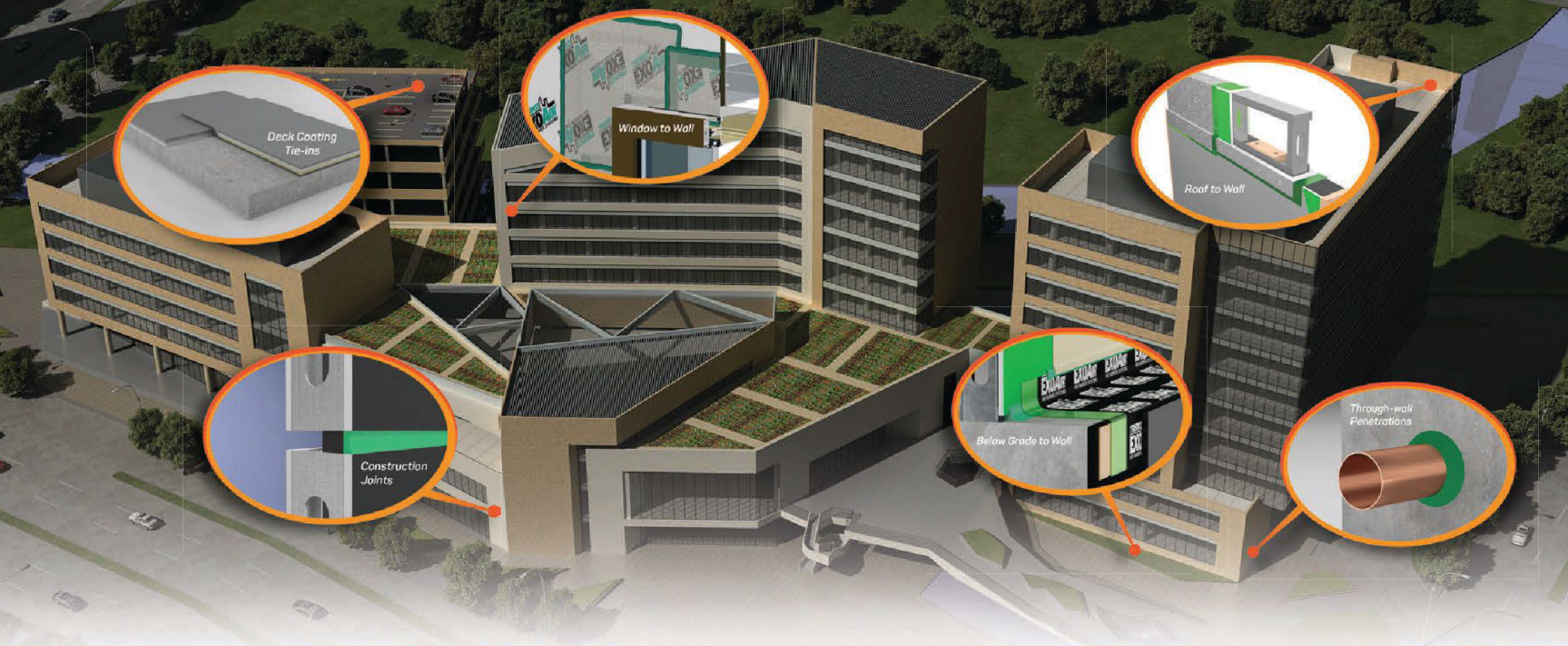


membrane. The second layer is a reinforcing fabric commonly made from polyester to take up any undue stresses from movement. An additional layer can be specified that allows for some added thickness to absorb and drain water away. This layer is commonly made of bentonite or a similar water absorbing and draining material. The final outer layer protects the drainage medium as well as the primary membrane. Such outer layers can be a composite made up of a

high-density polyethylene (HDPE) core and nonwoven polypropylene fabric drainage or a polypropylene core and polypropylene fabric.

The goal of this holistic approach to waterproofing is to create a series of barriers, drainage channels, and reinforcing protection over a concrete or masonry wall, slab on grade, or other structure. Each of these layers can be specified or selected based on the particular needs of the project with properties that suit

GET CONNECTED IN 2016



Continuous, compatible solutions for the high-performance building envelope

Since 1928, Tremco has developed the most comprehensive building envelope protection available in the industry. This singular focus ensures total compatibility of all products and systems. More comprehensive warranties. Single-source accountability. And, knowledgeable company representatives in most major markets across the country to help analyze job requirements, ensure proper product selection, conduct appropriate tests and provide on-site assistance.

But, we haven't stopped there. Our problem-solving approach is pioneering advances in sealant and waterproofing technology that will enable products to set new performance standards, dramatically reduce production schedules and provide ever-increasing flexibility in project design and implementation.

We've built a reputation for developing better ways to get the job done. See for yourself. Visit us at www.tremcosealants.com.

- AIR-BARRIER SYSTEMS
- GLAZING SYSTEMS
- TRAFFIC COATING SYSTEMS
- BELOW-GRADE WATERPROOFING & DRAINAGE SYSTEMS
- EXTERIOR SEALANT SYSTEMS
- FIRESTOPPING SOLUTIONS
- TRANSITION SYSTEMS

TREMCO
Commercial Sealants & Waterproofing

www.tremcosealants.com

USA • 3735 Green Road, Beachwood, OH 44122 • (800) 321-7906

Canada • 220 Wicksteed Avenue, Toronto, ON M4H 1G7 • (800) 363-3213

CIRCLE 87

the harshness of the building site or the degree of protection required. By working with one manufacturer that provides a complete system with the multiple choices, the design can be simplified and the performance maximized. At least one manufacturer provides such a system that truly combines all types of waterproofing into one coordinated system.

In addition to the actual system, it is important to understand how the edges of these systems are detailed. On vertical or sloped walls, a continuous metal termination strip across the top of a hybrid membrane allows for the transition between the area above and below the waterproofed area, but it also holds the drainage barrier in place. The bottom needs to account for the footing condition and allow the vertical drainage to be picked up, channeled, and moved away from the wall. That may mean adding some products specifically designed to be compatible with the rest of the waterproofing system that can be integrated as a horizontal or sloped drainage medium. Finally, the collected water must be able to drain away from the wall altogether either through drain tiles or piping or through the use of backfill materials that will allow for water dispersion.

Horizontal conditions, such as concrete floor slabs on grade, can be equally demanding, particularly if the groundwater level is high or the soil around and under the slab becomes saturated due to heavy rains. In order to prevent water infiltration, the waterproofing system needs to be continuous under the floor slab and connect with the wall edges to form a continuous barrier to drain and stop the water. This need can be exacerbated if freezing conditions are encountered near the building or if seismic activity is prevalent. In these cases, the waterproofing membrane system is subject to additional stresses and pressures beyond the normal hydrostatic concerns. Hybrid or composite systems that incorporate the multiple attributes of membrane, reinforcing, drainage, and protection into one coordinated system are most likely to perform well under these conditions compared to less complete or less coordinated approaches from multiple manufacturers.

Overall, hybrid, composite waterproofing systems leverage the attributes of multiple waterproofing technologies into a coordinated system. This enables building owners to receive a better overall value by receiving the appropriate level of protection, provided the architect selects the best mix of products and barriers to do the job efficiently. Further, by combining and leveraging the benefits of each waterproofing component, installation times can be decreased while overall protection increases compared to other types of waterproofing systems.

KEEPING FIRE BARRIERS UNINTERRUPTED

Fire separations are required in buildings for good reasons—there are too many tragic examples of preventable death and injury from fire and smoke in buildings. While a common reaction is to require fire sprinklers as an “active” means of fire safety, architects are well aware of the “passive” approach of using compartmentalized spaces that are enclosed on all horizontal and vertical sides with fire-rated construction. As in all barrier systems, the main body of the barrier is fairly well understood—in this case, noncombustible construction using protected steel, concrete, or gypsum board. The issue becomes addressing the seams or joints in this construction. In particular, large buildings require expansion joints that are often located in fire-rated construction that separates occupied spaces from each other, from vertical shaft ways, or from adjacent tenancies. The apparent paradox of providing an intentional break in the structure to allow for normal expansion and contraction while still maintaining a fire rating is addressed by providing an expansion joint fire barrier.

There are three common types of fire barrier expansion joint systems, and the suitability

of each will depend on the size of the joint or gap as well as the conditions that the joints are subjected to.

- Compression systems are typically for 4-inch and smaller expansion gap widths. These products are commonly comprised of mineral wool strips held in place through compression. These are topped with fire caulk sealant to secure the barrier in place and protect from water infiltration. Fire lab testing of compression systems is typically done for both concrete and drywall conditions.
- Fire-rated foams are suitable for 6-inch and smaller gaps and conditions where abuse is not likely. These systems are comprised of open-cell polyurethane foam impregnated with a fire-retardant material. These foams can be faced with colored silicone to match a desired décor or design aesthetic. Foams can also provide acoustic and insulation properties. Fire-rated foams are usually lab tested in concrete and cement-board wall conditions (not drywall).
- Fire blankets are the most versatile systems, suitable for expansion joint gaps of 2 to 32 inches and able to withstand high rates of movement. Fire blanket systems come in two forms—either ceramic cloths with

Photo courtesy of Epro/Jason Whitfield



Waterproofing systems can be subjected to stresses beyond hydrostatic pressure alone. The 1-million-square-foot West LRT Tunnel constructed in Calgary, Alberta, Canada, during the winter time is an example of the need for waterproofing to resist stresses from cold temperatures and possible seismic activity.

We make products to keep buildings dry and safe.

**REDUNDANT FIELD-FABRICATED
COMPOSITE DESIGN**



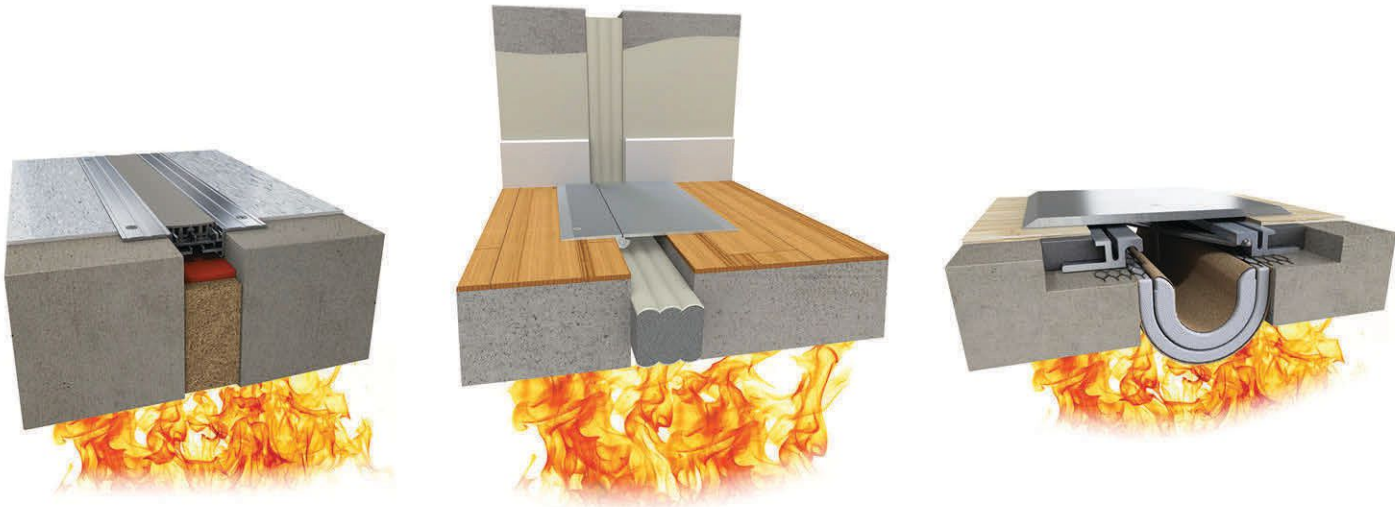
CIRCLE 88



**20 YEARS OF
EXPERIENCE**

EPRO Services Inc.
800-882-1896
www.eproserv.com

Images courtesy of Inpro



The three common types of fire barrier expansion joints are: compression systems with mineral wool (left), fire-rated foams (center), and fire blankets (right).

intumescent layering or graphite sheet goods encasing insulating blankets. In seismic conditions, they allow for approximately 50 percent of joint compression and expansion movement. Some models are able to retain their rating throughout lateral shear movement testing, while others cannot. Fire blankets are tested in concrete, but alternate substrate conditions may also be acceptable.

In all cases, the continuous, uninterrupted installation of the fire barrier is critical for life safety. This is especially true when using fire blankets since they need to be fully and carefully connected to the adjacent concrete surfaces and form a continuous barrier where vertical and horizontal conditions meet. At

least one manufacturer has addressed this concern through the use of a modular system that allows separate sections to nest together creating tight, continuous protection. Further, the edges of the blanket are pre-attached to metal flanges, assuring that the proper seal is obtained instead of relying on field installation to create an uncertain seal. These pre-attached flanges drastically reduce labor costs and ensure a uniform installation for a more reliably continuous seal.

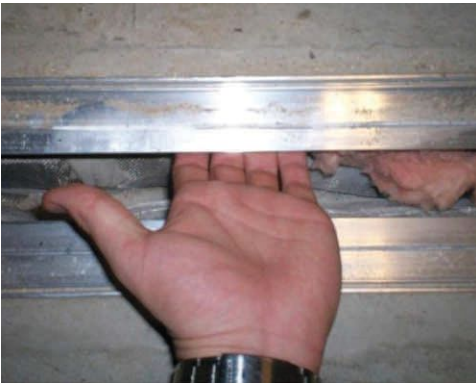
Fire blankets can be specified either to withstand water or not. Those that cannot withstand water exposure and become wet are often rendered useless against smoke, fire, and heat, and even after re-drying carry

diminished fire resistance. Products that are rated and tested for water exposure during or after construction or for open structures, such as parking facilities and stadiums, provide fire protection even if they become wet. It is important then to select and specify the appropriate material for the water conditions anticipated in the building.

CONCLUSION

Barriers of multiple types are needed in buildings to protect not only the building but the people inside. In all cases, the continuity and integrity of those barriers are critical to their performance. This is compounded by the fact that different conditions ranging from moderate to harsh will impact the ability of the barriers to perform as intended. Architects and designers who understand the range of options and the suitability of those options to different conditions can design and specify buildings that are safe, durable, and sustainable over the long run.

Photos courtesy of Inpro



Fire barrier expansion joints that have gaps between flanges and the blanket do not provide continuous fire protection. Further, blankets that are wet and not rated to resist water lose their fire rating.

Continues at ce.architecturalrecord.com

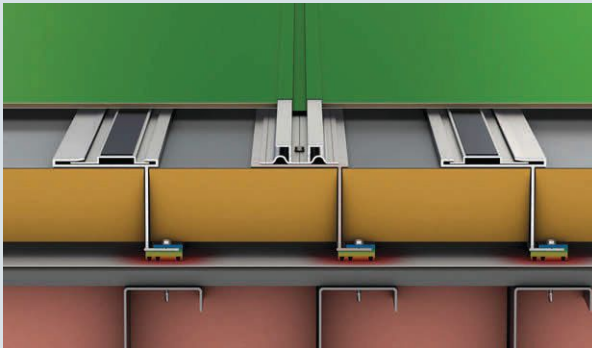
Peter J. Arsenault, FAIA, NCARB, LEED AP, is a practicing architect, sustainable building consultant, continuing education presenter, and prolific author engaged nationwide in advancing better building performance through design. www.linkedin.com/in/pjaarch

PRODUCT REVIEW

Providing Thermal, Moisture, and Fire Barriers in Harsh Conditions

Acexpress

Image courtesy of Acexpress



Cladiators Thermal Wall System

Cladiators is a revolutionary new wall cladding solution from Acexpress, an established leader in the industry. Cladiators features a flat panel installation—no routes and returns—that can be enhanced with thermal break technology. Painted aluminum caps cover the reveals and provide a clean, finished look to the installation.

www.cladiators.com

Circle 45

Epro

Photo courtesy of Epro



E.Series by Epro Keeps Buildings Dry and Safe

E.Series by Epro provides designers the ability to match the proper waterproofing system to their project requirements. The E.Series was developed over the past 20 years and embodies Epro's Redundant Field-Fabricated Composite Design philosophy. This simple yet powerful concept enables Epro to meet the demanding requirements of modern-day construction.

www.eproinc.com

Circle 46

Inpro

Image courtesy of Inpro



Fireline 520™ Water Guard™ Fire Blanket Expansion Joint System

Fireline 520™ Water Guard™ Series systems are the only fire blankets with a U.S.-patented, UL 2079-rated waterproof design. The Water Guard protects the integrity and performance of the fire barrier from extended exposure to the elements.

www.inprocorp.com/jointmaster-expansion-joint-systems/ Circle 47

Tremco Commercial Sealants & Waterproofing

Photo courtesy of Tremco Commercial Sealants & Waterproofing



Proglaze® ETA: A Window-to-Wall Connection with Clear Proof of a Proper Seal

Proglaze® ETA is a patented transition assembly composed of pre-engineered, finished aluminum and silicone materials mechanically attached to the window/wall's framing, absorbing thermal movement and wind-loading stresses. The translucent silicone allows the installer/ inspector to verify that the sealant is properly applied, while the gasket ribs ensure a minimum sealant thickness.

www.tremcosealants.com/products/proglaze-eta.aspx Circle 48

Prefabricated Ornamental Railings

Beauty, safety, and ease of installation all come together when stainless steel railing systems are prefabricated instead of constructed on the job site

Sponsored by AGS Stainless, Inc. | By Andrew A. Hunt



Ornamental stainless steel railings can add a touch of luxury and class to both interior and exterior designs, and can be easier for builders and architects when prefabricated off the job site.

All photos courtesy of AGS Stainless, Inc.

Metal ornamental railing systems can provide an elegant and functional finishing touch to a building project. However, it is important for architects to understand the difference between the types of materials available, as well as where and how the railing system is manufactured, and how it will be installed. By understanding these aspects of the railing system, architects can better manage this aspect of the building project.

This course will discuss the overall advantages of choosing a custom-fabricated railing system built off-site compared to off-the-shelf products or locally fabricated railings. In addition to looking at the practical considerations of how different fabrication choices affect project time and budget, this course also identifies some ways to address health, safety, and building occupant welfare.

The traditional practice of building railing systems on-site can present architects and building professionals with several challenges that

can affect overall project timelines, budget, and safety. When a general contractor builds a railing system on-site, he/she handles the entire process, from design to installation. This approach can add to project costs through time delays since the time spent on the railing system is time taken away from other aspects of the building project. Alternatively, contractors may choose off-the-shelf railing systems, which greatly limit the designer's ability to provide custom and personalized touches to the overall project design.

Contractors often tend to choose wood, composites, or aluminum as the materials for on-site railing systems because they are easier to work with. Aluminum, for example, is very popular because it is strong, lightweight, and durable. These materials, however, are not always the best choice for a specific project design. Stainless steel railings, on the other hand, are considerably stronger, more durable and offer greater design flexibility than the previously mentioned materials. Whereas these other materials can be bought off the shelf and cut

CONTINUING EDUCATION



1 AIA LU/HSW

Learning Objectives

After reading this article, you should be able to:

1. Explain the advantages of a prefabricated custom railing system and an all stainless steel railing system.
2. Compare and contrast the railing system materials used for posts, top rails, and infill.
3. Describe common challenges with locally fabricated metal rail systems.
4. Evaluate how stainless steel railing systems meet health, safety, and welfare requirements.

To receive AIA 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 COURSE #K1608C

Commonly used materials for railing posts include wood, aluminum, composites, or stainless steel. Wood posts wear well if maintained, but steel posts are more durable.



to length on-site, stainless steel railings must be custom fabricated before they can be installed.

When a contractor chooses to include custom stainless railings on a project, he/she usually hires a local metal fabricator/job shop who will design, manufacture, and install the railing system. While this practice can result in unique work from local specialists, it runs the risk of adding to the overall project cost and completion time. On-site railing work also increases the health and safety risk to the fabricator/installer, the contractor, and the building team, especially when materials need to be welded on-site.

As an alternative, architects and building professionals can choose that the stainless steel railings they specify for their projects be prefabricated. This option is more efficient and more reliable than using a local metal fabricator. It also takes some of the workload off the general contractor. Architects can consult with a manufacturer's railing specialist to determine the best design choice for the project, and then provide their

CAD designs to the manufacturer for customized fabrication. The manufacturer will deliver the finished product to the construction site as a ready-to-install, fully componentized system. The result is a project that benefits from customized, factory-crafted ornamental railings, without the time, expense, and uncertainty of local fabrication.

There are several benefits to using prefabricated railings. First, because the architect can custom design the railing, he/she can make sure that the design works perfectly with the rest of the building design. As noted above, architects can consult with railing specialists from the manufacturer if they have questions about their design or would like to explore design solutions they may not have initially considered.

Once the custom design is sent, the railing system is then produced in a centralized factory, where quality-control protocols ensure consistent product excellence and lean manufacturing processes reduce construction waste, when compared to local fabrication.

Prefabricated systems also mean fewer on-site worker safety concerns because the installation tends to be easier, safer, and quicker than with locally fabricated railings. No on-site cutting or welding is needed, and thus the building site and construction team can avoid the risk of sharp metal debris from the rails, or risk of electric shock or toxic fumes from the welding.

All of the above elements translate into shorter installation times, lower project costs, and improved safety for the on-site construction team. They also contribute to a more streamlined project schedule, which can also mean lower overall project costs.

ELEMENTS AND EVALUATION OF RAILING SYSTEM MATERIALS

The basic components of ornamental railing systems include the post material, the top rail, and the infill. Together, these components make up the main visual elements of a railing system. There are many different options for component materials, with either a single material for the whole system or with different materials combined for a railing that is unique to the specific building project. In addition to being designed to enhance the building's aesthetic elements, railings should be designed for strength, durability, and safety.

Railing Posts

Commonly used materials for railing posts include wood, aluminum, composites, or stainless steel. Wood posts provide a classic look, and as long as the wood is treated properly, they should be durable and have a relatively long lifespan. With wood posts, the force is directed to the joist and rim joist connections, and so builders need to pay close attention to post and joists framing procedures and select the most appropriate fasteners. There are a wide variety of framing techniques, each of which carries with it different challenges and costs.

Aluminum posts are commonly used in off-the-shelf systems because of their light weight and easy installation options, and because they tend to be more durable than wood or vinyl. They distribute the load well and are usually coated with a powder-coat finish to help prolong the life of the metal.

Composite railing posts tend to be a low-maintenance option that provides building professionals with a range of styles, colors, and design options. These systems are often sold to complement a manufacturer's flooring products and thus offer a unified, finished look when installed.

Stainless steel posts tend to combine the best of all worlds in that they are strong, durable, and are usually engineered to exceed most local building codes. Stainless posts can be fabricated with a range of finishes, including brushed, polished, or powder-coated paint, and they resist corrosion very well.

Top Rail Materials

As with posts, the top rail is also usually made of wood, aluminum, composites, or stainless steel. While the top rails serve a different purpose than the posts (i.e., they do not deal with as much force as the posts), the material choices have similar pros and cons. For example, wood top rails make an aesthetic statement and work well for interior railing systems. However, even the best-treated wood will eventually give way to the elements when used outdoors.

Aluminum and composite materials are subject to wear and tear as well. Additionally, some composite materials require a supporting structural component to reduce the risk of deflection in the top rail. And, as with posts, stainless steel works as an ideal material because of its longevity, corrosion resistance, and finish options. For example, a brushed stainless or satin finish can be beneficial for top rails to retain less heat than highly polished surfaces, and thus ensure that the railings can be comfortably used even in the hot sun. This benefit takes into consideration the health, safety, and well-being of building occupants and the general public by allowing the rail to be used regardless of the time of year, all while allowing the designers the freedom of creative design for aesthetics.

Welded Connections

An easy way to identify a custom-made stainless steel railing are the connections between the systems components. Most custom-made stainless steel railings have welded connections. On the other hand, a tell-tale way of identifying a kit is the snap-on pieces. For example, a top mount post on a custom-made stainless railing system will be welded to the base plate. Welding is typically done by hand and allows the skill and craftsmanship of the fabricator to shine through. With a kit, the post material is cut to length and then fitted over a sleeve on top of the base plate. The post and base plate are secured together with either an adhesive, screws, or both. The same is true for end caps. At the end of the run on a custom-made stainless steel top rail, the end cap will be welded to the top rail. When built by a true craftsman, there will be no evidence of a joint. It will be polished to create the illusion of a single piece of solid metal. With a kit, the end cap is inserted into the top rail and secured with an adhesive.

Infill Materials

The infill is an important component of the system and can be made of cable or bar rails (typically stainless steel) that can be oriented vertically or horizontally, glass panels, wire mesh panels, or specialty materials unique to the project. Depending on the placement and purpose of the railings, health and safety considerations will also factor into material and infill choices. For example, a railing system on

a multistory apartment building or hotel may include tempered glass panels as infill to provide a solid physical barrier between the decks and the ground. Alternatively, a homeowner who installs a new deck in their yard may desire a railing that provides a clear line of sight to the yard without the frequent cleaning required of glass and, in this case, cable rails may be the perfect solution. Or vice-versa. In short, the project needs will determine the infill solution and the material.

Cable infill, or “cable rails,” as they are commonly known, work well for both indoor and outdoor railing systems. They can easily be mounted to almost any post style or mounting configuration (top mount, side mount, core drill, etc.). Cables are a popular component of railing systems because they are thin, flexible, and yet very strong. In fact, stainless steel cables can usually withstand 1,000 to 3,000 pounds of force without breaking. Cable infill can provide a sleek and modern look, and can appear practically invisible from a distance, providing a nearly unobstructed view of the surroundings. This is why cable railings have become so common on decks where the view is striking (like around the ocean, mountains, lakes, etc.). Cable railing also looks great indoors, as it can tastefully define spaces, while maintaining a feeling of openness within the living areas.

Like all infill components, cables are subject to building code requirements. There are minimum loads to be resisted and maximum openings to be heeded. The load requirement is a 50-pound horizontal force applied on a 12-inch square area. The opening size is governed by a 4-inch sphere. What often happens is that both of these provisions are combined to where the specification documents or the inspectors refer to a 4-inch sphere being pushed by a 50-pound force. The fact of the matter is that the 4-inch sphere is intended to be a measuring device, not a load-delivering implement. Nowhere does the code mention the two requirements acting together.

Glass infill provides a railing system with a clean, transparent look that is ideal for situations where added safety is required. Tempered safety glass is frequently used, providing a strong, safe infill that protects building occupants from accidental injury, while delivering a classic look for the railing design. An added benefit of glass infill is that it also serves as a wind barrier, which can be useful for outdoor decks in coastal areas or on the upper levels of buildings, where winds tend to be strong.

Bar rails are another classic railing infill look. Bars may be square or cylindrical, providing a strong, secure infill for the railing system with an aesthetic appearance that highlights its strength. As a safety feature, railings with horizontal or vertical bars can prevent accidents or serious injury by providing a secure

barrier as part of the railing system. Bar rails have traditionally required on-site fabrication and welding, which limited the aesthetic element because the welds could be difficult to “finish” on-site. New technologies now provide prefabricated systems that architects and building professionals can design ahead of time and have custom made at a fabrication facility. These component-based systems remove the need for the extensive on-site construction and welding, and they come perfectly “finished” and ready to be installed.

UNDERSTANDING STAINLESS STEEL IN ORNAMENTAL RAILING SYSTEMS

There are several considerations to keep in mind when selecting the material type for a railing project. First, stainless steel is stronger than aluminum. Tensile strength is measured as force per unit area, and in the International System of Units (SI), the unit is the “pascal” (Pa); a multiple is called “megapascal,” or MPa. The ultimate strength for stainless steel is 590 MPa versus that of 300 MPa for 6061-T6 aluminum. Moreover, the surface hardness of stainless steel is much higher than that of aluminum, and thus it resists scratches and is easier to maintain than its aluminum counterparts. Additionally, stainless steel’s fatigue performance is twice that of aluminum, and that adds to a product’s durability. In terms of railings,



Glass as an infill material can help provide a sense of privacy, security, and also, when clear, open up visibility for occupants.

a stainless steel rail will likely provide many more years of safe, aesthetically appealing use than an aluminum system.

The benefits of stainless steel's additional strength are evidenced in the railing system's posts and handrails, which can be constructed to be much thinner than those made of aluminum. A "strength-equivalent" stainless post is 50 percent thinner than an aluminum post.

Stainless steel is 100 percent recyclable, making it a material of choice for architects who design with sustainability in mind.

Appearance is also a key advantage of stainless steel. No other commonly used railing material can match the ease of maintenance and stunning good looks of stainless steel. This is one of the reasons you will find it used frequently on luxury appliances like high-end gas ranges and refrigerators.

Different Types and Grades of Stainless Steel (304, 316)

Stainless steel is usually divided into five categories: ferritic, martensitic, duplex, precipitation hardening, and austenitic, the most commonly used stainless. Austenitic stainless steel comes in many different grades, used for different purposes, with the two most common grades for architectural applications being Type 304 and Type 316.

Type 304 stainless steel is the most common grade, also known as A2 stainless steel or "18/8 stainless steel" (18 percent chromium and 8 percent nickel, which are the main non-iron constituents). This grade of steel is a popular choice for building materials, machinery parts, and food-handling equipment because it has low electrical and thermal conductivity, and it resists corrosion remarkably well. Because of these traits, Type 304 is a popular choice of material for indoor and outdoor railings.

While Type 304 stainless steel is highly resistant to corrosion (both environmental and corrosive media), it is susceptible to pitting and crevice corrosion in warm environments when exposed to chlorides, namely marine environments. It is also susceptible to stress corrosion, cracking at high temperatures (above 140 degrees Fahrenheit, or 60 degrees Celsius).

Type 316 stainless steel, otherwise known as "marine-grade stainless," is the second most common austenitic stainless steel. Higher nickel content (10 to 14 percent) and the addition of molybdenum increase this grade's resistance to corrosion. Like Type 304, this type of stainless steel

has a low conductivity of electricity and heat, and so it is appropriate for a wide range of uses. Unlike Type 304, this type of stainless steel resists pitting corrosion very well, making it desirable in exterior and even coastal environments.

Post Gauges (11, 14)

Railing systems can fail if the post gauge is too thin, even if made of tubular steel. It is important to work with the railing manufacturer to ensure the tube size and the post gauge specified is appropriate for the application and use intended.

Spacing and Line of Sight: Steel vs. Other Materials

The spacing between rails is a key building code requirement linked to the health, safety, and welfare of building occupants. Complicating matters, the International Residential Code (IRC) regulates single-family dwellings, and the International Building Code (IBC) regulates multifamily and commercial dwellings. Additionally, different codes apply to railing systems installed on stairs vs. decks. Prefabricated railing systems can make meeting these various code requirements easier.

Open stairs greater than 30 inches in height are required to have a guard installed on the open side, as well as a handrail. These rails must be at least 34 inches high, from the nosing of the stair treads. The spacing between the rails must prevent a 4 $\frac{3}{8}$ -

inch sphere from passing through, except space where the stair riser, stair tread, and bottom edge of the rail meet, in which case, 6 inches is the minimum. As specified by R311.5.6.3 in the IRC, the top edge of the handrail must be between 34 and 38 inches above the nosing of the stair tread, and the handgrip must provide 1 $\frac{1}{2}$ -inch space between the handrail and the guardrail or wall.

Decks that are designed to be higher than 30 inches above grade are required by code to have a guardrail; however, in cases where a building professional chooses to install a guardrail on a deck below 30 inches, they still must meet the code requirements. For homeowners, the code requirements for single-family detached homes can be found in the IRC, which requires a railing to be a minimum of 36 inches from deck to the top of the rail. However, the railings can exceed that height as long as all other code requirements have been met.

► Continues at ce.architecturalrecord.com

Andrew A. Hunt is vice president of Confluence Communications and has been a writer and consultant in the green building and building science industries for more than a decade. He has authored more than 100 continuing education and technical pieces as part of a nationwide practice. www.confluencecommunications.com



Stainless steel is one of the most forgiving materials, resists corrosion, and is very easy to maintain. The ultra-thin cabling also allows the surrounding natural beauty to be highlighted with minimal distraction, yet the quality craftsmanship and fine detailing are just as breathtaking when in focus.

AGS Stainless builds custom-designed, premanufactured stainless steel railing systems that are in demand all over the world. Its unique (and proprietary) way of manipulating dimensions provided by the customer allows the company to fabricate custom railing configurations that rival anything built on-site. Cut with the precision of a computer-controlled laser then welded and polished by hand, each railing component reflects craftsmanship at its finest. The railing design options are as extensive as the production standards are high: round, flat, and elliptical top rail; standard (36-inch to 42-inch) or custom post heights; cable, glass, bar, or mesh panel infill with a myriad of end-fitting combinations; top- or side-mount post-mounting methods; and more. For more information, call 888-842-9492 or visit www.agsstainless.com.

All images courtesy of Spectis Moulders Inc.



Millwork molded from high-density polyurethane can be crafted to appear identical to fabricated millwork made of common materials like wood, plaster, and PVC, but has significant performance advantages.

Architectural Millwork: Molded vs. Fabricated

One decision impacts the entire project

Sponsored by Spectis Moulders Inc.

Millwork is a basic component in almost every project, from a remodeled kitchen to a vast new hotel, apartment building, or casino. You can buy millwork pieces at any local hardware store. But, as with almost every other product and material, technology is changing the options available for millwork. The material chosen for the millwork is important, but even before the material is selected, one decision will have an impact on the entire project: molded or fabricated?

Today's specialized molding manufacturers use high-density materials, computer-aided design (CAD), computer-aided manufacturing (CAM), computer numerical control (CNC), and 3-D printing, combined with traditional craft, to translate virtually any design into light, durable, economical architectural elements for any application. Designs can go from a sketch to a finished

product much more quickly and efficiently than was possible in the past. This ability to create precise detail, in single pieces of any size, is based on the molding process. Molding enables the use of millwork designs that would be technically impossible or prohibitively expensive to manufacture, fabricate, and install.

This course focuses on the advantages and characteristics of molded millwork, and the process of taking millwork designs to finished elements in a wide range of projects. The course includes a comparison of the features of millwork materials, an overview of how manufacturing affects product performance, and other considerations for designers about the process of selecting and specifying molded millwork, such as installation, code considerations, and finding the most environmentally sound products.

CONTINUING EDUCATION



Learning Objectives

After reading this article, you should be able to:

1. Discuss the advantages of precast molded millwork over fabricated millwork.
2. Compare the advantages and disadvantages of available millwork materials.
3. Examine the use of molded polyurethane in a wide range of residential and commercial applications, such as new construction, renovation, and historic reproduction, including new possibilities for custom design as well as off-the-shelf components.
4. Evaluate important considerations for selecting and specifying molded polyurethane millwork, including design, manufacturing, installation, and code requirements.

To receive AIA 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 COURSE #K1608G

DECISION ONE

Because the finished millwork in a room may look very similar, it is easy to overlook the fundamental difference between molded and fabricated products. Molded millwork is created by pouring liquid resin, of varying composition, or liquid gypsum concrete, into precast molds. (The spelling “moulding” is the traditional version, reflecting the term’s origins in the 18th century woodworking craft in Britain, and still used throughout Canada, Australia, and New Zealand, while “molding” is used in the United States).

Molding allows millwork to be produced in a single section as opposed to building up numerous sections. A single molded section can be installed in a long, seamless length of any measurement. Seams are often weak places vulnerable to moisture, wear, and damage so molded millwork has many advantages, but one obvious one is the reduction in the time, labor, and difficulties involved in installing fabricated millwork.

Fabricated millwork consists of pieces cut from a sheet of material, such as wood or PVC, and then built up section by section to create the finished piece. For example, a crown molding pattern might be formed from three different pieces of wood, each shaped and cut to fit together into the desired pattern (many patterns feature more than that). So, the installers will have to install the entire length of each piece, one at a time, moving all around the space three times, carefully building up and joining the pieces to create the eventual continuous pattern. In fact, installers will need to make a complete additional pass for removing scaffolding, painting, and finishing.

But, with a molded product, the same classic crown molding, identical in appearance down to the surface details, with three or as many layers as desired, can be installed in a single light, precast piece in one trip around the space. Time and labor are reduced both for installation and for call-backs since the single piece is inherently stronger, eliminating problems—even failures—that frequently occur along areas where pieces are joined together.

Molds can be used for the entire range of millwork products from interior and exterior trim to pergolas, sunbursts, railings, and many more applications, either installed or preassembled. Some of the examples in this course include:

- Crown moldings
- Mantels
- Columns
- Ceiling medallions
- Balustrade systems
- Pergolas
- Corbels
- Louvers
- Wall panels
- Decorative features

Figure 1

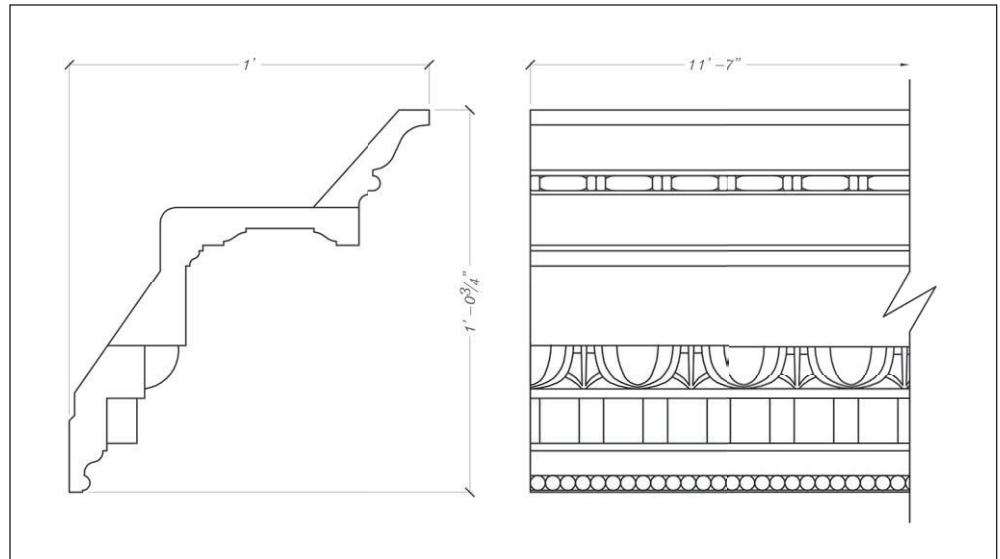


Figure 2

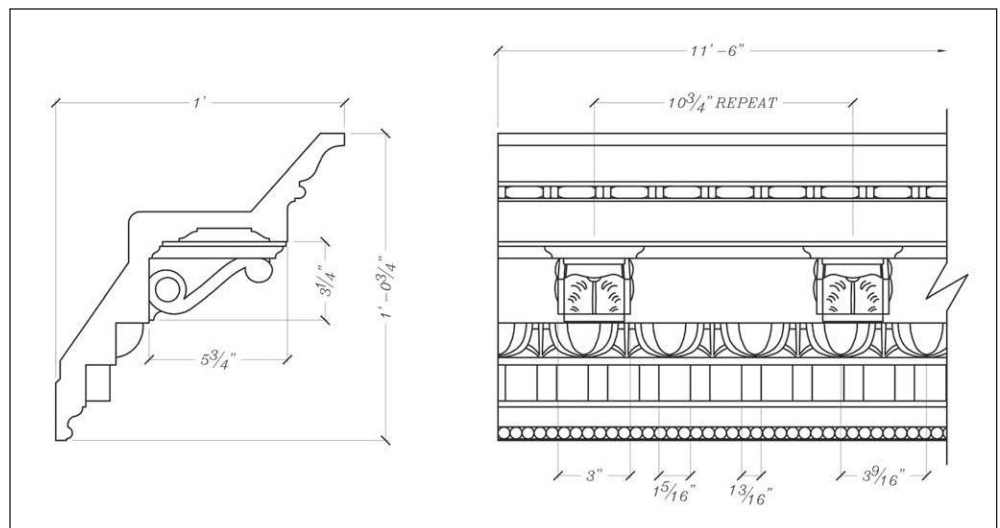


Figure 1 shows drawings for building up a fabricated molding out of three pieces. The identical profile is shown in one molded piece in Figure 2, an indication of the savings possible—in installation time and cost, and in avoiding problems that often start at seams and joined pieces.

Although millwork can be molded from a number of materials (discussed in more detail below), when high-quality, high-density polyurethane is used the resulting pieces are completely waterproof, will not decay, warp, or wick moisture, and are light in weight, making them economical to transport, install, and maintain. Molded polyurethane resists many of the problems that affect other types of materials, such as insects, mildew, and cracking, while providing even more options for paint colors, stains, and specialty finishes.

Molding with high-density polyurethane also enables the use of flexible forms (such as those in radius application), and the creation of minute surface textures and other details. Today’s

molding process is driven by CAD and CAM, but high-density polyurethane molds can also be machined using traditional woodworker tools, and specialized manufacturers still engage the work of skilled craftspeople applying traditional methods.

A leading millwork manufacturer will have an extensive catalogue of thousands of off-the-shelf products and components, but one of the many advantages of molding is the ability to execute unlimited custom designs—an increasing part of the market. One leading company estimated that 40 percent of its work is now in the development and production of unique, custom designs. The selection of molded millwork will open a wide range of possibilities not available with fabricated millwork.

MATERIAL BASICS

Millwork traditionally is made of wood, plaster, or concrete. These are still used, along with a number of synthetic materials. Each material has its own advantages, disadvantages, and possibilities.

Wood is a familiar, plentiful material used widely all over the world for thousands of years. It can range from very low in cost, as in ordinary, inexpensive trim found in any hardware store, to very high in cost for superior wood types in handcrafted applications. Wood is easily formed into desired shapes. Wood is also considered a renewable resource and can often be recycled or reused for different applications.

Wood as a millwork material does have disadvantages, including the necessity of repeated maintenance to prevent rot, decay, and insect damage. In its ordinary forms, it is combustible, and piece sizes are limited. In the past, long lengths of wood from large, old trees were available, but today most pieces are much shorter. For example, if a piece 20 inches wide were required, it would have to be laminated from smaller pieces.

Fiberglass is another material often used for millwork. It is light, not subject to rot, and can be molded into large, one-piece sections. Fiberglass is relatively difficult to work with, however, and is combustible unless fire rated at a very high cost. Detailed shapes with undercuts cannot be made with fiberglass. Fiberglass products cannot be recycled so there are disposal issues in their life cycle.

Exterior insulation finishing systems (EIFS), on the other hand, are easy to work with and low in cost. But, EIFS will absorb and wick moisture, and they do not typically have a very durable service life, nor can they be recycled at the end. The smooth finishes associated with quality millwork are very difficult to accomplish with EIFS material.

Glass fiber reinforced gypsum (GFRG) is an inorganic mixture that provides a noncombustible product. GFRG millwork can be produced with relatively simple labor and equipment, and is recyclable, although gypsum is a raw material mined from underground, which complicates its environmental impact. It is an extremely heavy material, making it costly to produce and install, and can only be used in areas where it will not be exposed to moisture.

GFRG (Glass Fiber Reinforced Concrete) can be used in wet locations. GFRG is another noncombustible inorganic mixture that can



Molded high-density polyurethane is impervious to moisture, insects, and most other types of damage and decay so it is often used in large-scale exterior applications.

be produced with simple labor and equipment, and is recyclable. But, like GFRG, it is basically composed of a mined raw material, heavy and expensive to produce and install.

Polyvinyl Chloride (PVC) is one of the most widely used materials in current millwork as in many other common products. PVC is a synthetic plastic polymer that also contains many chemical additives and “plasticizers.” PVC does not have many of the disadvantages of other materials since it is inexpensive, available in large sheets, and can be laminated to produce even larger workable sections, and PVC products are often recyclable.

But, for millwork, PVC has its own disadvantages. It is relatively heavy in weight and cannot be made into individual pieces economically, or installed in long, seamless lengths. PVC also contains chlorine and other chemicals whose safety and environmental impact have been questioned. When machined, PVC in general becomes porous and relatively combustible. At the current time, most PVC millwork products are not considered suitable for applications requiring a Flame Spread Rating of 25 or less (Class A FSR).

HIGH-DENSITY POLYURETHANE FOR MILLWORK

High-density polyurethane solves a number of the problems with other common materials outlined above. There are many varieties of polyurethane, used in a host of common products, but high-density, chemically reacted, two-component polymer systems were invented by American chemists in the 1940s. Rigid polyurethane began to be used in commercial millwork in the 1960s. The material has a virtually limitless useful life due to its thermosetting chemical makeup.

Today, most building components are made with a higher surface density than previous polyurethanes, an average in the range of 14 to 18 pounds per cubic foot, an overall density similar to white pine. The process used to create superior-grade products provides a greater skin density than core density, which increases durability.

Continues at ce.architecturalrecord.com



Spectis Moulders Inc. specializes in producing unique custom moulded and fabricated products. The company policy is “We will build anything!” Spectis has complete design, engineering, and drafting capabilities, enabling it to work from very simple sketches to develop and produce just about any product with impeccable detail and quality. www.spectis.com



WE UNDERSTAND

UNCONVENTIONAL

Tapered. Folded. Perforated. Faceted. Unprecedented shapes and astonishing finishes. Whatever you can envision, there's likely a way to make it with lightweight, flat, endlessly adaptable ALPOLIC® materials. One-of-a-kind concept? Let's build.

Dream different at alpolic-americas.com

ALPOLIC®
MATERIALS

Let's Build
CIRCLE 204



Maricopa County Sheriff's Office Headquarters
Phoenix, Arizona with ALPOLIC® /fr
materials in Natural Zinc



Neiman Marcus, Garden City, NY with ALPOLIC® /fr
materials in SAW White, SOG Grey, MFE Mica Grey,
TOB Black, MDF Mica Silver, FOG & FOA Grey



Ryerson University, Toronto, Ontario
with ALPOLIC® /fr materials in Prismatic SEP Blue

ARCHITECTURAL RECORD



WE HAVE A **NEW** CUSTOMER SERVICE DEPARTMENT



Toll free phone number is still

877-876-8093



Subscribers outside the
U.S. please call

818-487-2077



New email address is

AR@pubservice.com



We've also recently updated our website and mobile app access process, so if you're having trouble please contact customer service for assistance.

New Mailing Address: Architectural Record • PO Box 16387 • North Hollywood, CA 91615

ARCHITECTURAL RECORD

WE DESIGNED SOMETHING
EVEN BETTER

AND **MOVED TO**



architecturalrecord.com

A new simplified website designed to adjust
to your desktop, tablet, or smartphone

2016 CALL FOR ENTRIES Design Vanguard



The editors of ARCHITECTURAL RECORD are looking for the best emerging architecture firms from around the world to feature in our **2016 Design Vanguard** issue. Although we do not have an age limit, we try to select architects and designers who have had their own practices for less than 10 years. Winners will be featured in the December 2016 issue.

There is no fee to enter. For full details and to submit your entry, visit: designvanguard.architecturalrecord.com.

Submissions are due September 2, 2016.

2016 CALL FOR ENTRIES Record Products



The editors of ARCHITECTURAL RECORD are currently accepting submissions for the **2016 Record Products** competition.

Manufacturers and designers may submit items introduced in the U.S.

between September 2015 and September 2016. A panel of architects and specifiers will judge the entries on criteria including innovation, functionality, and aesthetics. Winning products will be featured in the December 2016 issue.

The fee is US\$25 per entry. For full details and to submit your entry, visit: recordproducts.architecturalrecord.com.

Submissions are due September 2, 2016.

CAPTIVEAIRE

40 YEARS OF INNOVATION

the complete solution

COMMERCIAL VENTILATION SYSTEMS



CORE Fire Protection



Next Generation Exhaust Hood



Heating & Cooling Options



Stainless Steel Grease Duct



Demand Control Ventilation



Exhaust Fans

NOW SHIPPING FROM SIX LOCATIONS NATIONWIDE



Redding, CA



West Union, IA



Bedford, PA



Muskogee, OK



Youngsville, NC



Groveland, FL

New Career Opportunities - We Are Hiring!

Visit a *Display Center* near you!

www.captiveaire.com

1.800.334.9256

ARCHITECTURAL
RECORD
125 years

HONORING THE BEST 125 BUILDINGS SINCE 1891
—Gala Cocktails + Dinner—

MONDAY, SEPTEMBER 12, 2016

Metropolitan Club

New York, NY

PLATINUM SPONSOR



SUPPORTING SPONSOR



Architectural Record
is always a click away.

ARCHITECTURAL
RECORD
Have you connected?



MAKING THE COMPLEX CLEAR

Clear Seas Research is an industry-focused market research company dedicated to providing clear insights to complex business questions. Capturing feedback via quantitative surveys (online, phone, mail or in-person) OR qualitative experiences (one-on-ones, focus groups or bulletin boards), we present results that are easily understood, insightful and actionable.

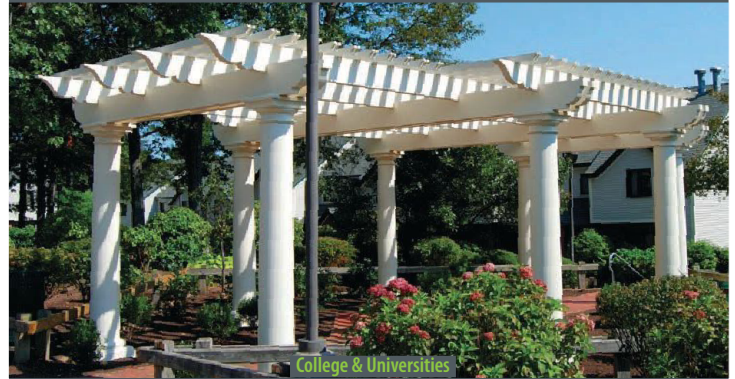
www.clearseasresearch.com

Clear Seas
RESEARCH
Making the complex clear

Walpole's high quality
features low maintenance AZEK.



Commercial Retail



College & Universities



Historic Restoration

Hospitality



Custom Residential

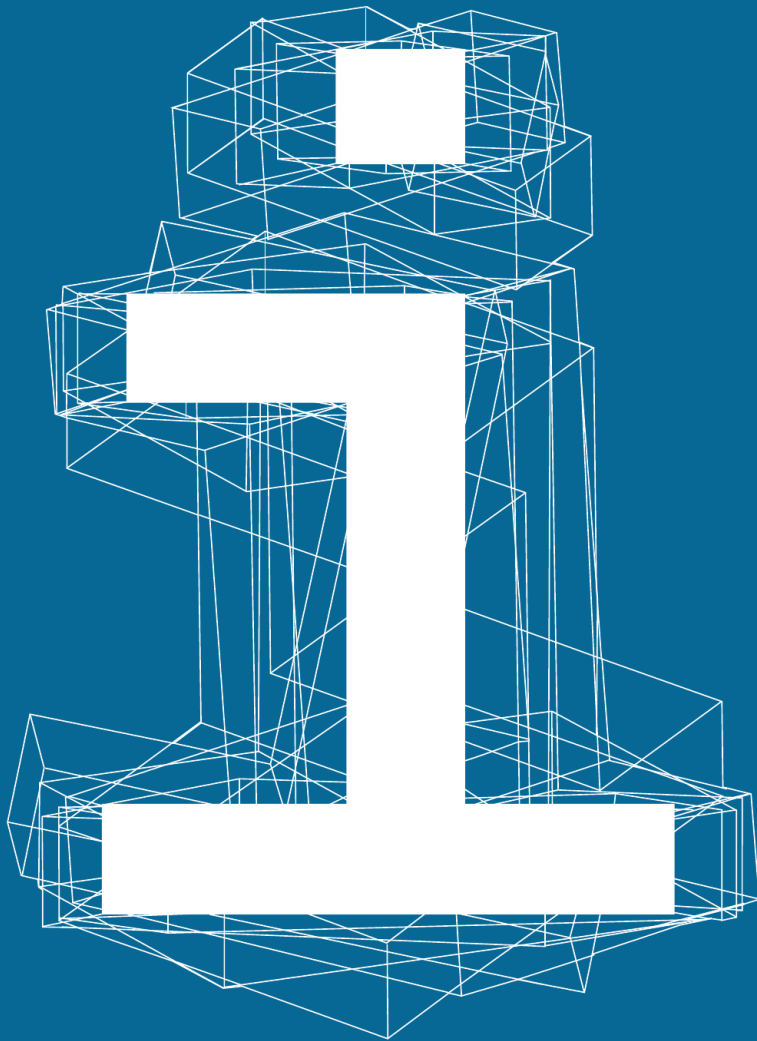
Walpole, the nation's largest fabricator of cellular PVC, has completed numerous outdoor projects with low maintenance Azek®, offered with Sherwin-Williams® paint in many colors. Our expertise and CAD capabilities help formulate construction details for your designs. Call **800-343-6948** or visit walpolewoodworkers.com

80+
years
Walpole Outdoors™

Serving professionals directly nationwide since 1933 • Projects shown crafted with AZEK®

ARCHITECTURAL
RECORD

INNOVATION CONFERENCE



CREATIVITY+DESIGN+TECHNOLOGY

ARCHITECTURE
AND MAKING IN THE
POST-DIGITAL AGE

REGISTRATION OPEN:
WWW.ARINNOVATIONCONFERENCE.COM

NOVEMBER 3 | NEW YORK CITY

KEY CORPORATE SPONSORS

GUARDIAN
INDUSTRIES

reTHINK
WOOD



PRODUCT GALLERY SPONSORS

ABC
STONE

DORMA

Contact
INDUSTRIES



menck
windows

A better world inside and out.™

Ornamental Metal Institute of New York

Steel Institute of New York

Advertisers Index

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



Reader Service #	Advertiser	Page	Reader Service #	Advertiser	Page	Reader Service #	Advertiser	Page
249	ACP Express	123	181	CENTRIA	115	16	Steel Institute Of New York	4
17	Airolite Company LLC, The	113	231	CertainTeed Ceilings	24	18,24	Sunbrella	30, 31
156	Amerlux	104	215	Construction Specialties, Inc.	11	27	Technical Glass Products	CV2, 1
204	ALPOLIC/Mitsubishi Plastics Composites America, Inc.	137	206	Cosella-D rken Products, Inc.	91, 96	87	Tremco Commercial Sealants &Waterproofing	125
	Architectural Record Fall Innovation Conference	144	221	CPI Daylighting Inc	111	223	Underwriters Laboratories Inc.	47, 95
	Architectural Record Customer Service	138	4	Doug Mockett & Company Inc.	35	203	Unilock	17
	Architectural Record Digital Edition On Your Tablet	113	88	Epro Services	127	28	U.S. Green Building Council	CV3
15	Architectural Record Skyscraper Museum	14	37	Georgia Pacific	19	143	Walpole	143
	Architectural Record CE Center	151	189	Graham Architectural Products	114	84	Zumtoble Lighting	102
	Architectural Record 125th Anniversary	93	19	Huber Engineered Woods LLC	26			
	Architectural Record Guess The Architect	22	251	Inpro Corporation	121			
	Architectural Record CEU APP	116	8	modular Arts	146			
	Architectural Record 125th Anniversary Event	142	186	National Terrazzo & Mosaic Association	52			
72	ASI Accurate Partitions	49	39	Nora Systems	51			
211	BEGA	15	162	NYSERDA	93			
253	Behr	9	236	Oldcastle Architectural	5, 94			
2	B-K Lighting	18	12	Ornamental Metal Institute Of New York	2			
241	C. R. Laurence Co., Inc.	CV4	165	Owens Corning	3			
213	CAPTIVEAIRE	141	242	Pella EFCO Commercial Solutions	6			
			83	Pilkington North America	92, 97			
			255	PPG Architectural Coatings	28			
			248	SAFTIFIRST	21			
			132	Sherwin Williams	34			
			131	SIMONSWERK	147			
			143	Sonneman	101			



dates&events

New and Upcoming Exhibitions

Tracing Displacement and Shelter New York City

October 1, 2016–January 22, 2017

This upcoming exhibit at MoMA will explore how architects and designers have considered the meaning of shelter in light of global refugee emergencies. Works on display examine such trends as the strengthening of national borders in response to influxes of migrants and the growing need for affordable, adaptable, mobile housing for transient populations (currently estimated at over 60 million). For more information, visit moma.org.

Ongoing Exhibitions

Young Architects Project New York City

Through August 28, 2016

The 17th edition of a long-running exhibition at MoMA PS1 highlights the work of young architecture firms. This year, Escobedo Soliz Studio of Mexico City won the global competition to design a temporary outdoor installation that provides shade, seating, and water in the courtyard of PS1, in Long Island City. Called Weaving the Courtyard, the canopy-like pavilion hosts concerts and other events as part of the museum's Warm Up series for the duration of the summer. For more information, visit momaps1.org/warmup.

Extraordinary Playscapes Boston

Through September 5, 2016

Curated by Design Museum Foundation, *Extraordinary Playscapes* explores contemporary playground design and makes a case for the importance of free play to healthy child development, thriving communities, and social equity. The exhibition features a project that reimagined a defunct ambulance as a children's playground at a hospital in Malawi, and examples of Danish designs that integrate nature and play, in addition to innovative play-centered design closer to home, on the Boston waterfront. *Extraordinary Playscapes* includes interactive installations, videos, scale models, and hands-on elements for visitors to explore the art, history, and science behind play. At the Design Museum Boston. For more information, visit architects.org.

Roberto Burle Marx: Brazilian Modernist New York City

Through September 18, 2016

The Brazilian artist and landscape architect Roberto Burle Marx (1909–94) undertook projects ranging from the mosaic pavements on the seaside avenue of Rio de Janeiro's Copacabana Beach to the multitude of gardens that embellish Brasilia (one of several large-scale projects he executed in collaboration with famed architect Oscar Niemeyer). This exhibition at the Jewish Museum explores the richness and breadth of the artist's practice—from landscape architecture to painting, from sculpture to theater design, and from tapestries to jewelry. For more information, visit thejewishmuseum.org

Narcissus Garden at Johnson's Glass House New Canaan, Connecticut

Through November 30, 2016

To celebrate the 110th anniversary of the great architect's birth and the 10th anniversary of his most famous residence's being opened to the public, Philip Johnson's Glass House hosts an installation by Japanese artist Yayoi Kusama. *Narcissus Garden*, initially created for the 33rd Venice Art Biennale in 1966, will be incorporated into the 49-acre site around the Glass House. The piece consists of 1,300 steel spheres floating on a newly restored pond, providing a dramatic view leading up to the house. For more information, visit theglasshouse.org

Model Behavior: Snøhetta at SFMOMA San Francisco

Through January 14, 2017

This exhibition explores the design process behind Snøhetta's expansion of the San Francisco Museum of Modern Art. Architectural models, sketches, an interactive app, and a narrated walk-through of the building reveal how Snøhetta responded to the built environment and cultural context of the expansion-to-be and arrived at the space that opened on May 14 of this year. At SFMOMA. For more information, visit sfmoma.org.

Lectures, Conferences, and Symposia

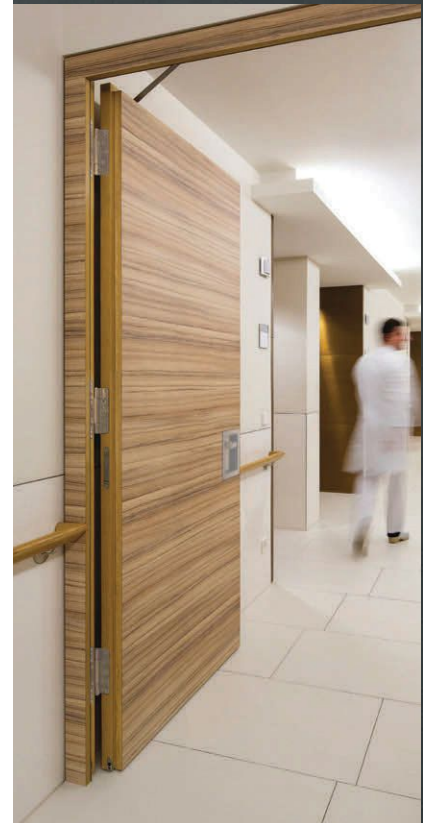
Architectural Record Innovation Conference East

New York City

November 3, 2016


Join RECORD for a single-day conference on architecture and making in the post-digital age. Innovation East (the east coast counterpart to the summer's conference in San Francisco) will bring together imaginative and forward-looking figures to exchange ideas

VARIANT® the adjustable hinge system for commercial doors.



The European contemporary alternative to continuous hinges with the added benefit of adjustability.



 F180

www.simonswerk-usa.com

CIRCLE 131

about the built world of today and the future. Speakers and participants will range from architects practicing outside the discipline to principals of large firms, and from materials experts and graphic designers. Attendees will leave the conference inspired by brave and original approaches to some of the most relevant problems in the industry. For more information, visit ariceast.com

London Design Festival 2016

London

September 17–25, 2016

First staged in 2003, the London Design Festival has since become one of the world's largest conferences for design of all kinds, ranging from interiors to that of the city. This year's festival, oriented around the theme "Design is in the Detail," will feature innovative experiments such as a wide wooden structure by Allison Brooks Architects called "The Smile," an installation about contemporary urban living presented by MINI, and numerous partnership events, networking opportunities, and panels on trends in engineering and design. For more information, visit londondesignfestival.com.

International Bauhaus Colloquium

Weimar, Germany

October 26–29, 2016

The 13th International Bauhaus Colloquium at the Bauhaus-Universität Weimar is titled Dust and Data. It will reflect on the near century-long history of the Bauhaus at its original sites in Germany—Weimar, Dessau, and Berlin—as well as the history of its international reception. Just as in the Bauhaus and post-Bauhaus years, architecture is again entangled in geopolitical transformations on a global stage. The conference, through the lens of architectural history and methods, will address contemporary political transformations including migration, climate change, and violent conflict. For more information, visit bauhauskolloquium.de.

World Architecture Festival 2016

Berlin

November 16–18, 2016

This year's World Architecture Festival, in addition to awarding prizes for building projects both completed and proposed, will include a robust roster of seminar speakers—including Richard Rogers and Moshe Safdie—who will touch on large-scale topics relating to housing: housing in dense cities, housing for refugees, housing and luxury, housing and energy efficiency, and more. There will also be panels focused specifically on the revitalization of post-Wall Berlin and architecture tours of the area running on all three days of the festival.

Additionally, there will be on-site "live crits," where architects and designers can receive feedback on their project ideas in real time. Visit worldarchitecturefestival.com.

Competitions

IDEAS² Awards: Innovation in Designing with Structural Steel

Submission deadline: August 26, 2016

Projects completed in the U.S. between January 1, 2014, and December 31, 2016, are eligible for a prize from the American Institute of Steel Construction (AISC) for innovative use of structural steel. This year, the AISC makes previously separate architectural and structural engineering contests into a single competition that judges the use of structural steel on a comprehensive, project basis. There are three categories, divided by building cost—under \$15 million, between \$15 and \$75 million, and above \$75 million. For more information, visit aisc.org.

AIANY COTE Awards 2016

Submission deadline: September 16, 2016

Established in 2014 by the New York chapter of the AIA's Committee on the Environment, this awards program recognizes results-oriented projects that are socially and environmentally responsible, promote sustainable design in the urban context, and reveal the process behind innovation. Visit aianycoteawards.org.

Fentress Challenge: Airport of the Future

Submission deadline: October 1, 2016

Students who enter this contest, sponsored and judged by Fentress Architects, must submit a design for the airport terminal of the future, specifically one that responds to present-day issues and dynamics in airport design and air travel. Designs ought to be flexible and consider security while also responding to long-term trends like globalization and urbanization. A traveler's curbside-to-airside experience is also a major consideration. Winners will receive cash prizes and a paid fellowship, as well as international exposure. For more information, visit fentressarchitects.com.

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

PRODUCT SPOTLIGHTS

Advertisement

DOORS, WINDOWS

LaCantina Doors Puts a New Spin on Vinyl

\$ I \$ \$ I New

LaCantina Doors

LaCantina's new Vinyl Folding system brings high quality contemporary styling to the Vinyl door market, performs well in all environments and matches popular vinyl window packages. Featuring a narrow 2 15/16" stile and rail profile, an exclusive hardware package and standard dual glazed LoE glass, LaCantina Vinyl is available in standard and custom size up to 8' tall and 18' wide.

Product Application

- Production Homes
- Custom Homes
- Residential Remodels/ Renovation

Performance Data

- DP 35
- Energy Efficient and Low maintenance



www.lacantinadoors.com (888)221-0141 info@lacantinadoors.co

Circle 50

DOORS, WINDOWS

ADJUSTABLE CONCEALED HINGES

\$\$\$

SIMONSWERK North America, Inc.


The TECTUS 3-way adjustable concealed hinge series for doors offers designers and architects an entire range of hinges for different architectural openings.

Product Application

- Hospitality: Armani Hotel, Burj Khalifa, Dubai, UAE
- Residential: 2012 Olympic Village, London, UK
- Retail: Apple Retail Stores, global

Performance Data

- Maintenance-free slide bearings for doors up to 300 kg/660 lb – designed for high-frequency use (not limited to low-frequency applications)



www.simonswerk-usa.com
262.472.9500 | info@simonswerk.com

Circle 51

ELECTRICAL, LIGHTING

ONE-PIECE HYDRAULIC & LIFT-STRAP BIFOLD DOORS

Schweiss Doors, Moving Walls


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

- Faster, safer operation
- Zero lost headroom
- Superior design that keeps working



www.schweissdoors.com
507.426.8273 | schweiss@schweissdoors.com

Circle 52

ELECTRICAL, LIGHTING

SUSPENDERS LIGHTING SYSTEM

NEW | GREEN | WR

SONNEMAN - A Way of Light

Suspenders™ is a delicately scaled, modular system of interconnected elements and suspended LED luminaires.

- Residential
- Commercial
- Hospitality

Performance Data

- Customized as individual LED sculptures or as a tiered web of infinite variety.
- Eleven styles of Luminaires (luminous elements for Suspenders)



www.sonnemanawayoflight.com
914.834.3600 | suspendersconfig@sonneman.com

Circle 53

LANDSCAPING, SITEWORK

VGP TRAY-BASED LIVING WALL SYSTEM

\$\$ | WR | GREEN

Tournesol Siteworks


VGP Living Wall System offers versatility, easy installation; planting tray mounts to plastic support panel, wire mesh, rope, or rods.

Product Application

- Rooftop and Amenity Decks
- Light Commercial and Residential
- Interior and Exterior

Performance Data

- Water-efficient sub-irrigation reservoir for healthy, low maintenance plants
- Range of mounting options; various price points



tournesolsiteworks.com

Circle 54

ROOFING, SIDING, THERMAL & MOISTURE PROTECTION

ARCHITECTURAL PRECAST CONCRETE CLADDING

GREEN | WR

Easi-Set Worldwide

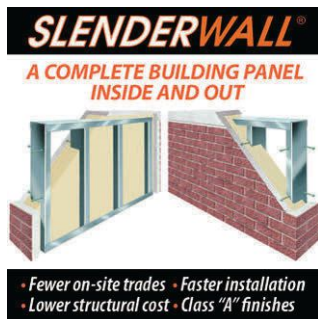
Ultra Hi-Performance SlenderWall is a 28 lb/sf award-winning architectural precast concrete and integral steel-stud building panel system. Wind load tested to 226 mph. Continuous foam insulation.

Product Application

- BioInnovation Center, New Orleans, LA
- Hilton Hotel, Montreal, Quebec, Canada
- Westin Luxury Hotel, Virginia Beach, VA
- US Army Legal Headquarters, Ft. Belvoir, VA

Performance Data

- Compliant with all IECC/ASHRAE energy codes



www.slenderwall.com
800.547.4045 | info@easiset.com

Circle 55

ROOFING, SIDING, THERMAL & MOISTURE PROTECTION

A BETTER BARRIER THAT BREATHEs LIKE YOUR SKIN


NEW

Georgia-Pacific Gypsum

The DensElement™ Barrier System with AquaKOR™ Technology is the first wall system of its kind to provide a built-in water-resistive and air barrier while maintaining high vapor permeability

Performance Data

- Panels have a WRB-AB integrated right into their gypsum core
- Finish the system with PROSOCO R-Guard® FastFlash® liquid flashing to fill and seal all openings



Visit DensElement.com

Circle 56

ROOFING, SIDING, THERMAL & MOISTURE PROTECTION

WALL PANELS

\$\$ | GREEN | NEW

Petersen Aluminum Corporation


PAC offers several wall and soffit profiles for perforation in a nearly endless combination of hole sizes and patterns to complement virtually any architectural design need.

Product Application:

- I-Drive 360 Parking Deck, Orlando, FL

Performance Data:

- 20-year non-prorated finish warranty
- 70% full PVDF-finished metal
- Available in 38 colors



PAC-CLAD.com
800.722.2523 | Rob.Heselbarth

Circle 57

**ARCHITECTURAL
RECORD**

eNewsletters



SUBSCRIBE TODAY

www.architecturalrecord.com

125 NEVER LOOKED SO SMART

125TH

Visit www.architecturalrecord.com to see our newest course offerings in celebration of our 125th year.

Architectural Record would like to thank the following 125th Anniversary course sponsors:

ANNIVERSARY
SPECIAL SECTION

ARCHITECTURAL
RECORD



ARCHITECTURAL
RECORD 125 years

#1 PROVIDER of CEUs TO THE INDUSTRY



In 2015, *Architectural Record's* parent company BNP Media, offered 89,590 hours of AIA CE credits. That's more than the 2nd and 3rd providers combined!

AIA CE CREDIT HOURS

89,590



**Architectural Record/
BNP Media**

70,106*



#2 Provider +
#3 Provider

Data provided by AIA, presented to 2016 AIA Convention attendees.

Architectural Record's library of courses is best in class!
Visit the CE Center and earn your credits today!

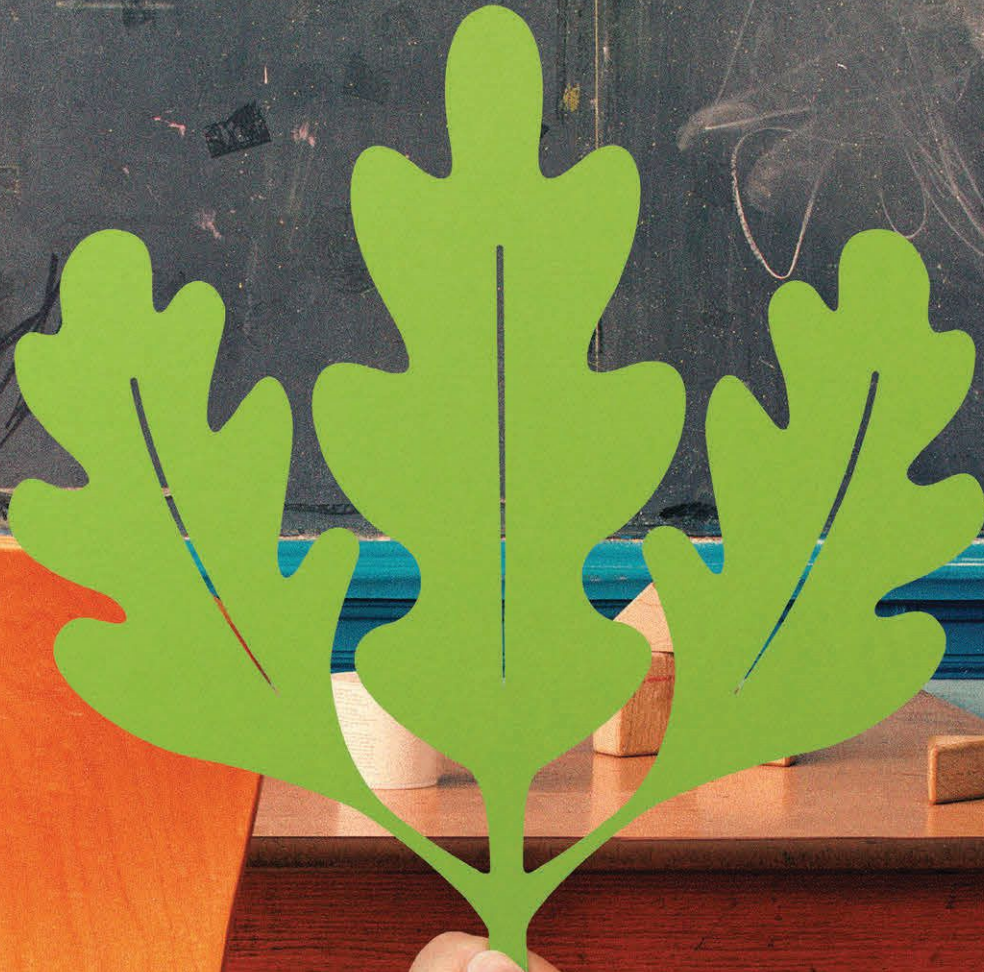
www.ce.architecturalrecord.com

*#2 Provider: Hanley Wood; #3 Provider: AEC Daily Corporation



BY THE TIME *The Floating Piers* on Lake Iseo closed to the public on July 3, an estimated 1.5 million people had walked on water. The spectacular project was first conceived by artists Christo and Jeanne-Claude as wrapped inflated piers for Rio de la Plata in Buenos Aires and for Tokyo Bay, in 1970 and 1996 respectively. While those were never realized, Christo revisited the idea following Jeanne-Claude's death in 2009 and found a receptive audience in the small communities around Iseo, a little-known lake in northern Italy. Composed of 220,000 high-density polyethylene cubes, about the size of milk crates, bolted together to make 328-foot-long sections, the walkway was sheathed in a million square feet of nylon polyamide fabric—the same saffron color of the husband-and-wife team's *The Gates* in New York's Central Park (2005). *The Floating Piers* extended nearly two miles, wrapping around the small private island of San Paolo and connecting to the larger island of Monte Isola as well as to the mainland. Ropes fastened to 190 concrete anchors on the lake floor held the cubes in place with just enough give to appreciably move with the water. But more than a technological achievement, *The Floating Piers* was a social phenomenon, attracting almost three times the visitors anticipated over its 16-day run, and uniting a wide spectrum of the public on a golden 52-foot-wide pathway. During divisive times, leave it to a work of art to bring people together. *Josephine Minutillo*

We LEED in the classroom.



LEED, the most widely used green building program, is helping buildings and homes everywhere use less water and energy, provide a healthier environment for occupants, and save money.

LEED—a commitment to the environment and a commitment to people.

#FindyourLEED

CIRCLE 28



usgbc.org/LEED



CRL Clear View
Pivoting System

INTRODUCING C.R. LAURENCE GLASS WALL OFFICE SYSTEMS DEMOUNTABLE PARTITIONS

- FRAMELESS
- FRAMED
- MOVABLE WALLS

The landscape of business environments is changing. Today's office interiors must meet a host of performance and aesthetic requirements, striking a compelling balance between form and function. C.R. Laurence accomplishes this by pairing the benefits of glass with attractive and durable hardware systems.

CRL provides a complete range of sleek and functional demountable partition options to complement and enhance your project. Our systems are customized to the exact needs of each customer. They reflect the quality and workmanship of our decades as an industry leader, and ship quickly from a network of service centers on three continents. The results are increased natural light, improved visibility, efficiency and privacy in any workspace, all the while creating a striking visual statement.

crl-arch.com/partitions

Specify Confidently. Specify CRL.



Learn more about our complete line of interior office partitions by contacting Technical Sales:
E-mail: partitions@crlaurence.com
Phone: (800) 421-6144 Ext. 7770
Fax: (800) 262-3299

CIRCLE 241



JAB446_7/16

CRL Series 487 in Black Anodized
With Integrated Top Hung Slider