ARCHITECTURAL RECORD

#BXNDZPG ********AUTO**ALL FOR ADC 275
#AE871802?# SEP18 BKS
GEORGE SMART
5409 PELHAM RD
DURHAM NC 27713-2533
0001
P001
042#
536

fireframes®
Aluminum Series

Pilkington **Pyrostop**®

© 2017 Technical Glass Products. UL and the UL logo are trademarks of UL LLC. Pilkington Pyrostop is a registered trademark of Pilkington plc. Technical Glass Products, One Source. Many Solutions, Fireglass and Fireframes are registered trademarks of Technical Glass Products. Image above courtesy of Pilkington.

Discover Fireframes® Aluminum Series combined with Pilkington Pyrostop® glass. Technical Glass Products' innovative Fireframes Aluminum Series frames are available with fire ratings up to 120 minutes and provide a barrier to radiant and conductive heat transfer, allowing for unlimited areas of glazing in interior fire separations. The narrow aluminum profiles create clean sightlines and are available with custom shaped cover caps. For a complete entrance solution, the system can be combined with fire-rated doors from TGP.

Explore this framing system's customizable cover caps, which provide even greater design flexibility. Use our online design tool to see how they look in a virtual space.

fireglass.com/cover-cap

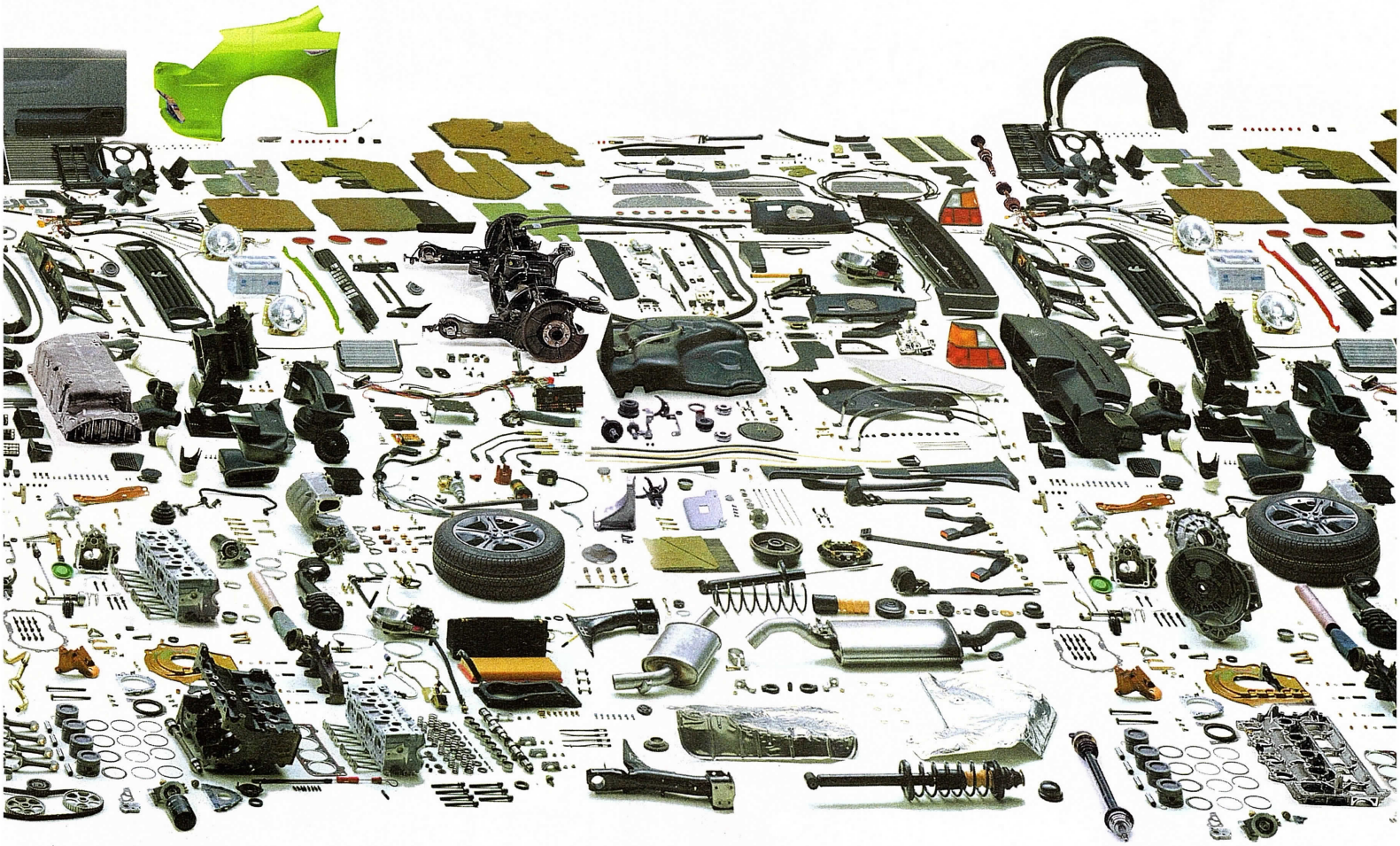
TGP FIRE RATED
one source. many solutions.®

fireglass.com | 800.426.0279

Still buying building

Only one company can provide fully-integrated building envelopes.
An automobile is a complex machine made up of thousands of parts. You would never order an automobile one part at a time, so why specify a building envelope that way? We are the only manufacturer that designs, engineers, tests and manufactures curtain wall, windows, storefronts, skylights and glass seamlessly from one source. So let's build better, faster, with less risk, more reward—we're The Building Envelope Company.™ Call 1-866-Oldcastle (653-2278) or visit obe.com.

envelopes this way?



Oldcastle BuildingEnvelope®

Engineering your creativity™

curtain wall | storefronts | windows | skylights | glass

SOLARBAN 90
Solar Control Low-E Glass
Vitro
SOLARBAN 72
Solar Control Low-E Glass
Vitro
SOLARBAN 70XL
Solar Control Low-E Glass
Vitro
SOLARBAN Z50
Solar Control Low-E Glass
Vitro
SOLARBAN 60
Solar Control Low-E Glass
Vitro
SOLARBAN R100
Solar Control Low-E Glass
Vitro
SOLARBAN 60
Solar Control Low-E Glass
+ STARPHIRE
ULTRA-CLEAR GLASS
Vitro
SOLARBAN Z75
Solar Control Low-E Glass
Vitro
SOLARBAN 67
Solar Control Low-E Glass
Vitro

Find your comfort zone. On so many levels.

Establish a comfort zone with *Solarban*® glass by Vitro Architectural Glass (formerly PPG Flat Glass)—now under new ownership and driven by the same U.S.-based plants, people and products trusted by architects for years.

Within the *Solarban*® brand family of low-e glass coatings, you'll find a wide array of solar control performance and aesthetic options delivering unparalleled choices. Backed by 50 years of proven reliability and a formula for the future, you can find comfort in the *Solarban*® glass family.

Start your own stack of *Solarban*® samples at **vitroglazings.com/solarban** or **855-VTRO-GLS (887-6457)**.

SOLARBAN®
Solar Control Low-E Glass

Vitro
Formulated for the Future of Glass

©2017 Vitro Architectural Glass. All rights reserved. *Solarban, Starphire* and the *Starphire* logo are registered trademarks owned by Vitro. *Starphire Ultra-Clear* is a trademark owned by Vitro. The *PPG* logo is a registered trademark of PPG Industries Ohio, Inc.

Top Seed

Arthur Ashe Stadium at **USTA's Billie Jean King National Tennis Center** is one of sport's most beloved venues. But its roofless design meant rain often stopped play. To keep tournaments on schedule, the stadium's original designers, architect **Rossetti** and engineer **WSP Parsons Brinckerhoff**, proposed the tennis world's largest long-span retractable roof. With a 7-minute opening time and a design that keeps sightlines unobstructed, the new lightweight fabric and steel canopy is favored to win over athletes and fans alike. Read more about it in **Metals in Construction** online.

Steel Institute of New York

WWW.SINY.ORG

ARCHITECTURAL RECORD

EDITOR IN CHIEF	Cathleen McGuigan, *mcguiganc@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	Kelly L. Beamon, *beamonk@bnpmedia.com*
WEB EDITOR	Miriam Sitz, *sitzm@bnpmedia.com*
ASSISTANT EDITOR	Alex Klimoski, *klimoskia@bnpmedia.com*
COPY EDITOR	Anna Shapiro
EDITORIAL ASSISTANT	Erin (E.K.) Hudson, hudsone*@bnpmedia.com*
ART DIRECTOR	Michael T. Powell, *powellm@bnpmedia.com*
ASSISTANT ART DIRECTOR	Kaylee Webster, *websterk@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

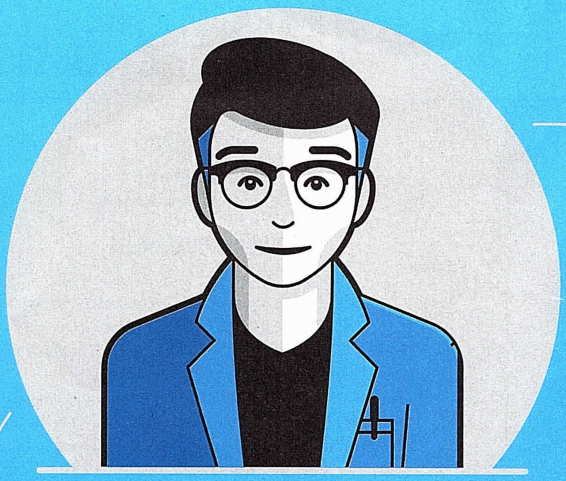
ARCHITECTURAL RECORD (ISSN: Print 0003-858X Digital 2470-1513) October 2017, Vol. 205 No. 10. Record is published 12 times annually, monthly by BNP Media II, LLC., 2401 W. Big Beaver Rd., Suite 700, Troy, MI 48084-3333. Telephone: (248) 362-3700, Fax: (248) 362-0317.
ANNUAL RATE FOR PRINT, DIGITAL AND 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 $17.00; Foreign $11.00.
Printed in the U.S.A. Copyright 2017, 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 BNP Media Helps People Succeed in Business with Superior Information

ABC MPA

PRINTED IN USA



FROM SKETCHES TO AS-BUILTS

Bluebeam® Revu® helps Architects initiate PDF-based design reviews that allow all project partners to collaborate on the same documents in real time. Teams of any size can easily respond to submittals and RFIs—and save project time with a more streamlined punch process.

More than one million AEC professionals around the world trust Revu as their end-to-end digital workflow and collaboration solution.

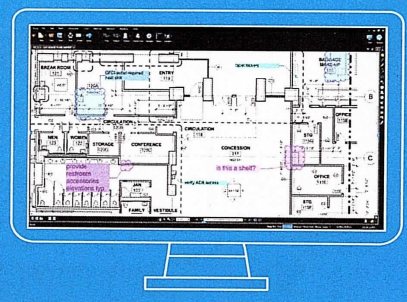
ESTIMATOR

ENGINEER

SPECIALTY CONTRACTOR

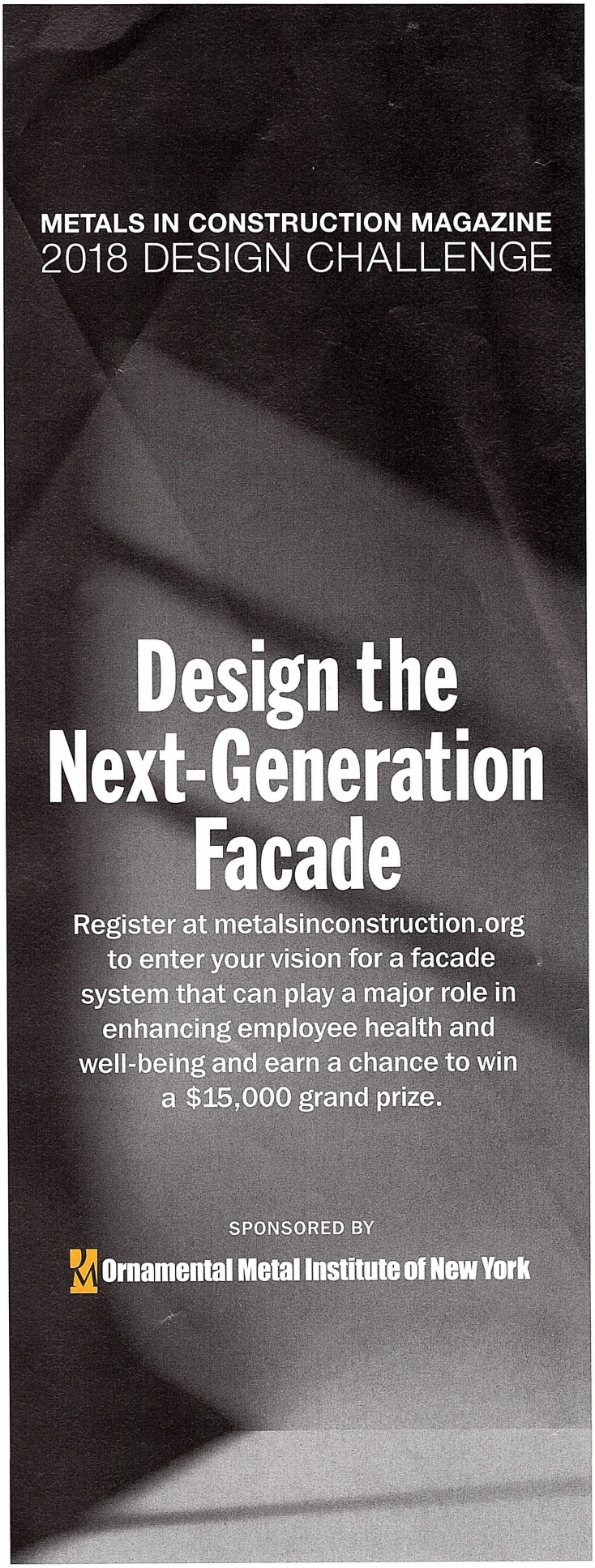
GENERAL CONTRACTOR

DOWNLOAD A TRIAL OF BLUEBEAM REVU TODAY
BLUEBE.AM/REVIEW



BLUEBEAM®
A NEMETSCHEK COMPANY

© Copyright 2017, Bluebeam, Inc.



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): Bruce Smith
(224) 216-7836, Fax: (248) 786-1390, *Smithb@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, INTERNATIONAL: Risa Serin
(646) 849-7130, Fax: (248) 786-1393, *serinr@bnpmedia.com*

WORKFORCE/RECRUITMENT: Diane Soister
(646) 849-7137, Fax: (248) 502-2046, *soisterd@bnpmedia.com*

PRODUCTION MANAGER: Kristen Carpenter
(248) 786-1222, Fax: (248) 502-2051, *carpenterk@bnpmedia.com*

CONTINUING EDUCATION

CONTINUING EDUCATION GROUP MANAGER
Brittnie Wilson
wilsonb@bnpmedia.com

CONTINUING EDUCATION PROJECT COORDINATOR
Stephanie Costigan
costigans@bnpmedia.com

CUSTOM CONTENT EDITOR
Samantha Meux
meuxs@bnpmedia.com

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
AUDIENCE AUDIT MANAGER
Anna Silvestri
ONLINE DEVELOPMENT DIRECTOR
Nikki Smith
DIRECTORY DEVELOPMENT MANAGER
Erin Mygal

LIST RENTALS

SENIOR ACCOUNT MANAGER
Kevin Collopy
(402) 836-6265,
Toll Free: 800/223-2194, ext. 684
kevin.collopy@infogroup.com
SENIOR ACCOUNT MANAGER
Michael Costantino
(402) 836-6266,
michael.costantino@infogroup.com

BNP MEDIA: (248) 244-6400

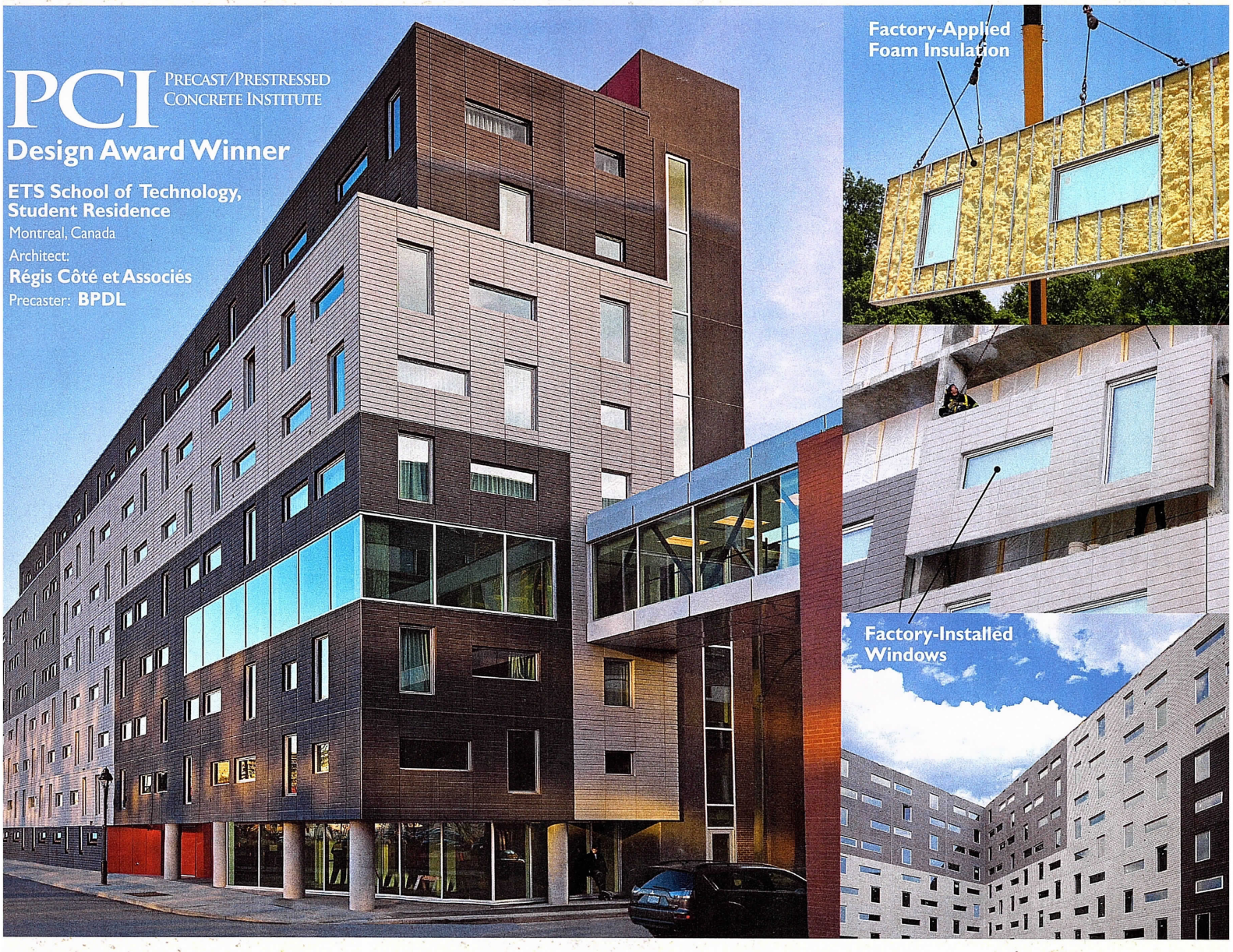
WEBSITE: architecturalrecord.com. **SUBSCRIBER SERVICE:** 877/876-8093 (U.S. only); 818/487-2077 (outside the U.S.). Website Registration: 847/559-7398. E-mail: *AR@pubservice.com*. If the Post Office alerts us that your magazine is undeliverable, we have no further obligation unless we receive a corrected 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 BNP Media Helps People Succeed in Business with Superior Information

ABC MPA

PRINTED IN USA

A Winning Performance of Beauty, Strength & Economics.

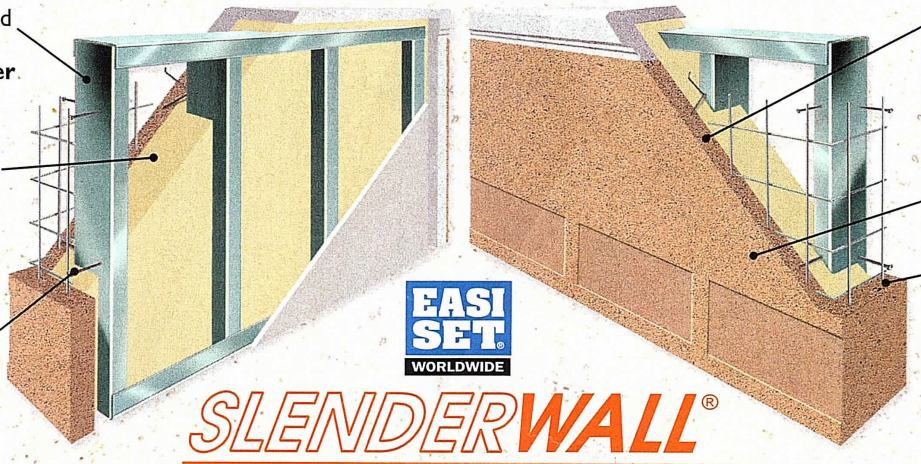


Ready for drywall, integrated heavy-duty G90 galvanized steel stud framing equals **fewer on-site trades** and **faster construction schedules**

Energy Code & NFPA 285 compliant (hot box tested) factory-applied closed-cell foam continuous insulation **meets all thermal and air barrier requirements**

Stainless steel fasteners

Optional **factory-installed windows**



30 lbs. per sq. ft. composite panels, containing 2 inches of precast concrete, are **significantly lighter** than traditional systems, allowing for **larger panels** and **lower structural and foundation costs**

Virtually unlimited choices of **Class "A" finishes,** colors and textures

Molecularly-bound high-tech fiber and welded-wire reinforcement, **wind-load tested to 226 mph**

Optional H^2Out **pressure-equalized in-the-joint rainscreen** caulking system

EASI SET® WORLDWIDE

SLENDERWALL®

Architectural Precast/Steel Stud Building Panels

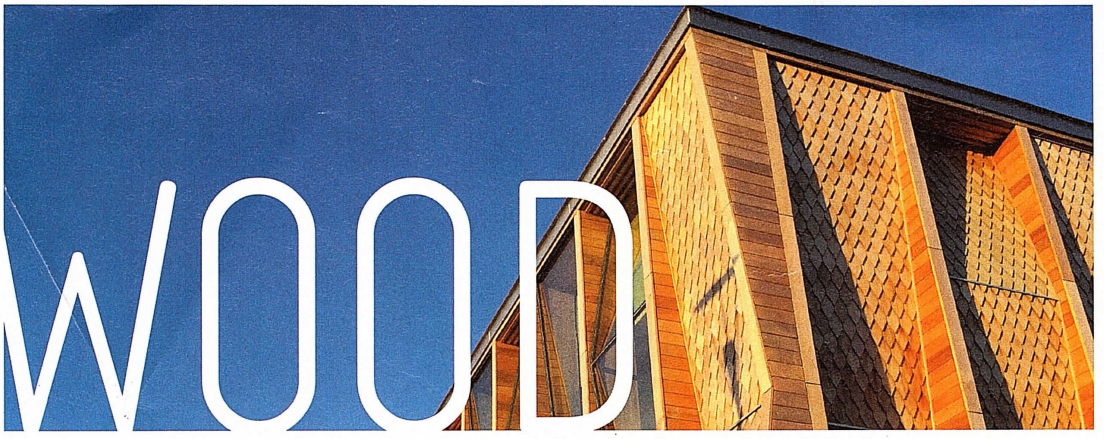
1.800.547.4045

SlenderWall.com

HEALTHCARE • HOSPITALITY • INSTITUTIONAL • OFFICES • MIXED-USE • MULTI-FAMILY • SCHOOLS

SLENDERWALL® is a product of Easi-Set® Worldwide, a licensor of precast products, with 68 licensed producers in 42 states & 10 countries. Manufacturing licenses available for qualified precast producers. A subsidiary of publicly traded Smith-Midland, Delaware [SMID] AR©2017

CIRCLE 250



WOOD DESIGN & BUILDING AWARDS

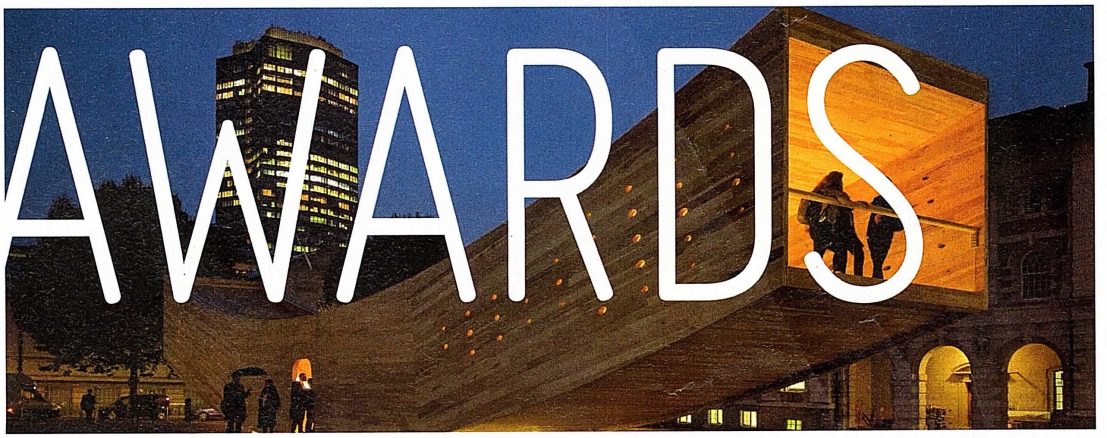


Photo credit: Courtesy of the 2016 Wood Design & Building Awards

RECOGNIZIN
EXCELLENC
IN WOO
ARCHITECTUR

QUESTIONS?
visit
wooddesignawards.c

OR
contact Ioana Lazea
1-800-463-5091 x2
ilazea@cwc.ca

OR
Natalie Tarini at
1-800-463-5091 x2
ntarini@cwc.ca

Early Bird Discou
OCTOBER

Submissions Deadlir
NOVEMBER

Wood Design & Building
woodWORKS! Program of the Canadian Wood Council
Canadian Wood Council · Conseil canadien du bois
Sustainable Forestry Initiative
REALCEDAR
SANSIN

ARCHITECTURAL RECORD

10 2017

NEWS

21 REELING FROM HURRICANES, U.S. ARCHITECTS GET TO WORK *By Miriam Sitz*

24 DESIGN RENAISSANCE IN COLUMBUS, INDIANA *By David Sokol*

26 RECORD'S INNOVATION CONFERENCE IN NYC CONSIDERS THE PUBLIC REALM *By E.K. Hudson*

28 U.S. PAVILION TO EXPLORE CITIZENSHIP AT 2018 VENICE ARCHITECTURE BIENNALE *By Miriam Sitz*

DEPARTMENTS

14 EDITOR'S LETTER: SHELTER FROM THE STORM

31 HOUSE OF THE MONTH: TATIANA BILBAO'S LOS TERRENOS HOUSE *By Pilar Viladas*

35 INTERIORS: EVA JIŘIČNÁ'S TIFFANY GALLERY FOR THE NEW-YORK HISTORICAL SOCIETY *By Linda C. Lentz*

41 GUESS THE ARCHITECT

43 ON THE RECORD: OMA PARTNER REINIER DE GRAAF *By Josephine Minutillo*

49 BOOKS: IAN VOLNER'S *MICHAEL GRAVES: DESIGN FOR LIFE* *Reviewed by Paul Goldberger*

51 BOOKS: DANIEL L. DOCTOROFF'S *GREATER THAN EVER: NEW YORK'S BIG COMEBACK* *Reviewed by Diana Lind*

55 PRODUCTS: WINDOWS & DOORS *By Kelly L. Beamon*

61 PRODUCTS: HVAC *By Kelly L. Beamon*

PROJECTS

65 KEW GARDENS HILLS LIBRARY, NEW YORK WORK ARCHITECTURE COMPANY *By Josephine Minutillo*

70 BISHOP SELWYN CHAPEL, NEW ZEALAND FEARON HAY ARCHITECTS *By Brian Carter*

74 DOMAINES OTT WINERY, FRANCE CARL FREDRIK SVENSTEDT ARCHITECT *By Alex Klimoski*

BUILDING TYPE STUDY 987 MULTIFAMILY HOUSING

83 INTRODUCTION

84 GROVE AT GRAND BAY, MIAMI BJARKE INGELS GROUP *By Suzanne Stephens*

90 HOUSE Z22, ZURICH GUS WÜSTEMANN ARCHITECTS *By Hugh Pearman*

96 CREST APARTMENTS, CALIFORNIA MICHAEL MALTZAN ARCHITECTURE *By Sarah Amelar*

102 HUMA KLABIN, SÃO PAULO UNA ARQUITETOS *By Tom Hennigan*

108 MARIPOSA 1038, LOS ANGELES LORCAN O'HERLIHY ARCHITECTS *By Clifford A. Pearson*

114 WEST END SQUARE 50, WASHINGTON, D.C. TEN ARQUITECTOS *By Deane Madsen*

TECHNOLOGY

123 COASTAL RESILIENCE FIVE YEARS AFTER SANDY, TWO FORTHCOMING PROJECTS IN THE NORTHEAST OFFER MODELS FOR OTHER VULNERABLE REGIONS. *By Michael Cockram*

163 DATES & EVENTS

172 SNAPSHOT: MAD ARCHITECTS' HUANG MOUNTAIN VILLAGE *By Alex Klimosk*

THIS PAGE: *THE EXCHANGE*, AN INST
INDIANA, BY OYLER WU COLLABOR
FRUITS FOR EXHIBIT COLUMBUS

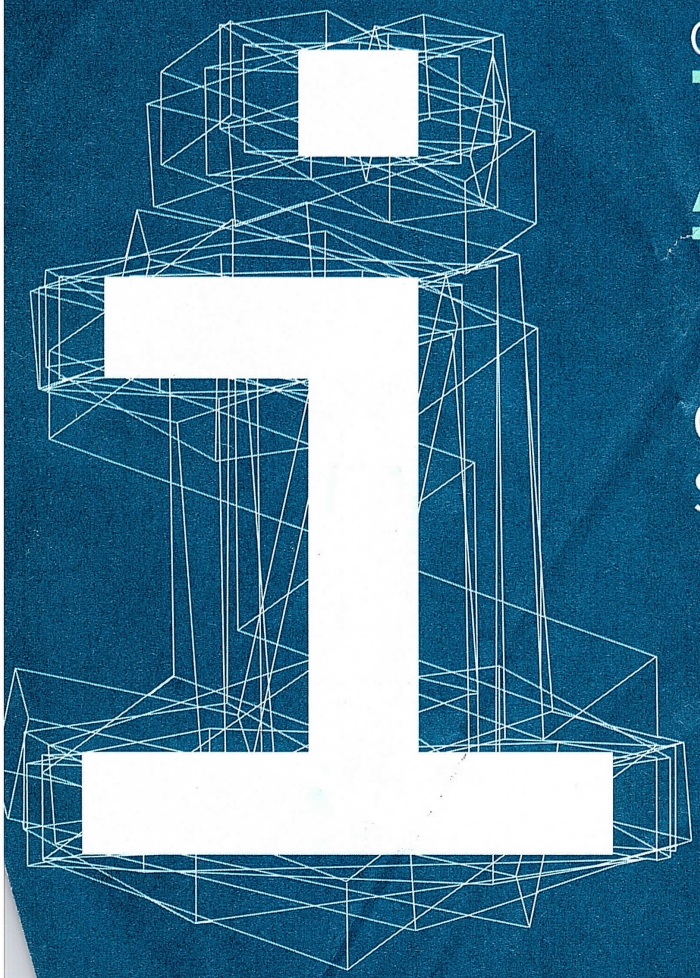
COVER: MARIPOSA 1038, LOS AN
O'HERLIHY ARCHITECTS. PHOT

Find expanded coverage of Projec
Web-only features at architectura

ARCHITECTURAL
RECORD

INNOVATIONCONFERENCEeast

OCTOBER 19, 2017 | MASONIC HALL | NEW YORK, NEW YORK



CREATIVITY + DESIGN + TECHNOLOGY

THE FUTURE OF ARCHITECTURE AND THE PUBLIC REALM

Group, AIA Member and
Student Discounts Available

Y CORPORATE SPONSOR

reTHINK WOOD®

INGSPLUS®

PRODUCT GALLERY SPONSORS

ABC STONE

ICYNENE
The Evolution of Insulation

CASTCONNEX
innovative components for inspired designs

AISC
American Institute of Steel Construction
Founded 1921

DURA INDUSTRIES

TRIMO
Architectural Solutions

RIEDER

Contact

MICRODESK

SUPPORTING SPONSORS

AIA New York

Ornamental Metal Institute of New York

Steel Institute of New York

2017

CONTINUING EDUCATION

AIA

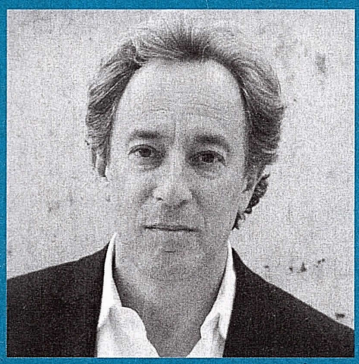
Earn up to 7.75 AIA LU/HSW

FEATURED SPEAKERS INCLUDE:

Marion Weiss and Michael Manfredi
WEISS/MANFREDI Architecture/ Landscape/ Urbanism, New York

Brendan MacFarlane
Jakob + MacFarlane, Paris

Sharon Johnston and Mark Lee
Johnston Marklee & Associates, Los Angeles



Michael Kimmelman
Architecture Critic, *The New York Times*

Shohei Shigematsu
Partner, OMA, New York

PANEL SPEAKERS INCLUDE:

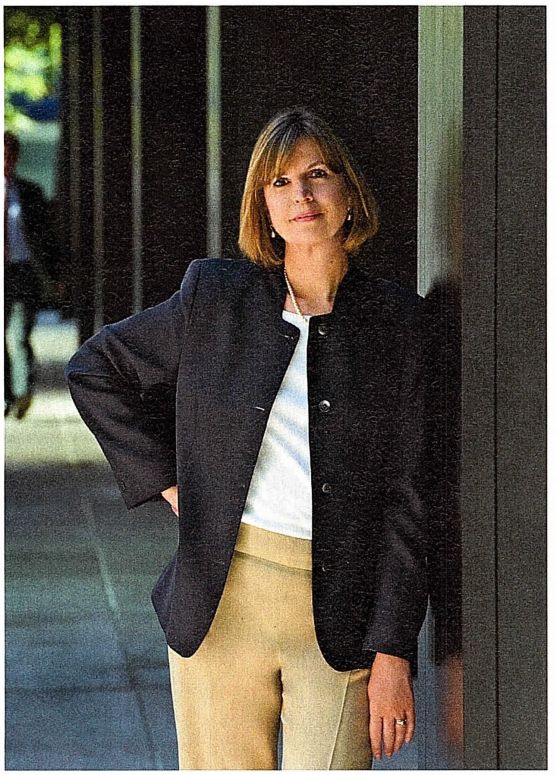
- **Amy Chester**, Managing Director, Rebuild by Design
- **David Waggonner, FAIA**, Principal, Waggoner & Ball Architects
- **Simon David**, Project Leader & Senior Designer, Bjarke Ingels Group
- **Robert Rogers, FAIA**, ROGERS PARTNERS Architects+Urban Designers

VIEW THE AGENDA AND REGISTER TODAY AT:

EAST.ARINNOVATIONCONFERENCE.COM

Shelter from the Storm

Architects must continue to explore new forms for urban living.



A FEW DAYS after Hurricane Harvey swamped Texas, Richard Florida, the urban theorist and author of *The Rise of the Creative Class*, rang an alarm, declaring that the "new age of the city" might be ending. He wasn't talking about the impact of the storm but, instead, cited statistics that show some big cities are losing population, including Chicago, and some suburbs are gaining—in the Sun Belt around Charlotte, North Carolina, and Orlando, for example. There are signs, he wrote in a *New York Times* op-ed piece, "that the tide [of urbanization] has crested."

But try telling that to the people of Houston, where overdevelopment has been blamed for the catastrophic flooding the city has endured, not only during Harvey but with two other calamitous floods in the last three years. Houston's population continues to grow—it now has 2.3 million people and is on track to become the nation's third-largest city by 2025. Miami, the other major city in a hurricane's path this season, is also booming, with a downtown population that rose 6.5 percent every year between 2010 and 2016. When Irma whipped through last month, two of more than 20 construction cranes on the skyline toppled, both atop new multifamily structures.

Demographers may be right about a downward slide in certain cities, but urban areas remain powerful magnets. Houston has long been a big center for the construction of multifamily buildings and is slated to add about 18,000 more units this year. Miami, too, is adding new housing. While both cities face a future of even more storms—and storms of greater force, according to climate scientists—the level of destruction could be partly alleviated by better management of development. In sprawling Houston, with its notoriously nonexistent zoning laws, experts have decried the widespread paving of coastal prairie, with so much building and hardscape that stormwater has nowhere to be absorbed. In Miami, where every developer wants to build condo towers with spectacular views, the dangers of building along the shore, at or below sea level, have been obvious for some time.

Multifamily residential development has not caused, in itself, the problem for cities threatened with disastrous storms and rising sea levels, but can be part of the solution, creating greater density to house growing populations. If municipal planners and policy makers could better control where and how development occurs, housing more people on a smaller footprint would allow for more green parks, bioswales, and other public spaces designed with greater porosity. That, along with improved infrastructure, could reduce the impact of storm surges and flooding.

The challenge for architects is how to design housing for varied urban contexts and the needs and incomes of diverse populations. In this issue, we look at a range of innovative approaches, from a mixed-use complex in an upscale Washington, D.C., neighborhood that incorporates a firehouse, a squash club, and affordable apartments under one roof (page 114) to a five-story residential building in the densely populated Koreatown in Los Angeles, which animates the streetscape with a facade of black and white punched-out window frames and balconies (page 108). A not-for-profit in L.A. that builds housing for the formerly homeless has constructed its first project in the suburbs, with a design that cleverly adapts to a narrow, deep lot, with a snaking series of faceted forms (page 96). And in Miami—to access those great water views—a pair of twin towers twists and turns, its unusual architecture aided by smart engineering (and, yes, it has hurricane-impact windows, a three-story podium, and a hydrostatic basement slab, all designed to withstand monster storms). In São Paulo—a city where apartment buildings tend to be fortresses against crime—a handsome new concrete high-rise subtly incorporates security measures while presenting a welcome openness to its surrounding neighborhood (page 102). And architects transforming old buildings into dwellings may well be inspired by a Swiss conversion that doesn't cover up the original interiors but, boldly, strips them bare to create a rich backdrop for daily living (page 90).

Despite dire predictions, cities, of course, will endure and keep changing. They are still the greatest hallmarks of civilization and the engines for human creativity and enterprise. But housing is among the most urgent urban problems, one that architects must continue to explore with ever more inventive designs.

Cathleen McGuigan

Cathleen McGuigan, Editor in Chief

Steel Grey (K12-3008) and Dark Pumice (K09-7053) in Modular sizes, Chalk White (K13-3056) in Saxon size, Barely Grey (K08-6008) in Norman size, and Carbon Black in Utility size.
Visit glengery.com/innovation for more details.

Build beauty with us

Colors, textures, sizes, shapes and materials—Glen-Gery provides architects and designers the largest palette of hard surface options to bring their visions to life. To learn what's possible call 484.334.2843 for our idea book or visit glengery.com

Glen-Gery

Timeless. Elegant. Durable.

CIRCLE 29

ARCHITECTURAL RECORD

RECORD ON THE ROAD

REGISTER TODAY

Join *Architectural Record* and a panel of leading architects for a conversation on **Water + Architecture**.

NOVEMBER 14 | LOS ANGELES

SCI-Arc
960 East 3rd Street
Los Angeles, CA 90013

Panelists to be announced soon!
Visit RecordontheRoad.com for more information.

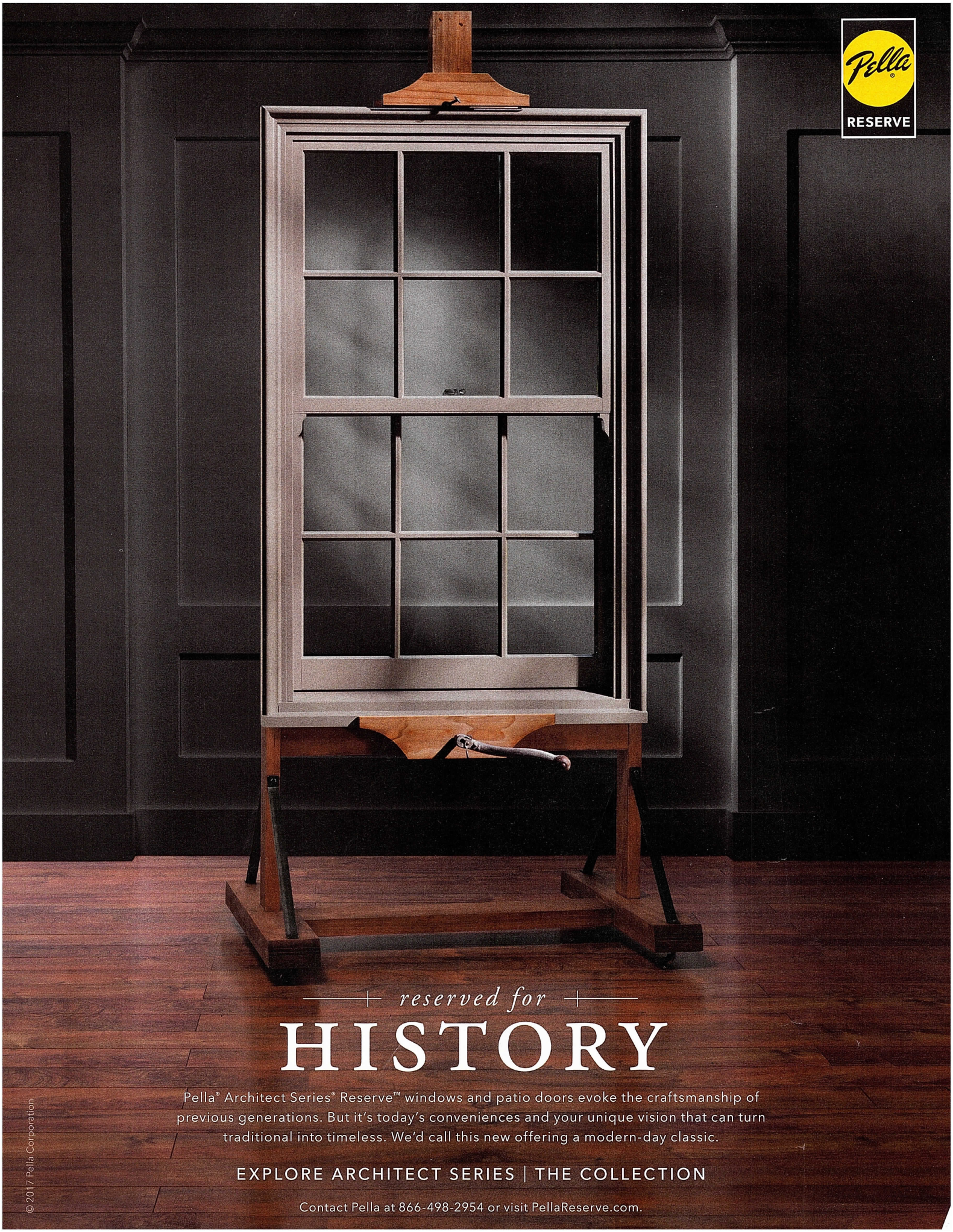
This event has been approved by AIA for 2.5 AIA HSW|LU.

*This program is sponsored by **Ceilings Plus**. Complimentary seating is limited to the first 75 registrants.*

BROUGHT TO YOU BY

CEILINGS PLUS

RecordontheRoad.com

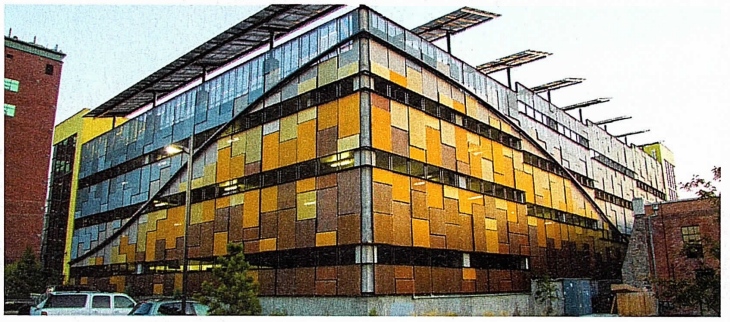

Pella
RESERVE
reserved for
HISTORY
Pella® Architect Series® Reserve™ windows and patio doors evoke the craftsmanship of previous generations. But it's today's conveniences and your unique vision that can turn traditional into timeless. We'd call this new offering a modern-day classic.
EXPLORE ARCHITECT SERIES | THE COLLECTION
Contact Pella at 866-498-2954 or visit PellaReserve.com.
© 2017 Pella Corporation

LEARN & EARN

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

IN THIS ISSUE

Photo courtesy of Accurate Perforating/Bret Hoekema

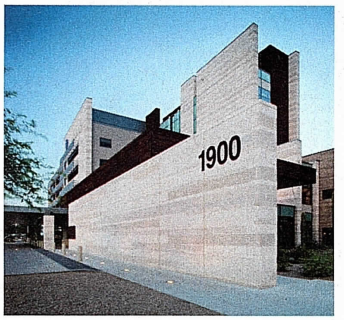


Designing Green: The Seen and the Unseen

Sponsored by Accurate Perforating, ARCHITECTURAL GRILLE, Benjamin Moore, EXTECH/Exterior Technologies, Inc., and ZIP System® Sheathing and Tape
Credit: 1 AIA LU/HSW; 1 LFA CEU

Page 134

Photo courtesy of Echelon™ Masonry



Modern Masonry: Fire Protection and Enhanced Performance

Sponsored by Echelon™ Masonry
Credit: 1 AIA LU/HSW

Page 148

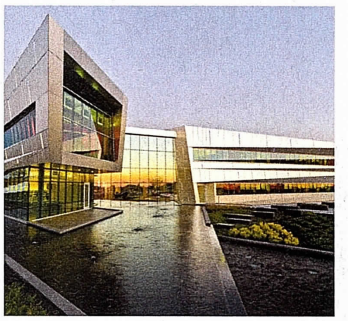
Photo courtesy of VT Industries

Keeping the Beauty in High-Performance Areas with High-Pressure Decorative Laminate Doors

Sponsored by VT Industries Inc.
Credit: 1 AIA LU

Page 150

Photo courtesy of Alucobond/Connor Group/Daniel Lunghi Photography



Put the Pedal to the Metal

Sponsored by Metal Construction Association
Credit: 1 AIA LU

Page 154

Photo courtesy of Walker Zanger

Large-Size Porcelain Slabs for Building Surfaces

Sponsored by Walker Zanger
Credit: 1 AIA LU/HSW

Page 156

NEW ONLINE AT CE.ARCHITECTURALRECORD.COM

Image courtesy of BASF Corporation

A Case for Continuous Insulation: Building Science, Market Demand, and Common Sense

Sponsored by BASF Corporation–Neopor®
Credit: 1 AIA LU/HSW

Image courtesy of reThink Wood

Successful Strategies for Profitable, Carbon-Neutral Designs Using Passive House and Mass Timber

Sponsored by reThink Wood
Credit: 1 AIA LU/HSW

Using Vector Graphics in Laminated Architectural Glass

Sponsored by Forms+Surfaces
Credit: 1 AIA LU; 0.1 IDCEC CEU

Planning Sustainable Infrastructure

Sponsored by Procore
Credit: 1 AIA LU; 1 PDH

Building a Culture of Quality and Safety One Hard Hat at a Time

Sponsored by Procore
Credit: 1 AIA LU/HSW; 1 PDH

ALSO ONLINE AT CE.ARCHITECTURALRECORD.COM

A Roadmap to Tall Timber Structures: Design, Approval, Construction
Sponsored by reThink Wood

Healthy, Sustainable Buildings by Design
Sponsored by Armstrong Ceiling and Wall Solutions

Top Five Tips for Successful Daylighting Design
Sponsored by Lutron Electronics

Managing Daylight with Automated Solar Control
Sponsored by Draper Inc.

Moisture Control with Spray Foam Insulation
Sponsored by Icynene

High-Performance Building Enclosure Design for a Net-Zero Ready Habitat for Sub-Zero Wildlife
Sponsored by IMETCO

The Architect's Guide to Specifying Sustainable Single-Ply Roofing Membranes: NSF/ANSI 347
Sponsored by Duro-Last®, Inc.

Managing Heat and Light Through Exterior Shading Systems
Sponsored by Draper Inc.

Destination Dispatch Elevator Systems Benefit Passengers, Building Owners, and Design Professionals
Sponsored by Otis Elevator Company

To receive credit, you are required to read the entire article and pass the test. Visit 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.
This course is part of the Wood Structures Academy. This course is part of the Sustainability Academy.

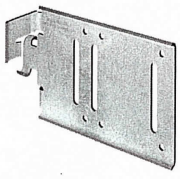
The innovator in steel framing for more than 25 years.

Bridging and Bracing

Deck Fasteners

Direct Fastening

Anchors



Connectors

Trusted solutions for the mid-rise steel industry.

Simpson Strong-Tie was one of the first companies to develop connectors specifically for steel framing. Today, we continue to invest in product research and development to offer our customers connectors, fasteners, anchors, steel shearwalls and special moment frames, which feature our innovative Yield-Link® connection. Our commitment to the mid-rise steel industry has never been stronger.

Let us help you with your next project. Visit our website at **go.strongtie.com/midrisesteel** or give us a call at (800) 999-5099.

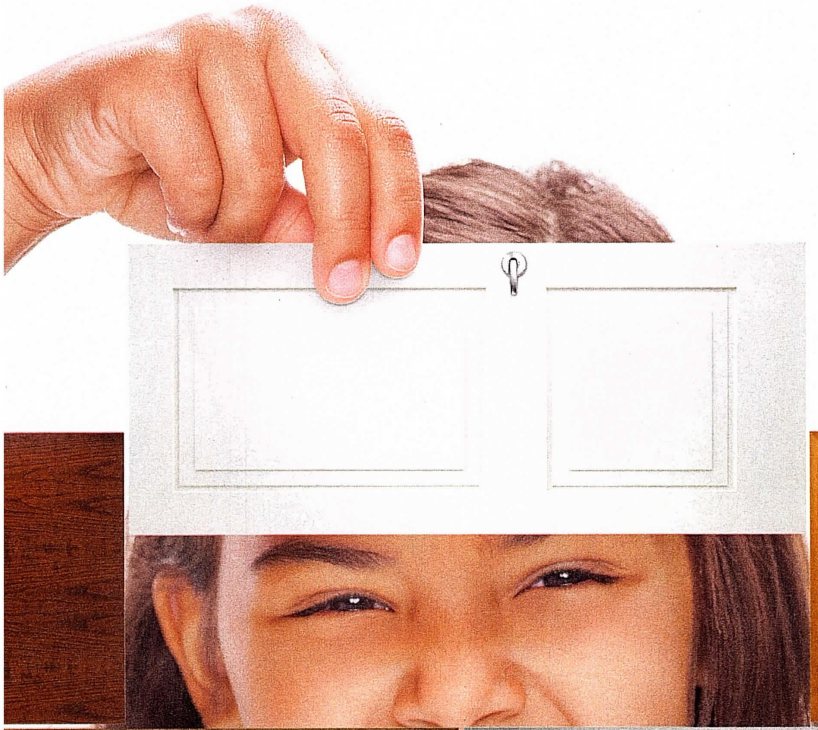
AISC ASSOCIATE

SIMPSON Strong-Tie®

©2017 Simpson Strong-Tie Company Inc. MIDRISE17

BUILD.

With SUPA Doors MDF Collection,
you can build more.



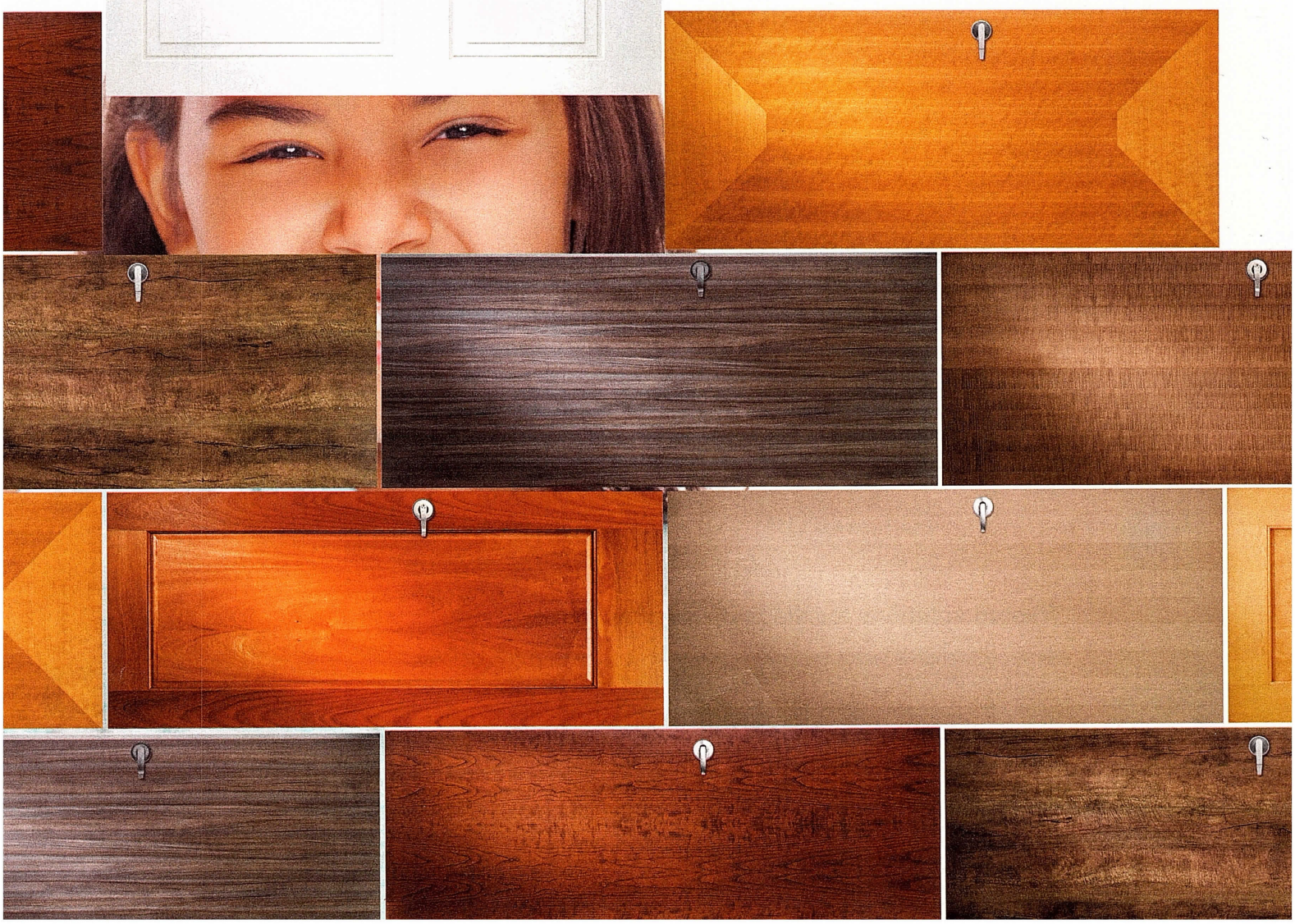
VT INDUSTRIES **Architectural Wood Doors**

VTDoors.com 1-800-827-1615 (ext. 10512)

©2017 VT Industries, Inc. All rights reserved.

FSC
www.fsc.org
FSC® C005590

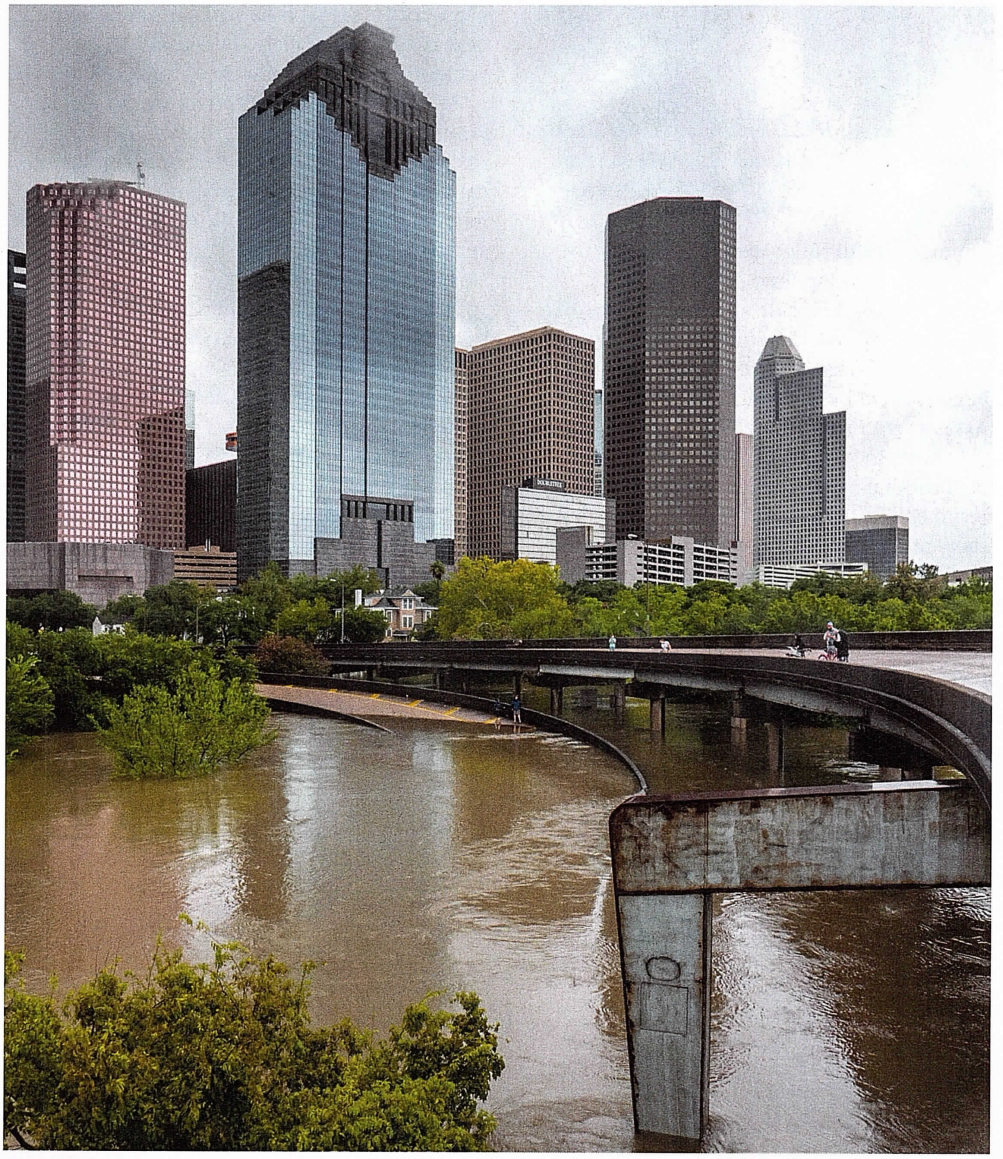
The mark of responsible forestry



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

perspective

I think not acknowledging climate change at the federal level is a huge disservice to those of us who have to deal with it every day. –*Tampa Mayor Bob Buckhorn on NPR's* Morning Edition *the day after Hurricane Irma's landfall in Florida.*



On August 27, floodwaters from Hurricane Harvey submerged a ramp to Interstate 45 in downtown Houston (left). The South Carolina Helicopter Aquatic Rescue Team came to the aid of residents in Port Arthur, an inundated south-Texas city, seen here on August 31 (above).

Reeling from Hurricanes, U.S. Architects Get to Work

BY MIRIAM SITZ

AS SUMMER 2017 drew to a close, for the first time in 166 years of weather records, two Category 4 Atlantic hurricanes hit the United States in the same season—just 16 days apart. Each brought its own superlatives: Harvey, the continental U.S.'s wettest storm ever, drenched southeast Texas with as much as 51 inches of rain, while Irma maintained a devastating maximum wind speed of 185 mph over a record-setting 37-hour period. Among Texas, Florida, and the Caribbean, where both storms brutally battered small island nations before making landfall on the continent, more than 130 lives were lost, and early estimates of total damages are approaching $300 billion.

In some ways, both hurricanes proved less severe than expected. In Houston—the Harvey victim with the highest visibility—most hospitals in the Medical Center and many major cultural buildings (including the Museum of Fine Arts, Houston, which is undergoing a significant expansion by Steven Holl Architects and Lake|Flato) went largely unscathed, apart from the expected flooding of below-grade construction sites and subterranean garages. Inhabitants of residential neighborhoods built on higher ground, located in the upper reaches of watersheds, and equipped with good drainage infrastructure saw significantly less flooding, with little to no water entering buildings.

But what Harvey lacked in ferocity of winds, it made up for in sheer quantity of rain. For an agonizing five days, the storm lingered over the Texas Gulf Coast, damaging an estimated 200,000 homes and forcing many to evacuate. In Houston, water inundated two aging reservoirs built in the 1940s by the Army Corps of Engineers, filling them to the point that controlled releases, which sent a deluge to neighborhoods downstream, were required to maintain the integrity of dams. Buffalo Bayou topped its banks, submerging parts of downtown and flooding—among other buildings—the new home of the Houston AIA with more than four and a half feet of water. The architects and engineers had planned innovative flood-mitigation features for the office, but construction was incomplete when Harvey hit. (The local branch of HOK has provided temporary office space for chapter staff.) At its peak, an esti-

Visit our online section, architecturalrecord.com/news.

mated third of Harris County, which includes Houston, was underwater.

In Florida, Hurricane Irma also played out differently from the way initial forecasts predicted. Miami avoided a direct hit, and institutions such as the Pérez Art Museum Miami (RECORD, July 2016), designed by Herzog & de Meuron to be hurricane resistant, "fared very well" and did not flood, a spokesperson told RECORD. Similarly, Bjarke Ingels's new multifamily project, the Grove at Grand Bay (page 84) handled the storm with success.

But high winds did their share of damage, leaving as many as 15 million state residents without power for a time. In the Keys, where destruction had not yet been fully assessed by press time, an estimated quarter of all houses were destroyed by wind and storm surge.

The aftermath of the hurricanes has raised familiar questions about land use and zoning, urbanization and sprawl, climate change and sea-level rise, and, in the architecture community, resilient design. "We've been preaching sustainability and resiliency for years," says Catherine Callaway, board president of AIA Houston and senior associate at local firm Kirksey. "Now that there are new ears willing to listen, I think we have a great opportunity to talk about better ways to build and develop land."

After ravaging the Keys, Hurricane Irma left a trail of destruction in southwest Florida, including the city of Marco Island, seen here on September 11.

In Texas and Florida, once the storms dissipated, local AIA chapters quickly began to organize recovery efforts. A number of members, trained by the AIA National's Safety Assessment Program, readied themselves to volunteer in harder-hit areas.

"I think it's the architecture community's responsibility to be the bellwether, to be out there at the front of the resiliency movement," says Cheryl H. Jacobs, executive vice president of the AIA Miami chapter, which has been developing a tool kit to help municipalities make changes to zoning and land-use regulations.

Reinaldo Borges, principal of Borges + Associates Architects in Miami and chair of the local AIA chapter's sea-level-rise task force, maintains, "You have to think the way developers think." Whether their goals are to rent out property for the next 20 years or to sell in the next two, "You can help them make better decisions by getting into their mindset," he says.

At Rice University, architecture professor Ron Witte, a founding partner of WW Architects, says, "Hurricanes, or other significant events that alter the chemistry of a city, help to accelerate the thinking around certain subjects." In his view, the subject du jour in Houston is density.

"Density and staying dry go hand in hand," says Witte, explaining that density minimizes impermeable ground and concentrates urban infrastructure, leaving cities better equipped to handle dramatic weather events, while also hastening improvements in transit, public spaces, and other social infrastructure.

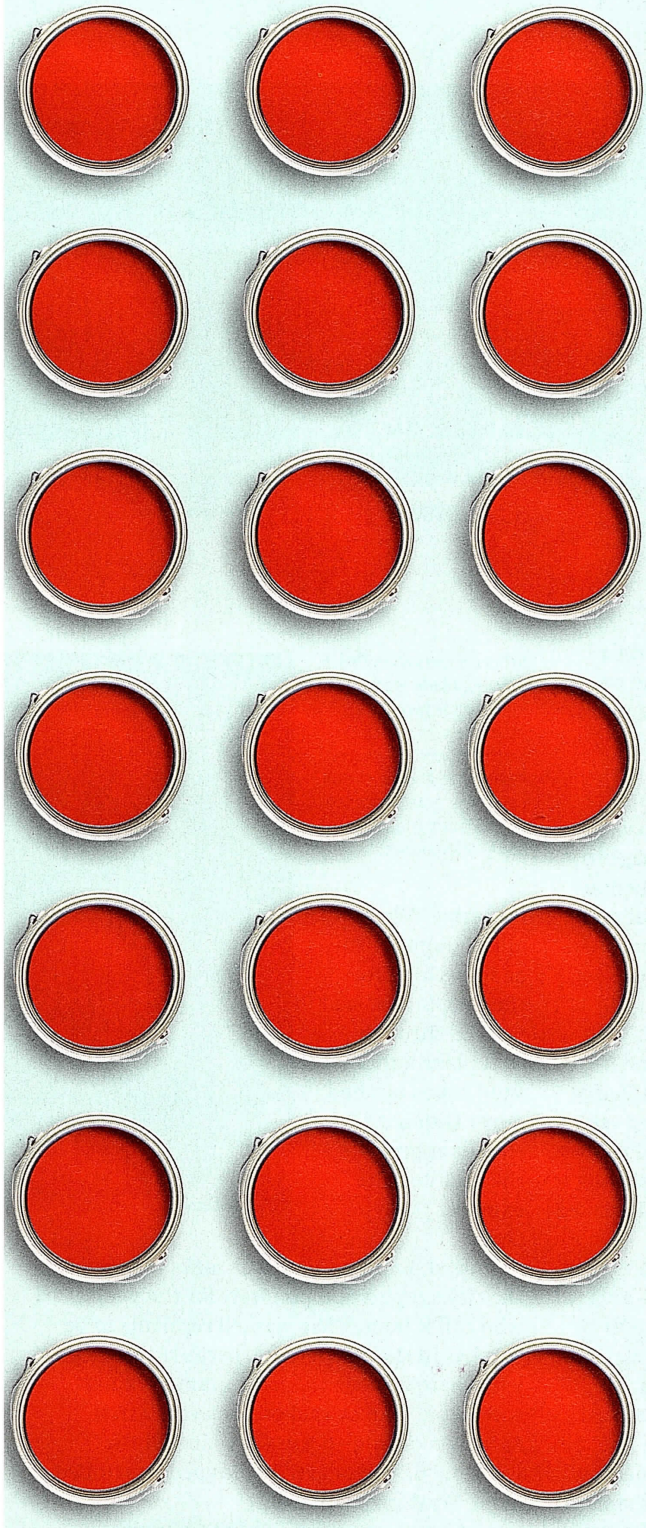
"I prefer to look for the opportunity, as opposed to the doomsday story," says Witte. "It's far more interesting." ■

17 Heritage Ball

October 26, 2017
Chelsea Piers, Pier Sixty
—
Cocktail Reception at 6:00pm
—
Dinner at 7:30pm

Honoring
Caples Jefferson
—
Type A Projects
—
Jeffrey Sachs
—
Claudia Gould and the Jewish Museum

www.aiany.org/heritageball



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**.

SHERWIN-WILLIAMS. COLORSNAP® | PRECISION

COVER THE EARTH

SHERWIN-WILLIAMS®

Design Renaissance in Columbus, Indiana

BY DAVID SOKOL

IN 1937, when Eliel Saarinen received an invitation to conceive a new house of worship in downtown Columbus, Indiana, he demurred. The Finnish-born architect and educator suspected that American churches demanded more flamboyance than Modernism could provide, and this small Midwestern community had no previous claim to innovative design. But the congregation soon brought the architect around by assuring him that Modernism's restraint reflected its ethics as well as the local culture. Even before Saarinen completed First Christian Church in 1942, the once-improbable building was hailed as the most daring of its kind.

Columbus defied expectations repeatedly thereafter. Today it is home to one of the first glass-pavilion banking halls, designed by Eliel's son, Eero, as well as career-defining commissions by the likes of Kevin Roche and Michael Van Valkenburgh. Of the dozens of cutting-edge designs completed in the city over the last 75 years, seven are National Historic Landmarks.

While Columbus's treasures are periodically thrust into the limelight—most recently by the indie film of the same name (RECORD, August 2017)—more contemporary progressive building has slowed to a trickle. But now, a $1.5 million initiative called Exhibit Columbus aims to reinvigorate the city's stature as a cultural destination by stimulating fresh work. "Columbus is a community that decided it was open to new ideas, but it had become known for what it did—not what it was doing," says Richard McCoy, who is spearheading Exhibit Columbus. To kick off the program, organizers invited 17 up-and-coming architectural teams—whose members range from gallery-represented designers to Midwestern architecture students—to create a series of installations across the city.

On the eve of the exhibition's launch in late August, Columbus mayor James Lienhoop told a 700-person audience gathered in the Van Valkenburgh–designed Mill Race Park that Exhibit Columbus will test "whether our community is ready to remember the legacy [it has] inherited and whether they are prepared to steward it."

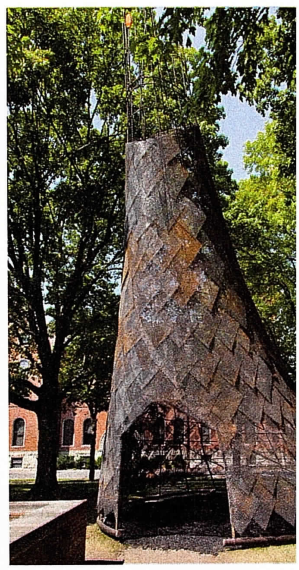
Named for J. Irwin and Xenia S. Miller, who were the guiding forces behind Columbus's distinguished 20th-century architectural heritage, the Miller Prize installations clearly embody this drive forward. Encouraging a dialogue between past and present, the program matches five emerging designers with five of the most significant Modernist sites on downtown Fifth Street.

On one corner of the First Christian Church site, for example, Milwaukee-based studio:indigenous has created an homage to the *wiikiaami* shelters of Indiana's indigenous Myaamia people, using rebar and metal mesh. As it rises, this diaphanous conical form swerves toward the church's famous 166-foot-tall campanile.

In the plaza of the I.M. Pei–designed Cleo Rogers Memorial Library that faces First Christian, Boston-based IKD encircled Henry Moore's *Large Arch* sculpture with tiered viewing platforms made of cross-laminated timber. During opening weekend, a constant throng of visitors explored, scampered over, and relaxed on the observation decks.

The theme of catalyzing interaction extended to Mill Race Park, where New York– and Tucson-based Aranda\Lasch arrayed 2,800 pieces of salvaged Indiana limestone in circles and stacks over 3.5 acres of open lawn, to encourage more specific uses like theatrical performance or game play. And at the Roche-designed Cummins Corporate Office nearby, New Haven's Plan B Architecture & Urbanism inserted small, man-made hills into the landscape, as well as freestanding, reflective steel columns within the building's soaring pergola, visually activating the space and offering spots for taking a break—or a selfie.

Meanwhile, the fifth project, by Los Angeles architects Oyler Wu Collaborative, dovetails steel panels and tubes around former drive-through teller lanes of the Eero Saarinen–designed bank (now a conference center). The complex shapes form enclosures and street furniture that engage the casual passerby. "We really thought of this as something for the people who had walked through that plaza a thousand times but had never thought to stop or appreciate the architecture," explains Dwayne Oyler.

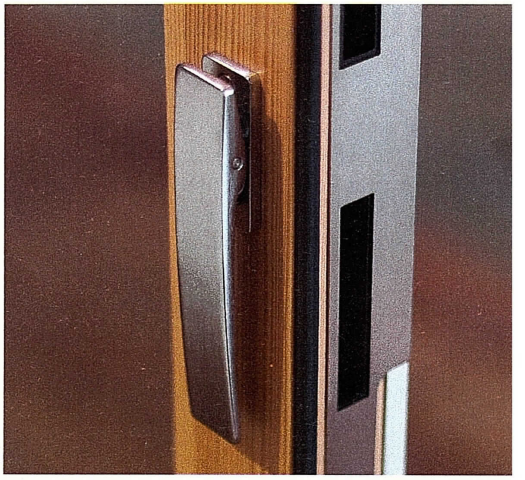


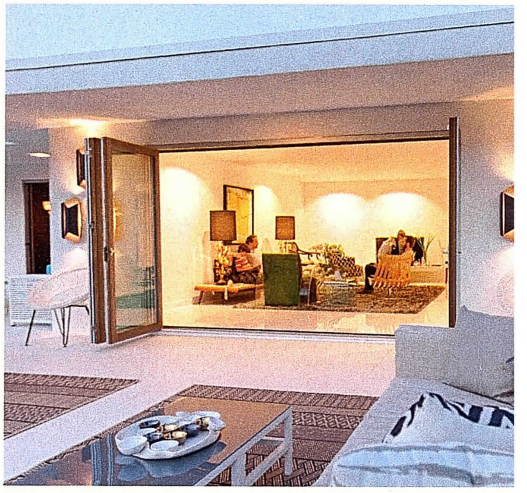
IKD's *Conversation Plinth* (above), made from Indiana hardwood CLT, offers new perspectives on the Moore sculpture. Perforated copper scales cover the rebar structure of *Wiikiaami* (right) by studio:indigenous.

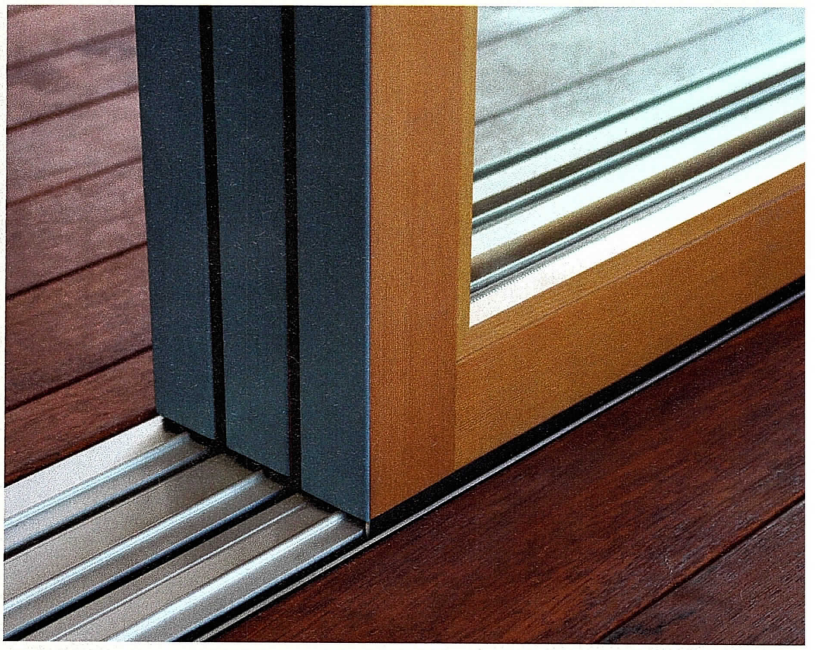
Indeed, Exhibit Columbus seeks to burnish the city's reputation precisely for the people who call it home. "We wanted residents to be tourists in their own town, because the excellence here is taken more for granted than it should be," McCoy said on the event's first Sunday morning—normally a time of the weekend devoid of activity—as people strolled along Washington Street.

McCoy believes that Exhibit Columbus could help bring about other long-term goals, such as preservation or commissions for permanent buildings. He also hopes to banish any contemporary architect's doubt that Columbus remains a vanguard town for new design ideas: "We just created a bunch of national ambassadors for this city, who care about it and who are invested in it." Exhibit Columbus installations will remain on view through November 26, and the initiative will commence a second cycle next year. ■

CONTEMPORARY CLAD | A MATTER OF STILE







FOLD | SLIDE | SWING

LaCANTINADOORS.COM

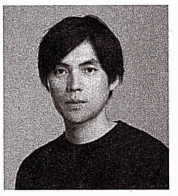
LaCANTINA DOORS

OPEN SPACES®

Record's Innovation Conference in NYC Considers the Public Realm

BY E.K. HUDSON

THE FUTURE of architecture and the public realm will be the topic for discussion in New York on October 19 as some 300 architects and designers gather in the historic Masonic Hall for ARCHITECTURAL RECORD's annual daylong Innovation Conference. "We wanted to explore the expanding role of architects in designing social infrastructure and making architecture engage the public sphere," says RECORD editor in chief Cathleen McGuigan. "The design community has the opportunity to assume a leadership role in the future of urban spaces as cities increasingly plan projects based on changing needs."

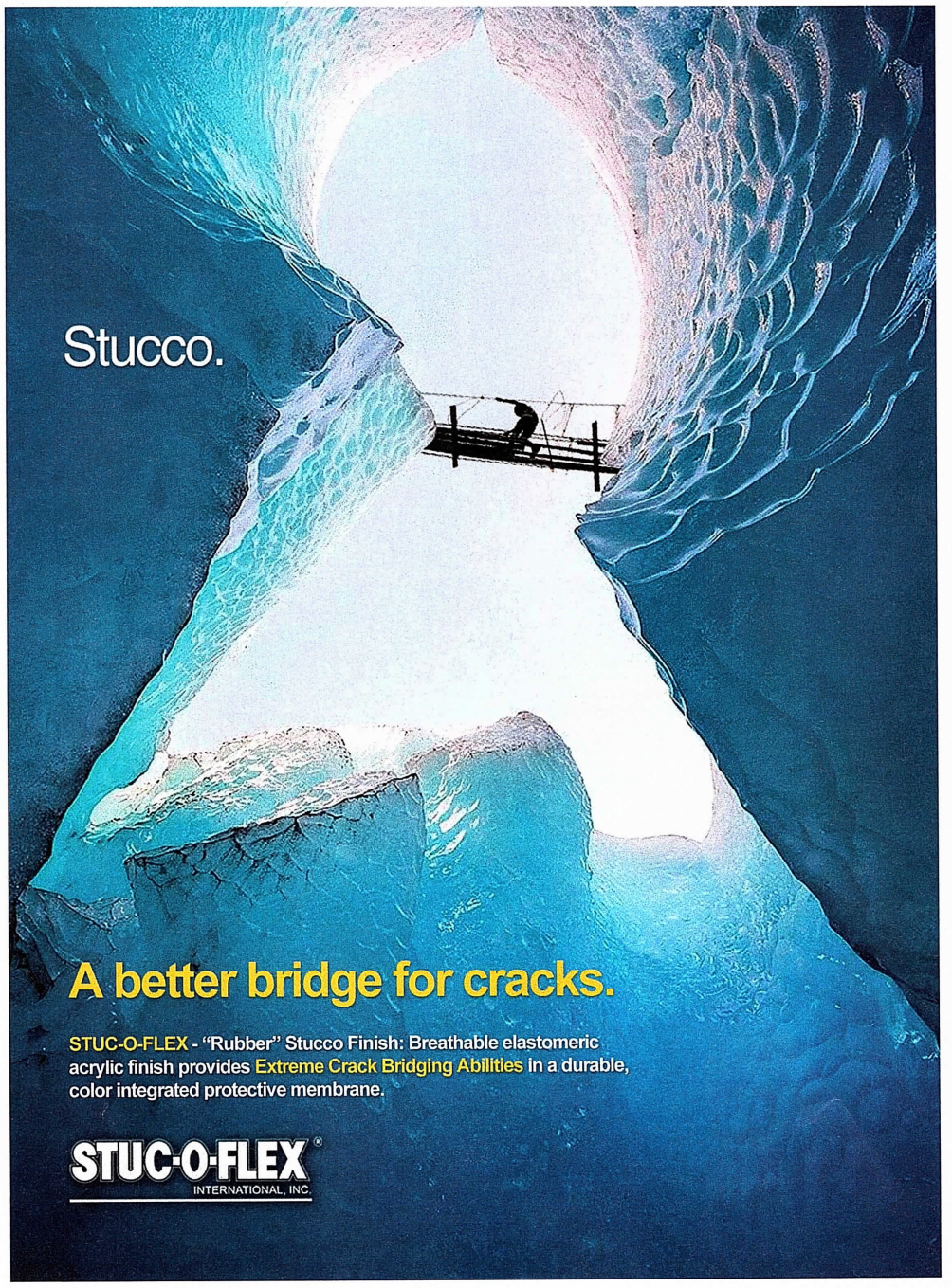


Clockwise from left: Michael Kimmelman, Brendan MacFarlane, Marion Weiss and Michael Manfredi, Mark Lee and Sharon Johnston, and Shohei Shigematsu

Sessions will include discussions led by the curators of the 2017 Chicago Architecture Biennial, Sharon Johnston and Mark Lee; *New York Times* architecture critic Michael Kimmelman; OMA New York partner and director Shohei Shigematsu; architect Brendan MacFarlane of Jakob + MacFarlane; and Weiss/Manfredi founding partners Michael Manfredi and Marion Weiss, who is a 2017 recipient of RECORD's Women in Architecture awards.

Programmed around the themes of design, creativity, and technology, the conference will also feature a timely conversation on resilient architecture, focusing on how the design community in Manhattan and coastal Connecticut can respond to—and prepare for—destructive weather, rising sea levels, and storm surges. The architects leading the conversation will include Amy Chester, managing director at Rebuild by Design; David Waggonner, principal of Waggoner & Ball Architects; and Simon David, a senior designer and project leader from Bjarke Ingels Group. Another panel will look at designing for contingencies in the public realm.

The conference will run from 9 a.m. until 7 p.m., with breaks for socializing, and will end with a cocktail reception. Attendees can earn up to 7.75 CE credits. Find details, registration information, and a full list of sponsors at east.arinnovationconference.com. ■



Hurricane protection without compromising design. You can have it all: The design you want with the protection you need. In fact, all our window styles are available in hurricane-resistant versions, even oversized and historic reproductions. Our experienced engineers and highly knowledgeable staff will make sure the project is done right and in compliance with project requirements. With Graham, you can rest easy when the wind blows hard.

Learn how Graham meets the challenge of hurricane resistance:
www.grahamwindows.com/hurricane1

YOUR VISION. OUR EXPERIENCE.

GRAHAM
ARCHITECTURAL PRODUCTS

grahamwindows.com 800-755-6274

Architectural Windows | Window Wall | Curtain Wall | Doors

U.S. Pavilion to Explore Citizenship at 2018 Venice Architecture Biennale

BY MIRIAM SITZ

THE DEPARTMENT OF STATE has announced the organizers of the U.S. Pavilion at the 2018 Venice Architecture Biennale.

Three curators will steer the exhibition, *Dimensions of Citizenship*, at the 16th edition of the international exposition: the University of Chicago's Niall Atkinson, an associate professor of art history; architect Ann Lui, an assistant professor at the School of the Art Institute of Chicago (SAIC) and the cofounder of Chicago-based Future Firm; and Mimi Zeiger, a Los Angeles–based architecture critic, curator, and educator. The trio is joined by SAIC faculty member Iker Gil, the director of MAS Studio, as associate curator. SAIC and the University of Chicago will serve as co-commissioners of the show.

Running from May 26 to November 25, 2018, *Dimensions of Citizenship* will grapple with the idea of belonging and the meaning of being a citizen. "For us, this is a really urgent topic," Lui told RECORD. "Conversations about citizenship have been part of the national consciousness lately, and architecture has notably been at the center of those talks—from the border wall and airports to monuments in parks. I think architects need to reckon with these issues. We hope this is a framework for how to do that."

Lui described the curators' ideal show as interdisciplinary in nature, and they plan to include installations, immersive experiences, and video content. "We hope that exhibitors draw from a wide range of research," she said, "and that the work they produce challenges existing modes of architectural practice."

The organizers have selected a group of seven architects, designers, and landscape architects to create work for the show, including artists Amanda Williams and Andres L. Hernandez of Chicago; Cambridge, Massachusetts–based firm Design Earth; Diller Scofidio + Renfro and SCAPE, both based in New York; Estudio Teddy Cruz + Fonna Forman of San Ysidro, California; New Haven, Connecticut–based Keller Easterling; and Chicago's Studio Gang. Each team will investigate a different "special condition of design and citizenship," according to a statement from the two institutional co-commissioners.

Lui revealed that the curators prioritized diversity when it came to selecting exhibitors—both in the "traditional sense," she said, and in terms of professional experience and focus. "We think the most productive conversation about citizenship is one that brings in a wide range of voices and perspectives," said Lui. "We're really proud and excited to have newly established offices, firms working at an international scale, and more academic practices doing leading-edge research."

The organizers have also assembled a curatorial advisory board comprised of public artist and designer Theaster Gates; Graham Foundation director Sarah Herda, who cocurated the inaugural Chicago Biennial; University of Chicago's Bill Brown; SAIC's Mary Jane Jacob; and artist and designer Oliver Palmer. Irish architects Yvonne Farrell and Shelley McNamara, cofounders of Grafton Architects, will curate the larger Biennale around the theme "Freespace." In a statement released this summer, the duo said the event will explore "examples of generosity and thoughtfulness in architecture throughout the world." ■

Curators Iker Gil, Mimi Zeiger, Niall Atkinson, and Ann Lui will direct the U.S. Pavilion at the Venice Architecture Biennale.

noted

Rafael Moneo Wins Praemium Imperiale Prize for Architecture

The Japan Art Association has named Rafael Moneo the architecture laureate for the 2017 Praemium Imperiale. The accomplished Spanish architect, whose projects include the Logroño Town Square in northern Spain and the Atocha Station in Madrid, received the Pritzker Prize in 1996 and the RIBA Gold Medal in 2003.

Contracts Awarded for Eight Border Wall Prototypes

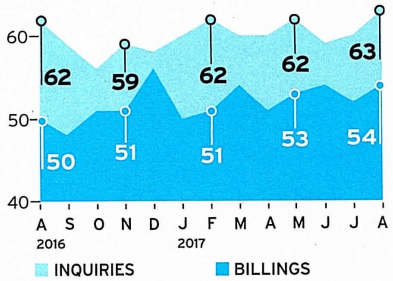
The Trump administration has handed out contracts for eight prototypes of the U.S.-Mexico border wall. Four of the designs are concrete, while the others will be constructed of a transparent material. The 18- to 30-foot-high prototypes, to be built in San Diego, will cost some $3.6 million.

Two New Jurors Join Pritzker Architecture Prize Committee

Wang Shu, cofounder of Amateur Architecture Studio in Hangzhou, China, and 2012 Pritzker laureate, will join the jury alongside critic André Aranha Corrêa do Lago, who is the current Brazilian ambassador to Japan. The two replace architect Yung Ho Chang and curator and journalist Kristin Feireiss, who served as jurors for seven and six years respectively.

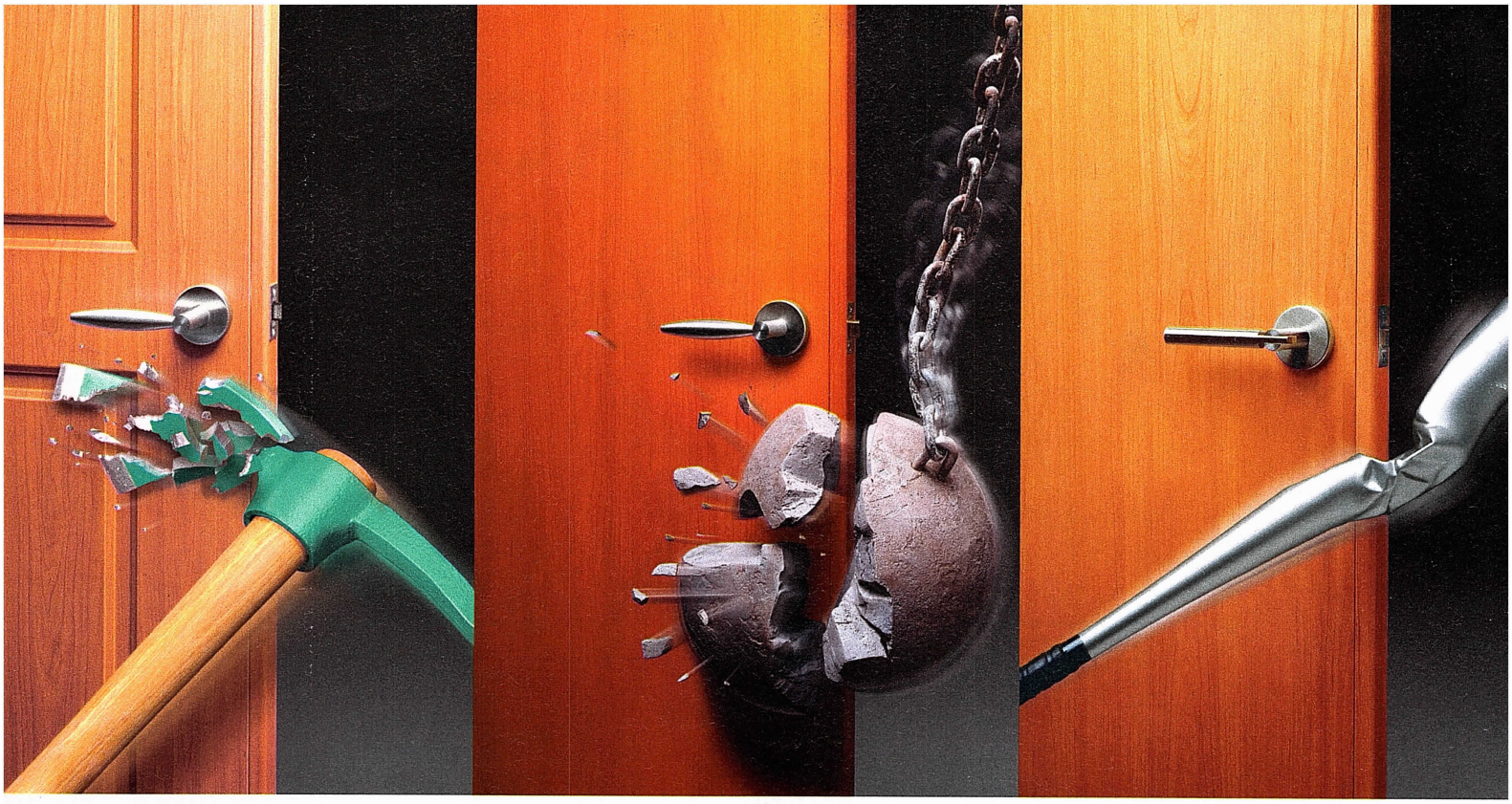
Manuelle Gautrand Receives 2017 European Prize for Architecture

Known for designing the Alesia Cinemas in Paris and the Cartoucherie Housing Block in Toulouse, Paris-based architect Manuelle Gautrand has been named the 2017 laureate of the prize. She is the first woman and first French citizen to receive the honor which recognizes influential European architects.



Nationwide Demand for Design Services Continues to Grow

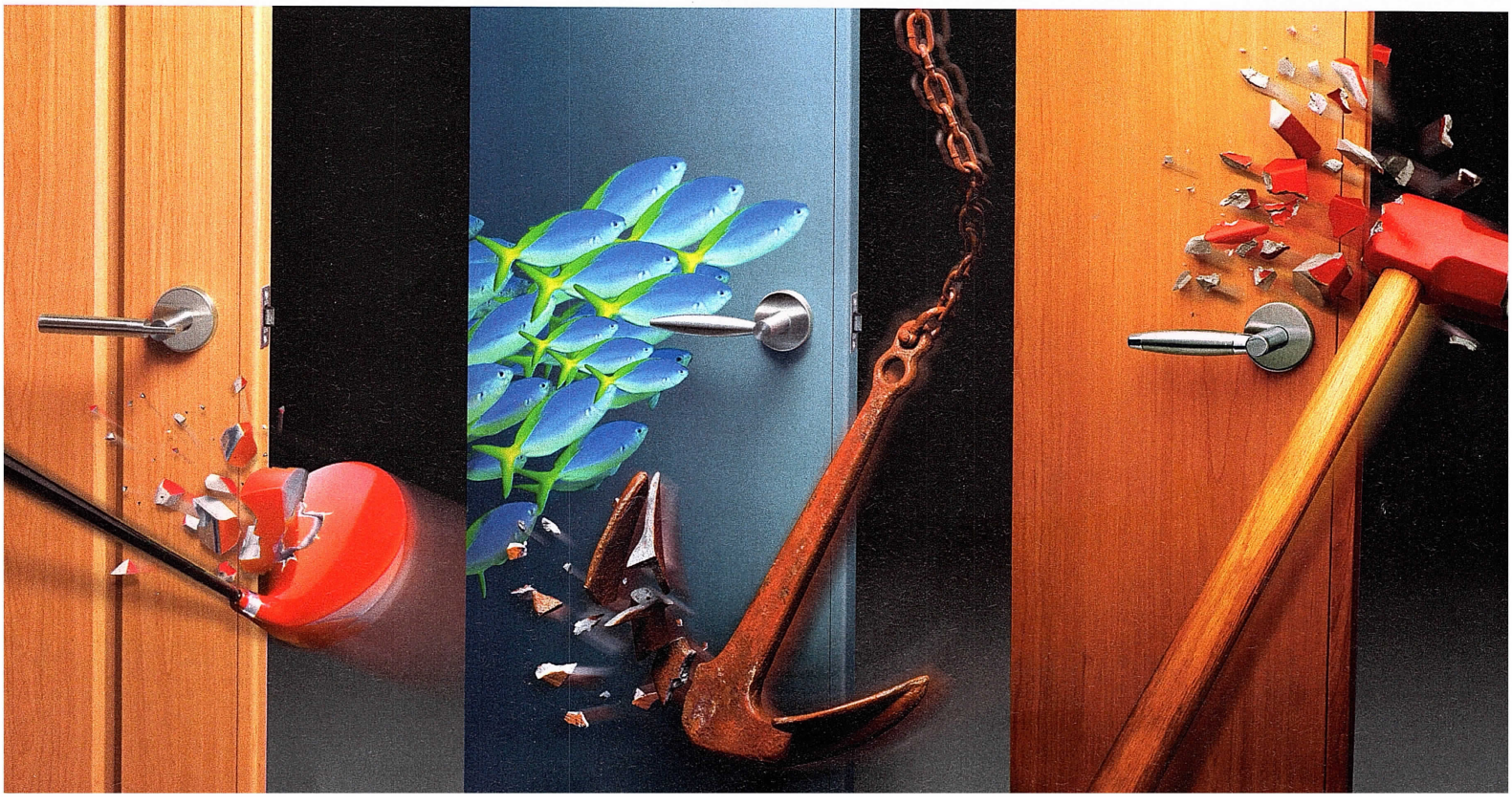
The AIA's latest Architecture Billings Index (ABI) again signals a heightened demand for design services. The August ABI scored 53.7, up 1.8 points from July. (Any score above 50 indicates an increase in billings.) The new projects inquiry index rose by 3 points to 62.5. Both continue a pattern of "very positive readings," says AIA economist Kermit Baker.



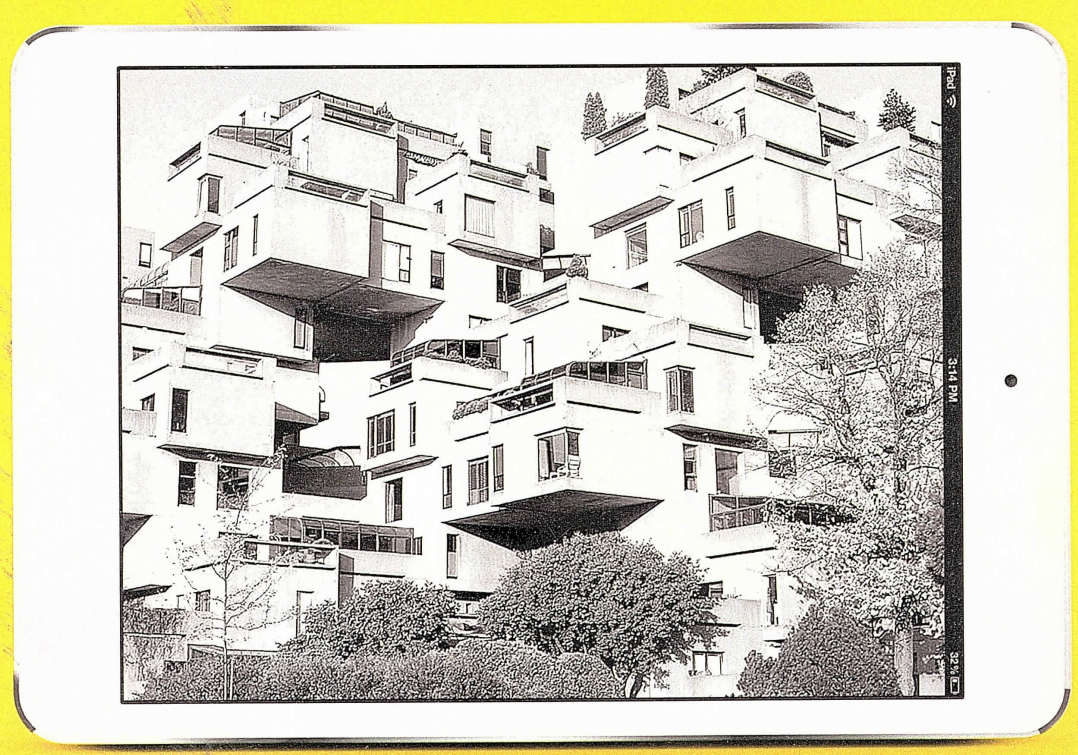
After 10 years our track record is indestructible

Acrovyn® Doors have taken every beating commercial facilities can dish out, yet they're still looking new. And with unlimited creative potential, our virtually indestructible Acrovyn Doors are the top choice of architects and designers. To learn more call 800.416.6586 or visit www.c-sgroup.com/door

CS™ Acrovyn® Doors



GUESS THE ARCHITECT
WIN AN IPAD MINI



PHOTOGRAPHY: © MATIAS GARABEDIAN/WIKIMEDIA COMMONS

▶ TAKE A LOOK ON PAGE 41

ENTER @ ARCHITECTURALRECORD.COM/GUESSTHEARCHITECT

ARCHITECTURAL RECORD

Guess the Architect Contest

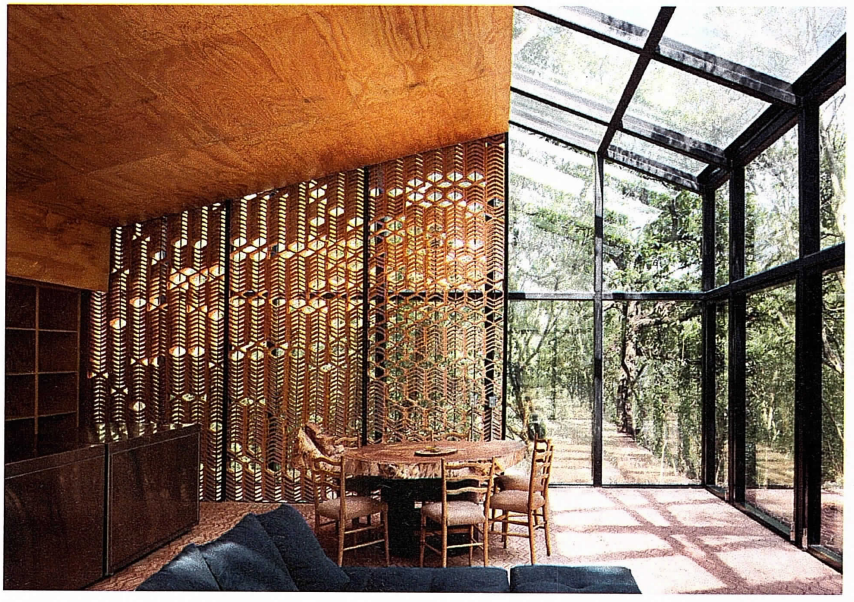
FOR COMPLETE RULES AND REGULATIONS GO TO ARCHITECTURALRECORD.COM/GUESSTHEARCHITECT

Sponsored by:

PAC-CLAD PETERSEN

perspective **house of the month**

A DISAPPEARING PAVILION REFLECTS ITS WOODED SETTING, A COUNTERPOINT TO THE RESIDENCE'S MASONRY SLEEPING QUARTERS. BY PILAR VILADAS

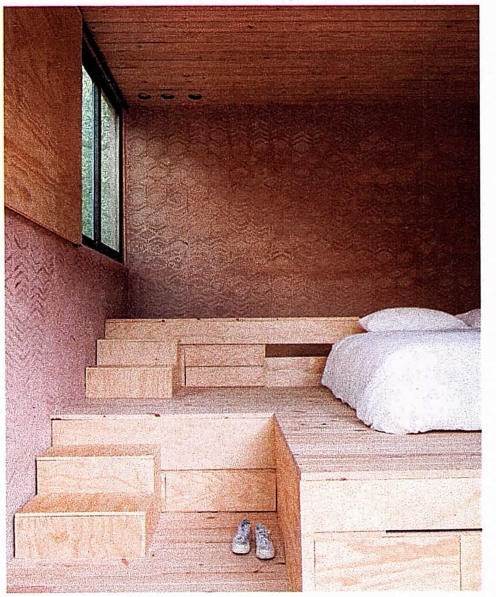


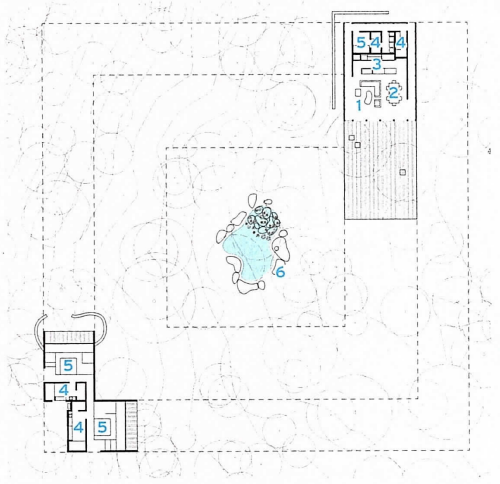
The peak-roofed living pavilion is clad in mirrored glass (top). Inside, an open arrangement of V-shaped clay brick forms a playful screen (above, left). The swing doors open completely to the courtyard (above).

IN THE 13 YEARS since she established her studio in Mexico City, the architect Tatiana Bilbao has designed a body of work that is refreshingly dogma-free; she has never had a signature style. Instead, Bilbao's varied projects in her native country—including a dramatic cliffside house for the artist Gabriel Orozco; an art-filled botanical garden; the master plan and open-air chapel for a pilgrimage route in the Jalisco Mountains; a research building that is a stack of glass boxes; and sustainable affordable housing—demonstrate an abiding interest in how people really use architecture. "Every building is different for us," Bilbao says. "We try to think on a human scale."

A case in point is a vacation house that Bilbao designed for a wooded site on a mountainside overlooking the city of Monterrey. The client, who lives in Mexico City, is the daughter of a couple who purchased the large tract and divided it into 60 lots for their heirs, who can build houses there on the condition that they hire architects to design them. So far, the roster includes Tadao Ando, the late Ricardo Legorreta, and contemporary Mexican architects like Alberto Kalach and Bernardo Gómez-Pimienta, as well as Bilbao herself, who had already designed a house—Casa Ventura, a series of pentagonal forms stepping down the hillside—nearby.

Bilbao conceived the new house, Los Terrenos (The Terrains), as a trio of small





SITE PLAN

0 60 FT. 20 M.

1 LIVING
2 DINING
3 KITCHEN
4 BATH
5 BEDROOM
6 COURTYARD

The L-shaped sleeping quarters contain two stepped bedrooms facing in opposite directions (above). Simple materials like clay brick, rammed earth, and plywood mark the spare interiors (top and bottom, right).

buildings (just under 2,200 square feet in total), each of which serves a specific function and emphasizes one of the three main materials in the project's palette. The largest of these, a structure that contains an open living/dining/kitchen space, is clad in mirrored glass, allowing it to disappear into the surrounding vegetation; its peak-roofed profile mirrors those of the mountains, and concealed doors open the interior to the terrace beyond.

Diagonally opposite, an L-shaped building with walls of clay brick and rammed earth houses two bedrooms and bathrooms. (A third structure, still unbuilt, will be made of wood and elevated for a view of the treetops.)

Using just three materials might seem downright monastic to many, but it was a cornucopia to Bilbao. "We usually use just one material," she explains, alluding to the strict budgets of many of her projects. "We typically don't get to do that much experimentation." Still, she and her colleagues made a little go a long way. The mirrored-glass exterior of the living structure not only reflects the surrounding woods when you're outside, but it also creates what Bilbao calls an "outside reflection" of the interior—a mirror image of the space that you can see outside the building when you're sitting in it. The chevron-shaped clay-brick walls of the bedroom building reflect Bilbao's idea that where you sleep should feel enclosed rather than exposed. But the architects use the basic form of the brick as a flexible language that also translates into the floors and the openwork screens in the living structure. Materials are used to sensual, elegant effect in both buildings, but are never precious; the smaller windows in the bedrooms, for instance, have shutters made of plywood.

Bilbao's current projects include a social housing project in Lyon, France, that is made up of three completely different buildings; an art center in an abandoned church near Avila, Spain; four projects in the U.S. (none of which Bilbao can discuss); and 10 in Mexico, including a university building in Monterrey, a hotel in Los Cabos, and more low-cost housing, which represents half the office's work these days. Many of these projects rely on local architects, builders and craftspeople, and Bilbao insists that clients be closely involved in the process. She recalls one client who commissioned a house, and then sent Bilbao a contract, saying, "See you in eight months—you can do what you want." Bilbao refused, saying she would only design the house if the client showed up for meetings each week. "We don't build for people," she explains. "We build *with* people." ■

Cascara Teakwood. One of 32 new designs.

Explore the SurfaceSet® 2018 lookbook to inspire your vision. Formica.com/lookbook

Meet **SurfaceSet® 2018** by Formica Corporation. Three dynamic palettes of creative contrasts, pushing the boundaries of calm to bold, organic to elegant, art to science. Bring beauty, durability and originality to your vision.

Formica® Surfaces. **FOR REAL.®**

Formica®, the Formica® Anvil Logo and SurfaceSet® 2018 are registered trademarks of The Diller Corporation. All rights reserved. ©2017 The Diller Corporation. A member of the Fletcher Building Group.

FORMICA®

What if the

perfect ceiling panel

for your project doesn't exist?

You're picturing an expanse of clean, smooth ceiling.

Pick a panel to save the budget and you'll compromise acoustics. Pick the best acoustic panel and you'll blow the budget.

There's another option: **Targeted Acoustics.** Put high-performance acoustic panels where you need them and more economic panels where you don't – all while keeping that clean, smooth visual across the space.

Because sometimes the right ceiling for the space is more than just one ceiling.

CertainTeed
SAINT-GOBAIN

See it in action at
CertainTeed.com/TargetedAcoustics

CertainTeed Ceilings | Acoustic Ceilings & Suspension Systems

perspective interiors

EVA JIŘIČNÁ DESIGNS A DRAMATIC BACKDROP FOR THE JEWELLIKE LEADED-GLASS LAMPS OF TIFFANY STUDIOS. BY LINDA C. LENTZ

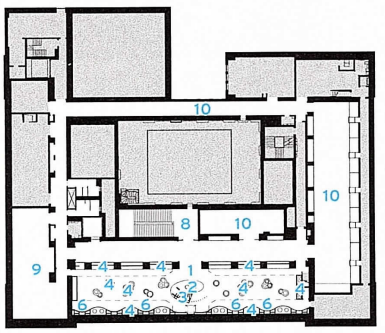
The architect juxtaposes a graceful, contemporary stair (top), made of low-iron glass, with sinuous vitrines that contain the collection (above), which is over a century old. The $12.5 million project houses many of the nature-themed designs of Clara Driscoll, a protégé of Louis Comfort Tiffany and head of his women's glass-cutting department from around 1888 to 1909.

THE NEW-YORK HISTORICAL SOCIETY's new Center for Women's History, located on the recently renovated fourth floor of its Beaux-Arts granite building (circa 1908 and '38) on Central Park West, is said to be the first of its kind in the United States. At its heart, a permanent exhibition of Tiffany lamps is a revelation, not only for the breadth of the collection and the fact that many of its 100 leaded-glass fixtures—in particular those with nature-themed motifs—were designed by Louis Comfort Tiffany–protégé Clara Driscoll and fabricated by women at his studio, but also for the luminous setting in which these works are showcased.

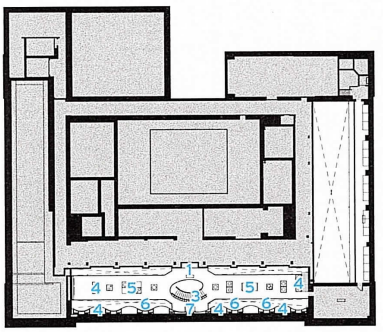
Created by London-based Czech architect Eva Jiřičná, with PBDW Architects and dpa lighting consultants, the 4,800-square-foot, bi-level Gallery of Tiffany Lamps is like a jewel box, lined with a deep, lapis-blue vaulted ceiling made of glass fiber reinforced gypsum and decorative metal wall panels, grounded by black rubber floors. Perforated convex screens, also blue, conceal ductwork below the ceiling.

At the entrance, a delicately curved stair made of tempered, laminated glass spirals up to a mezzanine. Braced by vertical fin-like supports pinned to the floor slab and a beam in the ceiling, its treads are discreetly lit by cool-white 5000-

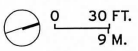
The tempered-, laminated-glass stair cuts through the center of the mezzanine, which is suspended from the trusses (left), enabling it to "float" above the lower level. A cove-lit vaulted ceiling (bottom) provides height to the mezzanine, from which the top-tier wall displays are visible.



FOURTH-FLOOR PLAN



MEZZANINE PLAN



1 GALLERY OF TIFFANY LAMPS
2 OPEN DISPLAY
3 GLASS STAIR
4 VITRINE
5 FLAT-FILE
6 DECORATIVE PANEL
7 ELEVATOR
8 MAIN STAIR
9 WOMEN'S HISTORY
10 GALLERY

kilowatt LEDs, with an even light distribution facilitated by a slip-resistant, sandblasted pattern on their surface. The low-iron-glass stair's structural elements are similarly illuminated at the top and bottom. With its lighting dimmed to an icy glow, this sculptural centerpiece is a distinct contemporary counterpoint to the warmth of the surrounding Tiffany fixtures, which date from the turn of the 20th century and are retrofitted with customized 2600-kilowatt LED filament- and A-style bulbs that fit into the historic sockets. Each lamp on display is controlled by its own dimmer, to maintain a pleasing balance of light that will complement the many unique shades.

Floor and table lamps are displayed in curving glass cases, elevated on dark metal plinths so that they appear to float across the lower level. The mezzanine, too, seems to hover. Pulled away from the walls, it is suspended by steel hangers from the trusses. This allows for double-height vitrines, some containing Tiffany pendants, around the room's perimeter. These alternate with the wall panels, overlaid with abstract graphics inspired by Driscoll's designs. The exhibit continues on the upper level with blue custom flat-file cabinets, holding such presentations as an interactive "Design-a-Lamp" device, backlit drawers with shards of vintage glass, and examples of authentic versus counterfeit fixtures.

As with her 2008 Jewelry Gallery for the Victoria & Albert Museum in London, Jiřičná has succeeded in devising a subtly layered and intimate exhibit space—one that invites us to indulge in the craftsmanship, finishes, and quality of the artifacts; their color, form, and, above all, their radiance. ■

IT'S NOT A TREND. IT'S A REVOLUTION.

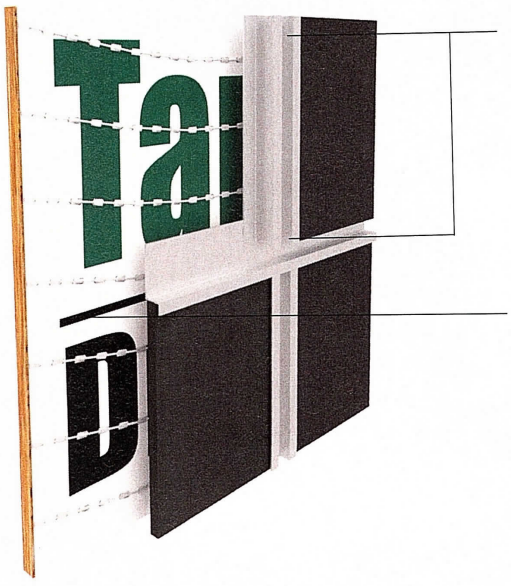
Visit ZIPRevolution.com to learn how easy it is to make the switch.

ZIPsystem™
SHEATHING & TAPE

© 2017 Huber Engineered Woods LLC. ZIP System, the accompanying ZIP System logo and design are trademarks of Huber Engineered Woods LLC.
Huber Engineered Woods' ZIP System® products are covered by various patents. Please see ZIPSystem.com/Patents for details. HUB 17804 07/17

RECREATE. REBUILD. REIMAGINE.

Give your project a modern aesthetic look. Back it up with the best drainable wrap on the market!



XtremeTrim®

Finding profitable ways to expand your market perspective is easy when you have XtremeTrim® as part of your next project. With the most options of design and detail, XtremeTrim® makes the magic happen. With our wide family of products, you will make a great building even better.

TamlynWrap®

Industry leading 1.5mm continuous filaments help keep TamlynWrap® intact in up to 87 mph hurricane force winds. Drains and dries as efficiently as 3/8" rainscreen with no furring strips to install.

Visit our website at www.tamlyn.com or call us at 800-334-1676.

CASTCONNEX
Universal Pin Connectors
& Architectural Tapers
CLARK UNIVERSITY
Clark University Alumni & Student Engagement Center
by Architerra with Odeh Engineers

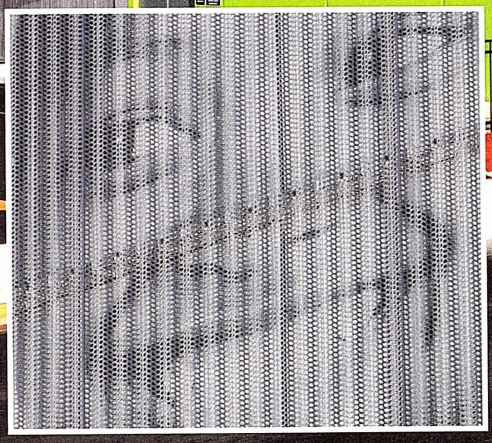
FUN FLEXIBILITY

"It's a fun material because it's very flexible to design with and doesn't drive costs up."

Joe Buehler, AIA, LEED AP BD+C, TEAM A

PAC-CLAD Corrugated

Charcoal - Energy Star - Cool Color



7/8-in. perforated corrugated panels overlay the graphic

Moving Everest Charter School, Chicago, IL

Owner: By The Hand
Architect: Team A
General contractor: Novak
Installing contractor: WBR Roofing
Profiles: 7/8-in. corrugated, 7/8-in. perforated
Color: Charcoal

CASE STUDY

See us at METALCON - booth 1431

PACGREENINFO.COM
YOUR GREEN METAL RESOURCE

PAC-CLAD PETERSEN

PAC-CLAD.COM | IL: 1 800 PAC CLAD | MD: 1 800 344 1400 | TX: 1 800 441 8661 | GA: 1 800 272 4482 | MN: 1 877 571 2025

Proud sponsor of the ARCHITECTURAL RECORD GUESS THE ARCHITECT

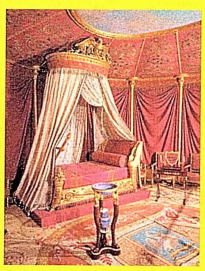
ARCHITECTURAL RECORD

Guess the Architect Contest

ENTER NOW!

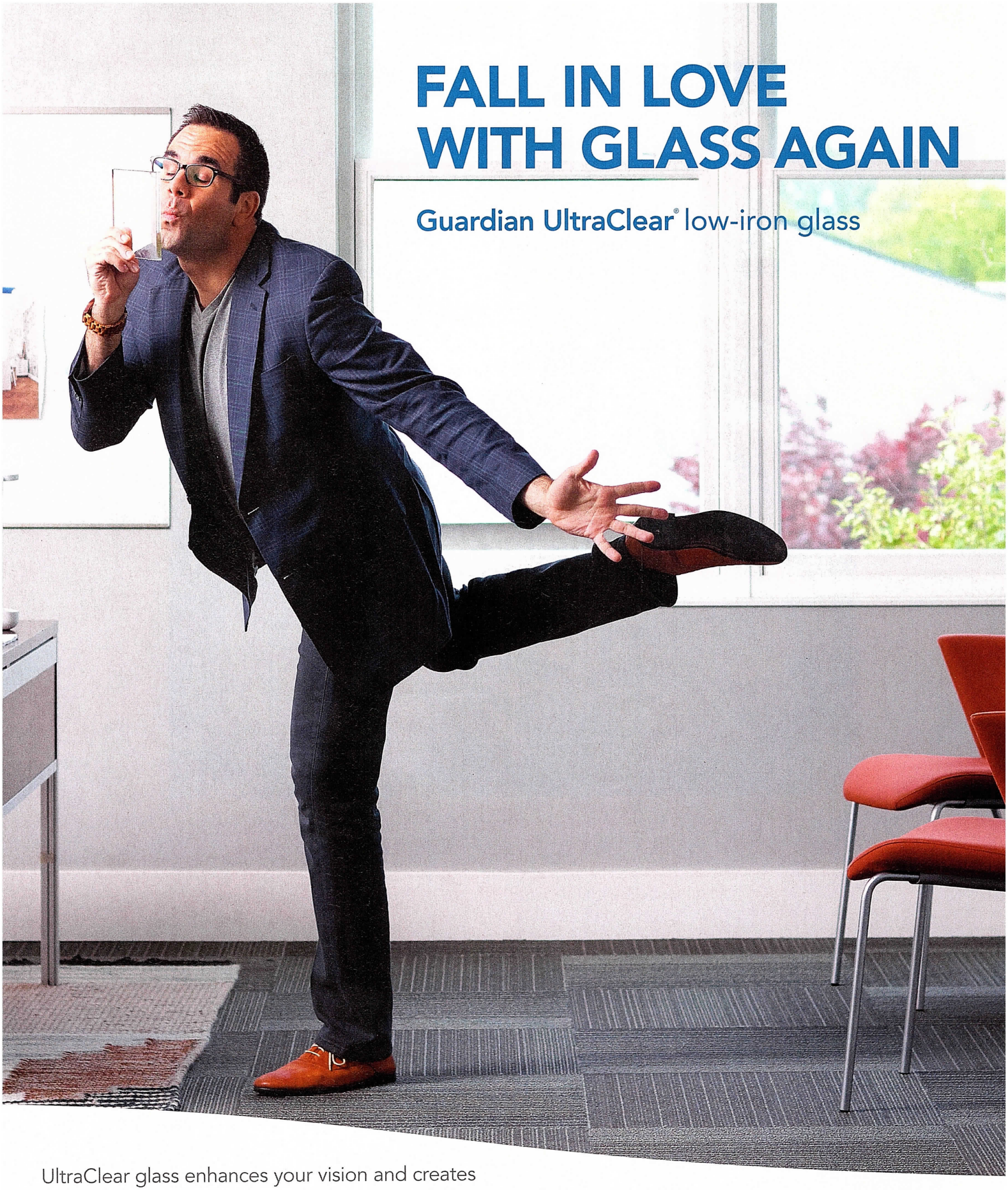
A monthly contest from the editors of RECORD asks you to guess the architect for a building of historical importance.

CLUE: THIS RESIDENTIAL COMPLEX, INITIALLY DESIGNED AS A MASTER'S THESIS, ENDED UP BEING COMMISSIONED FOR A WORLD'S FAIR PAVILION. THE HIGHLY PUBLISHED STACKED ARRANGEMENT OF 354 IDENTICAL, PREFABRICATED CONCRETE UNITS HELPED LAUNCH THE CAREER OF THE NOW INTERNATIONALLY KNOWN ARCHITECT.



The architects and designers for the September issue's contest are **CHARLES PERCIER** and **PIERRE FRANÇOIS LÉONARD FONTAINE**, who renovated the Château de Malmaison for Napoléon and Joséphine Bonaparte in 1799 in what is known as the Empire style. In 1805, architect, decorator, and landscape designer Louis-Martin Berthault created a tentlike setting for Joséphine's bedroom (left) as a backdrop for the gilt, canopied bed from the furniture maker Jacob-Desmalter and Company.

By entering, you have a chance to win an iPad mini.
See the complete rules and entry form online at architecturalrecord.com/guessthearchitect.



UltraClear glass enhances your vision and creates spaces full of light and life.

Watch the story unfold at **UltraClearYourMind.com**

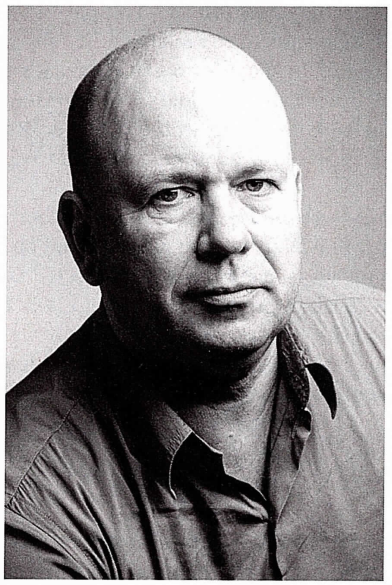
GUARDIAN® GLASS

©2017 Guardian Glass, LLC

Complexity and Candor in Architecture

OMA partner **Reinier de Graaf** talks with Record about his blunt new book of essays.

INTERVIEW BY JOSEPHINE MINUTILLO



A PRACTICING ARCHITECT based at OMA's headquarters in Rotterdam, Reinier de Graaf juggles building and master planning projects in Europe, Russia, and the Middle East with a prolific writing career. His latest book, *Four Walls and a Roof: The Complex Nature of a Simple Profession*, takes an idiosyncratic look at architectural history and dissects contemporary practice—from the quotidian (and sometimes comic) frustrations to the occasional triumphs and memorable failures.

First, why did you write this book?

There's a twofold answer to that. I've been publishing essays online and in architectural magazines. One in particular was an analogy between Thomas Piketty's economic history and a history I perceived in architecture. After reading his book *Capital in the Twenty-First Century*, a number of things about the history of architecture that had always baffled me all of a sudden became clear. Piketty's economic analysis also offered a strange explanation for some of the inexplicable stylistic twists that architecture had undergone in the 20th and 21st centuries. The editor of Piketty's book read my article and we had the idea to make a book in the form of a concept album, a collection of essays with a thread.

The second answer is that I realized this is simply an autobiography about our profession—not of me but of the state of the profession at large. It's pretty wide, and therefore it carries the title *Four Walls and a Roof*, the most dumb definition you could give of architecture, and then it has the subtitle which fills you in that this won't do it. There are lots of publications on the works of architects—buildings, urban plans, etc. Architects always talk about their works, but they never talk about their work, singular—what it is like to work as an architect.

The subtitle is *The Complex Nature of a Simple Profession*, but you're the head of AMO, the think tank portion of OMA that deals with cultural and research issues outside the traditional realm of architecture, such as energy planning. You're a curator. You're an author, obviously. So aren't you responsible for making it a much more complex profession?

Partly, probably. I've happily contributed to the mix in that sense, but I'm a person who at one point decided to study architecture, who has had a professional life which is longer than my history with OMA, and I therefore do like the idea that I could take a step back even from myself. The book, let's say, couples what it is like to work as an architect with an attempt to take stock in a somewhat more cold way.

As a partner in one of the best-known firms in the world, do you think your experiences are representative? Can you relate to the average architect?

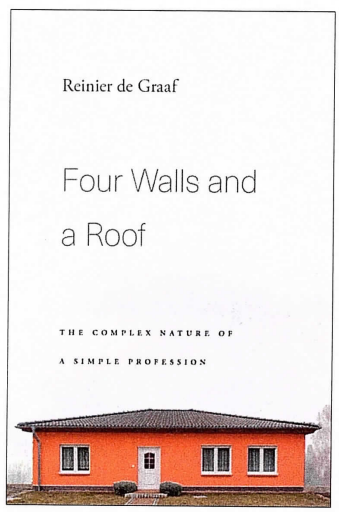
You'd be surprised at how normal 80 percent of my daytime job is, at the degree of banality and at the degree of the anecdotal that pervades this famous office. I think my work is way more representative than many people might think, in that the problems and the dilemmas we encounter are actually fairly representative of the dilemmas of the profession as a whole.

Are you generally optimistic or pessimistic about the future of the profession?

That is very difficult to say. I enjoy my work, and I think the fact that you write 528 pages about your work clearly means you're enjoying it, you love your work. This is not a book written out of frustration or out of anger. It is just an attempt to be candid about a profession that is burdened by too many myths. Where I talk about our own experiences—which are sometimes very funny, sometimes profound, sometimes simply silly—I think there is also great comic potential in all of those things. Once you learn to see architecture not only as a way of delivering products but as a form of acquiring knowledge, there's every reason to be joyous. The book is of course critical, and sometimes dark, but I'm ultimately a happy person and a happy architect.

You are very candid in certain essays, among the funniest, where you shed a not-so-flattering light on some very well-known architects, like your take on a lecture given by Richard Rogers, when you refer to him as Urban Man. Were you afraid of offending anyone?

You have a laugh and a joke about each other. I'm sure people joke at my mannerisms sometimes. This is so normal in the context of many professions. People do that in show business, in literature, in a lot of creative professions. It's a way of belonging. I think the fact that you asked the question is indicative of one of the things that is looming over architecture—that this is a profession that takes itself extremely seriously, and is made up of people who sometimes take themselves too seriously. Maybe the book is an attempt to single-handedly compensate for that a little bit. I didn't mean to offend anyone. The fact that



there's a certain sense of humor in an architectural publication is in itself fresh and new.

Another amusing essay is called "The Inevitable Box," where you wax poetic for 20 pages about the box and the anti-box in all its forms. How much does this idea of the box infiltrate your approach to the design of a building?

Clearly a lot. It's a lot of text to spend on a three-letter word. What the essay says is that in many ways architecture is a very complex way to arrive at something simple. I write about the box in the most subliminal terms, and I write about the box in the most banal terms. It's a very weird realization that the box is both the outcome of an extreme architectural effort and it's also the outcome of no architectural effort at all. That is ironic, and, strangely, it probably takes an architect to distinguish which is which.

Take a petrol station or the Farnsworth House: one is not the other, but they have everything to do with one another. The irony of a lot of modern architecture is that, in many ways, it was a vanishing act. Another essay talks about the East German prefabrication effort, where architects essentially disappear into the building industry, which was actually a trajectory initiated by the Bauhaus. This fine line between a masterpiece and a vanishing act, which is what the box is about, is of course something that looms over you as a designer constantly, particularly in the context of the free market economy, which has a habit of pointing out your irrelevance to you on a very regular basis.

Going into this book, one might expect to read about projects like the Guggenheim Bilbao, or OMA projects, but instead there are many unexpected or unlikely buildings, like that postwar housing in East Germany or your entire essay on the Atlanta airport. Why did you include what most might see as very banal projects?

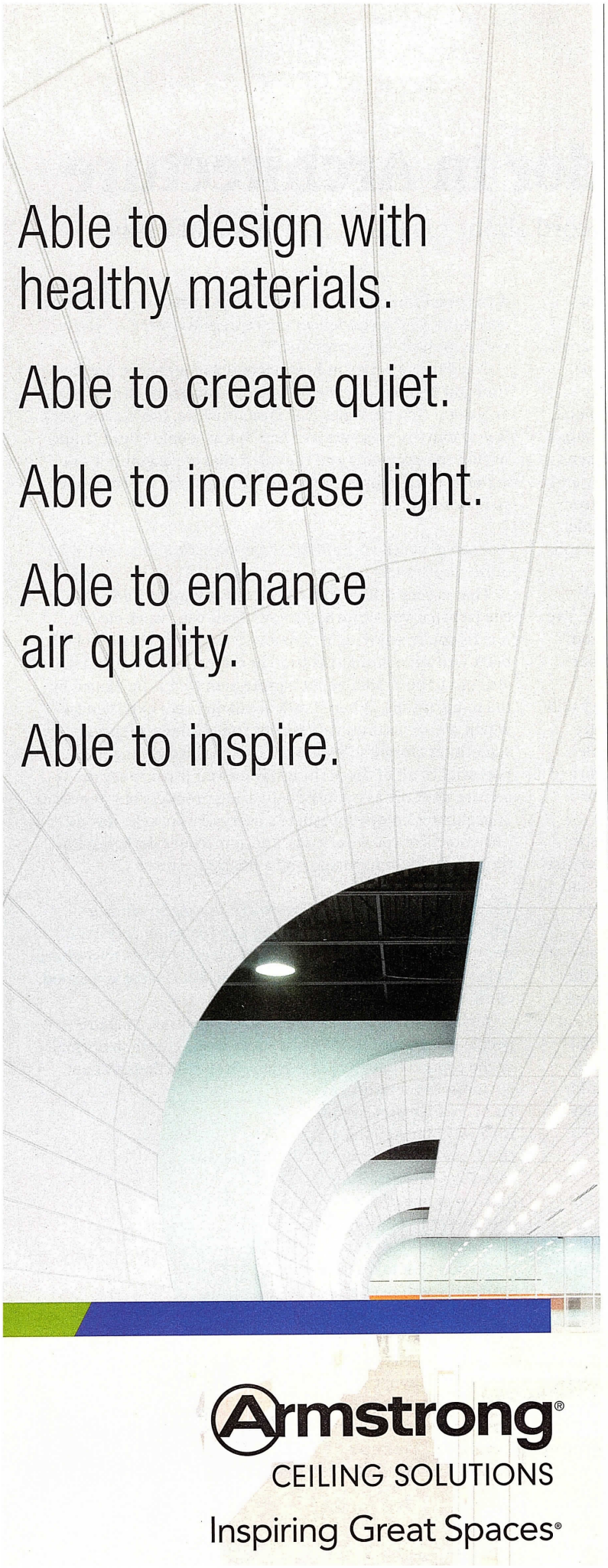
There's a strange beauty to their honesty. In the case of the Atlanta airport, it's a surrender to the perfect diagram based on the dimensions of planes. It's strangely beautiful, even though there is probably no other compositional effort invested in it, just an extremely utilitarian reflection of a diagram. The same goes for the East German housing. It's in a way the simplest possible solution to a very pressing problem, where repetition, which is normally disliked, acquires an aesthetic dimension simply because of the sheer scale.

I have a very perverse aesthetic fascination for those things personally, because they are on the threshold of an extreme radicality of architecture, which is at the same point where architecture almost ceases to matter, which is what fascinates me in Mies's work too. This realist threshold between being all-relevant and being irrelevant is, ultimately, the theme of the book. The book is both megalomaniacal about the profession, and nihilistic.

Politics runs through this book, sometimes very obviously, as in the essay about Trump, but often as a background to how and why certain projects got built or torn down. Does this reflect your own interest in politics or your personal experiences in building?

I'm a left-leaning individual, that much may be clear, but in the context of this book, my interest in politics is mostly driven by a desire to get to the core of things, to not just scratch the surface. Since I have a hunch that in the end everything is political, and therefore if you think about things with that in mind, that is the best way to treat the subject. I wouldn't know how to do it any other way.

In the essay "From CIAM to Cyberspace: Architecture and the Community," you write, "The community became the most frequently invoked concept in architectural and urban discourse, endowing even



the most mediocre designs with an aura of good intentions and implicitly condemning designers who declined to use the word."

Yeah. I do go for it, don't I? That is ultimately about the legitimacy of architecture. Architecture has a legitimacy in itself, which is neither good nor bad, which is neither optimistic nor pessimistic. It has its own deep-felt value system. In a time when everything needs to be argued, where everybody has to answer for their actions, architecture has invoked essentially extraneous causes—participation, community, sustainability—to enhance its own legitimacy, but, when it does that, it often hurts its own case. As soon as architecture becomes moralistic, it

It's a very weird realization that the box is both the outcome of an extreme architectural effort and it's also the outcome of no architectural effort at all. That is ironic, and, strangely, it probably takes an architect to distinguish which is which.

becomes mediocre. Do-gooders always have this kind of evangelical notion about them. Good intentions are often incredibly oppressive phenomena and very detrimental to creativity. I remember, particularly as an architectural student, how intimidated I was when sometimes I was put in a corner as an insensitive, evil person for not adopting the same jargon. I don't think it helped anybody. I think it's also produced quite a bad generation of designers, on the whole.

OMA is not generally recognized as a firm that does green architecture, and yet in a quiet way you've been increasingly involved in sustainability, with projects including a strategic master plan for the North Sea; the publication in 2010 of *Roadmap 2050: A Practical Guide to a Prosperous, Low-Carbon Europe*; and *The Energy Report*, a global plan for 100 percent renewable energy by 2050, with the World Wildlife Fund.

A lot of architecture that is green ends up looking green. We've done buildings. They've won awards for energy consumption and sustainability, which is very nice, but I will always present them as buildings with a lot more qualities than just that. I'm not against sustainability. I'm not against the community, nor am I against world peace. Of course I'm for clean air. But these things are so obvious that I feel they don't need arguing. Whoever argues about them too loudly is slightly too suspect for me. I'm just against one-dimensionality, because we have a three-dimensional subject. Once one of those things becomes a topic, it tends to be incredibly reductionist, in the sense that then you only talk about that aspect of a building. Invariably, you deny architecture its richness.

The new book closes with the story of Pruitt-Igoe, followed by a photo essay on other modern buildings that fell victim to the wrecking ball, and, finally, an alternative kind of housing project recently built in the Rockaways in New York. Why did you choose to end the book on that note?

The title of the last chapter of the book is "Progress." It's the architecture which was most vocally erected in the name of progress, and its demolition and its legacy is simply pointing at the most relative notion of progress at the same time, so there is a literal and a metaphorical meaning for that. I put the Rockaway article at the end also because of the last sentence: "Perhaps, in the end, that is where history's resolution lies: in oblivion."

In oblivion?

I thought that was quite appropriate at the end of a long book. ■

Content is King. - *Bill Gates, 1996*

ARCAT.com truly believes this. We provide architects, engineers, spec writers and contractors with the most comprehensive libraries of building product content. You will find this and more online at ARCAT.com ***FREE,*** and ***no registration required***!!!

- BIM Objects
- CAD Details
- Specifications
- SpecWizards
- Catalogs
- Videos
- Green Reports
- ARCAT Directory
- Building Products

ARCAT®

arcat.com

Our Paint YOUR PRIDE

LEARN MORE AT PPGPAINTS.COM/ARCHITECT.

PPG PAINTS

The *PPG Paints Logo* is a trademark and the *PPG Logo* is a registered trademark of PPG Industries Ohio, Inc. © 2017 PPG Industries, Inc. All Rights Reserved.

SAFTIFIRST™

CLEAR SOLUTION™

GPX™ ARCHITECTURAL SERIES
60-90 MINUTE ALUMINUM FIRE DOORS
WITH SUPERLITE™ II-XL

SINCE 1980

GPX Architectural Series is code-approved for all jurisdictions with flexible hardware options and multiple finishes.

Not all 60-90 minute glazed doors meet code and design requirements.

Visit www.safti.com/dooralert to learn more and avoid costly mistakes.

www.safti.com
888.653.3333

SAFTIFIRST™
SAFETY AND FIRE TECHNOLOGY INC.

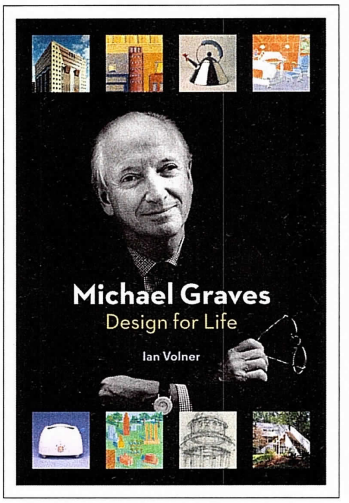
Intertek · CLASSIFIED UL US · USA Made

An Architect for All Seasons

Michael Graves: Design for Life, *by Ian Volner. Princeton Architectural Press, 304 pages, $30.*

Reviewed by Paul Goldberger

FOR A FEW YEARS in the 1980s, Michael Graves was Frank Gehry, Bjarke Ingels, and Zaha Hadid rolled into one: the biggest architectural celebrity of the day, a man whose work appeared to bridge the chasm that so often separates the architecture that excites the public from the architecture that is taken seriously by critics and scholars. Some of it was the drama of conversion: after a debut as one of the neo-Corbusian "Five Architects" in the early '70s, he turned away from the approach of his confreres Peter Eisenman, Charles Gwathmey, Richard Meier, and John Hejduk and dove fully into the history-churned waters of postmodernism. He talked a lot about using classical form to make architecture understandable, but his style was less purely traditional than it was a highly personal mix of classicism and cubism. He was more interested in composition than in space, more attuned to color than to shape and proportion. Whatever you thought about Graves, there was no denying that he was an original voice in American architecture, and that structures like his Portland Building of 1982, his far superior Humana Building of 1985 and Denver Central Library of 1991, and his compelling, if mannered, interiors, tapped into a widely felt desire for an architecture that at once connected to tradition and felt exciting and new.



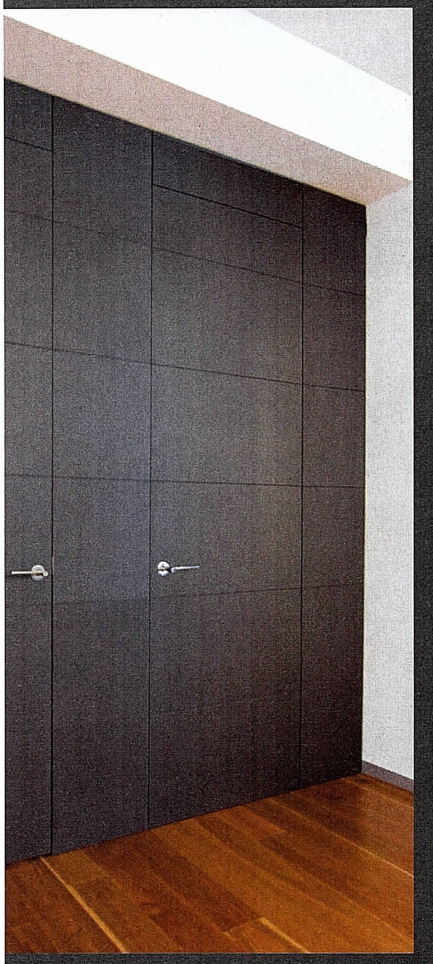
And so it was, until it wasn't. Graves's star fell relatively quickly as postmodernism faded, with some of its adherents, like Robert A. M. Stern, moving toward a more literal form of historicism. Graves stayed the course, and his architecture was remarkably consistent throughout his career. What defined his middle years was not so much the buildings he produced—decent but unexciting—as the product design, a second career he developed, first for Alessi and then, most famously, for Target. And then there was Graves's final chapter, after a tragic infection to the spinal cord left him paralyzed from the chest down. He, heroically, continued to work from his wheelchair, generating not only the exquisite drawings he was known for—drawings that were often more beautiful than the buildings they represented—but also embarking on yet another subcareer as he produced furniture and surgical products aimed specifically at the disabled. The artist/architect/designer ended his professional life as an activist for this latter audience.

His was a career made up of equal parts exhilaration and frustration, and it is perplexing to sum up. Ian Volner has worked conscientiously to do so in *Michael Graves: Design for Life*, the first biography of the architect, who died in 2015 at the age of 80. (Volner began the book with Graves's cooperation, but finished after the architect's death.) Volner is a sympathetic chronicler, and he is at his best when he recounts Graves's early years as a young architect—when he once tricked his first wife into thinking he was taking her to a beach on the shore of Lake Michigan but was really on his way to see Frank Lloyd Wright's Johnson Wax headquarters in Racine, Wisconsin. We get a picture of a man who was passionate, single-minded, ambitious, and work-obsessed, and at the same time could be thoughtful, charming, sardonic, and gentle. Volner shows us a Graves whose greatest joy was in working alone, making sketches and watercolors, and who at the same time would go to great lengths to exploit his celebrity. He craved the respect of the academy—he taught at Princeton for decades—and yet he mocked it constantly for being out of touch with the interests of ordinary people. He was devastated when the Whitney Museum, his most prestigious client, abandoned him after a third try at redesigning an aggressive expansion of the Whitney's Marcel Breuer building won no more praise than his two previous versions. He produced many fine buildings, but arguably no truly great ones. Was Graves the most populist of elitists, or the most elitist of populists? I suspect that no one, including Ian Volner, can ever fully answer that. ■

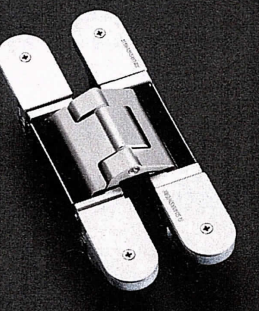
Paul Goldberger is an architecture critic and contributing editor to Vanity Fair.

SIMONSWERK

TECTUS®
the adjustable
concealed door hinge.



The hinge that is not limited
to low-traffic applications.



SIMONSWERK
North America, Inc.
1171 Universal Boulevard
Whitewater, WI 53190
262-472-9500
www.simonswerk-usa.com

Creativity Begins. **Sto Finishes.**™

Architects as Artists.

Deliver the curated feel of atelier design with Sto Façade Systems. Use Sto couture finishes, ranging from ultra-smooth to deeply textured. Easy-to-apply Sto Façade Systems push the envelope of architecture with countless color options and character.

Create more at: **www.stocorp.com/ArchitectsAsArtists**

sto®

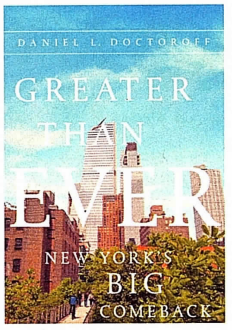
Building with conscience.

Transforming the Metropolis

Greater Than Ever: New York's Big Comeback, by Daniel L. Doctoroff. PublicAffairs, 371 pages, $28.

Reviewed by Diana Lind

ON THE FINAL page of his account of his years as Deputy Mayor for Economic Development and Rebuilding (2002–07), Dan Doctoroff writes, "Government can work." In these times, it's a radical statement. And Doctoroff delivers a surprisingly entertaining affirmation of government's ability to shape society, physically and economically.



Doctoroff's efforts incited a dramatic transformation throughout New York. The Bloomberg administration rezoned 40 percent of the city, and Doctoroff was a primary instigator behind rebuilding Lower Manhattan following 9/11, creating Hudson Yards in west Midtown and Atlantic Yards in Brooklyn, and helping to get new stadiums built for the Mets and Yankees in Queens and the Bronx. Many of these projects were catalyzed by the city's 2012 Olympics bid, an ultimately failed effort.

Doctoroff proved adept at using his background in private equity to increase the economic activity in the city as deputy mayor. His development strategy in all five boroughs moved the city away from depending on financial services to expanding light manufacturing, tourism, and technology sectors. He saw the potential of Brooklyn to compete with Jersey City as Manhattan's satellite business hub, and took his buy-low/sell-high ethos to its underperforming neighborhoods.

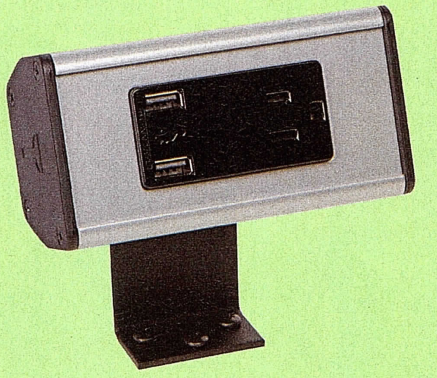
Yet Doctoroff seems unaware that dollars-driven government has downsides. Consider the High Line, which Doctoroff initially "couldn't envision a park out of" but later supported when shown how transferring air rights from land under or alongside the abandoned rail line to properties in the neighborhood would result in a "vibrant market" for new development. "Vibrant" is an understatement: Doctoroff notes that the parking and storage company, Edison Properties, paid "almost nothing" for a parking lot that it sold in 2014 for $870 million; a condo and hotel designed by Bjarke Ingels Group will soon open there. Doctoroff is untroubled that the surrounding neighborhood of Chelsea, once an artsy and low-income neighborhood, is now a tourist trap with ultra-luxury condos, no longer affordable to many residents with deep roots there.

Doctoroff never really transformed himself from being an investment banker to a public champion. He dwells on his tenure's lack of focus on affordable housing for only a few sentences amid 371 pages. As the book's affirmative title suggests, Doctoroff really does believe New York is better than ever, and would never connect his work to such unintended consequences as the city's skyrocketing rates of homeless families—the number of those in shelters has risen 76 percent in the past decade, while those living on the street has risen 39 percent in just the last year.

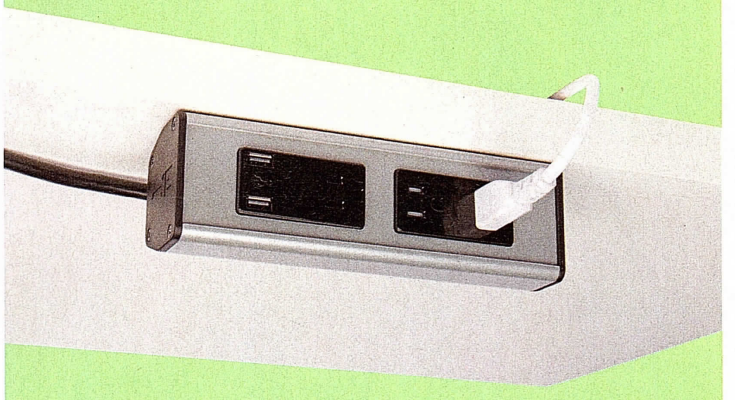
Doctoroff envisions *Greater Than Ever* as a playbook for other cities looking to stoke their own economic vitality. While there are a dozen smart ideas here worth replicating, such as the sustainability plan, or encouraging job-creating businesses to be in the city, the book should also be read as a cautionary tale. Growth as great as that which Doctoroff describes is usually too good to be true. ■

Diana Lind is the founding managing director of the Penn Fels Policy Research Initiative and formerly the editor in chief of Next City.

Edge-Mount Power



PCS61A & PCS61B



Mounts above or below desktop

"Fine Architectural Hardware for Your Fine Furniture"®

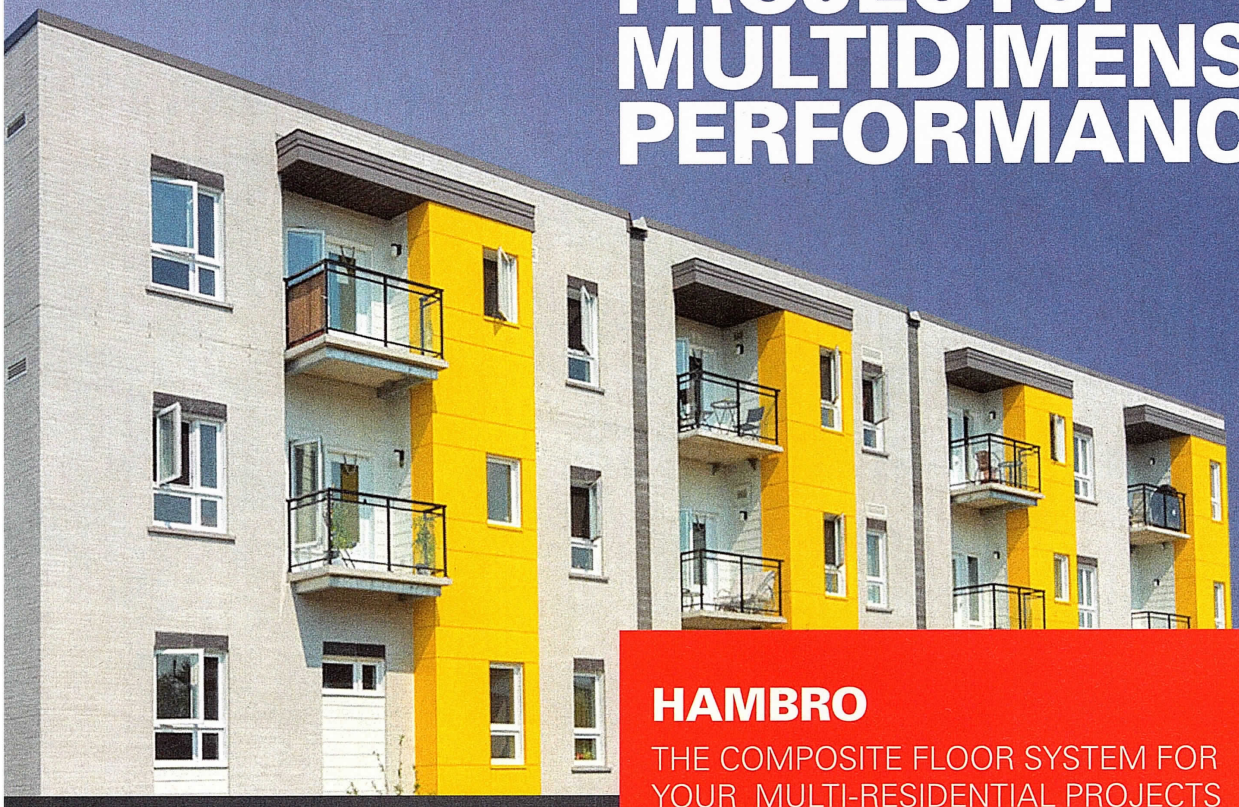
MOCKETT
DOUG MOCKETT & COMPANY, INC
www.mockett.com
800-523-1269

Many claim they can install terrazzo.
But you can trust the skill, experience, and
training of your NTMA contractor.

National Terrazzo & Mosaic Association
www.NTMA.com
800.323.9736

Tubman Museum • Architect: Verner Johnson, Inc. Museum Architects & Planners • General Contractor: Piedmont Construction Group • Owner Tubman Museum

MULTI-RESIDENTIAL PROJECTS. MULTIDIMENSIONAL PERFORMANCE.

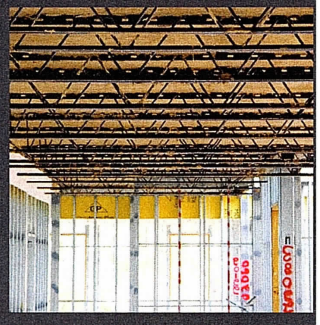


HAMBRO

THE COMPOSITE FLOOR SYSTEM FOR YOUR MULTI-RESIDENTIAL PROJECTS

Hambro D500 and MD2000 are high-performance solutions ideal for multi-residential buildings. Fully adaptable to your design and load specifications, these fire-resistant composite systems designed by Canam deliver outstanding soundproofing performance and boast a space-freeing span capacity of up to 43 feet. Hambro is optimized to facilitate mechanical system installation and reduce construction time and costs.

Hambro MD2000 on a conventional structural steel frame



Hambro D500 on load-bearing walls

CANAM BUILDINGS

canam-construction.com
1-866-466-8769

Because our expectations are as high as yours. Discover the difference at marvinwindows.com.

MARVIN
Windows and Doors
Built around you.®

Designed by Adams Architecture, Seattle, Washington
© 2017 Marvin Windows and Doors. All rights reserved. ® Registered trademark of Marvin Windows and Doors.

Entrance Exam

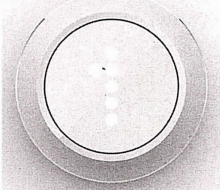
Craftsmanship and innovative designs take these doors and windows to the head of the class.

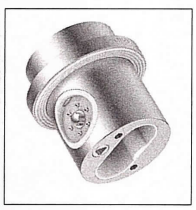
By Kelly L. Beamon

Home Designer Collection Windows

Hy-Lite has added 2' x 2' versions of the company's 36" x 60" and 48"-square privacy windows. The smaller size features the large windows' same tempered safety glass and silkscreened patterns inside, with textured glass on the exterior to keep prying eyes out. All windows come double-paned and pre-framed for easy installation.

hy-lite.com





Otto

This digital lock can be opened and secured remotely after users program it to recognize their Bluetooth-enabled phones. To operate it manually, homeowners can enter a code on the LED display screen. Built to the American National Standard for auxiliary locks, Otto is an easy retrofit for most mechanical deadbolts of the same 2.6"-diameter size. Designed for use in mild climates, it comes in Stainless Steel, Mineral Black, and Natural Gold finishes.

Meetotto.com

PlybooDoor Panel

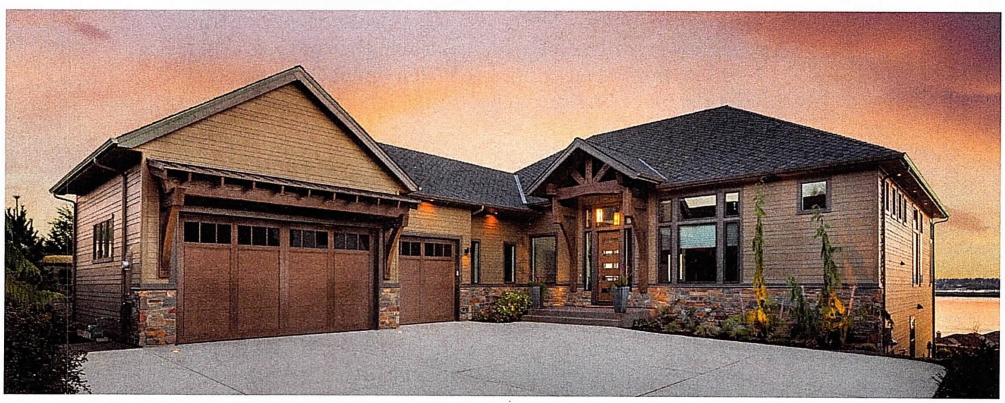
This eco-friendly update of a barn-style door is engineered for quick and accurate installation. The bamboo plywood panel, made by the sustainable building-product company Smith & Fong, comes pre-drilled for easy mounting onto Krownlab's sliding door hardware. Panels are offered in custom widths and heights, and the sliding-door system is built to enable builders to level and alter the length of tracks even after they've been installed. The doors' six standard finishes are also odorless and can be wiped clean with a damp cloth.

krownlab.com

American Tradition Series

What appear to be wood garage doors actually are made of 2"-thick steel. Haas Door, a fabricator of steel and aluminum garage doors, has developed simulated wood finishes to let architects add traditional details that deliver modern efficiencies. The company's residential garage doors can now be specified with American Walnut and English Oak finishes. All options come with CFC-free polyurethane insulation and a calculated R value of 13.45.

Haasdoor.com



products windows & doors

SteelBuilt Curtainwall Infinity System

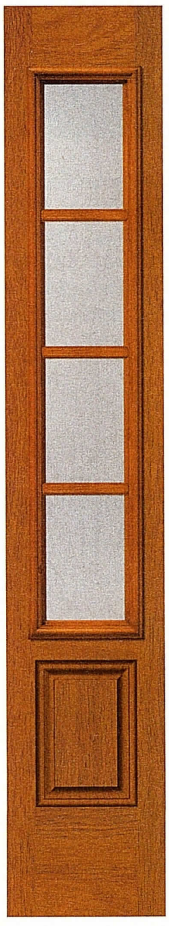
Almost any type of custom steel member—stainless, T-shape, box- and I-beam—can be used as the back mullion for this curtain wall, making it suitable for a wide range of commercial applications where clients need larger free spans and narrower sight lines. The steel construction enables expanses of glass extending to nearly 22'.

tgpamerica.com

Woven-to-Size Grassweave and Papyrus

Among its other hand-hewn wall- and window coverings and textiles, Hartmann and Forbes has added 16 new designs the company can weave to order by hand on wood looms. The Woven-To-Size Grassweave and Papyrus collections feature details such as strips of water hyacinth and braids of natural ramie fiber woven into the shade. All are custom made on traditional looms to suit a window's dimensions up to 180" wide, without any seams.

Hartmannforbes.com



PandaSelect™ All Aluminum LS.30

This wall of windows is designed to keep weather out while letting in daylight. The glazing is available in length runs of up to five panels (each can measure up to 10' x 5'), trimmed in 3 3/16"-wide aluminum frames to help maximize views. To guard against leaks, the floor track has a weep channel, which features the company's patented drainage technology. When opened, the windows can be pocketed or stacked to the left and right.

Panda-windows.com

Simulated Divided Lights with EVOLVE Frames

ODL's Simulated Divided Lights (SDL) can be used to add historic style details to exteriors that are easy to install, maintain, and replace. This one features the company's EVOLVE rib construction frame made from FiberMate, a composite that reduces scalloping and warping in high-heat areas. The window casing comes pre-drilled and with screw-hole plugs for a seamless finish that can be painted or stained.

odl.com

No Peek Privacy

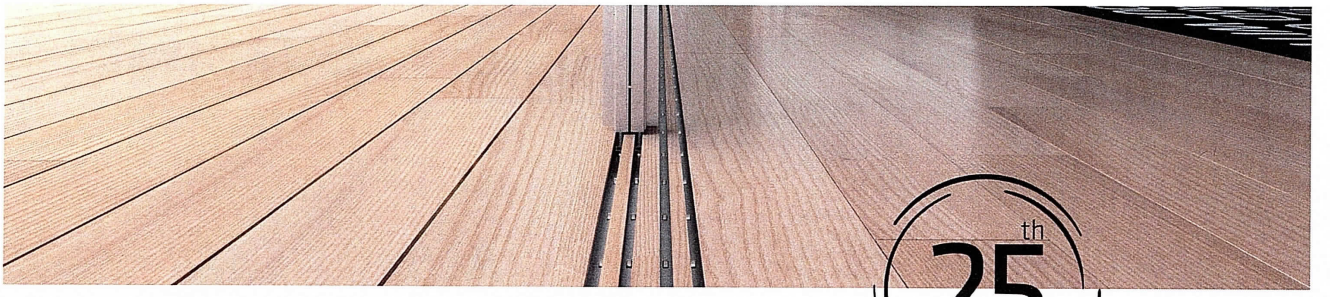
Architect Tom Kundig designed this 1¾"-thick sliding-door pull. Like the rest of his collection for 12th Avenue Iron, the hardware is hand-forged from ⅛" hot-rolled, blackened steel (wax finish) and recommended for use in residential projects. Viewed from the front, the locked profile measures 4" x 13" and can be ordered in satin bead-blasted stainless steel and oil-rubbed bronze.

12thavenueiron.com

VITROCSA®

THE WORLD'S SLIMMEST SIGHTLINES.

The Original – occasionally imitated, never equaled. As the inventor of the slim profile sliding glass wall, Vitrocsa is proud to celebrate its 25th anniversary this year. Featuring many beautiful innovations that you would only expect from the Original.



Vitrocsa's Patented Invisible Sill Option

25th anniversary

vitrocsaUSA.com info@vitrocsaUSA.com ☎ 310-988 4455

ARCHITECTURAL RECORD

RECORD ON THE ROAD

REGISTER TODAY

Join design leaders as they showcase their recent projects before being joined by *Architectural Record* Editor for a panel discussion on **Multi-Family Housing**.

NOVEMBER 7 | DALLAS

Nasher Sculpture Center
2001 Flora St.
Dallas, TX 75201

Panelists to be announced soon!
Visit RecordontheRoad.com for more information.

This event has been approved by AIA for 2 AIA LU/HSW.

*This program is sponsored by **Tamlyn** and **Tarkett**.*

Seating is limited - reserve yours today for FREE.

BROUGHT TO YOU BY

TAMLYN

Tarkett | THE ULTIMATE FLOORING EXPERIEN

IN PARTNERSHIP WITH

AIA Dallas

RecordontheRoad.com

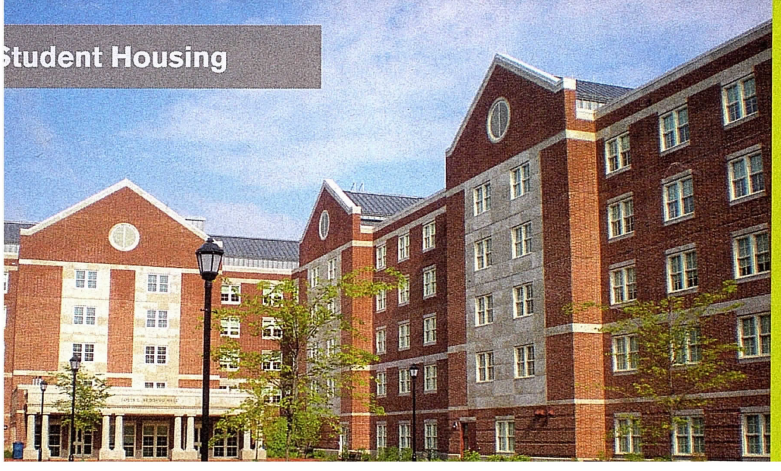
OUR VERSATILITY IS IDEAL FOR ALL BUILDING TYPES.

Ecospan's Composite Floor System is an integration of steel components with open web design for low, mid, and high-rise structures. Using a unique configuration of components with high strength-to-weight ratios, our innovative system allows for longer spans, shallow floor depths, greater rigidity and enhanced performance – without sacrificing aesthetics.

With steel joists and steel decking produced from recycled steel, Ecospan provides open web structural components with a lighter weight composite design for elevated floor construction.

ECOSPAN®
COMPOSITE FLOOR SYSTEM

www.ecospan-usa.com



NUCOR®
VULCRAFT/VERCO GROUP

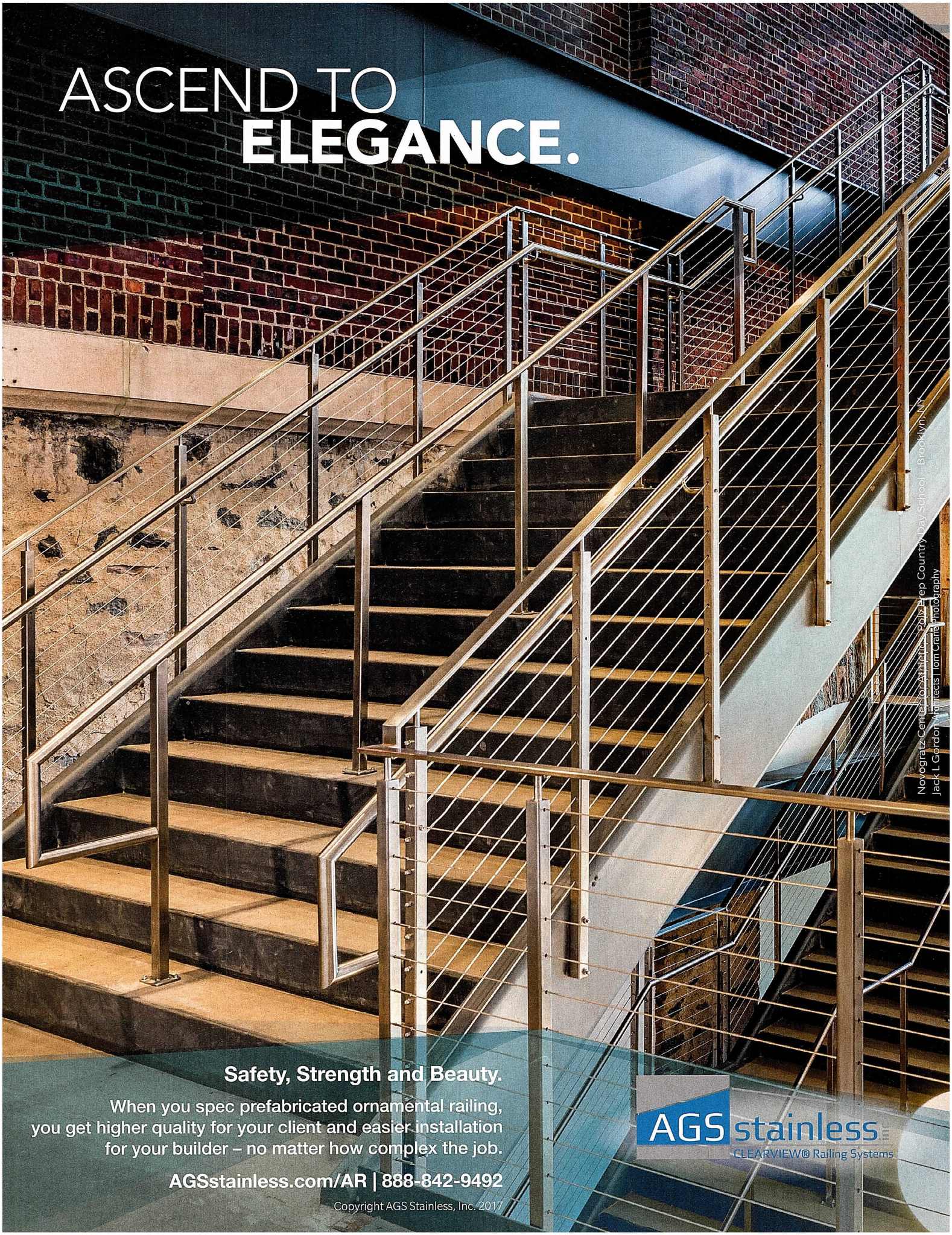
Ecospan Composite Floor System
Nucor Vulcraft National Accounts
6230 Shiloh Road, Suite 140
Alpharetta, GA 30005
(678) 965-6667
888-375-9787

THE VULCRAFT BIM EVOLUTION

UL FIRE RATED 1,2,&3 HOURS

STC 57

IAPMO ES CERTIFIED


ASCEND TO
ELEGANCE.
Novogratz Center for Athletics, Poly Prep Country Day School | Brooklyn, NY
Jack L Gordon Architects | Tom Crane Photography
Safety, Strength and Beauty.
When you spec prefabricated ornamental railing,
you get higher quality for your client and easier installation
for your builder – no matter how complex the job.
AGSstainless.com/AR | 888-842-9492
Copyright AGS Stainless, Inc. 2017
AGS stainless
CLEARVIEW® Railing Systems

Internal Affairs

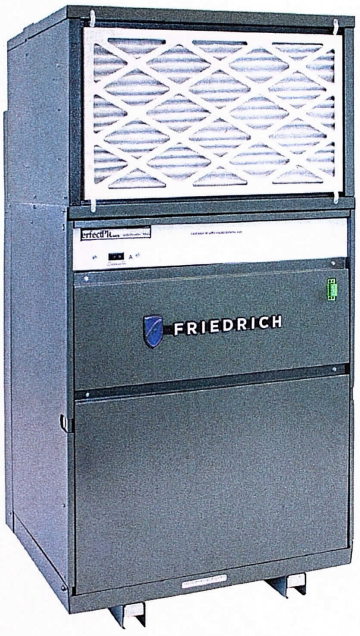
The latest warming and cooling equipment turns energy efficiency into an art.

By Kelly L. Beamon

ALPHA1 Constant Pressure Pump

Grundfos's new pump amps up hydronic heating and hot-water-recirculation flow rates, while requiring extremely low energy consumption compared with earlier single- and three-speed models. Made and assembled in California, the Alpha1 boasts the highest torque possible, a powerful start, three constant pressure modes operated by a single push-button control, and an easy-to-read LED display showing the gallons-per-minute flow and watt-hours consumption.

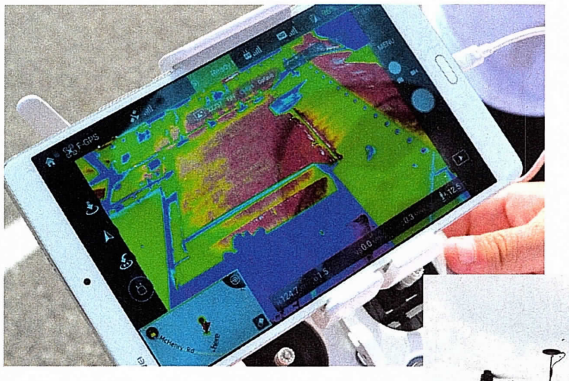
us.grundfos.com

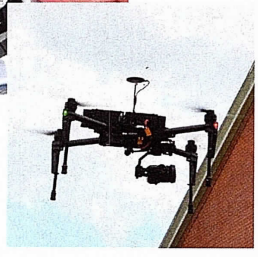


VRP HVAC System

Exceptional energy efficiency and improved indoor air quality are hallmarks of Friedrich's new Variable Refrigerant Packaged (VRP) HVAC system. The system has a Seasonal Energy Efficiency Ratio of up to 20 and heating seasonal performance factor as high as 13. Meanwhile, the company's FreshAire system brings in as many as 70 CFMs of conditioned, MERV 8–filtered outside air. Combined with the VRP units' compact, all-in-one design, the high performance makes it suitable for hospitality and multifamily applications.

friedrich.com





AkitaBox

Drone-assisted building inspections are a new additional source of data that building-management software company AkitaBox is offering clients. Along with faster and safer information-gathering on the condition of building envelopes, the company is testing thermal imaging (produced by drones from developer PrecisionHawk) as a way to detect HVAC issues such as leaks. The two companies have teamed up to start incorporating such data into AkitaBox's reports.

AkitaBox.com

LG MultiSite Control Suite

LG's suite of air-conditioning products is a one-stop solution for managing energy efficiency across sites. The company's MultiSite Remote Controller provides a touch screen to centralize monitoring of indoor environments; it uses sensors to determine such factors as occupancy and humidity for efficiency readings. Meanwhile, a Communications Manager integrates MultiSite Control with a building's existing system. The company's VM3 building-management solution enables architects to tailor the programming of the entire suite of products to specific needs.

lghvac.com

BLINK®
BY ODL

A MODERN PERSPECTIVE ON BLINDS

BOTH FULL-CONTROL AND TILT-ONLY

HIGH QUALITY MATERIALS
for long lasting product

BLINDS-BETWEEN-GLASS
for easy cleaning and safer use

INSULATED GLASS
for energy efficiency

HIGH-QUALITY BLINDS
for maintenance-free light control

ODL's 20 years of experience in blinds-between-glass ensures high-quality Blink Blinds + Glass options for both doors and windows. Personalize orders with custom sizes, multiple colors, and glass choices. Blink has no minimum order and delivery in as little as 8 days*, making it an ideal choice for any home.

Contact a Blink sales representative to get started today.

blink®
BLINDS + GLASS
An ODL brand

866.472.0042 | www.BlinkODL.com | blink@odl.com

*Delivery time may vary.

USG Interior Panel & Finishing Solutions

THE WORLD'S MOST SUSTAINABLE WALLBOARD.

USG Sheetrock® Brand EcoSmart Panels

Discover the next big thing in wallboard at **usg.com/eco**

GREENGUARD GOLD

USG
IT'S YOUR WORLD. BUILD IT.®

© 2017 USG Corporation and/or its affiliates. All rights reserved. The trademarks USG, SHEETROCK, IT'S YOUR WORLD. BUILD IT., the USG logo, the design elements and colors, and related marks are trademarks of USG Corporation or its affiliates.

GREENGUARD Certified products are certified to GREENGUARD standards for low chemical emissions into indoor air during product usage. For more information, visit ul.com/gg.

CIRCLE 304

THIS WILL SOON
BE SYDNEY'S VIBRANT
NEW FINANCIAL HUB
Containing thousands of copper pipe fittings that will ensure sustained drinking water hygiene for the future
International Towers Sydney is being developed by Lendlease as a future economic center for the Asia-Pacific region, right next to Sydney Harbour. Viega ProPress Copper fittings are being used throughout to provide the 131 floors of the three towers with a reliable supply of drinking water. Not only does the system impress with its excellent hygienic properties, it is also quick and easy to install – a significant advantage for a major project like this on a tight schedule. Viega. Connected in quality.
International Towers Sydney, Sydney, Australia
viega
viega.us/About-us

Kew Gardens Hills Library
WORK Architecture Company
Queens, New York

Bishop Selwyn Chapel
Fearon Hay Architects
Auckland, New Zealand

Domaines Ott Winery
Carl Fredrik Svenstedt
Taradeau, France

READ PRAY DRINK

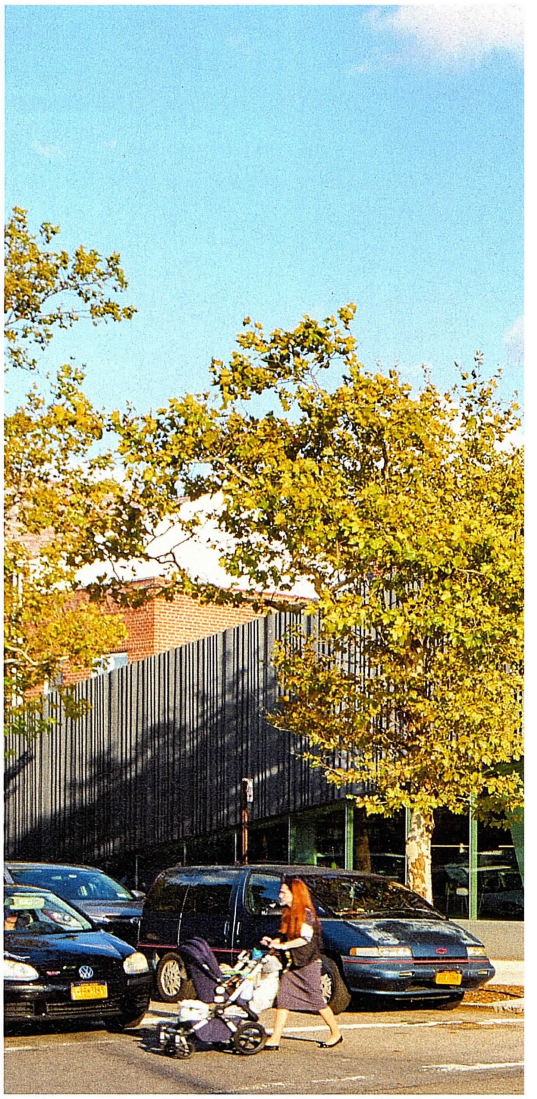
Kew Gardens Hills Library | Queens, NY | WORK Architecture Company

Turn the Page

Ten years in the making, an expansion of a small library has a big impact on its community.

BY JOSEPHINE MINUTILLO

PHOTOGRAPHY BY BRUCE DAMONTE



During its first full day of operation last month, the Kew Gardens Hills Library teemed with patrons. College students sporting large backpacks mixed with seniors scanning newspapers in the main reading area. One teen, not wishing to be disturbed, planted herself on the floor in a corner, headphones on. At the extreme opposite end of the building, toddlers ran to and fro, jumping on pint-sized furniture beside a string of baby carriages parked along the nearest wall.

Perhaps it's the playful design that enticed all these visitors. Or maybe it was the sheer anticipation. Residents of this diverse Queens, New York, neighborhood were promised a new library over a decade ago, making do in a temporary space for the past several years as construction on the much-delayed project dragged on. "I'm just happy people still read books and still need a library," jokes architect Dan Wood, WORK Architecture Company founding partner along with Amale Andraos.

WORKac was awarded the commission to expand an existing library here through New York City's Department of Design and Construction's Design Excellence Program.

OPEN BOOK The angular facade slopes down to reveal a green roof to pedestrians (above). The library reaches its highest point at the corner, where it faces a busy commercial strip (opposite). The lower ends of the building mimic the heights of neighboring structures; a window in the children's area is scaled to its users (right).

While that initiative, begun in 2005, has opened the door for many young creative firms to produce innovative public work, those buildings, like many city-run projects, are often saddled with delays—bureaucratic and construction—and cost overruns.

In the case of Kew Gardens Hills Library, the design portion happened fairly quickly. A much smaller, nondescript library building already existed on the site—an unusual corner lot sandwiched between a commercial strip and a quiet residential area. Zoning regulations had originally required that the earlier building be set back 15 feet from the property line, but a mayoral override allowed WORKac to expand the footprint of the one-story structure to the property line. The architects took the opportunity to wrap the original library with an articulated facade-cum-roof and fill that 15-foot-deep new, partially glazed perimeter space along the sidewalk with areas for reading, study, and play.

"The first time we visited the site, kids would constantly walk by, bringing with them laughter and activity. There were children growing tomatoes in the sliver of garden behind the building," recalls Andraos. "We tried to capture this and celebrate it: carrying the garden onto the facade through the folded green roof, arraying welcoming reading rooms onto the street but also registering the sense of playfulness and childlike wonder through the architecture."

The roof dips and rises, reaching its highest point at the corner and descending to the scale of neighboring buildings at either end to reveal an unusually steep planted cover. A single mold produced the wavy

credits

ARCHITECT: WORK Architecture Company

ENGINEERS: Leslie E. Robertson Associates (structural); Lilker Associates (m/e/p); ADS Engineers (LEED); CCBS Consulting (code)

CONSULTANTS: Tillotson Design Associates (lighting); Epigraph Studios (signage)

GENERAL CONTRACTOR: S&N Builders

CLIENT: NYC DDC & Queens Library

SIZE: 11,650 square feet

COST: $8.2 million

COMPLETION DATE: September 2017

SOURCES

FACADE PANELS: GFRC Cladding Systems

MASONRY TIES: Hohmann & Barnard

ROOFING: Siplast

CARPET: Modulyss, Mohawk Group

PAINTS AND STAINS: Benjamin Moore

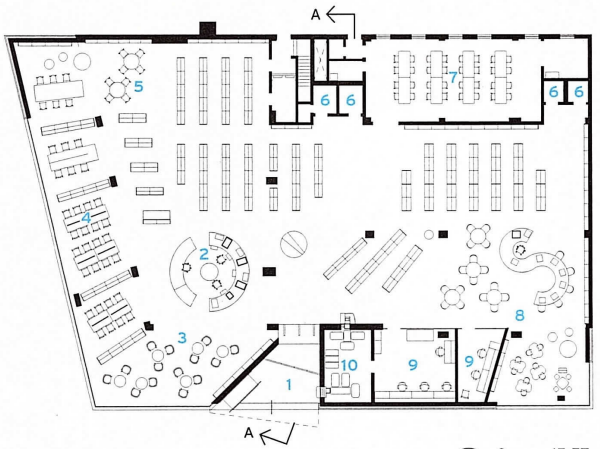
INTERIOR PARTITIONS: Carvart

PLUMBING: Elkay, Kohler

LIGHTING: Gammalux, Bartco, Alkco, Linear Lighting, Sistemalux, Birchwood Lighting, Philips (interior); Elliptipar (exterior)

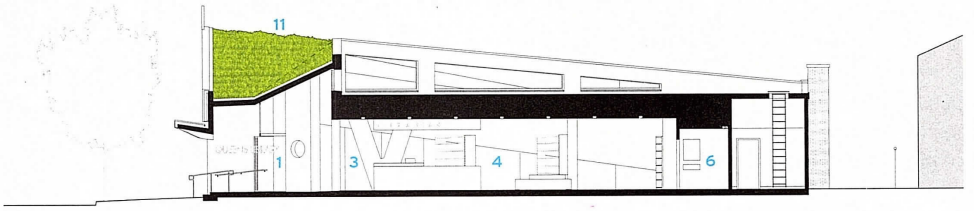
LIGHTING CONTROLS: Lutron

FURNITURE: Vitra, Knoll, Alias, Quinze & Milan, Agati, Ecotots

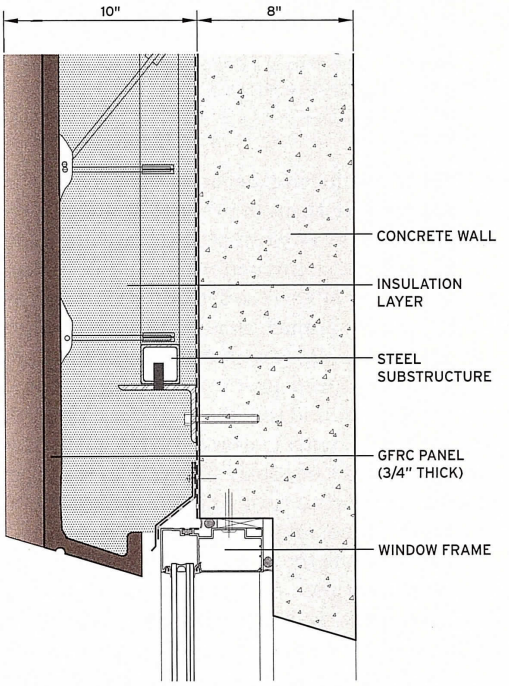


FLOOR PLAN

1 ENTRANCE
2 INFORMATION DESK
3 MAIN READING AREA
4 STUDY
5 TEENS
6 RESTROOM
7 MULTIPURPOSE ROOM
8 CHILDREN'S AREA
9 OFFICE
10 BOOK RETURN
11 GREEN ROOF



SECTION A - A



FACADE DETAIL

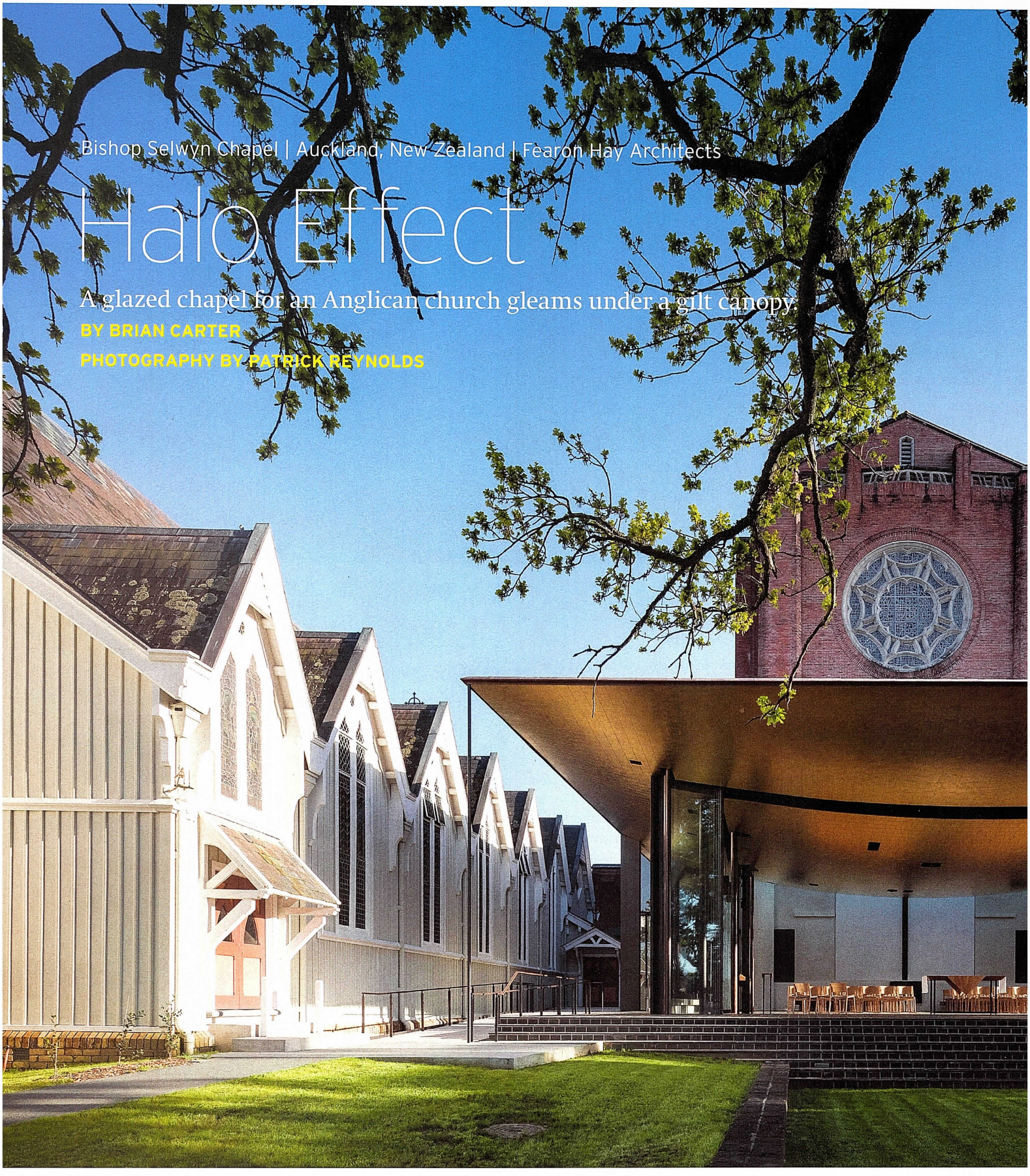
ON THE GREEN The landscape of the green roof is metaphorically carried over into the building with green carpet in the main reading area (above) and the children's area (opposite). The architects inserted clerestory windows where the new sloping roof rises above the roof level of the existing structure (right).

black GFRC facade panels, which are meant to evoke a curtain. At the entrance, the panels are turned 90 degrees to form an awning. "When we presented the design to the community, we likened the awning to folding the corner of a book to mark a page," says Wood. (Anecdotally, the librarians didn't like that analogy.)

The GFRC panels, specked with mica for a soft, glistening effect, are backed by a thick layer of reinforced concrete, which, somewhat accidentally, ended up serving a dual purpose. "The original design had a series of columns in line with the stacks to support the roof," says Daniel Sesil, partner at Leslie E. Robertson Associates, who had previously worked with Wood and Andraos on their 2008 installation of giant planted cardboard tubes inside the courtyard of MoMA P.S.1, also in Queens. "But that concrete band, which dipped down to touch the floor, represented a powerful piece of structure." Instead, Sesil reduced the number of columns in the library from about a dozen to just two—one V-shaped and one canted—as a "direct reflection of the architectural gesture."

While the design team originally intended to preserve much of the original structure, all that really remains are the foundations and a stretch of white brick exterior wall facing the rear yard. The colorful interior is completely new. Green carpet simulates the planted roof above. Bright orange information desks invite visitors to seek help. Furnishings in vivid hues dot the space. A large multipurpose room—for meetings, classes, lectures, even exercise—is marked by its sunny yellow floor.

The architects, inspired by the community and the love people had for their library, produced an expressive and playful form that breathes new life into a sedate building type, the branch library, that is only becoming more popular rather than less so. ■



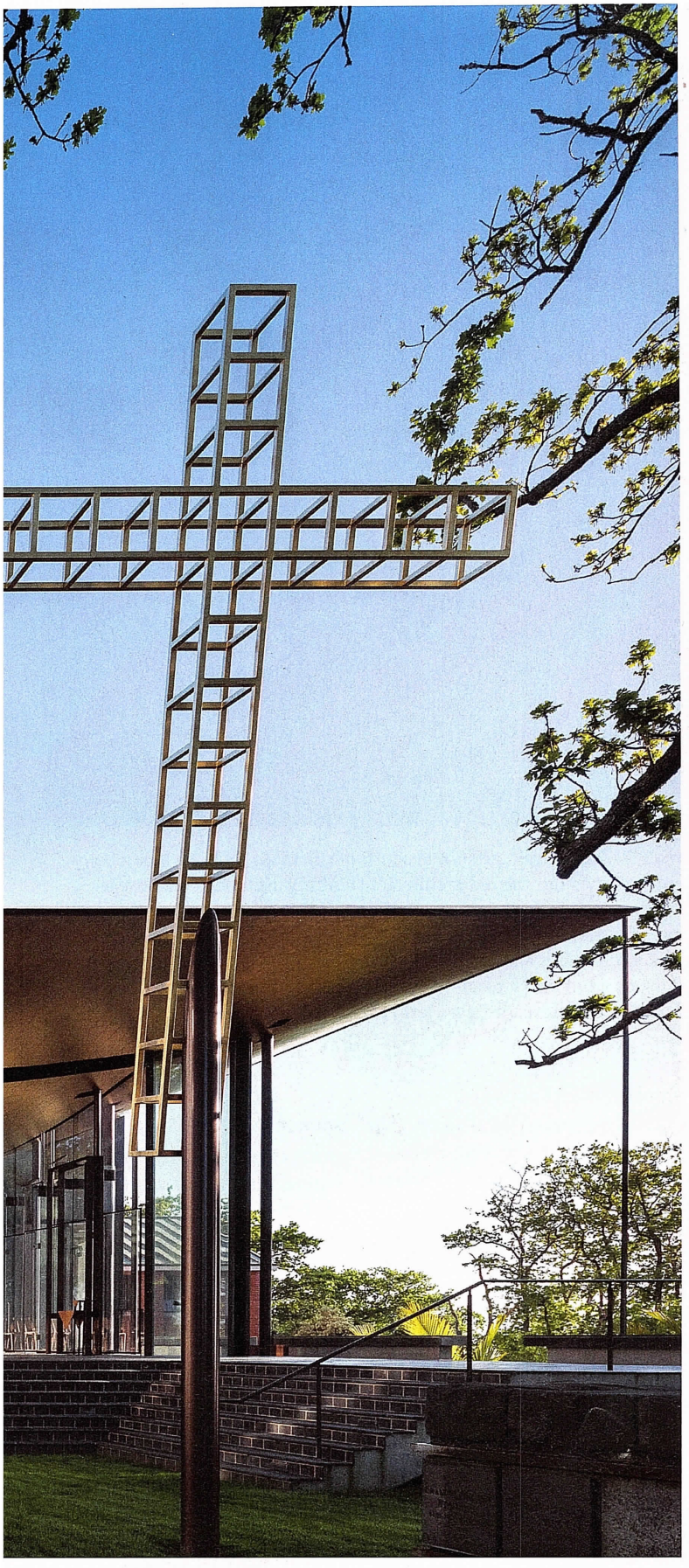
Bishop Selwyn Chapel | Auckland, New Zealand | Fearon Hay Architects

Halo Effect

A glazed chapel for an Anglican church gleams under a gilt canopy

BY BRIAN CARTER

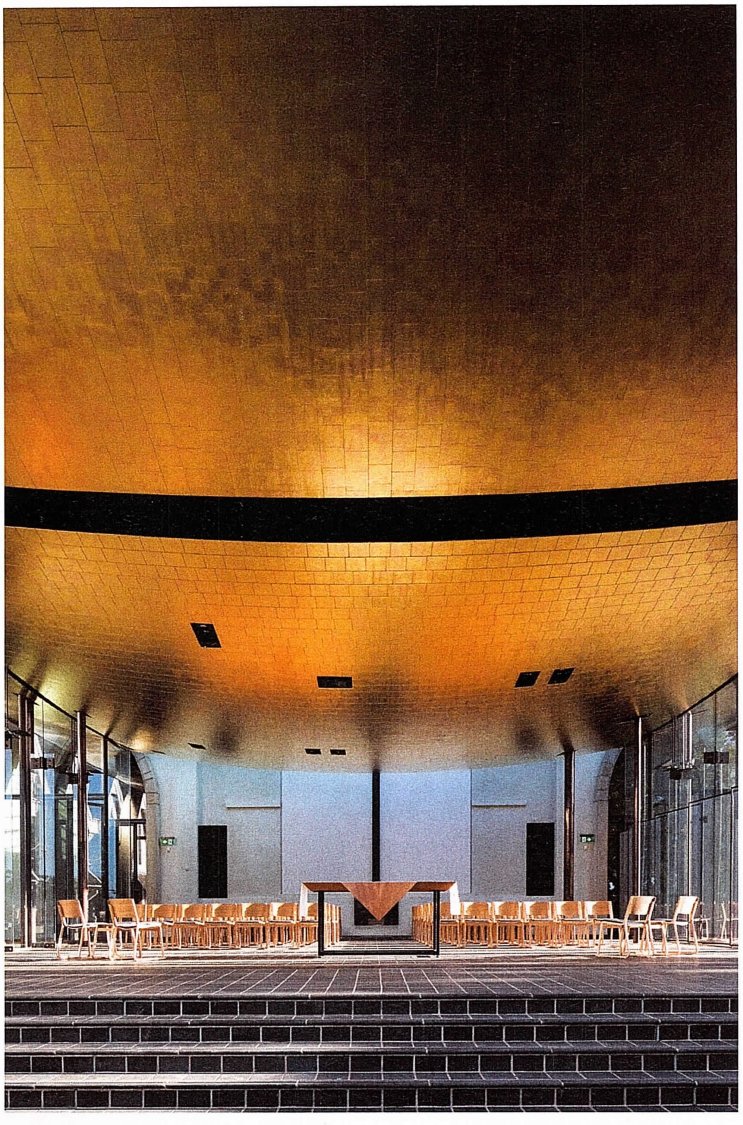
PHOTOGRAPHY BY PATRICK REYNOLDS

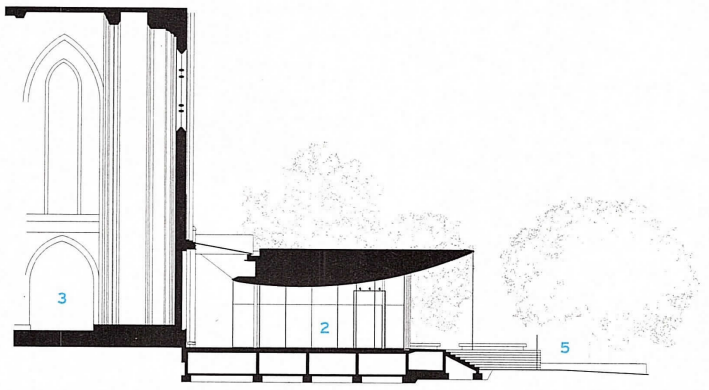


Bishop Selwyn Chapel is a small yet significant addition to the Anglican Cathedral in Auckland, New Zealand. One of several church buildings situated on a prominent ridge, it sits alongside a finely detailed, gothic wood structure, St. Mary's, that served as the principal Anglican church in New Zealand's largest city from 1888 to 1973. On its north end, the chapel is attached to a monumental redbrick chancel, a major expansion dating to 1939. In the 1960s, another extension, signaled by a dramatically folded roof over a nave, was added. Then, in 2011, the diocese prepared a brief calling for a new space that could accommodate 100 people for worship, choral performances, and special events. Fearon Hay Architects, an Auckland-based firm, was selected as the architect for this latest addition, named for the first Anglican Bishop of New Zealand (from 1848–58), who was an important advocate for the rights of New Zealand's indigenous people, the Maori.

The new chapel introduces a sense of calm to the eclectic collection of buildings. Fearon Hay conceived it as a single space located on axis

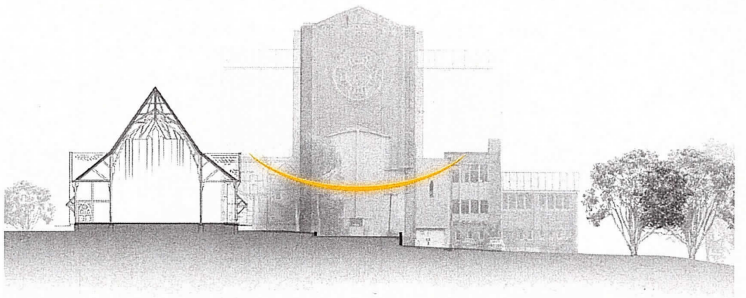
GOLDEN GLOW Fearon Hay Architects designed a swooping canopy with a gold-leaf ceiling over a glass-enclosed chapel (below) for the Holy Trinity Cathedral Auckland in Parnell, a suburb of the New Zealand city. The chapel is part of a campus that includes a white wood gothic church dating to 1888, and a redbrick church built in 1939, to which the chapel is attached (opposite). The cross is by Neil Dawson.



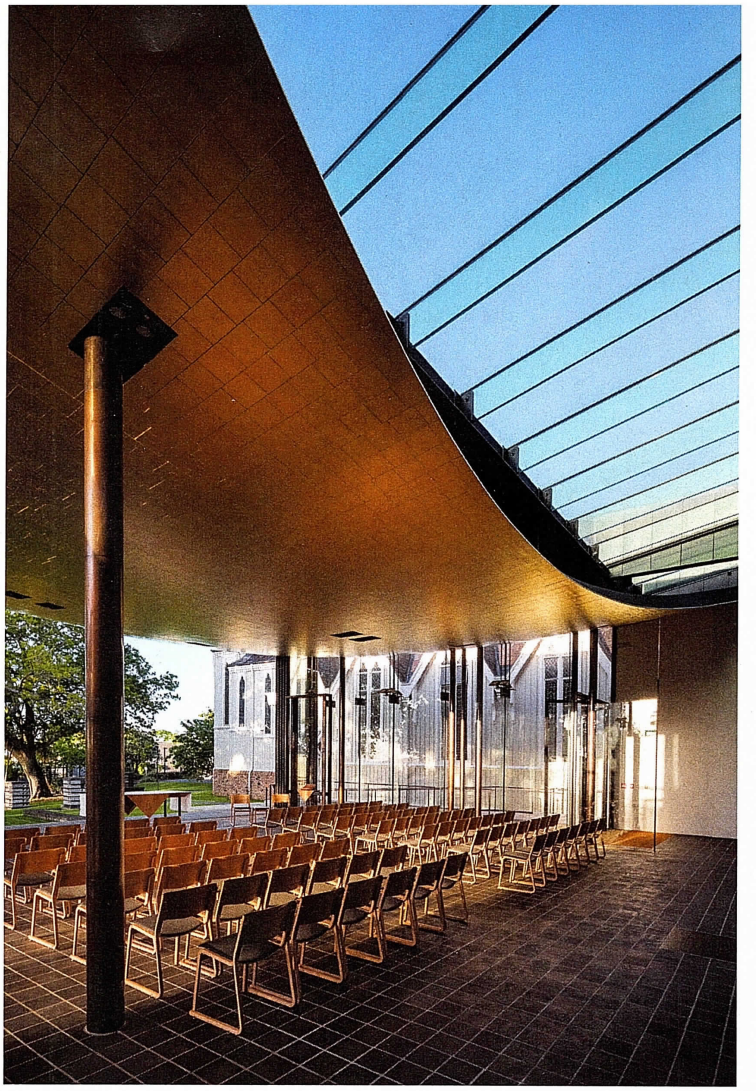


SECTION A - A

0 15 FT.
5 M.

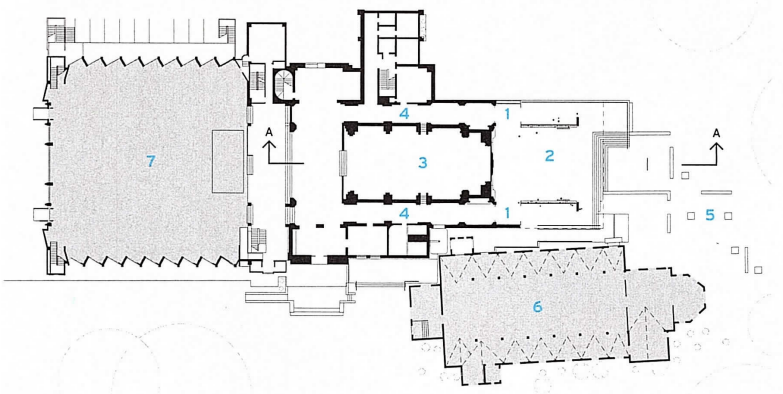


SOUTH ELEVATION



1 ENTRANCE
2 CHAPEL
3 CHANCEL
4 AMBULATORY
5 TRINITY GARDEN AND COLUMBARIUM
6 ST. MARY'S
7 CATHEDRAL NAVE

with the cathedral and placed south of the main altar, so it can be entered through the older church's flanking ambulatories. At the southern end, the chapel overlooks a garden, columbarium, and an expansive mountainous landscape beyond, including the spectacular volcanic peak of Maungakiekie. "We sought to complete and extend the journey from north to south . . . from the front of the cathedral to Auckland's landscape," says Jeff Fearon, director of Fearon Hay.



FLOOR PLAN

0 30 FT.
10 M.

credits

ARCHITECT: Fearon Hay Architects – Jeff Fearon, Tim Hay, directors; Michael Huh, associate architect; Stephen de Vrij, senior associate

ENGINEERS: Holmes Consulting Group (structural); Mott MacDonald (m/e/facade/hydraulic); Jawa (civil)

CONSULTANTS: Jacky Bowring (landscape); Lightworks, ECC (lighting); Tonkin & Taylor (geotechnical)

OWNER: General Trust Board of the Diocese of Auckland

CLIENT: Holy Trinity Cathedral Auckland

SIZE: 4,000 square feet

COST: $4.7 million

COMPLETION DATE: August 2016

SOURCES

FRAMELESS GLAZING: Woods Glass

SLIDING GLASS DOORS: Panoramah

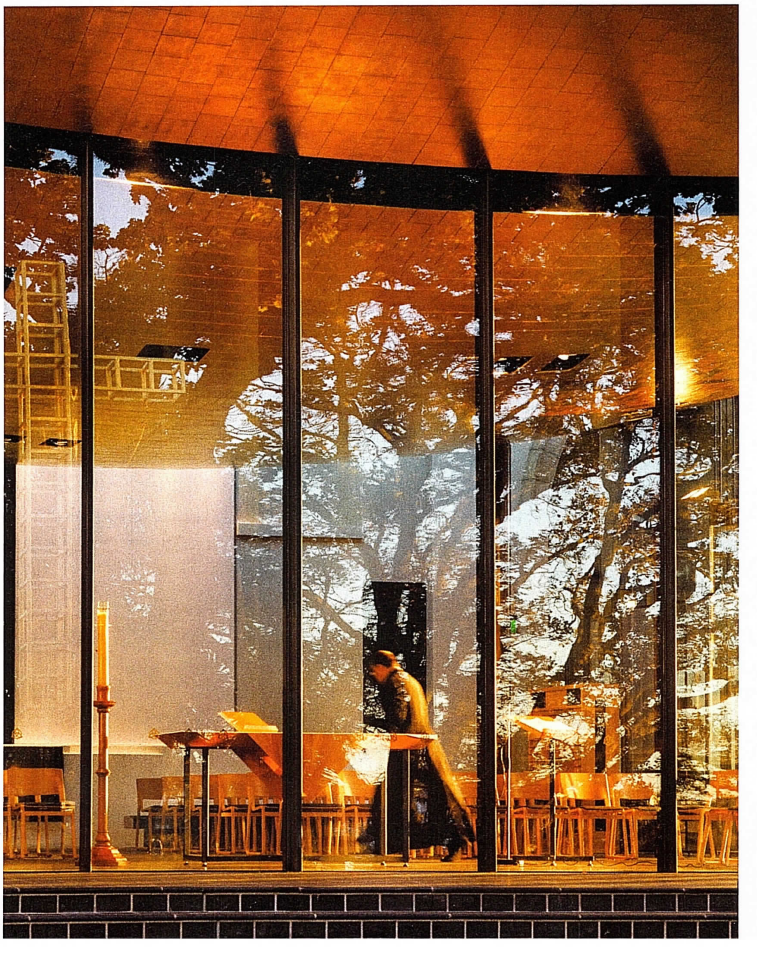
COPPER SHEET ROOFING: Architectural Metalformers

STONE FLOOR AND WALL TILES: European Ceramics

GOLD LEAF CEILING: Studio Carolina Izzo

THEO CHAIRS: Chorus

SYLVAN RETREAT A narrow, glazed roof supported by structural glass beams links the gold-finished canopy of the chapel with the cathedral's chancel of 1939 (opposite). Glass panels framed in bronze enclose the space on three sides (right). The glass along the south end of the chapel can be opened to provide an unhampered view and access to the garden and columbarium beyond (above).



A gracefully curved roof that recalls a baldachin is the defining element of the chapel. This is no baroque device referring to the work of Bernini but rather a thin canopy that suggests a simple fabric to shelter the congregants gathering beneath it. Fearon Hay connected the light, billowing shape to the masonry wall of the cathedral with a narrow, glazed roof carried on structural glass beams. With this unobtrusive link, the lustrous Florentine gold leaf ceiling of the canopy, supported on tubular steel columns, appears to float above the chapel's three precisely detailed glass walls, framed in bronze.

The pavilion's refined lightness contrasts dramatically with the massive weight of the existing redbrick cathedral; its sumptuous palette is juxtaposed against the older buildings' everyday materials. The collection of structures now assembled on this site not only traces a vivid history of architecture in New Zealand over the last century, but highlights changing priorities in ecclesiastical design. By alluding to an archetypal tentlike form, using rich materials, and opening to the horizon, Fearon Hay has created a new and inspiring space for worship in nature. ■

Brian Carter, an architect registered in the UK, was the former dean of the School of Architecture and Planning at the University at Buffalo, where he is currently a professor of architecture.

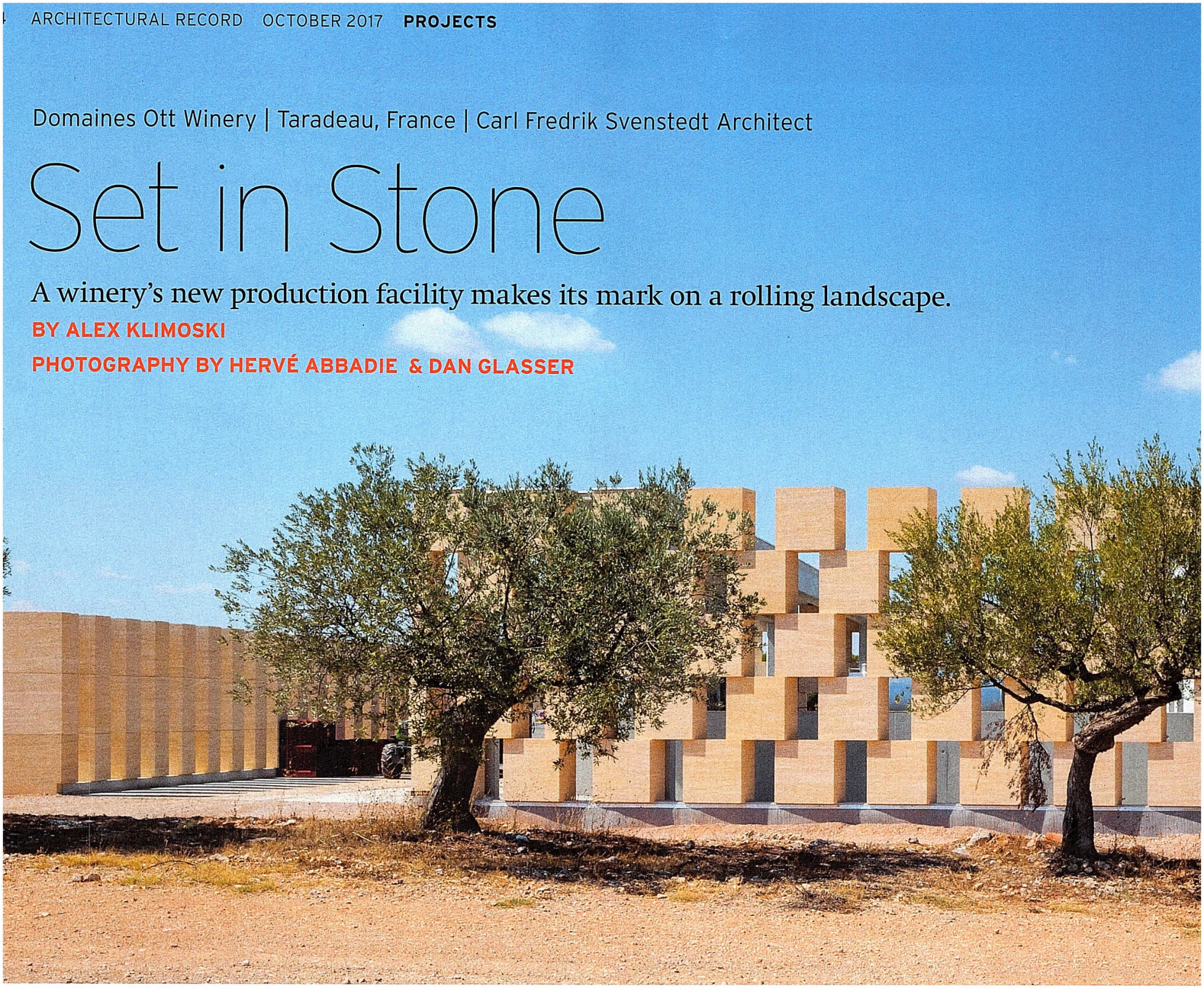
Domaines Ott Winery | Taradeau, France | Carl Fredrik Svenstedt Architect

Set in Stone

A winery's new production facility makes its mark on a rolling landscape.

BY ALEX KLIMOSKI

PHOTOGRAPHY BY HERVÉ ABBADIE & DAN GLASSER



The history of Provence—the region of southeastern France characterized by sun-soaked hills and a warm, dry climate tempered by salty ocean breezes—is steeped in winemaking. During the first century BC, upon discovering its fertile landscape and prime trading location, the Romans conquered the area, erecting numerous monuments, from arenas and temples to bridges and roadways, transforming it into a center of culture and wealth. In the small village of Taradeau, a new building for the more than century-old Domaines Ott winery, designed by Paris-based architect Carl Fredrik Svenstedt, hearkens back to this rich legacy. Its handsome limestone is extracted from the same quarry that gave rise to the Pont du Gard, an ancient Roman aqueduct 125 miles west.

The 45,000-square-foot building, which houses the vineyard's production facilities as well as offices and visitor spaces, replaces the company's previous early 20th-century building, which had a hodgepodge of additions. When Domaines Ott sold a majority stake in the business to Cristal purveyor Champagne Roederer in 2004, the opportunity to invest in a state-of-the-art premises arose. "They needed more space, and they wanted to really do it right," says Svenstedt, "so they decided to start over completely." The new building has about four times the winemaking capacity.

Working with Groupe Ducoin, a French engineering and design firm specializing in wineries, the clients invited three architects to submit plans for the new facility. Although the American-educated Svenstedt—who had done stints working for Santiago Calatrava and studioMilou before starting his own firm in 2000—had never designed a winery before, a member of the Ducoin team familiar with one of his residential projects (built from the same limestone, also located in the South of France) suggested to the client that Svenstedt be a part of the competition. Despite his lack of experience ("I was totally the underdog," says the architect), Svenstedt's scheme—a rectilinear form defined by an elegant latticed exterior—was chosen.

Sited on the edge of a meandering roadway and built into a hillside, the building was designed to appear as an "artificial horizon" in the landscape (much of the three-story structure is underground). Individual 2,205-pound blocks of stone were stacked to wrap around the building's concrete framework. Toward the middle of the elongated volume, the self-supporting blocks overlap, preventing direct sunlight from entering the interior winemaking spaces, keeping them cool. At either end, the blocks are set at increasing distances from each other, providing daylight and visual access for an enclosed

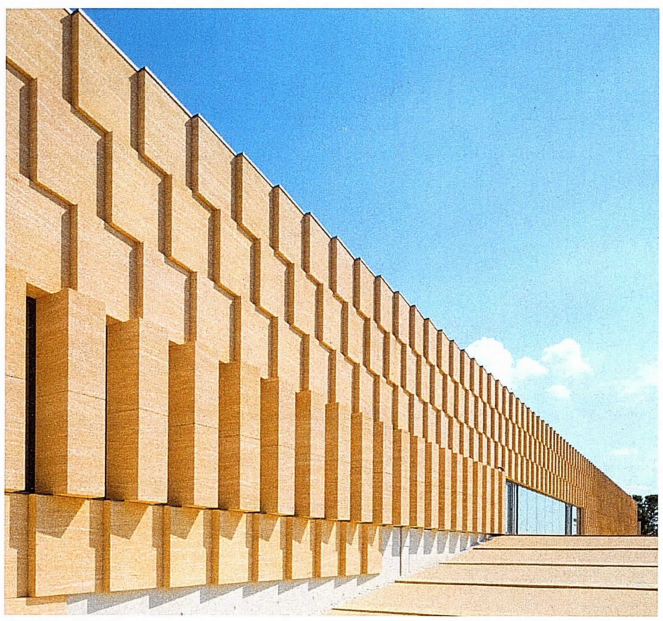
STONE SCALES. The building's checkered limestone exterior appears as a subtle gradient in the landscape. Where the interior visitor spaces are located, the stones are rotated 90 degrees, forming a series of rectilinear apertures, which, from the outside, line a ramp leading up to an elongated glazed entryway (below).

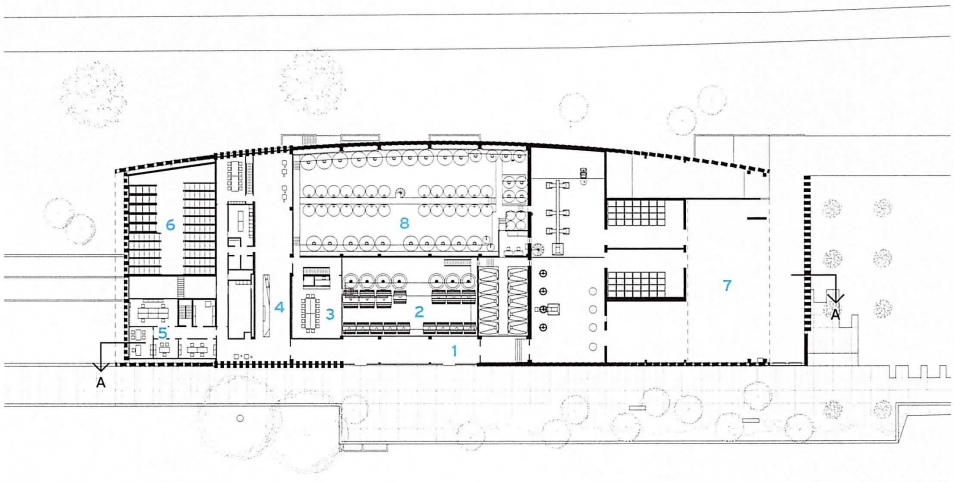
courtyard to the south, and offices and the visitors' center to the north. In addition to being a practical feature, this masonry configuration also lends a dynamic quality. "I wanted to dissolve the scale so that you're not looking at a big box," says Svenstedt. "It has texture—the edges become like a filigree, making a very heavy material light." To visually break down the structure's mass for those driving along the roadway, the east facade is slightly curved.

Building with limestone also proved to be surprisingly economical: when Svenstedt first discovered chunks of the material being used for makeshift parking dividers in a nearby lot, he knew it couldn't cost much. "Quarries are actually not doing very well, because people don't build stone cities anymore," the architect explains.

Up close, the discrete stone slabs provide a human scale for visitors approaching the building from the south parking lot; they enter the top level via a terrace that stretches along the facade's length, overlooking the vineyard below and an 18th-century château, once home to the counts of Provence. "When you walk alongside the building, you have this sort of privileged relationship," says Svenstedt. "There's something very friendly about the pieces of stone—they encourage you to reach out and touch them."

The terrace's glazed entryway both reflects the landscape and

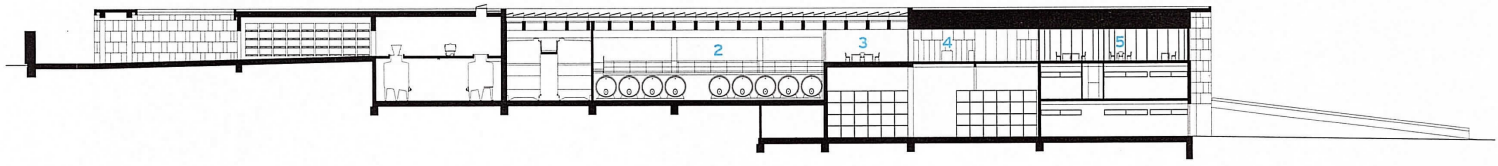




MAIN-FLOOR PLAN

0 30 FT.
10 M.

1 ENTRANCE
2 MAIN CASK HALL
3 TASTING ROOM
4 PUBLIC RECEPTION/WINESHOP
5 OFFICES
6 BOTTLE STORAGE
7 HARVEST COURTYARD
8 FERMENTATION HALL



SECTION A - A

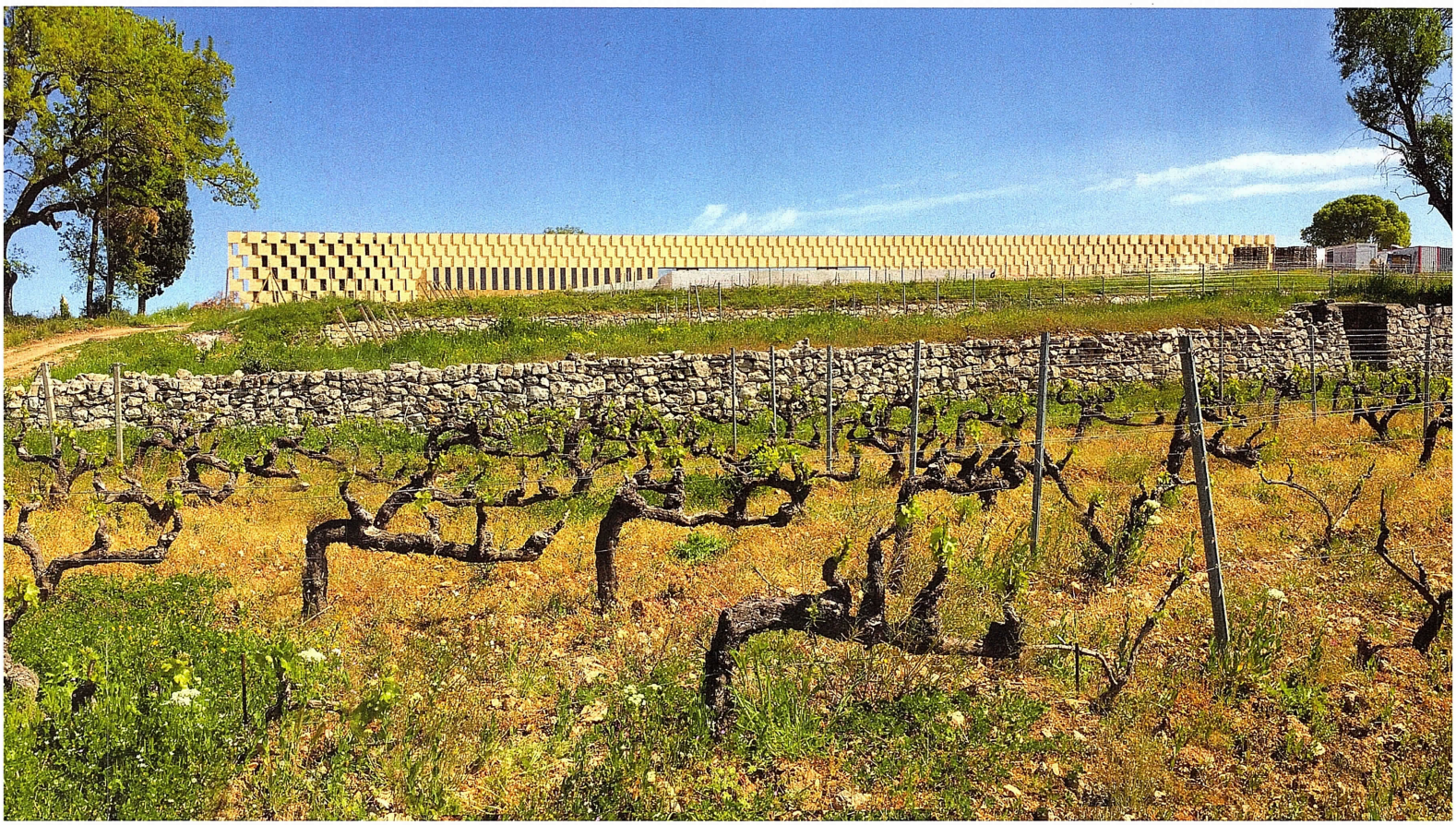
0 30 FT.
10 M.

ALL ABOUT WINE Oak wine barrels serve as the interior's focal point (top, right), made visible through glazed surfaces along the main hallway and in the tasting room (opposite). A sleek steel tasting bar and sinuous birch wall panels add decorative elements to the visitor wing (top, left). The latticed stone facade shields the fully glazed workspaces from the sun (above).

allows visitors to peer into the main display area: a central, double-height space lined with wine casks. Inside, elevated walkways line the room, allowing for a closer look at the winemaking process. From the casks, the wine flows through pipes down to the lower level, where it is bottled and then shipped from the adjacent loading dock. The natural gravitational pull of the building's sloped site aids this system, although stacking and arranging the interior spaces for optimum efficiency was no simple task; the architect consulted with Ducoin over the course of two years to get the layout just right.

The casks can also be viewed from above through a fully glazed wall in the tasting room. Throughout the public spaces, birch plywood ceilings contrast with exposed concrete floors. Birch is also used for furnishings designed by Svenstedt and for undulating wall panels that are both acoustic and decorative. The building's transparent quality is extended to the office area, also on the top level, where workspaces are separated by floor-to-ceiling glazing. There the stone facade acts as a sunscreen, reducing the need for mechanical cooling.

For Svenstedt, whose diverse portfolio comprises residences and cultural and religious projects, as well as sports centers, the winery



GLOWING LANTERN Located at the top of a valley, the building looks down upon the rolling vineyard, appearing as an artificial horizon in the landscape (top). The north facade, faced in slender columns of stone, is the tallest elevation and features a loading dock where wine is shipped directly from the bottling area (above).

typology has provided a new architectural niche to explore—he is currently designing another in Ambonnay, in northern France. "The programmatic requirements for wineries are great, since there's a real technical aspect, but, at the same time, it's like a museum," he says. "It's the best of both worlds." ■

credits

ARCHITECT: Carl Fredrik Svenstedt Architect – Carl Fredrik Svenstedt, principal; Thomas Carpentier, Camille Jacoulet, Clément Nia, design team

ENGINEER: Beccamel Mallard (structural)

CONSULTANTS: Ducoin SAS (winery design); Christophe Ponceau and Mélanie Drevet (landscape)

CLIENT: Les Domaines Ott

SIZE: 45,000 square feet

COST: withheld

COMPLETION DATE: June 2017

SOURCES

STEEL DOORS: Hörmann

EXTERIOR LIGHTING: Bega

FURNITURE: Carl Fredrik Svenstedt; Blå Station; Moooi; Gervasoni

Every Dri-Design panel is carefully manufactured – created without ACM, MCM, or any composite materials. Each Dri-Design product is a single-skin, non-combustible metal panel.

INNOVATIVE. INTELLIGENT. EXTERIORS.

Mill Woods Library, Seniors and Multicultural Centre - Edmonton, Alberta
Architects: Dub Architects and HCMA Architecture + Design

WHY DRI-DESIGN?

Dri-Design Tapered Series panels have the ability to create a unique effect of rich texture, giving buildings their own individual identity. Although painted a single color for the Mill Woods Library project, the multifaceted wall panels allow nature to create its own color palette as natural light reflects differently off each individual piece. Even with this unique look, Dri-Design's signature ease of installation and water management system are maintained, and only a single plane of substrate is needed.

- No sealants, gaskets or butyl tape means no streaking and no maintenance for owners.
- Not laminated or a composite material, so panels will never delaminate.
- At Dri-Design, we have a strict policy of recycling and creating products that the world can live with.
- Fully tested to exceed ASTM standards and the latest AAMA 508-07.
- Available in a variety of materials and colors.

dri-design®
WALL PANEL SYSTEM

616.355.2970 | dri-design.com

Mill Woods Library, Seniors and Multicultural Centre - Edmonton, Alberta
Architects: Dub Architects and HCMA Architecture + Design

ARCHITECTURAL RECORD

WOMEN IN ARCHITECTURE FORUM & AWARDS

OCTOBER 25, 201
NEW YORK, N

JOIN US IN CELEBRATING DESIGN LEADERSHIP

Architectural Record invites you to attend the fourth annual Women in Architecture Forum & Awards on October 25, 2017. This afternoon symposium, followed by a cocktail reception, recognizes and promotes women's design leadership and achievements.

CONGRATULATIONS TO OUR 2017 AWARD RECIPIENTS:

DESIGN LEADER:
Marion Weiss
Founding Partner,
WEISS/MANFREDI

INNOVATOR:
Billie Faircloth
Partner,
KieranTimberlake

NEW GENERATION LEADER:
Elizabeth Whittaker
Founder,
Merge Architects

EDUCATOR:
Sarah Whiting
Dean,
Rice University School of Architecture

ACTIVIST:
Deanna Van Buren
Cofounder and Design Director,
Designing Justice + Designing Spaces

ARWOMENINARCHITECTURE.COM

Reception Sponsors:

AUTODESK

AMERICAN INSTITUTE OF STEEL CONSTRUCTION AISC FOUNDED 1921

SPONSORSHIPS ARE STILL AVAILABLE, VISIT THE WEBSITE FOR DETAILS.

Since 1954, Florida Tile has been an innovator, marking many accomplishments, from building the first floor tile plant in the USA to introducing the first digitally printed products with our HDP–High Definition Porcelain® lines. Throughout our history Florida Tile has been a pioneer, but equally important, we have been a guideline for style. Offering products that are both practical and stylish is what we are all about, and tile never looked so good. Please visit us on the web for more about this product and more at www.floridatile.com.

DISTILLERY HDP High Definition Porcelain

BY

floridatile

floridatile.com

Pure Freude an Wasser

GROHE

new

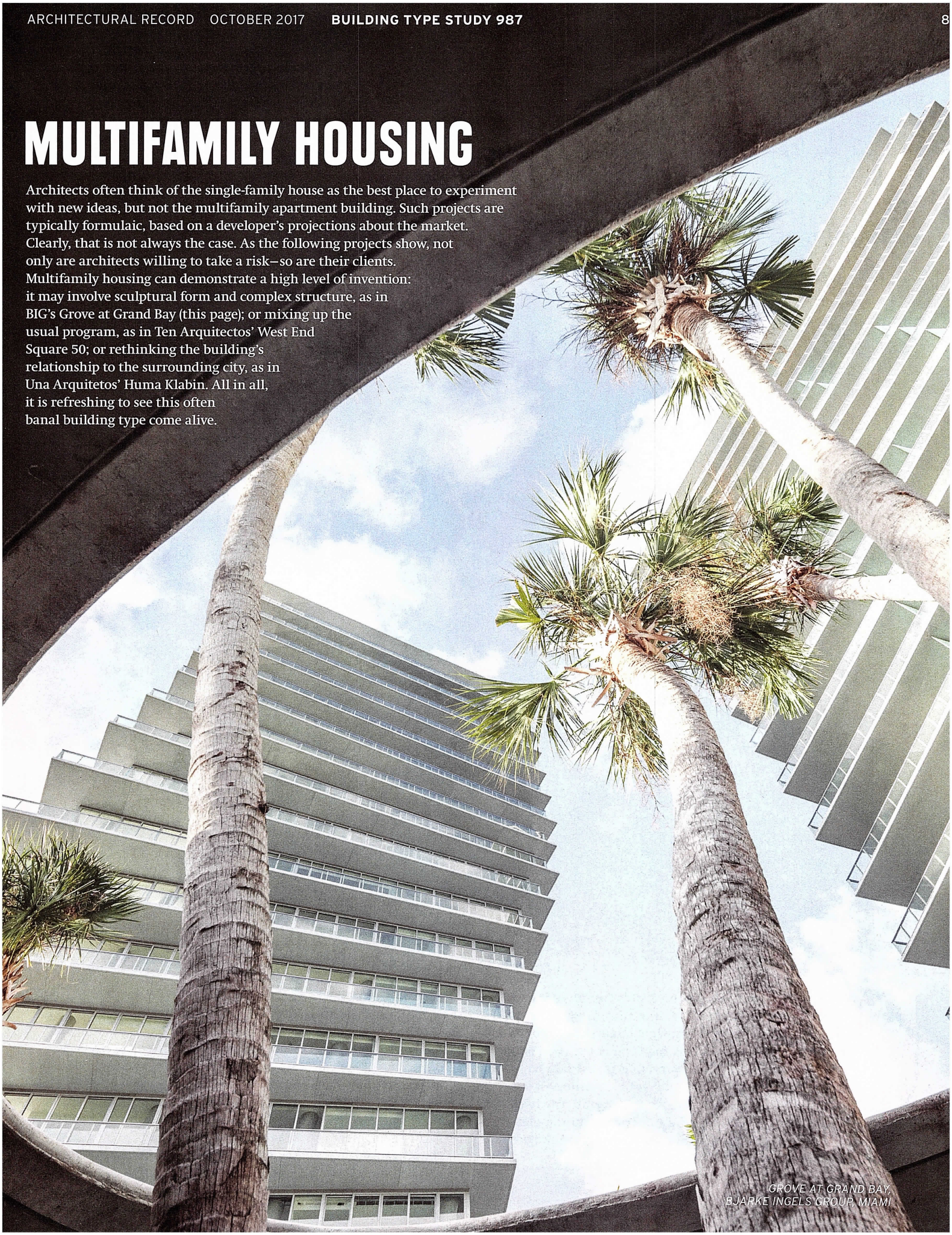
THE MODERN **CLASSIC**

GROHE MINTA

GROHE is adding a NEW pull-out faucet with a striking L-shaped swivel spout to its successful Minta collection. Thanks to GROHE SilkMove technology, smoothest handling for effortless precision and ultimate comfort are guaranteed for a lifetime. Available as a manual faucet, with touch activation or with Foot Control technology for hands-free operation – the choice is in your hands. **www.grohe.us**

MULTIFAMILY HOUSING

Architects often think of the single-family house as the best place to experiment with new ideas, but not the multifamily apartment building. Such projects are typically formulaic, based on a developer's projections about the market. Clearly, that is not always the case. As the following projects show, not only are architects willing to take a risk—so are their clients. Multifamily housing can demonstrate a high level of invention: it may involve sculptural form and complex structure, as in BIG's Grove at Grand Bay (this page); or mixing up the usual program, as in Ten Arquitectos' West End Square 50; or rethinking the building's relationship to the surrounding city, as in Una Arquitetos' Huma Klabin. All in all, it is refreshing to see this often banal building type come alive.



GROVE AT GRAND BAY, BJARKE INGELS GROUP, MIAMI

Grove at Grand Bay | Miami | Bjarke Ingels Group

Let's Do the Twist

A pair of towers uses inventive architecture and engineering to swivel in place.

BY SUZANNE STEPHENS

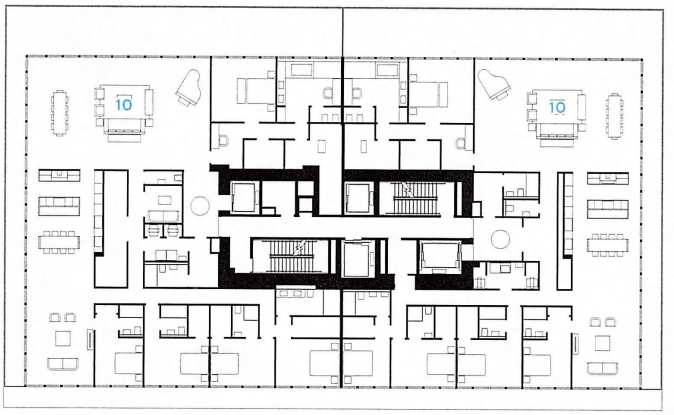
PHOTOGRAPHY BY RASMUS HJORTSHØJ

Until Hurricane Irma hit on September 10, the most striking aspect of the Grove at Grand Bay in picturesque Coconut Grove, south of Miami's downtown, was the unconventional twisting form of the two condominium towers. Now attention is focused on how well the pair (among others) survived 100-mile-an-hour winds and a 4-foot storm surge. "Overall, the two structures did extremely well—including their hurricane-impact glass," reports Jason Gilg, senior development manager with the project's Miami-based developer, Terra.

With its design, the Danish firm Bjarke Ingels Group (BIG) jettisoned the typical rectilinear high-rise and a straightforward, gridded plan. Instead, the firm conceived of two 20-story residential buildings of reinforced concrete where floor plates rotate as they rise from the second to the 17th level, capturing the views of Biscayne Bay. The tight three-acre site on which a hotel once stood posed a challenge to BIG: only the short end of the property faces the ocean, and zoning restrictions affect building height and setbacks. The answer was to place the 99 luxury apartments in twin towers.

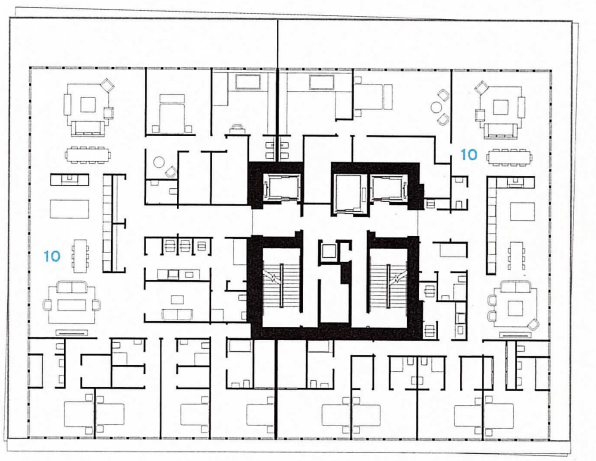
The only problem was that it would be hard for the apartments in

CRANING FOR THE VIEW The two 20-story towers at Grove at Grand Bay, designed by Bjarke Ingels Group, gracefully swivel upward at an angle that affords panoramic views of Biscayne Bay (this page). The lushly swirling landscape design, including a coiled canopy with a planted roof connecting the two towers, is by Raymond Jungles. The towers sit on a podium (opposite) enclosing a two-story garage.

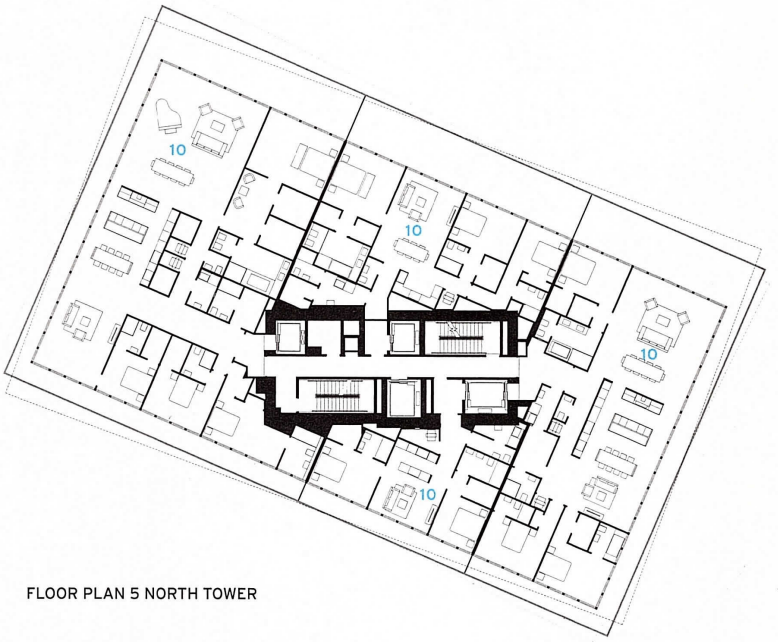


FLOOR PLAN 19 NORTH TOWER

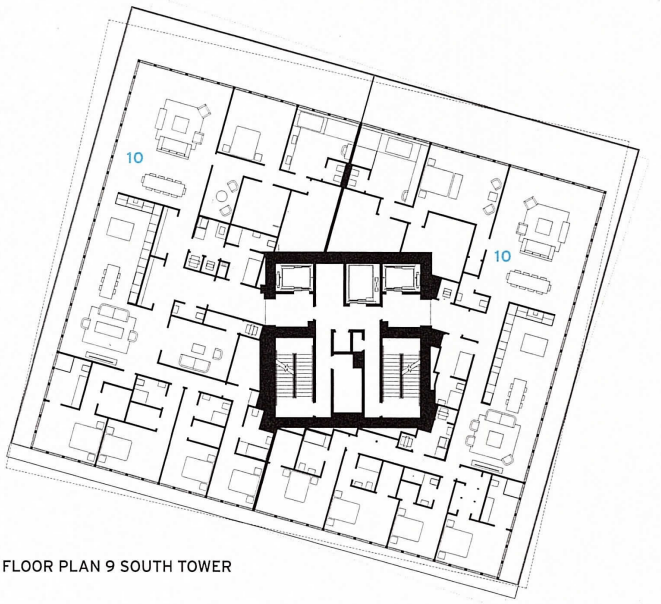
0 20 FT. 6 M.



FLOOR PLAN 16 SOUTH TOWER

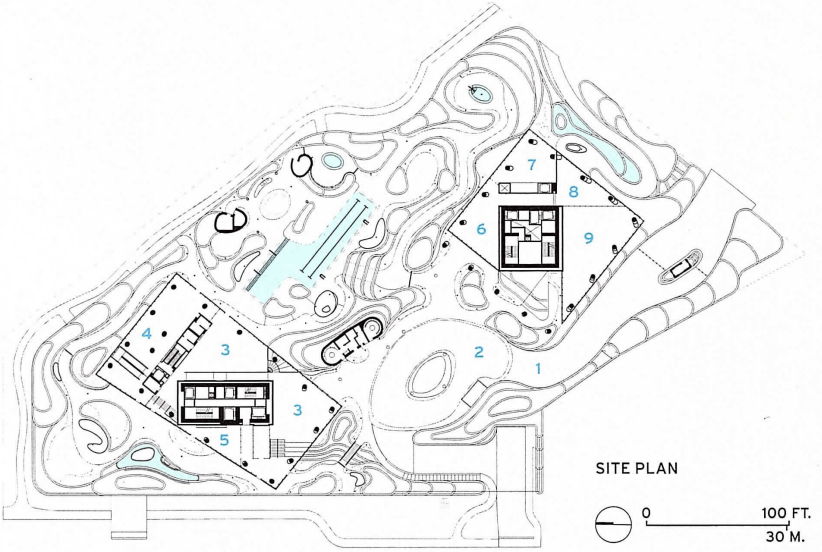


FLOOR PLAN 5 NORTH TOWER



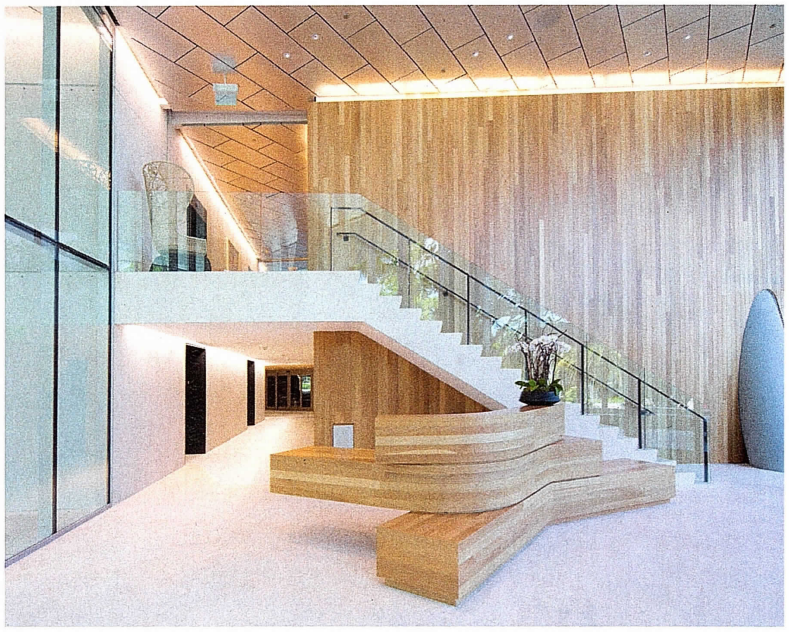
FLOOR PLAN 9 SOUTH TOWER

1 ENTRANCE DRIVE
2 CANOPY
3 NORTH TOWER LOBBY
4 FITNESS ROOM
5 TEEN/KIDS ROOM
6 SOUTH TOWER UPPER LOBBY
7 PRIVATE DINING ROOM
8 SOUTH TOWER LOWER LOBBY
9 FLEX SPACE
10 APARTMENT



SITE PLAN

0 100 FT. 30 M.



MULTIPLE MOMENTS The lobbies of both the North Tower (above) and the South Tower (right) reflect the respective rectangular and square footprints of the two buildings. Exposed concrete columns pierce a custom metal-paneled ceiling and then erupt through the oak-paneled walls to give the interiors architectural drama.

the north tower to have the same views as those in the south one, which is closer to the water, unless something unusual occurred. By swiveling the floors two-thirds of the way up and giving the south tower a square footprint that was smaller than that of the rectangular north one, the architects could provide spectacular views to almost all the occupants. (Only seven smaller units don't have water views.) In addition, open-plan apartments with 12-foot-high ceilings make you feel as if you are sailing on a large yacht. And when you step onto one of the deep, cantilevered balconies that can extend out as much as 12 feet, it's as if you are perched on a tall mast overlooking the marina and the bay beyond.

Yet Terra knew that the water views and the location—historically an artsy enclave of bungalows, overgrown with palms and banyan trees—were not enough in a competitive market. Amenities—including a spa for adults and a spa for pets—also were not enough. The design had to be distinctive to attract a sophisticated, super-affluent clientele, for apartments that average 4,000 square feet. Terra wanted a high-flying architect.

BIG, known for its startling, large-scale formal gestures, such as the looping 8 apartment house in Copenhagen (RECORD August 2011, page 44) or the pyramidal Via 57 West in New York (RECORD, September 2016, page 162), was a natural choice. (Terra also commissioned Rem Koolhaas's firm OMA to design the three-tower Park Grove close by. Now nearing completion, it is also a hardy survivor of Irma.)

The angled scheme that firm principal Bjarke Ingels came up with has the dynamic quality of his previous work, but is more elegant in its expression of excitement. It helps that the firm was involved with the design of certain interiors, including the lobby, which features crisp, custom metal-paneled ceilings, white oak cabinetry, and contemporary modern furniture. Furthermore, the developer cared about finishes: when the interior's exposed concrete turned out to be grotty in places, the company brought in German artisans to refine the surfaces.

The landscaping around the towers and on the roof of the coiled, concrete entrance canopy, which links the two lobbies, adds to the sense of luxe. Miami-based landscape designer Raymond Jungles has created an homage to the Brazilian Roberto Burle Marx at the Grove. While some of Jungles's swirling extravaganza of native trees and plants were lost to Irma's brute power, they should be replaced soon.

One of the most impressive aspects of the project—especially in light of "Irmageddon"—is the engineering. BIG's rotational scheme presented a huge challenge to DeSimone Consulting Engineers. On the floors that twist, DeSimone and BIG agreed that 30-inch-diameter concrete

SCULPTURAL EMPHASIS The slanted concrete columns in the living room (top) and entrance (above) punctuate an art collector's apartment in the North Tower. The curved and cranked twin structures (opposite) add drama even at the garden level.

columns placed for the most part at the perimeter, should slant diagonally. If they were left as vertical supports, says Ingels, they would "have ended up in weird locations. This way, they tilt, but occupy the same location on each floor." And rather than hiding them and "diminishing the drama," he adds, "we left the columns exposed to look like art pieces."

But with this concept, the team had to mitigate the torsional forces resulting from the sloping columns while countering hurricane wind loads. "We would have needed 6-foot-thick concrete shear walls at the

credits

ARCHITECT: Bjarke Ingels Group – Bjarke Ingels, Thomas Christoffersen, partners in charge; Leon Rost, project leader; Ziad Shehab, project manager

ASSOCIATE ARCHITECT: Nichols Brosch Wurst Wolfe & Associates

ENGINEERS: DeSimone Consulting Engineeers (structural); VSN Engineering (civil); Hufset-Nicolaides-Garcia-Suarez (m/e/p); Langan Engineering & Environmental Services (geotechnical); RWDI (wind)

CONSULTANTS: Raymond Jungles (landscape); Spinnaker Group (sustainability); Lerch Bates (elevator)

CLIENT: Terra Group

SIZE: 890,000 square feet

COST: $400 million

COMPLETION DATE: December 2016

SOURCES

HURRICANE-IMPACT GLASS: Vitro, Tecnoglass

STONE FLOORING: Epic Stoneworks

BATHROOM FIXTURES: Duravit, Hansgrohe

elevator core," says Abdul Mohammad, senior project manager for DeSimone. Since Terra wanted the maximum real estate, worth about $1,200 per square foot in sales, the engineers came up with a composite core of concrete and steel internal plates for the shear walls, keeping them at 30 inches thick.

To further reduce torsional forces, the team created a hat truss for each roof, where girders are cantilevered from the tower cores and connected to the columns. They in turn are suspended in tension at the uppermost levels. Other measures were taken to add more stability to the complex. For example, to reduce building movement, the floor plates are cambered, or slightly arched, in relation to the floor below. Because of soft soil conditions for the heavy loads, the engineers installed scores of pressure-injected auger-cast piles, averaging 80 feet in depth, below the three-story podium and its two levels of parking. Since the property is located in a flood zone, they also inserted a post-tensioned hydrostatic basement slab, useful in facing Irma.

Fortunately, the client was committed to the extra outlay of money for this kind of endeavor. Terra calculated that even if the costs for the $400 million project were more than 18 percent over normal construction expenses, the hefty prices of the condos—$3 million to $25 million—would cover cost overruns. (All, except for one penthouse, have been sold.)

Besides its sense of luxury, Grove can claim LEED Gold status. Measures involve reducing the use of potable water for irrigation by almost 80 percent and having heating and cooling systems rely on high-efficiency chillers and variable-speed exhaust. At least 30 percent of the materials are recycled or locally sourced.

While the ravages of Irma took their toll, the episode demonstrated that the extra investments were worth it. "In engineering, everything is possible," says Mohammad. The interaction between architects and engineers proved to be an impressive example of collaboration, with one side dreaming up a challenging concept and the other making it work and taking it to another level. The result is a graceful work that appears effortless—and even stands up in high winds. ■

House Z22 | Zurich | Gus Wüstemann Architects

The Past Laid Bare

The conversion of a 170-year-old single-family house and adjacent workshops into apartments is a study in contrasts.

BY HUGH PEARMAN

PHOTOGRAPHY BY BRUNO HELBLING

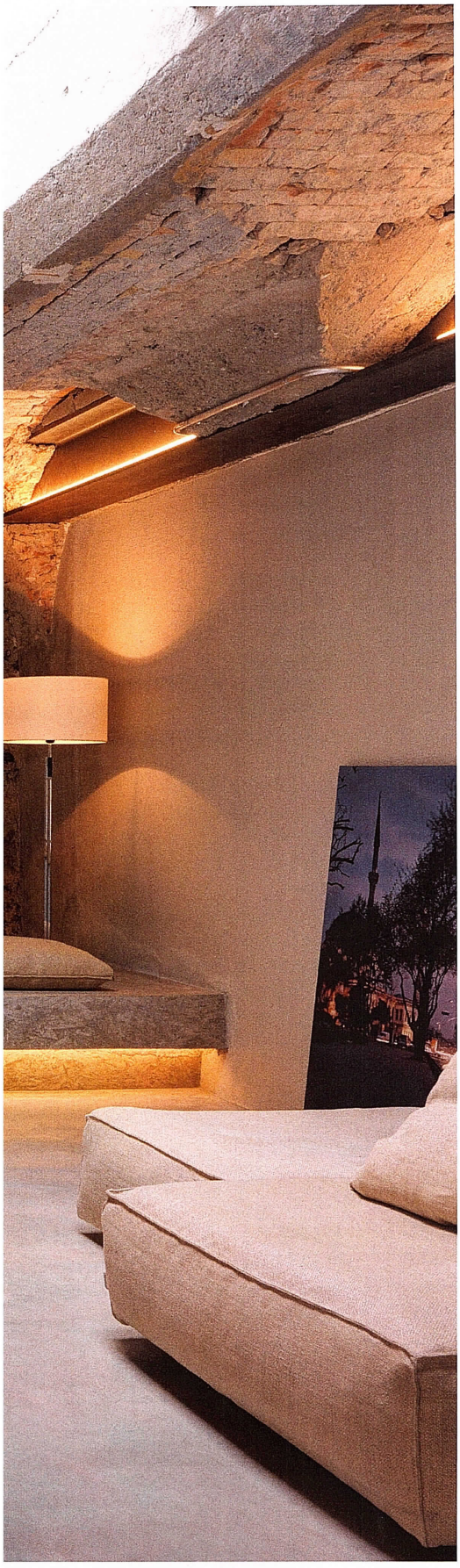
Regardless of the city, historic protection for a particular district typically restricts exterior alterations but allows much more freedom within buildings. This often results in a standard sleek-modern interior of the kind beloved by real-estate agents. Not so for the renovation of the Z22 House in Zurich. Architect Gus Wüstemann, a Zurich native who also runs a studio in Barcelona, has taken a thoroughly subversive approach to a 170-year-old, three-story house. What's the most radical and at the same time most conservative thing he could do? His answer: strip the building's interiors right back to their original structure and leave them as far as possible like that.

On the exterior, this house in the Riesbach neighborhood, toward the southern edge of the city's center, looks like many of the plainer mid-19th-century buildings in what is now an affluent district. Set a little way up the hillside overlooking the clear waters of Lake Zurich, nothing seems remarkable from the sidewalk: a pedimented neoclassical frontage, a white stucco facade, wood-framed windows, and a pitched roof. But when Wüstemann produces his bunch of keys and lets you in, you step into something that is a celebration of raw structure.

This is the "scrape-and-reveal" aesthetic taken to extremes. The moment when an old house is thoroughly gutted, just before all the usual new plastering and drywall and joinery and painting are done, before all the hard flooring and gleaming white porcelain plumbing fixtures arrive—that moment is what Wüstemann has chosen to freeze as his aesthetic and philosophy.

As we walk around the apartments, he is eloquent about this. "It's all about values in architecture—working against the idea that the end result must look perfect," he says. "It's a kind of therapy: get rid of everything, strip

HIDDEN WORLD From the outside (above), Z22 House looks like many of the other 19th-century buildings around it. But the inside (opposite) has been scraped back to its core, with rubblestone walls and other structural elements left exposed.



RAW AND REFINED The roughness of the masonry walls, found throughout the project, and the vaulting in the former workshops (above and left), contrasts sharply with the new poured-in-place concrete floors and the precast concrete plumbing fixtures. These were manufactured off-site to ensure their precise dimensions.

everything right back to the core. Then you start to see who you are."

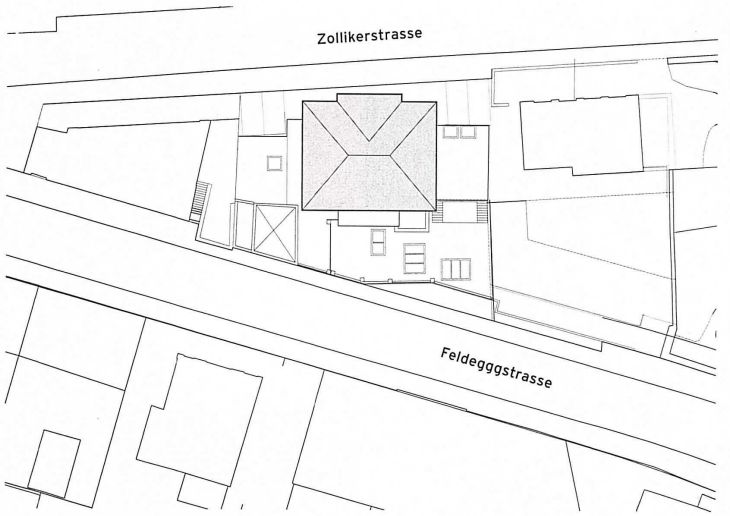
The building was his client's family home, though it is in fact a small complex. While the main house has its front door on the next street up the hill, its site included a row of industrial workshops down below on Feldegg street (the name translates as "field corner," a remnant of the time when the area was a new suburb). They comprised a car paint shop and storage. Wüstemann has united the two zones by converting the workshops to small "atelier" apartments, bringing daylight in from above via skylights set into a new terrace that is shared by some of the living units in the main house. The only other significant external change is the addition of a new concrete balcony at second-floor level on the back of the old house.

Up to this point, it is a standard exercise: maximize rental returns by squeezing in the greatest number of apartments—five in the main house and four in the workshop zone below. What makes it very different are the interiors.

Wüstemann has worked hard to reveal and preserve the interior structure—which includes brick vaulting and recently added steel columns and beams in some of the former workshops, and, in the main house, rubblestone walls, and timber beams, floorboards, lintels, and attic rafters. He has done this throughout with seemingly unfinished surfaces: the original rough masonry and its lime mortar have been sprayed with a dust stabilizer that leaves no visible trace, while new sliding doors and partitions made of pine and (in the ateliers) oriented strand board (OSB) are treated with a clear lacquer.

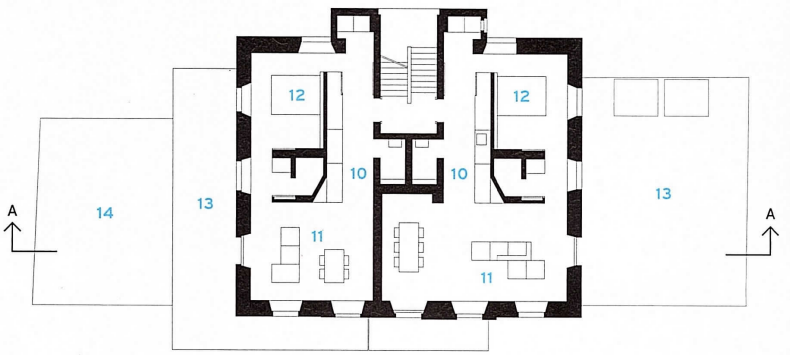
OSB was also used as formwork to provide a textured finish on some of the cast-in-place concrete, such as on island kitchen counters. Concrete is one of the main new materials, for smooth floors (with radiant heating) and built-in benches in the ateliers. There Wüstemann has created what he calls a "topography" that defines the various areas for living, dining, and ablutions. Precast sinks and baths, fabricated off-site by a specialist manufacturer to achieve a smooth finish and precise dimensions, are found throughout.

Services risers (pipes, ducts, and conduits) are generally concealed behind double-walled polycarbonate, which also acts, via concealed



SITE PLAN

0 30 FT. 10 M.



APARTMENTS 5 & 6 PLAN

0 10 FT. 3 M.

SECTION A - A

0 10 FT. 3 M.

1 ATELIER 1
2 ATELIER 2
3 ATELIER 3
4 ATELIER 4
5 APARTMENT 5
6 APARTMENT 6
7 APARTMENT 7
8 APARTMENT 8
9 ATTIC
10 KITCHEN
11 LIVING
12 BEDROOM
13 TERRACE
14 GARDEN

luminaires, as a light source (most of the illumination is indirect, and the sources are LEDs or fluorescents). Wüstemann has also been ingenious in the way he has maximized usable space in what are fairly small apartments of some 540 square feet. Legally required enclosed storage, for instance, doubles as circulation, with shelves and space for hanging clothes hidden behind sliding doors on either side of a corridor. Thick pine kitchen worktop sections smoothly slide out to reveal cooking ranges below.

Because the old rubblestone walls of the house are over 3 feet thick and stucco-coated on the exterior, no internal or external insulation was required. New high-performance timber-framed triple-glazed units, with traditional vertically sliding exterior shutters, were simply inserted into the existing window apertures.

The "as found" feel runs from the most cavelike workshop apartment to the daylight-filled attic. It takes considerable skill and effort to convincingly pull off such an approach. But Wüstemann succeeds with brio. "It's all very analog and organic," he suggests. Not for everyone, perhaps, but tenants have bought into the lifestyle, with all the apartments rented. ■

Hugh Pearman is a London-based architecture critic and the editor of the RIBA Journal.

credits

ARCHITECT: Gus Wüstemann Architects – Manuel Greter, Bianca Kilian, Valentin Kokudev, Daniel Pelach, Panagiota Sarantinoudi, Gus Wüstemann, project team

ENGINEERS: Born Partner AG (structural), Frei + Partner (m/p)

BUILDER: Corti AG

CLIENT: withheld

SIZE: 10,000 square feet

COST: withheld

COMPLETION DATE: February 2017

SOURCES

PLASTER: Agosti

ROOF TILES: Cremer Bruhin

WINDOWS: Huber Fenster

SKYLIGHTS: Cupolux

OSB PANELS: Gebert Möbelgestaltung

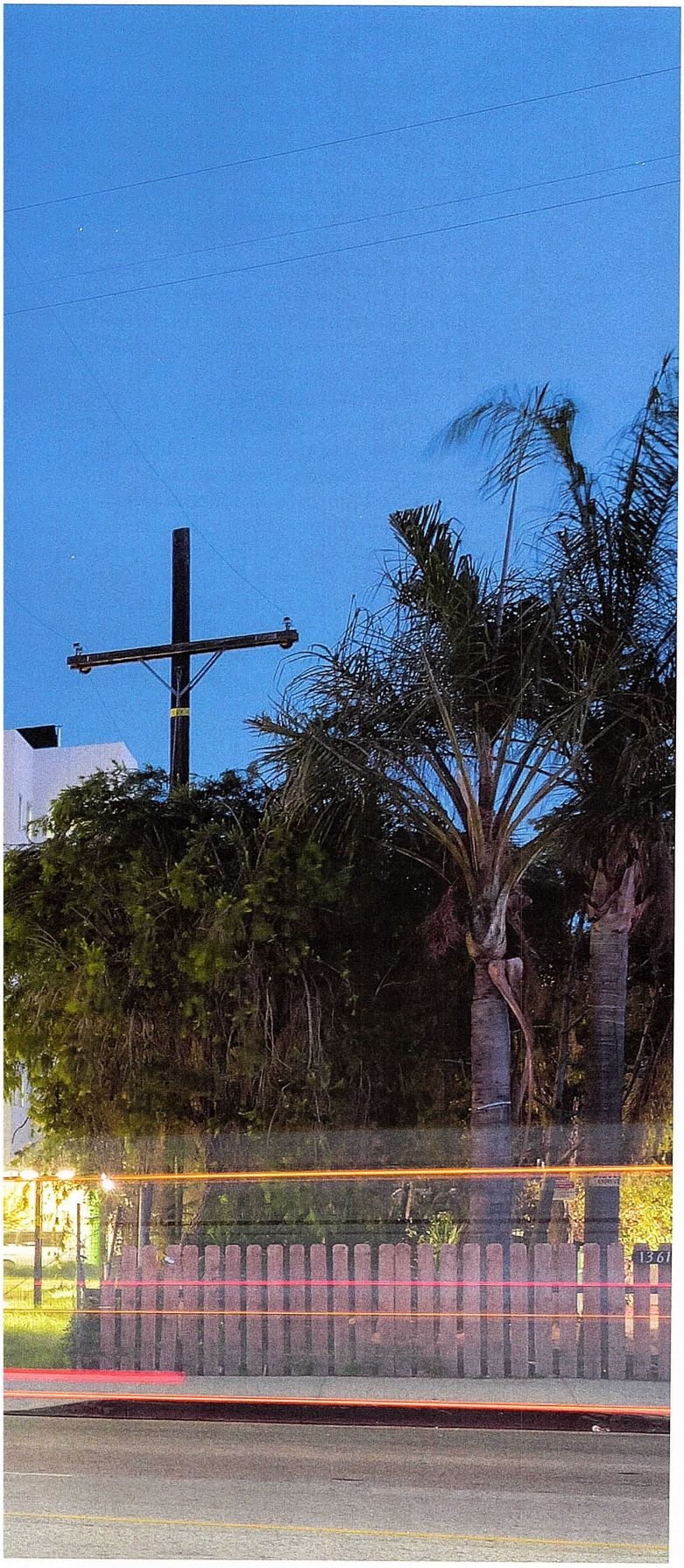
CONCRETE FURNITURE: Dade Design

LIGHTING CONTROLS: Spinaled Ribag, Melcom

SLIDING DOORS: Skyframe

UNFINISHED FINISH
New pine and OSB woodwork has been treated only with clear lacquer. The old masonry walls in the attic (above), a second-floor apartment (right), and masonry surfaces throughout the project have been sprayed with a dust stabilizer that leaves no visible trace. The walls, which are more than 3 feet thick, are not insulated. However, new high-performance wood-framed windows have been installed in the existing apertures.

13604



Crest Apartments | Van Nuys, California | Michael Maltzan Architecture

Speaking Volumes

An architect designs a fourth low-cost housing project for a longtime client, this one outside the urban core.

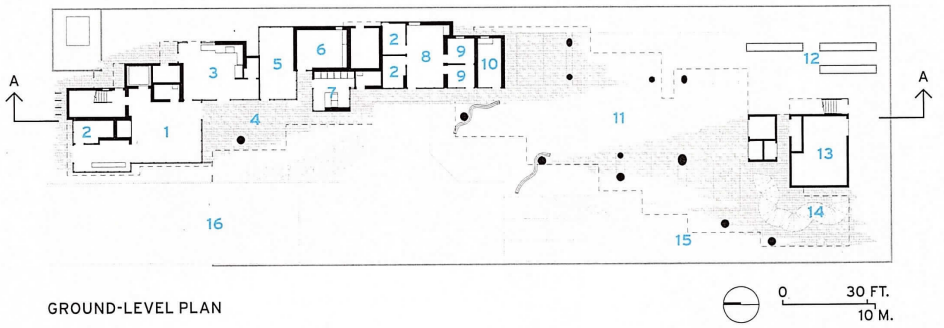
BY SARAH AMELAR

PHOTOGRAPHY BY IWAN BAAN

As Crest Apartments in Van Nuys, California, neared completion, this glowing-white, crisp-lined building—with its gently arcing cluster of volumes—began to attract inquiries from market-rate renters. But, as those aspiring tenants soon learned, this was actually permanent supportive housing for formerly homeless men and women. Crest's owner-developer, the Skid Row Housing Trust (SRHT), has always considered innovative, high-quality design fundamental to its philosophy and goal of creating places of pride for both its residents and their neighbors. "Yet, interestingly enough, this had one of the tightest budgets of the four residential projects we've done for the Trust," says architect Michael Maltzan. "Clearly, we had to be inventive with modest means, but I also think people were responding to an underlying familiarity—to a familiar approach reinterpreted."

In transformative ways, Crest took design cues from "dingbats"—the

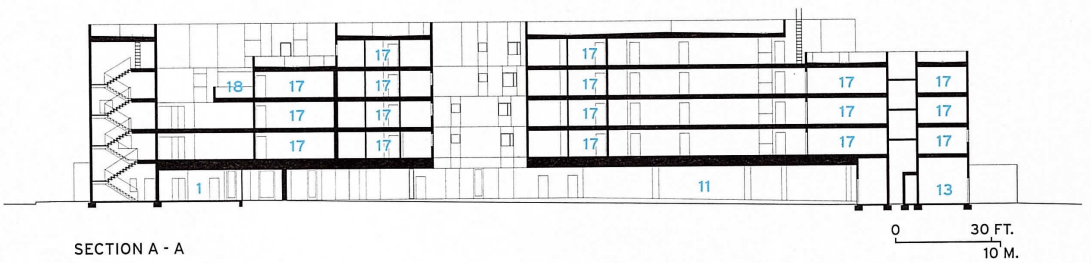
TIGHT SITE Crest's deep, narrow parcel extends from a busy commercial strip (left) to a single-family residential neighborhood (above). Along the street, a stair tower rises alongside the volume housing the glass-enclosed lobby at grade. The rooftops incorporate outdoor terraces, as well as PV and solar-thermal panels.



GROUND-LEVEL PLAN

THIRD-LEVEL PLAN

FOURTH-LEVEL PLAN



SECTION A - A

much-derided low-rise apartment buildings common in Van Nuys and the surrounding San Fernando Valley. Across this sprawling suburban area northwest of downtown Los Angeles, dingbats follow a classic formula: boxy, cheap-looking, and raised on columns to accommodate parking. Like those low-cost structures, Crest is modest in height (five stories), covered in stucco, and built (at least partially) on pilotis to free up the ground plane, but the similarities end there. Crest's skin is smooth, luminous, and precisely detailed; its massing is complex and subtle; and instead of hovering above barren concrete paving, the 45,000-square-foot building allows landscaping to thrive beneath and around it.

"We learned from our other supportive housing for the Trust," says Maltzan, "how important outdoor space is to a sense of community, and how essential community is to recovery." But with those previous projects, all built since 2006—Rainbow, New Carver, and Star Apartments (ARCHITECTURAL RECORD, June 2015, page 88)—the designers had to eke out open-air opportunities within dense urban settings. By contrast, Crest had the advantage of being SRHT's first project far from the downtown core, bordering on suburbia. Nonetheless, its roughly rectangular parcel was tight: nearly 300 feet deep with only 90 feet of street frontage, it had to fit in a code-mandated fire lane and firetruck turning radius.

Yet the constraints ultimately drove key design moves, including the arcing footprint to accommodate fire-rig maneuvers. And the emergency-lane conundrum inspired the architects to rethink a cost-saving convention, elevating the locally ubiquitous dingbat into an organic integration of landscape and building.

The resulting $23.6 million project (with $14.2 million in construction costs) is a modified bar configuration: a sculptural, curving cluster of

1 LOBBY
2 OFFICE
3 COMMUNITY KITCHEN
4 COMMON AREA
5 COMMUNITY LOUNGE
6 CONFERENCE ROOM
7 LAUNDRY ROOM
8 SOCIAL SERVICES
9 CLIENT ROOM
10 BREAK ROOM
11 PARKING
12 COMMUNITY GARDEN
13 MECHANICAL ROOM
14 BICYCLE PARKING
15 BIOSWALE
16 VEHICULAR ENTRY
17 APARTMENT
18 TERRACE

CLUSTERED COMPOSITION The massing—an arcing set of volumes—modulates the scale while defining varied outdoor spaces (above). The lobby (right) connects visually and spatially with the site's landscape.

blocky volumes that read together as a whole while mediating, in their varied heights, between the busy commercial strip fronting the site and the single-family residential neighborhood behind it. Freestanding within the lot, the bowed footprint generated diverse and protected outdoor congregating spaces, including one for barbecuing and another for community gardens. "Giving people options, letting them make decisions for themselves tends toward the best outcomes," says SRHT CEO Mike Alvidrez.

Inside, Crest's street-level amenities—its airy lobby, lounge, communal kitchen, laundry room, and supportive-service offices—have a glassy transparency, connecting them to the outdoors. With native tall grasses and other drought-tolerant plantings, the grounds, by project landscape architect Tina Chee (then a senior designer with SWA) embrace the inherent beauty of vacant lots—what Maltzan calls "feral" or "survivor" landscapes. "It's full of

credits

ARCHITECT: Michael Maltzan Architecture – Michael Maltzan, design principal; Tim Williams, principal in charge; Ed Tung, job captain; James Leng, project designer; Benjamin Ruswick, Hiroshi Tokumaru, Jessica Tracey, Joseph Saccomanno, Igor Kitsen, project team

CONSULTANTS: John Labib + Associates (structural); Breen Engineering (civil); Khalifeh & Associates (m/p); OMB Electrical Engineers (electrical); SWA Group (landscape); Newson Brown Acoustics (acoustics); Exponent (f/s); Office42 (interiors)

GENERAL CONTRACTOR: Benchmark Contractors

CLIENT: Skid Row Housing Trust

SIZE: 45,000 square feet

PROJECT COST: $23.6 million

COMPLETION DATE: July 2016

SOURCES

STOREFRONT GLAZING: Arcadia

WINDOWS: Western Windows

MOISTURE BARRIER: Dupont

STUCCO: LaHabra

PAINTS AND STAINS: Dunn Edwards

RESILIENT FLOORING: Armstrong

self-seeding and regenerative plantings that parallel Crest's mission," says Chee. Underfoot surfaces, even the fire route and parking spots, are pervious, universally accessible, and sprouting with vegetation. Bioswales, capturing site rainwater and runoff, are among the features that earned Crest LEED Platinum certification.

Upstairs, the wood-frame building, with concrete structure at grade, has 64 studio apartments, housing formerly homeless people with chronic health conditions (36 percent of the units are set aside for veterans). Maltzan says he's always avoided "the bleak institutional trope of double-loaded corridors." But Crest's site restrictions left few alternatives. So his team rethought the condition, giving it wide passageways (that also serve as gathering spaces), punctuated by light wells, open-air terraces, and journey-enhancing bends in the path. Similarly resourceful are the many transformations of low-cost materials and components, including expressive arrays of simple, off-the-shelf fluorescent fixtures. And, amid Crest's primarily white vertical surfaces, deftly placed planes of color generate atmospheric and spatial effects. Animated by sunlight, these insertions of yellow, green, or blue alter the reading and character of an entire passage, bouncing color against the white stucco walls and polished concrete floors. Extending the journey metaphor, the studio apartments (offering full kitchens, large bathrooms, and generous daylight) have U-configurations for spatial variety within a single room.

With such projects, however, "there's often a question of how they'll fit into the community," says Alvidrez, underscoring SRHT's commitment to being good neighbors. "We tend to encounter initial trepidation about formerly homeless residents." All the more reason, he says, to deploy "great design to begin changing negative perceptions." But even he was surprised that Crest won over not only locals, but adjoining neighborhood councils. "They were all at the grand opening," he continues. "It really wowed them."

Now in operation about one year, Crest looks bright, clean (even stylish), inviting tenant interaction while also providing for quieter, more solitary activity. The resident-tended planting beds are burgeoning with tomatoes, basil, cantaloupes, zucchini, and peppers, mostly grown from seeds salvaged from kitchen scraps. In a recent conversation, one enthusiastic gardener—noting the quality of the apartments and outdoor areas as well as Crest's proximity to such conveniences as a supermarket and dedicated biking and walking path—gave the place high marks. "Man," he mused, "someone really thought this out." ■

COLOR THEORY Throughout the building, occasional shots of color reflect off surrounding white stucco walls, generating atmospheric effects, as in a stairwell (above) or exterior light well (left). The apartments (opposite) are all light-filled studios with full kitchens—a key amenity for achieving stable lifestyles, as earlier SRHT projects revealed.

Huma Klabin | São Paulo | Una Arquitetos

About Face

An apartment building engages with its neighbors, rather than turning its back on them.

BY TOM HENNIGAN

PHOTOGRAPHY BY NELSON KON

With its first foray into São Paulo's high-rise residential market, local architecture practice Una has daringly rethought the role of this signature building type in Brazil's biggest metropolis.

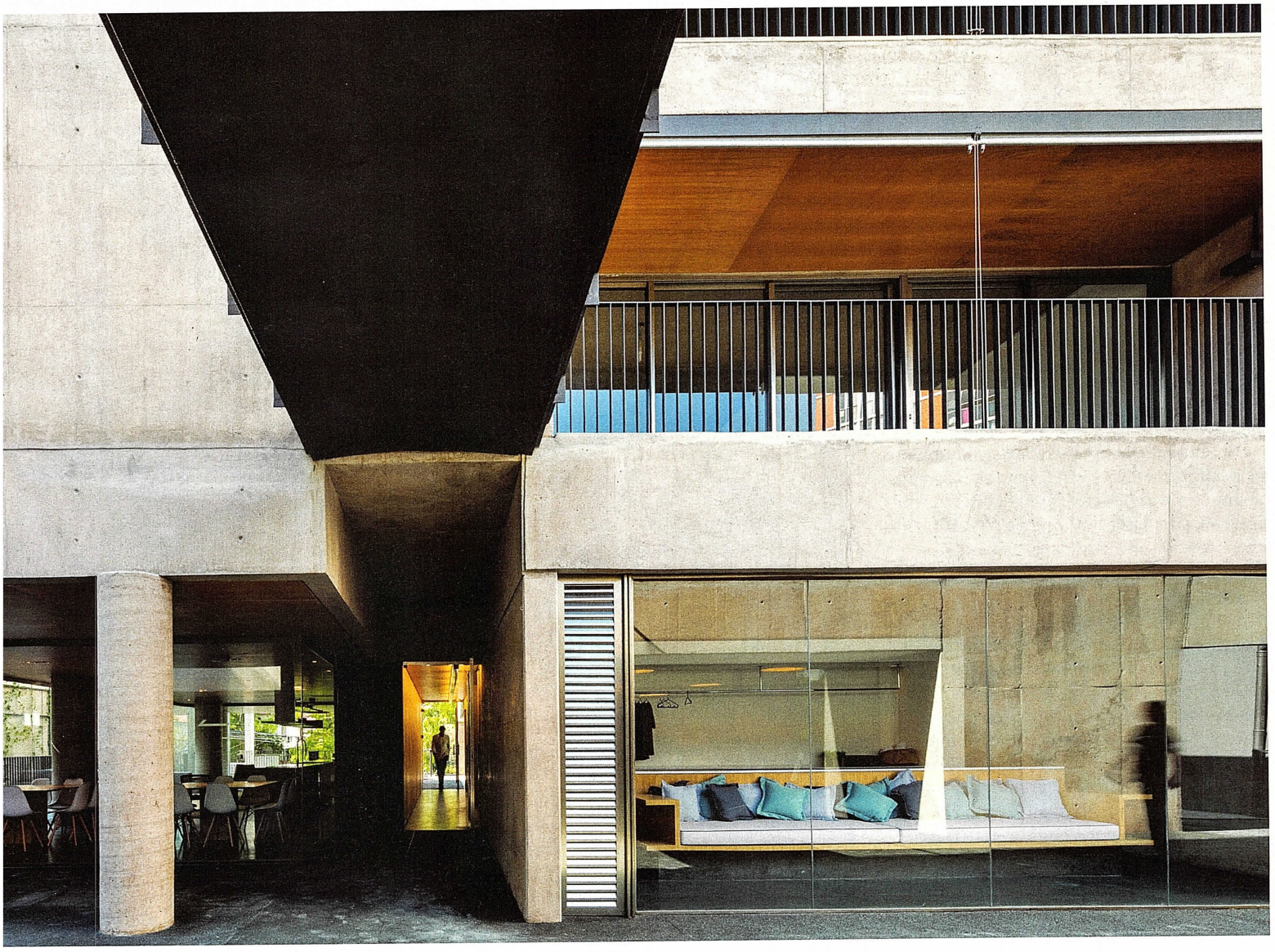
In recent decades, most apartment complexes built in São Paulo sought to isolate residents from their wider environment. But Una's latest project, Huma Klabin (a moniker that combines the real-estate developer's name with that of the surrounding neighborhood) instead strives for harmonious integration with it. With this goal in mind, its creators have delivered a 12-story concrete tower that is a built expression of an exciting cultural moment when *paulistanos* are rethinking their relationship with the city.

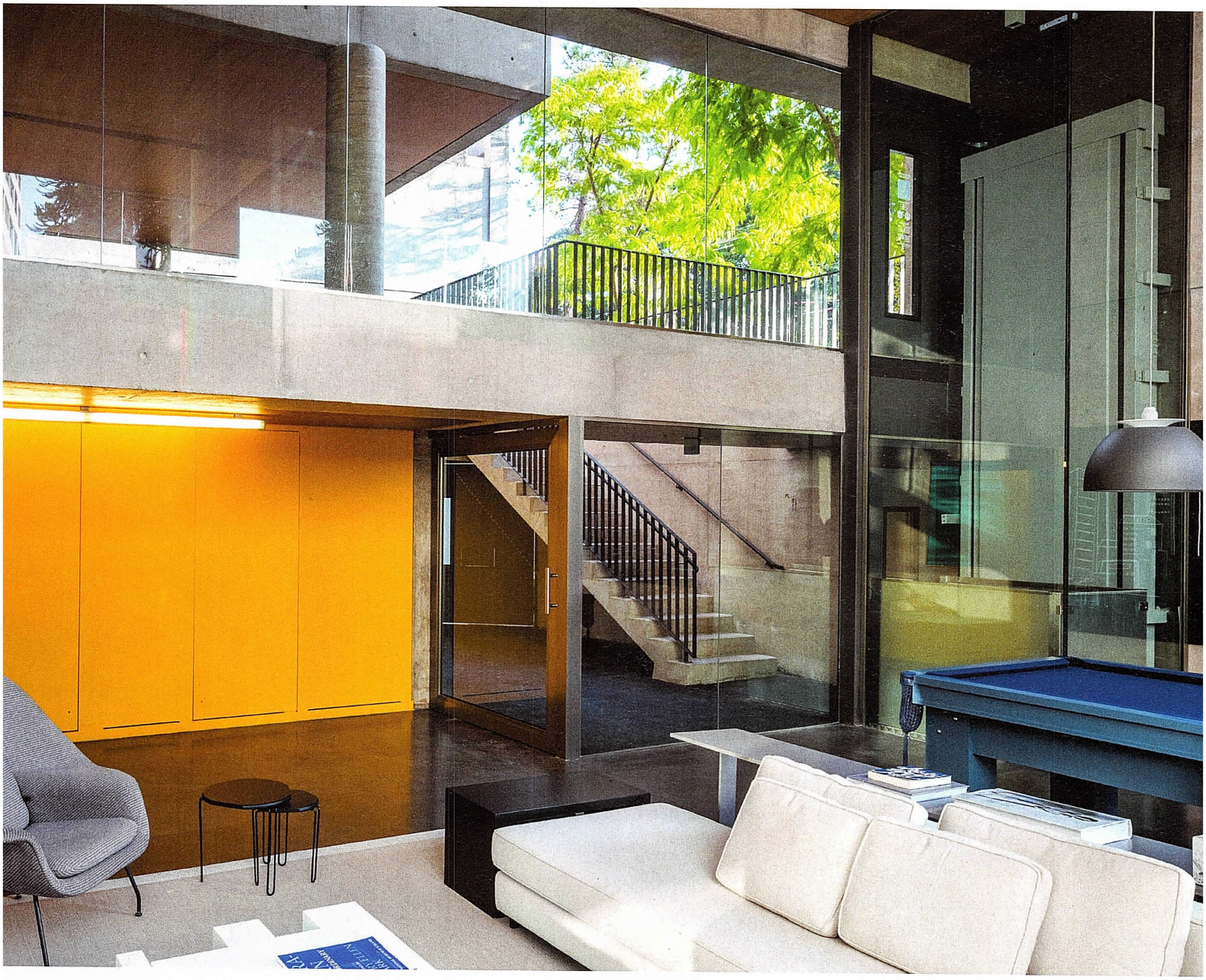
Huma Klabin's unique approach announces itself immediately. Defying the paranoia about crime and security that demands the typical apartment building be cut off from the sidewalk by intimidating walls and fences, the building instead offers a welcoming gesture. In front of its discreet entrance, a small tree-shaded public courtyard provides an inviting space for both residents and neighbors. In another urbanistically astute move, the architects carefully sited the building—which is composed of two towers joined by an elevator core—on its irregularly shaped lot to best take advantage of the breathing space offered by the adjacent properties' gardens and access routes. By doing so, the team could be generous

LINKED IN The building, two towers connected by an elevator core (opposite), plays with solid and void. The double-height lobby is visible through its glass front (right) and looks out onto the landscaped garage entry.

with balconies and windows on all four sides of the building—no one elevation is prioritized. In addition to providing residents with better views and light, this move benefits the neighborhood by flouting the norm of anonymous facades punctured with small service windows often no bigger than ships' portals. These sorts of sensitive solutions are not surprising coming from Una, whose work, up to this point, had focused on public and cultural projects. "We want our building to have a strong relationship with its city," says the firm's director, Fernando Felippe Viègas. "There is a beautiful exchange of building to the city and the city to the building."

Huma Klabin targets an emerging, sophisticated market in São Paulo, professionals with no children. Most of the 52 units it contains are 475-square-foot one-bedrooms, with one 720-square-foot two-bedroom apartment on each floor. "It is a younger demographic that has a more cosmopolitan profile," says architect Beatriz Bertho, project manager at Huma. "They are well traveled and know how other cities work. They are anxious to see a residential option like this in São Paulo, where the standard is tall walls." While eschewing fortresslike



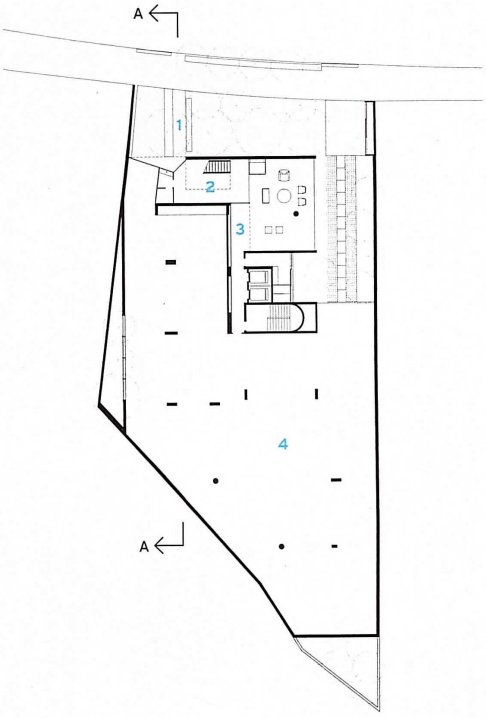


IN COMMON Huma Klabin is surrounded by similarly scaled apartment buildings and private houses (opposite, top). Generous glazing (opposite, bottom) frames a communal living room and a well-appointed laundry. The main entry opens to a double-height lounge (above) and to stairs leading to more shared spaces.

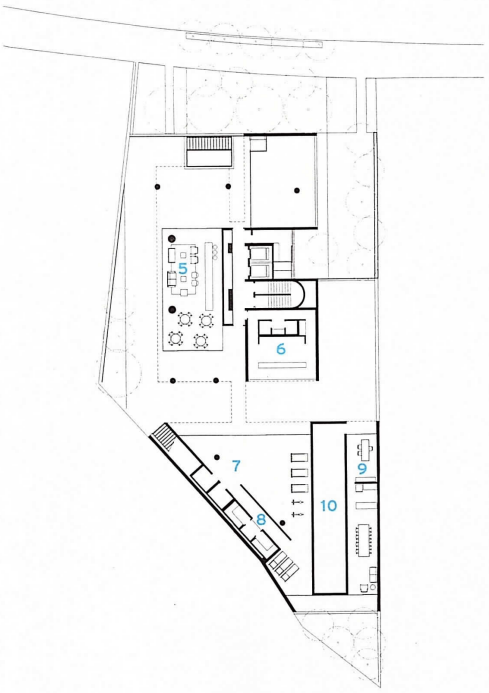
qualities, however, the building does have features typical among the middle class here, like security cameras and a 24-hour doorman.

The team's willingness to take risks with openness perhaps explains its willingness to take risks with materials as well. Exposed concrete is common in public buildings in São Paulo but rare in apartment blocks. Few builders have had the courage to work with it since Pritzker-winner Paulo Mendes da Rocha's notable residential work in the 1980s. Thus Huma Klabin's prominent use of poured-in-place architectural concrete for floors and walls manages to be daring while also paying homage to one of Brazil's greatest modern architectural traditions. The decision to use it as the principal material throughout the building also acts as a statement of confidence in the project's quality, since it meant the team would forgo the tricks used by many São Paulo builders to mask substandard work: plaster, paint, and tiles. On the exterior, the concrete is beautifully softened by charcoal gray roll-down shades that protect the recessed balconies from the elements, while still allowing views out. Inside the units, buyers can choose to leave the concrete exposed or have it covered in white plasterwork. Other materials used to contrast with the concrete include the tiling for the elevator landings, which was designed by Mendes da Rocha, who had supervised the thesis of Una's Viègas when he was a student at the University of São Paulo.

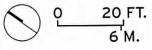
While seeking greater integration with the city beyond, Huma Klabin also creates a strong sense of community within, through generous shared spaces. The ground-floor reception area doubles as a communal living room, complete with pool table. Its lofty double-height glass-walled space allows visitors on the floor above to gaze right through the building to the city beyond. This upper floor also contains a sequence of public areas clad with soft-yellow engineered wood. Beyond a large lounge with an open kitchen is a gym and,

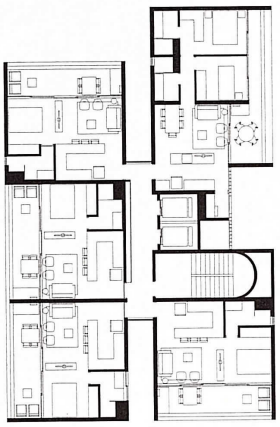


GROUND-FLOOR PLAN



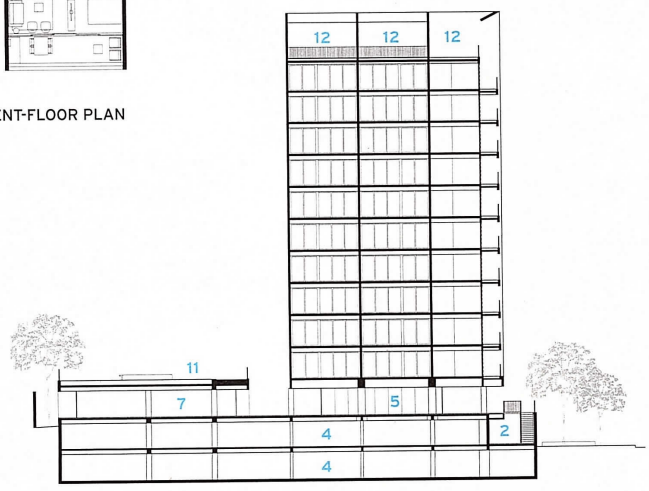
FIRST-FLOOR PLAN



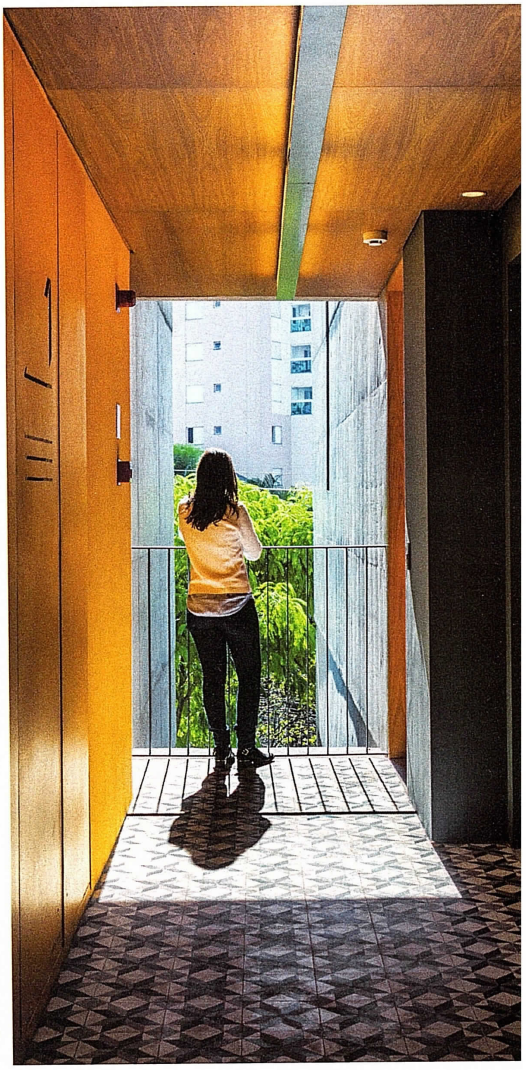


TYPICAL APARTMENT-FLOOR PLAN

1 ENTRANCE
2 FOYER
3 LOBBY
4 PARKING
5 COMMON LIVING ROOM
6 LAUNDRY
7 GYM
8 SAUNA
9 MANAGEMENT
10 MECHANICALS
11 SWIMMING POOL
12 TERRACE



SECTION A - A



credits

ARCHITECT: Una Arquitetos – Cristiane Muniz, Fábio Valentim, Fernanda Barbara, Fernandor Viégas, partners; Eduardo Martorelli, Hugo Bellini, Igor Cortinove, Marta Onofre, Paula Saito, Pedro Domingues Silva, Ana Julia Chiozza, Luisa Cleaver, Marie Lartigue, Thiago Benucci, Julia Jabur Zemella, team

INTERIORS: Triplex Arquitetura

CLIENT: Huma Desenvolvimento Imobiliário (Beatriz Bertho, Fabio Miranda, Felipe de Gerone, Rafael Rossi)

SIZE: 55,000 square feet

COST: $4.6 million (does not include all interior finishes)

COMPLETION DATE: April 2016

SOURCES

CONCRETE FORMWORK: Doka

AWNINGS: TPS Persianas

WINDOWS: Adalume Alumínio

GLASS: Mansur Vidros

FLOOR TILE: Rochbeton

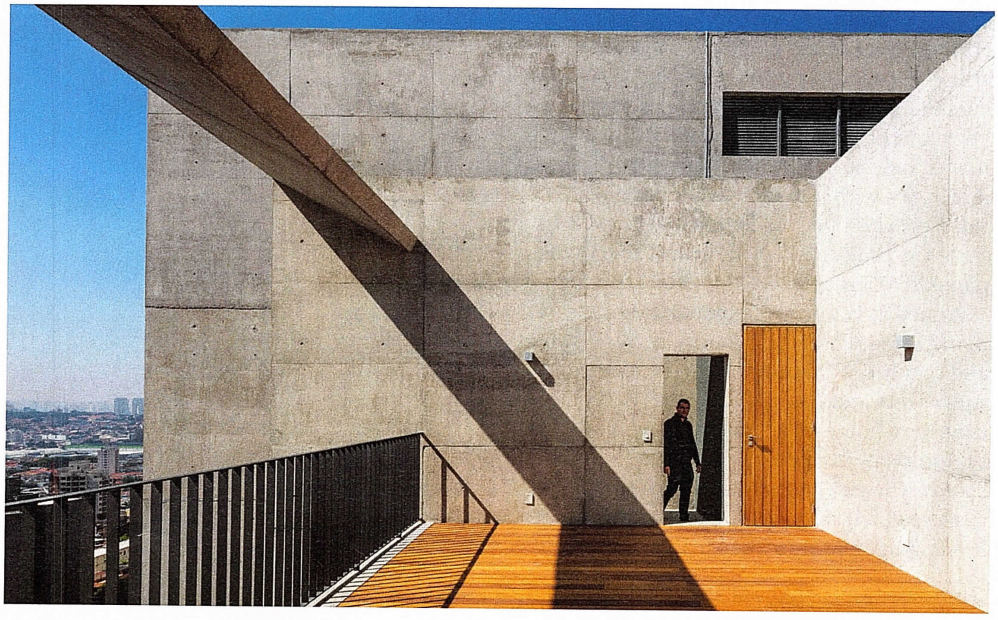
SOLID SURFACING: Granitorre

outside, at the back of the site, a swimming pool surrounded by a deck of cumaru tropical hardwood.

In case the building's many amenities, its embrace of the environment, and its airiness, were not enough to attract buyers (despite Brazil's economic crisis, the building is almost fully occupied), each apartment comes with its own bicycle—a mode of transportation that is undergoing a revival is this car-centric metropolis. In fact, authorities have recently installed a bike lane on the building's street. This small gesture is just one more demonstration of the team's commitment to reengaging with the community on a more human level.

In a city whose built environment has for decades been degraded by social exclusion and the response to urban violence, Huma Klabin is not just a building of striking design, but an important declaration of the belief in a better urban experience. ■

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



THE HIGH LIFE Tiling on an open elevator landing (opposite) was designed by Paulo Mendes da Rocha, whose concrete work inspired the architects at Una. The small apartments are maximized by ample glazing and outdoor space (top). Top-floor apartments have their own roof decks with stunning views of the city.

Mariposa 1038 | Los Angeles |
Lorcan O'Herlihy Architects

K-Pop

In L.A.'s Koreatown, an apartment building with a punchy facade enlivens the street.

BY CLIFFORD A. PEARSON

PHOTOGRAPHY BY PAUL VU

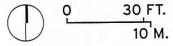
Taking the old cliché literally, Lorcan O'Herlihy pushed the envelope of Mariposa 1038, his new multifamily housing project in Los Angeles, to create concave facades on all four sides. This simple act of indenting the perimeter so it bows in at the middle like a pillow that has been slept on allowed the architect to animate the elevations and change the building's relationship to its neighbors. By establishing a curving outdoor space between the sidewalk and the apartment block, he provides a third zone that sits on private property but opens to the public. The building, with four full residential floors above grade, has balconies and window frames that project out to fill the space with a syncopated rhythm of black and white shading devices. The framing boxes in the center of the facade extend out 30 inches—the same depth as the curve—while those at the ends are flush with the building wall.

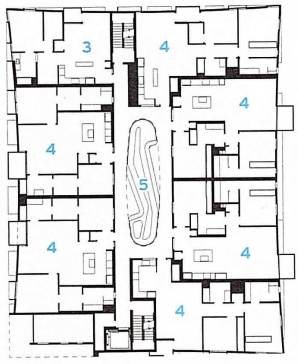
For more than two decades, O'Herlihy has been exploring what he calls "amplified urbanism," often using private development to engage the public realm. For example, at his Formosa 1140 condo project in West Hollywood (ARCHITECTURAL RECORD, July 2010, page 91), he convinced the private client to devote a third of the property to a publicly managed pocket park, a feature that adds value to both the apartments and the city. At Mariposa 1038, the gesture is less dramatic—with a 15-foot semi-public space between the sidewalk and building—but equally welcoming, especially since the project is in Koreatown, Los Angeles's most densely populated neighborhood at 42,600 residents per square mile.

Aimed at young professionals, Mariposa 1038 offers 32 market-rate rental apartments, divided evenly between one- and two-bedroom units. The typical one-bedroom unit is 880 square feet and has a "flex space" in the bedroom that can be used for a home office, a sitting room, or a play space. The typical two-bedroom unit has 1,250 square feet and two bathrooms. The city's zoning ordinance required 67 parking spaces, which are provided on the ground and basement levels. Anticipating a change in requirements due to the

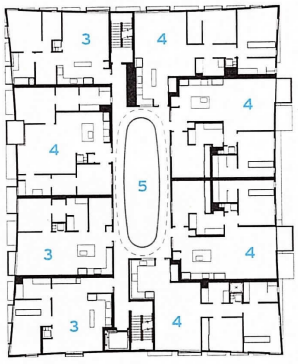
CHECKERBOARD LIVING The main facade of the 68,000-square-foot building addresses Mariposa Avenue with a lively composition of projecting balconies and window frames. While other buildings on the block have walls or fences in front, Mariposa 1038 invites pedestrians to sit on low planters and perhaps engage residents in conversation.

LEVEL-ONE PLAN





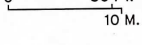
LEVEL-TWO PLAN



LEVEL-FIVE PLAN

1 ENTRY LOBBY
2 PARKING
3 ONE-BEDROOM APARTMENT
4 TWO-BEDROOM APARTMENT
5 COURTYARD
6 ROOF TERRACE

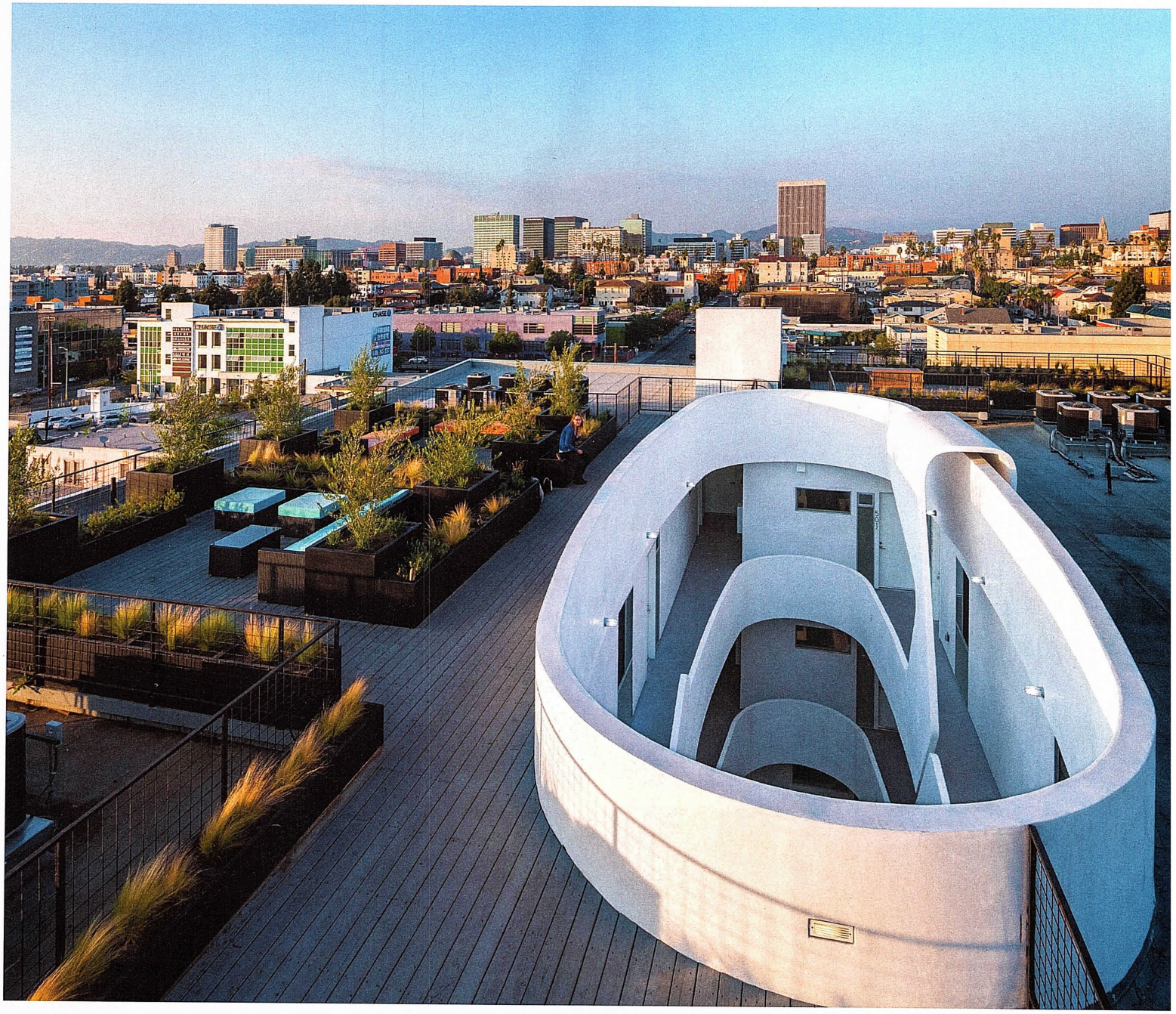
SECTION A - A



COMMUNAL SPACES Oak paneling and clerestory windows add warmth and daylight to the double-height lobby (above). On the roof, redwood decking, planters, and comfortable seating create a casual place for residents to socialize and enjoy views of Koreatown and surrounding areas (opposite).

growing popularity of car-sharing programs, O'Herlihy designed the ground-floor parking so it opens onto a strip of outdoor space in the rear and can be converted, at least in part, to a programmable area for exercise or recreation. As is typical for this kind of multifamily building in Los Angeles, the foundation and first floor are poured concrete, while everything above is wood-frame, Type-V construction covered in raked plaster.

Playing off the gentle bow of the exterior envelope, O'Herlihy scooped out a curving courtyard in the middle of the building and ringed it with outdoor corridors providing access to the apartments.



The courtyard brings daylight and cool air into the dwelling units, all of which take advantage of cross ventilation to reduce the need for air-conditioning. At the base of the courtyard—on the second floor—a planter captures rainwater for use in irrigation and, in the process, reduces stormwater runoff. A built-in bench hugging the planter turns the outdoor space into a social hub for residents, while the balustrades above form a sinuous ribbon that draws the eye to the roof, where a landscaped redwood deck with seating areas and planters serves as another spot for gatherings.

The apartments all have 10-foot ceilings, open kitchens, and some floor-to-ceiling glazing to make them feel more spacious. While the interior finishes, such as engineered-oak floors, manufactured-stone counters, and walk-in closets with pocket doors, are nothing fancy, they have clean modern lines that give them a stylish look.

The client, a first-time developer who is a lawyer by profession, approached O'Herlihy, asking for a design that would set the building apart from the usual housing product on the market. "She knew my work and was open to new ideas," says the architect. Even with its innovations, he delivered a project that cost about $190 per square foot to build, a low figure for the city, with the apartments renting for between $2,400 and $3,400. On a tour of the building in late August, this writer spoke with a few residents in their late 20s and early 30s who were attracted to the architecture and the growing food scene in newly fashionable Koreatown.

Although the building doesn't use any alternative energy sources, it employs a number of passive-design strategies that include the sun-shading frames around windows and balconies, the rainwater recycling in the courtyard, LED lighting, the reflective plaster skin, and apartment layouts that facilitate cross ventilation with exposure on two sides.

CALIFORNIA MODERN Closets in the bedroom help define a "flex space" that can be used as an office or a sitting area (top). Open layouts and exposures on at least two sides facilitate cross ventilation in all apartments (above). Residents access their units from a central courtyard that offers seating and a planter that captures rainwater for use in irrigation (opposite).

The architect, who has designed multifamily housing for two decades and is currently working on a project for the formerly homeless in South L.A., feels that housing should be at the center of the architectural conversation in Los Angeles. "I'm interested in the social and civic aspects of these projects," says O'Herlihy. "We need to create new models for connecting residents to each other and to the rest of the city." ■

credits

ARCHITECT: Lorcan O'Herlihy Architects – Lorcan O'Herlihy, principal in charge; Nick Hopson, project director; Alex Anamos, Dana Lydon, Donnie Schmidt, Jessica Colangelo, Jennie Matusova, project team

ENGINEERS: Amir Pirbadian (structural); Budlong & Associates (m/e/p); Harvey Goodman Civil Engineering (civil); Geocon West (geotechnical)

CONSULTANTS: Guy Smith Architectural Lighting Design (lighting); LINK landscape architecture (landscape)

GENERAL CONTRACTOR: Fortis 17 CRM

CLIENT: Mana Hale LLC

SIZE: 68,000 square feet

COST: withheld

COMPLETION DATE: October 2016

SOURCES

ELASTOMERIC ROOFING: Miracote

WINDOWS: Milgard

SKYLIGHTS: Velux America

TIE-DOWN SYSTEM: Earthbound

CABINETWORK AND CUSTOM WOODWORK: Modulo Cucine

ELEVATORS/ESCALATORS: Otis

BUILT-UP ROOFING: GAF

EXIT
EXIT
208
201

SQUASHONFIRE.COM
OPEN TO SERVE
Breakfast • Lunch • Dinner
MEDIC 1
ENGINE CO NO 1
SAFE PLACE
SQUASH ON FIRE
UPPER WEST SIDE
CAFE

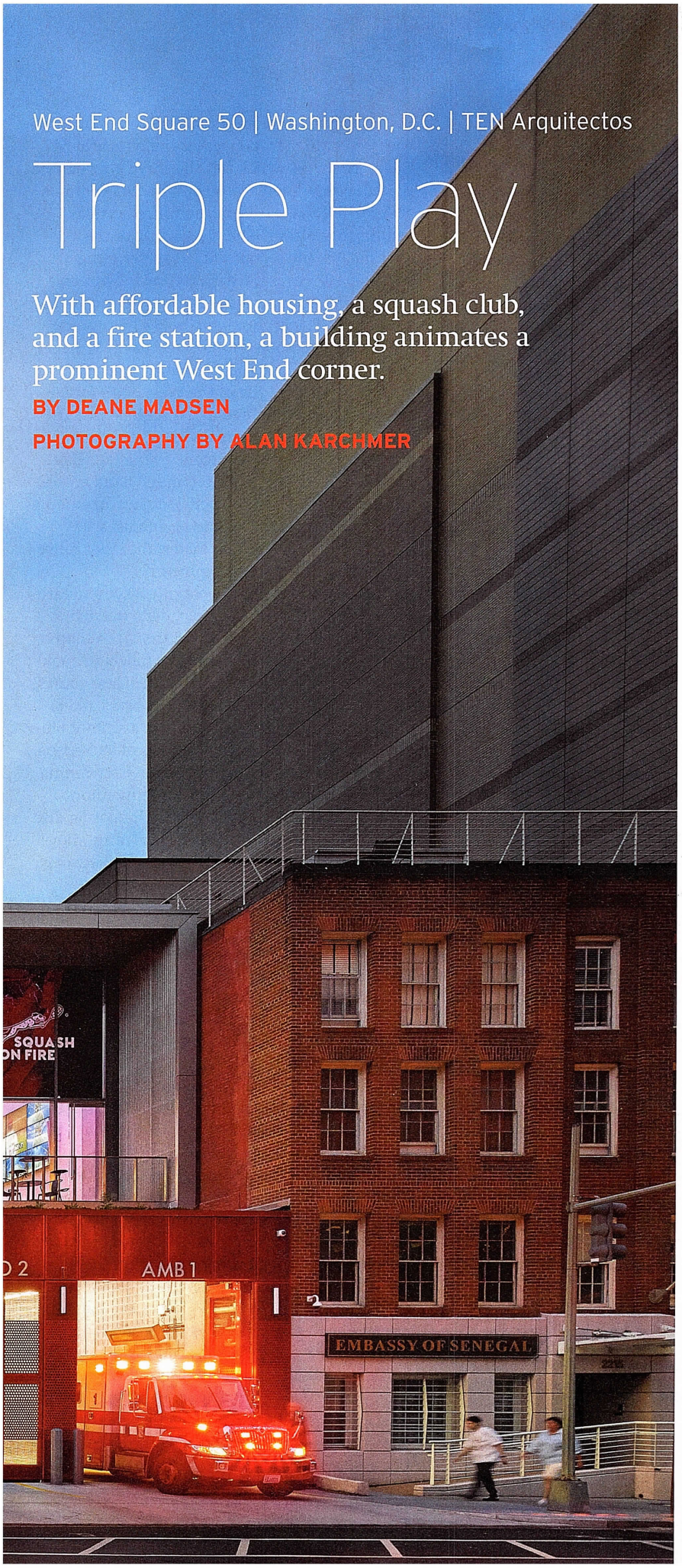
West End Square 50 | Washington, D.C. | TEN Arquitectos

Triple Play

With affordable housing, a squash club, and a fire station, a building animates a prominent West End corner.

BY DEANE MADSEN

PHOTOGRAPHY BY ALAN KARCHMER



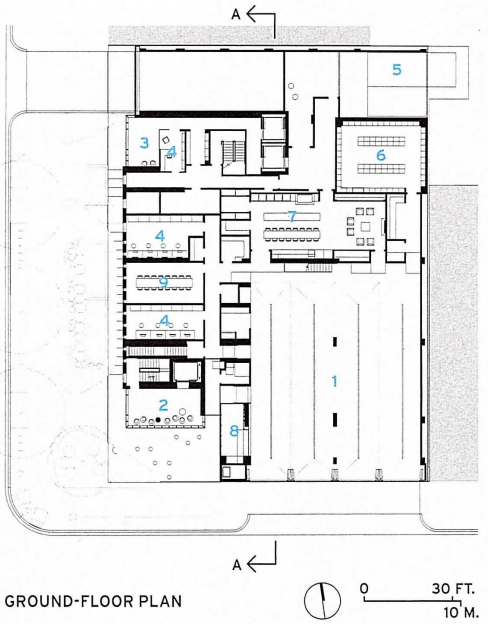
The stretch of Washington, D.C.'s M Street between 21st Street and Rock Creek Park—otherwise known as the West End—boasts enough highbrow hotels and restaurants that the neighborhood seems a perfect fit for a squash club; what's surprising is that the club, as the middle part of a three-tiered cake by TEN Arquitectos, is layered between a fire station and six floors of affordable housing.

The project, called West End Square 50 in reference to its lot's appellation within the planning department, replaces an aging two-story fire station with a brand-new one. But it also injects palpable activity into an inward-facing neighborhood as part of a public-private partnership between the city and developer Eastbanc while making the most of a previously underutilized site. Eastbanc won the bid to redevelop this lot and nearby Square 37 in large part due to its solution for the replacement of municipal facilities and inclusion of affordable housing.

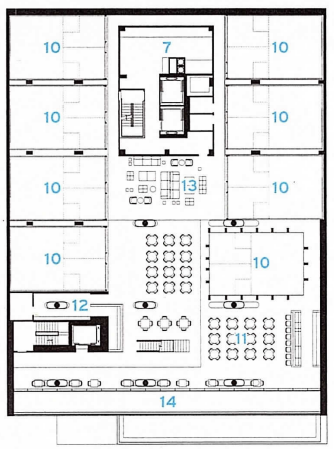
Marketing lingo for Square 50 is "squash on fire," which is a literal description of the program: the double-height street-level fire station is capped with a squash facility featuring a bar and restaurant. And then there are the 55 units of affordable housing in the six stories above the squash club.

The tripartite configuration is the expression of the different uses. "It is a superposition of three separate buildings that all respond quite literally to the demands on them," explains Enrique Norten, founder of New York– and Mexico City–based TEN Arquitectos. "The articulation of the space,

SQUASH SANDWICH Square 50 layers a fire station, a squash club, and 55 units of affordable housing. Along the primary facade on M Street, the station serves as a vibrant podium. With its doors open (left), the facility showcases emergency vehicles. With the doors closed (above), it provides an uninterrupted band of fire engine red.



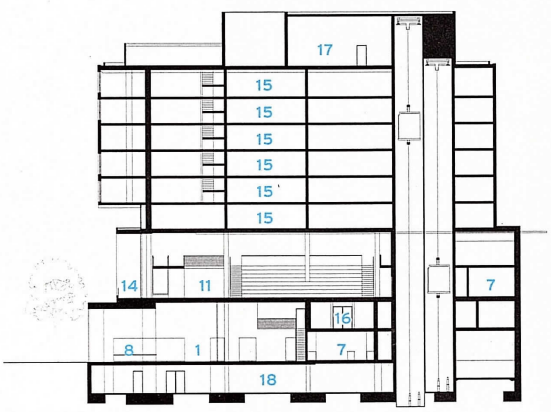
GROUND-FLOOR PLAN



THIRD-FLOOR PLAN

SIXTH-FLOOR

1 FIRE-STATION APPARATUS FLOOR
2 SQUASH-CLUB ENTRY
3 RESIDENTIAL ENTRY
4 OFFICE
5 LOADING
6 GEAR ROOM
7 KITCHEN
8 WATCH DESK
9 CONFERENCE ROOM
10 SQUASH COURTS
11 RESTAURANT
12 PRO SHOP
13 SITTING AREA
14 TERRACE
15 APARTMENTS
16 BUNK ROOM
17 MECHANICAL
18 PARKING



SECTION A - A

materiality, and coloration is different, but structure is the thread that weaves them together." That structure—which ties the three portions via paired, poured-in-place, steeply angled columns that form V-shapes—is on prominent display, thanks to the double-height glazing of the squash club and restaurant. (Transfer girders within post-tensioned slabs redirect forces and allow ideal structural grid layouts for each of the uses on the floors above and below.)

Along Square 50's primary facade on M Street, the club's lobby and the firehouse serve as a vibrant podium at one of the West End's tonier intersections. Perforated metal screens clad the firehouse, and its folding doors, when open, present the station's emergency vehicles; when closed, they form an uninterrupted band of fire engine red. The station itself becomes an extension of the apparatus it houses, and uses, as Norten puts it, "reflective materiality that refers to the machinery and equipment."

Above the station is the roughly 20,000-square-foot squash facility, which includes a bar and restaurant. A check-in desk and small pro shop greet players, who need not be members to book lessons or reserve time on one of the eight courts, two of which are glass-enclosed. Courts 1 and 8, situated closest to the entrance, are a vibrant blue, and their glass walls invite the gaze of lookers-on in the lounge area between them; live-streaming video from all of the courts feeds to monitors above a stacked plywood bar lit with floating disc pendants. A suspended central mezzanine allows views of the play from above. Exposed ductwork produce a scolding thud when errant balls fly above out-of-bounds lines. The pulse-pounding social activity spills outside on a south-facing open-air terrace overlooking M Street, where bar patrons and squash players can catch their breath, and take in the views down 23rd Street to the other TEN Arquitectos/Eastbanc collaboration on the block, the higher-end mixed-use development, Westlight, on the Square 37 parcel.

While the stacking of programmatic boxes may not be novel, it's a welcome break from the monotony of unbroken glass expanses that toe the property lines of nearby K Street. And it does accurately encapsulate the mixed-use nature of the project, which is what allowed this project to see the light of day. The city swaps an outmoded facility for a brand-new one, with the added benefits of increased density and affordable housing in an area that is anything but: leases at the Ritz-Carlton Residences (one of Eastbanc's earlier developments) across the street from Square 50 start at $5,200 per month. Meanwhile, Square 50 includes a mix of 52 studios, one-bedroom, and two-bedroom apartments that are available to residents who earn 60 percent of the Area Median Income (AMI) and start at $1,200 per month. Three units are designated for resi-

STRUCTURAL MUSCLE
V-shaped columns are on display in the squash club (above). Transfer girders and post-tensioned slabs help redirect forces and allow column-grid layouts, ideal for the uses on the levels below and above, including the fourth floor, which has residential units that look out onto a green roof (right). The apartments on the five levels above are enclosed behind a more solid exterior wall assembly.

Stacking the Deck

The Westlight, or Square 37, plants itself firmly on the other end of the affordability spectrum from its sister Eastbanc project, Square 50. But, like that building, this market-rate project includes a public component. Here it is a 20,000-square-foot ground-level neighborhood library that replaces an outdated facility on the site; retail space lines the avenue leading to Square 50. On the nine floors above—supported by a poured-in-place concrete structure that includes columns that split into pairs or trios—rises an agglomeration of glass-enclosed modules. These house 71 luxury condominiums and 93 rental apartments in one-, two-, and three-bedroom configurations, staggered in a way that produces a facade of varying depth as well as corner conditions for each unit. A peculiarity in the zoning regulations allows for 4-foot cantilevers, which Norten has used to fullest advantage at one corner, where each aluminum-and-glass module protrudes farther than the one beneath it in two directions. At the opposite corner, the modules step back as they rise, producing a ziggurat-like effect. Some of units feature dramatically raked columns that trace these offsets and brace the cantilevers. "By using that exception to the code," explains Norten, "we could create differentiation among the apartments." *DM*

dents at or below 30 percent of AMI, and there are also six market-rate units.

Most of the residential portion of the building is enclosed within an exterior wall assembly of fiber-cement board with punched, soundproof windows, thanks to noise-reduction considerations related to the ground-floor firehouse. Access to the apartments is through a lobby and elevator bay on the quieter 23rd Street side. And, once upstairs, double-loaded corridors lead to the units, which are, in a word, compact. One-bedroom apartments of roughly 700 square feet open into efficient kitchens-as-foyers, and two-bedroom apartments of about 840 square feet occupy the corner overlooking M Street; 530-square-foot studios bend around fire-stair and elevator cores. Durable finishes, such as laminate cabinets, and standard appliances are reminders of the affordable part of the equation. Still, the units are smartly designed: that's part of developer Anthony Lanier's conundrum, as he cites his responsibility to deliver first-class housing for city dwellers. "An affordable-housing project doesn't have to be a lesser building than a market-rate building." Looking at this project and the Westlight down the block, it's clear that Square 50 in many ways surpasses the bar set by its market-rate neighbors while infusing a needed mix of uses and diversity into the West End. ■

Deane Madsen, Associate AIA, is a writer and architectural photographer based in Washington, D.C.

credits

ARCHITECT: TEN Arquitectos – Enrique Norten, Andrea Steele, Joe Murray, James Carse, Erick Lang, Chris Glass, Wook Kang, Erik Martinez, Ekta Desai, Andrew Deibel, Sebastian Gutierrez, Christian Ayala, Elsa Ponce, Eduardo Ponce, Harry Byron, Hannah Lee, Vicky Daroca, project team

ARCHITECT OF RECORD: WDG

CONSULTANTS: Cosentini Associates (m/e/p, LEED, IT, AV); Tadjer Cohen Edelson (structural); Polysonics (acoustical); Ingo Maurer (lighting)

GENERAL CONTRACTOR: Clark Construction

CLIENT: Eastbanc

SIZE: 89,000 square feet

COST: withheld

COMPLETION DATE: October 2017

SOURCES

METAL PANELS: Atlas International

GLASS: Vitro

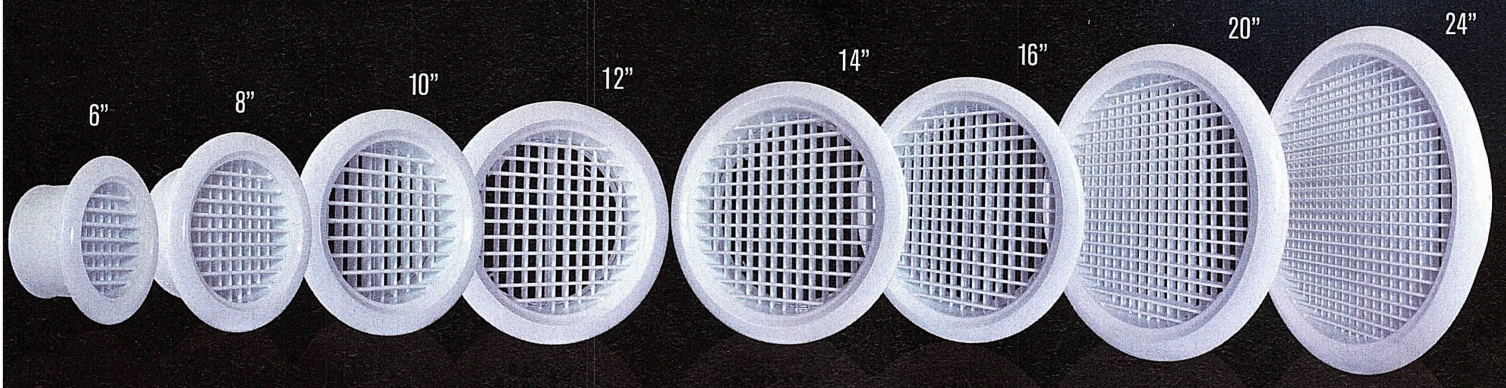
GARAGE DOORS: Amarr

METAL MESH CEILINGS: Armstrong

RESTAURANT SEATING AND TABLES: Vitra

PLASTIC LAMINATE: Nevamar

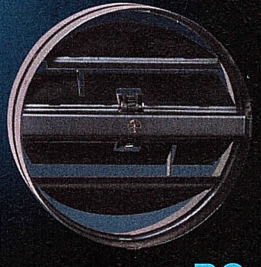
High Quality Aluminum Grilles Model: RHV



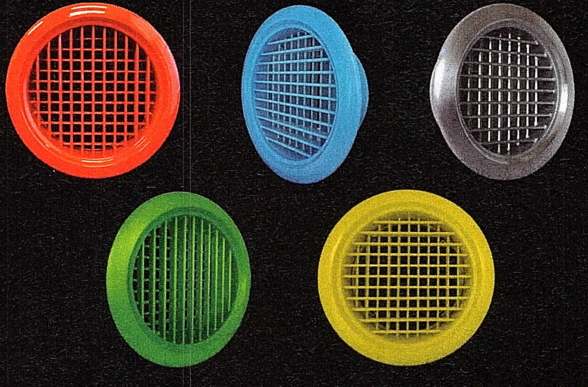
~ Finally an attractive grille for those special projects ~

The RHVs can be used for many different types of construction projects.

- High Grade Residence
- Convention Centers
- Office Buildings
- Hotels
- Airports
- Restaurants
- Sports Facilities
- Shopping Malls
- Hospitals

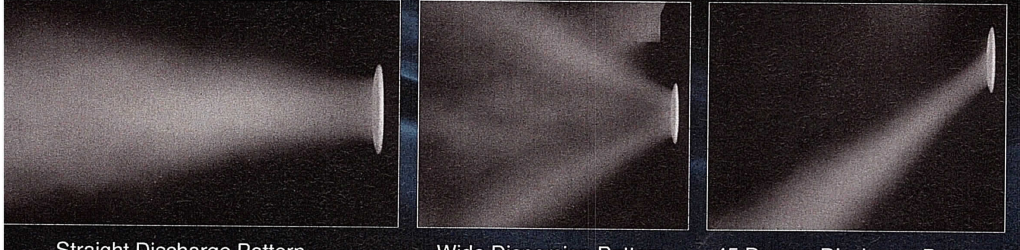


Model: BS
Butterfly Damper

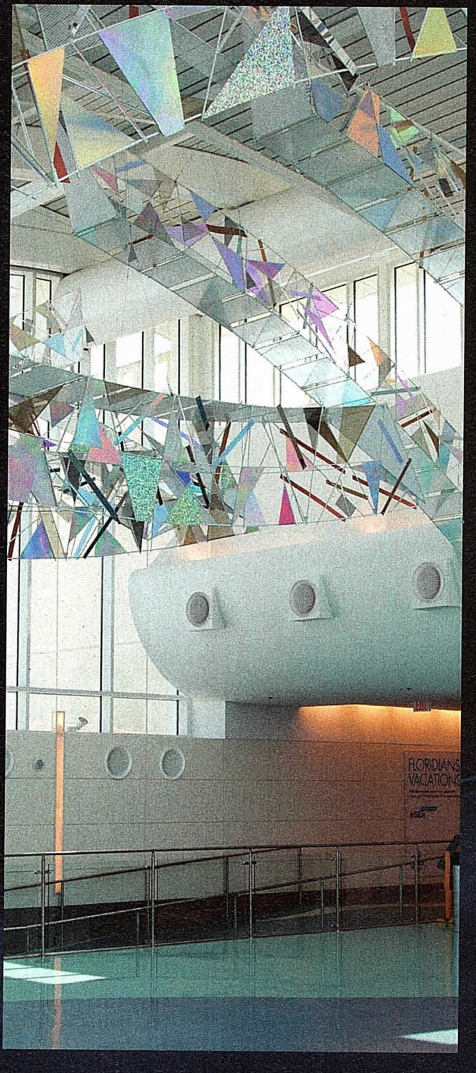


- Mill Finish and Custom Colors Available

- Airflow Patterns



Straight Discharge Pattern | Wide Dispersion Pattern | 45 Degree Discharge Pattern



SEIHO | seiho.com

We Ship Worldwide

Seiho International,Inc. 120 W.Colorado Blvd. Pasadena, CA 91105 Tel:(626) 395-7299 Fax:(626)395-7290 info@seiho.com

SPECIFY | LEARN | CONNECT

NEOCON EAST

NeoCon® East
PHILADELPHIA

NOVEMBER 15–16, 2017
Pennsylvania Convention Center
NeoConEast.com

The premier design expo and conference for commercial interiors on the East Coast.

PRODUCED BY
theMART
A VORNADO PROPERTY

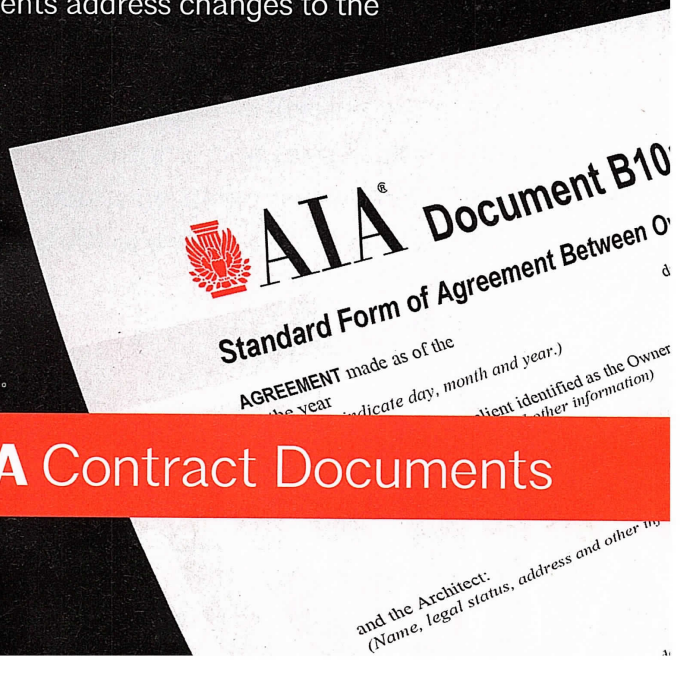
The Announcement of the Decade

Documents to Expand Your Practice

Like Kowalski, the comet we only see every ten years, the core set of AIA Contract Documents is only updated every ten years. This ensures your design and construction projects are protected against changing industry trends and needs.

Many architecture firms go beyond the everyday practice of architecture to include site evaluation, historic preservation, facility support, and commissioning services. Heavily revised Architect Scope documents address changes to the industry landscape.

Learn more and download samples at **aiacontracts.org/ar**.



Block 51, San Francisco, CA, Ian Birchall & Associates

Get green anywhere on structure with lightweight fiberglass hanging planters. Pre-engineered in a wide range of standard sizes and lengths to 10′ - and more available custom. Tournesol Siteworks offers more solutions for integrating plants on structure than any other manufacturer. **Find out more about how we can help your outdoor spaces come to life at tournesolsiteworks.com.**

Tournesol SITEWORKS

BETWEEN LANDSCAPE +ARCHITECTURE

tournesolsiteworks.com | 800-542-2282

EMERALD NECKLACE The Big U will wrap the southern tip of Manhattan and combine hard, heavily engineered infrastructure with softer protection devices, and include parkland and other social and recreational amenities.

On the Waterfront

Five years after Sandy, two forthcoming projects in the Northeast offer models for other vulnerable regions.

By Michael Cockram

IN THE AFTERMATH of the damage wrought by hurricanes Harvey and Irma, many residents in areas surrounding Houston, in the state of Florida, and throughout the Caribbean are struggling to satisfy their immediate and most basic needs. But as the devastated communities start thinking about long-term recovery efforts, they will need to carefully consider their rebuilding strategies. Rising sea levels and warming ocean temperatures will only increase the intensity of future storms and the threat to coastal cities and towns.

Places to look for examplars are New York and Connecticut, where projects aimed at improving resilience are nearing construction, five years after Hurricane Sandy slammed into the region. Two infrastructure projects in particular, one for Lower Manhattan and another for Bridgeport, Connecticut, could provide lessons in preparing for the next superstorm.

The two schemes were among the winners of the 2013 Hurricane Sandy Design Competition, whose goal was to address social and structural vulnerabilities in the cities and towns affected by the storm. Known as Rebuild by Design (RBD), for the nonprofit created to oversee it, the competition resulted in more than $1 billion in awards from the Department of Housing and Urban Development (HUD), providing seed money, as well as funds for implementation, of

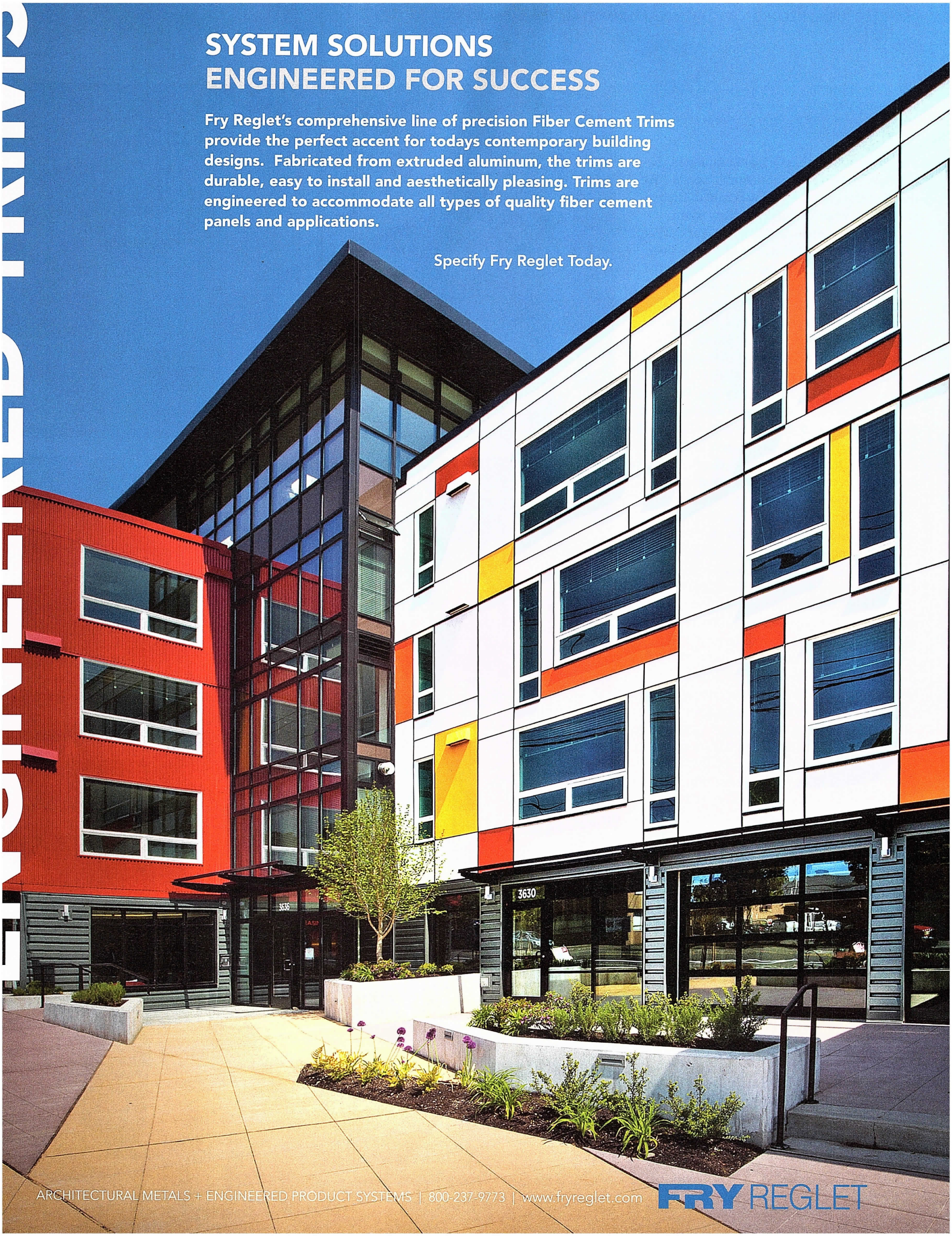
PASSIVE PROTECTION The first phase of the Big U will stretch down the East Side of Manhattan from 25th Street to south of the Williamsburg Bridge (above). A redesigned Stuyvesant Cove Park (left and below) will serve as a storm buffer, with landscape features that can survive inundation.

a number of projects in the New York metropolitan region and beyond.

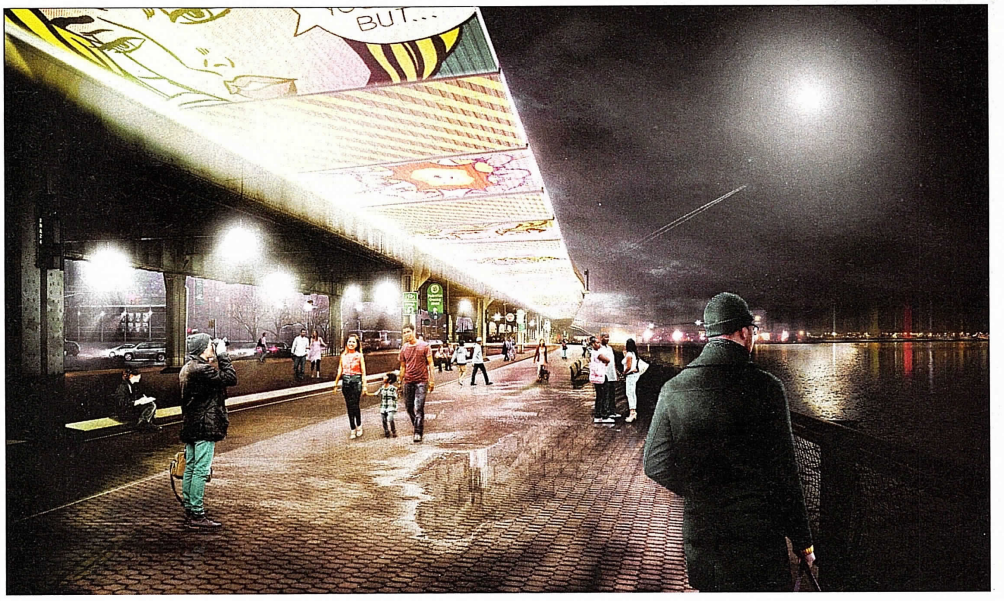
Architecture firms play a leading role in the RBD teams, which are also made up of landscape architects, scientists, and engineers from the U.S. and abroad. This multidisciplinary framework was an essential aspect of the multistage competition, says Amy Chester, managing director of RBD. Each team was encouraged to include international participants and engage in extensive collaboration with residents and local governments and other stakeholders, she explains.

A team led by the Danish firm Bjarke Ingels Group (BIG) produced the scheme known as "The Big U," a buffer that relies on an assortment of strategies and both "hard" traditional infrastructure, such as walls and gates, and "soft" elements like green space and berms, which would double as community social and recreational areas. It will wind around the shoreline in the shape of a "U" and protect the southern tip of Manhattan from storm surges and flooding.

Design-team members are fond of referring to this combination of large-scale, highly engineered elements and more human-scaled strategies as the outcome of an imaginary partnership between Robert Moses, the planner behind much of New York's megascale mid-20th century urban renewal, and Jane Jacobs,


ENGINEERED TRIMS
SYSTEM SOLUTIONS
ENGINEERED FOR SUCCESS
Fry Reglet's comprehensive line of precision Fiber Cement Trims provide the perfect accent for todays contemporary building designs. Fabricated from extruded aluminum, the trims are durable, easy to install and aesthetically pleasing. Trims are engineered to accommodate all types of quality fiber cement panels and applications.
Specify Fry Reglet Today.
3630
ARCHITECTURAL METALS + ENGINEERED PRODUCT SYSTEMS | 800-237-9773 | www.fryreglet.com
FRY REGLET

OPEN AND SHUT The Big U will have some active flood-control elements, such as a flip-up gate (all photos right) that can be used in a variety of modes and in different weather conditions.



the influential activist who championed the richness and diversity of neighborhoods. "We think of the Big U as the love child of the two famous adversaries," quips Jeremy Alain Siegel, project leader in BIG's New York office.

Since the competition, the BIG U has been divided into two implementation phases: the East Side Coastal Resiliency (ESCR) project, which stretches for 2.2 miles along the East River, from 25th Street to just south of the Williamsburg Bridge, and the Lower Manhattan Coastal Resiliency (LMCR) project, which extends below the Manhattan and Brooklyn Bridges to the Battery. The two are further segmented into several discrete flood protection zones, or "compartments," defined by "tie backs" made up of barriers and operable floodgates. But as a whole, the Big U favors passive protections, including berms and walls, over deployable devices. The approach should reduce maintenance requirements and the likelihood of system failure due to power outages or human error, explains Siegel.

With construction slated to start in 2019 and be completed by 2025, the design for the ESCR, for which almost $800 million in federal and city funds have been committed, is the most developed of the two phases. It will improve pedestrian connections across the multilane FDR Drive to the East River and Stuyvesant Cove Parks with broad and sinuous footbridges. The pair of narrow parks, which are wedged between the roadway and the water, will be rebuilt to include diverse social spaces and topographical variety, gradually stepping up in elevation as they move away from the water's edge. According to Siegel, many of the parks' features will emulate natural systems such as wetlands, barrier islands, and dunes, and protect the coastline by buffering waves and storm surges.

To mitigate flash flooding, the ESCR will also have plenty of porous and pervious surfaces as well as temporary stormwater storage. The team is also currently exploring options for retention basins, including recessing paved recreational areas, such as basketball courts. These could be designed to fill with water during heavy downpours and, once flooding subsides, they would be slowly drained, easing the burden on the city's sewer system.

Sixty miles up the coast from Manhattan, a similar combination of hard and soft infrastructure strategies is planned for Bridgeport, Connecticut, which straddles the Pequannock River and lies exposed to the Long Island Sound on a set of peninsulas. The once-thriv-

THE MOD-ERN FAN CO

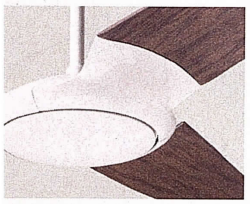
A Collection of Ceiling Fans

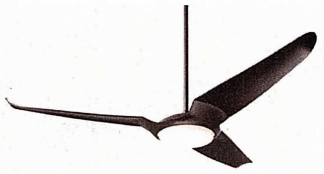
Designed by Ron Rezek

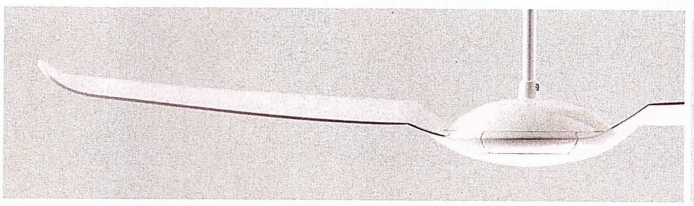
IC/Air2

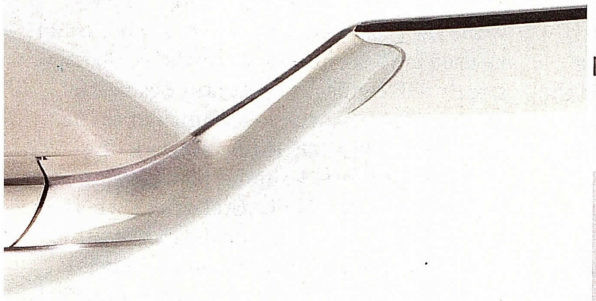
: designed by Guto Indio da Costa

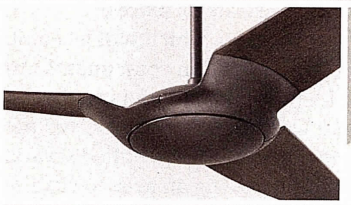
modernfan.com

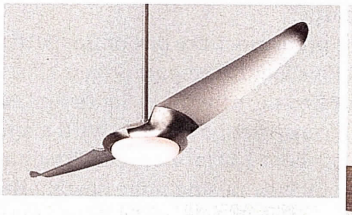


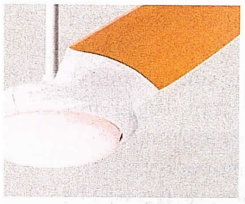


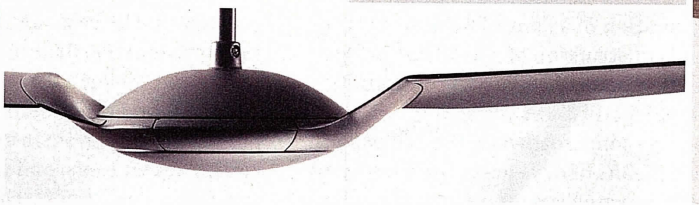




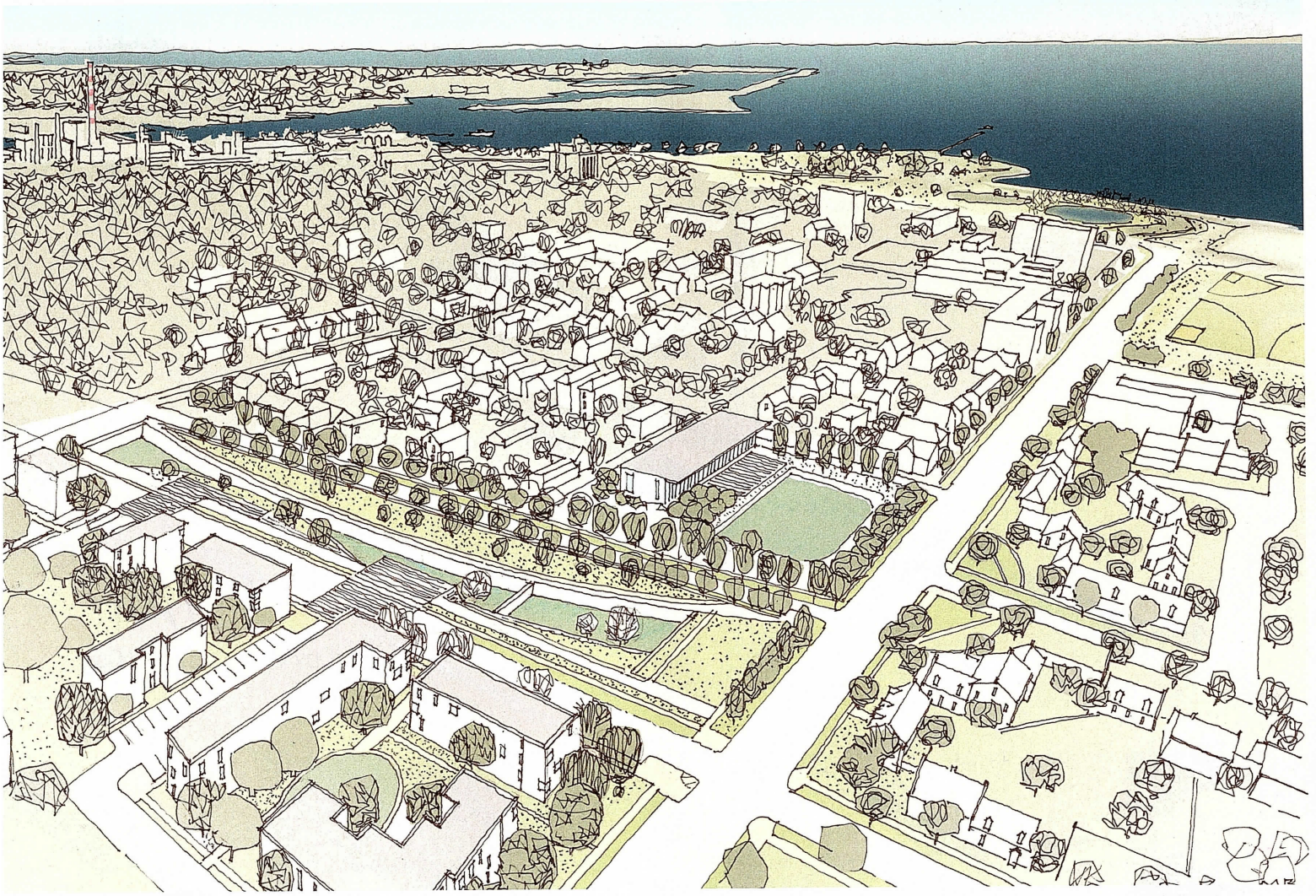








Ultra-efficient DC Motor | 2 or 3 Blades | Nickel, White or Dark Finish | Solid Color, Wood Grain or Clear Blades | Optional LED Lighting



DELAY AND CONVEY Plans for Bridgeport, Connecticut, include a new park (foreground, above) with a water-retention pond. It will help slow stormwater runnoff, easing the burden on the city's sewer system.

ing industrial city was hard hit by Hurricane Irene in 2011, and then Sandy a year later.

"The tendency is to look only at the infrastructure, but the first thing to consider are the natural systems," says David Waggonner, president of New Orleans–based Waggonner & Ball, which is leading the Rebuild by Design team known as Resilient Bridgeport. Tapping into Dutch flood-control expertise, the firm has developed an urban water plan for its home city, as well as other towns and regions.

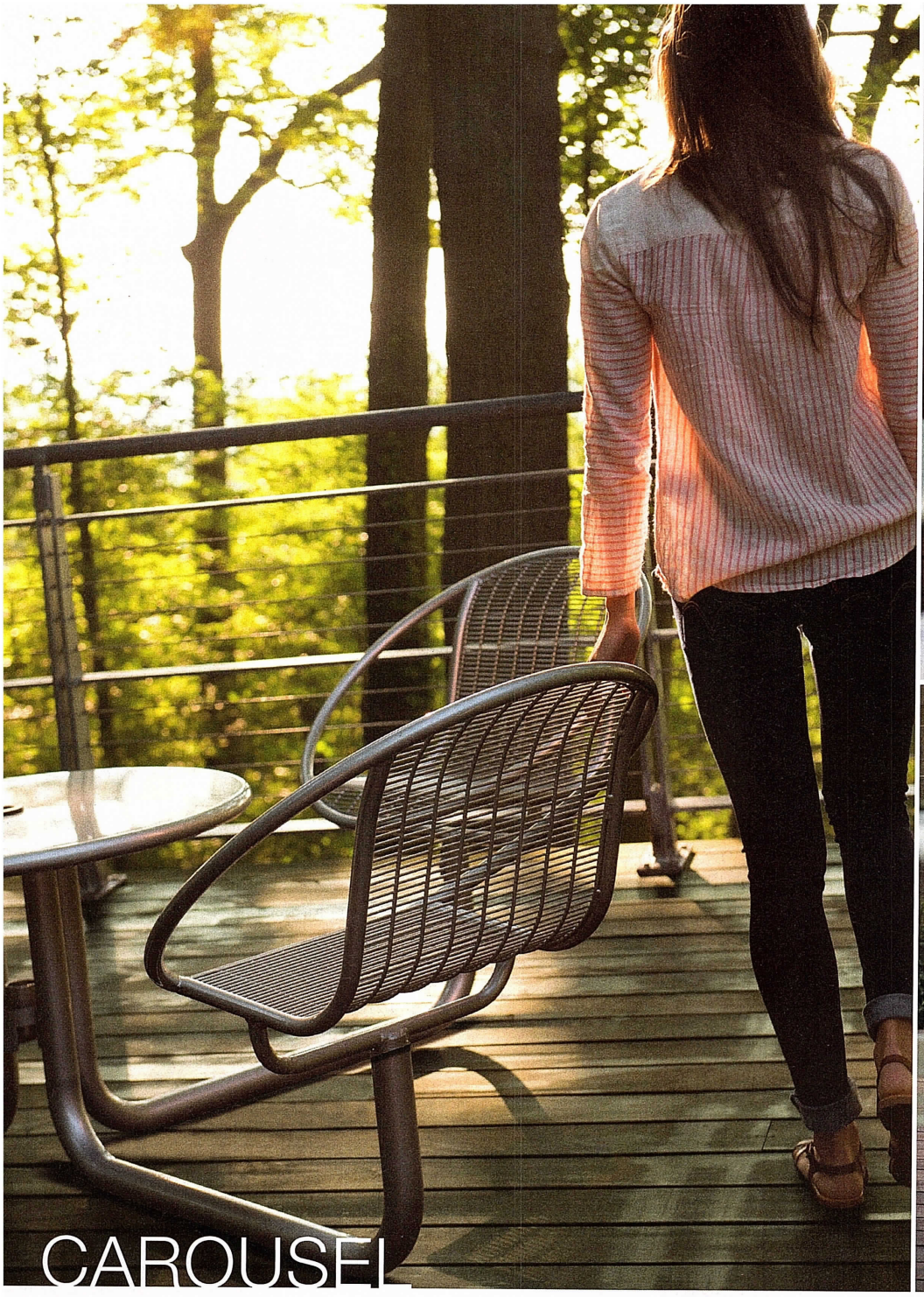
The Bridgeport team's plan makes the most the city's existing assets, including Seaside Park, designed by Fredrick Law Olmsted. Although the city sustained substantial flood damage from Sandy, this swath of green space along the coast helped buffer low-lying areas from the full intensity of the storm surge. The Resilient Bridgeport scheme takes advantage of this parkland, while weaving in new protective barriers in strategic places.

The new barriers, which will be combined with natural mitigation components, are in some instances berms and in others seawalls, and will sometimes be located near the water's edge and at others pulled several blocks inland, leaving an area to cushion the storm surge.

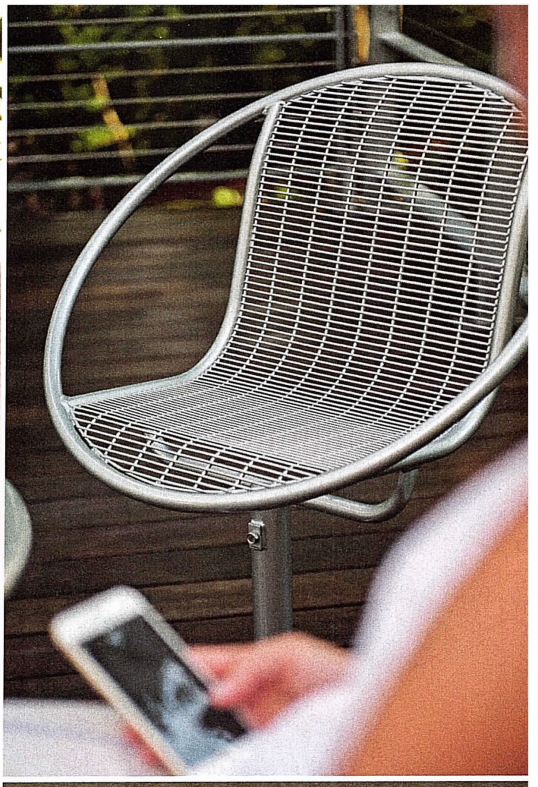
These protections are one of four HUD-funded Resilient Bridgeport projects, all concentrated near the city's South End, slated to begin construction in 2019. With a total budget of about $47 million, this first phase will also include raising some neighborhood streets, creation of a South End Stormwater Park, and construction of a Resilient Bridgeport Center that will serve as a community educational facility.

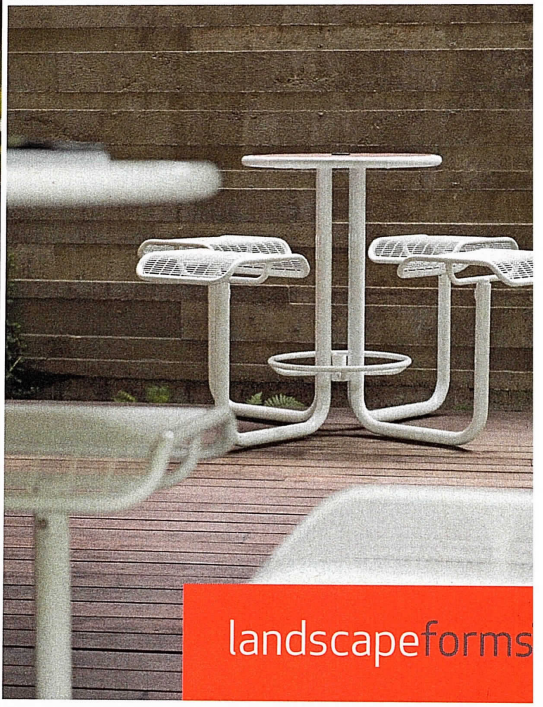
By raising some roadways, the project will provide a means of dry egress from low-lying areas. The elevated streets, which would be roughly at the first-floor level of the adjacent houses, will connect to their front stoops via small bridges. The space in between the houses and the new roadway could house rain gardens for slowing and absorbing runoff, while the space below the street surface could be used for box culverts and utilities. The new streets will connect to naturally occurring glacial ridges that run perpendicular to the water, forming a waffle-like network of resilient corridors. A similar plan is being implemented in other coastal cities such as Miami Beach, where key roadways are being raised to serve as protection and as routes where vehicular traffic can travel unimpeded during floods.

For dealing with heavy rainfall, which can overwhelm the city's antiquated combined sewer system, Resilient Bridgeport relies on a "delay and convey" strategy similar to that proposed for Lower Manhattan. The approach emphasizes green infrastructure such as bioswales, green roofs, and temporary water storage to slow runoff. These tactics will be used in combination with gray infrastructure (pumps and pipes) and some raised streets in the 2½-acre Stormwater Park planned for a site

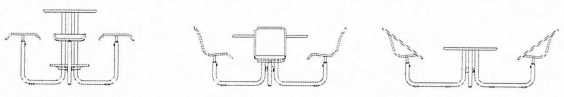


CAROUSEL





landscapeforms



Carousel Gets a New Spin

Taking a Landscape Forms classic to new heights with additional seating and tables, high and low.

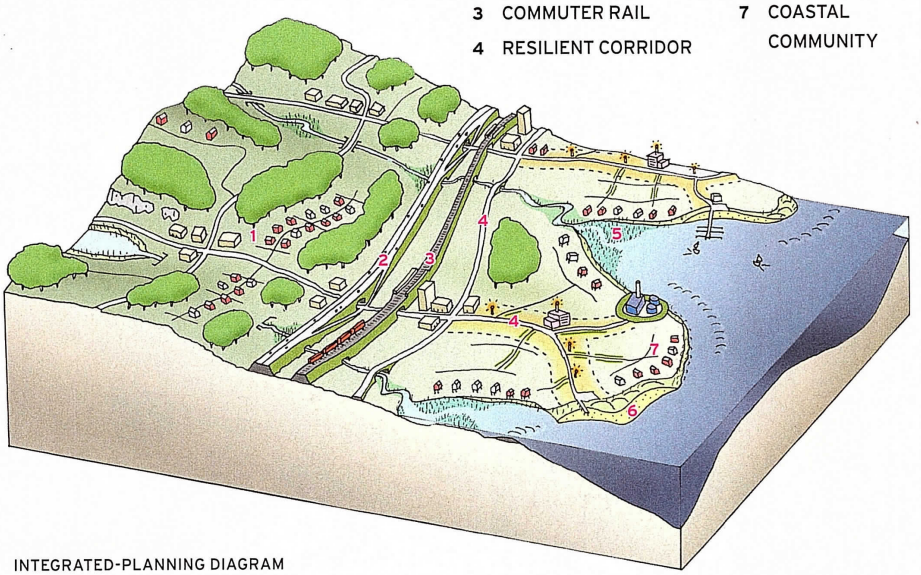
Welcoming new experiences in outdoor spaces.

Fresh. Vibrant. Versatile.

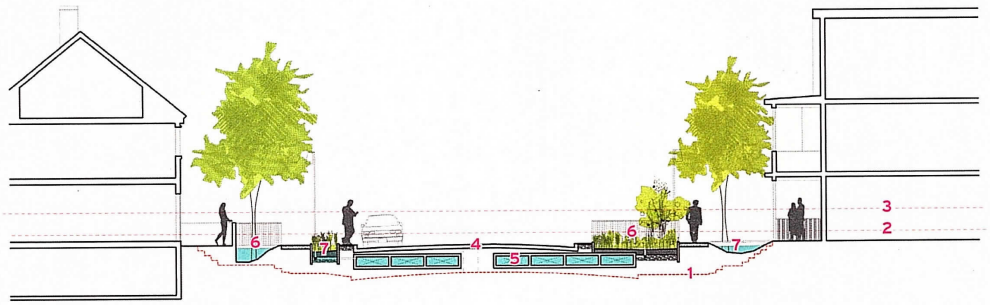
Designed by Landscape Forms

Find us at landscapeforms.com or contact us toll free at 800.430.6208.

DESIGN. CULTURE. CRAFT.



INTEGRATED-PLANNING DIAGRAM



ELEVATED-STREET SECTION

1 EXISTING GRADE
2 100-YEAR-FLOOD ELEVATION
3 500-YEAR-FLOOD ELEVATION
4 REBUILT ROAD
5 UNDERGROUND STORMWATER STORAGE AND UTILITIES
6 RAIN GARDEN
7 BIOSWALE

adjacent to an affordable-housing development. The park will also include recessed play areas and green space that can temporarily store water during a heavy rainstorm. If these basins fill to a critical level, the water could be pumped to a nearby creek.

Another initiative of Resilient Bridgeport is to help ensure the continuity of electrical service after an extreme weather event, since the loss of power hampers recovery efforts and can have far-reaching safety, social, and economic impacts. The program addresses this challenge by promoting microgrids: local electrical networks that can operate independently of the traditional grid if a power outage occurs. Several such projects, relying on fuel cells, gas turbines, and heat-recovery loops, are in the predevelopment phase in the city, according to David Kooris, the state director of both Rebuild by Design and National Disaster Resilience, another HUD-funded program.

Like most major infrastructure projects, the New York and Connecticut projects have undergone a cost-benefit analysis. There are a number of accepted methods for calculating this ratio, depending on the source of funding. While the Federal Emergency Management Agency's considers only the hard cost of flood-mitigation measures and, in some cases, the cost of business interruption, HUD-funded projects such as the ESCR and Resilient Bridgeport can take a broader range of factors into account. "That agency allows you to count ecological and quality-of-life benefits. It's a softer accounting method," Waggoner explains. Both projects have favorable benefit-to-cost ratios, with the ESCR at 2.8:1 and the Bridgeport Stormwater Park at 1.6:1. Anything above 1:1 is considered cost-effective.

HIGH AND DRY The Bridgeport scheme calls for raising some streets in the city's South End (bottom). These would work in conjunction with naturally occuring glacial ridges (left) to create a network of resilient corridors.

The analyses show that the benefits of projects like those planned for Lower Manhattan and Bridgeport far outweigh the risk of doing nothing. Though not yet built, they present a powerful argument against the Trump administration's efforts to defund climate-change-related programs and roll back policies intended to protect flood-prone areas. Waggonner remains committed to improving the resilience of coastal cities. "It's all about persistence," he says, citing his own city: "A lesson from New Orleans is that the challenges keep changing, but you have to persevere, check your direction, see where you are, and move ahead." ■

Michael Cockram is a freelance writer and director of Bowerbird Design in Fayetteville, Arkansas.

Continuing Education

To earn one AIA learning unit (LU), including one hour of health, safety, and welfare (HSW) credit, read "On the Waterfront," review the supplemental material found at architecturalrecord.com, and complete the quiz at continuingeducation.bnpmedia.com or by using the Architectural Record CE Center app available in the iTunes Store. 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 at continuingeducation.bnpmedia.com.

Learning Objectives

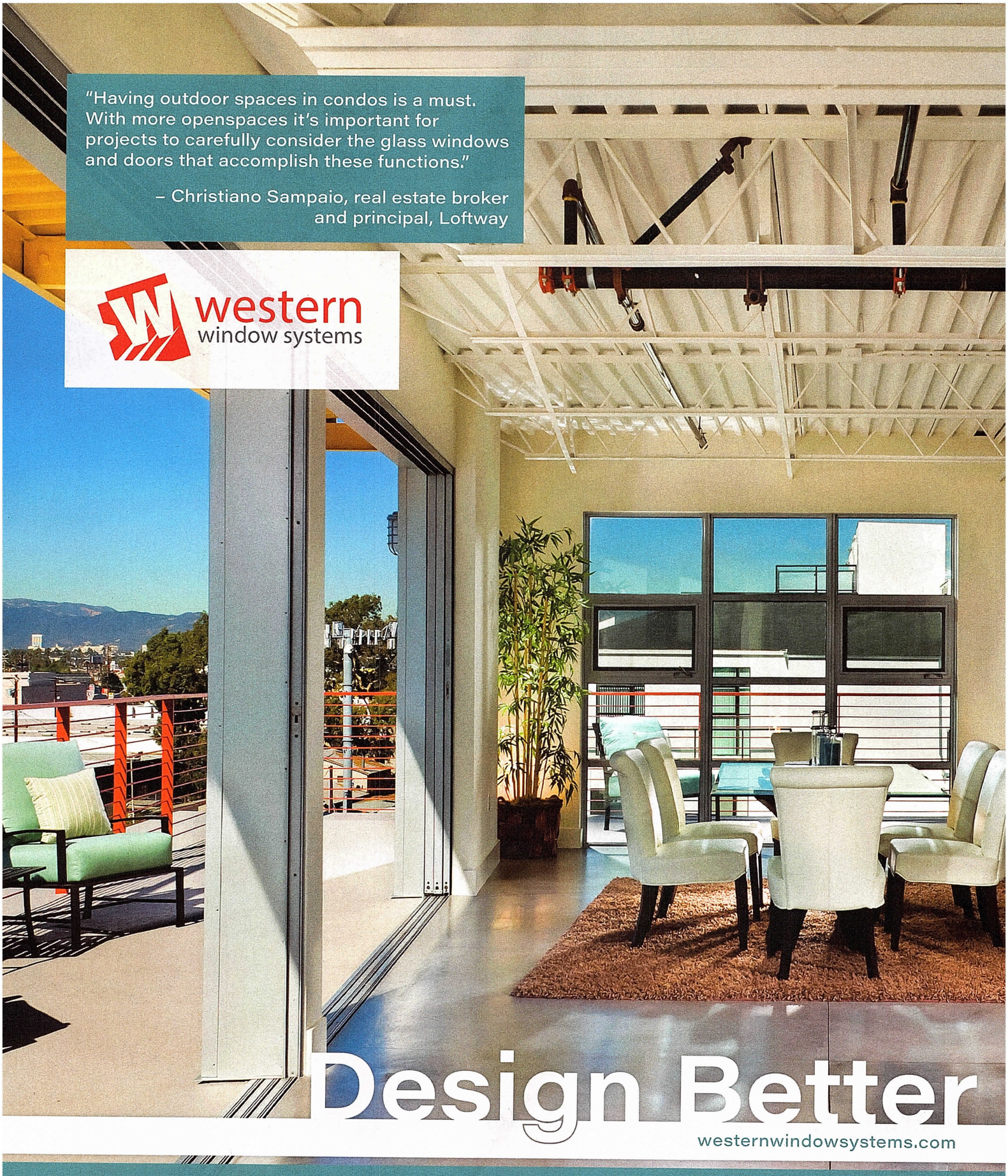
1 List some of the strategies that are often referred to as "green" or "soft" infrastructure.

2 Discuss how green infrastructure and traditional hard infrastructure can be combined to protect coastal cities from flooding, sea-level rise, and storm surge.

3 Outline the resilience-strengthening measures planned for Lower Manhattan and Bridgeport, Connecticut.

4 Discuss how cost-benefit analyses are calculated for infrastructure projects.

AIA/CES Course #K1710A


"Having outdoor spaces in condos is a must. With more openspaces it's important for projects to carefully consider the glass windows and doors that accomplish these functions."
– Christiano Sampaio, real estate broker and principal, Loftway
western window systems
Design Better
westernwindowsystems.com
Introducing the Series 7600.
Our strongest and most energy-efficient aluminum multi-slide door ever.

ARCHITECTURE & DESIGN FILM FESTIVAL

NOVEMBER 1-5 2017 NEW YORK

CINÉPOLIS CHELSEA 260 WEST 23RD STREET

THE ARCHITECTURE & DESIGN FILM FESTIVAL (ADFF) IS THE NATION'S LARGEST FILM FESTIVAL DEVOTED TO THE CREATIVE SPIRIT OF ARCHITECTURE AND DESIGN. THIS FALL'S NINTH SEASON PROMISES A FANTASTIC LINEUP OF EVENTS – OVER 30 DOCUMENTARIES, INDUSTRY LEADERS, Q&AS, SPIRITED PANEL DISCUSSIONS, GREAT PARTIES... AND MUCH MORE.

NOVEMBER 3RD

PLEASE JOIN CATHLEEN MCGUIGAN, EDITOR IN CHIEF OF ARCHITECTURAL RECORD, FOR A SPECIAL SCREENING OF *REM* DIRECTED BY TOMAS KOOLHAAS.

adfilmfest.com

adff

Boffi SOHO · Wolf Gordon · SONY MAGNOLIA · COSENTINO · ARCHITECTURAL RECORD

SUITE NY · Jeffrey Silverman Citizens Bank · BOLON · Howard Hughes · Hästens Since 1852 · KETRA

Archtober · AIANY · The American Institute of Architects · NOVITÀ · westedge DESIGN FAIR · Salone del Mobile Milano · ACE HOTEL

CONTINUING EDUCATION

In this section, you'll find five compelling courses* highlighting creative solutions for tomorrow's buildings brought to you by industry leaders. Read the course, and then visit our online Continuing Education Center at ce.architecturalrecord.com to take the quiz free of charge to earn credits.

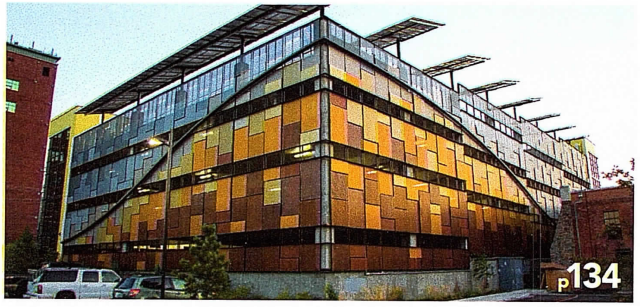


Photo courtesy of Accurate Perforating/ Bret Hoekema

Designing Green: The Seen and the Unseen

Sponsored by Accurate Perforating, ARCHITECTURAL GRILLE, Benjamin Moore, EXTECH/Exterior Technologies, Inc., and ZIP System® Sheathing and Tape

BE PM SU

CREDIT: 1 AIA LU/HSW; 1 LFA CEU

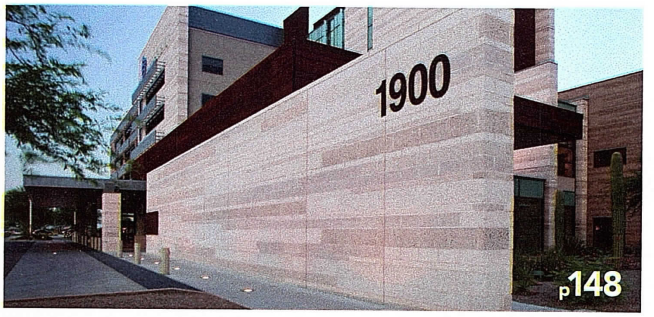


Photo courtesy of Echelon™ Masonry

Modern Masonry: Fire Protection and Enhanced Performance

Sponsored by Echelon™ Masonry

BE LS PM

CREDIT: 1 AIA LU/HSW

Photo courtesy of VT Industries

Keeping the Beauty in High-Performance Areas with High-Pressure Decorative Laminate Doors

Sponsored by VT Industries Inc.

IN PM RR

CREDIT: 1 AIA LU

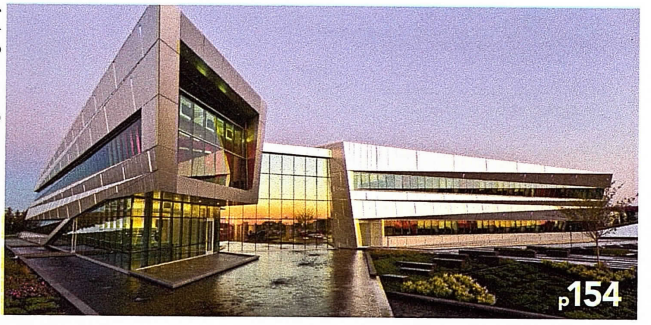


Photo courtesy of Alucobond/Connor Group/Daniel Lunghi Photography

Put the Pedal to the Metal

Sponsored by Metal Construction Association

BE PM SU

CREDIT: 1 AIA LU

Photo courtesy of Walker Zanger

Large-Size Porcelain Slabs for Building Surfaces

Sponsored by Walker Zanger

BE IN PM

CREDIT: 1 AIA LU/HSW

CATEGORIES

- **BE** BUILDING ENVELOPE DESIGN
- **IN** INTERIORS
- **LS** LIFE SAFETY AND CODES
- **PM** PRODUCTS AND MATERIALS
- **RR** RENOVATION AND RESTORATION
- **SU** SUSTAINABILITY

*Courses may qualify for learning hours through most Canadian provincial architectural associations.

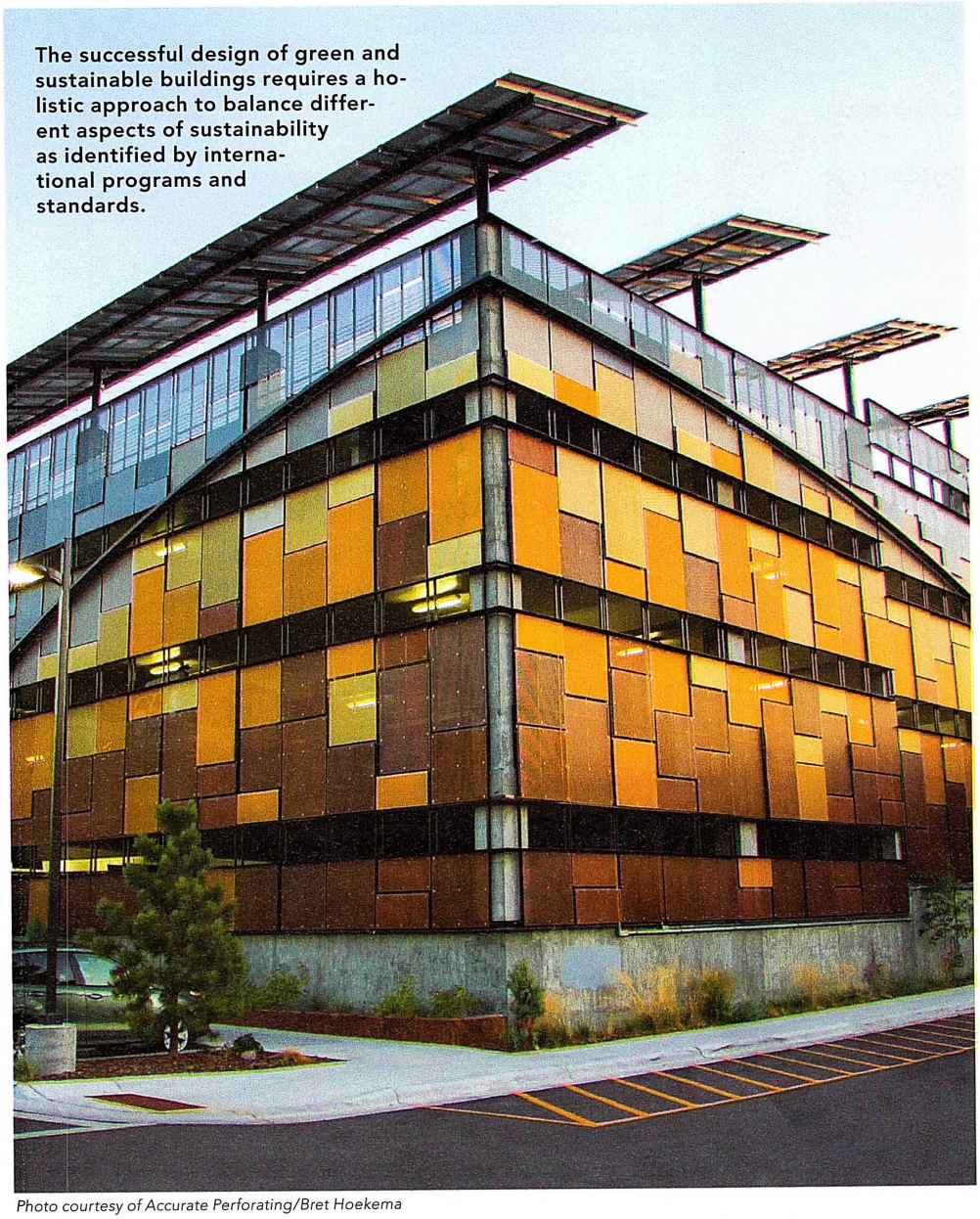
Designing Green: The Seen and the Unseen

Integrating components to achieve holistic performance

Sponsored by Accurate Perforating, ARCHITECTURAL GRILLE, Benjamin Moore, EXTECH/Exterior Technologies, Inc., and ZIP System® Sheathing and Tape | *By Peter J. Arsenault, FAIA, NCARB, LEED AP*

The movement for green and sustainable building design continues to grow and pick up steam for multiple reasons that operate totally outside the realm of politics. Building owners recognize real financial and personnel advantages with green buildings and are coming to expect that their design and construction teams have the knowledge and expertise to create energy-efficient, environmentally sensitive, and healthy buildings as part of their normal design process. Accordingly, architects and other design professionals have become better educated on how to produce and advocate for such designs, sometimes taking advantage of advanced computer software tools to help in the process. Similarly, construction professionals have developed standard practices or teamed with specialists to be sure they can provide green building work competitively. Concurrently, product manufacturers have invested heavily in finding ways to both operate in a sustainable manner and to create products that pass muster as green and sustainable too.

Pushing this movement along is the existence not only of energy codes and even the International Green Construction Code (IgCC), but also a number of voluntary standards and rating systems to help identify just how green or sustainable a building really is. The U.S. Green Building Councils' LEED program is probably the best-known one, but there are others being used too. The WELL standard is recognized by LEED but focuses on the health and well-being of occupants in more categories and in greater detail. Passive House is raising the bar on energy efficiency not only for single-family residential buildings but also for multifamily construction—its fastest-growing area of certification. And the International Future Living Institute has developed the Living Building Challenge (LBC) which goes beyond "doing no harm" to being truly regenerative and contributing to a positive built environment in multiple respects. It includes 20 imperatives organized into seven "Petals," all of which must be achieved in order to receive full LBC Certification. Separate certifications are also available for certain petals and for a net-zero energy building.



The successful design of green and sustainable buildings requires a holistic approach to balance different aspects of sustainability as identified by international programs and standards.

Photo courtesy of Accurate Perforating/Bret Hoekema

CONTINUING EDUCATION

1 AIA LU/HSW

1 LFA CEU

Learning Objectives

After reading this article, you should be able to:

1. Identify and recognize the significance of different aspects of green and sustainable design working together to create a holistic solution.
2. Assess the health and wellness aspects of green rating programs and ways that they can be incorporated into building designs.
3. Explain the multiple aspects of energy conservation and efficiency in buildings that contribute to better green design.
4. Determine ways to incorporate green and sustainable principles into selected buildings as shown in case studies.

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 #K1710C

Opening Glass Walls that Completely Disappear

Shadows on the Hudson Restaurant, Poughkeepsie NY • Architect: Marshall Rosenblum Architects • NanaWall Single Track HSW60 with incorporated swing door

Design around structural obstacles with the flexibility to park panels anywhere.

NanaWall Single Track Systems

All the same performance qualities as NanaWall Folding Systems:

- Wind & Water Resistant
- Energy Efficient
- Highly Secure
- Easy Operation & Durable

Showrooms Nationwide
Visit NanaWall.com
800 873 5673

NanaWall®
Engineering the Exceptional

Regardless of the standard being followed, the challenge for design teams is not necessarily how to address any individual aspect of green or sustainable design, but rather, how to synthesize multiple needs into an integrated, holistic design. That can often take some trial and error attempts at different design combinations to determine an optimal balance of benefits without detracting from other sought-after characteristics. The development of different design iterations, commonly using computer modeling or simulations, has given rise to a 21st century "iterative design process." Ideally, this process allows for several different design scenarios to be developed, first at a large scale or "massing" level, to compare the differences between them on environmental, energy, or wellness terms. Once a conceptual design is settled upon, then a more detailed analysis can take place where individual components can be studied to determine how to optimize each of them in relationship to overall design and other components. Finally, specifications for materials need to be coordinated with the design to maximize the green and sustainable qualities being sought for the materials that are used in the building.

With all of the above in mind, this course will look at several aspects of green and sustainable design, specifically with the idea of integration and optimizing design iterations, components, and specifications.

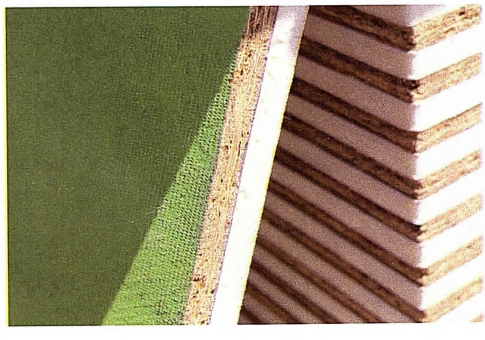
DURABLE, MULTIFUNCTIONAL BUILDING ENCLOSURES

Buildings, by definition, separate the outdoor environment from the indoors to provide shelter and comfort for people. The building enclosure (walls, roofs, floors) defines that separation and, in addition to structural and finish materials, is comprised of four fundamental building components: a water-resistive barrier, an air barrier, a thermal barrier, and a vapor retarder. Each of these barriers is intended to control or thwart the movement of air, water, moisture, or heat through the enclosure. The premise of green and sustainable design in regards to these items is to go beyond code levels of performance and pay attention to the details enough to be sure that all four of these components operate at a higher level for several reasons. First is to create a durable, long-lasting building enclosure system. This is required in building codes but is also the essence of what it means to be sustainable over the long term—making repeated repairs or replacing materials on a building is the antithesis of that. Second is the premise that a well-designed building enclosure will reduce energy requirements for heating and cooling that building. This is true for all of the barriers, not just the thermal barrier (i.e., insulation). A poor air barrier can cause drafts and air leaks that could require more heating or cooling energy than poor insulation would. Water or moisture penetration into a wall or roof assembly can damage and compromise the effectiveness of insulation, not to mention creating mold or other conditions that are not conducive to good human health. Hence, all of the barriers are critical.

There are numerous ways of course to create a sustainable, durable building enclosure. In framed wall construction, the place where most of these critical barriers come into play is along the line of the structural wall sheathing. Typically, in wood-framed construction, this is an engineered wood panel that is fastened directly to stud framing, providing shear support and a nailing surface for final cladding or other finishing. It is the exterior surface of this sheathing that also needs to be treated to provide a water-resistive barrier (WRB) and an air barrier to meet code and energy performance requirements. These barriers are critical not only along the surface of the sheathing but at all seams and penetrations as well. Separate products are commonly available that are either fastened (i.e., house wrap or sheet goods), adhered, or sprayed on in the field to achieve these characteristics with their performance subject to the skills of the applicators and the site conditions during construction.

While the combination of field-applied barriers has been traditional, there are products that have emerged to simplify construction,

Photo courtesy of Huber Engineered Woods LLC © 2016



Exterior continuous insulation can be specified as an integrated component with next-generation sheathing that includes various insulation thicknesses on the structural sheathing panel to meet thermal performance requirements of energy codes and voluntary standards.

Photo courtesy of Huber Engineered Woods LLC © 2016

Integrated structural sheathing is available that provides an integrated water barrier and air barrier with tape-sealed seams, which streamlines installation and can help improve long term performance.

improve durability, and meet high-performance criteria. Such products were developed with the recognition that the ones that have the most chance of performing successfully over time are the ones that are easy to integrate into a building design and streamlined to install. As such, new structural sheathing products have entered the market in the past decade that integrate factory-applied water-resistive barriers plus rigid air barriers all into a single-panel system. These next-generation structural sheathing solutions help framing crews reduce the risk of improper installation of multiple product layers to help assure better performance over time. Further, such integrated structural sheathing systems rely on sealing the seams between the sheathing and around the penetrations with acrylic tape specifically designed to seal against water and air. The entire system has passed third-party testing and been shown to meet or exceed the requirements for proper water and air barriers.

Taking integration one step farther, it is also possible to specify and design with structural sheathing that incorporates a built-in layer of exterior continuous rigid insulation on the interior side of the sheathing, leaving the air and water barriers unaffected. Continuous insulation is promulgated by energy codes and green building standards, particularly Passive House, for its superior thermal performance. Walls, floors, and other building components that are only insulated between the framing members ignore the reduced thermal performance of those framing members compared to insulation. Heat can flow somewhat unrestricted through that framing and cause a thermal bridge that lowers the overall performance of the building. By providing continuous insulation over the outside of all framing, the thermal bridging is reduced or eliminated. Integrated structural sheathing that includes an air, water, and thermal barrier builds on the simplicity, effectiveness and

CUSTOM FABRICATION FOR UNIQUELY DESIGNED HOME, OFFICE, OUTDOOR AND RETAIL SPACES

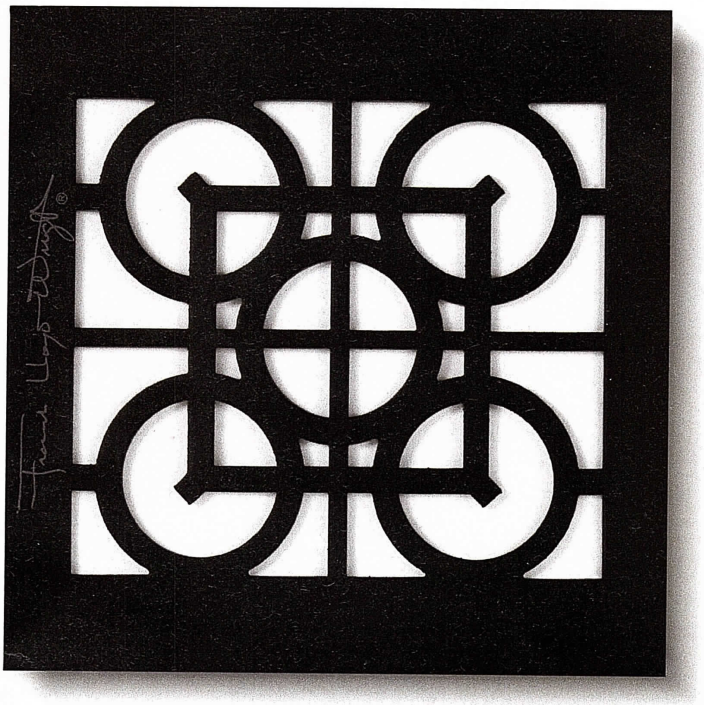
INTRODUCING THE

FRANK LLOYD WRIGHT®

SIGNATURE DECORATIVE GRILLE COLLECTION

DESIGNER PATTERNS
FOR YOUR MID-CENTURY MODERN PROJECT

Frank Lloyd Wright®



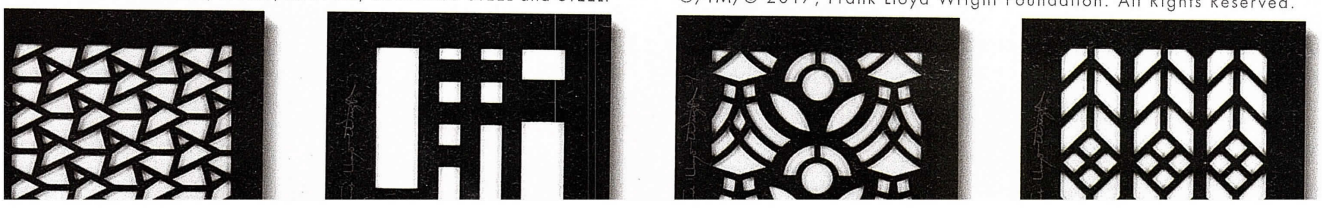
DESIGNED + MADE IN BROOKLYN

ARCHITECTURAL GRILLE

VIEW THE COMPLETE COLLECTION AT ARCHGRILLE.COM

VAILABLE IN ALUMINUM, BRASS, BRONZE, STAINLESS STEEL and STEEL.

®/TM/© 2017, Frank Lloyd Wright Foundation. All Rights Reserved.



FRANK LLOYD WRIGHT® FOUNDATION

Photo courtesy of Huber Engineered Woods LLC © 2016

Integrated structural sheathing with built-in underlayment and taped seams for a "sealed roof deck" are used on roof systems as part of sustainability and resilient strategies to help protect against water intrusion, particularly in high-wind-prone areas.

high performance that are possible with this advanced type of product offering. A factory-installed layer of polyisocyanurate (polyiso) continuous foam insulation is available in thicknesses between ½ inch and 2 inches. When used in conjunction with stud cavity insulation, this continuous insulation provides additional R-value for reduced heat transfer in advanced wall assemblies. Combined with the high performance of the air and water barrier, the total system becomes extremely energy efficient.

Laura Gamble is a project manager for the Philadelphia-area-based architectural firm BartonPartners and has seen the need for increased energy performance first hand. "Building codes in general are driving up insulation thicknesses and tightness standards," she says. Further, she points out, "Many of our clients are seeking out certifications that go above and beyond code such as LEED, NGBS, ENERGYSTAR certification, and others." To meet these needs, her firm is involving building envelope specialists to review both construction documents and contractor's installations to support the high performance expected in today's homes and buildings. In this regard, Gamble says, "An all-in-one product that includes sheathing, a weather-resistive barrier, and flashing tape speaks to the evolution of building science. For clients who are interested, we're specifying such systems because the building can be made weathertight quicker than with traditional sheathing and building wrap systems, which generally requires extra labor and time."

There are also other practical implications of using this type of integrated structural sheathing product. The combined capabilities mean there are fewer products to order and install, thus changing the way design and construction teams plan materials and framing schedules. On site, the resistive nature of the sheathing means that if it is left exposed before the siding or cladding is installed, then the barriers aren't necessarily compromised the way other materials can be, such as house wrap that is seen blowing loose. In fact, at least one manufacturer offers a 180-day exposure guarantee and a 30-year limited warranty based on the tested integrity of the system to ensure a fully weatherable exterior wall. In addition, because of its streamlined approach to achieving structure and air and water management in a single product, integrated sheathing and tape is used in many panelized and modular buildings. Here, the integrated sheathing not only compresses time schedules but helps achieve higher quality control of installation—another critical component of long-term durability.

An integrated water-resistive and air barrier sheathing also creates a unique system that improves the chances for greater long-term moisture resistance, one of the greatest threats to building envelope degradation. Typically, vapor retarders are required to be placed on the interior side of walls in colder climate zones. If any moisture does penetrate the wall and enter the construction, it may condense on the interior face of the sheathing. Products that provide moisture permeance to allow panels to dry to the outside can help alleviate this condition and contribute to the longevity of the construction.

It should be noted that such integrated systems are not limited only to exterior walls. Integrated sheathing and tape products are also used for roof construction. In fact, they have been shown to meet the FORTIFIED HOME™ national resilient building standards for a sealed roof deck. This means that they are much more likely to survive severe weather, such as hurricanes, tornados, and heavy rain, as compared to traditional sheathed roofs that do not use the tape sealing or integrated air and water barriers.

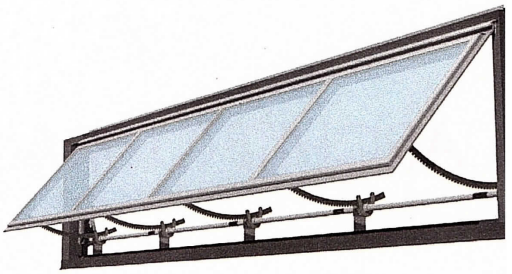
Overall, whether designing to meet the latest building codes or voluntary high-performance standards, managing air tightness, bulk water, and thermal bridging, all can be effectively addressed with this integrated approach to design and construction.

COMBINING NATURAL VENTILATION AND DAYLIGHTING

Virtually all of the green and sustainable building standards recognize the importance of life-giving elements in the interior environment. These elements include fresh air and daylight with specific provisions in LEED, WELL, and the Living Building Challenge (LBC) that seek positive, healthy indoor conditions. In fact, one of the required imperatives of the LBC (07) states: "Every regularly occupied space must have operable windows that provide access to fresh air and daylight." The design challenge in providing air and daylight, however, is balancing them with the energy use implications that can accompany them. Specifically, too much daylight can also cause unwanted solar heat or glare if not controlled properly. Similarly, providing abundant fresh air into the building means that air not only needs to be moved in some manner (often involving electric fans), but it may also need to be conditioned for temperature and humidity level to maintain comfortable interior conditions. Finding creative ways to provide the right levels of daylight and ventilation while minimizing the energy required to do so is a great example of the usefulness of iterative design.

The first thing to recognize in ventilating commercial or industrial buildings is that natural ventilation is still an option. Most of us are accustomed to simply opening a window in our residences for fresh air, but too many people incorrectly assume that doing something similar in commercial or industrial buildings can't be done. The use of HVAC systems that are assumed to run 24/7 tends to drive that perception. The reality is that natural ventilation is used very successfully in buildings of all types all around the world and has been for centuries. In some cases, there are certain times of day or times of year where outside air is very comfortable and suitable for indoor use. The incorporation of "economizer cycles" in HVAC systems is based on this, although fans are still needed for such a system to operate. Other systems use carefully placed, operable windows or louvers that allow fresh air to enter naturally in one location and exhaust out in another based on the building design. Some even use internal or external heat gains to warm the air and allow it to rise and ventilate accordingly.

Images courtesy of EXTECH/Exterior Technologies, Inc.



Top-hinged continuous window systems can provide natural ventilation and daylight into a building to balance wellness features of a sustainable building with energy efficiency.

WE RODE
SKATEBOARDS
ON THIS WALL ALL DAY.
AND DIDN'T
LEAVE A SCUFF.
Don't believe us? See how Ultra Spec® SCUFF-X® for commercial spaces kept this law firm's walls scuff-free at BenjaminMoore.com/Scuff-X
Benjamin Moore
Paint like no other.®
Only available at independent paint and hardware stores.
Benjamin Moore
ULTRA SPEC
SCUFF-X
SCUFF - RESISTANT
INTERIOR LATEX PAINT
Extreme Durability for High-Traffic Areas
EGGSHELL FINISH
©2017 Benjamin Moore & Co. Benjamin Moore, Paint like no other, SCUFF-X, the Fanhale™ symbol, and Ultra Spec are registered trademarks licensed to Benjamin Moore & Co.

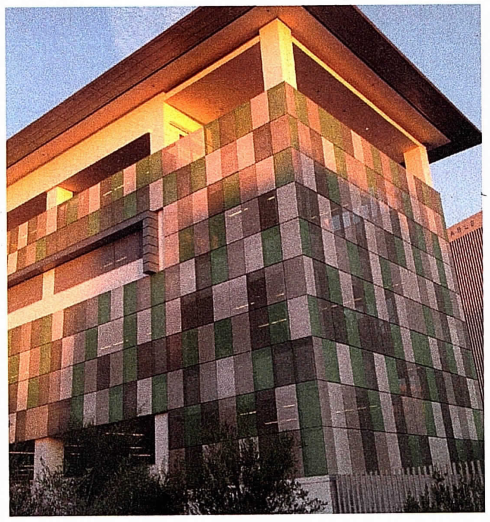
A modern, sustainable version of this approach to natural ventilation is the use of top-hinged operable windows that can respond easily to different building conditions and needs. Such windows offer very effective natural ventilation and daylighting that can be controlled manually or with electric motors. In some cases, they can also be fitted with electronic controls as part of a larger energy management system in a building to allow for automatic operation based on indoor and outdoor conditions, schedule, or other criteria. Hinging at the top allows the windows to remain open even during rainy times since the water will shed off of the angled open window and away from the building.

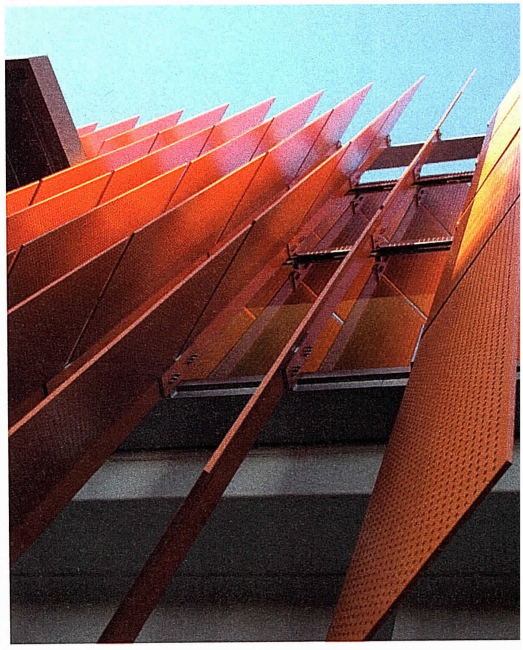
Some manufacturers have created a fully coordinated system that can be installed as single units or in continuous runs up to 150 feet wide. When placed in long runs, they are installed in sections designed to snap together when one unit is mated with another. In at least one case, the design of that 'snap together' joint includes weather stripping, which creates an effective continuous louver effect. The flexibility of the weather stripping can also accommodate thermal expansion and contraction of the system. Incorporating lightweight, but thermally efficient glazing into the system allows for natural daylight in addition to the ventilation. Bill Voegele, CEO and Founder of EXTECH/Exterior Technologies, Inc., points out, "Continuous top-hinged windows have been around for years, mainly for industrial applications, and now the world is understanding that they are an architectural resource as well. They deliver massive natural light and ventilation economically and sustainably. The fact that they can be left open during normal rainfall adds to this system's list of benefits."

Top-hinged window/louver systems are popular with warehouses, data centers, and other new or existing facilities that need to meet high cooling demands and/or rigorous sustainability goals. They are available in systems that accept glass or lightweight, translucent polycarbonate glazing up to 1 inch thick. Typically, they are "dry glazed" with low-friction gaskets to maintain good air and water infiltration seals while allowing for thermal movement of the glazing. Polycarbonate glazing is often used because it is available with a Class A fire rating and can achieve R-values up to R-3.8. The lighter weight of the polycarbonate compared to glass means that large, continuous runs are possible up to 8 feet tall and 150 feet wide, or smaller systems can be selected to suit the particular needs of the building. Either way, the need for multiple building penetrations can be reduced. The finish on the aluminum framing can be a choice of anodized or high-performance factory-baked paints.

When using these systems in the design of a building, a computerized daylighting study can be done to place the project in a virtual environment and allow the architect to modify the design to maximize the daylighting delivered and control the solar heat gain. Similarly, the massive ventilation offered by the system relieves demand for the HVAC system. This reduces energy costs and can help with optimizing energy usage consistent with LEED or other programs. Because the system can be left open during normal rainfall, it facilitates ventilation despite inclement weather. The natural daylighting provided also reduces the cost of artificial lighting and provides the wellness benefits of natural light. When used with polycarbonate glazing, it is nearly 100 percent recyclable, further lending itself to its overall, long-term sustainability. Even when installed in a long run, each glazing panel can be repaired and replaced individually, saving on maintenance and excess waste.

Photos courtesy of Accurate Perforating (left) and Accurate Perforating/Jonathon Lachlan-Hache (right)





Perforated metal sunscreens can be used on building facades in a variety of ways to help control energy use while still providing light and ventilation as well as biophilic design possibilities.

SOLAR SCREENING

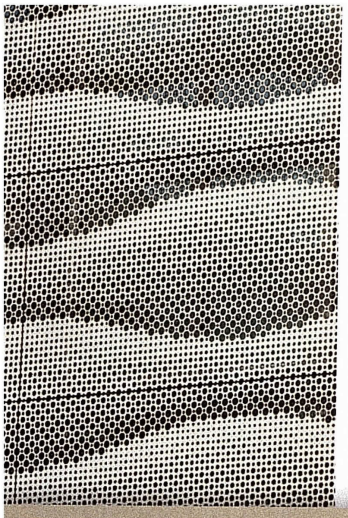
While allowing light and ventilation into a building is commonly achieved with window systems of some sort, there are other considerations for green and sustainable buildings too. In cases where the amount of sunlight needs to be controlled to limit solar heat gain and control energy usage, one of the most effective methods is to add an exterior treatment, such as a sun screen or awning. The exterior treatment stops the sunlight and resulting heat gain before it ever enters the window or the building, making it one of the more effective strategies for reducing heat gain in buildings. It also provides real opportunities for the creative design of building facades and exteriors.

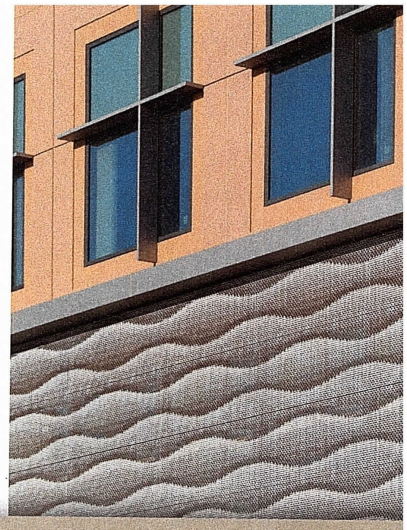
When looking at options for sun shade materials, one common approach is to use perforated metal. This choice has the benefit of being able to select or design the amount and style of perforation to provide differing levels of light penetration and/or reflectance. In addition to keeping the building cooler in the sunlight, perforated metal can also allow controlled light and views either directly through perforations in the sunscreen or between vertical louvers or baffles. There are also any number of other creative design options for daylight and views with this material based on the needs of the building and the overall design intent.

Beyond daylight, perforated sunscreens allow air to pass through them. For building occupants, that means they can still open windows or operate ventilation systems and receive plenty of fresh air. For exterior structural design, it means that wind loading is dissipated compared to an all solid material. Both of these conditions make it easy to add perforated metal sun screens to most building types.

Of course, any material used in a green building needs to be looked at in terms of its overall attributes. Perforated metal sun screens can be specified to be made from a high recycled post- and pre-consumer content to avoid the use of virgin raw materials. On-site, the sun screens can be sized and manufactured to reduce or eliminate waste. Further, at the end of its service life, 100 percent of perforated metal can be recycled. The finishing of the metal can also be a concern, particularly if volatile organic compounds (VOCs) are involved with the finishing. Hence, it is possible to use low-VOC finishes, or for certain metals and in some building designs, no finish may be required, thus eliminating the concern altogether.

From a building use perspective, perforated metal is an economical and very durable option. It typically requires very little maintenance compared to other materials since it needs less refinishing and less cleaning over time. It is quite common for it to hold up for decades, not just years. On and within the building, perforated metal can support biophil-





ustom Perforated Architectural Metal Components

Perforated Panels • Sun Shades • Graphic Panels • Garage Screening • Backlit Panels • Façades • Railing In-Fill Panels

Ventura County Medical Center - Ventura, CA
Perforated Metal Facade

l us today to discuss your next project

98-5219 • www.accuratemetalperf.com • sales@accuratemetalperf.com

accurate
PERFORATING

ic design, which is one of the Imperatives (number 09) of the Living Building Challenge. Under this requirement, the intent is to foster and nurture the connection between people and nature in the form of light, air, and environmental features as well as the use of natural shapes and forms. The perforated metal can be shaped and formed specifically to provide light and ventilation where it is needed but also to mimic shapes and forms from nature.

Overall, the use of perforated metal sun screens is another example of a single product or design solution that can address multiple aspects of green and sustainable design in a balanced way. As such, they can contribute to points and credits for green building certification programs, such as LEED, WELL, and LBC.

PAINTS AND FINISHES FOR RESPONSIBLE INTERIORS

LEED, WELL, the LBC and other programs are specifically concerned with the impacts of the interior environment on human health. In particular, they focus on the products and materials used inside a building and their specific chemical makeup. It is easy to understand that in a closed, indoor environment, people may react poorly when regularly exposed to products that emit certain chemicals or compounds, even if the quantities are small. Hence, there has been a considerable focus to require manufacturers to declare what is in the materials or products that they create, just as food products need to list the ingredients in them for health reasons. This allows designers, specifiers, and consumers to make informed choices and compare different products for use or exclusion in buildings.

A good example of where this responsible interior concept applies is the use of paints and finishes that are formulated out of a variety of chemical compounds and elements and which can be quite ubiquitous inside buildings. Recognizing this, they are often scrutinized particularly for the amount of volatile organic compounds (VOCs) and other ingredients. In particular, under LEED v4, flat paint must meet a VOC level of 50 grams per liter (g/L) or less, while non-flat paint is allowed 100 g/L or less, as well as be emissions certified. This is a restrictive but increasingly achievable requirement as paint manufacturers work to reduce or even eliminate VOCs from their formulations.

In addition to this basic requirement, LEED v4 awards credits where an environmental product declaration (EPD) is provided as a way of communicating the results of a detailed life-cycle assessment (LCA) of the ingredients and processes involved in a product. The American Coatings Association and the U.S. coatings industry have developed a standardized format for measuring the environmental impacts of architectural paint based on a defined set of criteria. Individual manufacturers are using this format to conduct an LCA and ultimately an EPD that would allow certain brands to qualify for the appropriate LEED credits. A similar process can create a health product declaration (HPD), which discloses the chemical profile of a product, including both hazardous and nonhazardous ingredients, in more detail. LEED recognizes both the EPD and HPD as a means to demonstrate qualification for certain credits/points.

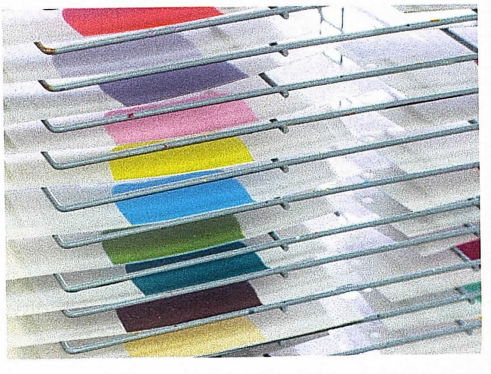
Beyond LEED, the WELL program similarly seeks to reduce VOCs and achieve transparency in product makeup. WELL Feature 04 specifically focuses on VOC reduction, while Features 11, 26, and 97 address fundamental and enhanced material safety and transparency. Some of these requirements are aligned or equivalent between the LEED and WELL standard, while others only overlap partially. Therefore, when seeking to obtain certification in either standard, it is important to review the specific language and details of what is being assessed for human health impact. Note that when reviewing the information, both the paint base and the colorants are important since adding colorant to a low-VOC paint can increase levels significantly. Some colorants alone can meet or exceed the 100 g/L threshold separate from the paint base, while other manufacturers have produced zero-VOC colorants (according to EPA Method 24): Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings. Further, if a full life cycle (or duty cycle) of the paint or coating is being considered, then the anticipated number of repaintings will influence the total VOC emissions over time.

The Living Building Challenge takes a slightly different approach to interior health and materials used in construction. Rather than trying to identify acceptable levels of certain chemicals or compounds, they simply call for them to be eliminated completely from buildings that seek certification. Specifically, they have researched and identified a "Red List" of chemicals and compounds that are known to pose serious risks to human health and the environment. Under required imperative 10, a project must be free of anything on the Red List. The means to identify this and other imperatives comes from

THE RED LIST – FROM THE LIVING BUILDING CHALLENGE 3.1

The Living Building Challenge envisions a future where all materials in the built environment are regenerative and have no negative impact on human and ecosystem health. The intent of the Materials Petal is to help create a materials economy that is nontoxic, ecologically restorative, transparent, and socially equitable. In order for a project to earn the materials petal of the Living Building Challenge, it cannot contain any of the following Red List materials or chemicals:

- Alkylphenols
- Asbestos
- Bisphenol A (BPA)
- Cadmium
- Chlorinated polyethylene and chlorosulfonated polyethylene
- Chlorobenzenes
- Chlorofluorocarbons (CFCs) and Hydrochlorofluorocarbons (HCFCs)
- Chloroprene (neoprene)
- Chromium VI
- Chlorinated polyvinyl chloride (CPVC)
- Formaldehyde (added)
- Halogenated flame retardants (HFRs)
- Lead (added)
- Mercury
- Polychlorinated biphenyls (PCBs)
- Perfluorinated compounds (PFCs)
- Phthalates
- Polyvinyl chloride (PVC)
- Polyvinylidene chloride (PVDC)
- Short-chain chlorinated paraffins
- Wood treatments containing creosote, arsenic, or pentachlorophenol
- Volatile organic compounds (VOCs) in wet-applied products



Photos courtesy of Benjamin Moore

When assessing interior finishes, both base paints and colorants used in them need to be considered for chemical ingredient content, including VOCs or Red List items.

ZIPsystem™
R-SHEATHING

Where Code Meets Comfort

Increased Exterior R-value

Structural Bracing

Built-In Water-Resistant Barrier

Rigid Air Barrier

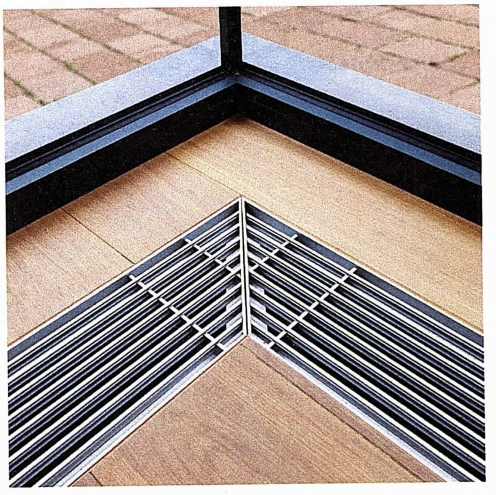
Structure, insulation and weather protection — in one sheathing system.

ZIP System® R-sheathing streamlines exterior wall designs with an all-in-one approach to sealing, protecting and insulating your building envelope. Revolutionary ZIP System R-sheathing provides a built-in weather-resistive barrier, air barrier and continuous exterior foam insulation in a structural panel that meets wall bracing and shear wall requirements. Achieve added R-value to meet new codes and advanced building programs — in one exterior wall sheathing system.

Visit ZIPSystem.com/R-Sheathing to learn how to streamline your next multifamily project.

© 2017 Huber Engineered Woods LLC. ZIP System, the accompanying ZIP System logo and design are trademarks of Huber Engineered Woods LLC. 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 18178 09/17.

Photos courtesy of ARCHITECTURAL GRILLE



Wood or metal HVAC grilles used in green buildings or following the Living Building Challenge are as significant as any other building product when total compliance with standards is required.

third-party verified information on manufactured products under the Declare program of the LBC and covered in imperative 12. This initiative focuses on product ingredients and uses an intentionally simple, color-coded summary label that declares any potential hazards. The choices for each ingredient listed can be a warning that something is 1) on the Red List; 2) another chemical of concern identified by the U.S. Environmental Protection Agency; or 3) not a hazardous chemical.

Designers and specifiers can request Declare labels directly from manufacturers and can use this information to specify materials that are free of Red List ingredients or other chemicals of concern. The International Living Future Institute, which administers the Living Building Challenge, also keeps a list of products and materials on its website that have filed declare labels (https://living-future.org/declare/). A search can be initiated by manufacturer name, by CSI Specification Division, or by geographic location in the world. Given the extensive list of products and materials, a helpful tab for "status" also provides sorted lists based on either Red List free, LBC compliant, declared, third-party verified, or LEED v4 listed.

It is worth noting that some paints and finishes can also be Cradle to Cradle Certified™. This product standard guides designers and manufacturers through a continual improvement process based on five categories: material health, material reutilization, renewable energy and carbon management, water stewardship, and social fairness. A product can receive an achievement level in each category, with the lowest representing the product's overall mark. Product assessments are performed by a qualified independent organization trained by the Cradle to Cradle Product Innovation Institute, a nonprofit organization that manages the certification program. Every two years, manufacturers must demonstrate good faith efforts to improve their products in order to have their products recertified. Some paints meet this ongoing recertification, and evidence of the same can be requested from the manufacturers or the Cradle to Cradle Product Innovation Institute (www.c2ccertified.org/).

ARCHITECTURAL AND HVAC SPECIALTIES

When designing a green or sustainable building, the use of rating systems and standards helps in determining the degree to which different goals are achieved. While programs like LEED and WELL recognize different certification levels, allowing designs to pick and choose which attributes to pursue, full certification in the Living Building Challenge requires that 100 percent of the building needs to comply with the criteria. The LBC does allow recognition for individual Petals that make up the total program, but everything in the requirements for the Petals must be met. The implication of this total approach is that everything in the design and/or specifications for a project needs to be looked at through the lens of a truly regenerative, healthy, and positive built environment. This can be easy to think of for the major components of a building, such as structure, facades, finishes, etc., but total compliance means that it applies to specialty products too, such as accessories, trim, grilles, and similar items used in a building.

To illustrate this concept, let's take a look at a common and required product in most buildings in the form of metal grilles, which cover HVAC openings in walls, floors, ceilings, or exposed ductwork. Architects often like to select such products based on their contribution to the overall design intent of the building, while engineers are focused on the amount of air flow and net free area in them—both legitimate and important design considerations. Of course, there are choices in such products, and many come with the attributes of being lightweight, versatile in design characteristics, available in a variety of styles, and being manufactured from a variety of material choices. When used in a building pursuing LEED or the LBC, the additional considerations of the grilles as an installed product in a green or living building come into play, just as for any other products used. That means they need to be looked at and assessed on several fronts:

- **Recycled metal content:** Up to 94 percent post-consumer content recycled aluminum is possible and should be part of the specification for linear bar grilles, perforated grilles, or custom-fabricated products.
- **Wood specification:** For some designs, the grilles may be specified as being fabricated from wood instead of metal. In this case, the use of reclaimed wood is possible, but otherwise the wood should meet the same sustainability criteria as other wood in the building, such as Forest Stewardship Council (FSC) certification.
- **Durability and ease of maintenance:** The most sustainable product is one that lasts and doesn't need to be replaced or repaired unduly over time.
- **Finishes:** If any finish is used on the grilles, then they need to be low- or zero-VOC content. Some powder coatings that are electrostatically applied and then cured under heat without the use of solvents may be the best choice here.

Just like other products used in a building, the use of Declare labels issued by the International Living Future Institute can be asked for and used to compare different manufactured products based on the relevant criteria above. This information can be used for LBC projects, but note too that Declare has been approved as a compliance pathway for the LEED v4 Building Product Disclosure and Optimization Credit, Option 1. Regardless of the program being pursued, all products of all sizes and types used in a building need the transparent data and information that such declarations provide.

Continues at ce.architecturalrecord.com

Peter J. Arsenault, FAIA, NCARB, LEED AP, *practices architecture, consults on green buildings, presents continuing education seminars, and writes prolifically on topics related to design and high-performance buildings.* ***www.linkedin.com/in/pjaarch***

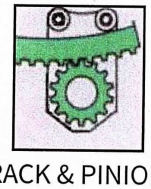
accurate PERFORATING
ARCHITECTURAL GRILLE CUSTOM DESIGNED, FABRICATED AND FINISHED
Benjamin Moore®
EXTECH EXTERIOR TECHNOLOGIES, INC.
ZIPsystem™ SHEATHING & TAPE

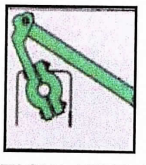
e TECHVENT 5300® top-hinged window system delivers the tural ventilation and daylighting needed to reduce a building's rbon footprint and achieve LEED certification.

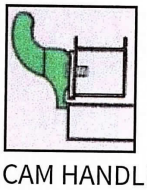
atures & Benefits:

- Delivers natural daylighting & massive ventilation
- Works as an operable top-hinged window or skylight
- Manual or electric operation
- Can be left open during normal rainfall
- Tested to hurricane-force winds
- HVAC integration possible for automatic window operation
- Available as single units or in runs up to 150' wide
- Complete design, manufacture, & installation services available

OPERATING HARDWARE OPTIONS


RACK & PINION


ARTICULATED ARM


CAM HANDLE

See project photos & easily order samples of the TECHVENT 5300® at extechinc.com/techvent

WW.EXTECHINC.COM
77.793.1140

TRANSLUCENT WALLS | TOP-HINGED WINDOWS
CUSTOM FACADES | SKYLIGHTS | CANOPIES

EXTECH
EXTERIOR TECHNOLOGIES, INC.

PRODUCT REVIEW

Designing Green: The Seen and the Unseen

Accurate Perforating

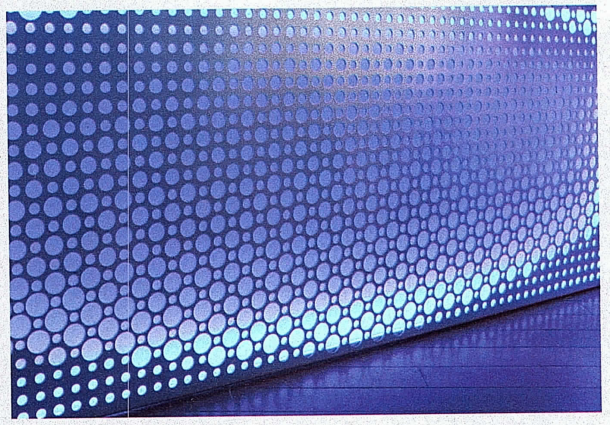


Photo courtesy of Chung In, Ngan

Backlit Perforated Panels

Backlit perforated panels are excellent at making your environment more brilliant. Backlighting highlights the structure of surfaces and makes perforated panels stand out to produce a more dramatic effect. Accurate, with the collaboration of its lighting partner, can utilize many different types of backlighting to enhance your surroundings.

www.accurateperforating.com

ARCHITECTURAL GRILLE

Image courtesy of Architectural Grille

Spackle In J-Frame Grilles

When your project needs a less-is-more approach to HVAC grilles, our Spackle In J-Frame Grilles offer a minimalistic design solution. These signature grilles allow for easy installation using common drywall screws and spackle/plaster to achieve a sleek and simple aesthetic finish with no visible mounting screws to detract from the overall visual design of the space.

www.archgrille.com

Benjamin Moore®

Image courtesy of Benjamin Moore

Benjamin Moore Ultra Spec® Scuff-X®

Ultra Spec® SCUFF-X® is a revolutionary, single-component paint that resists scuffing before it starts. It is ideal for high-traffic areas in commercial spaces, such as school hallways, hospital waiting areas, hotel lobbies, offices, conference rooms, restaurants, service entrances, gym locker rooms, retail fitting rooms, cafeterias, and stairwells.

www.benjaminmoore.com/scuff-x

EXTECH/Exterior Technologies Inc.

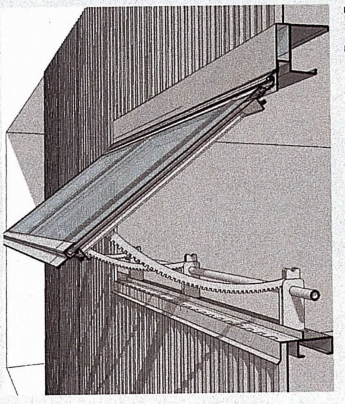


Image courtesy of EXTECH/Exterior Technologies Inc.

TECHVENT 5300 Top-Hinged Industrial Window System

The TECHVENT 5300 by EXTECH is a patented top-hinged window system that can be left open during normal rainfall. It provides massive natural lighting and ventilation and is great for new construction or retrofits. It can be operated either manually or electrically and can be installed as single units or in continuous runs.

www.extechinc.com/techvent

ZIP System® Sheathing and Tape

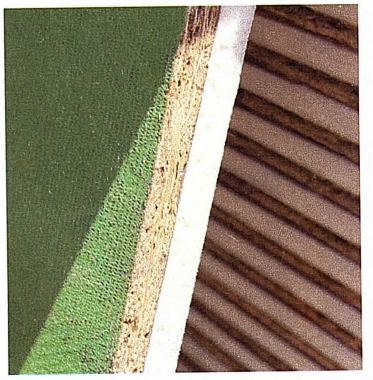


Photo courtesy of Huber Engineered Woods LLC © 2016

ZIP System® R-sheathing

For a streamlined approach to controlling water, air, and thermal bridging, ZIP System® R-sheathing provides structure plus built-in continuous foam insulation, a rigid air barrier, and a water-resistive barrier. Available in multiple insulation thicknesses, ZIP System R-sheathing is an efficient way to increase exterior R-value for projects in any climate zone.

ZIPSystem.com/R-sheathing

Academy of Digital Learning

Multifamily Housing

Architectural Record's Academy of Digital Learning is a new, free educational offering that provides some or all of your annual CEU requirements within a specific area of interest.

This academy will provide an editorial-rich curriculum on multifamily housing that includes a combination of articles, research, webinars , and multimedia courses, instructionally designed into an eight-hour program. Upon completion of the academy, you will receive a digital badge that can be used in your signature or online to recognize your achievement and you will be credited with 8 AIA LUs.

Start this academy today at:

ce.architecturalrecord.com/academies/multifamily

ARCHITECTURAL RECORD

Brought to you by

TAMLYN

Masonry products have been upgraded to meet stringent codes and evolving performance targets.

All images courtesy of Echelon™ Masonry except as noted

Modern Masonry: Fire Protection and Enhanced Performance

A proven material upgraded for code consistency, fire protection, and high-performance building

Sponsored by Echelon™ Masonry

Fire safety is one of the paramount responsibilities of architects and developers, and it is dependent on careful selection of materials and proper design. Deficits in either area may result in a building fire, which can be a dramatic and devastating event, often incurring extensive property damage and, unfortunately, loss of human life.

Since February 2017, a number of high-profile fires have occurred in large wood structures in cities across the country, notably Oakland, California; St. Petersburg, Florida; Arlington, Virginia; College Park, Maryland; Overland Park, Kansas; Raleigh, North Carolina; and Maplewood, New Jersey. It is important to note that these were construction fires, not fires that occurred in a completed and occupied building.

The building type in question—wood-framed construction over a concrete podium—is a relatively new but highly popular design, enabled by the International Building Code's increase in allowable height for wood construction in apartment buildings. The finished building, equipped with sprinkler systems and fire separations, is considered safe. But building codes may not fully address life safety and property protection during the construction period, and that is often when a building is most vulner-

CONTINUING EDUCATION

1 AIA LU/HSW

Learning Objectives

After reading this article, you should be able to:

1. Discuss the factors involved in the recent rash of construction fires around the nation.
2. Explain masonry's ability to resist fires and assure safe buildings both during the construction phase and after completion.
3. Identify the ways in which masonry can resist moisture intrusion and protect buildings from moisture damage over the life of the building.
4. Describe three masonry systems that have been upgraded to meet codes, resist fires, and boost building performance and energy efficiency.

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 #K1710G

able to damage. Some maintain that structures built of wood are particularly vulnerable during construction for a number of reasons.

Wooden structures are considered "lightweight" combustible construction, a scenario that promotes specific fire risks. In addition, in the early construction phase, drywall may not yet be installed, sprinklers systems activated, or fire alarms, fire separation devices like gypsum board, fire doors, etc. in place. Further, wooden structures have void spaces between floors and ceilings where fire can spread quickly and undetected, whereas noncombustible materials slow the flame spread.

According to Jason Thompson, vice president of engineering for the National Concrete Masonry Association (NCMA), the evolution of building codes over the past 30 years from prescriptive to performance based counts heavily in the "beginning of the end of the inherent fire robustness of our buildings." He explains that building codes now allow usage of fire-rated assemblies of combustible construction. "The inherent redundancy of a concrete block firewall has been lost," he says. "If a fire starts, it can burn quickly through the building." And the increase in allowable height of wood construction presents a double whammy. "A wood-framed apartment complex consisting of 500 units has a significantly greater fuel load, and due to its size, can inhibit firefighter access during a fire," Thompson adds.

While the perception is that wood-framed midrise buildings offer cost-effective, high-density structures that can be constructed quickly with a low carbon footprint, some firefighting groups as well as cities and towns have expressed concern over their safety and are pressing for a ban on the use of combustible materials in multifamily construction. "A hard look is being taken at whether the pendulum has swung too far in permitting larger wood-framed buildings," Thompson says. "It's happening nationally, regionally, and at the state and municipal level with varying levels of traction and implementation." Examples include the town of Sandy Springs, Georgia, which passed an ordinance disallowing this type of construction, and the states of New Jersey and Maryland, where similar legislation is under review.

While no building material is totally immune to fire, alternative noncombustible materials can be an effective option. Masonry is one such material that carries minimal risk of fire during construction or otherwise. It has been used for thousands of years, demonstrating nearly unparalleled durability and the ability to withstand adverse natural and manmade events. But rather than being an "antiquated" medium, however, masonry is a proven solution well suited for modern codes and design, with today's masonry products combining the material's inherent attributes and upgrade options that are enhancing the natural qualities of block with insulation, moisture control, and strength. "Architects are being hand tied by building owners to use wood because of the cost savings," says John Cicciarelli, national sales manager for Echelon Masonry.

Masonry is a valuable, noncombustible alternative to wood.

"The owner wants to save money, meet code, and get the building open. But that may come with a heavy price. As a proven noncombustible building material, masonry is a sound design solution that offers architects protection not only for their projects but for their business and personal reputation as well."

This course will describe masonry's inherent characteristics and how the material has been improved in order to withstand the threat of damage from fire, moisture, and mold, meeting today's stringent code requirements and performance standards. Also discussed will be masonry's architectural options to meet pleasing contemporary design standards.

MASONRY AND FIRE RESISTANCE

Masonry is a noncombustible material that does not fuel a fire or emit toxic gases. It is widely known for its fire resistance and commonly specified for fire walls and barriers. After severe fire exposure, concrete masonry can frequently be repaired by patching cracks and repointing mortar joints. "When exposed to fire, there is generally no damage to masonry construction. It will heat up and then cool down," Thompson says. "Masonry is the quintessential noncombustible material. After all, we're not building fireplaces and chimneys out of wood."

Wood, on the other hand, is a combustible material. Thompson explains that wood construction is transitioning from traditional 2-by-4s to engineered lumber, which is composed of chips and sawdust to create a composite material offering greater strength with reduced weight, thus allowing larger spans, such as floors with engineeredwood joists. The problem from a fire standpoint is that engineered wood can burn more quickly due to the presence of resins and glues that bind the engineered wood members together, which can accelerate the fire spread. Another development in the wood industry is cross laminated timber (CLT), in which smaller pieces of timber are glued or nailed together to simulate heavy timber. Heavy timber will char, which does provide insulation from a fire, and will slow fire spread, although in time it will still burn. According to Thompson, the jury is still out on whether CLT acts like heavy timber in a fire, with third-party tests scheduled for later in 2017.

To prevent fire damage in multifamily housing, the concept of balanced design is particularly important. Balanced design is predicated on four strategies that work in unison.

Continues at ce.architecturalrecord.com

ECHELON

Echelon is the consolidated brand for all masonry products and services of Oldcastle Architectural, including Trenwyth® Architectural Masonry, Artisan Masonry Stone Veneers®, Quik-Brik® Concrete Masonry Units, Amerimix® Bagged Goods, and a complete portfolio of performance upgrades. As a single-source masonry portfolio solution, Echelon delivers consistent, reliable product manufactured locally at more than 170 locations and delivered by an unrivaled logistics network. For more information, call 844-495-8211 or visit **www.echelonmasonry.com**.

HPDL doors provide a comfortable, clean feel at the University of Iowa Stead Family Children's Hospital.

Keeping the Beauty in High-Performance Areas with High-Pressure Decorative Laminate Doors

HPDL doors provide solid architectural solutions for a wide range of commercial applications

Sponsored by VT Industries Inc. | *By Robyn Feller*

From aesthetics to performance, today's high-pressure decorative laminates (HPDL) are becoming an increasingly popular door surface application. With recent technological improvements in manufacturing and materials, HPDL doors offer an abundance of varied design choices, as well as provide significant cost savings, performance achievements, fire safety, and environmental benefits. Simply speaking, the face material is the main difference between a laminate door and a wood veneer door. Compared to laminate doors from bygone times, today's versions feature improvements in virtually every element and process, with the results including more detailed patterns, more authentic or true-to-life surfaces, stronger bonds to substrates, advanced resin surface chemistry for easier maintenance, manufacturing processes that prevent delamination of edges, and increased recycled content.

This course will examine the construction and many uses of HPDL doors and provide an overview of the nearly endless design options, performance, safety, and cost factors, as well as sustainability considerations of their use in all types of commercial projects.

WHY AND WHERE ARE HPDL DOORS USED?

HPDL doors are used in design for a variety of reasons, the first being to prolong the life of an opening in high-traffic areas or areas that are prone to abuse. Examples include patient rooms and double egress doors in hospital corridors or classroom doors in schools and universities.

Additionally, HPDL doors are used in design for areas that require high visual impact or to create a focal point. For example, custom laminates can feature team logos for stadium applications, or a company's logo for office buildings.

CONTINUING EDUCATION

1 AIA LU

Learning Objectives

After reading this article, you should be able to:

1. Explain the basics of high-pressure decorative laminate (HPDL).
2. Describe HPDL door construction.
3. Detail design considerations and choices for HPDL doors.
4. Discuss the main industry construction standards relevant to HPDL wood doors.

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 #K1710F

Exotic wood-look laminates are also popular in multifamily and hospitality applications where durability and sustainability are important.

HPDL doors are used in a wide variety of applications, including:

- hospitals and the health-care industry;
- hotels and motels;
- K–12 schools;
- universities;
- entertainment venues (i.e., stadiums, casinos);
- office buildings; and
- multifamily housing.

In other words, HPDL doors can be used in just about any commercial or multifamily setting where style and function are required.

HIGH-PRESSURE DECORATIVE LAMINATE

Overview of HPDL

High-pressure decorative laminate is comprised of several layers of brown kraft paper filled with phenolic resin for flexibility and a high-quality decorative print paper saturated with melamine resin or an overlay dipped in melamine for strength and durability. They are compressed under high pressure and heat for an extended period of time, approximately 1,400 psi at 300 degrees Fahrenheit for 30 to 40 minutes.

Manufacturing Overview

The number of kraft/phenolic layers in each sheet of HPDL determines its thickness. In the actual process, the raw paper is first dipped in a resin bath and dried, and, as noted, the laminate is then assembled with kraft paper and melamine-treated decorative paper or overlay; a textured metal plate then determines the finish properties. The bottom layer of kraft paper is sanded to provide proper adhesion between the laminate and a substrate material. For best results, door edges, which are usually finished with the same laminate as the face, must be applied first to reduce the potential for chips and to hide the seams. When designers opt to have the edges painted or stained, factory finishing almost always provides the best outcome for a look that is both polished and consistent.

HPDL is made of resin-saturated cellulose layers, which are consolidated under heat and high pressure. The various layers are described below:

Overlay paper, which serves to improve the abrasion, scratch, and heat-resistance.

Decorative paper, which defines the design and is composed of colored or printed paper.

Kraft paper, which is used as core material and to control product thickness.[1]

After the papers are saturated with the resins, the three layers of paper/resin are placed into a press that simultaneously applies heat and pressure. The pressing operation allows the thermoset resins to flow into the paper, then subsequently cure into a consolidated sheet. During the press cycle, the decorative surface can also be cured while in contact with a textured surface to create one of many different surface finishes.

HPDL consists of more than 60 to 70 percent paper, with the remaining 30 to 40 percent a combination of phenol-formaldehyde resin for the core layers and melamine-formaldehyde resin for the surface layer. Both resins belong to a class of thermosetting resins that crosslink during the press cycle, creating irreversible chemical bonds that produce a nonreactive, stable material with characteristics different and superior to those of the component parts.

HPDL can be produced using both continuous und discontinuous (batch) manufacturing processes. HPDL are supplied in sheet form in a variety of sizes, thicknesses, and surface finishes.[1]

Here is a brief overview of a typical laminate manufacturing process and the elements that go into making HPDL:

Raw Materials

The manufacturing process begins in the receiving area where the raw materials, including decorative paper, overlay paper, and kraft paper, are inventoried.

- **Decorative paper** provides the pattern, woodgrain, or solid color for a sheet of laminate.
- **Overlay paper** provides surface strength and scratch-resistance properties for the laminate. The overlay paper is sent through a melamine treater, where it undergoes melamine resin saturation, and is then cured and rerolled.
- **Kraft paper** makes up the "core" of the laminate. Kraft paper goes through a phenolic treater, is saturated with phenolic resin, and then is cured and rolled (or sized and cut to sheet size, as required).

MANUFACTURING PROCESS SUMMARY

- Raw materials are received and inventoried.
- A stack of paper and plates roll into the press.
- The press cycle combines high heat and pressure.
- The resins allow the paper to fuse together for the finished laminate sheet.
- The backs are then sanded to facilitate bonding to various adhesive.
- Finish plates determine what sizes of HPDL are available. (Typically, newer finishes are only available in 4-by-8-foot or larger sheets and add cost to a project.)

Assembly and Pressing

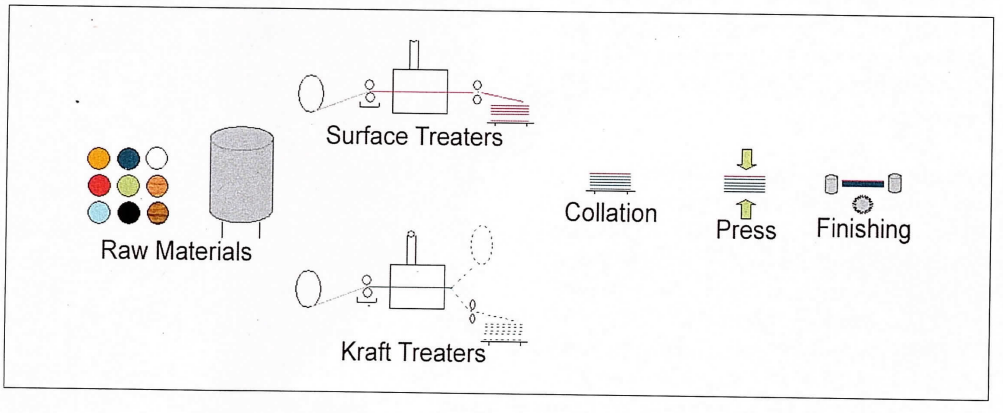
The decorative and overlay papers are assembled in sets depending on the day's production run. In effect, the decorative and overlay papers are combined as one half of the laminate paper. The kraft (or core) paper is prepared for press in a separate process. The layers are assembled and then "cooked" under high heat and pressure. The papers are placed between two stainless steel textured plates. The plates give the completed laminate sheet its finish (i.e., gloss, matte, textured).[2]

Sanding

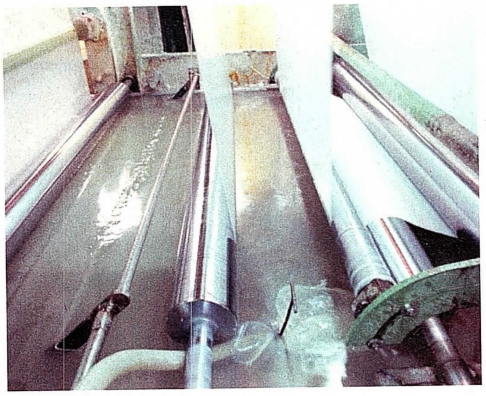
Next, the laminate goes to the sander, where each sheet's edges are trimmed. Then the back of the sheet is sanded down in order to facilitate bonding to various adhesives in fabrication.

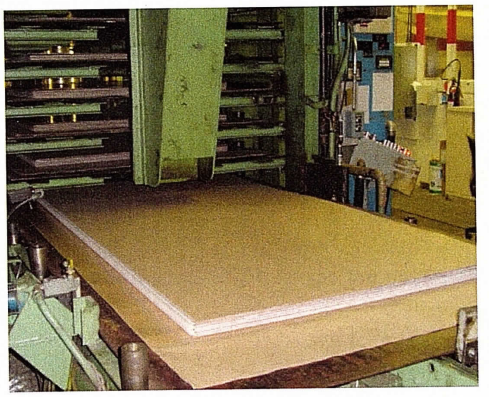
Cutting and Finished Products

Sheets are then cut to size, and the manufacturer stores the finished product prior to shipping to its destination.



This shows the manufacturing process for HPDL. The raw paper is dipped in a resin bath and dried. Then the laminate is assembled with kraft paper and melamine-treated decorative paper or overlay. The textured metal plate then determines the finish properties.





HPDL at various stages of the production process.

HPDL VS. LPL

The difference between high-pressure decorative laminate and low-pressure laminate is determined in how they are manufactured. With laminate, time and pressure make all the difference. An analogy would be to compare these two types of laminate to carbon. When pressure and time are applied to carbon, either coal or a diamond are produced. So, with coal, less time and less pressure are applied (similar to low-pressure laminate), and diamonds are a result of more time and more pressure (similar to high-pressure decorative laminate). As with coal and diamond, one is harder/more durable than the other.

High-Pressure Decorative Laminate

As previously noted, high-pressure decorative laminate is made up of several layers of phenolic resin-saturated kraft paper and a high-grade decorative print paper that is compressed under high pressure and heat for approximately 40 minutes. The bottom layer of kraft paper is sanded to provide proper adhesion between the laminate and a substrate material.

Additionally, as previously noted, the number of kraft/phenolic layers in each sheet of HPDL determines its thickness. Various thicknesses are available that meet National Electrical Manufacturers Association (NEMA) requirements.

Low-Pressure Laminate (LPL)

Low-pressure laminate (LPL) is a single thin sheet of decorative paper that is saturated and compressed under low pressure and heat for a short period of time (approximately 600 psi at 392 degrees Fahrenheit for 20 seconds). The material is then fused directly to a wood substrate and is often used on the vertical surface of various kitchen, bath, and furniture applications.

The term melamine is often used interchangeably with low-pressure decorative laminate and thermally fused panels within the laminate industry.

What comes to mind when you think of low-pressure laminate (melamine board)?

- Cheap, ready to assemble furniture
- Low-quality goods
- Bad wood grain patterns
- Paper-thin layer over substrate

Horizontal Grade HPDL

- Is used for premium grade doors.
- Meets Window & Door Manufacturers Association (WDMA) I.S.1A-11 extra-heavy-duty performance standards.
- Meets NEMA LD-3 standards.
- Is 0.048-inch-thick laminate used with three- and five-ply door construction.
- Is available from all leading laminate manufacturers in a variety of woodgrains, colors, patterns, and textures.
- Has edge-before-face construction, which prevents chipping and delamination.
- Minimizes "black line" along the meeting face and stile edge for a more aesthetically pleasing appearance.

HIGH-PRESSURE LAMINATE

- Recommended for vertical and horizontal surfaces
- Recommended for high traffic areas
- Hundreds of designs available
- Low initial cost
- Low minimum orders
- Many finishes available
- Match multiple products
  - o Countertops
  - o Doors
  - o Cabinets
  - o Etc.

LOW-PRESSURE LAMINATE

- Recommended for vertical surfaces or low-impact/low-traffic areas
- Lowest initial cost
- Large minimum orders
- Matte finish only
- Used for low-quality goods

Manufacturing comparison between HPDL and LPL

	HPDL (Vertical and Horizontal Grade)	LPL
PSI	1,400	600
Temperature	300°	392°
Time	30–40 mintures	20 seconds
Impact*	50" minimum	15" minimum

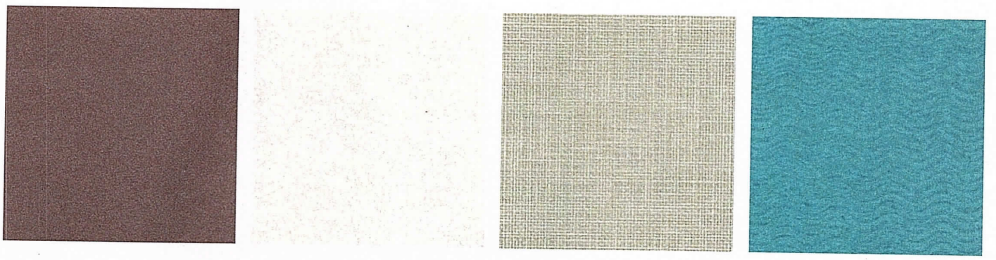
*Impact refers to "impact resistance," a critical performance attribute for laminate. The standard that measures impact resistance is NEMA LD 3-2005 Section 3.8-Ball Impact Resistance. This test measures the ability of the sample to resist fractures due to the impact of a 1.5-inch stainless steel ball when dropped from a specified height. The figures noted in the chart above reflect the minimum number of inches where fracturing can occur for standard compliance.

DESIGN CONSIDERATIONS

HPDL is available in a full range of colors, patterns, wood grains, and custom laminates, including silk screens and graphic images.

Colors and Patterns

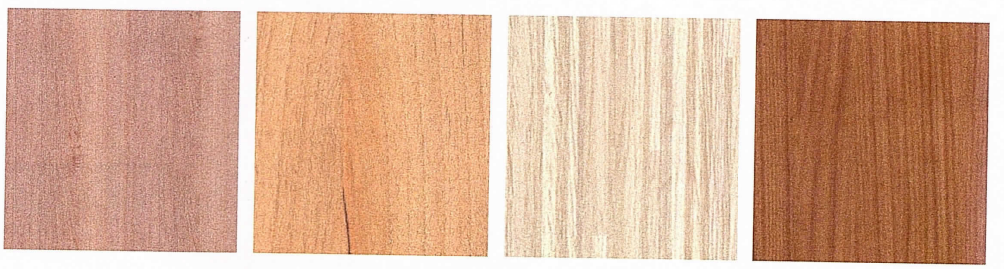
A variety of colors and patterns are available from leading laminate manufacturers ranging from subtle to bold, and they are available in most standard finishes.



Examples of colors, patterns, and finishes

Woodgrain

HPDL woodgrain patterns are available from leading laminate manufacturers. Patterns range from popular cherry and maple to lacewood and bamboo cane. When used on architectural wood doors, the appearance is similar to wood veneer face material. Woodgrain patterns are often specified in door applications.



Examples of woodgrain laminate patterns

Custom Options

Silk-screening works well where multiple colors or exact color reproduction are required. A design is screened directly onto a sheet of decorative paper and then made into a laminate surface. Silk-screening is ideal for incorporating logos and artwork that require bright, detailed graphics.

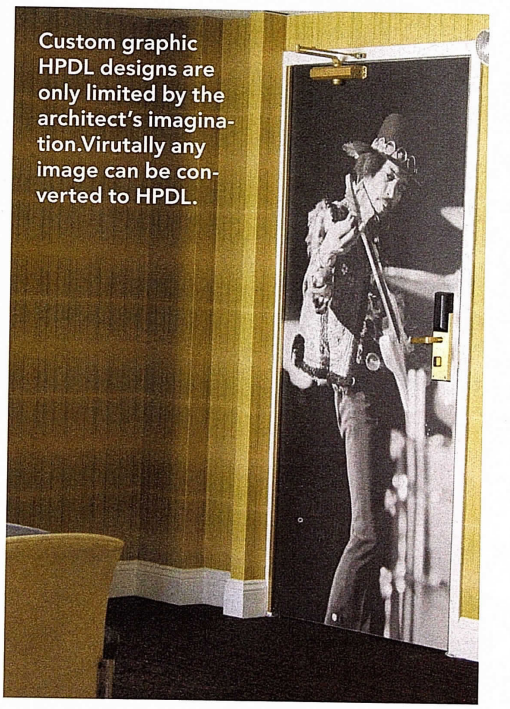
Sketch face doors allow unique design customization.

Graphic image process works best in cases when "picture perfect" is the expectation. A full-color photographic image or original artwork is scanned into a computer and then transferred onto decorative paper.

Fiber-reinforced laminate (FRL) provides the following benefits:

- Increased durability
- Higher wear resistance than competitive products (i.e., thermoplastic rigid sheets made from polyethylene terephthalate glycol-modified [PETG])
  - Better impact resistance than HPDL
- Less expensive than competitive PETG thermoplastic rigid sheet product.
- Can match HPDL colors, patterns, and woodgrains
  - Not all doors need to be FRL. It is recommended for use in high-impact areas where it can provide a significant cost savings
- No removable edge required
- Available in an extensive variety of laminate colors
- GREENGUARD Indoor Air Quality Certified®
- Can be used in hospital, school, and other high-traffic applications

HPDL Sketchface layup adds visual appeal.



Custom graphic HPDL designs are only limited by the architect's imagination.Virutally any image can be converted to HPDL.

Stainless steel edge guards and PVC edges help protect the most vulnerable part of a door: the edge. Stainless steel edge guards are a hardware addition to the door that and are most often routered into the edge of the door to create a seamless transition between the edge guard and the face of the door. A PVC edge also serves to protect the edge of the door. Instead of a laminate edge, a coordinating PVC edge is applied to the door's edge. The PVC edge offers the edge of the door an increased resistance to chipping and damage due to trauma on the door's edge. They are recommended for high traffic areas, such as hospitals, manufacturing facilities, and emergency rooms. Additional features include mortised edge guards. They can be L-shaped or U-shaped.

Continues at ce.architecturalrecord.com

VT INDUSTRIES

Headquartered in Holstein, Iowa, VT Industries Inc. is North America's leading manufacturer of architectural wood doors, VT Dimensions countertops, and GeoScapes architectural stone surfaces. The company's three divisions serve customers from 11 manufacturing facilities strategically located throughout the Unites States and Canada. **www.vtindustries.com**

Photo courtesy of Alucobond/Connor Group/Daniel Lunghi Photography

Put the Pedal to the Metal

Metal roofing and wall systems' longevity, recyclability, and compatibility with retrofits and rooftop solar technology present an impressive sustainable scorecard

Sponsored by Metal Construction Association

None of the three little pigs built a house out of metal, but it would have been a good way to keep away the big, bad wolf.

Sturdy, strong, and sustainable metal walls and roof panels are known for their durable and green features. Metal is almost unbeatable among building materials for its recyclable properties, and metal walls and roofs contribute to reduced energy consumption, as their well-known cool roofing properties reflect heat energy and absorb less heat, keeping buildings cooler and reducing air-conditioning costs.

In fact, Andy Feth, project director at C.W. Driver Companies in San Diego, says he frequently specifies metal wall systems solely on account of their sustainable attributes. "Many metal products in the construction industry are manufactured with recycled materials," he explains. Notably, "it's an excellent reuse or repurposing of materials that might previously have ended up in a landfill."

One-hundred percent recyclable, metal walls and roofs can also be manufactured with 40 percent recycled steel. This figure is especially impressive in light of the estimated 11 million tons of asphalt shingles that end up in landfills. Consequently, it's easy to see why Florida's Department of Environmental Protection ranks metal roofing as one of the most eco-friendly roofing solutions in terms of waste reduction.[1]

CONTINUING EDUCATION

1 AIA LU

Learning Objectives

After reading this article, you should be able to:

1. Define the primary advantages that metal and metal roofs offer in delivering a long-lasting, energy-efficient building enclosure.
2. Identify the predominant aspects of metal roofing systems that make them highly compatible with rooftop solar technologies and life-cycle benefits.
3. List key integrated building systems and strategies for maximizing energy and performance savings with metal roofing retrofits.
4. Discuss case studies illustrating the sustainability of metal roofing and wall systems.

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 #K1710B

Photo courtesy of Drexel Metals

The Welcome Pavilion at Hershey Gardens in Hershey, Pennsylvania, features a new curved metal standing seam roof that mimics early 20th century design and seems to crown the conservatory.

Meanwhile, Gloria D. Lee, principal of Swift Lee Office Architects in Pasadena, California, is enthusiastic about what she considers the most noteworthy sustainability attributes of metal walls and roofing retrofits: long life, low maintenance, reduced probability of water intrusion, recycled steel content, high solar reflective index (SRI), light weight, and metal roofs' compatibility with clip-on photovoltaics (PV) or thin-film peel-and-stick PV.

As a highly durable, long-lasting material, metal roofs and panels deliver an excellent roofing return on investment.

Furthermore, "metal wall and roof systems offer numerous ways to contribute to a high-performing building envelope," adds Karl Hielscher, CEO, Metal Construction Association, a Chicago-based association.

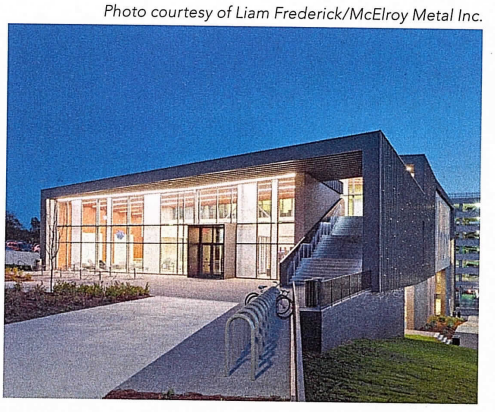
Beyond these advantages, many architects and builders are turning to metal for its clean lines, ease of use, and versatility, finding inspiration—and innovation—in metal building products.

A LOOK AT THE MARKET

Industrywide, metal construction is on the rise—and for good reason. Recyclable, durable, and easy to install, metal has a loyal and growing following.

For example, out of the U.S. Department of Defense's new construction and reroofing for U.S. military bases, more than half of the facilities' 290 million square feet of roofing is now metal. Moreover, within the United States, about half of all one- and two-story business buildings are now built using metal building systems.

Photo courtesy of Liam Frederick/McElroy Metal Inc.



Metal's durability, sustainability, and optimal building enclosure attributes made it the clear facade choice for the University of Arkansas Champions Hall in Fayetteville. Regionally sourced with a high recycled content, the metal structure contributed toward LEED credits.

"As a result, it's safe to assume that a majority of low-rise government buildings being constructed today are made of metal," says Dan Walker, professional engineer and assistant general manager of the Cleveland-based Metal Building Manufacturers Association (MBMA).[2]

In low-rise, nonresidential construction, metal buildings have captured more than 50 percent of the market, according to the MBMA business review. Architects in Metal Architecture's 31st Annual Architect Survey report that metal wall panels, metal roofs, and metal building systems were specified more in 2016 than in the previous year—and 2017 looks to be even stronger, with more construction in general, and an increase in metal materials specifically.[3]

Metal's market share continues to grow, both in new construction—a 4.6 percent increase from 2015 to 2016—and with regard to renovation projects, where it spiked 12.2 percent over the same period. Furthermore, metal roofing is the second most-used residential roofing product on the market today.

LEAN AND GREEN

Metal building products can reduce the load on a building's foundations, resulting in significant savings in substructure design and construction, particularly with building extensions and brown-fill structures. In addition to roofing and cladding, metal-based technologies can be utilized as framing, composite floor slabs, non-load-bearing metal infill, and separating walls.

Continues at ce.architecturalrecord.com

MCA METAL CONSTRUCTION ASSOCIATION

The Metal Construction Association brings together a diverse industry for the purpose of expanding the use of metal in construction through marketing, research, technology, and education. MCA member companies gain tremendous benefit from association activities that focus on research, codes and standards, market development, and technical programs. **www.metalconstruction.org**

Large-Size Porcelain Slabs for Building Surfaces

Interiors and exteriors finished with half-inch slabs can create lightweight and beautiful results

Sponsored by Walker Zanger | *By Peter J. Arsenault, FAIA, NCARB, LEED AP*

Large-size, thin porcelain slabs are now available in the United States, offering dramatic looks for interior and exterior applications with minimal grout lines.

All images courtesy of Walker Zanger, except as noted

When it comes to selecting materials for building surfaces, a number of factors come into the decision-making process. The appearance of the material and the way it fits with an overall design scheme is often paramount, but so is the durability and strength of the material. Special uses may dictate the need for easy-to-clean surfaces or even hygienic surfaces if used in kitchen and bathroom areas. And of course, the material has to fit within the overall project budget. Among the choices, porcelain ceramic tile is often selected for its ability to meet all of these criteria, particularly in areas that are heavily used or require clean and hygienic surfaces. One of its historical drawbacks, however, has been its comparatively small size, which necessitates grouted joints to take up a fair amount of a floor or wall area. The grout can be susceptible to damage or the promotion of organic growth if not maintained properly. However, this limitation, and others, have been overcome with the recent availability of large-size porcelain slab panels that can be specified in sizes to match or exceed large sheet stock products. These large but relatively thin (half-inch) porcelain slabs retain all of the superior characteristics of porcelain tile plus add new ones, such as the ability to simulate natural stone, wood, and other materials. In this course, we will take a closer look at this innovative update on a well-known and proven material that is suitable for a wide variety of both indoor and outdoor applications.

LARGE PORCELAIN SLABS

Some clients and even design professionals can get confused over the difference between ceramic tile and porcelain tile products. The process and materials to create both types of tiles are essentially the same. The difference really lies in the quality of the raw materials used. Compared to ceramic, porcelain clays are cleaner, whiter, and higher quality with less impurities. This makes the raw materials a little more expensive, but overall the final product cost is still very competitive. The higher-quality materials also allow for more finish options, including through-body coloring, specialty patterns, and even high-quality unglazed tiles.

Building on a long history of creating porcelain tile products, some manufacturers in Europe and the United States have developed

CONTINUING EDUCATION

1 AIA LU/HSW

Learning Objectives

After reading this article, you should be able to:

1. Identify and recognize the characteristics of large-format, half-inch-thick porcelain slabs as defined by industry standards.
2. Explain the life cycle of porcelain slabs from raw material extraction through manufacturing, building installation and use, and end of service life.
3. Assess the safety and functional contributions of large-format porcelain slabs for both interior and exterior surface treatments.
4. Specify porcelain slabs in a variety of new and renovated buildings, and make appropriate selections related to specific applications.

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 #K1710H

advanced techniques to make larger and thinner porcelain tile products. Using sophisticated machinery and careful quality control, designers are no longer limited to common sizes, such as 12-inch square porcelain tiles or 18-by-7-inch porcelain planks. Instead, many more face sizes have become available, with technology now allowing for large porcelain slabs to be produced up to 63 inches by 126 inches (5 feet 3 inches by 10 feet 6 inches). That is noticeably larger than common 4-by-8 or 4-by-10 sheet good wall and floor panel products, meaning that seams and joints can be reduced even more compared to those products. Further, for things like kitchen islands, countertops, or wall surrounds, a single slab may be able to be used, thereby eliminating joints altogether.

In terms of thickness, some large porcelain products are available in very thin (less than ¼ inch) profiles. However, once the material gets down to that size, it can be brittle and difficult to work with since it could be more prone to cracking and breakage. That is why many industry professionals suggest that half-inch thickness is ideal for most building applications. The half-inch material is thick enough to be strong, rigid, and durable but still thin enough to be lighter in weight than some other choices like natural stone. Further, the half-inch-thick material is commonly made so it is competitively priced.

Since porcelain and ceramic tile products have been in use for some time and are fairly well understood, it is not surprising that there are industry standards for its manufacture. Specifically, ANSI A137.1:2012: American National Standards Specifications for Ceramic Tile presents voluntary standard specifications for ceramic tile. It was developed by the Accredited Standards Committee (ASC) on Ceramic Tile 108, which includes representatives from across the industry, including the Tile Council of North America (TCNA). As described by the writers, "It lists and defines various types, sizes, physical properties, and grading procedures for ceramic tile, including mosaic tile, quarry tile, pressed floor tile, glazed wall tile, porcelain tile, trim units, and specialty tile. This standard provides quality criteria for buyers, specifiers, installers, manufacturers, and the public in general. It is intended for reference or inclusion in the ceramic tile section of project specifications and contracts." As such, this standard is a good general reference for the quality levels and criteria for porcelain ceramic products of all sizes and thicknesses. In addition to establishing physical criteria for tile for quality and strength, it also describes procedures for testing for safety, particularly when used on walking surfaces.

Some additional relevant standards include ANSI A137.3: American National Standard Specifications for Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs and ANSI A108.19: Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar. These standards provide more specific information related to large-size porcelain slabs.

MANUFACTURING PROCESS

To get a better understanding of the nature of porcelain products, let's take a look at the basic life cycle of the product, starting with the extraction process. The basic raw materials are mined from the earth and can include clay, silica, kaolin, sand, and feldspar. These are transported to the manufacturing facility, sorted, and stored until they are needed for production. In addition, glazing raw materials can include things like feldspar, clay, frit, and coloring agents that are also sorted and stored. Some of the coloring agents can contain precious metals, which makes them more costly but also less commonly used.

In a typical production process, the raw materials needed for a specific porcelain product are selected and mixed along with 30 percent water. This usually occurs in a ball mill machine, which turns the mixture into a homogenous slip. That slip is dried into prills (spheres) in a spray drier that reduces the moisture content down to 6 percent or so. At this point, the material is stiff but pliable and ready for pressing. Essentially, pressing involves placing the prepared prills into a pressing machine and exerting an immense, uniform load to create thin, flat tiles or slabs. There are several different press types based on different manufacturing processes and brands, but they all rely on pressures on the order of 7,000 pounds of force per square inch or total pressures up to 15,000 tons depending on the size and configuration of the pressing machine. It is the advanced development of these large presses that has made the large-size porcelain slabs possible. Such presses are among the largest in the world and necessary in order to press the prills to be large enough and dense enough to produce the needed characteristics for the large porcelain slabs.

Once pressed, the porcelain mixture is ready for further drying and finishing. The details of these steps will vary based on the type of product being produced and the type of finish sought. For example, smooth surface products will rely on smooth-faced pressing and processes, while molds may be used during or after the pressing to create texture in the surface of the porcelain. Additional drying may also occur to bring the pressed slab to the preferred moisture content for a particular finish. If the slab is to have a glossy colored surface finish, then glazing may be added if appropriate. In other cases, the glaze may be omitted and the color of the material itself be retained or a pattern within the material can be created to replicate stone, wood, etc. Once these details are finalized and carried out, then the slabs are ready for firing in a large kiln that can reach temperatures up to 2,200 degrees Fahrenheit. The time required for firing will vary based on slab thickness, but the goal is to achieve a 4 percent moisture content at the end of the firing. The porcelain is now hardened and, once cooled, achieves its final characteristics of strength, durability, and basic finish. Any final finish enhancements can be made at this point, such as cleaning, polishing, or edge cutting (rectifying) to final precise sizes.

Porcelain tile that is only half-inch-thick but up to 5 feet by 10 feet in size can be used for a variety of building surfaces.

Large porcelain tile slabs are handled and shipped from the factory to the site within much the same way stone slabs or glass sheets are handled.

The finished large porcelain slabs need to be transported to the building site and handled properly both in the factory and on-site to protect both the finished slabs and the people working with them. As such, they are commonly handled using carefully placed suction cup lifting devices, much the same way large glass panes are carried and transported. Then they are set into protective crates and made ready for shipment. Once received on-site or in a fabrication ship, the crates need to be carefully opened and the large slabs lifted out again with suction cup based carriers. This means that experienced tradesmen are needed to handle, and prepare the slabs for final installation.

With an understanding of the material, we can now look at some of the applications, both interior and exterior, where large porcelain slabs can become an integral part of a building design.

INTERIOR BUILDING APPLICATIONS

Large half-inch-thick porcelain slabs can basically be used in interiors anywhere other ceramic or porcelain products are used. That includes traditional applications, such as new or existing rooms for walls and floors, as well as specialty treatments in kitchens and bathrooms, such as backsplashes and countertops. However, it is also durable enough that it can be used in commercial spaces, such as public circulation corridors, elevator cabs, and stairwells.

From a design standpoint, large-format porcelain slabs offer a variety of looks that are not limited to traditional tile appearances. In particular, they can be patterned to look like white or black marble, other stone, or even wood grain in a choice of patterns. The large size of the slabs allows coverage of floors or walls with minimal joint lines, replicating again the look of natural stone or other large slab materials. Of course, the large slabs can be combined with smaller tiles, planks, or other porcelain products to create a varied appearance that is coordinated in style and uniform in performance.

The edge condition of the slabs can be selected based on the final appearance and performance as well. Common edges are square and quite acceptable for most installations with common joint widths. For installations that seek the appearance of minimal joint lines and tight tolerances, then precision-cut (i.e., rectified) panels can be specified to be created in the factory. This creates very thin grout lines, giving the porcelain the appearance and control of solid stone slabs. For countertops in particular, porcelain slabs can be preferable since they overcome some of the maintenance requirements of some natural stone. For example, recommendations for stone slabs include avoiding the use of certain abrasive cleansers or cleaning pads. In addition, acidic materials, such as lemon juice and vinegar, can etch some stone surfaces, especially limestones with low porosity. And because normal wear and tear can affect even the most durable stone, some scratching and chipping may occur over time. Porcelain slabs can overcome many of these issues if denser and less porous products are selected.

When reviewing porcelain products for commercial or residential projects, it is important to recognize that different products will be rated for different levels of durability. A common rating breakdown follows:

- **Light duty:** These products are intended for use on interior vertical surfaces only. This may include commercial spaces, depending on the intended use of the space. Light-duty tile may have special cleaning or care requirements.
- **Medium duty:** These products are intended for use on interior vertical and some horizontal surfaces in most residential and some commercial applications. This includes bathroom walls, showers walls and floors, vanity tops, wainscoting, kitchen backsplashes, as well as light use kitchen counters. Commercial applications may be limited to interior vertical applications.
- **Heavy duty:** These products are appropriate for use in all residential applications and many commercial applications, including all medium-duty applications as well as all kitchen counters, residential flooring, pools, and exterior vertical surfaces, but only areas that do not experience freeze/thaw conditions. Commercial uses include most wall and floor applications, with the exception of heavy-traffic flooring.

Large-size porcelain slabs are a preferred material for countertops since they overcome some of the limitations of natural stone for this use.

- **Commercial duty:** These products are manufactured to the highest standards of durability, and are recommended for all interior and exterior residential and commercial applications, including heavy pedestrian traffic flooring. Recommended uses include heavy-traffic residential areas, commercial lobbies, and other areas that require a tile with maximum durability.

When considering heavy-duty or commercial-duty porcelain for flooring, there is also a safety concern that needs to be addressed, namely, slip resistance. This is specifically addressed in ANSI A137.1-2012, which defines an updated method for assessing and rating tile surfaces (including large porcelain slabs). Previously, ASTM C-1028 was the standard test method for determining the nonmoving or static coefficient of friction (SCOF) of ceramic tile and other like surfaces. Static coefficient of friction is a term used in physics to describe the amount of force required to cause an object in contact with a surface (e.g., shoe sole on tile floor) to start moving across that surface. A higher coefficient indicates increased resistance of shoe sole material to start moving across a flooring material. While this produces a measured value, no standards have a specifically determined 'safe' SCOF value.

Due to the difficulty in measuring SCOF and lack of a specific recommendation, ANSI A137.1-2012 changed the testing requirement to a moving or dynamic coefficient of friction (DCOF). DCOF differs from SCOF in that the shoe material is made to move across the flooring surface and the resistance to movement is constantly recorded and averaged. This test uses an automated device (i.e., the BOT 3000 recommended) instead of the human hand, which reduces the variation in the test method from 30 percent in the SCOF measurement to less than 10 percent for DCOF. As such, ANSI 137.1 now includes a method for measuring (DCOF) with a recommended minimum value of 0.42 for interior, level floors that are likely to be walked upon when wet. Specifically, it states, "Unless otherwise specified, tiles suitable for level1 interior spaces expected to be walked upon when wet shall have a wet DCOF of 0.42 or greater when tested using SLS solution as per the procedure in Section 9.6.1." With all of this in mind, most manufacturers have their porcelain floor products independently tested using the procedures and guidelines in this standard and report the results in product literature with the goal of achieving the DCOF of 0.42 or greater.

Keep in mind that when selecting a tile for slip resistance, however, the ANSI standard is very clear to state, "Because many variables affect the risk of a slip occurring, the COF shall not be the only factor in determining the appropriateness of a tile for a particular application." Therefore, it also makes clear that "tiles with a DCOF of 0.42 or greater are not necessarily suitable for all projects. The specifier shall determine tiles appropriate for specific project conditions, considering by way of example, but not in limitation, type of use, traffic, expected contaminants, expected maintenance, expected wear, and manufacturers' guidelines and recommendations." This professional judgement and prudent assessment is true for all flooring, and in this case, applies equally to porcelain slabs as well.

Photo courtesy of FLORIM

Porcelain tile used for flooring needs to be tested for slip resistance based on the requirements of ANSI A137.1-2012 and is particularly important in wet areas.

Slip resistance is important on flooring but also important in places that are expected to be wet, such as bathrooms and shower areas. Those areas will need some special attention when porcelain is used on the floor. In addition to the surface, all shower floors need to be detailed to include appropriate waterproofing in the event that any seams or joints seep water over time. The general industry recommendation is for shower floor substrates and adjacent walls around the perimeter (12 inches up) to include a waterproof membrane on the top surface of the fully cured mortar bed prior to tiling. No allowances or claims are normally accepted by manufacturers or suppliers of porcelain, or other shower flooring materials for that matter, for damage to products installed in shower flooring that do not have a waterproof membrane system installed.

EXTERIOR BUILDING APPLICATIONS

While interior applications of large porcelain slabs are commonly thought of, exterior applications on building facades are a logical and attractive choice too. Panel-type building facades have been common for decades and often include wood or steel framing for the structural support, plus a supported finished panel as the exterior weathering surface. Large porcelain slabs can easily replace stone panels or other panels, thus creating a lightweight but durable surface, coming in at about 5.5 pounds per square foot.

Continues at ce.architecturalrecord.com

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

WALKER ZANGER

Since 1952, Walker Zanger has combined traditional tile-making techniques with a modern sophistication that transcends any singular design style. A leading choice for design professionals and consumers, its natural stone and tile products are found in luxury homes, trendy boutiques, and fine restaurants around the globe. **www.walkerzanger.com**

PRODUCT SPOTLIGHTS

Advertisement

DOORS, WINDOWS

LIFT-STRAP BIFOLD DOORS AND ONE-PIECE HYDRAULIC DESIGNER DOORS

WR

Schweiss Doors, Moving Walls

Schweiss Doors manufactures unique custom designer doors, one-piece hydraulic doors and patented lift-strap opening/closing bifold doors.

Product Application:
- Moving doors and walls
- You think it, we build it
- Custom designed storefronts and more...

Performance Data:
- Faster, safer operation
- Zero lost headroom
- Superior design that keeps working!

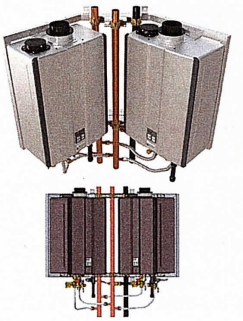
www.schweissdoors.com
507.426.8273 | schweiss@bifold.com

SPECIALTY PRODUCTS

CORNER TANKLESS RACK SYSTEM

WR | NEW

Rinnai America Corporation



Rinnai's Corner Tankless Rack System allows two C199 tankless units to be installed on perpendicular walls in the corner of a room, freeing up nearly 40 cubic feet of valuable floor space previously taken by a tank.

Product Application:
- Offers wall-mount design and zero floor footprint
- Ideal for applications where space is at a premium, like restaurants, fitness clubs, laundries, school or hotel kitchens and breweries

Performance Data:
- Makes replacing an existing commercial tank with two C199 tankless units simpler than ever
- Vertical manifold design and wall-hanging bracket save time and materials

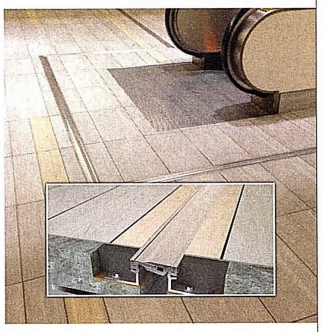
www.rinnai.us | 1-800-621-9419 | Ansley Houston, ahouston@rinnai.us | Trade Show PCBC

SPECIALTY PRODUCTS

HEAVY DUTY COVER

$$ | GREEN

Construction Specialties Expansion Joint Covers



The APF system's heavy duty design allows for a smooth transition of rolling loads and is for high foot traffic areas.

Product Application:
- Smaller joint sizes ranging from 1"– 4"
- Handles horizontal and vertical movement
- Ideal for malls and airports

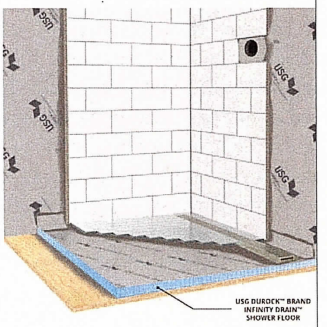
Performance Data:
- Withstands frequent, heavy rolling loads
- Low maintenance
- Fire rated models available

www.c-sgroup.com/ejc
800.233.8493 | joints@c-sgroup.com

MECHANICAL SYSTEMS, HVAC, PLUMBING

COMPLETE WATERPROOF SYSTEM FOR TILED SHOWERS

USG Durock™ Brand Infinity Drain™ Shower System



One complete waterproof shower installation made easy. Pairs high-performance Durock™ Brand Shower System components with decorative linear drains from Infinity Drain.

Performance Data:
- Easier and faster to install than traditional shower construction.
- Bonded waterproofing system with pre-sloped floor made for tile shower installations.

http://usgid.com
516.767.6786 | info@usgid.com

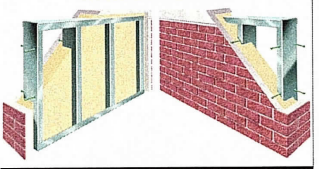
ROOFING, SIDING, THERMAL & MOISTURE PROTECTION

ARCHITECTURAL PRECAST CONCRETE CLADDING

GREEN | WR

Easi-Set Worldwide

SLENDERWALL®
A COMPLETE BUILDING PANEL INSIDE AND OUT



• Fewer on-site trades • Faster installation
• Lower structural cost • Class "A" finishes

Ultra Hi-Performance SlenderWall is a 30 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

CATALOGS & SERVICES

NEW 2017 AIA CONTRACT DOCUMENTS

AIA Contract Documents are viewed as the industry standard

Changes affecting contractors include a new insurance exhibit and changes to the insurance requirements. To learn more and download samples of the new documents, visit www.aiacontracts.org/archrecord

www.aiacontracts.org/archrecord

DOORS, WINDOWS

DURABILITY TRANSFORMED

WR | GREEN

Construction Specialties Acrovyn Doors by Design™

CS Acrovyn by Design® allows architects to incorporate a myriad of graphic imagery into our virtually indestructible Acrovyn® Doors

Product Application:
- High-traffic commercial interiors areas requiring custom design or higher-end aesthetic finishes
- Yale New Haven Hospital: Pediatric ER, New Haven, CT

Performance Data:
- Images embedded behind impact-resistant, PVC-Free Acrovyn sheet
- Doors feature rounded, replaceable edges for extra impact protection

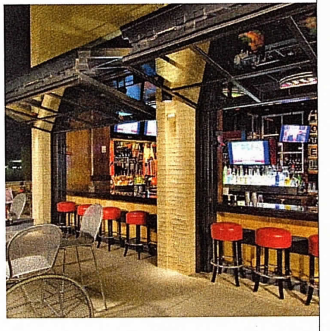
www.c-sgroup.com/door
1.800.416.6586 | acrovyndoors@c-sgroup.com

DOORS, WINDOWS

LIFT-STRAP BIFOLD DOORS AND ONE-PIECE HYDRAULIC DESIGNER DOORS

WR

Schweiss Doors, Moving Walls



Schweiss Doors manufactures unique custom designer doors, one-piece hydraulic doors and patented lift-strap opening/closing bifold doors.

Product Application:
- Moving doors and walls
- You think it, we 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@bifold.com

Advertisement

ROOFING, SIDING, THERMAL & MOISTURE PROTECTION

METAL ROOFING

GREEN | $$

Petersen Aluminum Corporation

SNAP-CLAD Metal Roofing Panels feature architectural aesthetics and structural performance. They are corrective leveled for superior flatness.

Product Application:
- Mundelein Village Hall, Mundelein, IL

Performance Data:
- Available in 38 colors on steel and 36 on aluminum
- 30-year non-prorated finish warranty
- Labor-saving one-piece design

PAC-CLAD.com
800.722.2523 | Rob Heselbarth

Booth: 1431 METALCON

SPECIALTY PRODUCTS

ARCHITECTURAL ENTRANCE GRID

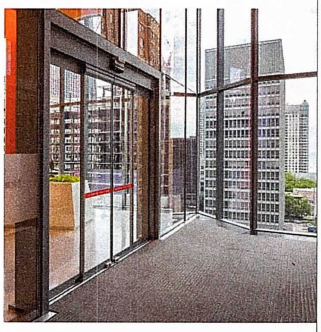
$ | WR | GREEN

Construction Specialties

PediTred (G4) is the industry's strongest architectural entrance grid. This system traps dirt and debris at the door, rolls back for easy cleaning and is the ideal choice for high-traffic entrances.

Product Application:
- Shirley Ryan AbilityLab - Chicago, IL
- JFK Airport - New York, NY
- New York Times HQ - New York, NY

Performance Data:
- Withstands rolling loads up to 1,000 lbs./wheel
- *Cradle to Cradle Certified*™ Silver



www.c-sgroup.com/efs
800.233.8493 | Wade Brown | wbrown@c-sgroup.com

ARCHITECTURAL RECORD

Reserve Space Now in the Next Architectural Record Issue Classified Section

Promote:

- Job Opportunities
- Consulting Services
- Official Proposals
- Legal Notices
- Books
- Recruiting Services
- Business Opportunities
- Professional Studies

and more...

To obtain Classified Advertising information please contact:
Diane Soister at Tel: 646-849-7137
Email: soisterd@bnpmedia.com

THE SKYSCRAPER MUSEUM

Explore the History of Height @ www.skyscraper.org
The Skyscraper Museum | 39 Battery Place, NY, NY | Wed-Sun, 12-6 pm

ARCHITECTURAL
RECORD

THERE'S MORE TO EXPLORE AT...

architecturalrecord.com

VIDEOS

WEBINARS

CONTINUING EDUCATION

PRODUCTS

WEB EXCLUSIVE CONTENT

New and Upcoming Exhibitions

Geostories: Another Architecture for Another Environment
New York
October 17–December 2, 2017
Cooper Union will host this exhibition by Design Earth, a design and research practice led by Rania Ghosn and El Hadi Jazairy that investigates the geography of technological systems like garbage, water, and agriculture. Four projects will be presented in the form of large-scale drawings. For more information, visit cooper.edu.

Platform: Origin, 135 degrees
Houston
October 21, 2017–May 31, 2018
The new Moody Center for the Arts' first fall season will feature a series of temporary, site-specific public art projects on the Rice University campus. Participating artists will respond to student and faculty artwork, architectural designs, and research. The series begins with a performance by artist Jarrod Beck in response to Michael Heizer's monolithic sculptural works. Beck will also build a sculpture with students that will be on display for the duration of the academic year. More information at moody.rice.edu.

Ongoing Exhibitions

Solo Exhibition of Bardula
Zurich
Through October 21, 2017
In its fourth presentation of Bardula's artwork, Galerie la Ligne is hosting a solo exhibition of the Paris-based artist's latest works, which use LED technology to focus on simple geometric shapes like spheres, circles, and squares, as well as complex ones like the torus. For more information, visit galerie-la-ligne.ch.

Archtober 2017
New York City
Through October 31, 2017
The month-long architecture and design festival in New York features lectures, films, tours, and exhibitions throughout the city. Previous partners include diplomatic missions, local architecture schools, and institutions such as the Historic House Trust of NYC and the Public Art Fund. Visit archtober.org.

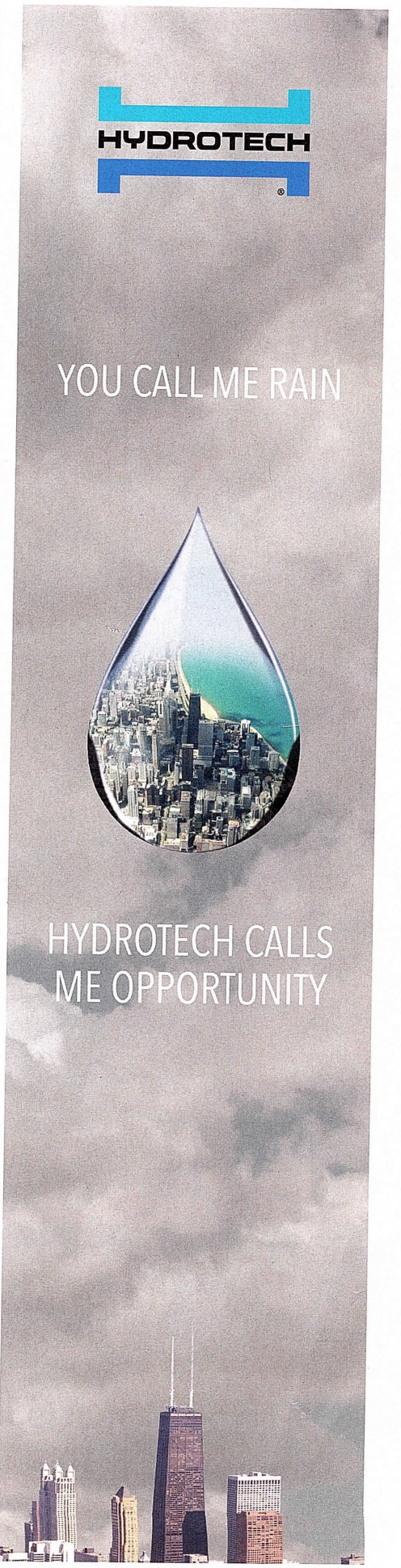
Seoul Biennale of Architecture and Urbanism
Seoul
Through November 5, 2017
The inaugural design event explores how sustainability and justice are expressed in urban environments. Curated by architectural historian Hyungmin Pai and architect Alejandro Zaera-Polo, the biennale features two exhibitions and a programmed event series including activities such as a films, tours, and workshops. For more information, visit seoulbiennale.org.

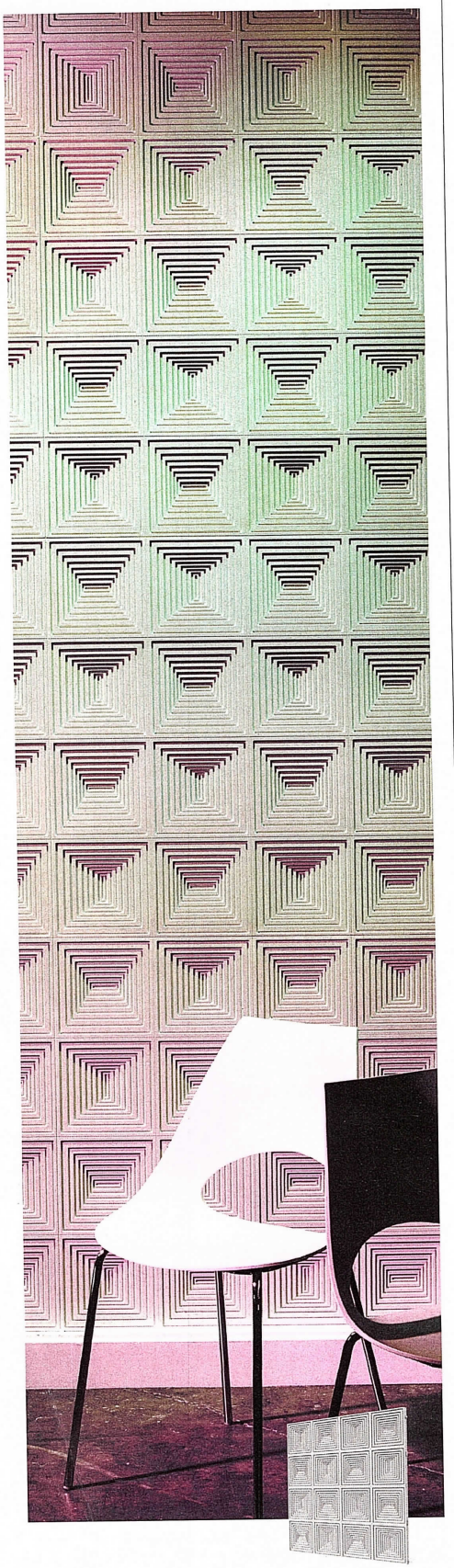
Plywood: Material of the Modern World
London
Through November 12, 2017
Featuring a collection of items that ranges from skateboards to planes, this exhibition explores the many ways that plywood has shaped the modern world. Pieces by Alvar Aalto, Marcel Breuer, and Charles and Ray Eames are highlighted alongside architectural drawings, historical photos, and other designed objects. At the Victoria & Albert Museum. Visit vam.ac.uk.

Louis Kahn: The Power of Architecture
Philadelphia
Through November 5, 2017
The international tour for the first comprehensive retrospective of Louis Kahn's work in two decades concludes in Philadelphia, where the architect spent much of his life. Over 200 objects related to Kahn's buildings and projects are on display, including unpublished film footage and interviews with contemporary architects. At the Fabric Workshop and Museum. For more information, visit fabricworkshopandmuseum.org.

Exhibit Columbus
Columbus, Indiana
Through November 26, 2017
The annual exhibition of architecture, art, design, and community features 18 outdoor installations in and around the city's Modernist buildings. This year's exhibitors explore the past, present, and future of design, and range from award-winning design firms such as Aranda\Lasch to local university and high school students. For further information, visit exhibitcolumbus.org.

Noguchi's Playscapes
San Francisco
Through November 26, 2017
This exhibition will revisit sculptor Isamu Noguchi's designs for several playgrounds and stand-alone play structures. Through models, sketches, set designs, and archival images, the exhibition will show Noguchi's visions for new experiences of art, education, and humanity through play. For more information, visit sfmoma.org.





modulararts®
InterlockingRock®
modulararts.com | 206.788.4210
design shown: Cosmo™ PANEL

CONTINUING EDUCATION CENTER
ARCHITECTURE + CONSTRUCTION

CONTINUING EDUCATION THAT'S AS MOBILE AS YOU ARE.

Download on the App Store
GET IT ON Google Play

Living in America: Frank Lloyd Wright, Harlem & Modern Housing
New York City
Through December 17, 2017
This exhibit examines racial segregation and socioeconomic inequality through two housing projects designed by Wright—one occupied by predominantly black residents, the other predominantly white. Curated by Columbia University's Temple Hoyne Buell Center for the Study of American Architecture, the exhibition relates to the Museum of Modern Art's ongoing Frank Lloyd Wright exhibition. Visit arch.columbia.edu.

Albert Frey and Lina Bo Bardi: A Search for Living Architecture
Palm Springs, California
Through January 7, 2018
Part of a Getty-led initiative to explore the connection between Latin America and Los Angeles, the Palm Springs Art Museum presents an exhibition that parallels the work of architect Albert Frey and Italian-born Brazilian architect and furniture designer Lina Bo Bardi. For more information, see psmuseum.org.

Chicago Architecture Biennial
Chicago
Through January 7, 2018
The second edition of the Chicago Architecture Biennial features works by over 141 architects and designers on the theme of "Make New History." Consisting of six community anchor exhibitions, two special project sites, installations, performances, talks, and films, the Biennial is a citywide event that encourages visitors to explore Chicago with an architectural eye. For more information, visit chicagoarchitecturebiennial.org.

Alex Schweder and Ward Shelley: Your Turn
Ridgefield, Connecticut
Through April 22, 2018
For this combined architecture and performance art piece, Alex Schweder and Ward Shelley will build a 24-foot-high living environment that they will then inhabit. They will share nine basic amenities that, while being used by one, cannot be used by the other. Audience members are invited to engage in conversation with the artists, as well as explore an adjacent gallery, which holds the first survey of Schweder and Shelley's reverse paintings on Mylar. At the Aldrich Contemporary Art Museum. Visit aldrichart.org.

Lectures, Conferences, and Symposia

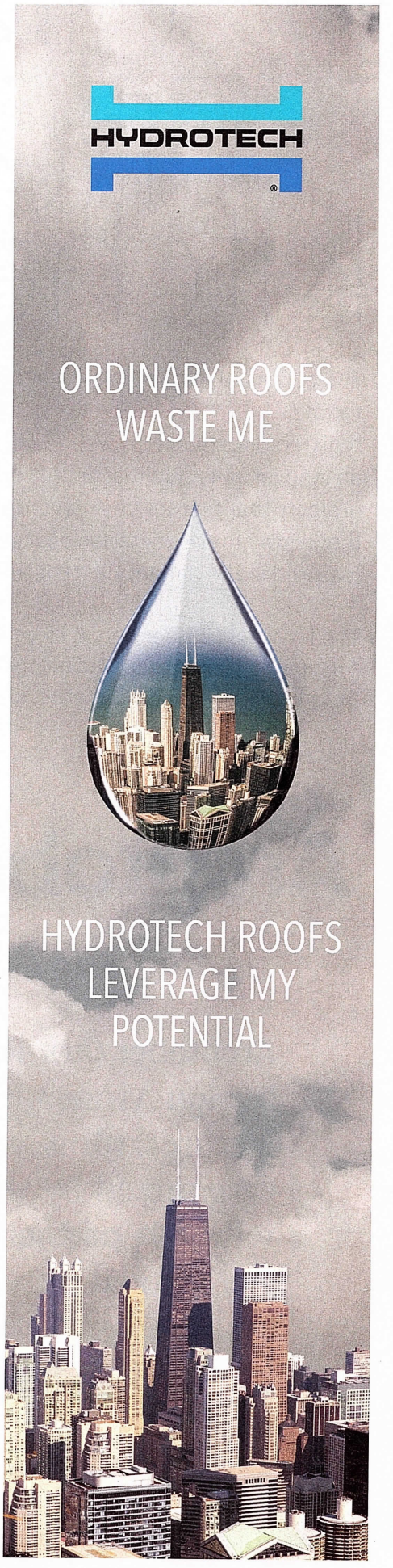
Architectural Record Innovation Conference East
New York
October 19, 2017
Curated by RECORD editors, this conference examines the boundaries of architecture through the lens of technology. With more than 300 architects and designers attending, the conference serves as a connecting platform among American architects as well as an opportunity to earn up to 7.75 AIA LU/HSM. Visit east.arinnovationconference.com.

Monterey Design Conference
Pacific Grove, California
October 13–15, 2017
This forum brings together architects and designers from around the world for three days of networking events and panel discussions. Notable speakers include Gere Kavanaugh, Sou Fujimoto, Dominique Jakob, and Alberto Kalach. More information at aiacc.org/mdc.

World Design Summit
Montreal
October 16–25, 2017
In the inaugural World Design Summit meeting, 50 international organizations will come together to develop an international action plan for harnessing the power of design to address pressing global challenges. Participants will produce a declaration and a 10-year implementation framework for their designs. At the Palais des Congrès. For more information, visit worlddesignsummit.com.

Understanding Wood: Sourcing Against the Grain
New York City
October 18, 2017
Hosted by Wilsonart, continuing education courses for architects and designers will be held in person and online to raise awareness about endangered and threatened woods and the alternative materials that can substitute for wood, functionally and aesthetically. Participants will receive an AIA-accredited Global Forestry CEU. Visit at wilsonart.com.

WestEdge Design Fair
Santa Monica, California
October 19–20, 2017
The annual fair will bring together more than 150 brands and 12,000 designers and consumers. Furniture, lighting, and kitchen and bath products will be on display. Talks, live demonstrations, and meet-and-greet events will also be included. Visit westedgedesignfair.com.



2018 CALL FOR ENTRIES
Record Kitchen & Bath

The editors of ARCHITECTURAL RECORD are currently accepting submissions for the **2018 Record Kitchen & Bath** competition. Entry is open to any registered architect, as well as any designer working in collaboration with architects, who has completed an innovative residential and/or commercial kitchen or bath project in the last year. We are looking for projects that feature unexpected materials, address unique client needs, or are designed in a manner that allows these utilitarian spaces to be functional, sustainable, and beautiful. Winning projects will be featured in the January 2018 issue.

The fee is US$75 per entry. To enter, visit: architecturalrecord.com/call4entries. E-mail questions to ARCallForEntries@bnpmedia.com. (Please indicate **Record Kitchen & Bath** as the subject of the e-mail.) **Submissions are due October 16, 2017.**

Archtober

Archtober (ärk'tōbər) is New York City's **Architecture** and **Design** Month, the annual festival of architecture tours, lectures, films, and exhibitions taking place during October. Organized by the **Center for Architecture** in collaboration with **60+ partner organizations** across the five boroughs, the festival raises awareness of the importance of design and the lasting civic and international impact of the city's built environment.

Architecture and Design | New York City | October 2017 | www.archtober.org

Architectural Record Women in Architecture Forum & Awards
New York City
October 25, 2017
RECORD's fourth annual awards program celebrates women's leadership in the field of architecture and design. An awards ceremony honoring five industry leaders will follow a panel discussion moderated by editor in chief Cathleen McGuigan. For more information, visit arwomeninarchitecture.com.

The Architecture & Design Film Festival New York
New York City
November 1–5, 2017
The largest American film festival dedicated to design and architecture, ADFF includes screenings, panel discussions, and other events. At Cinépolis Chelsea. For more information, visit adfilmfest.com.

World Architecture Festival 2017
Berlin
November 15–17, 2017
This 10th annual international event encompasses a series of conference programs, networking events, and an awards ceremony. The festival includes project galleries, product exhibitions, and workshops. For more information, see worldarchitecturefestival.com.

Competitions

Call for Ideas: Revitalization of Charles Square Park
Submission deadline: October 12, 2017
The City of Prague is seeking international proposals to update the preexisting master plan of a significant municipal heritage site that borders a teaching hospital and courthouse. The City is looking for entries from landscape architects, civil engineers specializing in traffic, and architects. Successful submissions will be invited to participate in further stages of the bid process. For more information, visit iprpraha.cz.

Ice Breakers
Submission deadline: October 13, 2017
For its second year, this Toronto-based competition invites architects, designers, and artists to propose temporary public artworks and installations to animate five sites along the city's major waterfront street, Queens Quay, during the winter months. Coordinated by Winter Stations, the theme for this year's proposals is "constellation." For more information, visit icebreakers.winterstations.com.

International VELUX Award 2018
Registration through April 1, 2018
This competition explores the role of daylight in architecture and challenges students to create designs using sunlight as the primary source of energy and light, and examine how natural light can improve health and wellness. Participating students must have support from an instructor at an architecture school. The total prize money is 30,000 euros. For more information, visit iva.velux.com.

2018 Better Philadelphia Challenge
Submission deadline: October 27, 2017
In celebration of the Benjamin Franklin Parkway's centennial, the Ed Bacon Memorial Committee of the Center for Architecture and Design is challenging all university-level students to design the next "parkway" that will create new connections in the city. For more information, visit philadelphiacfa.org.

Laka Competition 2017: Architecture that Reacts
Registration through November 1, 2017
Run by nonprofit Laka, this international competition seeks conceptual proposals for how social issues can be tackled by architectural interventions. Entrants can choose the location, scale, size, and program of their proposed design; three prizes will be awarded. For more information, visit lakareacts.com.

FORM Student Innovation Competition
Submission deadline: November 10, 2017
The FORM Student Innovation Competition offers students a chance to design objects for play using Formica-brand products. The competition is a twist on Formica's 2008 competition, FORM: Contemporary Architects at Play, which posed the same challenge to 10 internationally renowned designers and architects, including Zaha Hadid and Bernard Tschumi. Visit formica.com.

Senior Housing News Architecture & Design Awards 2017
Submission deadline: November 13, 2017
This annual award series honors innovative projects designed for seniors. With professional and student divisions, the awards are given to senior residential projects that fit into categories such as independent living, assisted living, and continuing care. For more information, visit shnawards.com.

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

TRUST IN RESEARCH

Strategic, full-service market research solutions focused on measuring...

- BRAND POSITION — attitudes, awareness, usage, image
- PRODUCT DEVELOPMENT —concept testing, product needs identification, nomenclature, pricing, marketing

To know what we know, please contact us at 248-786-1683 or info@clearseasresearch.com www.clearseasresearch.com

Clear Seas RESEARCH
Making the complex clear

CENTRAL LOCATION TESTING | EXECUTIVE INTERVIEWS | FOCUS GROUPS | SURVEYS

ADVANCE LIFTS®

INSTANT DOCK

LAG IT DOWN & PLUG IT IN YOU HAVE AN INSTANT DOCK!

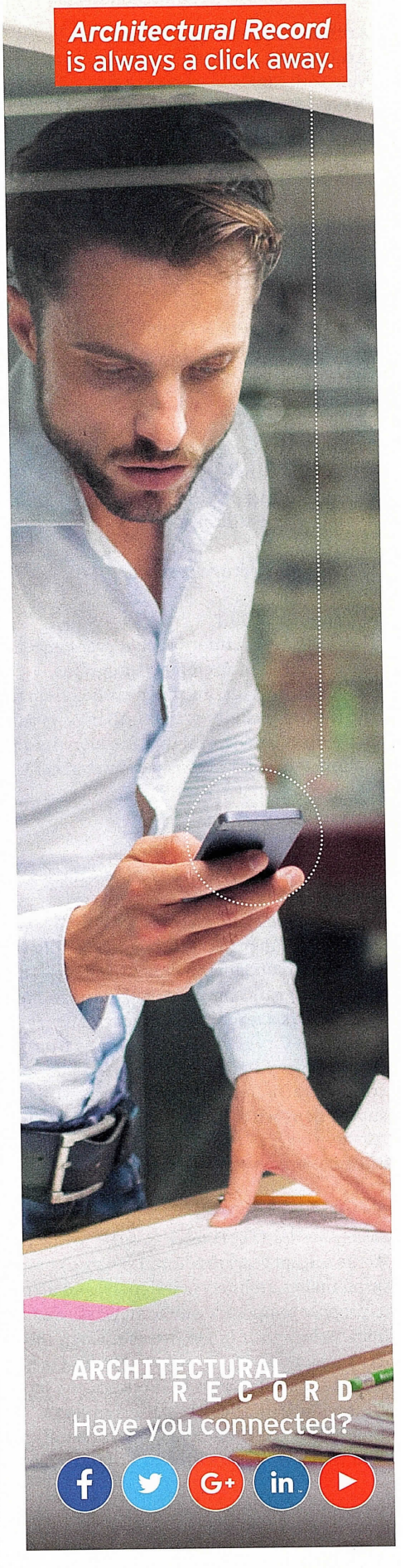
Services Any & All Height Trucks

VIEW ALL 26 MODELS AT
advancelifts.com

made in USA
ISO 9001:2008 Certified

1-800-THE-DOCK

Architectural Record is always a click away.

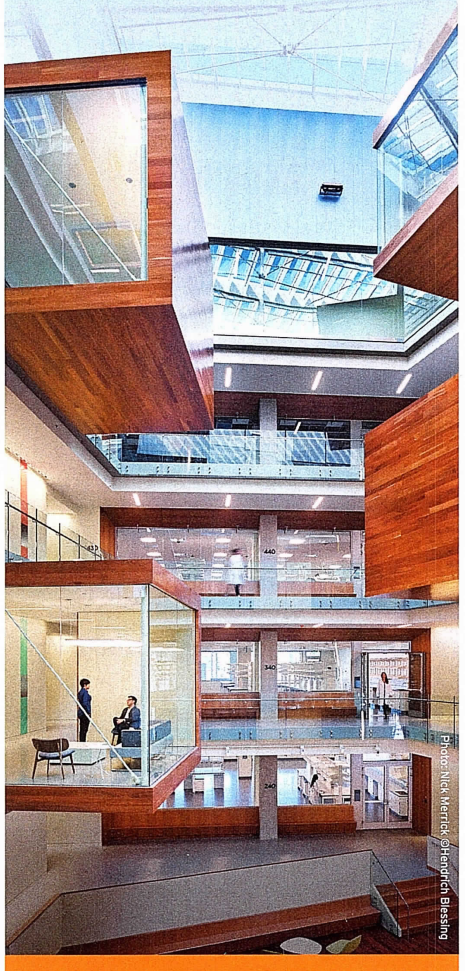


Fire Resistant. Design Consistent.

Fire-Rated Aluminum Window And Door Systems

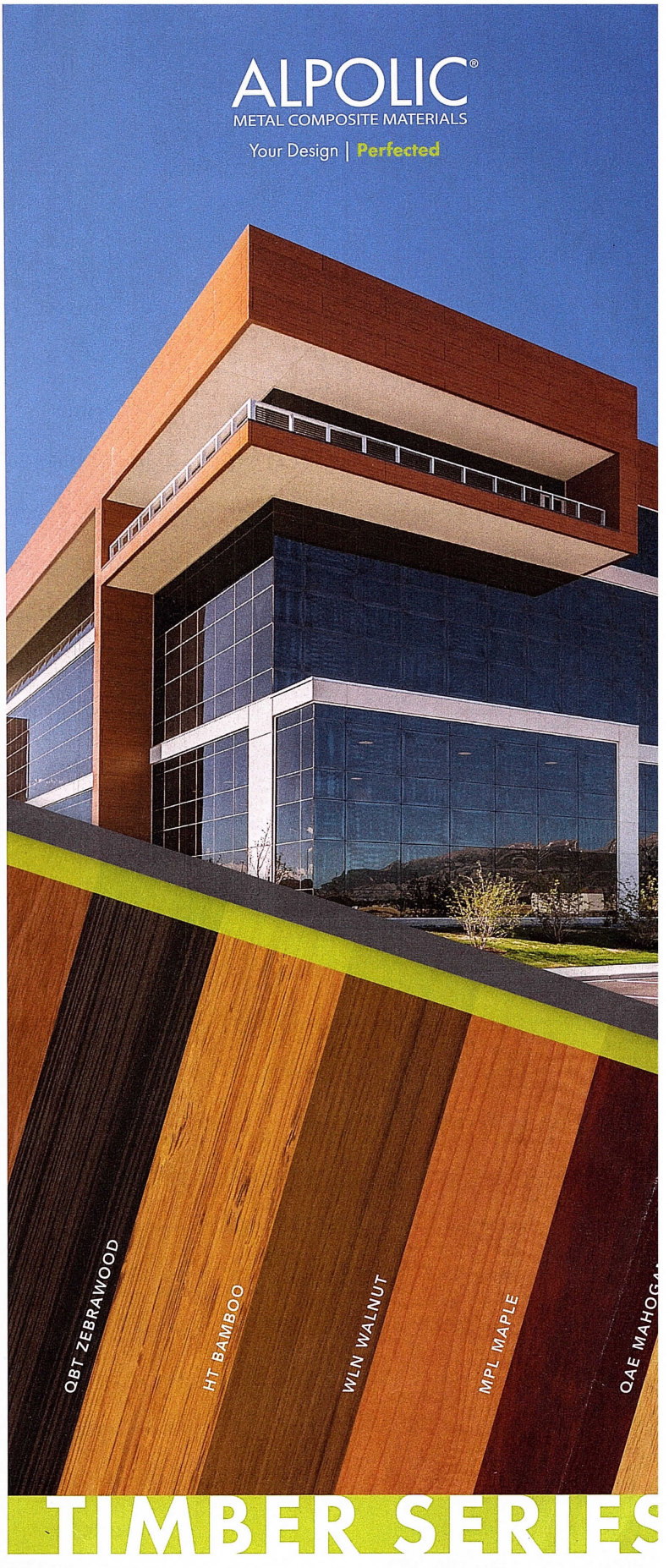
Aluflam has a complete offering of true extruded aluminum fire-rated vision doors, windows and glazed wall systems, fire-rated for up to 120 minutes. Available in all architectural finishes, our products are almost indistinguishable from non-fire-rated doors and windows. You won't have to compromise aesthetics to satisfy safety regulations.

aluflam



Aluflam North America
562-926-9520
aluflam-usa.com

ALPOLIC®
METAL COMPOSITE MATERIALS
Your Design | Perfected



TIMBER SERIES

MITSUBISHI CHEMICAL COMPOSITES AMERICA, INC.

©2017. Mitsubishi Chemical Composites America, Inc. All Rights Reserved.

alpolic-americas.com | 1.888.597.5431 | 401 Volvo Parkway Chesapeake, VA 23320

Advertisers Index

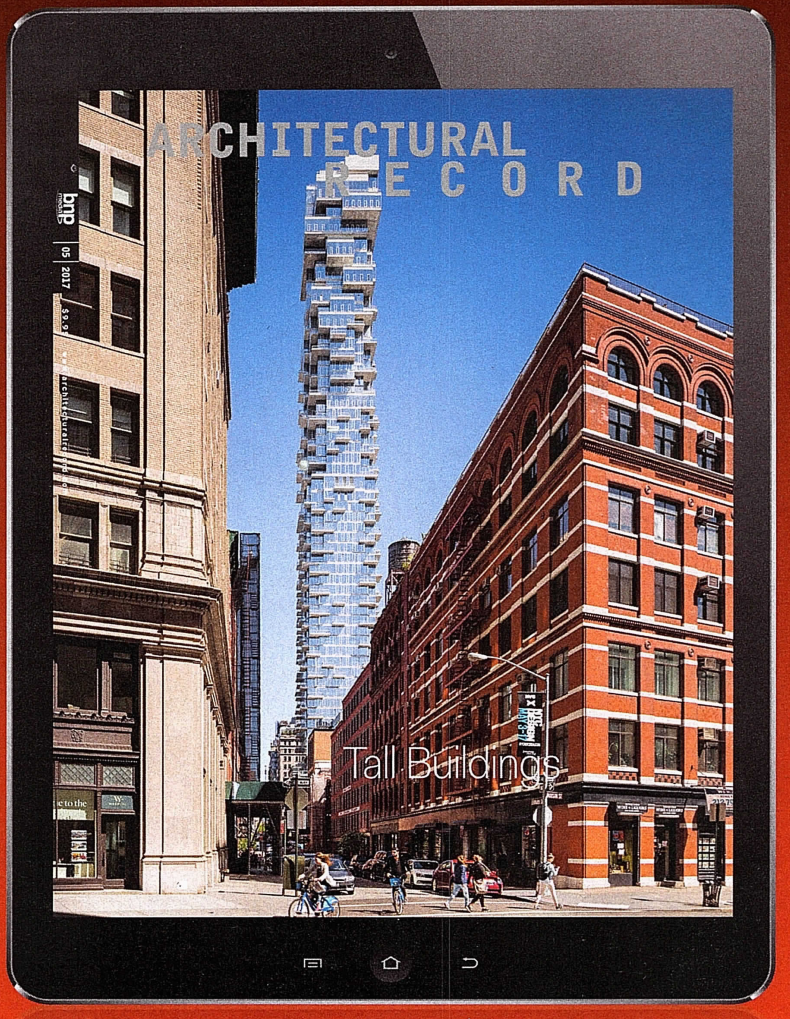
Get Free Information
From our advertisers! Go to **architecturalrecord.com/productinfo**

Advertiser	Page
A & D Building	Ⓡ
Accurate Perforting	141
Advance Lifts Inc	168
AGS Stainless	60
ALPOLIC/Mitsubishi Plastic Composites America, Inc.	169
Aluflam North America LLC	169
American Hydrotech	163, 165, 167
American Institute Of Architects	121
American Standard	82
ARCAT, Inc.	46
Architectural Grille	137
Architectural Record - Skyscraper Museum	161
Architectural Record - NEOCON	120
Architectural Record - CEU APP	168
Architectural Record - Architecture & Design Film Festival	132
Architectural Record - Women In Architecture Conference	80
Architectural Record - Record On The Road Los Angeles	16
Architectural Record - AIA Archtober	166
Architectural Record - Academy of Digital Learning	147
Architectural Record - AIA Heritage Ball	22
Architectural Record - Record On The Road Dallas	58
Architectural Record - AR Innovation Conference	12,13
Architectural Record - AR Digital Edition	171
Architectural Record - AR Social Media	164
Architectural - Website	162
Armstrong World Industries	44, 45
Benjamin Moore	139
Bluebeam Software Inc	7
Canadian Wood Council	10
Canam	53
CAST CONNEX	39
CertainTeed Ceilings	34
Construction Cost Management	171
Construction Specialties	29
Doug Mockett & Company, Inc.	51
Dri-Design	79
Easi Set Worldwide	9
Extech/Exterior Technologies	145
Florida Tile	81
Formica	33
Fry Reglet	125
Glen-Gery	15
Goldbrecht	57
Graham Architectural	27
Guardian Glass	42
Huber Engineered Woods LLC	37, 143
LaCantina Doors	25
Landscape Forms	129
Lumion	CV4
Marvin Windows & Doors	54
Metal Construction Association	154, 155
Modern Fan Co., The	127
modular Arts	164
NanaWall Systems	135
National Terrazzo & Mosaic Association	52
ODL Inc.	62
Oldcastle Architectural, Echelon Masonry	148, 149
Oldcastle BuildingEnvelope®	2, 3
Ornamental Metal Institute Of New York	8
Pella EFCO Commercial Solutions	17
Petersen Aluminum	40
PPG Industries, Inc.	47
RH Tamlyn & Sons	38
SAFTIFIRST	48
Seiho	119
Sherwin Williams	23
Simonswerk	49
Simpson Strong-Tie	19
Steel Institute Of New York	6
Sto Corporation	50
Stuc-O-Flex International	26
Technical Glass Products	CV2, 1
Tournesol Siteworks	122
USG EchoSmart C4	63
Viega	64
Vitro Architectural Glass (Formerly PPG Glass)	4, 5
VT Industries	20, 150-153
Vulcraft	59
Walker Zanger	156 - 159
Western Window Systems	131
WSP	CV3

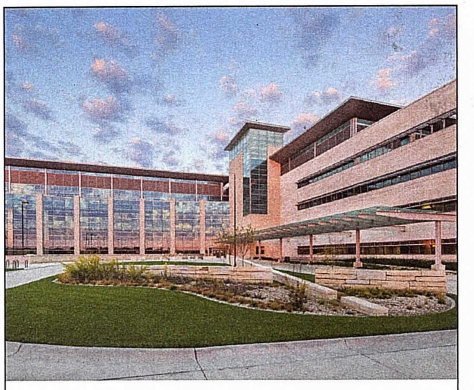
Publisher is not responsible for errors and omissions in advertiser index.

Ⓡ Regional AD

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."



Since 1979, providing estimating and construction consulting to Architectural and Engineering firms worldwide.

Multi-discipline experience and expertise in the construction industry.

"If you absolutely need accuracy – call us and see how we "measure" up!"

Katy Kothmann Abraham, President

US based, serving the international and domestic Architectural Industry.

40 years of customer satisfaction.

- ✓ Woman Owned
- ✓ HUBZone certified
- ✓ Family Owned

CCM
Construction Cost Management, Inc. est. 1979

CCM, Inc.
2413 N. Main Street
Fort Worth, TX 76164
817-625-6200
www.buildcostcontrol.com

snapshot

PROJECT HUANGSHAN MOUNTAIN VILLAGE
LOCATION HUANGSHAN, CHINA
ARTIST MAD ARCHITECTS

WHEN CHINESE developer Wang Weixian commissioned MAD Architects to design a large-scale residential complex in Huangshan, a mountain region and UNESCO Heritage Site 250 miles southwest of Shanghai, he wanted to steer clear of the typical urban high-rise. "It's very hard to argue that a development like this can coexist with nature," says MAD founding principal Ma Yansong. "That was the main challenge of this project." The design, a cluster of 10 undulating concrete buildings ranging from five to 21 stories, both mimics the landscape and brings residents closer to it. "The goal was to make multiple levels that look like the surrounding terraced tea fields, so that the architecture fits in," says Ma. Each of the 859 units is set back, allowing for individual balconies that overlook the lush setting, while bridges connecting the towers also provide platforms to view the outdoors. The result is not about "functioning as a machine for living," says the architect. "The attitude and the atmosphere are what's important." *Alex Klimoski*