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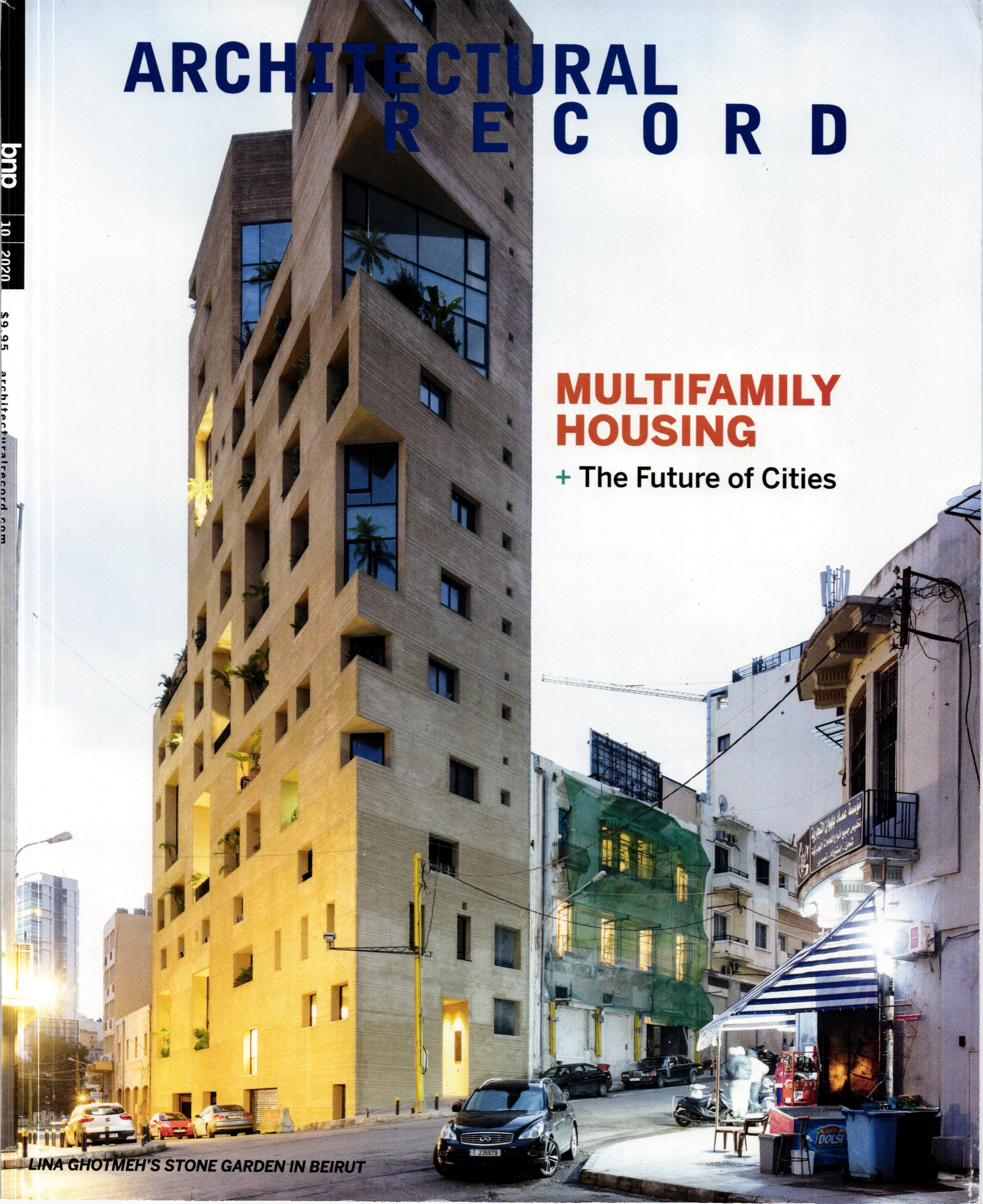
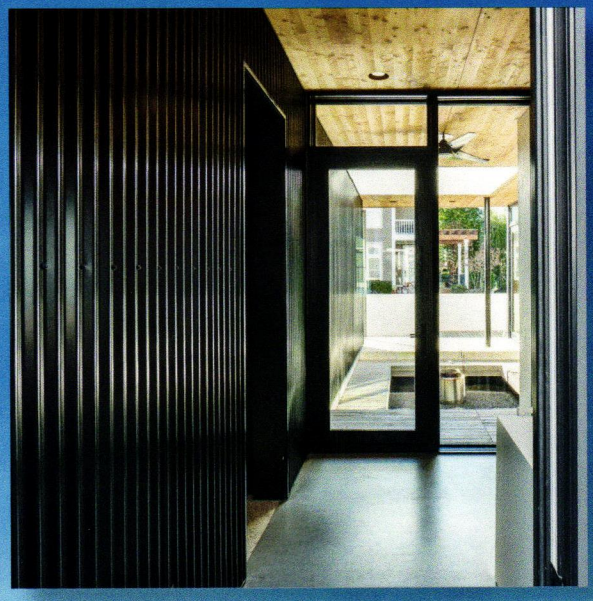


LINA GHOTMEH'S STONE GARDEN IN BEIRUT

High-Performance Metal

Civitas | Net Zero Design





"We went through a process of energy studies, and aluminum started coming in" as a favored choice. "If you install it correctly, it will last forever."

-Barry Alan Yoakum, FAIA, Principal, archimania

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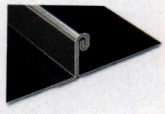
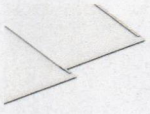
Civitas makes a strong statement not only in its visual presentation, but also in its accomplishment as the first single-family home in the Americas to be registered as a Zero Energy/Zero Carbon home. Chosen for durability, with the goal of creating a house that would remain standing two centuries from now, Petersen's aluminum wall and roof systems contributed to both the dynamic design and performance of this progressive home.



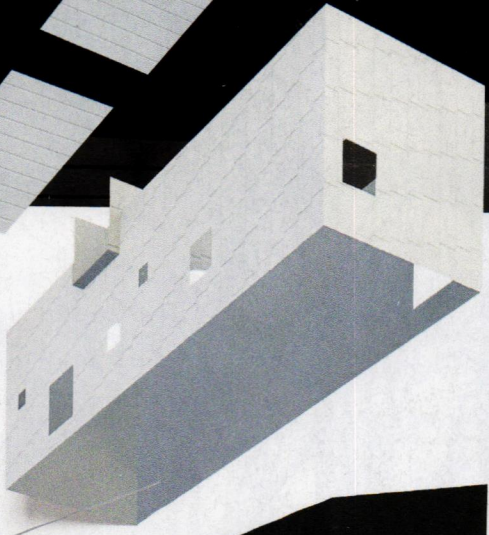
Civitas, Memphis Installing contractor: Ralph Jones Sheet Metal
Architect: archimania Owner: Barry Alan Yoakum Photos: archimania

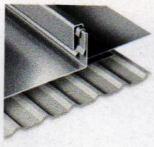


Tite-Loc Plus
Aluminum Roofing System



Contractor-Fabricated Flat-Seam Panels
Aluminum Wall System





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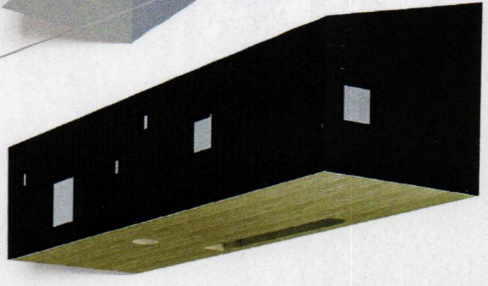
PAC-CLAD Corrugated
Aluminum Wall System



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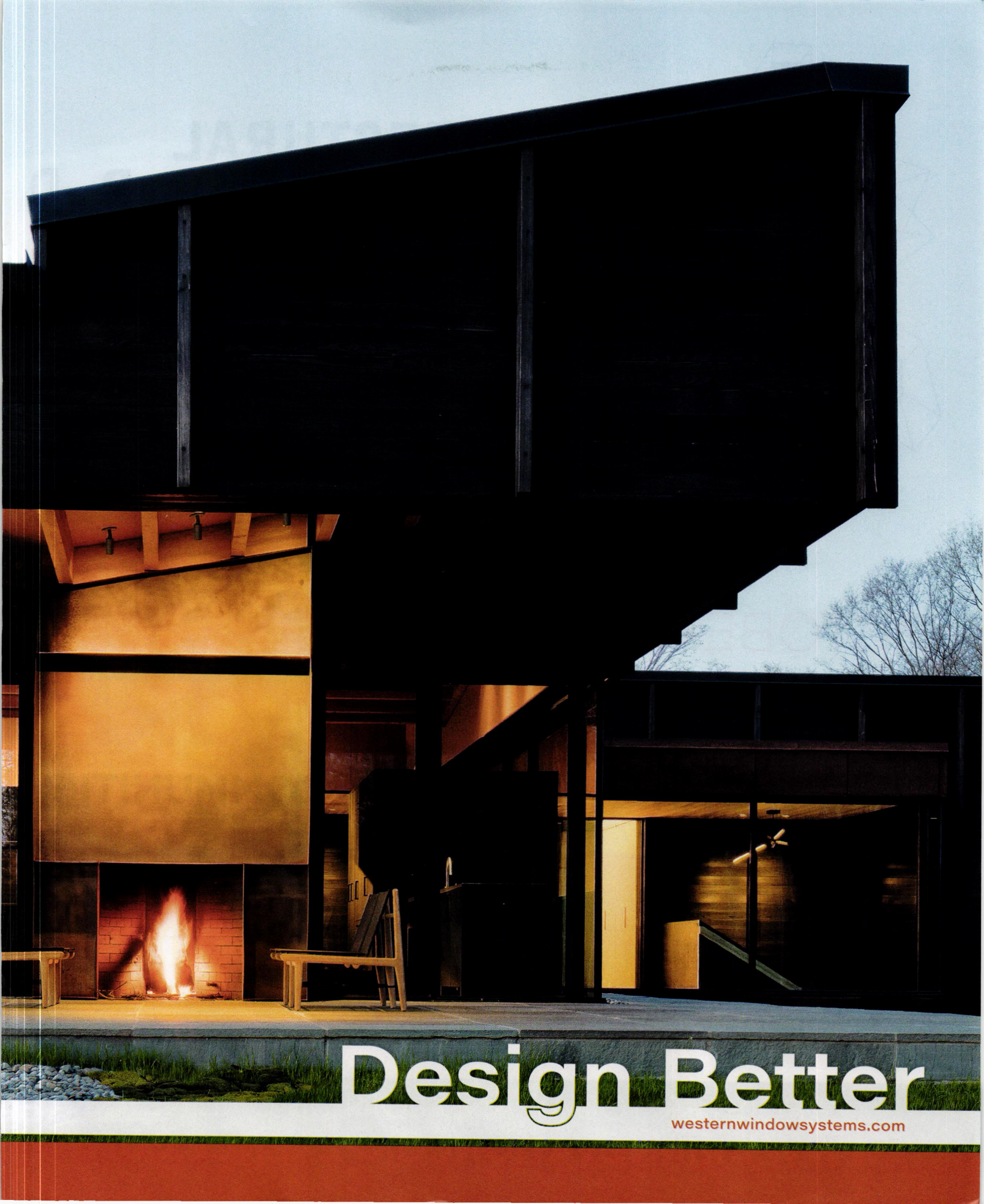
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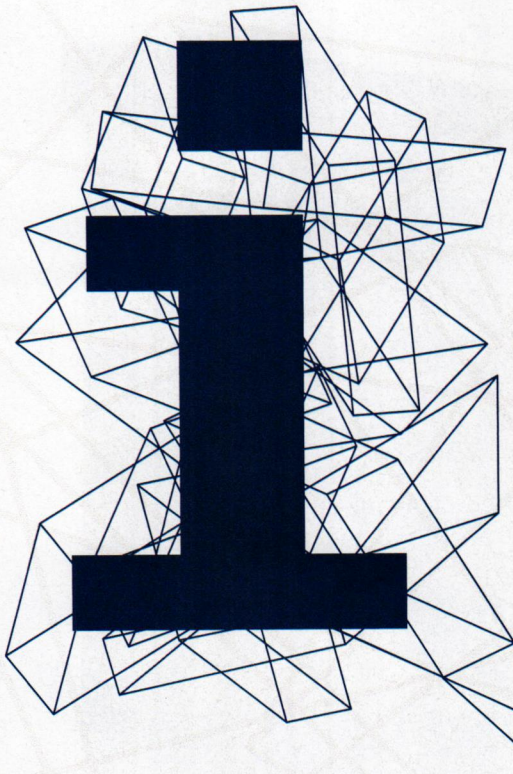

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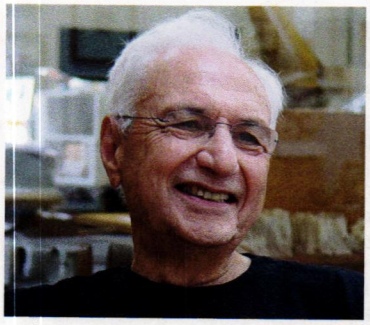

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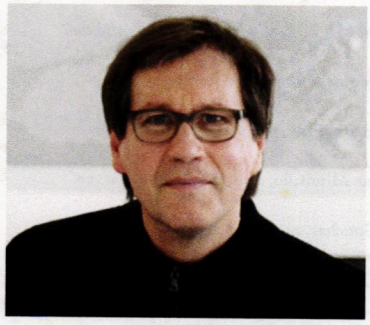

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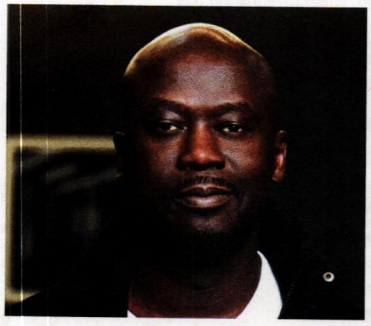

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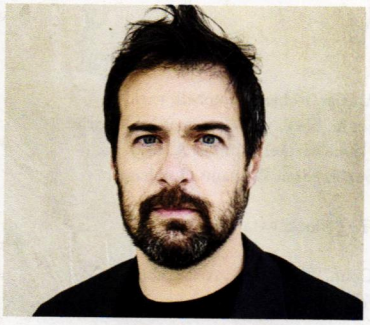

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NEWS

17 **Affordable Multifamily Housing Adapts to Pandemic**
By James McCown

20 **Women in Architecture Awards Recognizes Five Leaders**
By Miriam Sitz

23 **Aluminaire House Heads West**
By Kara Mavros

24 **Newsmaker: De Nichols**
By Kara Mavros

DEPARTMENTS

14 **Editor's Letter: Mankind's Greatest Invention**

29 **House of the Month: SKYHOUSE in Los Angeles**
By Wendy Moonan

33 **Treetop Walkway in Portugal**
By Kara Mavros

35 **Guess the Architect**

37 **Commentary: Designing to Divest**
By Garrett Jacobs and Deanna van Buren

41 **Doshi Exhibition Opens in Chicago**
By Zach Mortice

50 **Close Up: Rothko Chapel Renovation**
By Miriam Sitz

57 **Products: Accessibility**
By Sheila Kim

62 **Products: Roofing**
By Sheila Kim

BUILDING TYPE STUDY 1,022 MULTIFAMILY HOUSING

83 **John R 2660, Detroit**
LORCAN O'HERLIHY ARCHITECTS
By Joann Gonchar, FAIA

88 **Stone Garden, Beirut**
LINA GHOTMEH
By Joumana Ghandour Atallah

94 **The Continental, San Diego**
JONATHAN SEGAL, FAIA
By Sarah Amelar

98 **Modern Mill and River Houses, Williamstown, Massachusetts**
MERGE ARCHITECTS
By Suzanne Stephens

104 **South Bronx Housing, New York**
ALEXANDER GORLIN ARCHITECTS
By Linda C. Lentz

108 **Eight Houses on Alcántara, Chile**
CRISTIÁN IZQUIERDO
By Josephine Minutillo

BOOKS

46 ***Modern Architecture and Climate: Design Before Air Conditioning***
Reviewed by Russell Fortmeyer

47 ***Hans Scharoun and the Development of Small Apartment Floor Plans***
Reviewed by Josephine Minutillo

PROJECT

66 **Eisenhower Memorial, Washington, D.C.** FRANK GEHRY
By Cathleen McGuigan

THE FUTURE OF CITIES

72 **Are Cities Over?**
By Diana Lind

77 **The Straits of Transbay**
By John King

CONTINUING EDUCATION

114 **Environmental Inequity**
By Katharine Logan

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148 **Dates & Events**

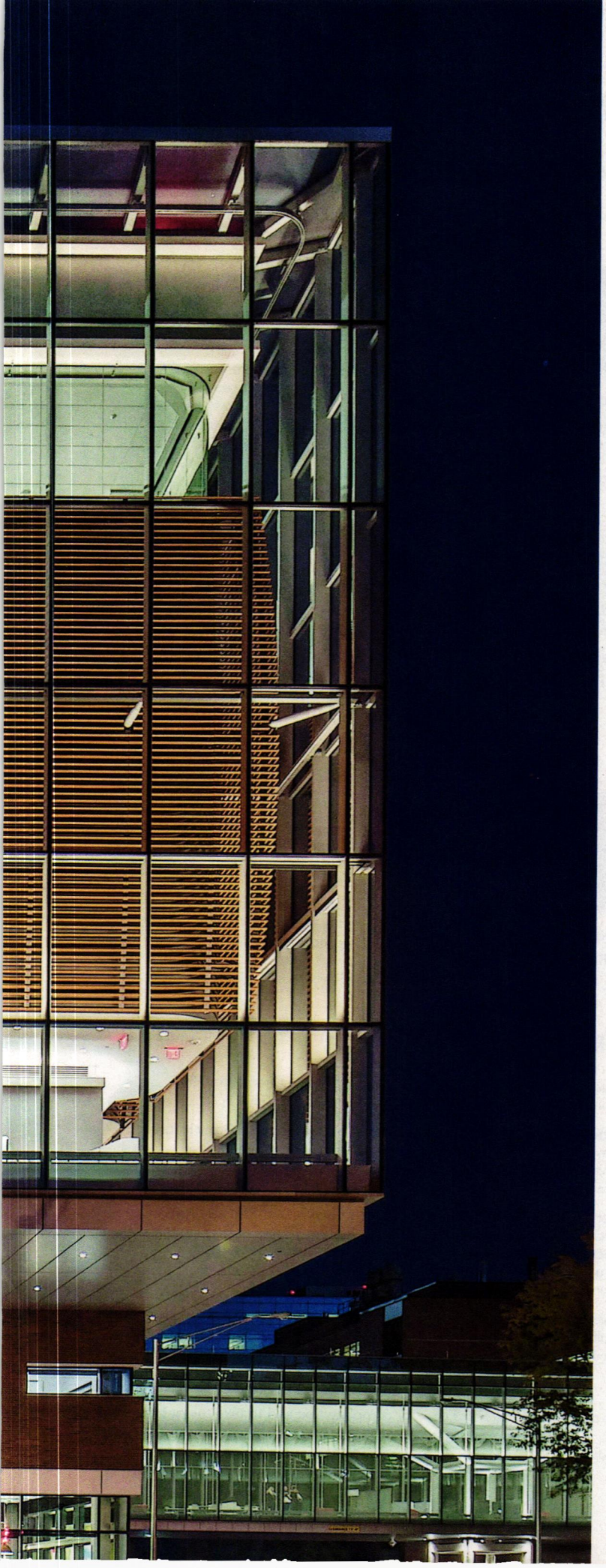
152 **Snapshot: Valcotos by MK27**
By Kara Mavros

THIS PAGE: EISENHOWER MEMORIAL, WASHINGTON, D.C., BY FRANK GEHRY. PHOTO BY ALAN KARCHMER.

Expanded coverage at architecturalrecord.com.

COVER: STONE GARDEN IN BEIRUT WAS PHOTOGRAPHED IN MARCH 2020 JUST BEFORE THE PANDEMIC LOCKDOWN, AND MONTHS BEFORE THE AUGUST 4 EXPLOSION ROCKED THE CITY AND DAMAGED THE BUILDING; BY LINA GHOTMEH. PHOTO BY IWAN BAAN.





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Mankind's Greatest Invention

Cities have survived wars, depressions, and natural disasters—and they can survive Covid too.

ON THE COVER of RECORD this month is a striking building, Stone Garden, in Beirut. The 13-story apartment tower—designed by Lina Ghotmeh, a French Lebanese architect based in Paris—is angled onto its tight urban site and wears a striated skin, cut with deep apertures, out of which spill profusions of greenery. The design was inspired, says the architect, by the brutal history of conflict in the city of her childhood. "Violence had always left its mark on the city's building skins, hollowing these and leaving nature to invade every left-out concrete skeleton," she writes. "In Beirut, you are invited to change your understanding of what a facade opening might mean."

RECORD contributing photographer Iwan Baan, who brought this project to our attention, photographed it early this year, before the pandemic lockdown. Joumana Ghandour Atallah, a Beirut-based architect, was commissioned to visit the building and report on it for this issue.

Then, on August 4, a huge blast rocked Beirut, this time not from a bomb or artillery but from an explosion in a warehouse in the port—a mere 1,500 feet from Stone Garden—killing at least 190 people and injuring many more. Features editor Josephine Minutillo immediately reached out to Ghotmeh and Atallah and learned that they were OK and that the building, though damaged, was structurally sound. Most of its windows were blown out—but the plantings in the openings were still thriving. We decided we had to go ahead and publish it (page 88).

Few cities have endured what Beirut has faced, and few are as resilient. And in its long, scarred history, the jewel of the Mediterranean has exemplified what the economist Edward Glaeser and others mean when they call cities mankind's greatest invention.

But right now, in the U.S., cities are viewed with skepticism. Metropolitan areas have taken a huge economic hit because of Covid, and people are expressing fear of the density and social and cultural interactions that make cities vibrant and alive. And though urban areas are now opening up again—and an eventual vaccine seems to be on the horizon—in this issue of RECORD, we ask the hard question: "Are Cities Over?" (page 72). What will it take for cities to recover economically? And if they do recover, will urban leaders grab the opportunity to improve them and finally deal with long-standing inequities in housing and public access that can make civic life open and fair to all?

For those millions who remain committed to urban living, we offer several varied, inspiring, multifamily-housing projects in the pages ahead (even one apartment complex out in the country). From the Continental in San Diego, by Jonathan Segal, with its clever open plan and balconies, at an affordable rent (page 94) to LOHA's first building for the City Modern development in Detroit, a new ground-up neighborhood in a once wealthy part of the city (page 83) and the urbane Cable Mills apartment complex by Merge Architects in bucolic Williamstown, Massachusetts (page 98), and Alex Gorlin's South Bronx housing, a model of good design, with ample daylight and refined detailing brought to a handsome low-income project (page 104), these works of architecture reflect some of the diverse and lively ways to reimagine dwelling in the city.

Cities have a long history of post-crisis resilience. While it seems at the moment that many American cities are failing, we can't forget the determination of those who live in them—the majority of residents unable to leave during the pandemic, and those who would never *want* to leave—who, despite the efficiency of connecting remotely, find the "real, live, inspiring human energy" of the city irreplaceable, as that great urban philosopher Jerry Seinfeld recently put it in *The New York Times*. RECORD will continue to report on the future of cities—how they are evolving, and how commerce and creativity can begin to thrive again, like a garden growing from stone.

PHOTOGRAPHY: © MICHEL ARNAUD

Cathleen McGuigan

Cathleen McGuigan, Editor in Chief

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—*California Governor Gavin Newsom, discussing the deadly wildfires along the West Coast in a press briefing on September 8.*

Affordable Multifamily Housing Projects Adapt to Covid-19

BY JAMES MCCOWN

IN THE BRONX, New York, the congregation of Wakefield Grace United Methodist Church is replacing their longtime house of worship, a 1927 stone Gothic-revival structure. But instead of just building a new church, the congregants decided to construct a 72-unit affordable-housing complex for seniors on top of a new ground-level sanctuary. And their architect, Walter Marin, is ensuring that the church's act of faith and civic philanthropy will help future residents stay healthy by designing a building that will combat the spread of the coronavirus and possible future viral outbreaks.

"There are so many things you can do to fight Covid-19," says Marin, senior principal at Marin Architects in Manhattan, such as installing elevators that can be called via cell phone or utilizing UV lighting to kill germs. "But the challenge is finding applications within the budget constraints of affordable housing." This is a growing concern for architects of this typology.

Given the lower chance of Covid transmission outdoors, Marin is making the most of open-air spaces. "New York City codes discourage individual balconies in affordable housing, so we've designed a roof garden, which is like a giant communal balcony," he says. "It's the one place you can gather at a reasonable distance, and, with movable furniture, tenants can personalize the space and make it into little pods." The project is slated for completion in fall 2022.

But in Richmond, Virginia, an affordable-housing complex designed by Dallas-based global architecture firm HKS is going all-out for individual balconies. The Benefield Building, an Art Deco structure that formerly housed an auto-repair shop, will contain a mixture of retail and office space as well as 30 affordable apartments, all of which will have private outdoor space. The project—through the schematic design phase and now in a public review process—is anticipated to open in the second half of 2022. Located in the primarily African American neighborhood of Highland Park, the building will also be home to the Six Points Innovation Center (6 PIC), a makerspace and youth programming organization that encourages young people to pursue careers using both minds and hands.





Communal terraces on the roofs of Marin Architects' project in the Bronx (above) and the Benefield Building housing by HKS (bottom) allow residents to safely gather outdoors.

The design has air exchange with the outdoors, thus reducing aerosolized transmission of the virus. It also has multiple outdoor venues, including a large community garden, which will have movable chairs that are easily arranged for optimum distance. A green roof and communal balcony give the building a dramatic profile at the center of Highland Park. Common exterior spaces will be open to the residential, retail, and office tenants, and all users of the building.

Health and wellness have long been factors in architectural design, points out Rami el Samahy, founding principal of the Boston firm OverUnder and adjunct professor at MIT's School of Architecture + Planning. "Haussmann's 19th-century renovation of Paris is just one prominent example," el Samahy says, "as was New York's reaction to the

IMAGES: COURTESY MARIN ARCHITECTS (TOP); HKS (BOTTOM)



Each unit of the Golden Circle by Studio One Eleven has a private balcony.

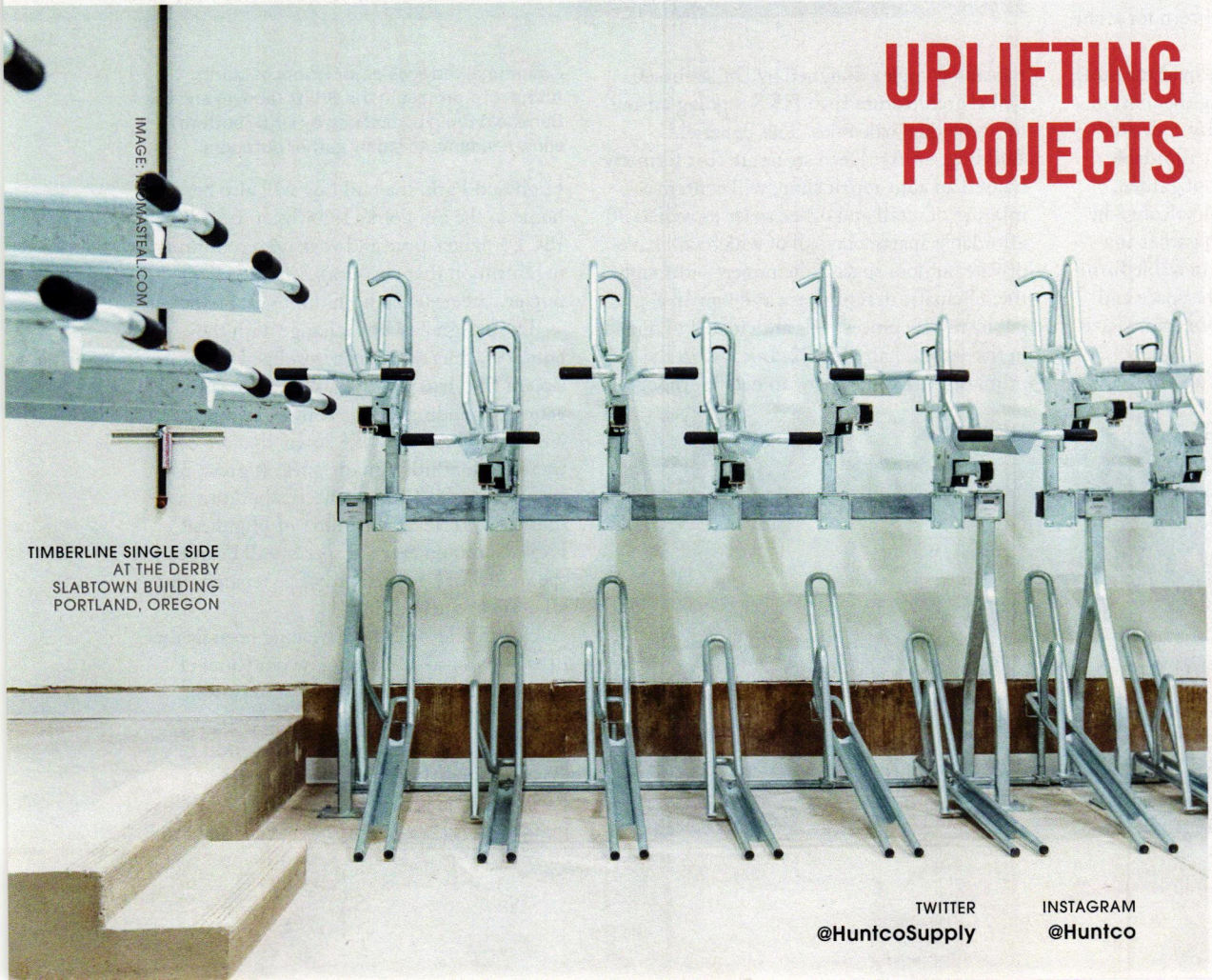
IMAGE: COURTESY STUDIO ONE ELEVEN

squalid conditions of tenement housing in the early 20th century, or London's reconfigured infrastructure in the wake of an 1854 cholera epidemic." In the post-Covid world, he predicts, "the demand for more generous public spaces will continue to grow."

In the city of Santa Ana, California, southwest of Los Angeles, Long Beach– and Los Angeles–based Studio One Eleven is designing a 160-unit affordable-housing project called the Golden Circle Development, now in schematic design and estimated to be complete in 2023. "We're trying to create an enduring atmosphere of safety and belonging," says Michael Bohn, senior principal and design director of the firm, noting that the community has given extensive input on plans.

Bohn and his colleagues have specified a panoply of Covid-related elements for the building, inside and out. Extensive collaboration with the clients—Innovative Housing Opportunities and the Orange County Community Housing Corporation—was crucial. "In the early stages," he says, "the clients pushed us: 'What are you going to do about Covid?' Then we pushed ourselves." The architects' concept provides more outdoor space than is required by code, rooftop gardens with movable furniture, children's play areas with a mixture of hard and natural surfaces, and prominently located stairs as an alternative to the elevators, which will have voice-activated sensors. Within units, they placed the kitchen sink near the main entrance to allow for convenient handwashing upon entry, and added private balconies to combat quarantine-induced feelings of isolation. Instead of being cantilevered outward, the small patios are pushed inward, a modest luxury that allows for shading in the strong Southern California sun.

By designing the Golden Circle with Covid—or future pandemics—in mind, the firm believes it is demonstrating its "commitment to cities," Bohn says, "making housing livable, safe, and equitable," and available to those of modest means—not just the wealthy. ■



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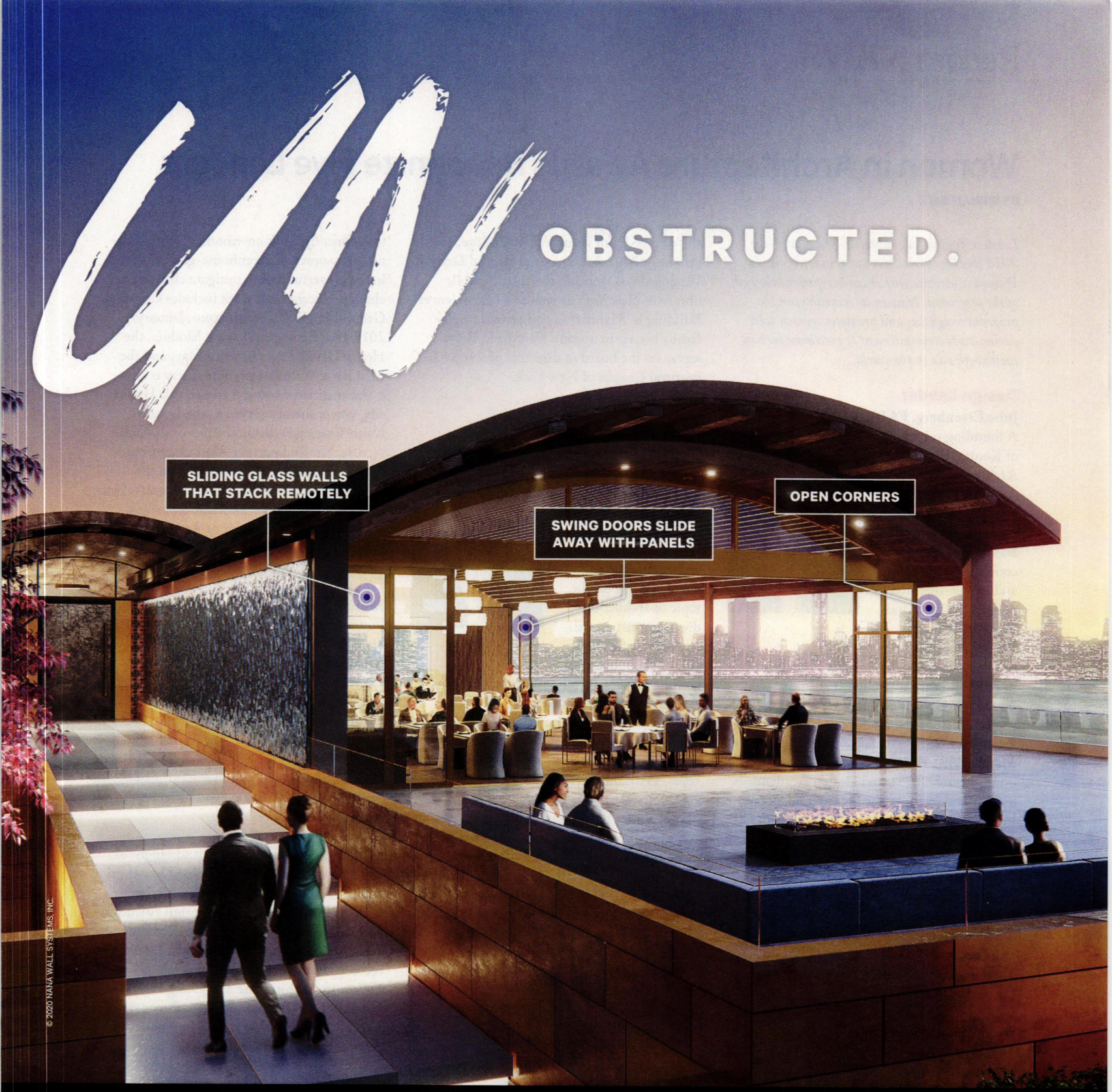

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Women in Architecture Awards Recognize Five Leaders

BY MIRIAM SITZ

Leaders, innovators, activists, educators—the 2020 winners of ARCHITECTURAL RECORD'S *Women in Architecture Awards represent the best of the profession. Now in its seventh year, the program recognizes and promotes women who demonstrate a commitment to excellence both in their work and in the world.*

Design Leader

Julie Eizenberg, FAIA



A founding principal of Koning Eizenberg Architecture in Los Angeles, Julie Eizenberg has given visibility to the design value and potential of community projects and people-oriented practice. With founding partner Hank Koning, Eizenberg received the AIA Los Angeles Gold Medal in 2012 and the Australian Institute of Architects Gold Medal in 2019. Notable projects include the Children's Museum of Pittsburgh, 28th Street Apartments (RECORD, March 2013), the Pico Branch Library (RECORD, March 2015), and Geffen Academy. A teacher and lecturer, she holds an honorary Ph.D. in Architecture from the University of Melbourne.

New Generation Leader

Stella Betts



LEVENBETTS principal Stella Betts founded her New York–based firm with her partner, David Leven, in 1997. An adjunct professor at Yale University School of Architecture, Betts has previously taught at the Columbia University Graduate School of Architecture, Planning and Preservation; Cornell University School of Architecture, Art, and Planning; Cooper Union; Parsons School of Design at the New School; and Syracuse University. She holds a Master of Architecture from Harvard University's Graduate School of Design, and a Bachelor of Arts from Connecticut College. Her office—a 2007 Architectural Record Design Vanguard—is working on its fifth public library in New York as well as a Life Sciences Building in Manhattan and several single-family homes in upstate New York. Betts serves on the board of directors of the Architectural League of New York.

Activist

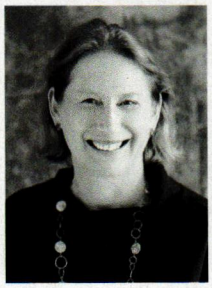
Kimberly Dowdell



The 2019–20 president of the National Organization of Minority Architects (NOMA), Kimberly Dowdell is a licensed architect and frequent speaker on the topic of architecture, diversity, sustainability, and the future of cities, whose overarching mission is to improve the quality of life for people living in urban areas. Her career aspirations are rooted in her upbringing in Detroit, where she was initially driven to utilize architecture as a tool to revitalize cities. With the staff and board of directors of NOMA, Dowdell is working to increase the opportunities for women and for people of color to gain more equitable access to the design profession. A LEED-accredited professional, she holds a Bachelor of Architecture from Cornell University and Master in Public Administration from Harvard University. Dowdell is a principal in the global design firm HOK's Chicago office.

Innovator

Lisa Gray, FAIA



A founding principal of Gray Organschi Architecture in New Haven, Connecticut, Lisa Gray's work focuses on regenerative building. Ongoing research initiatives at the practice explore the potential of renewable, bio-based building materials and circular-economic construction techniques, to transform the built environment from a significant source of greenhouse-gas emissions into a powerful tool to mitigate climate change. Recent built work includes Common Ground High School (RECORD, January 2017), the Ecological Living Module, the Henry David Thoreau footbridge, and the Mill River Carousel pavilion. Gray is a frequent instructor and lecturer at Yale University, where she has served as the Louis I. Kahn Visiting Assistant Professor of Architecture. She and partner Alan Organschi received an architecture award from the American Academy of Arts and Letters. Gray holds a Master of Architecture from Yale University and a Bachelor of Arts in English and Architecture from Yale College.

Educator

Monica Ponce de Leon



Founding principal of MPdL Studio, Monica Ponce de Leon became dean of the Princeton University School of Architecture in 2016, where she is also a professor. From 2008 to 2015, she served as dean of Taubman College at the University of Michigan, and taught at the Harvard Graduate School of Design prior to that. She has been honored with the Cooper Hewitt's National Design Award in architecture and the American Academy of Arts and Sciences' academic award in architecture, and she was named a USA Target Fellow in Architecture and Design by United States Artists. In 2016, Ponce de Leon was inducted into the National Academy of Design. ■

The winners were chosen by an independent jury: Tomas Rossant, design partner, Ennead Architects; Jing Liu, principal, SO – IL; Claire Weisz, FAIA, principal-in-charge, WXY; and John King, urban design critic, San Francisco Chronicle.

The awards will be conferred during ARCHITECTURAL RECORD'S *virtual Women in Architecture forum on Thursday, October 29, 2020, at 5 p.m. EDT.*

PHOTOGRAPHY (CLOCKWISE FROM TOP, LEFT): COURTESY KONING EIZENBERG ARCHITECTURE; HOK; MPDL STUDIO; © JOYCE GEORGE; LEVENBETTS

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CASE STUDY
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BILCO Roof Hatches Add Unique Element to D.C. Housing Project

The historic buildings, monuments and scenery around Washington D.C. draw tourists from all over the world. Tenants of 32 new townhomes in the city's swanky Capitol Hill will have a unique and private vantage point to the area with individual roof hatches, offering them a perspective that is available to only a few residents of the nation's capital.

Buchanan Park is a residential development being built by Ditto Residential. It will include 41 condominiums in a redeveloped historic three-story school building that dates to 1895 and was named after James Buchanan, the nation's 15th president. Buchanan Park includes a central green, multiple outdoor gathering areas and pedestrian walkways.

The 32 three- and four-bedroom townhomes will line 13th and D Streets in Washington, surrounding the Buchanan School. Inspired by the Federal-style homes in the neighborhood, the townhomes will include brick exteriors and spacious living areas.

The architect for the townhomes, Maurice Walters, designed them to provide residents with individual access to rooftop deck areas. DJB Contracting is installing 32 thermally broken roof hatches from The BILCO Company to meet the architect's request.

"We have used BILCO roof hatches all the time," said Eric Ward, project manager for DJB, whose business has been providing roofing and related services to the Washington area for more than two decades. "We had never used the thermally broken roof hatches before this project. I think it's a good fit for the situation. It's an access point to the roof, and I like that they are pre-fabricated and pre-coated. It makes the job a lot easier."

BILCO's E-50TB thermally broken roof hatch offers a new standard in energy efficiency, making them ideal for the project at Buchanan Park. The hatch minimizes heat transfer and the effects of condensation. The unit includes a thermally broken cover and curb featuring R-20+ insulation. The unit also offers corrosion resistant aluminum construction.

"The increased R value makes this hatch superior to its competitors in the industry," Ward said. "Typically, roof hatches don't have much insulation in the cover. It's made of aluminum, too, while others are made of steel around the base. It's much lighter. I like this model because it's lighter and maintenance free."


Photo: Studio Trejo

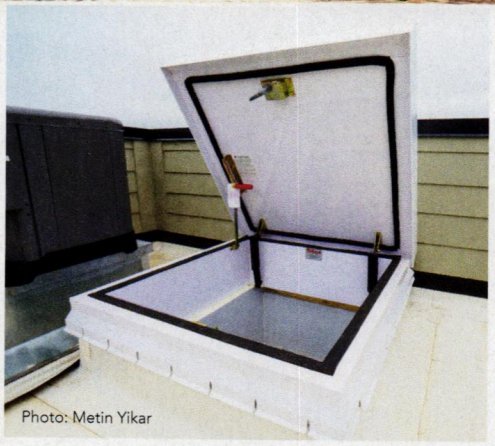
Photo: Metin Yikar

When DJB started the project, the general contractor pushed for a quick install of the roof hatches. BILCO delivered them swiftly so that Ward and his team could meet the project timeline. While there have been other delays in the construction process, BILCO's customer service team delivered astonishingly fast. "BILCO's customer service is great," Ward said. "They did what they promised they would do. I absolutely loved working with BILCO."

Ward believes the residents of the townhomes will appreciate the roof hatches. Besides increasing energy efficiency, they will allow residents rare private access to their roofs. Most city housing projects that offer rooftop access accommodate multiple tenants, and not individual access.

"I think the hatch will work great," Ward said. "I've never seen this application before, but I think it's a great idea and tenants will find they really like the BILCO product."

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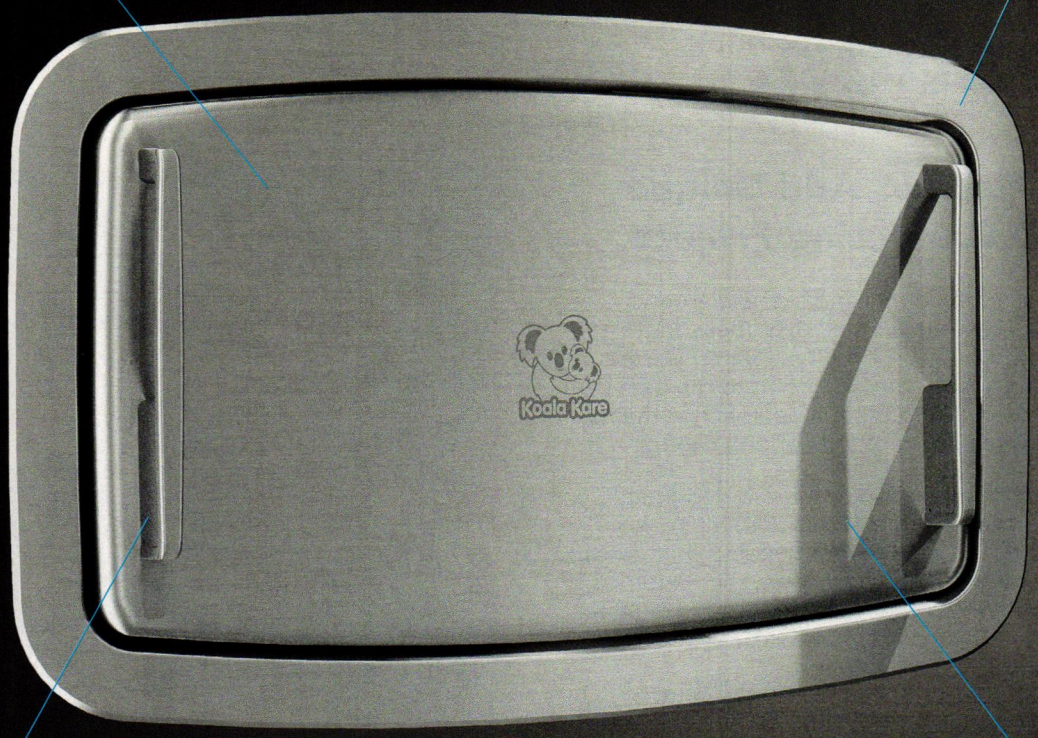

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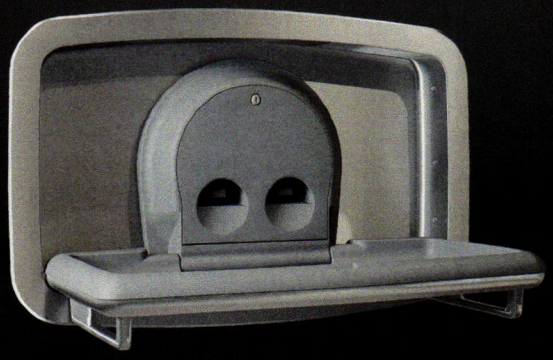

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Aluminaire House Heads West

BY KARA MAVROS

THE ALUMINAIRE HOUSE has found a permanent home on the West Coast.

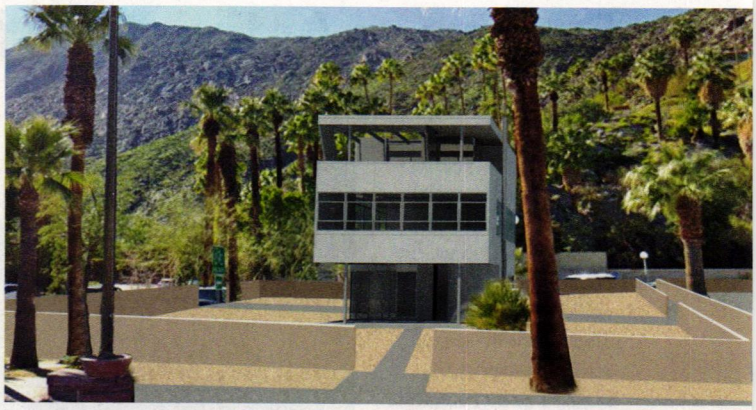
The Aluminaire House Foundation, established by New York architects Michael Schwarting and Frances Campani, has donated the groundbreaking Modernist structure to the Palm Springs Art Museum in California, where it will become part of the museum's permanent collection.

A. Lawrence Kocher, a longtime editor of ARCHITECTURAL RECORD, and Albert Frey, a young Swiss architect who worked for Le Corbusier in Paris, designed the structure in 1931. The first house in the U.S. constructed entirely of metal, it was assembled in just 10 days and exhibited by the Architectural League of New York and Allied Arts and Industries in a show at the Grand Central Palace exposition hall in New York, drawing more than 100,000 visitors over the course of a week. It was later featured in the 1932 MoMA exhibition *The International Style—Architecture Since 1922*.

The innovative aluminum residence changed hands and locations many times in the decades that followed. In 2012, after some 25 years of working to protect it through their foundation (of which architecture critic Kenneth Frampton is also a part), Schwarting and Campani dismantled the house and stored it on Long Island in preparation for its eventual relocation to California.

"We have studied several sites over the past four years, and this one is the best," says Schwarting. "The museum is a prestigious cultural place and in the center of town. The mountain behind it is beautiful, and Albert Frey's own house is there and also part of the museum collection. The house will be properly recognized and cared for as part of the museum's collection."

Meant to coincide with the reassembly of the structure, which is still pending final approvals from the city, the Palm Springs Art Museum is organizing an Albert Frey exhibition for 2021–22. ■



A rendering of the Aluminaire House shows the proposed site at the Palm Springs Art Museum.

IMAGE: COURTESY CAMPANI AND SCHWARTING ARCHITECTS

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Designer-Activist De Nichols

BY KARA MAVROS



WITH A summer of protests against racial injustice and police brutality behind us, De Nichols believes the work is only beginning. The St. Louis–based artist, lecturer at the Hasso Plattner Institute of Design at Stanford, and 2020 Harvard GSD Loeb Fellow has been using her "visual voice" to condemn racial injustices for over a decade. After the 2014 police killing of Michael Brown in Ferguson, Missouri, Nichols found herself using art supplies from her community-educator classroom at the Contemporary Art Museum St. Louis to support the early protests. By 2018, she, along with other activists, had created over 82 projects addressing police brutality and racism in cities. Today she is founder and principal of her firm, Civic Creatives, and one of roughly 120 BIPOC (Black, indigenous, people of color) organizers of the Design as Protest initiative.

You've been an activist and a voice against oppressive design for years. Has the country's latest social-justice movement affected your work?

As an educator, I am being asked to lecture on these topics more often than I was even two years ago. So much of pedagogy has been about design as social practice or a tool for general social change, but now people really want to get to the heart of racial justice—specifically, looking at how it differs from racial equity, equality, diversity, and inclusion. It has also led to thinking more about racial healing, collective trauma, and how that informs and fuels the processes, outputs, and creative power of designing justice.

The nuances of how I structured my practice have also shifted greatly. In terms of content, adding more clarity around the language I'm using—it's constantly evolving.

Tell me about Design As Protest (DAP) and its initiative network, Dark Matter University. Why were they created and what's the vision for the future?

DAP was created to hold the profession accountable—to reverse the violence, harms, injustices that architecture, engineering, and construction have inflicted upon Black and brown communities over time. What needs to be shifted and dismantled so that, moving forward, we're not collectively contributing to harm and legacies of harm? More than 800 individuals and almost 200 organizations have signed on.

The other side of that vision is championing new reparations for the ways that design and architecture and planning have harmed communities. That includes looking at the ways in which we are trained, the ways we learn about these injustices, which are not in our design curriculum and institutions. So we've created Dark Matter University (which is also largely BIPOC-led) in order to reframe the learning process and experience, and to look at the ways in which BIPOC design educators and antiracist folk—including white educators who are teaching from an antiracist perspective—might create a learning space to fill gaps in their own understanding.

The DAP manifesto talks about "architects' obligations to the short- and long-term outcomes of justice." What are examples of that? How can those in the profession work toward achieving such goals?

In the short term, designers should be looking at their contracts with prisons, jails, and police stations, and find ways to divest from the spaces that have inflicted egregious harm upon Black bodies. Abolition is a long-term outcome.

Also, because we're entering the school year, design educators need to do the diligent work to reassess their curriculum, required readings, and the guest speakers they invite, so that there's not only an increased diversity of text from Black and brown architects and designers, but so that there's also community input, so that we can shift the savior complex that we often have in this profession.

More long-term, we must consider how we can further disentangle ourselves from exploitative practices, especially thinking about our relationships to developers and gentrification. The work has to start now. ■

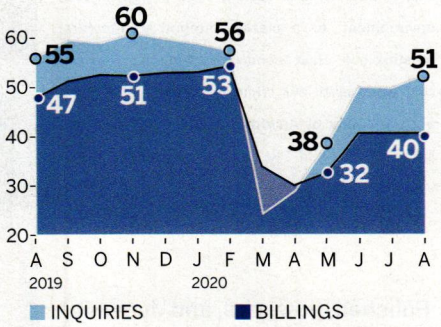
TRIBUTES

Gene Norman, architect and preservationist who, as chairman of the New York City Landmarks Commission in the 1980s, was instrumental in saving historic Broadway theaters and the Coney Island Cyclone, died on August 30 at age 85 in his home in the Bronx.

Siah Armajani, the Iranian-American artist whose work frequently veered into architecture, died August 27 at age 81 in Minneapolis. Born in Tehran in 1939, Armajani was known for his sculpture and works of public art and bridges, including the Irene Hixon Whitney Bridge to link two neighborhoods severed by a 16-lane highway. The Walker Art Center in Minneapolis mounted his first major retrospective in 2018.

Bill Lacy, executive director of the Pritzker Architecture Prize from 1988 to 2005, died August 25 at age 87 in San Antonio, Texas. Trained as an architect, Lacy was founding dean of the University of Tennessee's architecture school, director of architecture and design at the National Endowment for the Arts, president of the American Academy in Rome, and president of Cooper Union.

William McMinn, an architect and longtime educator, died August 21 at age 89 in Asheville, North Carolina. The founding dean of the School of Architecture at Mississippi State University, McMinn went on to become dean of the College of Architecture, Art and Planning at Cornell University, and then founding dean of the School of Architecture at Florida International University.



August Billings Remain Sluggish

The AIA reports that the Architecture Billings Index remained at 40 in August, unchanged from June and July. (A score below 50 indicates decreasing billings.) New design inquiries increased from 49.1 to 51.6, and new design contracts moved from 41.7 to 46.

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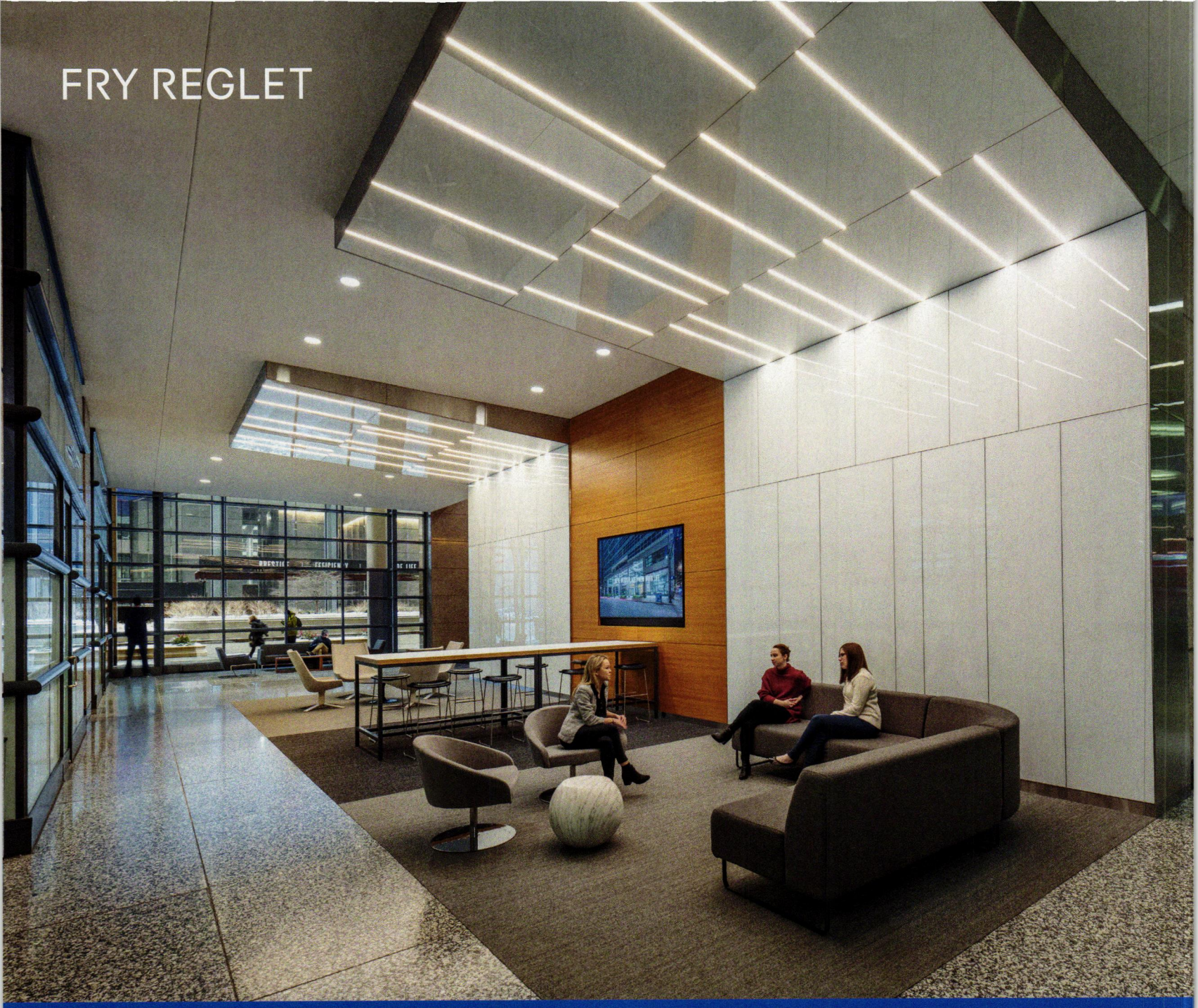

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HOUSE of the Month

A DISCREET FACADE BELIES THE SURPRISES WITHIN XTEN'S SKYHOUSE IN LOS ANGELES. **BY WENDY MOONAN**

IN THE HOLLYWOOD HILLS neighborhood of Los Angeles, known for prominent houses (and celebrity residents), a small one-story, windowless, white-plastered steel-framed volume emerges eerily from a grassy knoll.

"I conceived the house as land art," says Monika Haefelfinger, the Swiss architect who founded XTEN architects in 2000 in L.A. with her late husband, Austin Kelly. "We design strong sculptural forms at the scale of the landscape." Along the street-facing wall, a stainless-steel door pivots open to a small garden. There, stepping-stones over a shallow black terrazzo reflecting pool lead to a front door of glass with slender steel framing set into floor-to-ceiling glazing.

Once inside, you find a travertine wall divides the living room from the family/dining/kitchen area. You are on an experiential journey: as you turn left, a view opens up of the green canyons to the west, and the city and Pacific Ocean to the south. Overhead, the 12-foot-high ceiling is defined by a luminous grid of wood-framed and metal-paneled coffered skylights: tinted glass and PVC membranes reduce solar intake while providing natural light by day; LEDs make them glow at night. "The filtered quality of light required many mock-ups," Haefelfinger says.

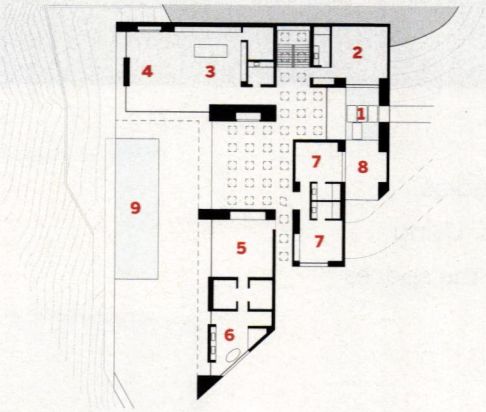
Flanking these public spaces are four volumes containing the main bedroom suite, two bedrooms, and a home office. A skylighted switchback stair takes you down to a home theater, bar, and a gym and bedroom sharing a patio—plus the garage. Now you understand how the house can be 10,000 square feet with no clue of that scale from the outside. As Haefelfinger says, "Our work is to create things that are very simple but very harmonious. It's about reduction and refinement." ■





The street facade (above) is small in scale. At the entrance vestibule, a pivoting glass door set within a glazed wall (left) opens into the public spaces, ethereally illuminated by a coffered skylight. The living quarters (below) wrap around the pool, and have views of the surrounding landscape.





GROUND FLOOR PLAN

0 30 FT. 10 M.

1 ENTRANCE
2 OFFICE
3 DINING/KITCHEN
4 LIVING AREA
5 MAIN BEDROOM
6 BATH
7 BEDROOM
8 PATIO
9 POOL

PHOTOGRAPHY: © STEVE KING

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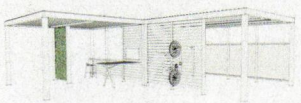

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PORTUGUESE ARCHITECT CARLOS CASTANHEIRA DESIGNS A WALKWAY AMONG THE TREETOPS ON A CULTURAL SITE IN PORTO. **BY KARA MAVROS**

VISITORS TO the Serralves Foundation in Portugal's coastal city of Porto can now experience one of the country's most celebrated cultural institutions from a whole new vantage point. The most recent addition to the 44-acre park—which counts the Art Deco Serralves Villa and the Alvaro Siza–designed Museum of Contemporary Art among its many attractions—the Treetop Walkway is an elevated boardwalk designed by Carlos Castanheira Architects that winds along an 820-foot-long circuit within a towering canopy of cedars and sequoia.

Carlos Castanheira, founder and principal of the Porto-based firm, says he drew inspiration for this intervention from the densely forested landscape. "The idea was already on the site. I just needed to find it." The serpentine pinewood walkway is supported by treelike pine piloti, which range from 4 to 75 feet in height, depending on where they are planted in the uneven topography. The architect describes the experience of viewing the ground from high above as conveying a sense of depth rather than height. "It's almost as if it's the land that escapes our feet," he says.

The Serralves Foundation commissioned the Walkway largely as a didactic tool, with the hope that visitors will learn more about the park's biodiversity from a unique perspective. For this reason, the architect included an intimate 60-person open-air auditorium along the elevated trail where teachers and staff can give lectures during guided walking tours. In addition, informational signs are posted along the way, offering details on flora and fauna that visitors may observe from these heights.

Building the structure without felling any on-site trees, as is mandated at national monuments such as this, was "a surgical operation," notes Castanheira. "Even with a precise topographic survey, it's very difficult to have a good perception of all the branches," he says. Still, the team was able to enhance the visitor experience by deftly weaving this latest element into the existing fabric. "For me, it seems that the Walkway has always been there," says the architect. "And that was the intention." ■





PHOTOGRAPHY: © FERNANDO GUERRA

The elevated Walkway, which is illuminated after dark (right and top), spans 820 feet throughout Serralves Park, for Foundation visitors to explore.

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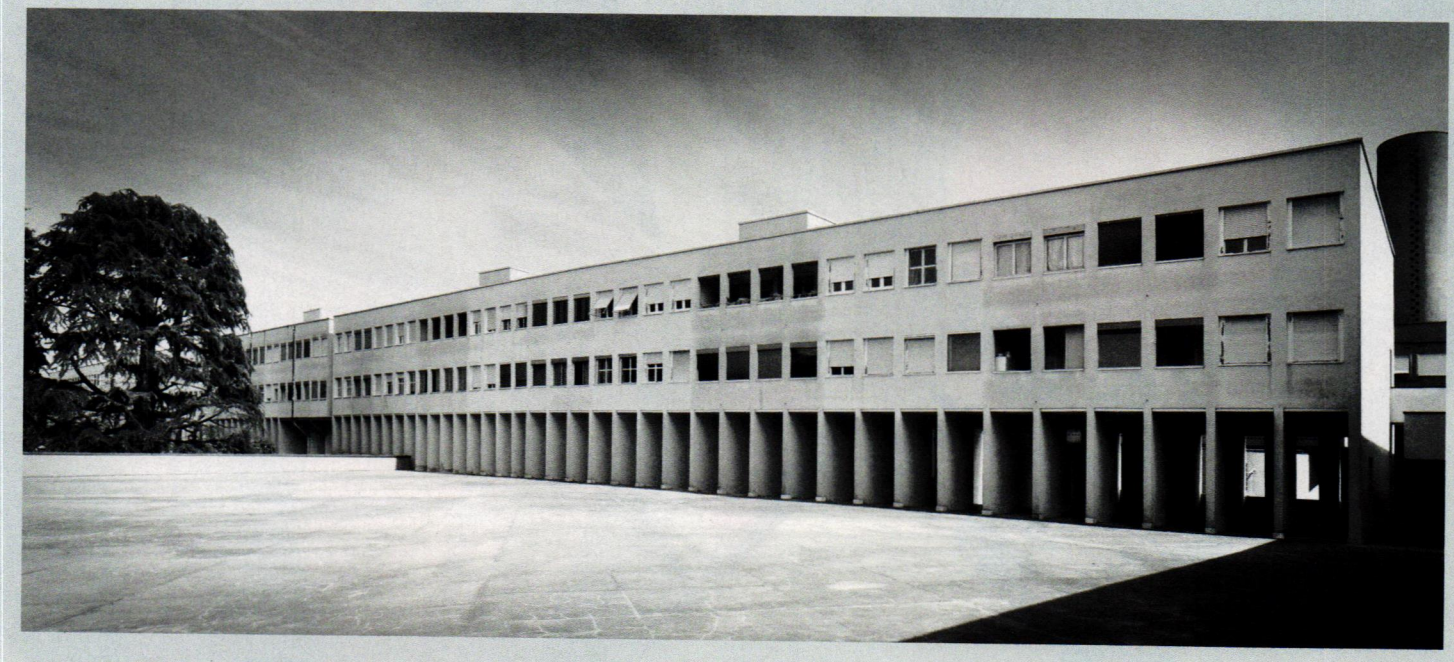

CLUE: THE ARCHITECT FOR THIS HOUSING BLOCK WAS EXCEEDINGLY INFLUENTIAL IN CREATING A RIGOROUSLY MODERN TYPOLOGY FOR THIS BUILDING TYPE. PART OF A LARGER NEW QUARTER IN A HISTORIC CITY, THE DESIGN FUNCTIONED AS A SIMPLIFIED URBANISTIC DEFINITION OF PUBLIC SPACE.



The architect for the Beverly Hills Hotel's Crescent Wing and its famous sign is **Paul Revere Williams**, the African-American architect who designed the addition in 1949. While the hotel's original architect, Elmer Grey, had given it a Mediterranean Revival style in 1912, Williams's more modern contribution became emblematic of the legendary site.

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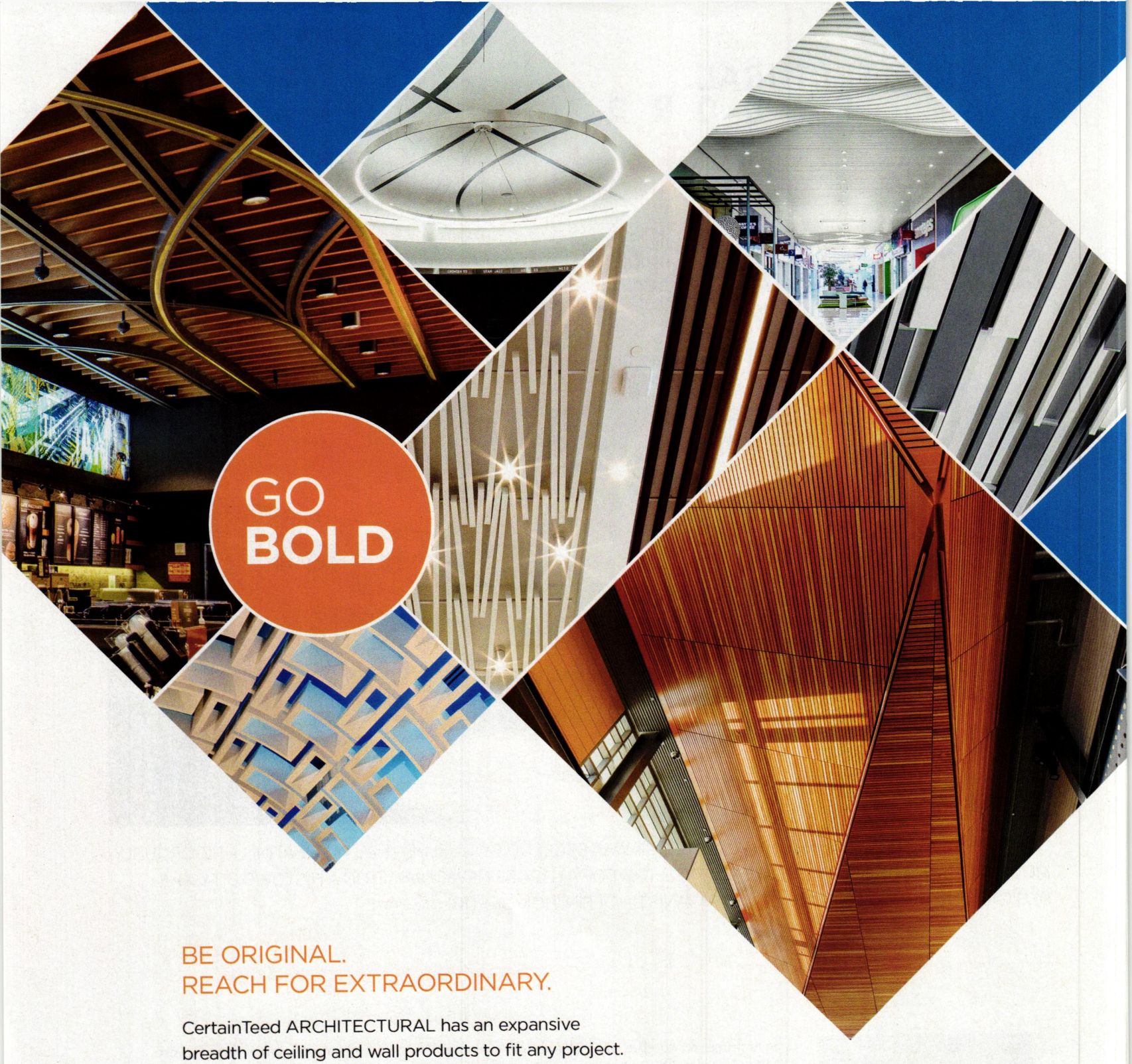

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Designing to Divest

BY GARRETT JACOBS AND DEANNA VAN BUREN

DUE TO COVID-19 and the awakening of America to the historical and ongoing systematic oppression of Black and brown people, designers are grappling with notions of equitable practice and how to apply our skills to end the racism that is embedded in the built environment. As a society, we build what we believe in, and currently our architecture of justice in the U.S. represents beliefs in oppression, punishment, and dehumanization. Every aspect of a building has the potential to be touched by the justice system; from the labor used to manufacture what we spec to the companies that build our projects, racism is woven into how we invest in the prison-industrial complex. In the U.S., we spend approximately $80 billion per year to incarcerate, control and supervise over 6 million people, and approximately $100 billion per year goes to policing our communities. As our tax dollars fund this infrastructure, corporations, banks, and investment funds generate profit from the construction and operations of prisons and jails. By ignoring this, we are perpetuating systems rooted in slavery. So how do architects, designers, and planners help divest from systems of oppression and instead invest in the communities and people most negatively affected? What and how do we build instead?

At Designing Justice + Designing Spaces (DJDS), we ask these questions every day. We apply our creativity as designers and our capacity for collaboration to engage all stakeholders—community organizers, elected officials, affected individuals and their communities, and corrections officers—to radically reimagine a restorative-justice system that would see the end of prisons and jails altogether. Our racially diverse, multidisciplinary team and our approach focus on envisioning new systems and spaces. We identify new building typologies, partner with leaders in criminal-justice reform and prison abolition, and determine the complex funding sources to make prototype projects happen. We believe two of our current projects signal how to end mass incarceration as we know it—one in Atlanta and one in Los Angeles County.

More than a year ago, in May of 2019, Atlanta mayor Keisha Lance Bottoms passed a measure calling for the creation of a task force to provide recommendations for how to transform the city's huge (471,000 square feet) jail downtown—originally built to house over 1,300 people but now housing only 25 individuals at any given time—into a Center for Equity and Wellness. This measure came after years of pressure from the community organizations Women on the Rise and Racial Justice Action Center. For the last year and a half, we have been working with those organizers and the mayor's office to design and implement the community-engagement process, guide the financial and feasibility analysis, and design four creative options for repurposing the jail.

The community-engagement process was one of the most transparent and inclusive ever undertaken by the city government. We designed custom engagement games and exercises, which supported extensive dialogue between over 600 community members and the mayor's 60-person task force. With these community stakeholders, we developed repurposing scenarios that included spaces for a healthy-food ecosystem, day care, health and wellness, legal support, and "daily needs" retail. This summer we took the results from the engagement process and designed and presented four exciting and beautiful visions for the Center of Equity and Wellness—designs we hope will guide the city in deciding what to do with the jail.

As a society, we build what we believe in, and currently our architecture of justice in the U.S. represents beliefs in oppression, punishment, and dehumanization.

DJDS also supported Racial Justice Action Center and Women on the Rise in developing a visual survey to gather community input and preferences among the four design options, the results of which will be presented to the mayor's office to pressure the administration to set a closing date for a decision. Early results show a preference for demolishing the existing jail and creating Centers for Equity and Wellness distributed throughout the city.

This public interest in the distributed model in Atlanta is in direct alignment with the initiatives that we are working on in Los Angeles County. There, we have been collaborating with the leaders of JusticeLA, a coalition that actively stopped a $3.5 billion plan to construct a new mental-health jail; the group coauthored what we believe is the country's most comprehensive alternatives-to-incarceration plan to date. We are working with JusticeLA to implement the Alternatives to Incarceration plan, which was adopted by the County Board of Supervisors this past March.

For the past year we have been strategizing to bring the plan to fruition by creating a pilot project, to be used as a model process to guide capital investments. We are partnering with data-visualization, mapping, and research organizations to understand how various systems—such as health care, first response, pre-arrest diversion, housing, post-incarceration re-entry, and more—interact at the district scale. At a pilot site, we will use DJDS's Concept Development Process as a first step toward creating a Restorative Care Village, an architectural prototype that will be part of a large distributed network of places with programming and services that put the value on care over incarceration.

These projects in Atlanta and L.A. have taught us that, as we seek to divest from the prison-industrial complex and invest in a future that is equitable, our role as creative professionals is essential. We use our unique way of thinking to bring people to the table and shake up the stagnant mindsets that too often revert to the comfort of the known. When we lead with creativity, work across disciplines, carefully listen to the community, and implement inclusive, trauma-informed methodologies, we can provide vibrant examples of how to invest to unbuild the racist infrastructure that keeps us locked in an unjust and inequitable world. ■

Deanna Van Buren is executive director and design director of the Oakland, California–based Designing Justice + Designing Spaces, and Garrett Jacobs is the company's Chief of Finance and Operations.

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Compelling Exhibition of Indian Master Doshi Opens in Chicago

BY ZACH MORTICE

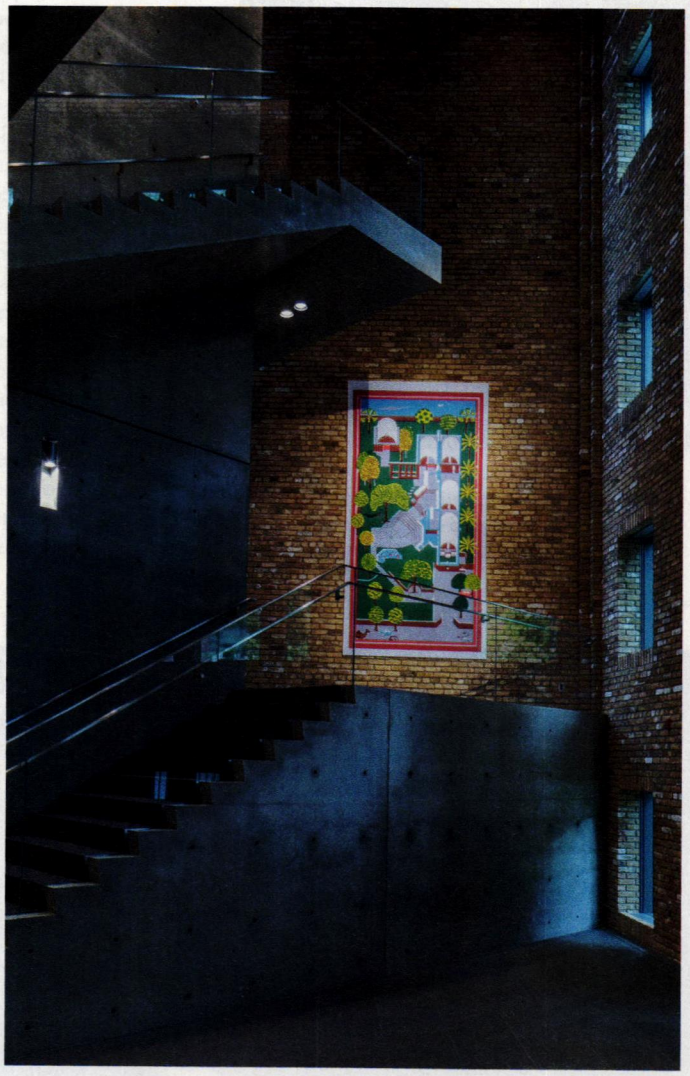
AS THE FIRST Pritzker Prize laureate from the south Asian subcontinent, with a seven-decade career, Balkrishna Doshi is easily viewed as a Modernist standard-bearer for Indian architecture. And *Balkrishna Doshi: Architecture for the People*, now at Chicago's Wrightwood 659 (its only stop in North America), plays up Doshi's fusion of Indian vernacular traditions and Modernism, learned at the feet of Le Corbusier (he spent four years working in Corbusier's Paris studio) and Louis Kahn (he worked on Kahn's Indian Institute of Management in Ahmedabad). But there aren't any Taj Mahal domes or Keralan bamboo houseboats. Instead, the exhibition's photos, sketches, and wood models express India's cultural specificity and challenge Western architectural ideals. In exploring how the public realm and private spaces are inextricably intertwined in Indian cities, *Architecture for the People* attempts to communicate something visceral and direct about daily life in that country, and it is largely successful.

The exhibition (organized by the Vitra Design Museum, the Wustenrot Foundation, and the Vastushilpa Foundation) is curated by Khushnu Panthaki Hoof, Doshi's granddaughter and longtime collaborator. It features projects from 1956 to 2014, and is organized by program and scale. Within Wrightwood 659 (designed by another Pritzker-winner, Tadao Ando), education projects are showcased in the second-floor gallery, cultural and urban-scale work on the third floor, and housing projects on the top floor. The exhibition begins strikingly, with one of Doshi's paintings—of his 1980 Sangath architecture studio—hanging in Wrightwood 659's grand atrium.

Doshi, now 93, began studying architecture in 1947, the same year India gained independence, and he saw his first projects as vessels for the new future of self-determination. Early institutional works demonstrate Doshi's facility with Corbusian Brutalism, before he'd fully merged this style with Indian conceptions of program and climatic context. One such building is the 1967 Tagore Memorial Hall in Ahmedabad, where his practice is based and many of his projects are located. With its looming trapezoidal ceiling and bowl-shaped auditorium, the hall is a study in concrete heroics.

But other work reveals a more thorough integration of the vernacular. Instead of appropriating formal cultural features, Doshi draws insight from broader functional aspirations, with his projects embodying the complex layering of history and infrastructure observed in Indian cities. For instance, Sangath reflects this concept of urbanism—a village of vaulted roof bays arranged around courtyards and pools, taking a note from the informal settlements well entrenched in the country. One highlight of the exhibition is a reproduction of a Sangath vaulted bay, room-scaled but altered to shrink along its length, its forced perspective pulling visitors in.

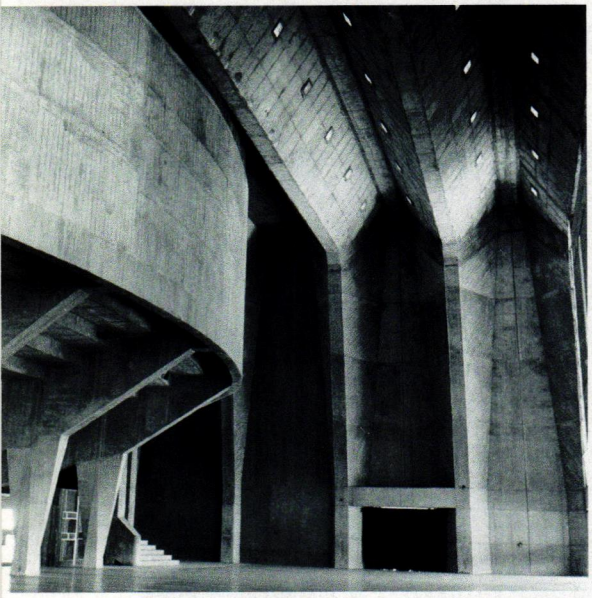
By the standards of his own work, it's not an insult to say that Doshi's personal Ahmedabad residence, Kamala House (1963), would fit into the informal settlements he has carefully studied. It offers the same freewheeling spatial logic and loose relationship to program. It's also been photographed in a state that few architects would allow, its joints and seams imperfect. There are nicks on the walls, and a paper calendar pinned up with a sticky note. There's a sense that this house is lived in and loved, in a way that's rare for ultra-curated homes by and for designers. "That open-endedness, the incompleteness, that ambiguity is the essence of his work," says Hoof.





The exhibition begins with a single painting, of Doshi's Sangath studio, hung in the Wrightwood's grand atrium (top). His own residence, Kamala House (right), takes cues from informal settlements.

PHOTOGRAPHY: MICHAEL TROPEA. © 2020 ALPHAWOOD EXHIBITIONS LLC.; © VASTUSHILPA FOUNDATION (BOTTOM)



Tagore Memorial Hall, built in Ahmedabad in 1967, has a heroic poured-in-place concrete structure that recalls Corbusian Brutalism.

Doshi defines architecture as a living organism, and Hoof explains that his work is less about static objects and more about facilitating "a growth pattern." His 1973 housing for the Life Insurance Corporation of India in Ahmedabad exemplifies this philosophy, with its six-unit blocks in a loose pyramid. Lower-wage residents occupy the top of the blocks and have the ability to expand their homes across the larger floor plates below. The exhibition's media screens document how families have adapted and expanded their homes over time, gradually blurring the complex's orthogonal Modernism with terra-cotta shingles and decorative pediments.

An undercurrent of mysticism is apparent in Doshi's worldview, especially evident in his paintings. These provide brilliant counterpoints to the concrete and brick that predominate in his work: buildings are abstractly rendered in fields of neon, orange, and pink, and populated by errant peacocks and camels. This way of presenting architecture puts the natural world on equal footing with the anthropocentric one, hinting at a mysterious unity of form and purpose. These moments of convergence are some of the show's most satisfying, and more focus on Doshi's spiritual side would have enhanced an otherwise conventional exhibition.

Yet the show makes it clear that Doshi is chasing something as ineffable as the expression of what life is like in the world's largest democracy. Despite its traditional format, the exhibition communicates an essential humility that comes with letting go of architectural control and allowing for change. The acknowledgment that architects are not actually gods might not sit well with all professionals, but the truth is, as Doshi knows, buildings, cities, and life are messy and complicated. ■

Balkrishna Doshi: Architecture for the People *runs through December 12 at Wrightwood 659 in Chicago. There are Covid restrictions, and reservations are essential.*

Zach Mortice is a Chicago-based design journalist who focuses on landscape architecture and architecture.

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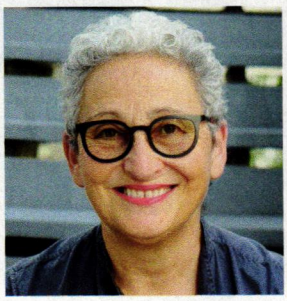

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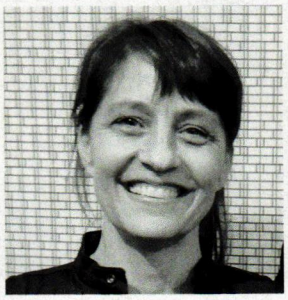

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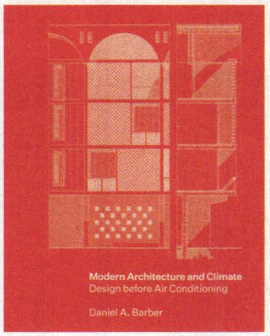


THE NATIONAL Weather Service suggests that the 130 degrees Farhrenheit measured in Death Valley on August 16 ranks as the highest temperature ever reliably recorded. Evidence of our environmental crisis surfaces daily, an inconvenience that the architecture profession has largely avoided addressing, and even abetted, through enormous expenditures of energy in buildings.

Architecture's past could be a key to a more climate-friendly future, which is the case the architectural historian Daniel A. Barber makes in his new book. Barber is not the first historian to note the sustainable design predilections of modern architects in the decades bookending the Second World War, but his book offers perhaps the most comprehensive and concise corrective to the reigning histories of Modernism that have tended to exclude, or at least consider only superficially, environmental context.

Barber makes a detailed study of the building envelope in early Modernism, situating it as both a mediating device and a cultural production, always in the service of a resultant and useful "planetary interior." Among his "climatic modernists" is Le Corbusier, the great innovator of the brise soleil, and so the author begins with an elegant description of the architect's unbuilt 1931 project for Barcelona, Lotissement. An apartment block with multiple louvered and dynamic facade expressions, it's the sort of porous, performative, naturally ventilated project that today would win an AIA COTE award for its innovation, which tells you how little the profession has advanced in response to the climate crisis.

The Corbu example acts as a soft opening for a book that takes some unexpected turns. Barber concludes the first half, which considers the global development of the modern movement, with an analysis of early Brazilian Modernism centered on the intensely articulated facades by the firm MMM Roberto in Rio de Janeiro, followed by an examination of the way Richard Neutra's work in Los Angeles and on behalf of the U.S. government exported concepts of climatic modernism around the world. These case studies illustrate an architectural agenda that situates the expression of the facade as an integration of cultural, political, scientific, and design forces to advance emerging research and a global economy. It's a neat trick to suggest that new computational models and diagrams, such as the sun-path diagram, express climatic risk and political power through the integration of shading systems and other facade technologies, but Barber does it.

The second half of the book is for true aficionados, especially if you've ever wondered how the magazine *House Beautiful* and ASHRAE conspired to sell air-conditioning to the insatiable American consumer, or if you find the midcentury development of Victor and Aladar Olgyay's computational models for a fully integrated, climatic architecture particularly thrilling. Here, the book makes its most compelling argument for a reset and a return to climatic modernism's original aims after an era of cheap energy and climate-change denial.

We are now faced with an avalanche of new data about climate risk that architecture has been slow to acknowledge, particularly when coupled with race and class divides that have historically limited access to healthy buildings. It's telling that many of the case studies of early Modernism that Barber selects are social housing, schools, and everyday office buildings.

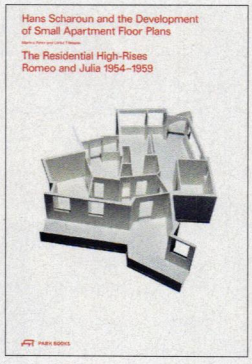
To date, our response to wildfires, extreme heat, tropical storms, sea-level rise—take your pick—has been reactive, and mostly in terms of engineering. Unlike the architects in Barber's book, we have armies of specialists, advanced digital fabrication technologies, and terabytes of computational models to inform architecture. Imagining a new "planetary interior," one divorced from air-conditioning, calls for a reckoning not only for architecture but our entire social and cultural existence. The emptying out of office buildings during the pandemic presents an opportunity to start that revolution, one that architects could be leading again. ■

Russell Fortmeyer leads sustainable design for Arup's Los Angeles office.

Home Makeover

Hans Scharoun and the Development of Small Apartment Floor Plans: The Residential High-Rises Romeo and Julia 1954–1959,
by Markus Peter and Ulrike Tillmann. Park Books, 232 pages, $65.

REVIEWED BY JOSEPHINE MINUTILLO



EVERY NOW and then, an architecture book comes along that reminds you of all the things you love about architecture. In this particular case, it may not be because you necessarily love the subject of the book—an apartment complex in Stuttgart, Germany—or, frankly, have ever even heard of it (though a pair of high-rises called Romeo and Julia is hard to forget). Its architect, Hans Scharoun, along with his slightly older compatriots Hugo Häring and Bruno Taut, is often considered, with his particular brand of organic architecture, to be on the fringes of Modernism rather than one of its leading figures. Scharoun's work may not be that familiar to most readers outside of his paradigmatic Berlin Philharmonic; he won the competition to design it in 1956, a year before Romeo completed construction and three years before Julia opened. But the documentation of Scharoun's simultaneously meticulous and messy design process, often presented in this sizable book on a facsimile of its original matte beige sketch paper, is astonishing, a "back to basics" architecture informed by extensive research—his own and that of colleagues in related fields who set out to solve the housing crisis in postwar Germany—and countless drawings of a kind that have become foreign to our contemporary eyes, now accustomed to lifelike renderings and slick animations to illustrate a project.

The documentation is thanks to the Akademie der Künste Berlin, where Scharoun served as president from 1956 to 1968. Shortly before his death in 1972, he donated to the arts academy some 25,000 drawings, 14,000 photographs, and vast written records pertaining to 331 projects, around 90 of which were actually built.

For Scharoun, the design was guided by a humanistic approach. The 18-story Romeo has a compact, fairly conventional polygonal footprint, while Julia spreads out in a lace-collar-like footprint with diamond-shaped units around a single-loaded corridor, and staggers in height from seven to 11 stories. The striking towers, with their lively facades adorned with swaths of color, pointed balconies, and geometric motifs, still stand in Stuttgart, as a series of recent photographs at the end of the book attest. As the book explains, the history of how small dwellings evolved cannot be written without discussing their relation to the city as a whole. The authors credit Scharoun with "refining a method in which the individuality of the apartment and the multiplicity of the form are integral to the creative process."

The book is sprinkled with quotes—just as relevant today as back in Scharoun's day—by prominent figures in prominent type at the beginning of each chapter: "Always getting to the bottom of things, we drown," from Nietzsche, and "A period of crisis . . . is also one of theoretical research," from Karl Marx among them. They are a reminder that, in the more than 65 years since Scharoun designed Romeo and Julia, the process and the methods may have changed—in this case, to develop "*die billige, gute wohnung*" (literally, "the cheap, good apartment")—but the efforts to build decent housing, affordable and otherwise, in and around our cities, continues as one of the central projects of the profession. ■



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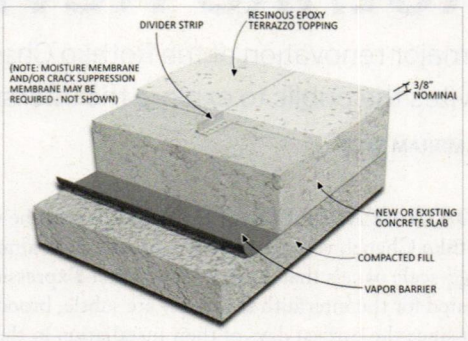

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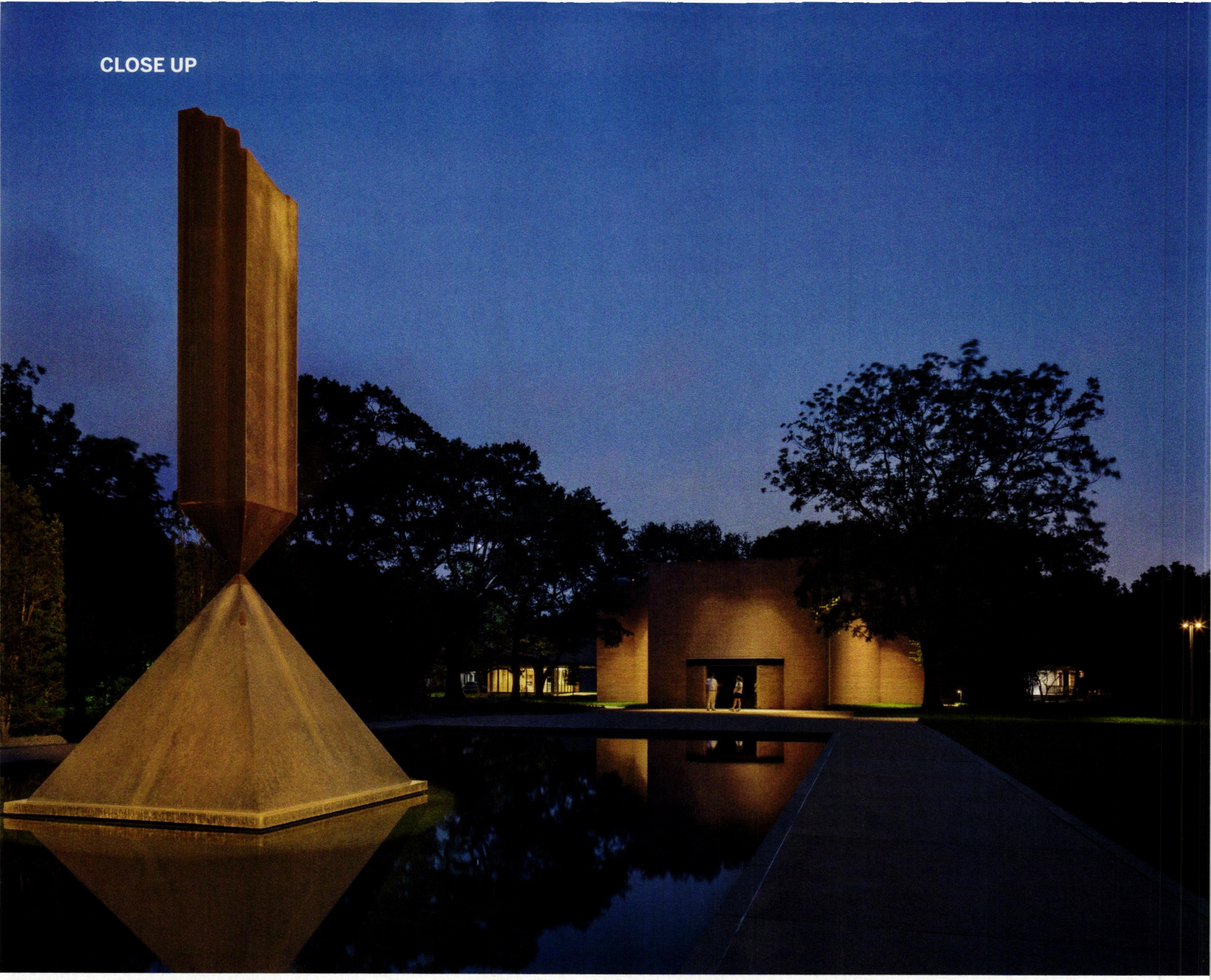


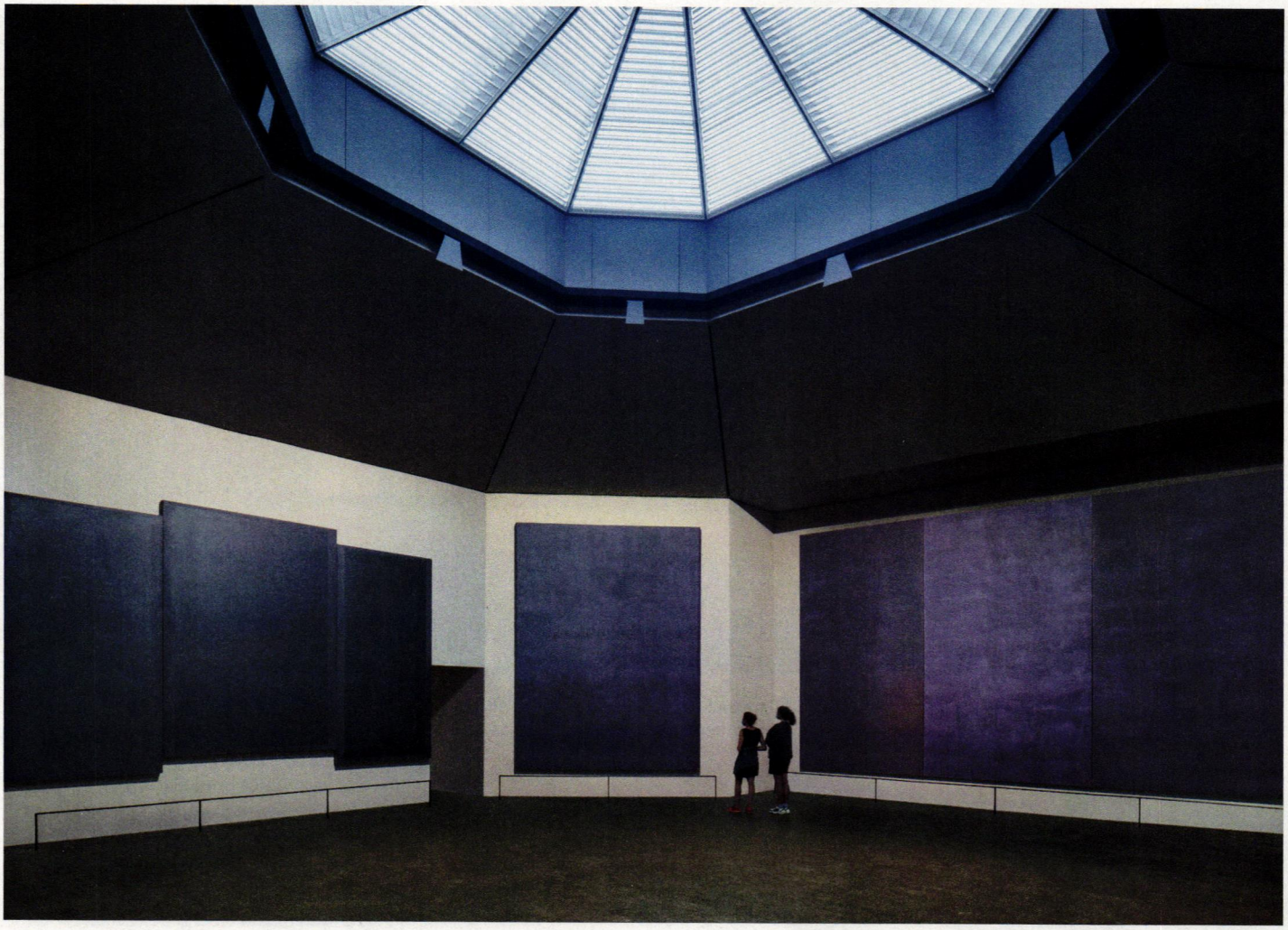
Rothko Revisited

A major renovation of the Rothko Chapel in Houston is part of an ambitious new campus master plan that invites the public to explore the intersection of art, spirituality, and justice.

BY MIRIAM SITZ

TO FULLY APPRECIATE the darkness of the works in Houston's Rothko Chapel, you need to have just the right amount of light. The 14 large-scale panels that American Abstract Expressionist Mark Rothko created for the interfaith sanctuary are subtle, brooding, and evocative. But since the earliest days of their installation in the octagonal brick structure, they haven't been illuminated to their full advantage. That changed in September, when the chapel reopened after an intensive restoration—part of a multiphase master plan by New York–based Architecture Research Office (ARO) that will allow the public to engage more deeply with the Rothko Chapel organization's mission to advance art, culture, social justice, and human rights.

In 1964, Houston oil magnates, philanthropists, and art patrons John and Dominique de Menil commissioned Rothko to create a meditative sanctuary anchored by a collection of site-specific paintings. Philip Johnson worked on the building until 1967, followed by Houston architects Howard Barnstone and Eugene Aubry, who saw it through to completion in 1971—the year after Rothko's death. It was added to the National Register of Historic Places in 2001. One block



New lighting on *Broken Obelisk*, by Barnett Newman, accentuates its placement in the reflecting pool (opposite). LED projectors hidden around the chapel's skylight (above) provide diffuse illumination when it is dark outside.

west of the chapel is the Menil Collection, the 1987 Renzo Piano–designed museum that houses the founders' private art collection. Together, the institutions, located in a residential neighborhood, underscore the Menils' larger vision: to make art and spirituality part of the everyday.

ARO embarked on the $30 million project in 2016, working closely with Nelson Byrd Woltz Landscape Architects and lighting designer George Sexton Associates. The completed master plan will add a large, flexible program center for symposia, receptions, and other events; an archive and administration building; a renovated bungalow for housing speakers, special guests, and scholars in residence; and new public gardens. First to be finished is a visitors center, called the Suzanne Deal Booth Welcome House, which opened in mid-September, and a mechanicals building, or Energy House, that will serve the entire two-acre campus.

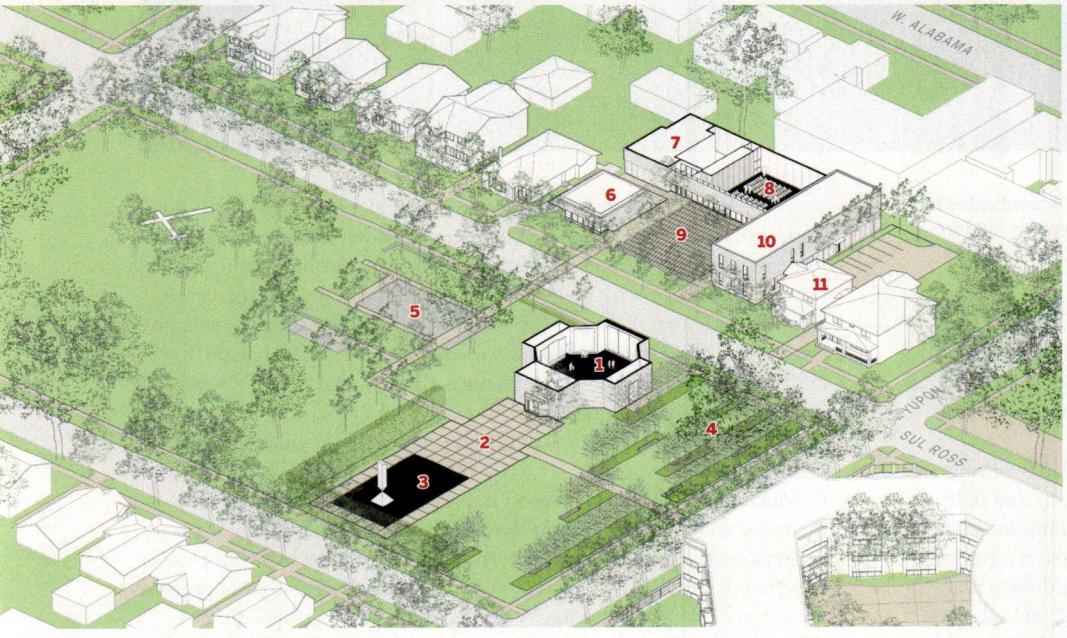
The chapel required significant restoration work, from bringing previously unreinforced concrete block walls up to code, to reconfiguring and updating the foyer. But the most transformational change is the complete replacement of its large central skylight. For six years, Rothko labored over his artworks under a skylight in his New York studio, but, once the pieces were installed in Houston, the intense sun overwhelmed the subtleties of the paintings. Various attempts to moderate the light were made over the years, including, most recently, a bulky baffle that darkened the space more than necessary. In collaboration with ARO, George Sexton's team devised an entirely new skylight with a system of aluminum louvers that direct daylight toward walls above the paintings. During the night and other low-light conditions, a photocell-controlled LED lighting system provides similarly diffuse light.

Much of the project focuses on improving transitions throughout the space and grounds. Nelson Byrd Woltz's landscaping scheme serves to prepare the eyes for entry to or exit from the Chapel by using plantings that decrease in scale and increase in shade cover as they approach the entrance. "What Thomas Woltz has done has lengthened the experience, so that it doesn't just start the moment you pull open the front door," says ARO principal Stephen Cassell. To the east of the chapel's front plaza, several linear stands of river birch trees give visitors a protected space to prepare for, and then reflect on, their experience inside. "This garden might be the place where, moved by what you've seen, you have a meditative moment to make your own covenant of what action you will take in the world," says Woltz. In Phase 2 of the project, a second garden will be located to the west of the plaza.

PHOTOGRAPHY: © ELIZABETH FELICELLA



Part solid and part trelliswork, the large cantilevered roof of the steel-frame Welcome House allows groups of visitors to congregate outdoors, protected from the elements, before entering the chapel.



ISOMETRIC PLAN OF THE PROPOSED ROTHKO CHAPEL CAMPUS

1 ROTHKO CHAPEL
2 PLAZA
3 *BROKEN OBELISK*
4 MEDITATION GARDEN
5 PHASE 2 GARDEN
6 WELCOME HOUSE
7 ENERGY HOUSE
8 PHASE 2 PROGRAM CENTER
9 PHASE 2 PLAZA
10 PHASE 2 ARCHIVE AND ADMINISTRATION BUILDING
11 PHASE 2 GUESTHOUSE

Just north of the chapel, the new visitors center and Energy House aim to "work within the rhythm of the neighborhood and existing houses," says ARO principal Adam Yarinsky. The single-story, 975-square-foot glass-and-brick Welcome House contains a reception desk, restrooms, and retail; behind it is the mechanicals building, which holds the new HVAC system and emergency generator for the chapel. (In Phase 2, it will be reclad with wood and receive additional air-handlers.) Situated closest to the street, the Welcome House's scale matches that of the neighborhood's historic bungalows; Phase 2 buildings (expected to be completed in 2023) include the glass-and-wood program center and the cedar-clad archive and administration building (stained "de Menil gray," like many of the neighborhood bungalows); they will all match the height of the chapel's parapet.

Christopher Rothko, the painter's son, chairs the capital campaign for this project and has served on the Rothko Chapel board for many years. His involvement has given him a new perspective on his late father's Menil commission. "I used to think it was an exception in his artwork—something that was a little bit different from everything else he did," he says. "What I've come to realize is that it's the purest expression of what he had always been after—the chance to not just paint a painting, but to create a whole environment and experience for the viewer." ■

IMAGE: © ELIZABETH FELICELLA (TOP); COURTESY ARO

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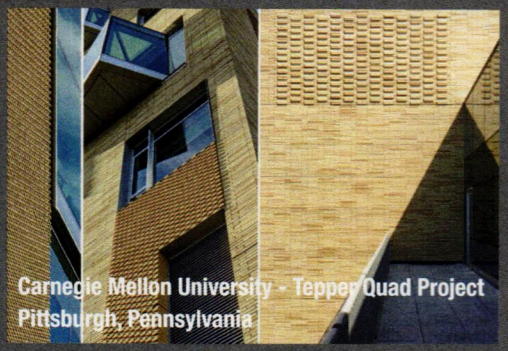
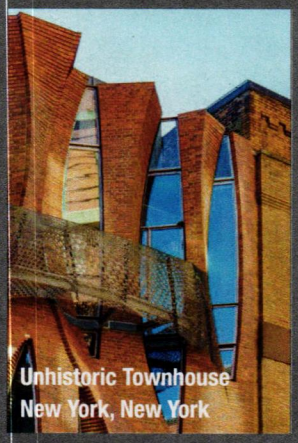
Drexel University - The Center for Jewish Life
Philadelphia, Pennsylvania



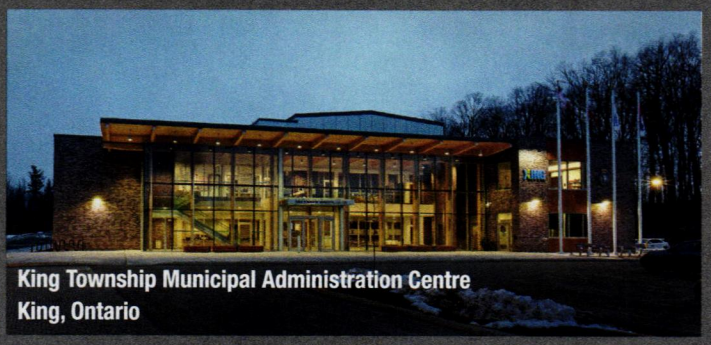
Carnegie Mellon University - Tepper Quad Project
Pittsburgh, Pennsylvania



University Of Connecticut Fairfield Circle
Storrs, Connecticut



Unhistoric Townhouse
New York, New York



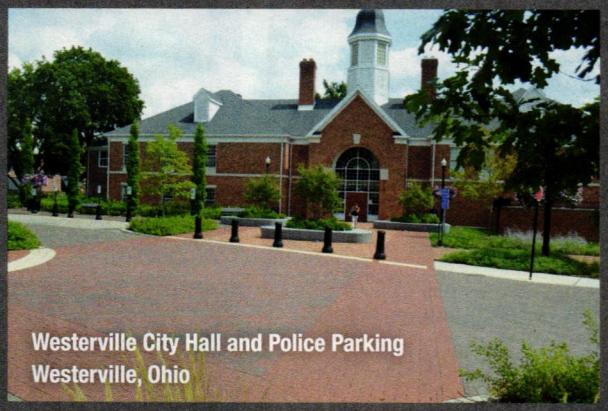
King Township Municipal Administration Centre
King, Ontario



Encore Casino
Everett, Massachusetts



Bernard Zell Anshe Emet Day School Expansion
Chicago, Illinois



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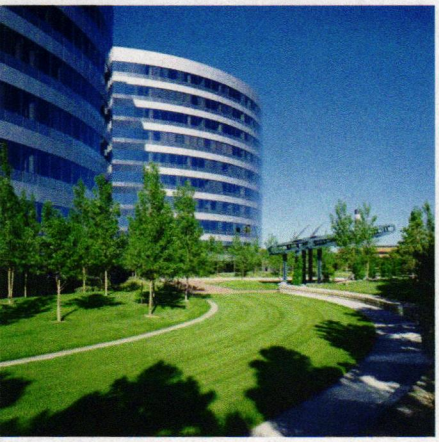

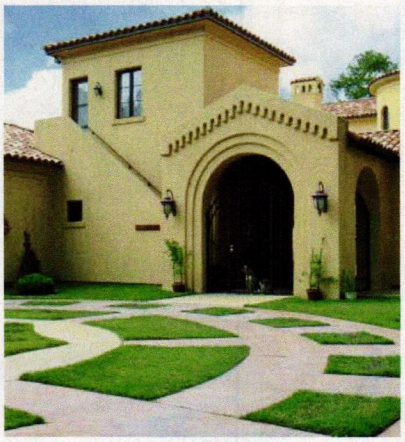

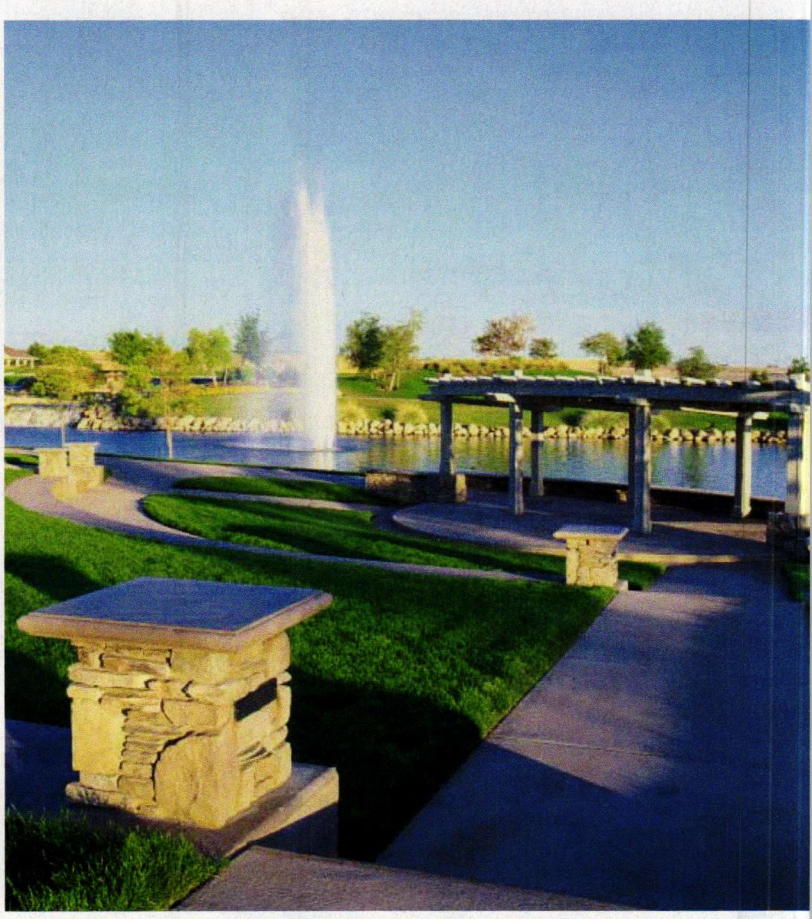





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BY SHEILA KIM



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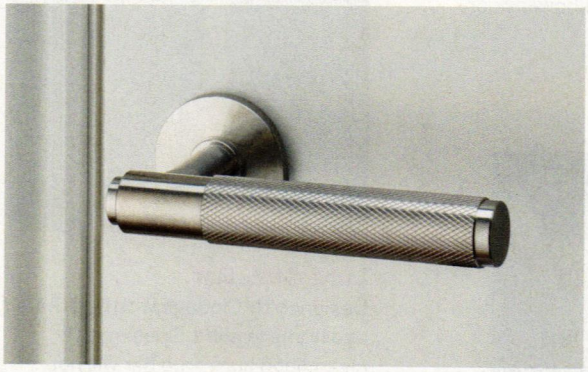

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busterandpunch.com



Dart Canyon

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elkay.com



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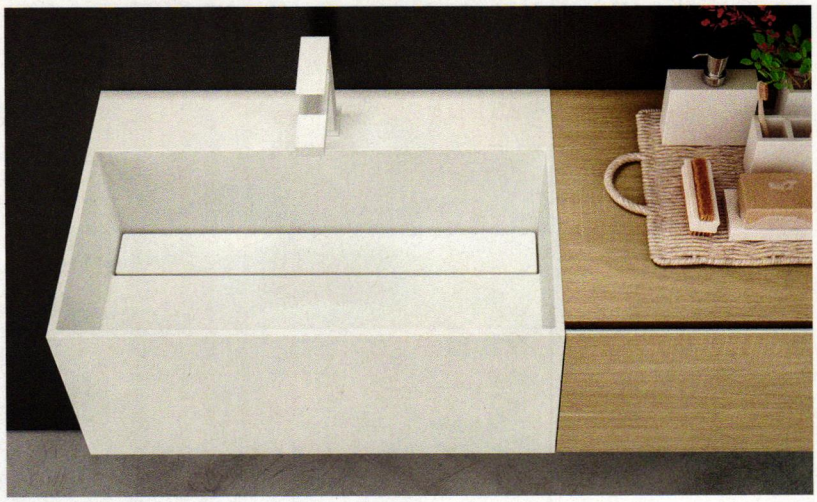
carvart.com



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hastingstilebath.com



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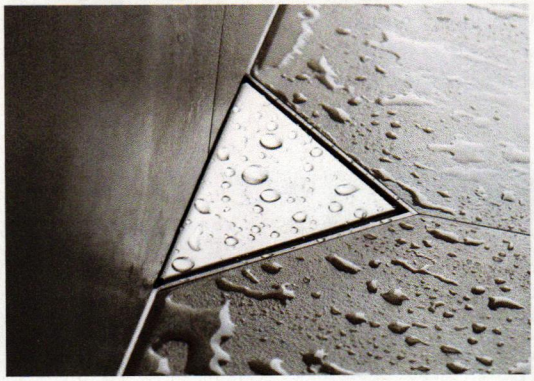
workstead.com



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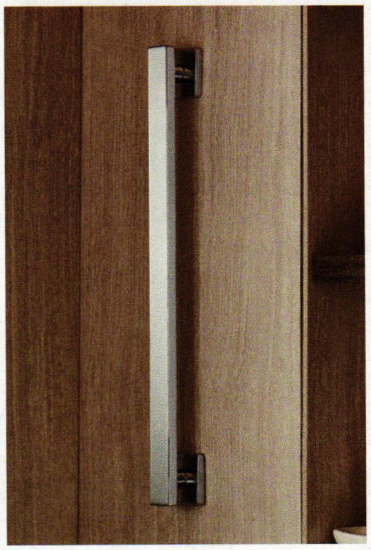

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speakman.com

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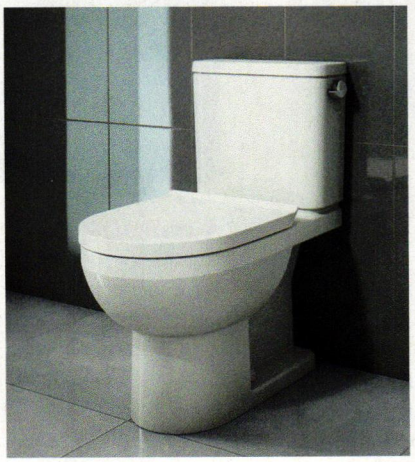
duravit.us



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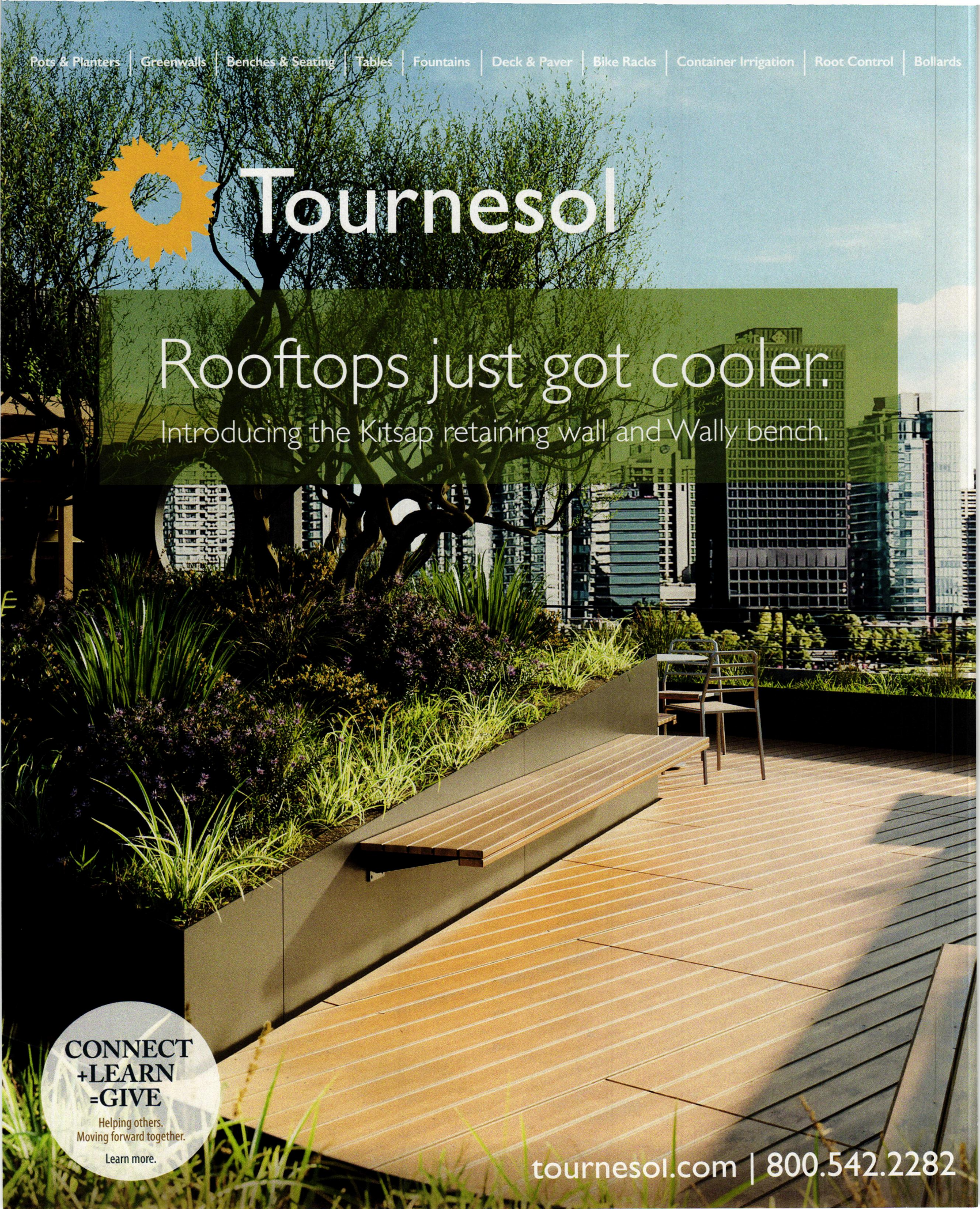
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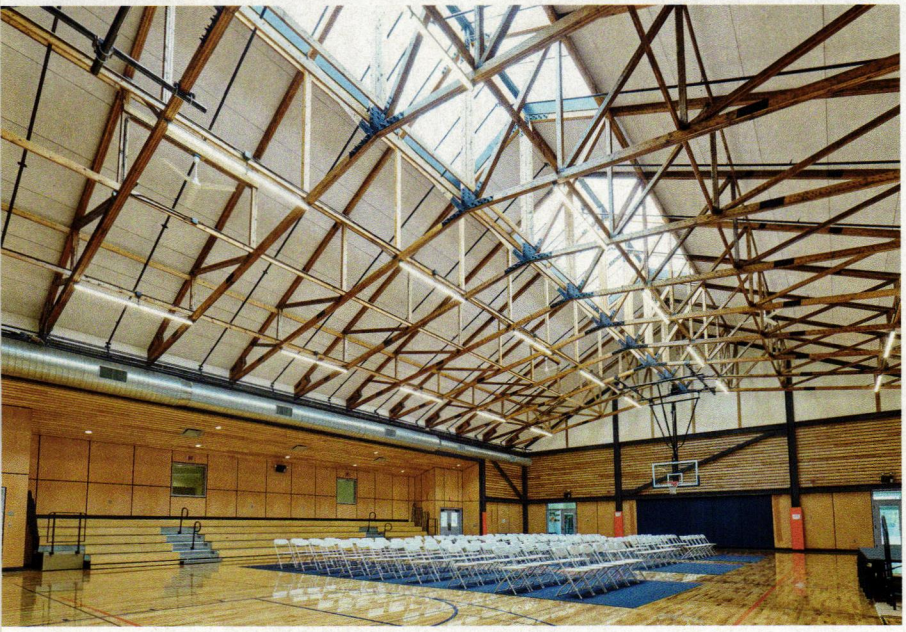
BY SHEILA KIM



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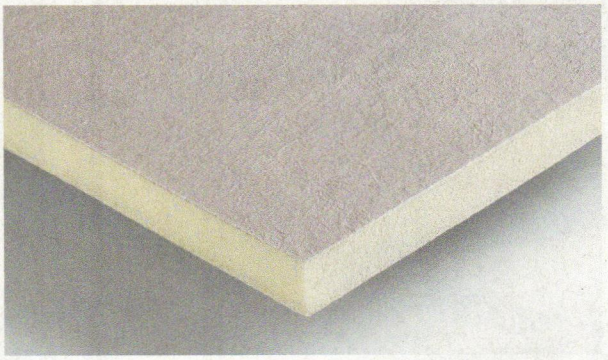

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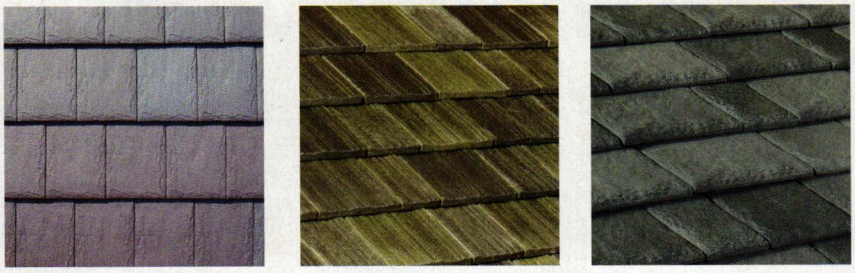
atlasrwi.com



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ludowici.com



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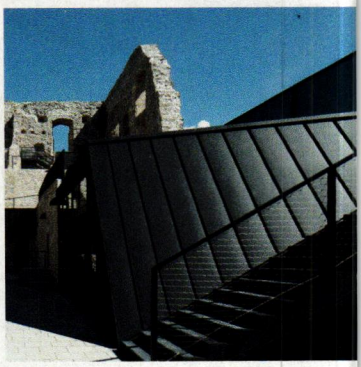

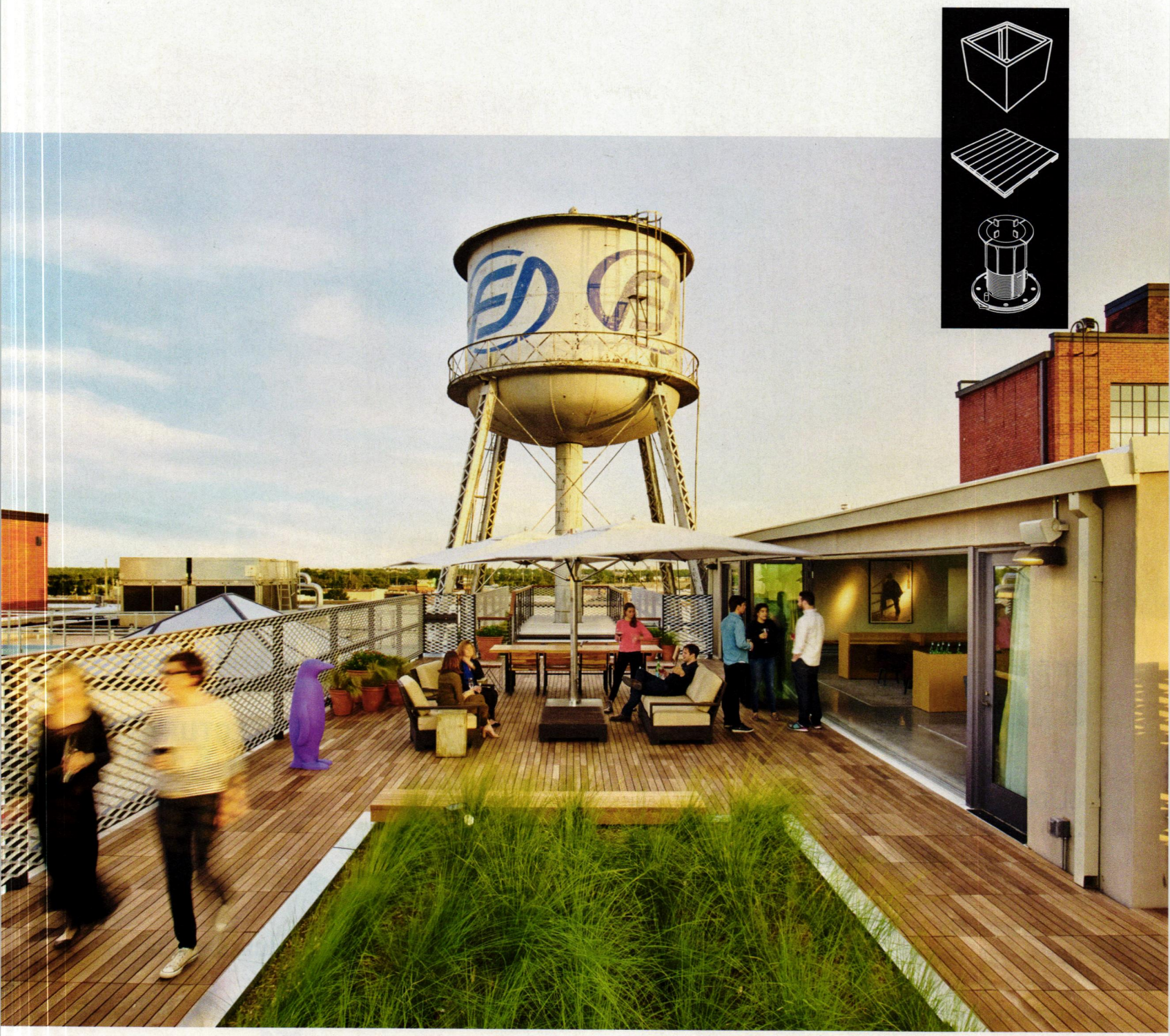

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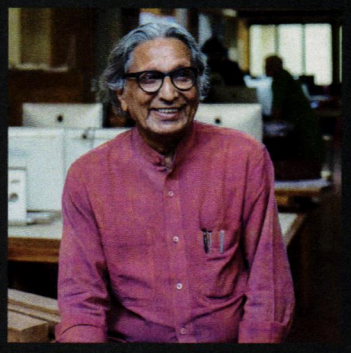

Wrightwood 659 is honored to be the first North American venue to present this important retrospective of the work of the seminal Indian architect Balkrishna Doshi. Despite winning the Pritzker Prize in 2018, Doshi is not as well known in the United States as he deserves to be. This exhibition brings to a wider audience his extensive contributions as an architect, educator, social scientist, city planner, artist, author, and founder of numerous institutions. In his nearly 70 years of practice, Doshi has fundamentally altered the built environment of India, celebrating its architectural heritage while creating new forms. With only 24 visitors at a time, Wrightwood 659 invites you to a unique gallery experience

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The exhibition is a project by the Vitra Design Museum and the Wüstenrot Foundation in cooperation with the Vastushilpa Foundation.

IMAGE CREDITS – TOP: Balkrishna Doshi, Tagore Memorial Hall, Ahmedabad, 1967 © Vastushilpa Foundation, Ahmedabad. LEFT: Balkrishna Doshi at Sangath Architect's Studio, Ahmedabad, 1980, © Iwan Baan 2018.

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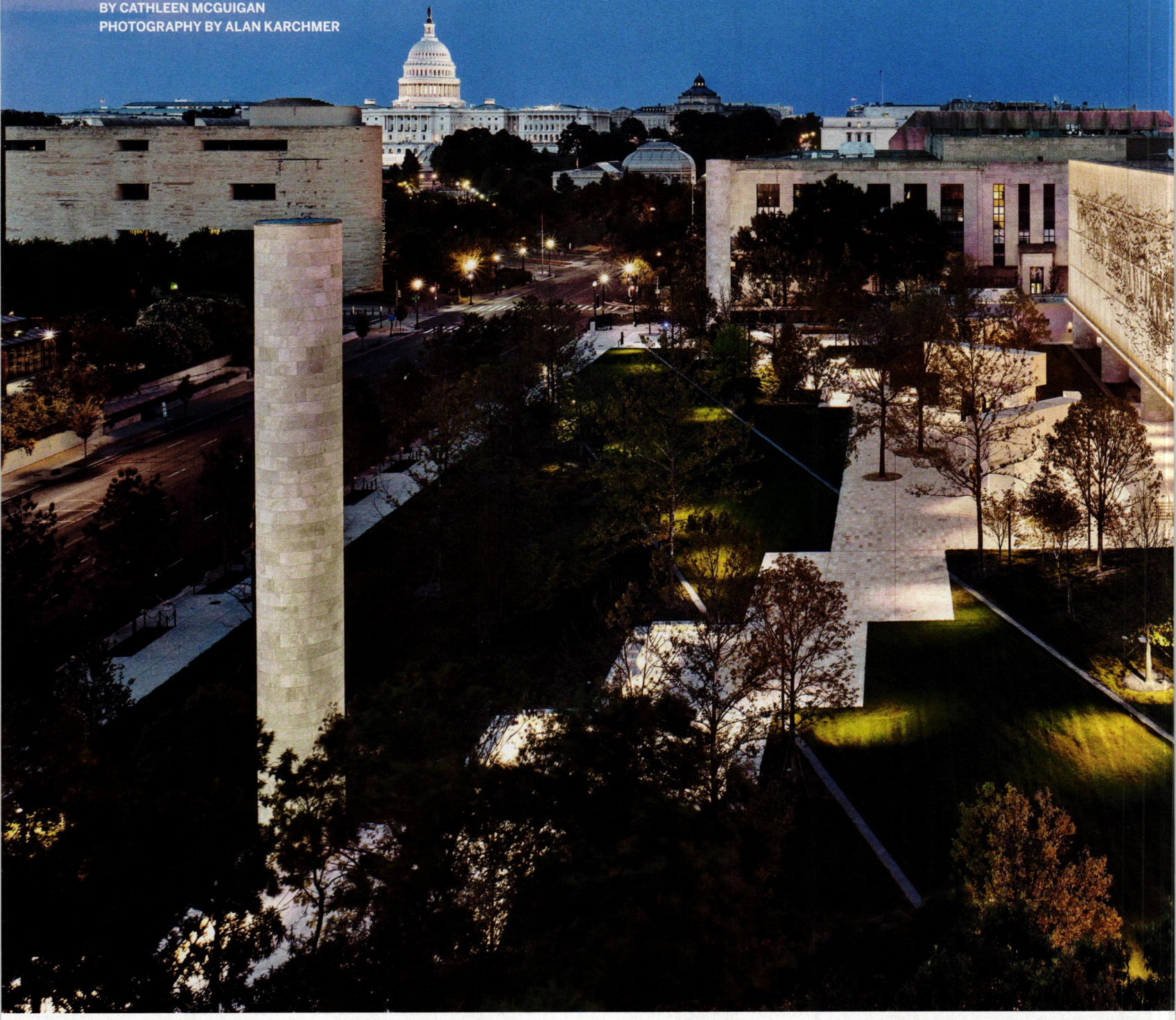
Monument Man

After a decade of contention and adaptation, Frank Gehry's Eisenhower Memorial in Washington finally opens, as both a dramatic tribute to the war hero who became President, and as a jewel of public space.

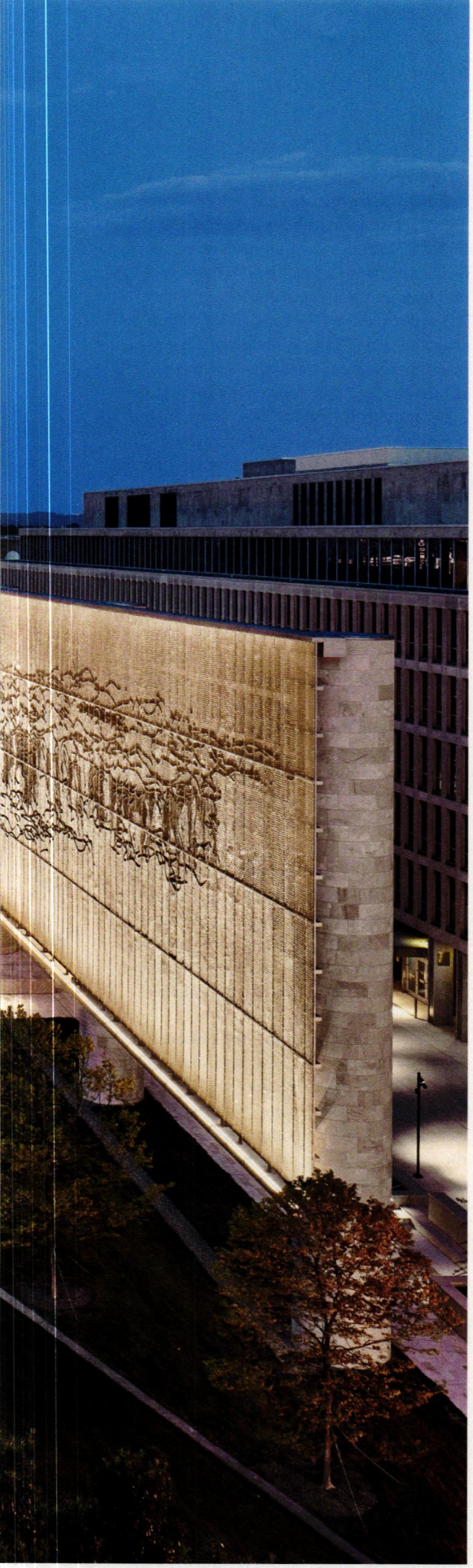
BY CATHLEEN MCGUIGAN
PHOTOGRAPHY BY ALAN KARCHMER

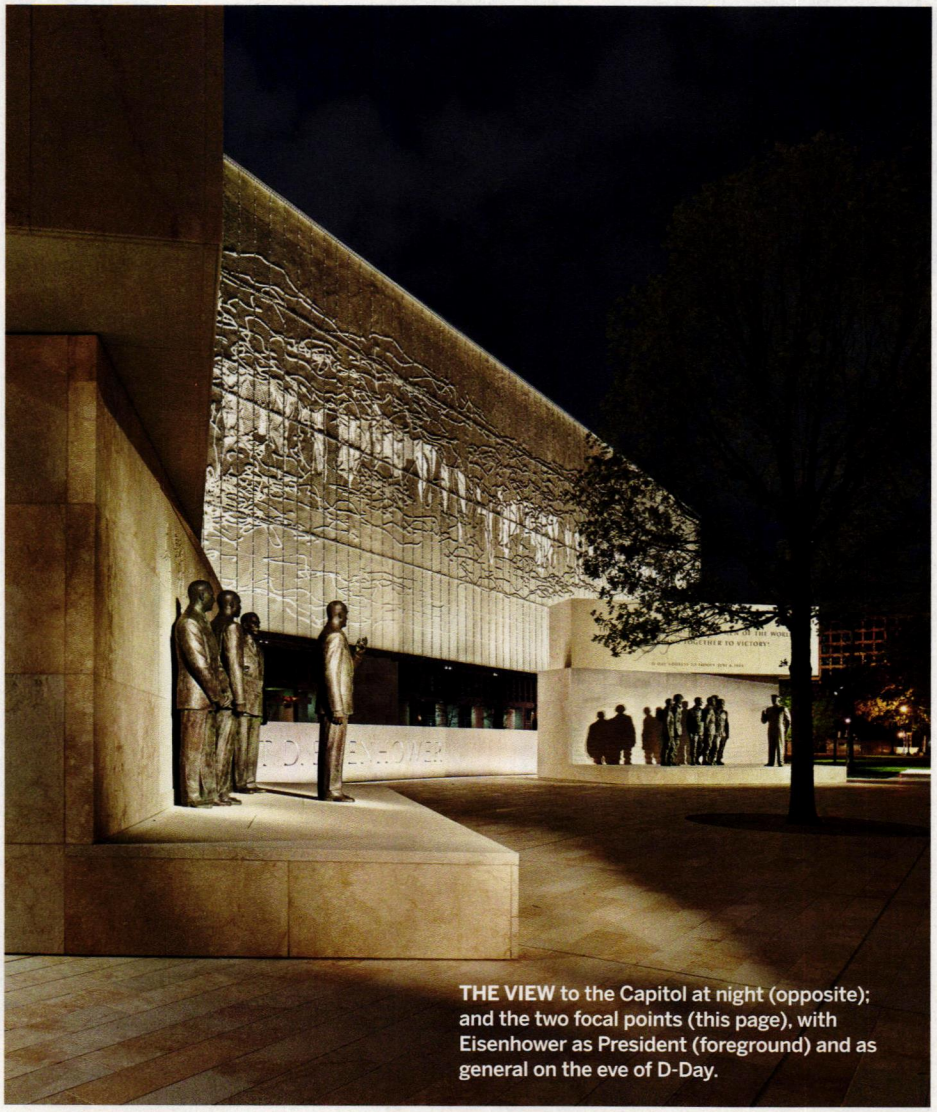


MONUMENTS breed contention, over who is honored—Confederate generals, say, or slaveholding founding fathers—and how they are designed. The Vietnam Memorial (1982), which changed forever what a military monument could look like, was so controversial it almost didn't get built. But then came the Eisenhower Memorial, devoted to the undisputed hero of World War II, with a design by America's most renowned architect. What could possibly go wrong?

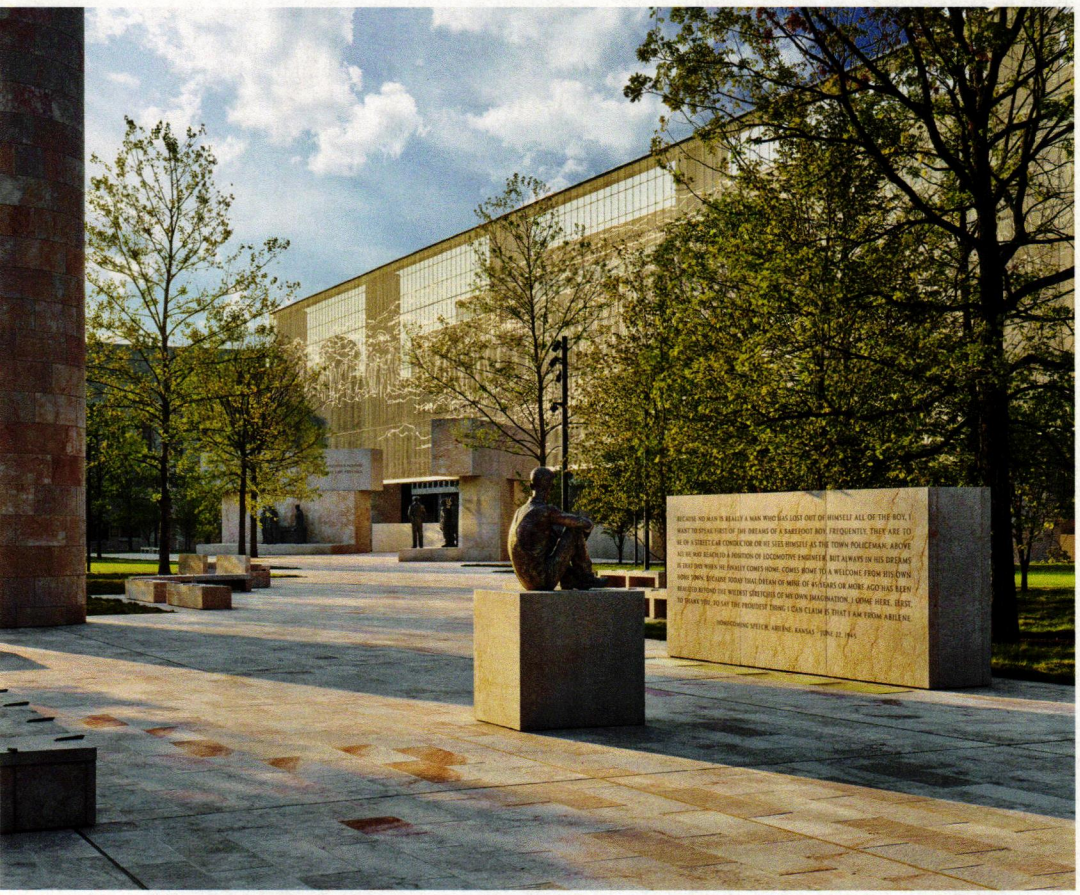
Quite a lot, it turns out. The $150 million memorial—designed by Frank Gehry, who was selected in a 2009 competition—finally opened last month, but it took more than twice as long to complete as it took to win the war. On an unpromising four-acre site, south of the National Mall in Washington—jammed with parked cars and facing the back side of the National Air and Space Museum—Gehry proposed an immense, translucent metal tapestry, to mask the stolid 1961 U.S. Department of Education building behind it. On a plaza in front would be components celebrating Ike as both the supreme commander of the Allies and as the 34th President of the United States. But the design—and Gehry himself—came under fierce attack from several quarters, including the Eisenhower grandchildren, and from a little-known, conservative critic named Justin Shubow (Shubow went on to find favor in the current White House and reportedly was behind a proposed executive order to mandate a "classical style" for new Federal buildings (RECORD, February, 2020.) At one point, Congress was so swayed by the naysayers that the House canceled the memorial's appropriation.

But detractors mistook Gehry, 91, for an





THE VIEW to the Capitol at night (opposite); and the two focal points (this page), with Eisenhower as President (foreground) and as general on the eve of D-Day.





THE BAREFOOT BOY looks toward his future from the plaza's edge (top); Gehry's design created a generous new urban space behind the tapestry, in front of the U.S. Department of Education (above).

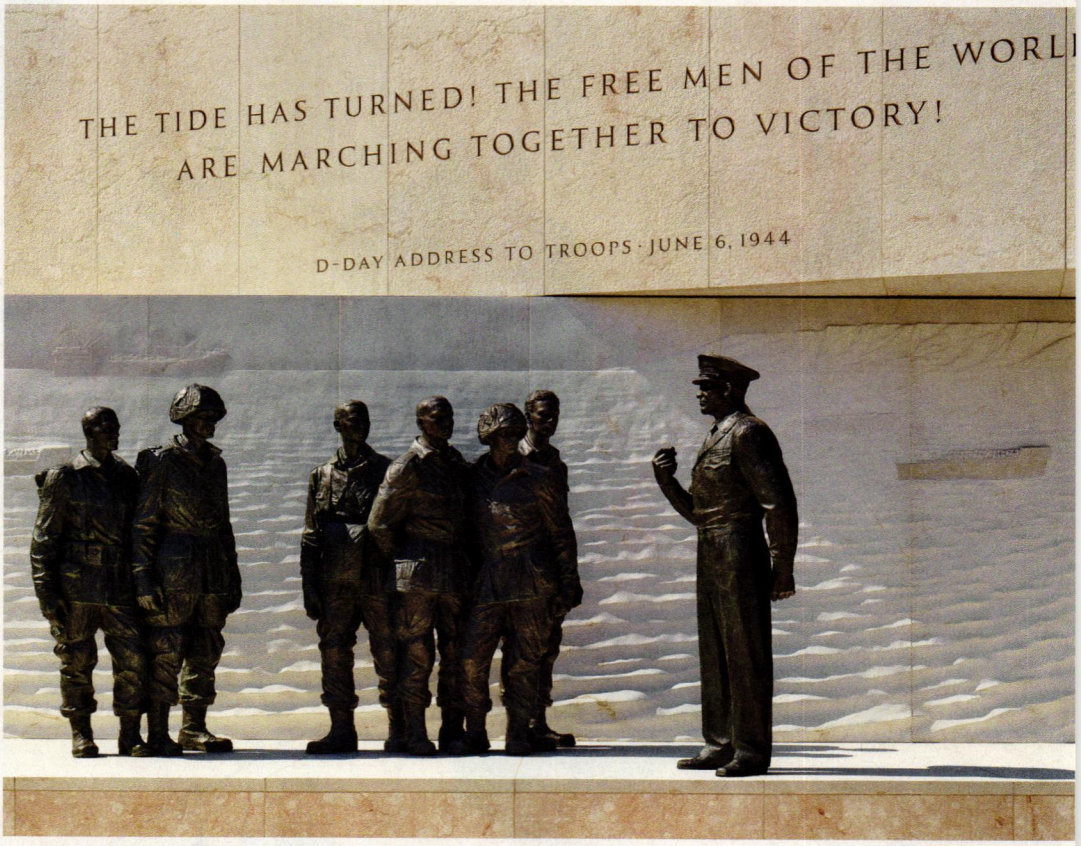
inflexible divo, and they underestimated his stamina. As anyone who has visited his office knows, he continuously reworks projects, injecting new ideas, with dozens of iterations, before coming to a final design. Initially reluctant to enter the competition, the architect "became a believer," he says, and was even attracted to the "impossible" site: "That was a mountain I wanted to climb." But, most of all, as he read about Eisenhower, his admiration grew, not only for Ike's achievements but for his modesty and plain, Midwestern background. When Eisenhower returned victorious in 1945 to his hometown of Abilene, Kansas, he gave a speech—an excerpt of which is now engraved on one wall of the memorial: "Because no man is really a man who has lost out of himself all of the boy, I want to speak first of the dreams of a barefoot boy."

That dreaming, barefoot boy was a powerful metaphor for Gehry, who came to California as a teenage immigrant from Canada, and who also served, in the 1950s, in the U.S. Army. Gehry wanted the vast tapestry to depict the Kansas heartland, with a central statue of the barefoot boy—but those ideas were shot down. As the architect continued developing the scheme, there were make-or-break moments, including the intervention of former Secretary of State James Baker, who negotiated a change in the tapestry image to a peacetime depiction of the Pointe du Hoc, a strategic position in the Normandy invasion. While Gehry now minimizes the conflicts over the design, he admits, "What I didn't figure was the politics that would come with it."

But the backstage drama isn't evident in the finished memorial, a calm and gracious public space, with trees and greenery, and the U.S. Capitol clearly visible in the distance. A pale, rosy Ambar limestone from Spain dominates the plaza—for paving, seating, and crisp-edged freestanding stone walls carved with Eisenhower speeches. The focal points are a pair of stone podiums—stages for heroic bronze figures, 9 feet high, sculpted by a Russian-born Long Island-based artist, Sergey Eylanbekov. One grouping, of President Eisenhower with aides in the Oval Office, is rather dull. But the other staging, of Eisenhower speaking to soldiers of the 101st Airborne on the eve of D-Day, is gripping: the men turn their earnest, youthful faces to the general, even as he knows most are not likely to return from their mission—a moving moment to remember today, when the sacrifices of the military have been denigrated in high places.

But the backdrop upstages the theater: the 447-foot-long metal tapestry, supported by

IN THE DAYTIME, the tapestry is almost transparent (above); detail of bronze grouping of Eisenhower speaking to the 101st Airborne before the Normandy invasion.



80-foot high Ambar-clad columns, is a tour de force. Gehry was flummoxed at first about how to evoke Pointe du Hoc—bare cliffs and sky. Finally, he made a sketch across a yellow legal pad—a spirited symphony of Gehry-esque wiggly lines that were translated into this expansive artwork of welded (not woven) stainless steel, by designer and fabricator Tomas Osinski, a frequent Gehry collaborator. During daytime hours, the screen is almost transparent, and the lines difficult to see, but at night (the beautiful lighting is by L'Observatoire International), it comes to luminous life.

And the barefoot boy? He didn't disappear altogether but sits now at the memorial's edge—in life-size bronze rather than heroically scaled—his legs casually crossed (and shoes on), gazing at dual aspects of his future self, fighting a war and running the country. In these times, when youthful dreams seem harder than ever to hang on to, he is a poignant symbol, bringing the memorial's monumentality down to earth. ■

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Are Cities Over?

Ongoing crises with coronavirus and social inequity indicate this is the time to reinvent solutions to urban living. Various experts speak out.

BY DIANA LIND

FOR MORE than a decade, the American desire for city life has been insatiable. Bountiful restaurants and shops, art and Instagram-worthy public spaces, people-watching and energizing density have pushed up housing prices and helped fill city coffers with tax revenue. Now with the impact of the Covid-19 pandemic on human health and the economy, major cities are witnessing a rapid and stunning reversal that is generating genuine concern about whether urban centers can recover. Cities have weathered downturns before, notably from the 1950s to the 1980s, when white flight and ill-conceived urban-renewal projects caused populations to drop. But the coronavirus, which has heightened the fear of density and led many city dwellers to work remotely, is posing a question once unthinkable: do we need cities? The answer used to be obvious: cities are the center of regional economies. But after the country's GDP contracted by 32.9 percent annualized in the second quarter of 2020 (the steepest drop since record keeping began in 1947), it seems unclear if or when urban centers will regain their share of the country's economic activity. Conventional retail was failing before the pandemic; now shopping online is bigger than ever, and brick-and-mortar stores are struggling to stay open while keeping employees and shoppers safe. In New York, the city with the deadliest Covid-19 outbreak, commercial rents have dropped an average of 11.3 percent across 16 major retail corridors in Manhattan, and as much as 37.5 percent in fashionable SoHo, compared with last year. At least 5 percent of the population (420,000 people) left New York between March and May. While many of those New Yorkers may have been temporarily holed up in vacation homes, a permanent loss of even half of them would wipe out a decade's worth of population growth in a matter of months.

It's not just New York—all major metropolitan areas are seeing negative indicators like rising unemployment, small-business closures, and commercial vacancies. In a National League of Cities' survey of 485 cities, sales tax decreased on average by 11 percent and income tax by 3.4 percent compared to last year. Officials in 90 percent of cities said they will be less able to meet residents' needs next year. A big fear is a "K-shaped" recovery, where the white-collar, work-from-home crowd sees an economic rebound (e.g., the S&P 500 reached a record high in August), while the rest of the country is mired in a new Great Depression.



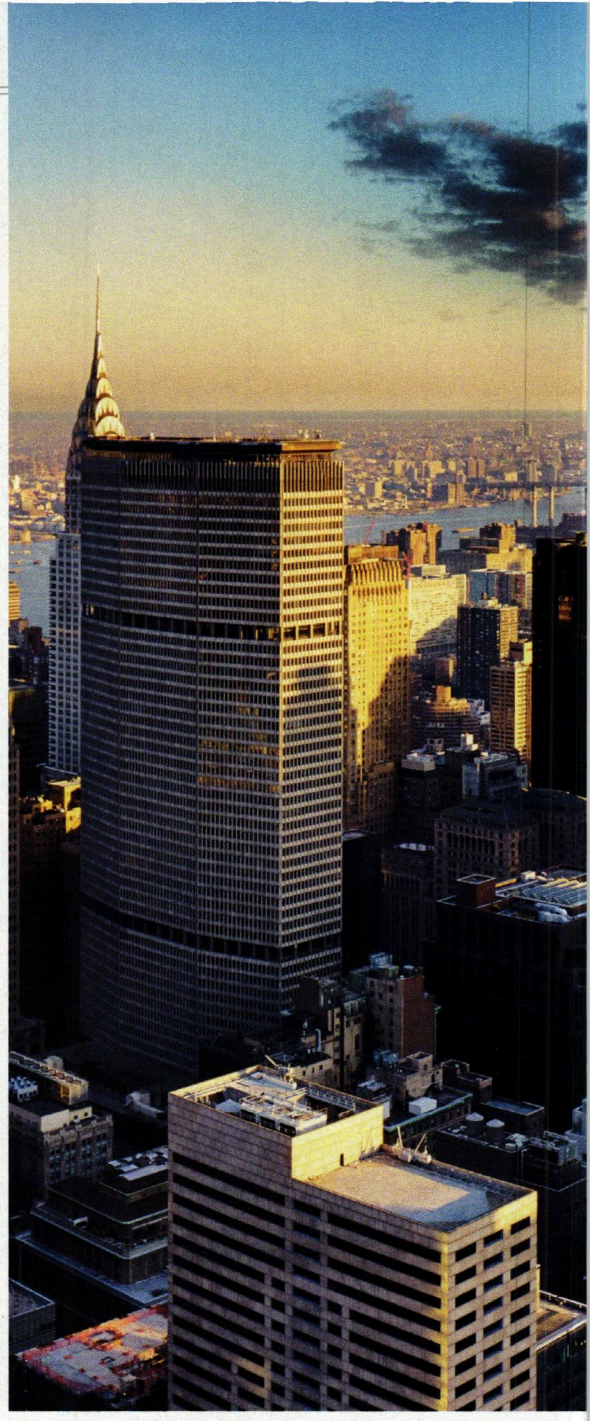
Superstar cities survived thanks to inertia. They are running on fumes.

—Dror Poleg, author, *Rethinking Real Estate: A Roadmap to Technology's Impact on the World's Largest Asset Class*

Racial disparities are front and center, with disportionately high coronavirus death rates among people of color, and demonstrations calling attention to systemic racism in policing, not to mention other aspects of society and the economy. Many low-income Black and brown neighborhoods are also enduring a devastating rise in gun violence. While overall crime remains low in most cities, a *Wall Street Journal* analysis of the country's top 50 cities found homicide rates going up an average of 24 percent over 2019.

The crisis in tenant evictions—held off for now by a nationwide eviction moratorium until the end of the year—is likely to become an avalanche of claims when protections expire. Cities from Los Angeles to Denver to Philadelphia are struggling with homeless encampments as protestors demand to stay put until cities provide permanent housing. Some cities are partnering with hotels, once full of tourists paying hundreds of dollars per night, to house the homeless, financed by CARES Act funding. But well-heeled NIMBYs are not taking this in stride; most notably, this past September, residents of Manhattan's Upper West Side threatened to file a lawsuit against the city for installing the homeless in a neighborhood hotel. Mayor Bill de Blasio relented, but now advocates for the homeless are protesting his decision.

Yet, despite the homelessness crisis, many urban dwellings are empty: the media on both coasts can't get enough of stories of wealthy





The pandemic has emptied New York's office buildings, so integral to the skyline.

PHOTOGRAPHY: © TOMAS SEREDA/GETTYIMAGES (TOP); COURTESY RICOTECH (OPPOSITE, BOTTOM); HARRIET TREGONING (BOTTOM, RIGHT)

families abandoning cities for places like Tahoe and New York State's Hudson Valley. The overheated housing markets of New York and San Francisco are cooling— prices have fallen in San Francisco by 4.9 percent and inventory has risen a whopping 96 percent compared with a year ago. Then, in such places as Cape Cod, the number of houses sold increased 93 percent this past July from the summer before. While data from a recent Zillow report show that unlike New York and San Francisco other cities have not seen a remarkable downward trend in real-estate listing searches, a recent survey by Quicken found that 37 percent of 1,000 millennials surveyed are considering moving out of cities in the next year.



The next four or eight years could change everything. Things could radically change for the better.

—Harriet Tregoning
New Urban Mobility alliance

What's more, some experts do not envision an urban recovery, even in the long term. For Dror Poleg, author of *Rethinking Real Estate: a Roadmap to Technology's Impact on the World's Largest Asset Class*, and a cochair of the Urban Land Institute's Technology and Innovation Council in New York, Covid-19 only accelerated negative trends that began well before March 2020. New York City had lost population for three consecutive years, with more than 50,000 people gone in the year ending July 1, 2019. Los Angeles and Chicago had also seen population declines for the past two years. As millennials began having children, the suburbs, with their lower housing costs but better funded school districts, have been a

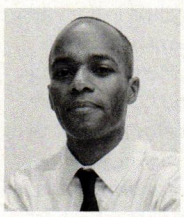


magnet, as they were for previous generations.

Poleg argues that "cities are running off of fumes." A prime example was Facebook's announcement in August that it would lease 730,000 square feet in Midtown Manhattan. Touted in *The New York Times* as "Facebook Bets Big on Future of N.Y.C.," Poleg points out that the deal had been in the works before the pandemic and was probably renegotiated in Facebook's favor after Covid-19 sent rents spiraling down. And the company has said it will allow most of its office-based employees to work remotely and it will "adjust" pay if they move to a less costly region than the Bay Area.

In Poleg's view, "superstar cities survived thanks to inertia" but aren't creating new and ongoing value; they're surviving because of existing residents and businesses—even as more than half those businesses that have been closed since March are now permanently shuttered, according to Yelp. Covid-19 has forced many urbanites to actively rethink their choices. If and when a vaccine does bring an end to restrictions, many office employees may have spent more than a year working from home. "How will they respond when they're told, 'Now commute an hour to and from the office and wear real clothes?'" Poleg asks.

But other prognosticators believe cities are far from over. Vishaan Chakrabarti, dean of the University of California, Berkeley, School of Environmental Design, says, "I'm just not one of these people who thinks that remote work is going to supplant offices." The "end of cities" narrative has been trotted out many times before, he reminds us: anyone remember the purported negative impact of the fax machine? To Chakrabarti, if the experience of remote work has proven anything, it has shown "the necessity to meet face to face and to be together," he says.



We really need to evaluate our systems of private-market-driven ownership and investment in an extremely different way. Cities are resilient, and we'll have to learn the new patterns.

—Justin Moore
New York City Public Design Commission

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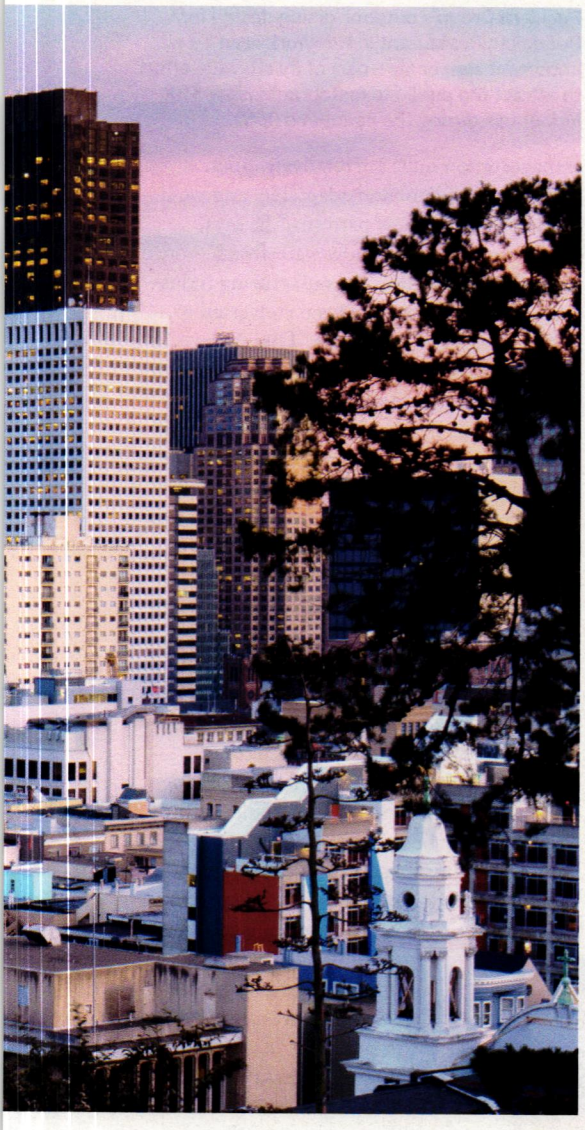


In early September, San Francisco's sky (above) was not its normal blue but a bright orange. N-95 masks were used to protect citizens from wildfire smoke as well as Covid-19.

"People come together in cities because it's human nature to do so."

That said, a certain type of employee—an accountant, say, with a terrible commute, who works in a large professional-service company—might negotiate ongoing remote work. "This represents a concern, not an existential threat," is how Chakrabarti puts it.

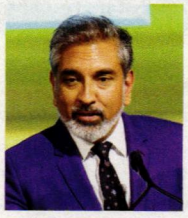
But the future city will be different, he says, with opportunities to rethink urban architecture and streetscapes. He believes there will be a cascade effect on commercial real estate: newer office buildings with state-of-the-art ventilation will come out of the crisis fine, but older office buildings might be converted to residential use. Chakrabarti, an architect and urban designer who has worked for the New York City Department of Planning, as well as for Related Companies, recalls the success of city incentives to owners of office buildings in Lower Manhattan to repurpose them as residential buildings, from 1995 to 2006. The city should consider a similar tax abatement now, he thinks, to convert commercial buildings into low-cost housing with live/work components, locating residents' offices at the dark core of the structures. Similar incentives could encourage landlords to fill vacant storefronts with social infrastructure like schools, cultural institutions, and day-care centers. By creating affordable housing in city business districts, thousands more people would be able to access nearby jobs, schools, and other amenities, without long commutes.

The post-Covid-19 city is going to be more equitable, including a changing distribution of work and a more regional network of activity centers.

—Amy Liu,
Metropolitan Policy Progam–Brookings Institution



Justin Moore, the executive director of New York City's Public Design Commission, finds the idea of supporting more social infrastructure compelling. "These kinds of spaces are an incredible resource" for all neighborhoods, he says. "Along with that, there needs to be a return to civic and public infrastructure and not simply a commercialized version of it." But he cautions against tax-incentive programs that typically don't result in equity and inclusion. "The reality is that people who own high-value buildings in office districts aren't very well inclined to see that outcome," he says. To truly create a path toward equity, Moore suggests, "we really need to evaluate our systems of private-market-driven ownership and investment in a radically different way." B-Corp neighborhood investment companies, where residents can become shareholders in local real-estate investment trusts (REITs) are becoming a more popular way for regular people to share in wealth creation.



I'm not one of these people who think that remote work is going to supplant offices.

—Vishaan Chakrabarti, dean of UC Berkeley's School of Environmental Design, architect, and planner

Certainly the question of who owns the streets is now up for debate. Less commuting and reduced automobile traffic have encouraged downtowns to loosen regulations and allow restaurants to host outdoor dining in former parking spots during the pandemic. In August, Chicago announced a "winter design challenge" to encourage outdoor dining in winter. (After all, Scandinavians and Canadians do it.) Never before has the inequity of private-car-centric streets been so clear, and urban advocates are clamoring to reclaim more of the street for an array of nonvehicular uses on a permanent basis. "We have substituted automobility for proximity for 100 years," says Harriet Tregoning, director of the New Urban Mobility alliance (NUMO); "now there is an opportunity to change that."

NUMO is part of a collective online platform called Covid Mobility Works that has assembled no less than 542 examples of transportation innovation in the face of the pandemic, from an expanded Slow Streets program in Baltimore to a 30-day free bicycle-share program for health-care workers in the Bay Area. Bike ridership is up everywhere, and sales of electric bicycles increased as much as 137 percent in May, according to the data-insight company NPD Group.

But public transportation is still necessary for many long-distance commutes and for nighttime safety and comfort. "This pandemic made it utterly clear that the fare box isn't how we should be primarily supporting transportation," says Tregoning. She believes that cities trying to address inequality could think more holistically about how they try to pull people out of poverty, and offer free public



Rockwell Group's outdoor-dining design for Buddakan Restaurant in New York is an important sign of life—part of its citywide effort to attract the public to restaurants closed for indoor use during the pandemic (left).

transportation to anyone requiring public assistance. After many cities made transit free during the height of the pandemic, Los Angeles is now considering doing so on a permanent basis. Much as urban settlements will need reinvention, so will city budgets and the delivery of local government services.

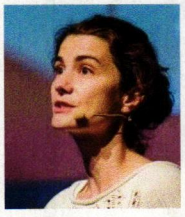
From the perspective of C40 Cities, a network of megacities dedicated to addressing climate change, long commutes were never sustainable. In July, the group launched a Green and Just Covid-19 Recovery Plan, which included a focus on creating "15-minute cities" where all people can access daily needs within a short walk or bike ride. Although the idea was popularized by Anne Hidalgo, mayor of Paris, long before the pandemic, it is a concept that functions especially well at a time of remote work. Hélène Chartier, the head of Zero Carbon Development for C40 Cities, sees 15-minute cities as the model to embrace in the urban core or the suburb. The plan asks neighborhoods to "emphasize local retail and local commerce instead of the mall," she explains. Zoning would be at play; buildings would have to be mixed-use to accommodate enough people and businesses. And the 15-minute neighborhood needs an ample percentage of affordable housing to ensure that all types of people could live and work there—across the spectrum from c-suite to service workers—while public spaces would need to be flexible to accommodate all of a community's needs.

Amy Liu, director of the Brookings Institution's Metropolitan Policy Program, is optimistic that "the post-Covid city is going to be a more equitable city." Liu sees the "changing distribution of work" as encouraging new directions, not only in office buildings but in demand for more diverse housing stock that accommodates people working from home. Cities will always have their downtowns, but she sees the potential for more "regional equity," where a network of "activity centers" (not unlike the 15-minute neighborhoods C40 Cities espouses) allow more dispersed housing options that potentially encourage older suburbs to bounce back and commercial corridors that are increasingly likely to host more minority-owned small businesses.

Moore has already seen how these patterns have shifted. For example, residential neighborhoods in cities are full of activity, while transportation hubs are relatively quiet. "Cities are resilient and adaptable, and we'll have to learn the new patterns," he says, giving the example of how waterfronts—once the backbone of cities' manufacturing industries—have increasingly been converted to public spaces and other uses. This time, Moore finds it promising that "people are talking about the spatial considerations—what happens in communities—and how that's connected to race and economic issues. Now, that's important."

Tregoning, who served in the Department of Housing and Urban Development during the Obama administration, can imagine a future where even a new federal government is aligned with these goals, allocating more funding to cities for transportation and housing needs, but with an eye toward correcting the past mistakes of prioritizing single-family housing and car-centric infrastructure. "These next four or eight years could change everything," she says. "Things could radically change for the better."

But Liu sums it up when she says, "So much is uncertain right now." What will happen with the pandemic, the 2020 presidential election, and the coming winter is anyone's guess. Once we all get past this period of "Zoom and gloom," will many people yearn to get back to the way things once were (though perhaps driving more to avoid the perceived risk of public transit, and buying local less often as online delivery takes hold)? Or will this unique experience forever change how cities operate and who lives in them, finally and truly addressing concerns of racial justice, economic disparity, sustainability, and inequality?



The 15-minute city (which depends on walking and biking for daily needs) emphasizes local retail and commerce instead of the mall.

—Hélène Chartier, Zero Carbon Development C40 Cities

Cities have been, and always will be, civilization's finest creation. If we don't radically reinvent them now, when will we?

Diana Lind is the author of Brave New Home: Our Future in Smarter, Simpler, Happier Housing.

PHOTOGRAPHY: © EMILY ANDREWS (TOP); COURTESY HÉLÈNE CHARTIER (MIDDLE)



The Straits of Transbay

Tech offices are dark and storefronts are empty. But, as residential towers by Studio Gang and OMA show, the future of San Francisco's new mixed-use district is planned for diversity and affordability.

BY JOHN KING
PHOTOGRAPHY BY JASON O'REAR

Mira tower overlooks the Bay Bridge

PHOTOGRAPHY © JASON O'REAR

Studio Gang's twisting new 39-story Mira residential tower has a built-in hedge against the city's notorious high cost of living, with more than 30 percent of its condominiums designated affordable based on income.

STUDIO GANG'S new residential tower in San Francisco, Mira, is a crisp shaft of white metal bays stacked 39 stories high, each floor twisted in a slightly different direction from the one above or below. The rippling pattern repeats itself every 10 floors, and from afar looks like a tightly wound corkscrew with a blunt top.

The architecture not only exudes confidence, it showcases the fast-growing Transbay district around it—21 blocks cradled against the city's Embarcadero waterfront and the traditional financial district, a dense neighborhood with high-rise housing and offices framing a futuristic transit station that includes a 5.4-acre rooftop park (RECORD, April 2017).

Before the coronavirus took hold last spring, Transbay's momentum seemed unstoppable. Now, in the persistent wake of the pandemic, the fragility of a plan approved in 2012 is more apparent by the month.

While such concerns play out in urban centers across the nation, it's especially stark in a city with so many tech companies that increasingly are comfortable with employees' working from home. Facebook, which fills the office space in two of the newest Transbay high-rises, has said it will let employees work remotely at least until next summer.



That's also the case with software firm Salesforce, the anchor tenant of the 1,070-foot-tall Pelli Clarke Pelli tower (RECORD, July 2018) that replaced the Transamerica Pyramid as the peak of San Francisco's skyline. Pinterest, meanwhile, paid $89.5 million in late August to cancel its lease on an unbuilt tower nearby.

But you don't need to read the business pages to get a sense of the pall cast by the pandemic. Ground-floor retail spaces in Mira and other new towers are largely vacant, as are once-active storefronts in the district's older buildings. On the block to Mira's north, two dozen ramshackle tents line one sidewalk.

San Francisco, which has long had the highest housing prices of any large American city, is no stranger to homelessness. The difference now? The homeless can be almost the only people on downtown streets otherwise usually filled with workers, shoppers, and conventioneers.

"The whole idea of a downtown depends on lots of people being there," said Ray Gastil, who leads the Remaking Cities Institute at Carnegie Mellon University. "Center cities like San Francisco and Seattle are going to struggle with downtowns having this strange empty quality." Yet Gastil recalls the doomsday scenarios that hung over New York after 9/11. "You can make short-term predictions that are way off," he says.

What may help Transbay succeed long-term is the diversity baked into the plan. The city requires that 30 percent of the 4,400 housing units planned here must be subsidized for lower-income residents, including supportive housing for the formerly homeless. At Mira, 155 of the 392 condominiums are reserved for buyers who make between 80 percent and 120 percent of the area's median income (the lowest price would be $231,000 for a one-bedroom). Similarly, the New York office of OMA designed the Avery tower that opened in the neighborhood last year—55 stories of stylishly understated serrated glass, with a low brick-clad wing designed by San Francisco's Fougeron Architecture. While market-rate condos begin at $1.8 million, 150 of the 548 units overall are apartments for households making no more than 50 percent of the median income.

That's still not cheap by national standards. But it means that when you walk through the transit center's lush rooftop park, you see families who reflect the neighborhood's economic and racial diversity.

Mira architect Jeanne Gang is confident that Transbay and its surroundings will regain the vitality for which San Francisco is known. "Months are nothing in relation to the life of a building or a city," Gang said earlier this summer. "We like cities for a reason. They're where exchanges can happen, social as well as economic." ■

John King is the San Francisco Chronicle*'s urban-design critic.*



The Avery, a 55-story glass skyscraper by OMA opened last year, with a low-rise component by Fougeron Architecture. More than 25 percent of its units are aimed at those making no more than 50 per cent of the area's median income.

PHOTOGRAPHY: © TOM HARRIS/COURTESY STUDIO GANG (OPPOSITE, RIGHT)

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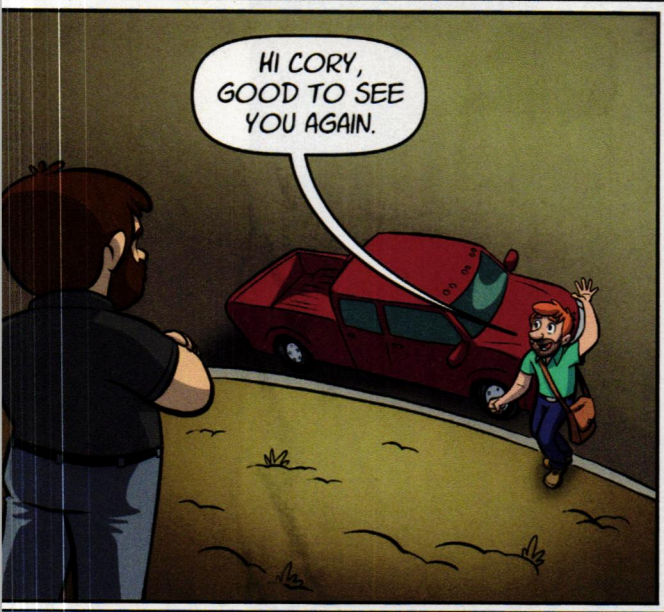



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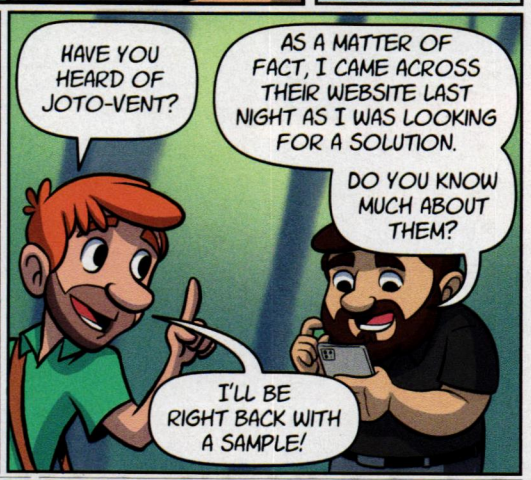







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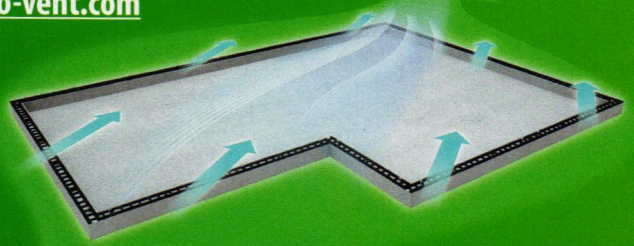

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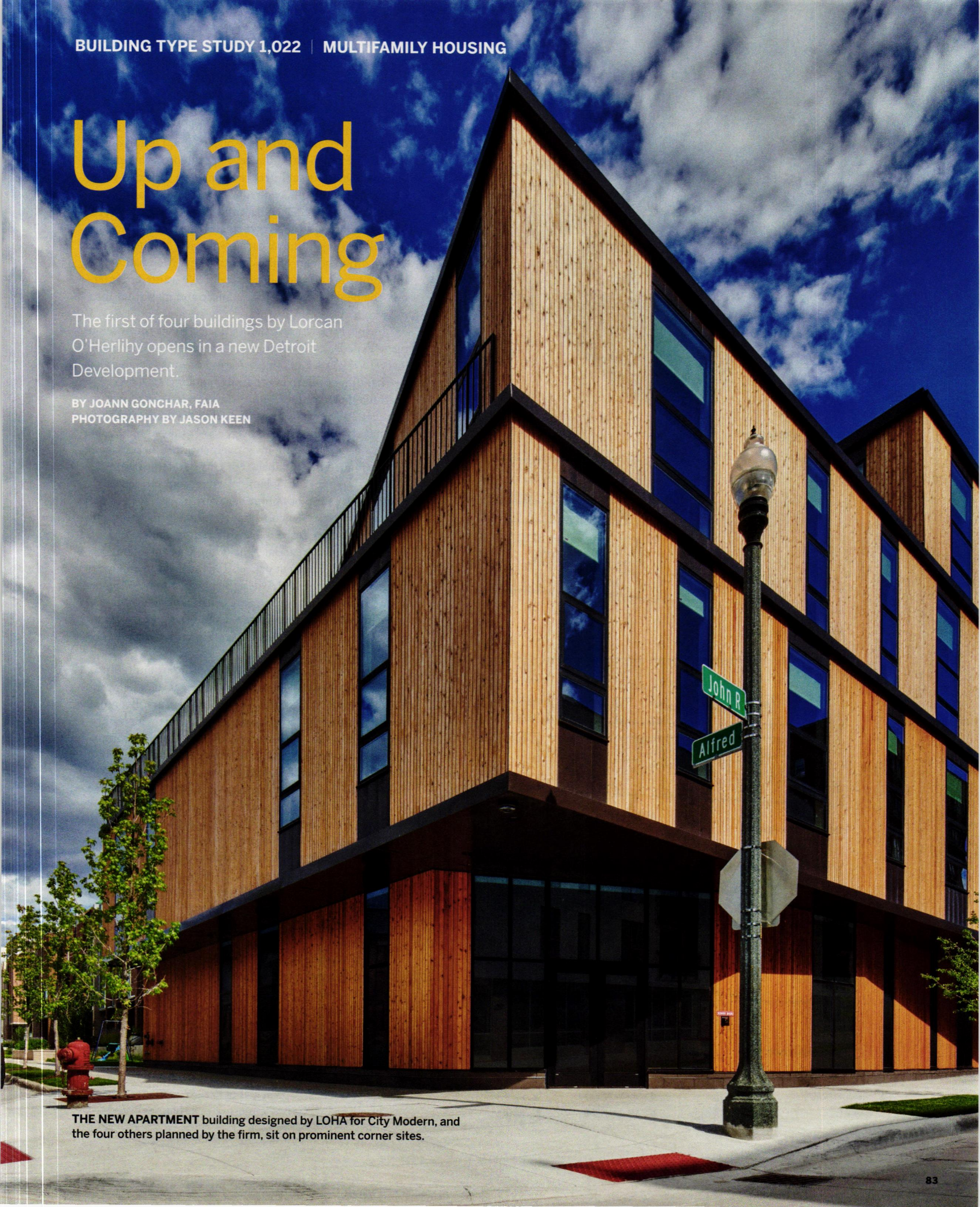
Up and Coming

The first of four buildings by Lorcan O'Herlihy opens in a new Detroit Development.

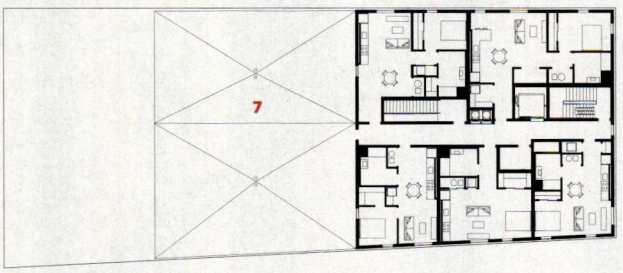
BY JOANN GONCHAR, FAIA
PHOTOGRAPHY BY JASON KEEN



THE NEW APARTMENT building designed by LOHA for City Modern, and the four others planned by the firm, sit on prominent corner sites.



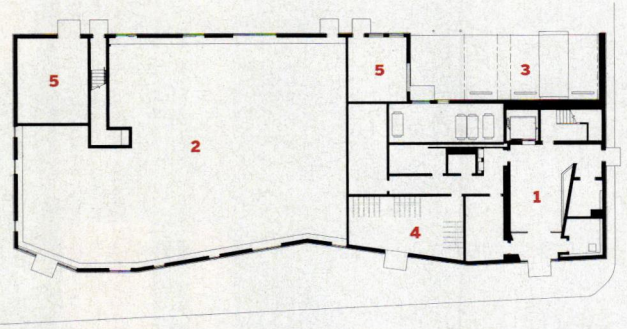
AERIAL-PERSPECTIVE DIAGRAM



FIFTH-FLOOR PLAN



THIRD-FLOOR PLAN



GROUND-FLOOR PLAN

0 20 FT. 6 M.

1 RESIDENTIAL LOBBY
2 RETAIL
3 CAR PARKING
4 BIKE PARKING
5 MECHANICAL
6 TERRACE
7 ROOF

IN 2015, soon after winning the bid to develop 8.4 desolate acres of city-owned land in the once-grand Detroit neighborhood of Brush Park, the developer Bedrock began a national search for architects to transform the site—vacant except for four abandoned redbrick Victorian mansions—into a vibrant mixed-income, mixed-use community. Bedrock was looking to showcase small firms with experience in infill housing. "But we didn't want to duplicate projects from a different part of the country," says Melissa Dittmer, the company's chief design officer. "We wanted to interpret the neighborhood's urban fabric and its history into modern form."

One of five architects Bedrock selected for the development, called City Modern, was Lorcan O'Herlihy Architects (LOHA), a Los Angeles firm known for its imaginative handling of LA's multifamily typology. LOHA's portfolio includes the 32-unit Mariposa1038 (RECORD, October 2017), with bowed facades and a dramatic elliptical void at its center, and Cloverdale749 (RECORD, October 2014), a 6-unit building inventively sheathed in corrugated and perforated metal panels. For City Modern, Bedrock gave LOHA the plum job of designing four residential buildings for the plot's prominent corner lots. Each of these five- and six-story "anchors," as the firm's principal, Lorcan O'Herlihy, refers to them, has different massing and a distinct cladding material—including black brick, red metal, and fiber cement panels. Tenants have begun moving in to the first LOHA-designed project to be completed. Wrapped in tongue-and-groove cedar panels, its four wood-framed levels on top of a poured-in-place concrete podium enclose 35 market-rate apartments and a ground-floor retail space.

City Modern is said to be Detroit's largest multiunit housing development since Mies van der Rohe's Lafayette Park was built in the middle of the last century. Eventually it will comprise 410 residential units in apartment buildings, townhouses, duplexes, and the renovated Victorian mansions, including rentals, of which 20 percent will be designated as affordable, and condos. In addition to LOHA, the complex's designers are Boston-based Merge, Studio Dwell of Chicago, and the local firms Hamilton Anderson Associates (HAA) and Christian Hurttienne. The new neighborhood, about one mile from downtown, is emerging in a part of Detroit that was once known as the "little Paris of the Midwest" for its elegant mansions built largely in the late 1800s. But Brush Park began to decline in the early 20th century, when streetcars and automobiles allowed its well-heeled residents to live farther from the city's center.

The development rising now, slated for completion in 2022, is organized under a master plan and form-based guidelines created by HAA. (The firm also has designed two apartment buildings for the complex.) Those plans establish the outlines of the dense but low-rise neighborhood, with criteria for building heights, setbacks, and materials, among other details, and designating streets, alleyways, and a string of pocket parks. The aim, says Mark Farlow, HAA principal of design, is to create a neighborhood with the richness of one that has evolved

THE FIVE-STORY BUILDING, one of 20 ground-up new structures planned for City Modern (foreground, below), steps down at one end to meet the scale of a Victorian mansion across the street (above).



over time but that is distinctly of the present. The master plan and guidelines "set the limits of the sandbox within which each architect would operate," he adds.

The selected architects describe the design process as highly collaborative, with the project teams regularly gathering virtually and meeting in person monthly in Detroit to align their schemes. O'Herlihy says his firm's just-completed building was shaped by this dialogue and by its neighbors. The roughly rectangular volume outlined for him by the master plan was carved so that it steps down from five stories at one end to two at the other, to be compatible with the scale of the future adjacent townhouses and, in particular, with the historic mansion across the street. "We didn't want to turn our back on it," he says.

The multiple flat roof areas that resulted from this stepping, combined with further sculpting of the building's volume, also pro-





THE CEDAR CLADDING extends into the lobby (above). The windows run the full height of the units (left) and appear even taller on the exterior due to the use of spandrel panels (opposite, bottom). The third-floor terrace (opposite, top) overlooks the historic mansion.

vided for angled terraces in the early design process. But over the course of the project's evolution, due to budget constraints, the angles grew more regular and the roof areas smaller, in favor of creating more apartments. "The scheme became more developer-friendly," says Dittmer. For now, only the roof at the third floor is a terrace—but one open to all the building's tenants. Despite these changes, LOHA has maintained a strong architectural expression with exterior details such as horizontal coping in dark metal between floors, which contrasts with the cedar, and a first-floor enclosure with subtle bends and folds. Both serve to accentuate the stepping form and make the building appear to slightly skew.

Inside, the building's apartments range from studios, renting for $1,200, to two-bedroom/two-bath units starting at $2,300.

They have sensible layouts and wood-laminate floors, quartz kitchen countertops, and stainless appliances, and are organized around a central interior corridor—a departure from LOHA's multifamily projects in LA, where the mild climate allows for outdoor circulation and access to daylight and air from two directions. But O'Herlihy compensates for the necessary double-loaded configuration with windows that extend to the apartments' full 9-foot 6-inch height. This arrangement allows daylight to wash floors and ceilings, explains O'Herlihy, lending the interiors an unexpected "freshness."

The appeal of the building's contemporary form and crisp interiors is clear. Bedrock has rented about 25 percent of its units since the spring—a performance that Dittmer says is strong given that the company paused active leasing efforts due to Covid. Of LOHA's three remaining buildings, one is nearing completion, while the other two are in the early stages of construction. As a whole, 12 of the 20 ground-up new buildings planned for City Modern are finished, and about 68 percent of those available for rental are leased or occupied. It seems that Bedrock's vision of a modern, dense urban environment that nods to history has legs, even with the uncertainty surrounding the future of cities post-pandemic. ■





Credits

ARCHITECT: Lorcan O'Herlihy Architects — Lorcan O'Herlihy, principal in charge; Noelle White, project lead; Matthew Biglin, Nicholas Muraglia, Nick Hopson, Lyannie Tran, project team

CONSULTANTS: SDI Structures (structural); Strategic Energy Solutions (mechanical); Giffels Webster (civil); Hamilton Anderson Associates (landscape)

GENERAL CONTRACTOR: Sachse Construction

CLIENT: Bedrock Detroit

SIZE: 43,000 square feet

CONSTRUCTION COST: $11.5 million

COMPLETION DATE: August 2020

Sources

WOOD CLADDING: Mans Lumber

METAL PANELS: Cass Sheet Metal

WINDOWS AND GLASS: Wojan, Thompson IG

ENTRANCES: US Aluminum

DOORS: LaForce

PAINTS AND STAINS: Sherwin-Williams

CARPET AND RESILIENT FLOORING: Mohawk

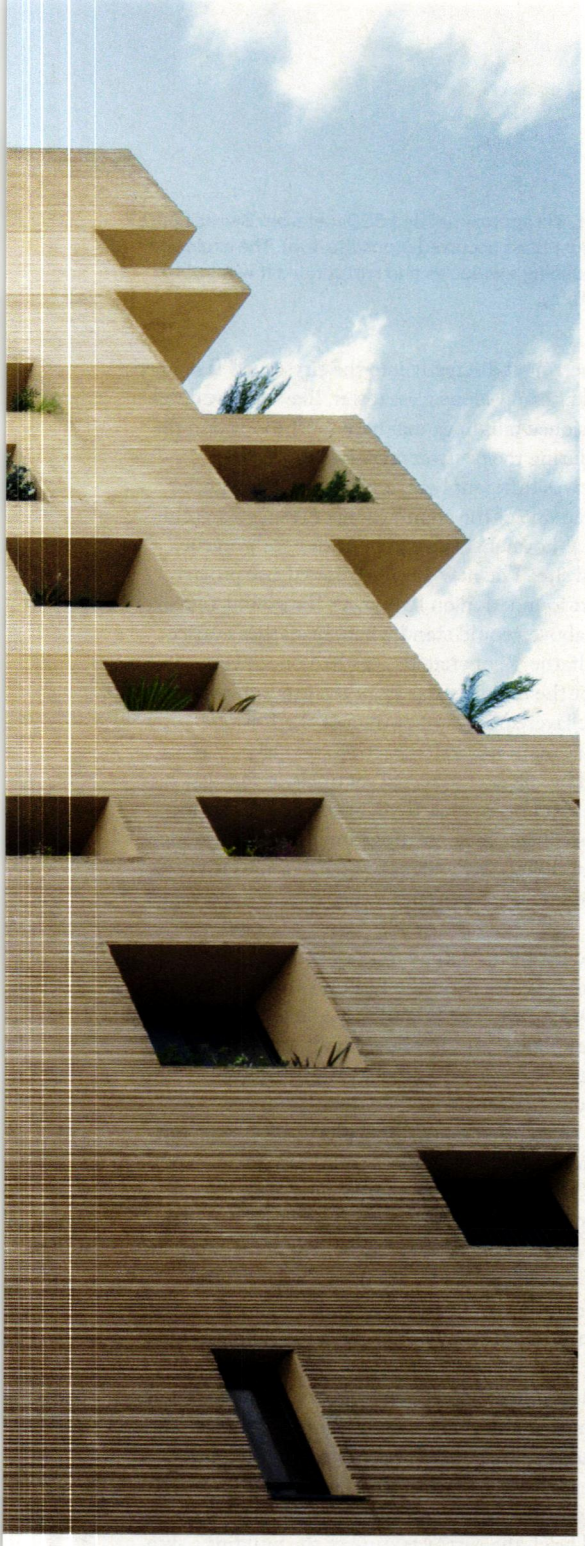
LIGHTING: Acuity Brands, Finelite, Alloy LED, Ledra Virtual, Kirlin, Kuzco, Bega



A Sheltering Place

Damaged by the Beirut blast, Lina Ghotmeh's new residential tower is a product of its highly charged context.

BY JOUMANA GHANDOUR ATALLAH
PHOTOGRAPHY BY IWAN BAAN





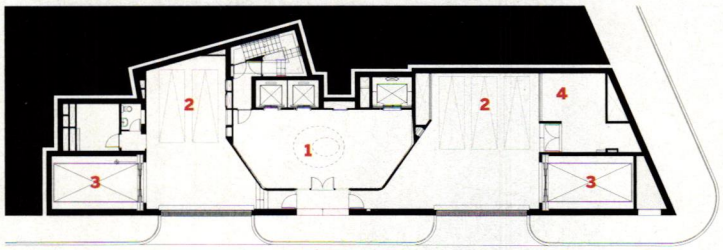
JUST OVER 40 hours after the blast that ravaged Beirut's port on August 4, 2020, and left the city core in apocalyptic doom, architect Lina Ghotmeh was back at Stone Garden—her recently completed project, the first in her native country—surveying its destruction, and discovering the city's gutted structures and ruined harbor through its many windows, most of them shattered.

It was eerie: the dead fish on the sidewalk tossed from the sea 500 yards away, shredded stone-wool insulation blown by the blast and clinging to the building's textured skin. Every glass, metal, and wood element in the building had been fractured, broken, or warped beyond functionality. "I had never thought we would be living through this disembowelment again. Is it a nightmare? It's definitely quite schizophrenic," said the Paris-based Ghotmeh.

Yet the building structure stood unscathed, towering at 165 feet among its much lower neighbors, a mix of five-story commercial buildings from the 1950s and '60s and a few rundown 19th-century low-cost lodgings servicing the port.

Never had the architect's design approach, her "archaeology of the future," resonated so well. Stone Garden emerged as an echo of the years of civil war the city had been through, an architecture that is laid bare by its context, a shelter overtaken by nature and the vicissitudes of time.

Set at the foot of a hill, on an irregular 4,360-square-foot sloping parcel, the site was quite challenging, but Ghotmeh decided to let its boundaries determine the envelope. She wanted to "glue the form to its



GROUND-FLOOR PLAN



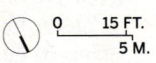
4TH-FLOOR PLAN



8TH-FLOOR PLAN



12TH-FLOOR PLAN



1 ENTRANCE LOBBY
2 PARKING
3 CAR ELEVATOR
4 MECHANICAL
5 APARTMENT
6 PENTHOUSE DUPLEX

STONE GARDEN is approximately 1,500 feet from Beirut's port, where the August blast occurred (opposite, top). The explosion blew out the building's windows and surrounded it with rubble (opposite, bottom).

neighbors, inserting it discreetly into the cityscape." It seemed absurd to build a stand-alone glass tower, like the new developer-commissioned buildings that have mushroomed in the last 30 years during the postwar reconstruction.

The client was different here; a photographer whose father had been one of the country's most respected architects, he gave Ghotmeh leeway to hone her craft on the family-owned site. The new 13-story mixed-use project, housing an art foundation on two lower floors and 14 residential units above, would stand where his father's office and his grandfather's concrete factory had once been.

Gotmeh let the building rise from the ground, textured much like the layered limestone strata of the Rawché Rocks, Beirut's main natural attraction, two islands that stand scoured by the sea as eternal sentinels of the city. It is as if the tower had been unearthed, at this particular moment, with its conspicuous openings inviting us to wander through the building, without a clear path or narrative, to discover it the way we experience a ruin found in a ravaged landscape.

There is no legible hierarchy to the structure, there are no architectural signifiers on the limitless lines etched into the facade. One's gaze travels endlessly along the sharp-angled vertical planes and the tilted bends at the top—a straightforward execution of setback requirements.

The 14-inch-thick envelope is load bearing, and the building was conceived as a sculpted block. Hollowed out spaces of various sizes serve as deep windows, loggias, or entrances. What seem to be random playful openings are actually variations on a 4-foot module, carefully scaled by Ghotmeh to echo a sniper's aperture, a generic window, or a gaping hole from the past. She admits to "tracing" the existing context, then mnemonically transcribing it on her sculpture. Three window openings from the nondescript building that housed the architecture office are drawn at their original locations, in acknowledgment of the spirit of the place. Ghotmeh likes to flirt with imperfection, finding poetry in deadpan juxtapositions. "There was the setback line, and I needed a window there, so they just coexist," she says, referring to an opening at the top.

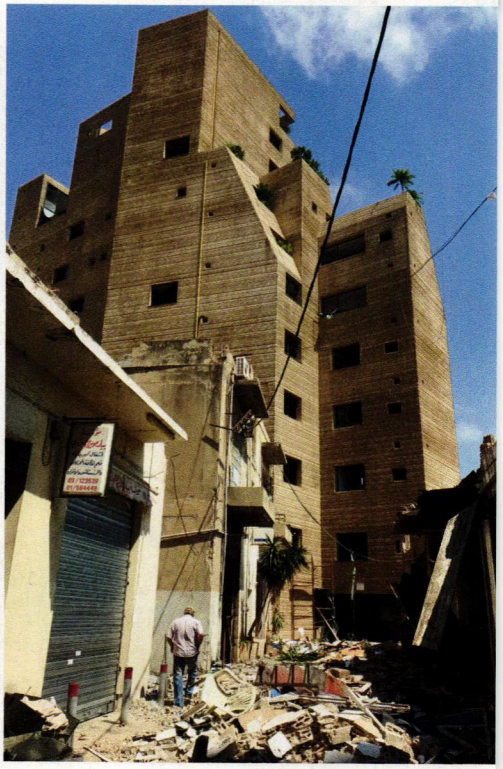
At ground level, the earthy texture of the building's skin is inviting; you touch the 2-inch-deep striated ridges applied to the surface of the structure as you would a sculpture or a body. It took two years of research and the dedicated collaboration of the builder and his team to deliver a seamless finish: a combination of mortar, pigmented cement, and gravel, which would be combed onto all 54,000 square feet of the envelope's many facets. Ghotmeh designed the 10-foot-high steel scriber which was set on rails and used repeatedly to labor the layered mix by hand.

Inside, there is an economy of finishes and tones; walls, floors, and ceilings in the common areas are treated alike, with a combination of matte epoxy and textured plaster looking like adobe. Door and window frames are rendered

PHOTOGRAPHY © LINA GHOTMEH (OPPOSITE, BOTTOM TWO)



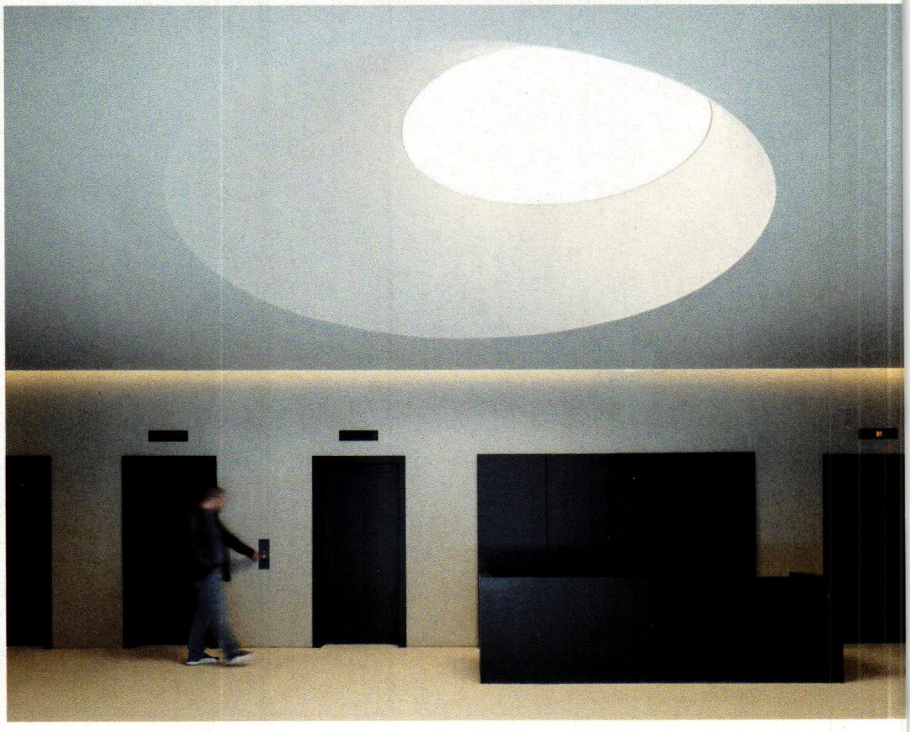












THE BUILDING'S openings are variations on a 4-foot module (right), many containing planters (opposite, top and bottom left). An oculus brings daylight into the entrance lobby (opposite, bottom right).

flat, in a muted burnt earth tone. Fixtures are kept minimal and unseen, and light washes on walls indirectly or, at the entrance lobby, from an oculus overhead. Interior apartment layouts are differentiated, since living spaces are arranged around the different loggias or large window openings.

Nature has been given the upper hand; Mediterranean trees and shrubs planted by the architect in the various recesses have inhabited the structure from the outset. Still alive after the blast, the greenery remains in symbiosis with the building, part of its ethos, but residents will probably not move back in for some time now, given the extent of damage.

Much like architecture in capriccio paintings, the different lives of the building have been designed into it, to make an ageless place combining absence and presence simultaneously. Stone Garden is not a palimpsest of history but a new form that appears in the urban scape with an uncanny sense of having "been there."

Ghotmeh is touched when people tell her that they had not noticed the new building. Designed with tact, respectful of its charged surroundings and the genetic footprint of the site, Stone Garden's architecture remains bold enough to suggest a fresh morphology that is the poetic translation of Beirut in its actual state. ■

Joumana Ghandour Atallah is a graduate of the Harvard Graduate School of Design and a practicing architect in Beirut.

Credits

ARCHITECT: Lina Ghotmeh - Architecture — Lina Ghotmeh, principal

ARCHITECT OF RECORD: BATIMAT Architects

ENGINEERS: CODE Consultants and Designers (structural); AME (electrical/mechanical)

CONSULTANTS: Habib Srour (vertical transport)

CLIENT: RED sal

GENERAL CONTRACTOR: Pegel

SIZE: 69,000 square feet

COST: withheld

COMPLETION DATE: April 2020

Sources

CURTAIN WALL: Gutmann

METAL DOORS: Anicolor

ELEVATORS: Fujitec (passenger); MP (vehicle)





All in the Family

Architect and developer Jonathan Segal and his son elevate micro-unit living in a formerly rough-and-tumble enclave of San Diego.

BY SARAH AMELAR
PHOTOGRAPHY BY MATTHEW SEGAL

IN THE 1920s and '30s, when San Diego's Little Italy was known for the gritty fishing fleets and tuna canneries that lined its waterfront, modest studio apartments were not unusual here. But that option largely disappeared as this once-industrial quarter became extremely desirable, full of hip eateries, bars, shops, and increasingly high-end residential structures. "The neighborhood ended up with very few studios, and typically in the worst parts of buildings—crammed in back, at the bottom, with little daylight and no views—but still really expensive," says architect Matthew Segal, chief of staff at the San Diego firm Jonathan Segal, FAIA. Given those slim pickings and the limited supply of affordable housing, Matthew and his father, firm owner/architect Jonathan Segal, saw the need and opportunity to introduce a whole tower of micro-units, at below-market rents. The Continental, the 8-story building they envisioned and completed last January—with 42 mostly south-facing studios, two commercial storefronts, and a four-story owners' townhouse—offers abundant sunlight, outdoor space, and distinctive architecture for every tenant.

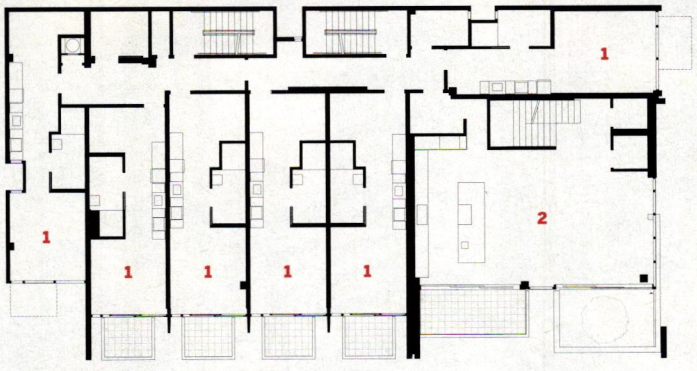
So, how did they achieve that—and keep rents low? The answer lies in the ways this family-owned-and-run architecture-development com-





WHILE KEEPING rents below market, the team offers tenants generous sunlight and outdoor space (above and left). An owners' cubic, four-story townhouse occupies one corner of the site.





TYPICAL-FLOOR PLAN

1 STUDIO

2 SINGLE-FAMILY RESIDENCE

pany has always built and done business, as well as key design decisions and trade-offs about what amenities to exclude, or include, at the Continental.

In a daring move, the team sought to eliminate tenant parking (except for the townhouse component), capitalizing on the neighborhood's walk score of 98—and banking on people's willingness to forgo garage space and square footage in order to live in a cool area at relatively modest rents. Dispensing with parking would have required a local planning variance, but community pushback ultimately forced the Segals to carve out 11 underground spots. That added $1 million to the budget (the company declines to disclose the total cost) and increased the intended rents by 10 percent. Nonetheless, the 27,000-square-foot Continental still undercuts Little Italy's mean studio rents by 10 to 20 percent, with 37 apartments, averaging 395 square feet each, at monthly rates from $1,595 to $1,995. Five of those units are available as steeply discounted state-regulated low-income rentals. Additionally, the Continental has five studio penthouses, priced from $2,195 to $2,995, each with 15-foot 6-inch ceilings, a balcony and bonus loft space, skyline views (and indoor parking). Adjacent to the tower, the townhouse—a cubic form with its own entrance, elevator, and parking—is home to Matthew, the project's lead designer, and his wife, whose holistic-and-traditional pharmacy occupies the retail space below them.

While minimizing the car's role, the Continental—like most of the firm's buildings—takes inspiration from the automotive realm. "Even if we don't believe you need to drive in this environment," says Matthew, "we still love the beauty of great design and engineering." His father owns 15 sports cars, including vintage classics. That sensibility may factor into the allure of their buildings, in this case the name that is borrowed from the Lincoln Continental and its facade composition—rendered as a projecting grid of concrete-faced chevron-patterned balconies—from the grilles of 1958 Buicks and Lincolns.

Exposed concrete, often favored by the Segals, emerges in both exterior and interior walls—cost-effectively giving the studios an industrial-chic aesthetic. The primary structural system is post-tensioned concrete, allowing for relatively thin slabs and long spans. Eliminating interior soffits and chases to economically maximize space and ceiling heights (which rise to 9 feet 3 inches in the ordinary studios), the architects embedded plumbing and electrical lines in the bare slab wherever possible, exposing the pipes and conduits where necessary.

The Segals always design, develop, construct (or adaptively reuse), own, and manage their buildings (this is their 23rd multifamily project in San Diego), allowing them to undercut the market. Their guiding principle is to bypass the conventional architect-owner-contractor triangle, with its inefficiencies, middlemen, and conflicting incentives. They work without general contractors (or realtors to rent out the units), claiming savings for themselves and their tenants. Wearing so many different hats, says Matthew, gives them nimbleness and flexibility "to make decisions and modifications on the fly without racking up costly change orders." Unlike developers who finish construction and move on, his family takes a "build-and-hold" approach, motivating them to achieve easy maintenance, streamlined operations, and durability.

So, instead of vinyl planking, with its limited lifespan, the Continental's apartment floors are tiled: a long-term investment. Often appearing more sophisticated and contemporary than traditional choices, other cost-savers include open powder-coated steel kitchen shelving in place of upper cabinets.

With operational sustainability, the Continental exceeds the California Energy Code by 16.9 percent, integrating features including high-efficiency appliances and lighting; solar-powered alarms, eleva-

tors, and common-area illumination; naturally ventilated corridors; and mini-split HVAC systems for zoned climate control. While the balconies, a component of most units, shade the south facade, the concrete's thermal mass further modulates interior temperatures.

As local luxury rentals amp up amenities, the Segals have chosen to limit them. The Continental has no pool or gym. "For those extras, you'd pay $400 to $500 more every month—and might not even use them," says Jonathan. They also dispensed with a front desk and full-time security guard but offer other perks: the laundry room borders a communal roof deck with panoramic views, making clothes-washing a potentially relaxing and social activity.

Initially, prospective tenants questioned the lack of parking, but the building soon filled up. "About 75 percent don't own cars, while others leave them at work and walk," Matthew reports. "I expected mostly millennial residents, but the Continental's demographic is really diverse," including college students, middle-aged professionals, and pied-à-terre retirees.

Although the Segals' approach to garage space was hotly contested, local authorities have since relaxed neighborhood parking requirements for new residential projects. "What can I say?" muses Jonathan. "We're often ahead of the curve." ■

Credits

ARCHITECT: Jonathan Segal, FAIA — Matthew Segal, lead designer & project manager

ENGINEERS: DCI Engineers (structural)

CONSULTANTS: J Geyer Plumbing; Nutter Electrical Design

GENERAL CONTRACTOR: Jonathan Segal, FAIA

SIZE: 27,000 gross square feet

COST: withheld

COMPLETION DATE: January 2020

Sources

MASONRY: Hanson Aggregates

ROOFING: CIM Industries

WINDOWS: Arcadia; Western Window Systems

SKYLIGHTS: Trulite

DOORS: C.R. Laurence (CRL Hardware); Door America

HARDWARE: Emtek

PAINTS & STAINS: Sherwin-Williams

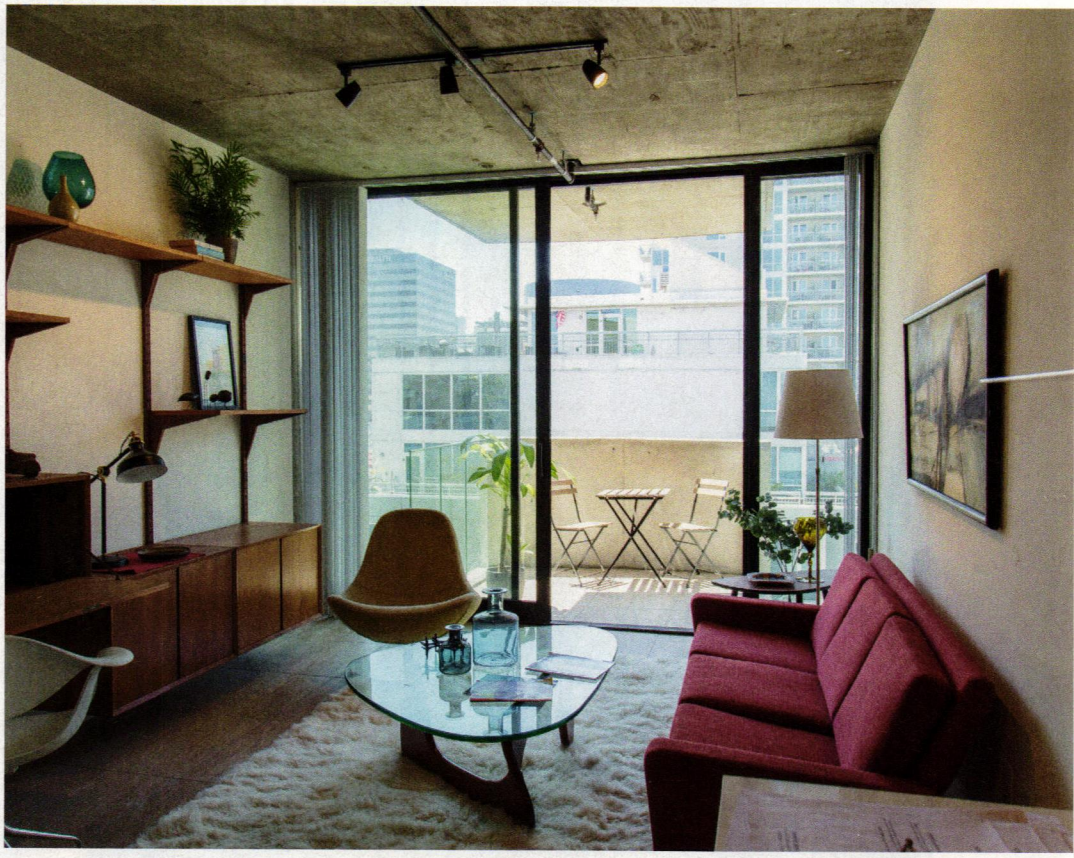
FLOOR & WALL TILE: Daltile

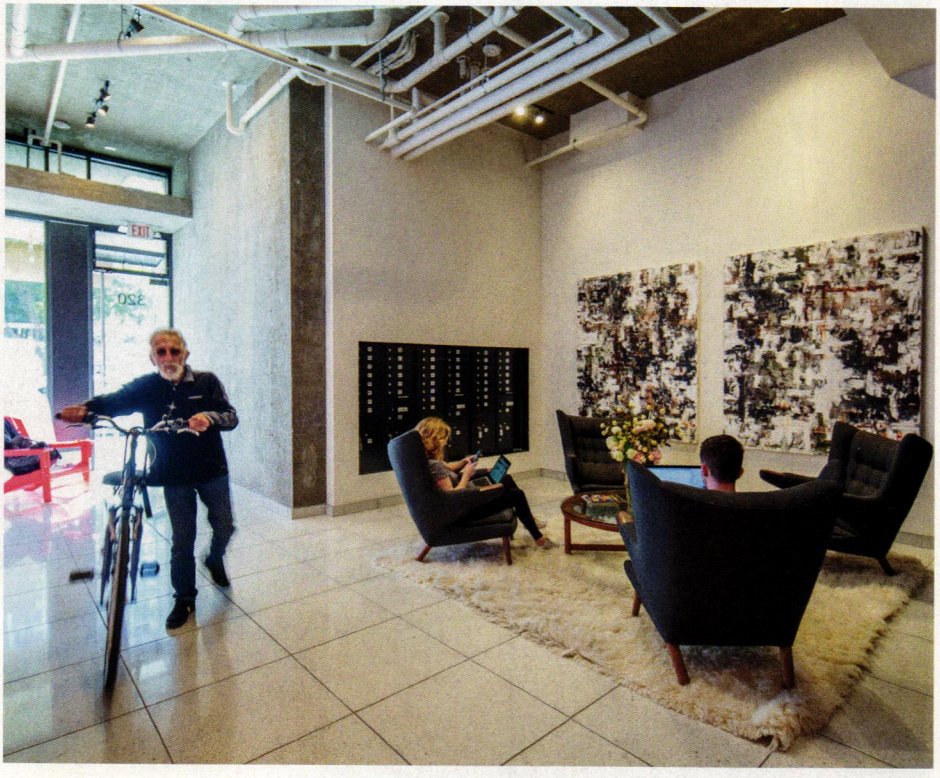
LIGHTING CONTROLS: Lutron

CONVEYANCE: Otis; McKinley; Garaveta

PLUMBING: American Standard; Symmons

ENERGY: LG; Enphase





THE ARCHITECTS invest in the long term with durable materials, such as exposed concrete and tile in the studios (top) and lobby (above). The owners' townhouse sits above a pharmacy (opposite).


2



Mass Appeal

Two types of multifamily housing by Merge Architects play off a legacy of New England Modernism.

BY SUZANNE STEPHENS
PHOTOGRAPHY BY JOHN HORNER

YOU MIGHT EXPECT a Boston-based firm to adhere to a proper New England architectural tradition when designing housing in a picturesque town in the Berkshires. Not so. Merge Architect's two multifamily housing structures, just added to a compound anchored by a 2016 residential conversion of the late 19th-century Cable Mills factory buildings in Williamstown, Massachusetts, is different. The firm eschews the regional architecture of white clapboard, black wood shutters, and gable roofs. Instead, the architects' approach reflects the Modernist direction that took hold in the 1930s and '40s in the Northeast after the International Style began to have an impact in that part of the country.

But what took root here was not necessarily akin to the machine-like, abstracted designs in the famous 1932 Museum of Modern Art exhibition, curated by Philip Johnson and Henry-Russell Hitchcock. Rather it was a hybrid Modernism that explored regional materials and building techniques typical of rural and industrial buildings, such as board-and-batten wood siding, timber framing, and vernacular, single-pitched roofs.

RIVER HOUSES is planned as seven two-unit duplex structures, the first of which is complete (opposite) and overlooks a bike path that runs along the Green River (above). Charcoal gray board-and-batten of fiber cement alternates with Alaskan yellow cedar.

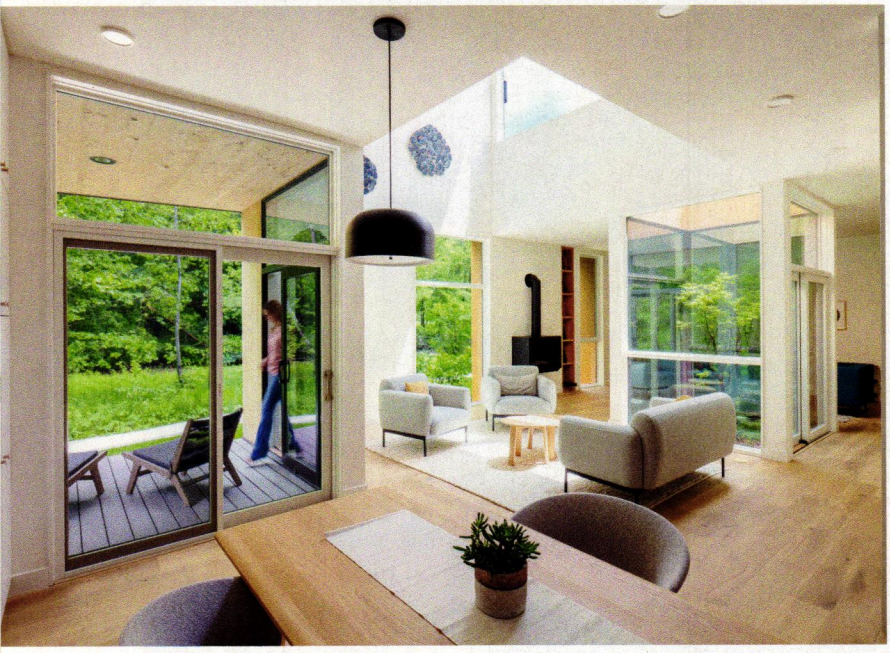
And that concept is alive and well today in Merge's new Williamstown housing projects, albeit updated in materials and design elements.

The firm's Modern Mill is a two-story, six-apartment building, while the River Houses eventually will be a row of seven structures, each with two duplex units (only the first of which has been built so far). Because the original conversion of the Cable Mills factory received tax credits, the National Park Service and the Massachusetts Historical Commission had a say in the design considerations, such as building heights, roof shapes, and the choice of materials.

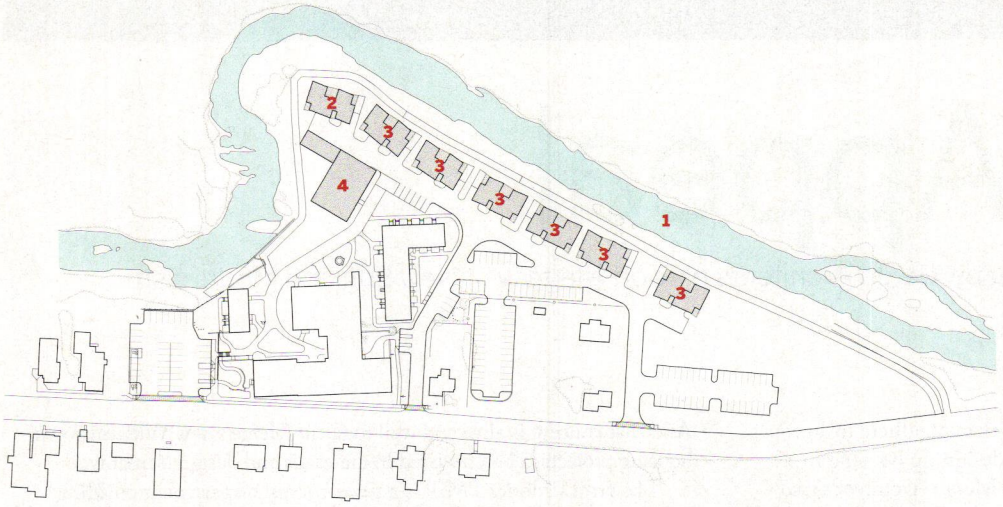
With the first of the River Houses, Merge carved out the volumes and pulled them apart to create voids for carports, patios, and porches. The charcoal gray board-and-batten exterior is actually fiber cement, and alternates with Alaskan yellow cedar, punctuated by gray brick at the entrances.

The six additional two-unit houses will extend along the Green River, which bends around the back of the site. As Elizabeth Whittaker, Merge's principal, explains, the next one will feature more yellow cedar on the exterior, with the charcoal gray fiber cement board lining the carved-out portions; the third house will revert to a charcoal wrapping with yellow cedar for indented areas, and so on, in a do-si-do rhythm.

In Modern Mill, the exterior cladding combines a terra-cotta-



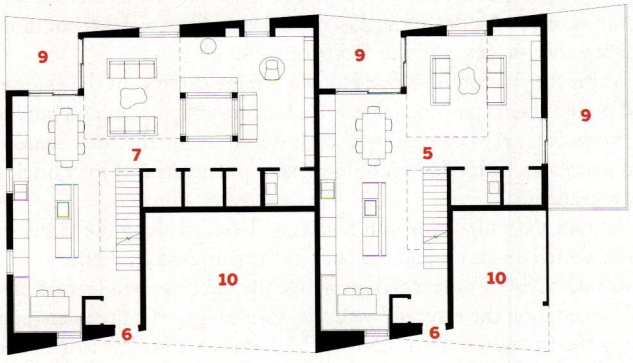




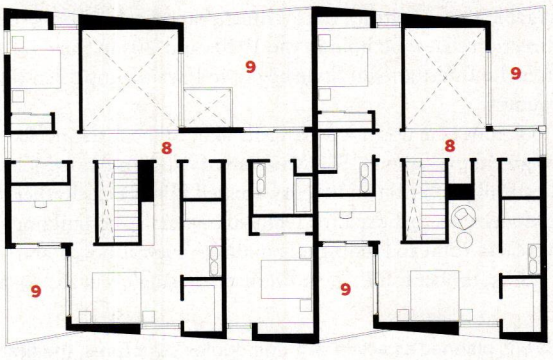
1 GREEN RIVER
2 RIVER HOUSES (COMPLETED)
3 RIVER HOUSES (UNFINISHED)
4 MODERN MILL
5 UNIT 2 LIVING SPACES
6 DUPLEX ENTRANCE
7 UNIT 1, WITH ATRIUM
8 BEDROOM LEVEL
9 PATIO
10 CARPORT

SITE PLAN

0 150 FT.
50 M.



RIVER HOUSES FIRST-FLOOR PLAN



RIVER HOUSES SECOND-FLOOR PLAN

0 10 FT.
3 M.



MODERN MILL is a second component of the condominium apartments at Cable Mills. Here terra-cotta-colored fly ash and polymer panels alternate with Alaskan yellow cedar (above). In River Houses, two views of a duplex living area (opposite) demonstrate how the atrium brings light into the living and dining spaces.

painted fly ash-and-polymer material for the carved-out spaces, with Alaskan yellow cedar tongue-and-groove panels. Those narrow planks are articulated with fins to give the low rectilinear block a sense of verticality. Since Modern Mill is closer than the River Houses to the converted factory buildings, its rusty hues and solid shapes were intended to fit in somewhat with the complex of 1870s redbrick buildings. The new structure's subtle single-pitched roof makes a gesture to the industrial-mill typology.

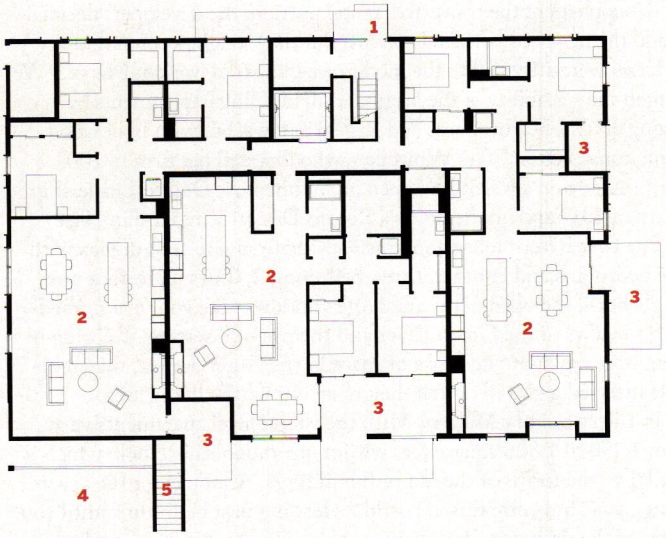
When Mitchell Properties and Traggorth Companies found the neglected nine-acre property in the mid-2000s, they commissioned Boston architects Finegold Alexander to adapt eight factory structures to 61 rental apartments with high ceilings and black-steel-framed windows. The developers had seen an opportunity to provide multi-family housing close to the center of Williamstown and to the Williams College campus. Although the town's population is only 6,000—swelling by 2,000 during normal school years—the college and such cultural magnets as the Clark Art Institute, and MASS MoCA in nearby North Adams, have been attracting curators, academics, and other professionals (and some retirees) to the area and, it seems, to Cable Mills.

To supplement the converted, rental portion, the developers decided to add the newly constructed condos. But they sought a contemporary look and were attracted to the modernist-industrial work of Merge. "We wanted the sensibility of the original mill buildings' apartments by having double-height spaces and large windows, but with light wood frame construction," says Whittaker, who founded her firm in 2003. (Whittaker won a Record Women in Architecture Design Leadership award in 2017 and her firm was a Record Design Vanguard in 2014.)

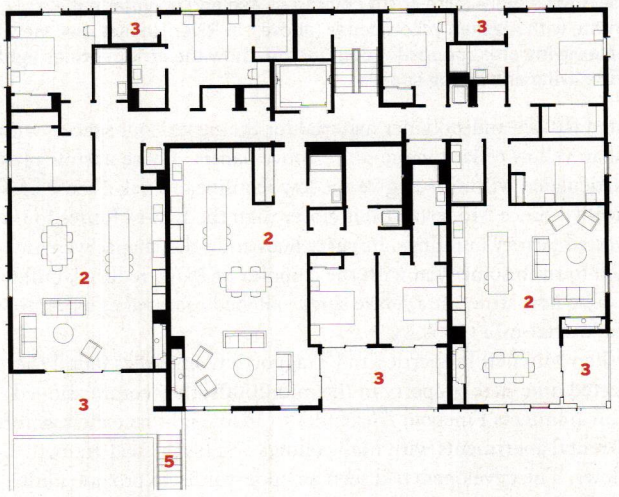
The first River House contains one 1,950-square-foot duplex with two bedrooms and another, three-bedroom, 2,400-square-foot unit. Inside both, the open plans and large windows take your eye immediately to views of the Green River and the pastoral setting. To bring in even more daylight and sense of space in the larger duplex, the architects inserted a glazed double-height atrium in the living area.

In the two-story Modern Mill, the single-level apartments vary from 1,450 to 1,800 square feet within one monolithic block, which is similar to the forms of the old mill buildings. As you enter the apartments, you find compressed corridors leading past bedrooms until you arrive at the dramatically expansive living/dining/kitchen area looking north to this building's own view of the Green River. "The game is to get you to the river," says Whittaker of the plan. (One exception is an apartment on the northeast corner abutting the carport, where daylight is admitted through clerestory windows. Since the second-floor apartment here overlooks the synthetic roofing for the carport, a prospective resident might want sedum to be installed on the roof at some point.)





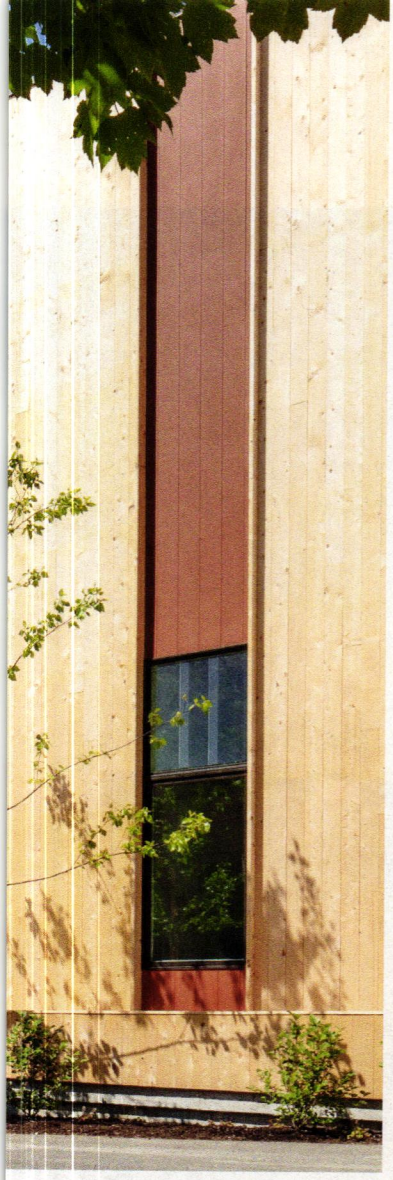
MODERN MILL FIRST-FLOOR PLAN



MODERN MILL SECOND-FLOOR PLAN

0 10 FT.
3 M.

1 ENTRY
2 APARTMENT UNIT
3 PATIO
4 CARPORT
5 OUTDOOR STAIR





While contemporary materials made of fiber cement and fly ash-and-polymer replace actual wood, and double-glazing substitutes for what typically would have been single-pane glass, the housing easily brings to mind its midcentury heritage. Merge introduces its own distinctive approach with more articulated surfaces and a highly defined volumetric play of mass and void. The architecture is recognizable as a current design response, yet cohabits nicely with its historic context, continuing a modern legacy that is now almost a hundred years old. ■

Credits

ARCHITECT: Merge Architects — Elizabeth Whittaker, principal; Jamie Pelletier, project manager and designer; Elana Abraham, designer

ENGINEERS: RSE Associates (structural); Johnson Engineering & Design (m/e/p); Guntlow & Associates (civil); McPhail Associates (geotech)

GENERAL CONTRACTOR: Salco Construction

CONSULTANTS: Offshoots (landscape); Accentech (acoustics); Code Red Consultants (code)

CLIENT: Traggorth Companies and Mitchell Properties

SIZE: 16,800 square feet (River House, 4,800 square feet; Modern Mill, 12,000 square feet)

COST: $4.8 million (River House, $2 million; Modern Mill, $2.8 million)

COMPLETION DATE: May 2020

Sources

FIBER CEMENT BOARD: James Hardie

FLY ASH AND POLYMER SIDING: Boral

WINDOWS AND DOORS: Pella

SKYLIGHTS: Bilco

PAINTS AND STAINS: Sherwin-Williams



MODERN MILL, a two-story block with six dwelling units is located close to the existing redbrick factory buldings that were previously converted to rental apartments (opposite). Modern Mill's apartment interiors feature large loftlike living spaces with views toward the river (top) and a kitchen/dining area (above) with abundant wood cabinetry.

Destiny's Child

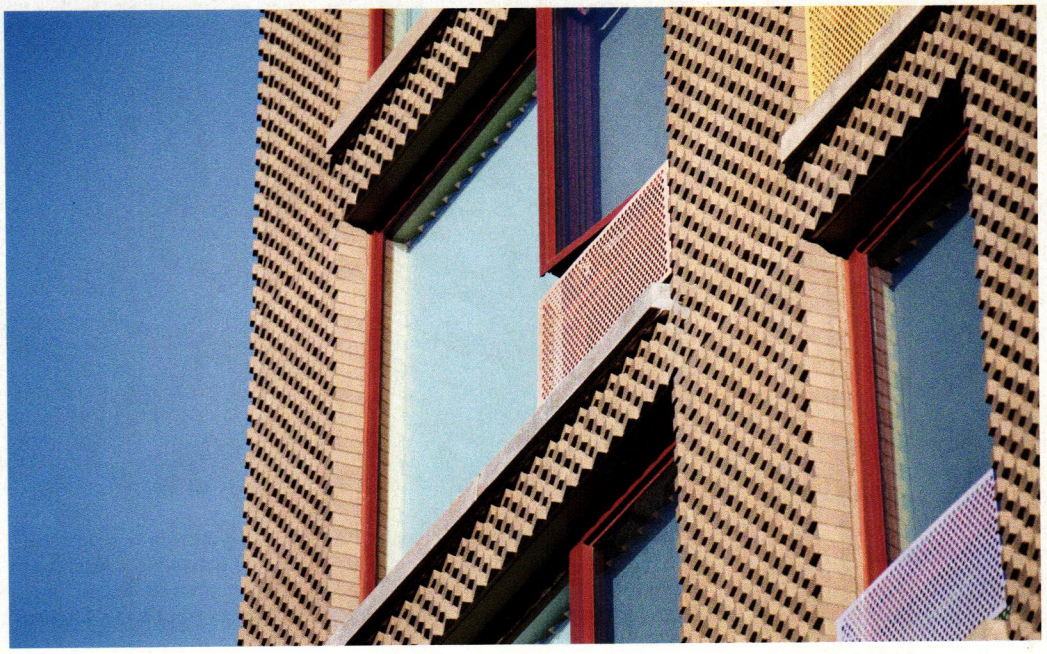
Alexander Gorlin brightens a once-notorious corner of the South Bronx with affordable apartments designed to provide more than shelter.

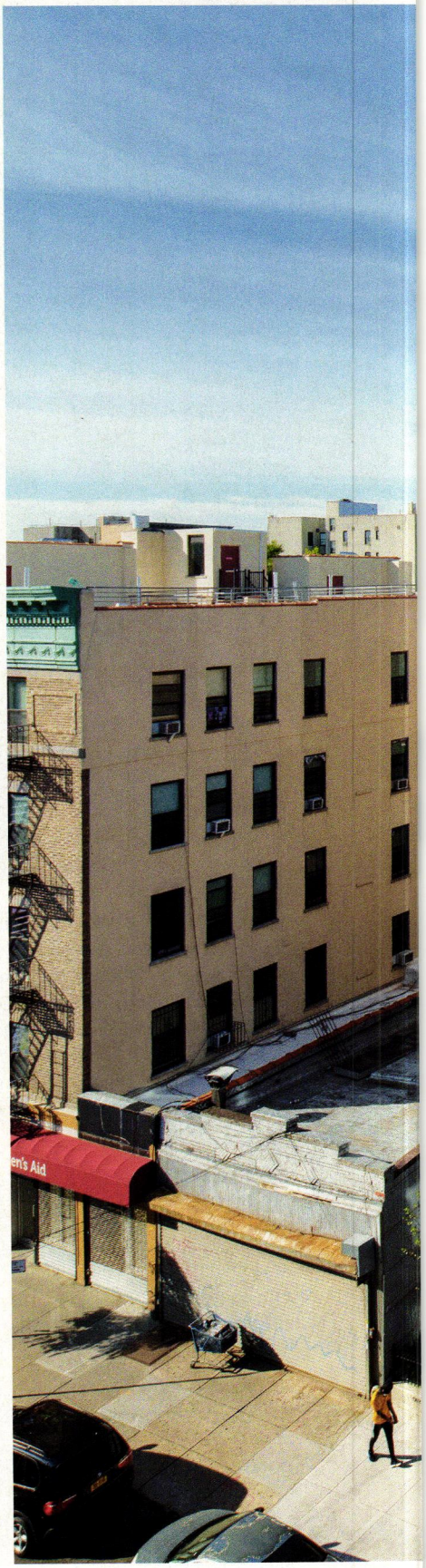
BY LINDA C. LENTZ
PHOTOGRAPHY BY ERIC PETSCHEK

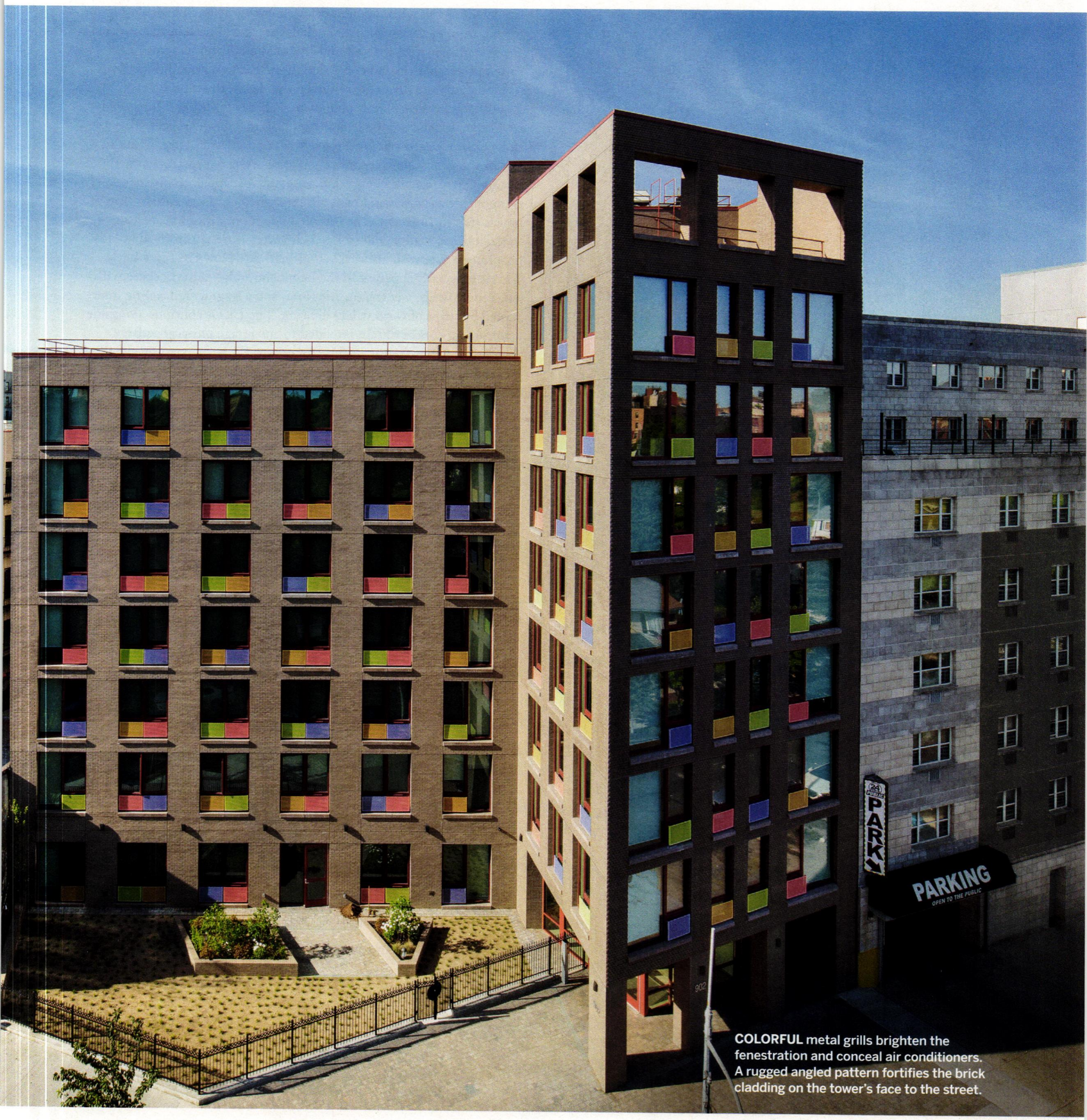
"EVERYONE should live in a dignified house," says architect Alexander Gorlin. The challenge, he explains, is that developers of affordable and supportive housing don't always emphasize design as a criterion. But Joan Beck, director of housing and development at New Destiny Housing, a New York nonprofit, was looking for more than just an adequate apartment block when she asked the Manhattan-based Gorlin to create a building in the South Bronx that would serve as a permanent address for survivors of domestic violence leaving the shelter system and other low-income families. She wanted him to imbue it with a sense of home. Completed last year, the brick-clad nine-story multifamily residence, punctuated by pastel-hued window grills inspired by Andy Warhol's *Flowers*, is an uplifting addition to a neighborhood once considered a poster child for urban blight.

The mid-block property faces a tight three-way intersection at the apex of a street that President Jimmy Carter visited 43 years ago to view an area devastated by disinvestment, arson, and neglect—with subsequent tours by presidents Reagan and Clinton in the 1980s and '90s to survey its gradual reconstruction. Gorlin had been there too, in 1978, when, as a Yale graduate student, he explored ways to "suburbanize" the Bronx in a class taught by Robert A.M. Stern. Given this personal connection, the site's provenance resonated with him, and he wanted to give the building a strong identity and presence.

Gorlin, whose practice ranges from similar housing and public schools to homes for the wealthy and work such as the reimagining of Eero Saarinen's Bell Labs (RECORD, February 2020), says he enjoys developing economical strategies with big impact for people. Here he employed massing, color, and the judicious use of quality materials to augment the basic block-and-plank structure. First the architect established an L-shaped plan, which maximized the specified number of units and left room for a front garden. This arrangement led to a welcoming building that opens to passersby with a tall, slender tower on the west thrusting toward the street with a protective loggia, and a broad, lower volume stepping back behind the garden. The design team then elevated the facade by cladding







COLORFUL metal grills brighten the fenestration and conceal air conditioners. A rugged angled pattern fortifies the brick cladding on the tower's face to the street.



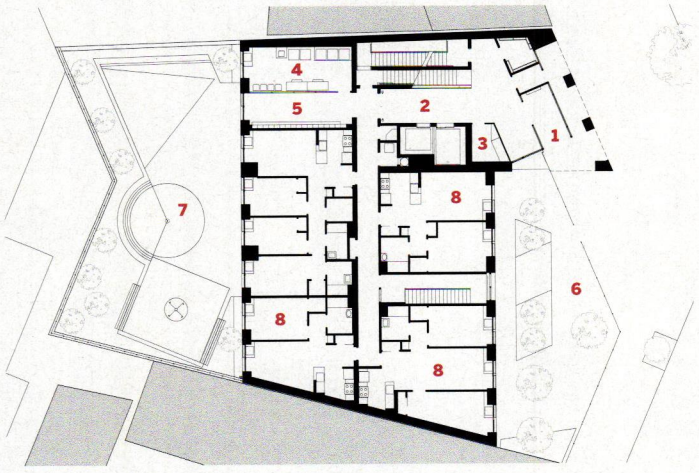
THE LOWER LEVEL opens to a rear garden and play space (above). Inside, Gorlin employed high-end details like an articulated ceiling in the oak-clad lobby (opposite, top) and daylit apartments with large windows, quartz counters, and discreet HVAC (opposite, bottom).

insulated CMUs with modular bricks in two gray hues, articulating the tower's front elevation with an angled, corrugated pattern that reflects the grid of the street with a visible heft. The colorful window grills soften this rigid skin and conceal high-efficiency air conditioners.

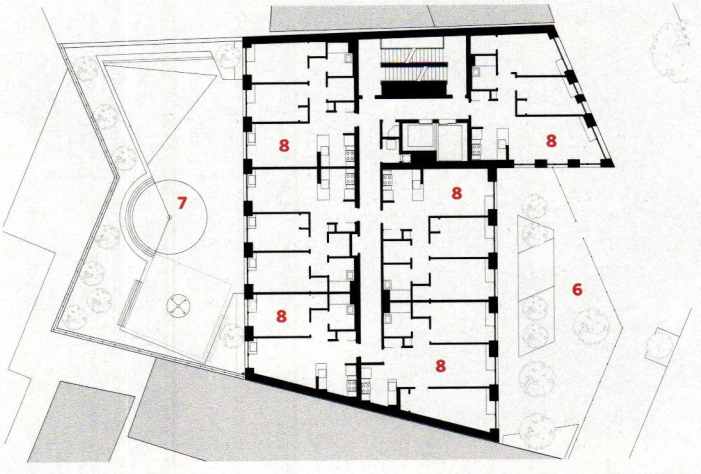
Designed under Enterprise Green standards, the subsidized 54,000-square-foot rental complex has 42 one-, two-, and three-bedroom apartments ranging in size from 550 to 950 square feet. Twenty-three units are reserved for the survivors of domestic abuse, while 19 are for the general low-income population. All are constructed with sustainable materials, energy-efficient systems, and such distinctive components as large windows with integrated shading, radiant-heat panels that sit flush with the ceiling, and air-conditioning enclosures that double as seating and storage. "It is very different from what most people associate with affordable housing," says New Destiny's Beck. This is especially apparent in the lobby, she adds—a daylit space with oak-veneer walls, a porcelain-tile floor, and a fragmented ceiling interrupted by strips of warm LED lighting. The LEDs continue alongside a prominent concrete stair, intended to encourage physical activity. Another gracious feature in this common space is an expansive window flanked by accessible mailboxes and a glazed laundry room, which looks out to a second garden and play yard behind the building.

This rear outdoor area borders the basement, a surprising space with 9-foot-high ceilings, tall windows, and glass doors. Making the most of an existing slope, the crew excavated to level the back of the site for the required play yard, resulting in the daylit lower floor that houses multipurpose and computer rooms for residents, plus offices for New Destiny's social services. The nonprofit not only builds and maintains its projects, it provides on-site counseling to assist tenants so they remain housed, safe, and on the road to economic independence.

Located on one of the last plots of land where a rubble-strewn urbanscape has been transformed into a bustling community, the project overlooks one of the earliest redevelopments here—a tree-lined cluster of subsidized suburban-style houses built in the 1980s to enable homeownership. "The setting is so family-friendly and pretty," says Beck. "I was lucky to find this site." Her satisfaction extends to the collaboration with Gorlin. "We asked him for a sense of home, and we got it." ■



FIRST-FLOOR PLAN



TYPICAL-FLOOR PLAN

1 ENTRANCE
2 LOBBY
3 MONITOR STATION
4 LAUNDRY ROOM
5 MAILBOXES
6 FRONT GARDEN
7 REAR GARDEN/PLAY YARD
8 APARTMENT

Credits

ARCHITECT: Alexander Gorlin Architects — Alexander Gorlin, principal; Quncie Williams, project architect; Reginald Dorce, Derek Supinsky, Daniel Schuetz, design team

ENGINEERS: OECIS (structural); OLA (m/e/p); JMC Site Development Consultants (civil)

GENERAL CONTRACTOR: Lettire Construction

CONSULTANT: Randy Sebedra (lighting design)

CLIENT: New Destiny Housing

SIZE: 54,000 square feet

COST: $18.7 million

COMPLETION DATE: October 2019

Sources

BRICK: Acme Brick; Pacific Clay Products

METAL PANELS: Accurate Perforating

GLAZING: VITRO/Solarban

WINDOWS: Quaker Windows & Doors

WINDOW SHADES: Phifer

DOORS: YKK; Long Island Fire Doors; Moderfold

HVAC: Airtex (radiant panels); LAARS (boilers)

FLOORS: Daltile; Halo Floors; Toli/CBCflooring

HARDWARE: Assa Abloy

PAINT: Benjamin Moore




360



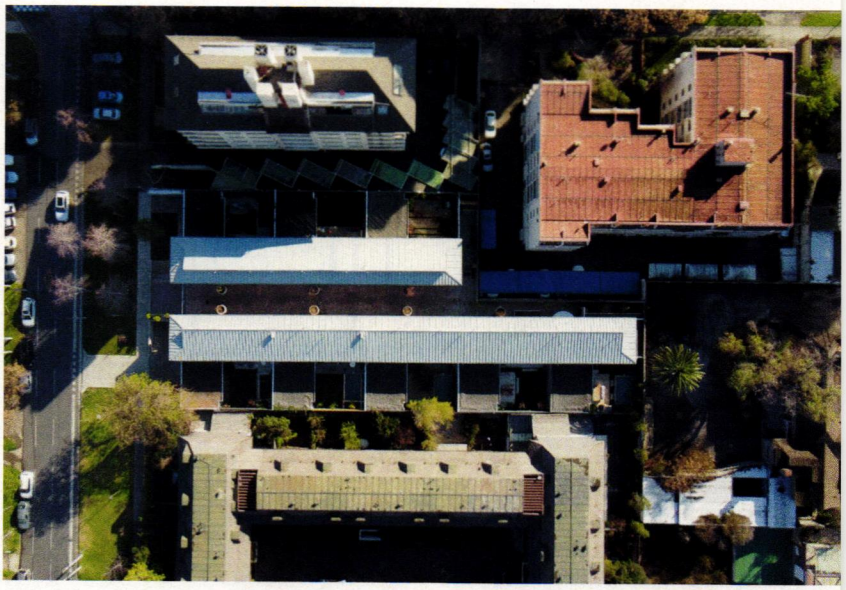
Against Type

Cristián Izquierdo juxtaposes two vastly different housing typologies for a small development in Chile.

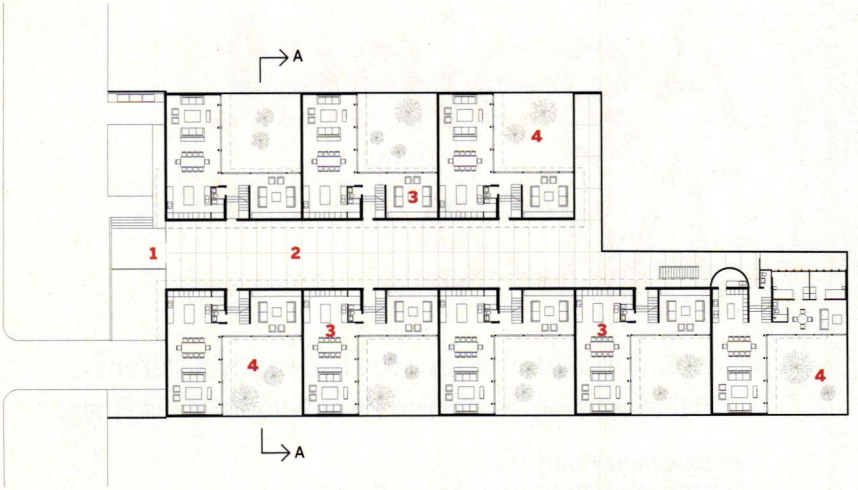
BY JOSEPHINE MINUTILLO
PHOTOGRAPHY BY PABLO CASALS AGUIRRE

UBER DRIVERS have trouble finding it. Passersby often don't know what it is. With a low profile and blind facade onto the street in an affluent area of Santiago where large estates have been replaced by commercial buildings and high-rises, one would hardly guess these modest wood boxes comprise a new housing development. Its architect, Cristián Izquierdo, a 2020 Design Vanguard, admits to playing with people's expectations, and wanting his buildings to be appreciated as something different. But the project's response to site restrictions, and its ingenious layout and impeccable detailing make it so much more.

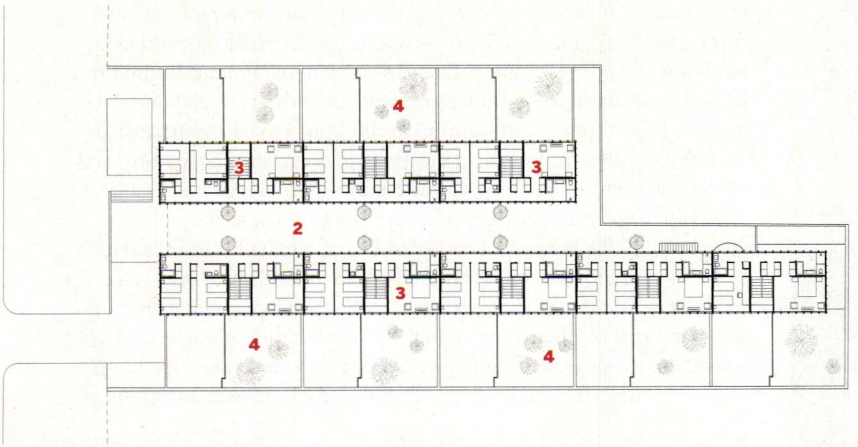
Zoning regulations change radically from this plot to the one next door, limiting the height and buildable area of Izquierdo's project, which he undertook with his contractor brother. To make the venture financially viable, they found prospective residents, who gave input on the design, and together all of them purchased the pricey but difficult parcel, which had sat empty for years. Building to capacity, Izquierdo developed eight nearly identical units, each roughly 2,750 square feet, in an arrangement



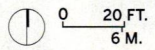
SET AMID much larger buildings, the two linear structures contain eight units, each with its own courtyard, on either side of a gated pedestrian alley.

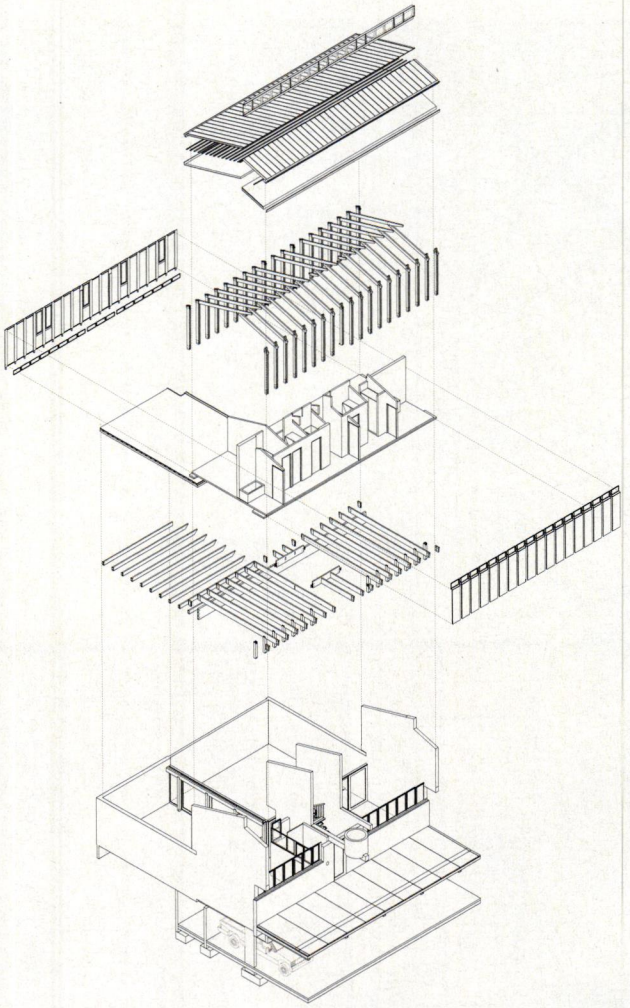


LEVEL-ONE PLAN

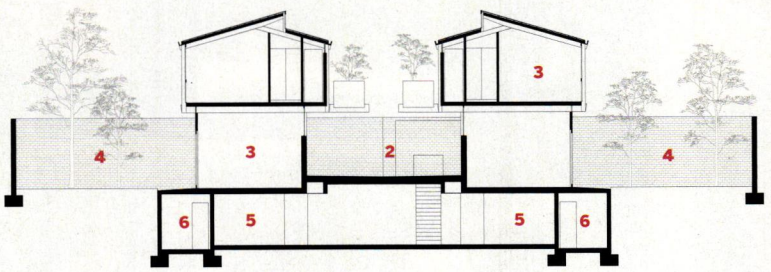


LEVEL-TWO PLAN

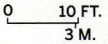




AXONOMETRIC



SECTION A - A



1 MAIN ENTRANCE
2 PEDESTRIAN ALLEY
3 APARTMENT
4 COURTYARD
5 PARKING
6 OFFICE/WORKSHOP

Credits

ARCHITECT: Cristián Izquierdo — Cristián Izquierdo, principal; Erica Passeti, Francisco Saul, design team

ENGINEER: Osvaldo Peñaloza M. (structural)

GENERAL CONTRACTOR: Tecton

CLIENT: Inmobiliaria Alcántara

SIZE: 22,000 square feet

COST: $6.8 million (total); $2.9 million (construction)

COMPLETION DATE: December 2019

Sources

LAMINATED PINEWOOD: Cortelima

METAL ROOF: Cubiertas Nacionales

HARDWARE: Italínea

STAINS: Osmo (interior), Cutek (exterior)

that is both familiar and completely new.

In Spanish tradition, houses are often designed around a courtyard, or patio, so the courtyard typology is one that is ubiquitous in Chile and rooted in its culture. Here, however, Izquierdo combines it with another typology more commonly associated with working-class accommodations in Santiago from the early 20th century: Cité housing, as it is known, was designed with narrow row buildings facing onto a pedestrian street to take advantage of natural light and ventilation. Extant examples in the city are scarce and often in bad condition, though some have now become popular living quarters among hipsters.

Taking "the best of both" typologies, as he says, Izquierdo designed two bars—the shorter, north one containing three units, the longer bar to the south, five—around a 23-foot-wide gated pedestrian alley accessible only to residents. The floor plans of the units are mirrored across the alley, where the main entrance steps down nearly 2 feet into each unit. An expansive L-shaped living area surrounding a private walled courtyard on the ground floor transitions to a linear structure on the upper level, where bedrooms are arranged in se-



FLOOR-TO-CEILING glazing in the living area (top) and bedrooms on the second level (above) overlooks the private walled courtyards.



WANTING the pedestrian alley to be as green as possible while leaving space for children to play, the architect located large planters overhead.

quence. A basement provides parking and additional space for an office or workshop, daylit from the courtyard above.

Though combining typologies gives the project the aspect of collage, Izquierdo wanted to maintain a single structure. "Formally, it appears continuous," he says. "But the individual spaces each have a different quality." The material of choice for this project—and almost all of the single-family residences the young architect has designed before it—is wood. "This will be the leitmotif of my career," he jokes.

While Izquierdo is attracted to both the haptic and sustainable qualities of wood, his interest in the natural material also has to do with his interest in architectural joinery, and creating a building made of many small parts. "The relationship of elements is more important than the element itself," he says. "There is a balance between columns and beams here that is related to classical architecture." The structure consists mainly of laminated pine, which also serves as the interior finish in combination with painted plasterboard, but concealed steel joints and concrete walls provide additional support in this earthquake-prone country. A prefabricated wood beam with steel diagonals running east–west in the roof of each linear, gabled 21-foot-high structure takes seismic loads along that axis.

The exterior is clad in shingles of alerce, a type of cypress that doesn't need maintenance. The individual boards were affixed with six custom-designed screw attachments, a time-consuming process that required skilled handiwork. The blind facades on the street and over the pedestrian alley, which are covered so prominently in this uncommon wood, open up to walls of glass facing the courtyards.

Izquierdo did well to draw on precedents and integrate tenets of classical architecture, but he also did something completely startling by suspending planters in the pedestrian alley, 9 feet above the entrance of the units. Four feet in diameter, the pots are planted with Japanese maple and rest on concrete beams projecting 5 feet from the building envelope. "I wanted the alley to be very green without impeding the children's play," says Izquierdo, who also planted climbing jasmine to grow on the walls. "Without the trees and plants, the buildings would be too monumental." Instead, the greenery—and the unexpected way some of it is inserted—is a whimsical counterpoint to the formal continuity the architect so desired. ■

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Environmental Inequity

As the brunt of the climate emergency falls on disadvantaged communities, green design must sharpen its focus on social values.

BY KATHARINE LOGAN





PHOTOGRAPHY: © BRUCE DAMONTE

NEW AFFORDABLE housing by LMSA in San Francisco has a sawtooth facade that admits daylight to the units from multiple directions. PV panels supply almost all of the electricity needed for the common areas.

"SUSTAINABILITY WITHOUT EQUITY is sustaining inequity." That's how Mandy Lee, program manager of the NAACP's Centering Equity in the Sustainable Building Sector (CESBS) Initiative, sums up the green building movement's long-standing tendency to shortchange social factors. "Like many other environmental efforts, green buildings are not reaching Black and brown communities," she says.

This is especially problematic as the climate crisis heats up, and the disproportionate burdens on already disadvantaged communities start to compound. "We're on both sides of that double-edged sword," says Jacqueline Patterson, senior director of the NAACP's Environmental and Climate Justice Program. "Our communities are the sacrifice zone for fossil-fuel-based energy generation, and we are disproportionately impacted by the results of climate change."

Whether it's air pollution, urban heat islands, wildfire risk, flooding, or substandard buildings in earthquake and hurricane zones, communities of color are more likely to find themselves in harm's way. Of the 2 million Americans living within three miles of the 12 dirtiest coal-power plants, 76 percent are people of color. In 108 urban areas across the country, 94 percent of formerly redlined neighborhoods are hotter than nearby non-redlined areas, by as much as 7 degrees. (Redlining was the historical practice of refusing mortgages or insurance to whole neighborhoods based on racially motivated considerations, which in some areas continues de facto, if illegal, discrimination.) Census tracts that are majority Black, Hispanic, or Native American experience about 50 percent greater vulnerability to wildfire compared to other census tracts. The list goes on.

Just to mitigate these threats is not enough. The real goal in designing for communities on the front lines of climate change, says Patterson, is to shift the benchmark from merely surviving to thriving, embracing culture, and fostering the ability to pursue a fulfilling life.

To see what that could look like, RECORD checked in with architects working on solutions at four scales. At the building scale, Leddy Maytum Stacy Architects recently completed Edwin M. Lee Apartments in San Francisco; at the community scale, Mithun's collaboration with the residents of North Richmond, California, as part of the Resilient By Design Bay Area Challenge; at the urban and watershed scales, an advocacy-through-design effort led by Rice University's Present/Future program; and at the scale of the architecture profession itself, the University of Oregon's Design for Social Justice Initiative.

Leddy Maytum Stacy Architects (LMSA) has long operated at the intersection of sustainable design and social equity, and the recently opened Edwin M. Lee Apartments (with associate architects Saida + Sullivan Design Partners) exemplifies this work. "While climate-change-related challenges are universal, they disproportionately affect low-income and homeless people, who have fewer resources and options to address them," says LMSA partner Richard Stacy, echoing Patterson's comments. A variety of socioeconomic factors—such as poverty, race, and physical or mental challenges—can generate overlapping circles of inequity. "Our focus was on making this the most equitable and the most sustainable project it can be," says Stacy.

Developed by the nonprofits Chinatown Community Development Center and Swords to Plowshares, and named in honor of the late San Francisco mayor for his affordable-housing advocacy, the 124,000-square-foot building in the Mission Bay neighborhood provides 62 apartments for formerly homeless veterans and 57 apartments for families earning less than 60 percent of area median income (AMI), or





TO OPTIMIZE passive-energy performance while offering a place for respite, LMSA organized the housing around a south-facing garden (left). Community areas (below) have direct access to this shared outdoor space.

about $69,000 for a family of three. Integrating strategies to improve resilience, reduce resource consumption, and improve residents' quality of life has put the project on track to achieve Platinum certification from GreenPoint Rated—a California-based standard for residential construction. It allocates points in categories that encompass energy and water efficiency, indoor air quality, and community. While social justice isn't a stated goal, the program includes credits for such equity-enhancing measures as universal design and affordability. Identifying synergies between the twin priorities of sustainability and social justice was key to achieving the project's goals on an affordable housing budget, says Stacy.

The five-story building is organized around a south-facing landscaped courtyard, which optimizes passive-energy performance and daylighting while offering areas for contemplation, gardening, and play. The first floor is elevated, a tactic that anticipates sea-level rise (with a hinged slab at each building threshold to maintain an accessible entrance even as the sidewalk—built on fill on a former marsh—continues to subside). In the meantime, the raised floor improves the privacy of first-level units.

The building is ventilated with filtered 100 percent outdoor air, which supports residents' health day to day, as well as when wildfire smoke makes it hazardous to open a window.

A sawtooth facade provides each unit with more than one outlook and admits daylight from multiple directions. Its rainscreen cladding of colorful cementitious panels improves the building's thermal and weather performance and durability. And its building-integrated photovoltaic panels generate more than 90 percent of the electricity needed to power the project's common areas. In addition to its technical performance, says Stacy, "the dramatic and contemporary exterior helps bring pride of place to affordable housing."

Pride of place emerged as a priority at the community level in Mithun's collaboration with North Richmond, California, as part of the 2018 Resilient By Design (RBD) Bay Area Challenge. The Challenge connected design professionals and area communities to catalyze ideas and collaborations and work toward a comprehensive regional plan. The location of the unincorporated district (population, about 5,000) between two flood-prone creeks, an oil refinery, and a major arterial highway that separates the neighborhood from the shore—combined with structural race-based injustices and economic barriers—have impeded residents' efforts to improve their quality of life. So, although the RBD Challenge originated as a quest for ways to manage the region's growing flood risks, "we couldn't think about resilience and climate response without first thinking about the deep disparities of wealth in the Bay Area," says Hilary Noll, sustainability integration leader at Mithun.

The year-long design project, known as ouR-HOME (with the R referring to both "Richmond" and "Resilient"), generated a suite of community-driven concepts for North Richmond that prioritize strategies for neighborhood stabilization and homeownership, as well as for living with rising water. Examples of the former include a community land trust to acquire vacant lots, and a zoning overlay to allow small-lot splits (subdivisions of existing urban sites to facilitate more compact and affordable developments). Examples of strategies for living with water include an innovative horizontal levee to protect the community

PHOTOGRAPHY: © BRUCE DAMONTE



THE OUR-HOME resiliency scheme for North Richmond, California, includes a horizontal levee (above) and a highway overpass (below) that would connect the community to the waterfront.

and low-lying infrastructure from rising tides while also serving as an accessible, migrating edge to a habitat-rich marsh.

To ensure ouR-HOME's design expressed community priorities, Mithun's approach was grounded in deep listening, says Noll, "rather than the design team parachuting in as white saviors." The Home Team (as the collaboration called itself), included an advisory board of community-nominated participants from diverse perspectives such as local nonprofits, water-infrastructure management, and estuary conservation. These representatives were paid a stipend for their time. Mithun also retained the Oakland-based Institute for Sustainable Economic Educational and Environmental Design (ISEEED) to facilitate meetings, so that people of color were speaking to people of color while the designers listened. "One of the big takeaways," says Debra Guenther, a partner at Mithun, "is that, as designers, we're designing a process as much as a tangible thing."

With previous outsider-led initiatives, says Princess Robinson, a member of the Home Team's advisory board and a project manager with local nonprofit Urban Tilth, "what we've seen in most cases is that anything new being built has no relationship to the residents that actually live here." But this time was different. "The team just came in so open," Robinson says. "It created a space where we're all working together, and those relationships are ongoing." In addition to the design solutions themselves, the strengthened social infrastructure (which includes connections to city and county planners) is responsible for continuing progress two years later.

A newly formed nonprofit is now shepherding the housing concepts forward, and the zoning overlay for small-lot splits has been well received by the county planning department in preliminary discussions. The levee is garnering broad support from a diverse range of interested parties. And a creek-trail activation program is continuing until resources become available to build an overpass that will connect the trail to the waterfront.

Where ouR-HOME is developing strategies for adapting in place, graduate studios in Rice University School of Architecture's Present/Future program, Houston, are developing proposals for responding to that city's persistent flooding with managed retreat (the purposeful and coordinated movement of people and buildings away from risk).

In 2017, Hurricane Harvey put a third of Houston under water, wreaking $125 billion worth of damage. A year later, of houses that had been badly damaged, 27 percent of Hispanic- and 20 percent of Black-owned homes remained unsafe, compared to 11 percent of white-owned homes. "Climate change is a force multiplier," says Albert Pope, director of the Present/Future program. It intensifies existing problems so that "the people who get hurt the most are those who are the most disadvantaged in the first place."

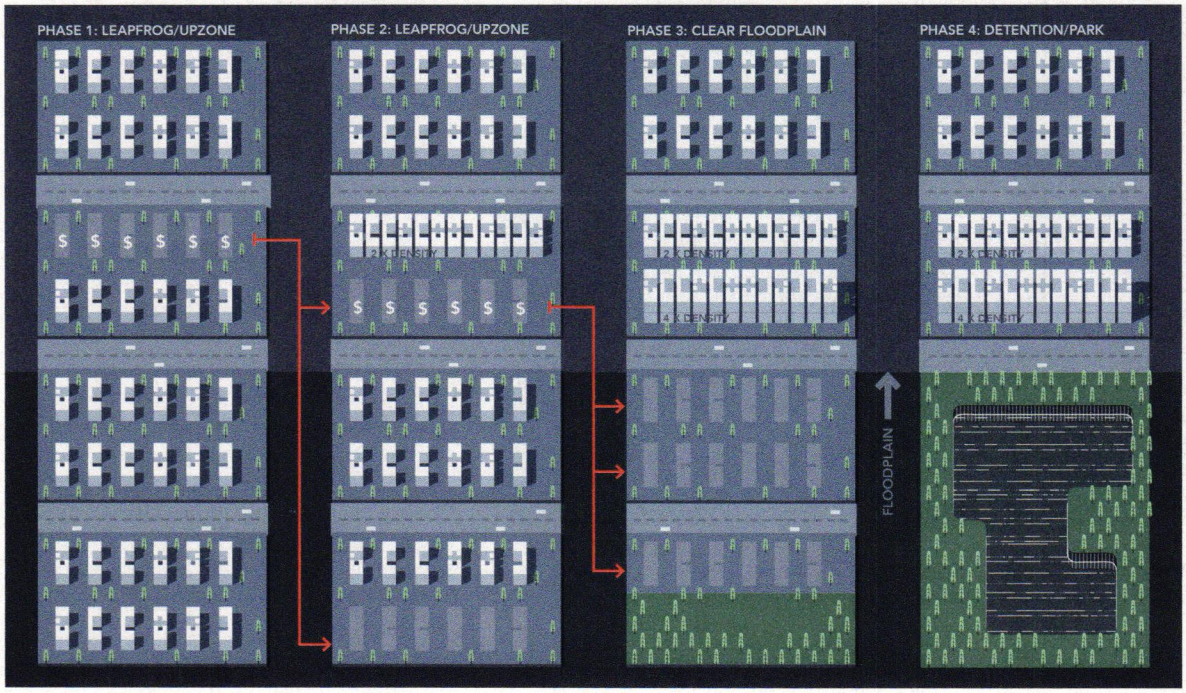
Surveys of residents of Westbury, a low-income, flood-prone Hispanic and Black neighborhood in Houston's Brays Bayou watershed, found that many wanted to move, but their insurance would only cover renovations—it wouldn't buy them out. Although the Harris County Flood Control District has been buying vulnerable properties on an ad hoc basis for the past 35 years, so far it has accounted for only 3,500 of the approximately 100,000 buildings in the bayou system's 100-year floodplain. Not only is this pace ineffective, "there's no plan for the buyout," Pope says, "which means you're not paying attention to how you're transforming the city."

Taking up the slack, Pope and the graduate students in his studios, in partnership with the Rice Design Alliance, the university's Department of Anthropology, and community leaders, have developed proposals to demonstrate that addressing climate risk, social and environmental inequity, and urban reform together can achieve a greater return on investment than large engineering projects that simply move water around.

The concept is this: buy out untenable upstream properties and convert them to flood-retention infrastructure. And design the infrastructure as public green space, connecting to a network of trails, so that when the land is dry



IMAGES: COURTESY MITHUN



TO TACKLE chronic flooding in low-lying areas of Houston, a program at Rice University has outlined a phased managed-retreat strategy that would enhance resilience and be largely self-financing.

(which is nearly all of the time), it's an amenity. Use additional buyouts fronting on the green space to replace and increase housing by building back more densely, with respect for the water, thereby also improving energy and transportation metrics and overall livability. Critical to the social equity of the scheme are measures to ensure that former residents of the bought-out properties have the opportunity, and can afford, to move into the new housing.

Strategic phasing of the scheme would allow it to be largely self-financing, especially if the costs of averted downstream flooding are taken into account. "This is an opportunity to make these areas safe," says Pope, "and, at the same time, to make the city better."

While these proposals have succeeded in stimulating discussion, and district officials increasingly see the need for a comprehensive approach to floodplain reclamation, inertia behind the status quo is enormous. That's why Pope and his students are developing alternatives proactively. "As designers, we need to be ready for a sea change in the economics and politics of managed retreat," he says. "The point of our proposals is to show that design is indispensable to any solution."

For the most part, however, equity-fostering and climate-facing projects like the ones profiled here are still far too uncommon. "One of the things we're trying to articulate with the CESBS Initiative is that the AEC sector is not really active in environmental justice right now," says the NAACP's Lee.

As advocates and practitioners begin working to change that, architecture schools are also taking steps. For example, the University of Oregon (UO), which was an early adopter of environmentalism in architectural education, has now implemented an innovative program to incorporate social justice.

Supported philanthropically by a group of Portland- and Seattle-based architecture firms, UO School of Architecture and Environment's Design for Spatial Justice Initiative (DSJI) recruits cohorts of visiting faculty to integrate under-represented perspectives into the architecture curriculum. The initiative also flips students' assumptions about social vulnerability by acknowledging community representatives as instructors, rather than beneficiaries, of studio work.

At first glance, the DSJI might look like a diversity initiative to change the demographics of the faculty, or a pedagogical initiative to change what's being taught—both of which are true, says Erin Moore, director of UO's School of Architecture and Environment. But beyond that, "it's significant to see a person from an underrepresented group who is affected by these disproportionate impacts teaching the topics from lived experience."

Ultimately, says the NAACP's Lee, "we're trying to completely reorient the green building movement so that sustainability is defined as having racial justice and economic justice—in addition to environmental stewardship—at the center." She's summing up the goal of the CESBS Initiative, but she could be describing the DSJI, the Rice floodplain reclamation plan, ouR-HOME, or the Ed Lee Apartments: it is an aspiration that all of these projects share. ■

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Learning Objectives

1. Discuss why climate change disproportionately affects the health and well-being of disadvantaged communities.
2. Describe some initiatives to tackle these inequities in the built environment and the architecture profession.
3. Describe methods for creating designs that reflect a community's priorities and support its well-being.
4. Discuss how green building standards address social justice issues.

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Multifamily Design in 2020

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Successful Perimeter Fire Containment

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Trends in Daylighting and Tunable Lighting

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BE IN PM

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Lighting Effects with Coiled Wire Fabric

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Multifamily buildings have been impacted by the events of 2020 in ways that influence their design and the effects on their residents.

Photo courtesy of NanaWall Systems

Multifamily Design in 2020

New health concerns blend with standard criteria to foster new solutions

Sponsored by Inpro, NanaWall Systems, New Millennium Building Systems, Rocky Mountain Hardware, and TAMLYN

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

The 2020 COVID-19 pandemic has affected many aspects of life, including multifamily residential design. With more people working or being schooled from home—a trend that is likely to continue into the future—the importance of the living/working/learning environment has received a lot of attention. This has played out in a variety of ways related to the design of multifamily buildings and living units, and it has also brought more attention to the health aspects of many materials and systems used in these buildings. Of course, there remain all of the usual requirements of multifamily design and performance that need to be taken into account as well. This course explores a variety of strategies, products, and systems to help enhance the creation of multifamily housing in 2020 and beyond. Topics include big-picture issues such as indoor/outdoor connectivity and structural systems, as well as details related to facades, hardware, expansion joints, and elevator cabs. In all, it is attention to all of these important aspects that combine to create successful multifamily projects for this current time.

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Learning Objectives

After reading this article, you should be able to:

1. Identify the design opportunities to enhance the health of residents and visitors in multifamily buildings.
2. Assess the safety performance aspects of materials and systems that can be incorporated into multifamily properties.
3. Explain the significance of multifamily design as it promotes the welfare of the residents, particularly during extended periods at home.
4. Determine ways to incorporate the principles presented into multifamily buildings as shown in case studies.

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INDOOR/OUTDOOR CONNECTIONS WITH OPENING GLASS WALLS

Many multifamily residents are interested in better ways to connect their indoor spaces to the outdoors for better ventilation, daylight, and a sense of expanding beyond the confines of a living unit. In particular, there is a desire to create the same sense of space of living in a single-family residence with the ability to integrate the indoors and outside. Toward that end, architects have used opening glass walls to achieve all of these objectives in many multifamily buildings. In locations where the geography provides desirable views, everybody likes that opening glass walls can provide unobstructed sight planes to take full advantage of these vistas. In most settings, the overall intent is to allow a large, uninterrupted opening between an indoor and outdoor space, thus making smaller spaces feel larger or simply allowing people to feel more connected to the outdoors. Further, building owners like that opening glass walls can enhance the value of dwelling units or help differentiate their buildings from other multifamily properties to create unique market offerings.

Photo courtesy of NanaWall Systems



Opening glass wall systems provide a range of design options to help multifamily spaces achieve indoor/outdoor connections.

Opening Glass Wall Design Traits

All opening glass walls are comprised of individual panels that include the glass and, in most cases, a frame around it (some are frameless glass too). The makeup of the individual panels can be specified to suit a project based on a number of standard options. The frames can be either solid wood or aluminum, or a combination in the form of aluminum-clad wood.

There are two basic ways that the panels can be put together into a full opening glass wall systems. The first, and most common by far, is a folding glass wall system, which represents 80 percent of all systems installed in the United States. Some reasons for this include the fact that folding glass walls are easier to operate and have better air and water performance than other systems. From a structural standpoint, the dead load of a folding system is kept within the plane of the opening, with the panels capable of being either top supported or floor mounted. Floor-supported folding glass walls allow for easier design, as the weight of the system is on the floor and offers smoother operation.

The second type of opening glass wall system uses individual sliding panels that are guided on one or more tracks in the floor or overhead. While these are much less common in multifamily buildings, they may be considered as a more economical choice for separating common or public areas. The panels may also have swing doors incorporated into them wherever desired so that the entire wall does not need to be open for people to pass through.

Opening Glass Wall Performance Characteristics

While windows and door systems are typically a performance weak spot, operable glass wall products can address thermal needs, high wind loads, and air and water infiltration suitable for mid-and high-rise applications. When aluminum frames are selected, they can include thermal breaks, while the glass in the panels can be selected to suit exterior conditions with single, double, or triple glazing from which to choose. There are also all of the usual choices for treating the glass for enhanced energy performance (low-e coatings, inert gas filled, other coatings, etc.). Folding glass wall systems are available that have been independently tested and shown to be capable of meeting the demands of these situations, contributing to the availability of ENERGY STAR products.

When it comes to the structural integrity of opening glass walls in high wind conditions, they have been tested to perform well up to 70 PSF (positive) and 100 PSF (negative) for folding glass walls, and up to 60 PSF for sliding systems. In terms of maintaining security in the building, all have been shown to provide excellent forced-entry resistance when tested per AAMA 1304 and ASTM F842. And since sound is often a concern in multifamily housing, the systems have been tested and can achieve sound attenuation ratings up to a significant STC 42.

When looking at these different performance characteristics, keep in mind that inward opening folding glass wall systems offer better performance and safety capabilities than outward opening systems since the wind dynamics are a bit different. They are also easier to clean since both sides of the glass panels are accessible from the inside. The sills of the folding glass wall systems will make an impact on performance as well. Folding glass wall systems with ADA (low-profile) sills need to be assessed in terms of water resistance compared to some others. Still other sills with higher profiles have been found to support higher water-resistance ratings during field testing.

Overall, it is easy to see why opening glass walls have been used in a variety of multifamily projects across North America.


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STRUCTURAL FLOOR SYSTEMS

The most common structural systems used in multistory construction are based on either concrete or steel, a combination of the two, or even combinations with wood in some cases. The selection is typically determined by the specific criteria and needs of a given project for not only structural strength but also fire safety, sound separation, and coordination with other building systems and finishes. Some of these criteria are dictated by code and safety concerns, and others by comfort and marketing issues. To address all of these, one approach that is gaining in popularity is a "thin-slab" composite floor system. Fundamentally, this hybrid system is based on using engineered steel decks and poured concrete acting together to create a long-span floor that requires fewer intermediate supports. As such, it can be a more economical yet high-performing system to consider.

Long-span composite floor systems are available in different deck profiles and a variety of depths. One of the most appropriate versions for multifamily buildings is a dovetail-shaped profile that provides a low profile that can integrate with virtually any beam (e.g., wide flange, low-profile composite steel, or concrete beam) or bearing-wall method. On top of the deck, monolithically poured concrete finishes flat so it eliminates the need for grouting and floor leveling activities. The system employs dovetail-shaped steel composite deck to establish the thinnest total floor depth possible, ideal for multistory projects. Combined with a concrete slab, the 2-inch and 3.5-inch dovetail composite deck profiles create floor depths as thin as 4 inches. Overall, this system blends the speed and versatility of steel with the performance and durability of concrete in a system that can weigh up to 40 percent less than comparable cast-in-place (CIP) concrete floors.

While a range of advantages are offered by the dovetail long-span composite floor system, the following three are most notable.

Thinner Floors

Thinner floor systems mean that floor-to-floor heights can be shorter while still maintaining desired ceiling heights. For example, a 12-story building using conventional cast-in-place concrete floors can alternatively be designed using a 2-inch dovetail composite floor and end up accommodating an entire extra floor within the same overall building height. Similarly, a six-story building can be reduced in height without reducing floor-to-ceiling heights. This space-efficient design translates into higher potential revenue options for the project owner with increased area and occupancy options. Alternatively, it can optimize multistory construction since the floor-to-floor heights are reduced. This occurs because the structure spanning between load-bearing walls or beams is only comprised of the composite slab without the use of additional joists, trusses, or girders hanging down below. This is particularly helpful in locations where the overall building height is limited due to zoning requirements. Often an added story means more income for a building owner and may improve the overall project's financial picture considerably.

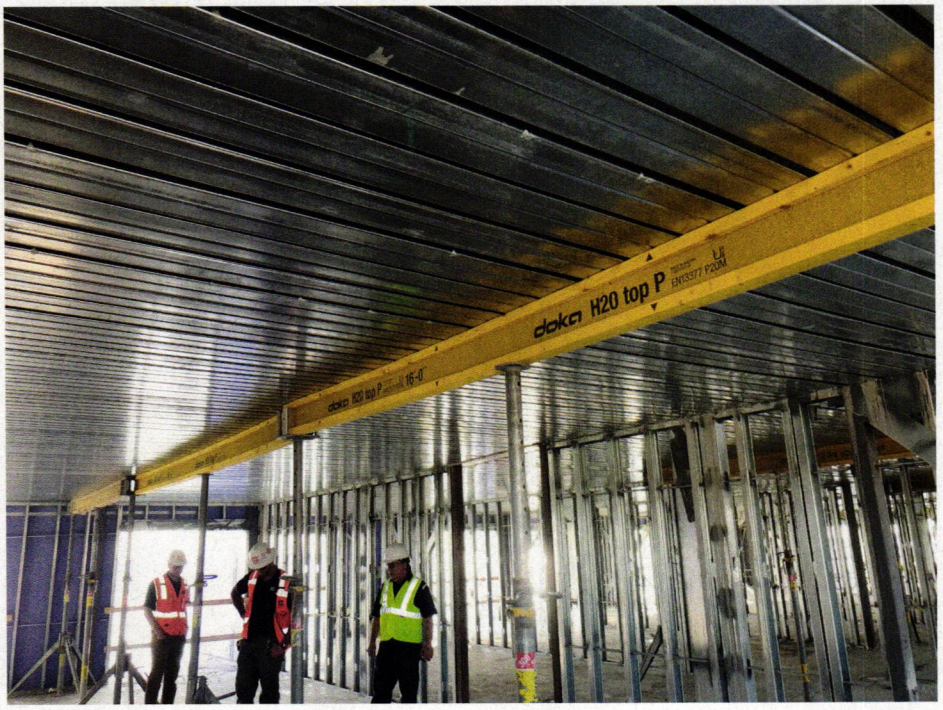
UL Head-of-Wall Barriers

Also unique to the dovetail long-span composite floor system is the ability to stagger the placement of the dovetail sections to create barriers to the transmission of fire, smoke, and sound. These elements cannot pass between separated spaces because they are sealed off at the top of the bearing wall with the inclusion of an end closure. The UL-tested solution eliminates the cost of placing expensive fire sealants in the deck flutes when set upon cold-formed steel (CFS) bearing walls.

Overall Cost Efficiency

Architects using long-span composite floor systems can contribute significantly to reductions in the construction timeline and the total cost of a multistory project. Specifying a dovetail composite floor deck and CFS load-bearing demising walls has provided a surprising set of cost benefits compared to other construction approaches, such as post-tensioned concrete. The significantly lighter-weight dovetail composite floors can often be supported by a spread concrete footing foundation and may eliminate the need for piles and pile caps in some cases. By virtue of the longer composite floor spans, support columns can be reduced, and those required can be smaller in girth. Floor spans can reach 16 feet without shoring. The thinner, faster-curing composite system allows for tighter scheduling of the trades that follow in the schedule, including plumbing and other rough-in work. There are documented cases where many weeks were removed from the project timeline using this approach.

With all of the above as a basis, multistory residential design can learn much about the total project cost and performance advantages made possible by a dovetail long-span composite floor system.



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Long-span composite floor systems can reduce weight, interior supports, and overall project time and costs.

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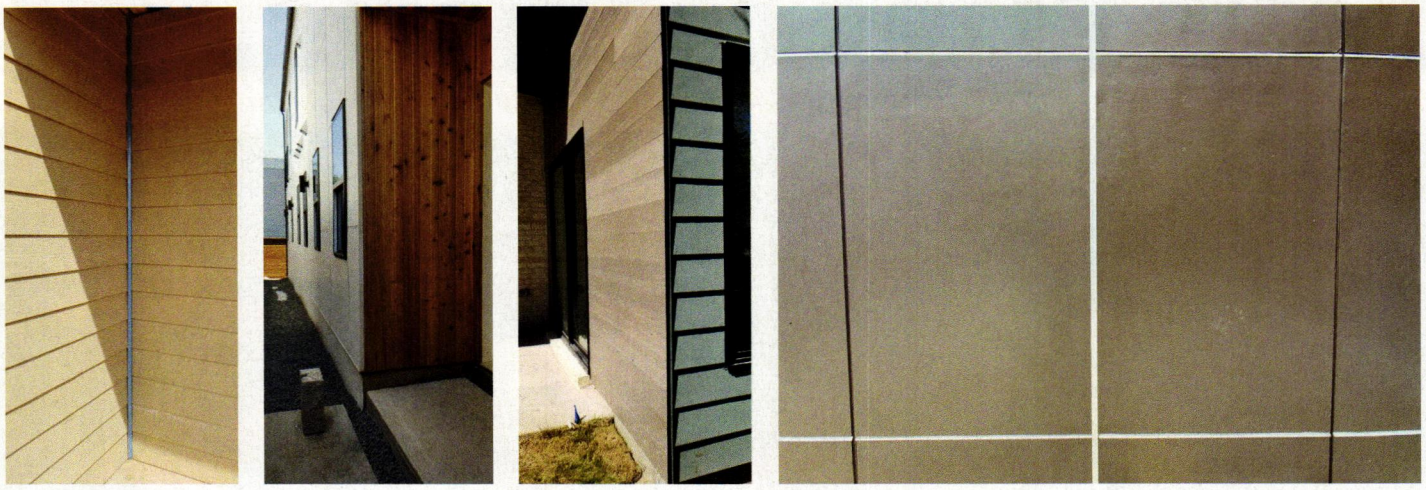


Extruded aluminum trim can be used for a variety of conditions between similar siding materials or as smooth transitions between different types at inside and outside corners, edges, and other locations.

EXTERIOR AND INTERIOR DETAILS

One of the key drivers to the short-term and long-term success of multifamily projects are the details that influence both the design and longevity of these buildings. Design details can tie different materials together or give them distinction and separation. Material details can make the difference between low maintenance and good looks over time or unsightly and costly deterioration. This attention to detail is true whether the building follows a traditional, contemporary, or modern design vocabulary. This is played out quite notably in the type of trim materials that are used on both the exterior and interior of multifamily buildings.

Exterior Panel Trim

One of the better ways to achieve a panelized, modern look on a building facade is to use a lightweight cladding over a framed wall assembly. Commonly, this cladding is incorporated from standard-size panels or lapped siding made from fiber cement, composite material, engineered wood, or even thin composite aluminum panels. Designing with such materials is fairly straightforward, but attention needs to be paid to the way the panels are secured to the building and how the edges, joints, transitions, and other details of the panels or siding are addressed. Typically some sort of trim has been applied to accomplish this using wood, composite, or plastic-based materials. While these are effective and can be good for some buildings, their width, bulk, and ongoing maintenance can make them less desirable for use and detract from the overall facade design.

As an alternative to traditional exterior trim, many architects are turning to the use of thin extruded aluminum trim systems. The use of extruded aluminum in buildings in general is common due to the versatile nature of the material and its durability. When used to hold the edges of exterior wall panels, it provides architects with a unique means to detail corners, vertical and horizontal joints, and material transitions. It can be specified in common thicknesses and profiles to suit any of the lightweight cladding materials already mentioned. Extruded aluminum trim can even be provided in sizes and styles that work with multiple panels, enabling architects to vary the material choices within their facade designs while still keeping details that will have a similar language. The variety of available extrusion profiles can create a recessed reveal between cladding panels or project outward to accentuate the lines of the design. Used in any of these ways, it has typically been shown to be less expensive with a more elegant look of clean lines than with other options.

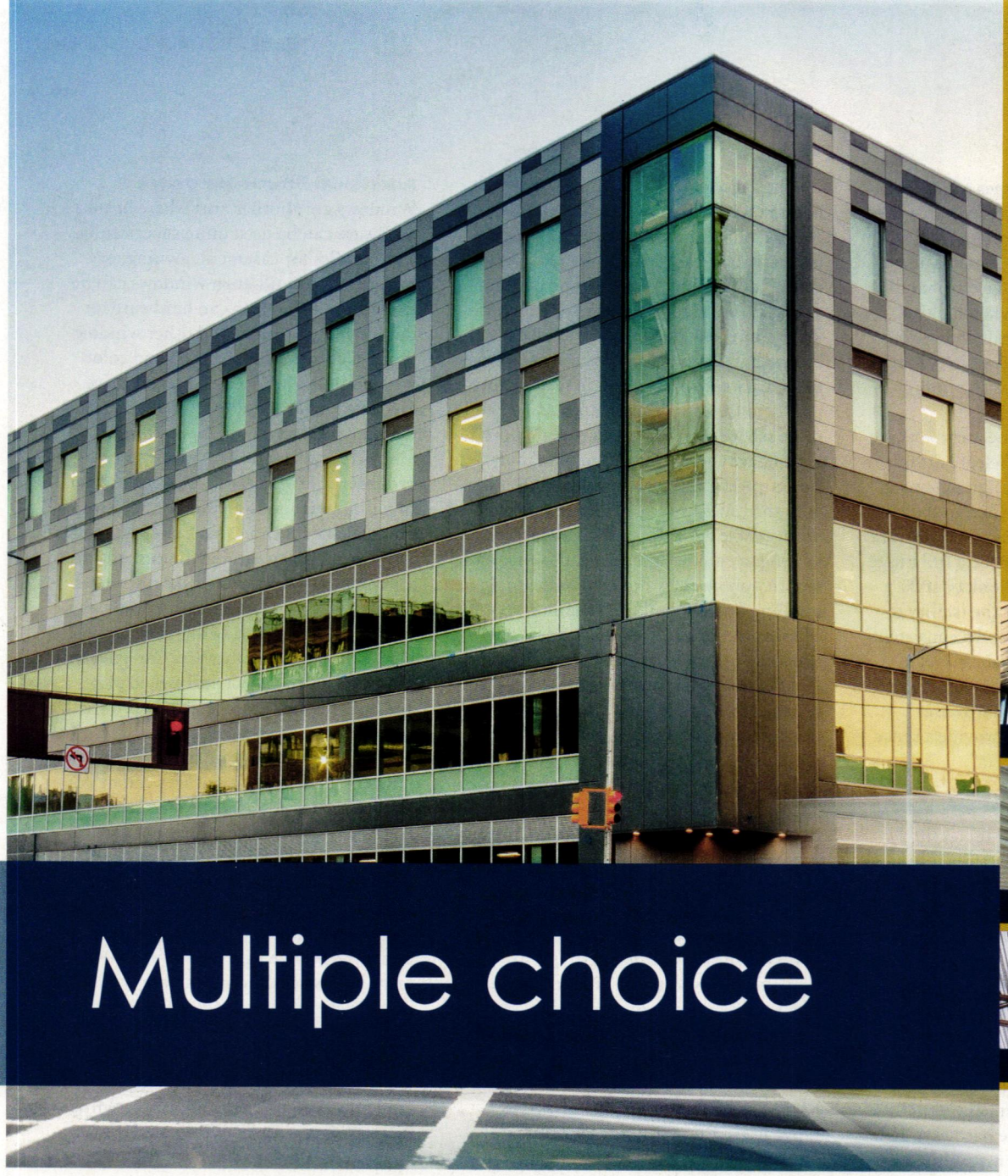
Interior Panel Trim

On the interior of multifamily buildings, similar systems can be used to carry a design scheme inside. Gypsum board or interior panel products can be surrounded by thin extruded aluminum trim, creating similar clean lines and geometric delineation on interior wall surfaces. This can produce clean and advanced details for an otherwise utilitarian product without requiring specialized metal work in the field. Such interior aluminum trim can provide unique profiles, which help to take a strong, well-known product in drywall and give architects and designers the opportunity to add new details, patterns, and design impacts. In multifamily developments, aluminum trim can be used to create bold corners or wall bases in addition to delineating wall panel patterns.

Of course, the color of the trim is an important design consideration, regardless of the exterior or interior location. Fortunately, there are many options beyond the standard mill-finish aluminum coloring. Extruded aluminum trim can be specified as finished with only a paint primer ready to receive final finish coats in the field of virtually any color. Alternatively, it can be specified as prefinished in the factory reducing, further the on-site labor needs. The prefinished choices vary by manufacturer but typically include durable powder coat paint, conventional wet paint coatings, or anodized aluminum in standard colors. In this regard, the trim can appear to blend in with the adjacent panels or cladding, or it can be used to highlight all or some of the visual lines it creates. This flexibility using familiar and long-lasting finish options means that both the design and performance level can be controlled.

HARDWARE AS A UNIFYING DESIGN ELEMENT

Multifamily properties typically have the need for a lot of hardware. Every door, window, cupboard, bathroom, kitchen, and other locations needs decorative and utilitarian hardware to open, close, lock, or simply perform a static function. The more



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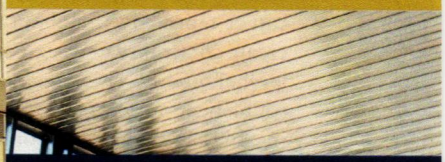

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living units and different types of spaces in a multifamily building, the more hardware that is needed. Of course, much of this hardware is not only visible, but it is also a surface that is regularly touched by hands, so it is noticed. Therefore, when looking at an overall design of individual dwelling units or a total building, this visible, touchable hardware can make a lasting impression on the people who use it.

In light of the above, some architects are starting to look for ways to select hardware that enhances the overall design scheme of a multifamily building. Further, to the extent possible, they are looking for hardware manufacturers that can provide a full range of hardware so a particular look or style can be repeated throughout the facility to create continuity of design and a consistent level of quality. This can create a level of sophistication across a project and, depending on the type and style of hardware selected, be a simple way to provide a sense of luxury.

Bronze Door Hardware

One type of hardware that is increasingly being used to achieve these results is bronze hardware. Bronze has been used for artistic and utilitarian purposes for thousands of years. In recent times, it has become a choice for quality, artisan products that are quite economical over the life of the building. As an alloy of copper and other nonferrous metals, it is inherently strong and resistant to rust and corrosion. Although a dark appearance is most common and provides a distinctive look, there are actually a variety of colors that bronze hardware can be finished in based on the metals used.

The range of hardware and accessory items made from bronze for multifamily construction is broad and diverse. Door hardware is available in a wide range of choices of styles, types, sizes, and appearances. In multifamily settings, the durability and integrity portrayed by a substantial bronze handset and lockset promote a sense of security and safety. And, in fact, quality products are available that are stronger and more secure than some lesser-quality products, hence comparing different manufacturers' products is worthwhile. In keeping with the times, these entry door systems are available with electronic controls and locking to enhance the user experience and security of the entry doors to individual dwelling units or building common areas. These include touch pad and keyless options and other smart lock entry systems. Further, some manufacturers offer special pricing for multiple entry door lock and hardware systems of the same type, helping projects stay within budget.

Beyond entry doors, the passage hardware for other doors can be provided in bronze too. These can be made in lever style or knob style as a project may require, and in a wide variety of looks that are standard or custom. Relatedly, miscellaneous hardware associated with doors such as door stops, hooks, hangers, etc. are all available in coordinated bronze offerings too. Even cabinetry doors and drawers can use a matching bronze hardware style to round out a complete unit design. In this case, knobs, handles, and other related hardware can be selected from a wide range of traditional, contemporary, and modern styles.

Additional Bronze Hardware

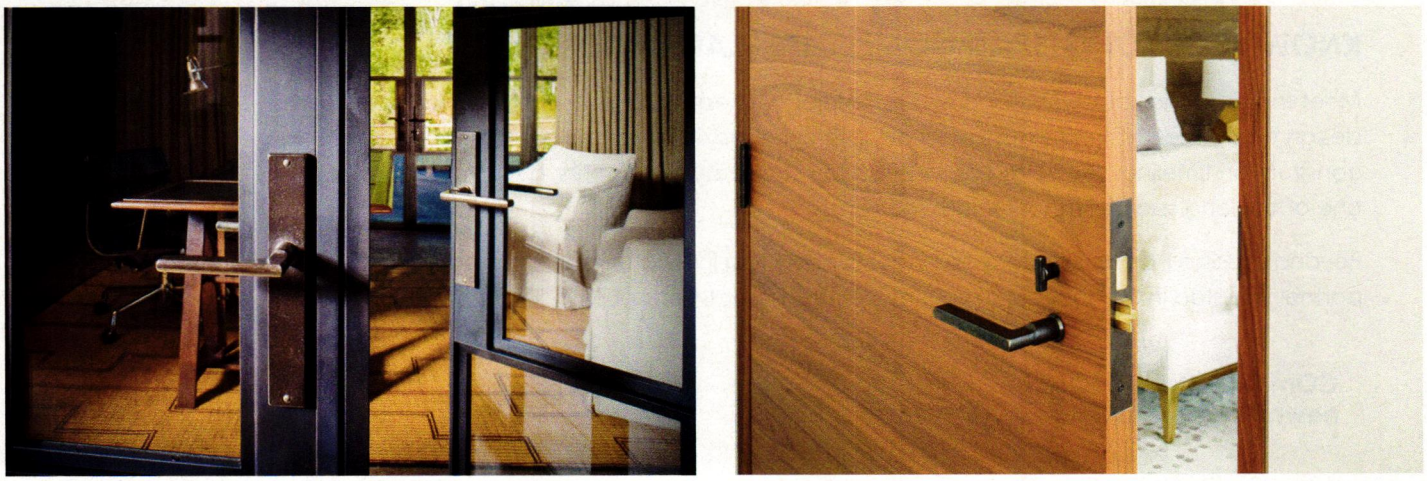
Windows are another area where bronze hardware can be used quite successfully. The handles for casement, awning, or European-style tilt/turn windows can be made from bronze, as can hardware for double-hung, sliding, and other window types. Coordinating the style and color with door hardware can be an effective and sometimes unexpected way to create design continuity within a building.

There is also the opportunity to use bronze in a variety of other discreet ways in multifamily housing. Bronze accessories are available for things such as apartment/unit door numbers and mail slots, or signs for common public spaces like restrooms. For stairways, handrail brackets and balusters can be used that can match or complement other bronze hardware. Carrying this a bit further, even electrical switch plates and outlet covers are available in bronze to create a very coordinated look.

Not to be overlooked, bathrooms, kitchens, and lighting fixtures can be considered too. Nonferrous bronze is ideal for any wet location since it does not oxidize (rust) the way that iron-based metals do. Faucets, sinks, shower controls, and other offerings fabricated from bronze overcome these issues and create striking visuals. Similarly, bronze lighting fixtures hold up extremely well outdoors and are available in a variety of artistic styles and looks for all locations.

Overall, bronze hardware, fixtures, and accessories can help unify and upgrade the design of multifamily buildings in a significant and sophisticated way to promote the look and appeal desired.

Photos courtesy of Rocky Mountain Hardware



Bronze hardware for entry and passage doors are a popular choice for multifamily buildings in a variety of styles and colors.

EXPANSION JOINTS

Large buildings, including multifamily buildings and their associated parking structures, often require expansion joints to control movement. When this is the case, there are several things to consider, including the following.

Type of Movement

Thermal movements are caused by daily environmental temperature changes in and around the structure. Thermal movement is primarily one directional in nature and is the result of the expansion and contraction of the building as it is affected by heat, cold, and humidity. Seismic activity is caused by shifting of the earth's tectonic plates (i.e., earthquakes, tremors, etc.). Seismic movement in buildings may be horizontal, vertical, in shear, or a combination of all three. Wind-load-induced movement is caused by high winds forcing the structure to sway. Wind-load-induced movement is normally perpendicular and/or parallel to the joint. This is common where a low horizontal building span meets with a taller vertical element, such as the communal space of a multifamily building adjacent a high-rise component.

Nominal Joint Size

The nominal joint size is the designed width of an opening at a median temperature as dictated by the structural engineer. The expansion joint system selected needs to accommodate the minimum and maximum dimensions of the movement range for the given joint width. For thermal concerns, this means the joint needs to move at least 25 percent in both directions (e.g., a 4-inch joint needs to be able to shrink to 3 inches or expand to 5 inches at any given time). For seismic and wind-load concerns, the joint needs to be able to move 50 percent in either direction (e.g., a 12-inch joint needs to be able to shrink to 6 inches or expand to 18 inches at any given time). Note that seismic joint widths may increase with higher floor levels as well.

Photo courtesy of Inpro



The form and appearance of expansion joints in multifamily buildings can vary based on the selection of type and materials.

Joint Applications and Locations

The design of the project will determine whether it includes interior joints, exterior joints, or both. Typical interior application conditions of expansion joint systems include floors, walls, ceilings, and roofs. However, joints may be needed on exterior building veneers, soffits, parking decks, patios, and roofing systems as well.

Loading Requirements

Different expansion joint systems have different capabilities to withstand the daily wear and tear of the building use. Floor joints in particular are subject to different types of traffic, such as pedestrians, equipment, or vehicular. The room location, such as a heavily used lobby or corridor compared to storage spaces or ancillary spaces, will influence the loading as either uniform, rolling, or concentrated. Consider the route for tenants to move their belongings in and out of a multifamily building. If there is an expansion joint in that location, it will be subject to repeated rolling loads.

Form and Appearance

Different expansion joint systems bring different appearances: some look simple and utilitarian, others include metallic covers, while still others can accept inserts of finish materials. Depending on the desired aesthetic, anodized metal finishes, Kynar coatings, or foam seal colors can all be considered to either complement the decor, provide an accent, or minimize its appearance. Final selection can be based on things like the room location, adjacent finishes, or simply the nature of the multifamily building.

Fire Resistance or Moisture Control

Sometimes, expansion joints need to cross areas that must fire resistive or retard vapor and moisture. In these cases, the selected expansion joint systems need to provide evidence of providing such capabilities. Vapor-resistant expansion joints need to be tested to show their degree of permeability to moisture or vapor. Fire-rated joints should be tested to meet ASTM E1966 and E1399. Note that water infiltration will usually destroy fire barriers, therefore systems with an integrated water guard (with proper drainage) can keep barriers dry and effective.

Photo courtesy of Inpro



Discussions with clients about elevator cab updates should be part of preplanning for any renovation project. New cab panels, trims, ceilings, and LED lighting bring such projects to full-circle completeness.

ELEVATOR CABS

Among the most used spaces in a multistory, multifamily building are the elevator cabs. As such, these cabs are subject to deterioration and damage precisely because of their heavy use. This damage gives the impression that the owner does not care about upkeep of the building, which in turn may create a negative perception of the entire organization. Therefore, the elevator cabs need to be upgraded regularly either to overcome a worn and unsightly appearance or simply upgrade the look to be consistent with the rest of the building.

Continues at ce.architecturalrecord.com

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

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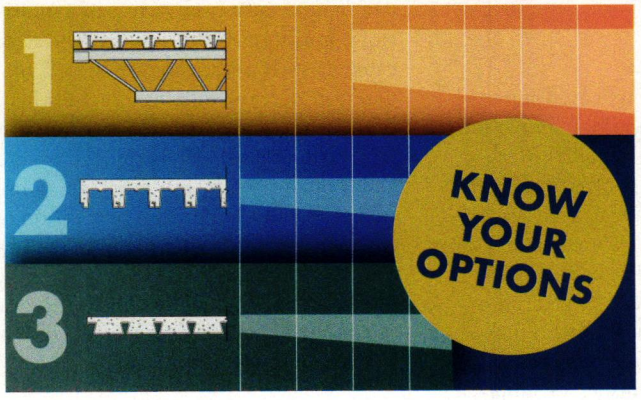

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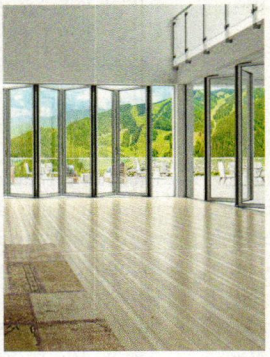

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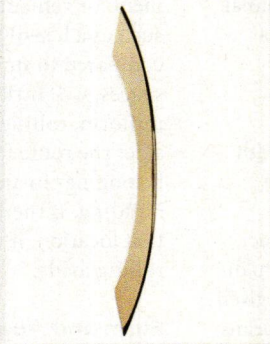

Bronze Crescent Grip

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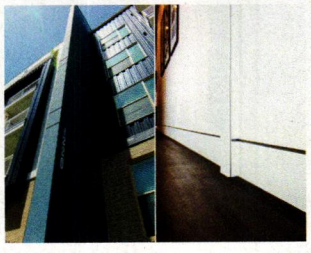

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Photo courtesy Courtesy of Cascade Architectural



Coiled wire fabric was used as a visual design element and safety feature around the elevator shaft and stairways at the VGM Group's Iowa headquarters.

Health-Care Design for All

Architects and designers have many choices for enhancing accessibility, performance, and well-being in health-care environments

Sponsored by Aamsco Lighting, Cascade Architectural, and Inpro

By Juliet Grable

Hospitals and other health-care facilities have special considerations when it comes to the health, safety, and welfare of their occupants. Sanitation and cleanliness are of upmost importance. Residents and patients may be older or immune compromised, and thus more vulnerable to disease-causing pathogens than healthy people. In addition, health-care facilities often see a higher proportion of people with special needs when it comes to mobility and access. Care providers must be able to effectively perform their work. At the same time, the building design should ideally promote healing through design choices that create a warm and comforting environment. Finally, the building should be safe, secure, and easy to navigate.

The transmission of infectious disease is a serious problem in hospitals and other health-care settings. The COVID-19 pandemic has underscored the importance of mitigating this risk while also maintaining flexibility. Sometimes spaces may need to be rapidly reconfigured to accommodate an influx of patients. At the same time, staff must help prevent the spread of highly infectious disease pathogens. Together, these concerns drive nearly every design choice, from floorplan design and layout to lighting design and the selection of surfaces, finishes, and fixtures.

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Learning Objectives

After reading this article, you should be able to:

1. Describe how coiled metal wire panels can be used to divide interior spaces while maintaining good airflow.
2. Identify the features of accessible restrooms that facilitate good hygiene and access to medications.
3. Explain how antimicrobial products and materials can reduce the spread of health-care-associated infections (HAIs).
4. List products and materials that can hold up to rigorous cleaning regimens in health-care environments.
5. Discuss how lighting can impact the safety, health, and well-being of patients and residents in health-care settings.

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.

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DESIGN FOR QUALITY CARE AND PATIENT SAFETY

Designers of health-care facilities must balance many factors: the safety, health, and well-being of patients; the effective delivery of care; the creation of a welcoming environment that promotes healing; energy efficiency; and the cost of maintenance and operation, among others.

A literature review conducted by several researchers in 2007 identified several design elements as critical for ensuring patient safety and quality care. These include strategies that help prevent falls, reduce the risk of cross-contamination, and enhance visual performance, among others.

Let's look at a few examples of design choices that enhance accessibility, safety, and health in health-care facilities.

Wheelchair-Accessible Medicine Chest

Wheelchair-accessible medicine chests and mirrors can make a significant difference for someone with a disability. These Americans with Disabilities Act (ADA)compliant products are ideal for assisted-living facilities. One such medicine chest is constructed with an angled, LED-illuminated mirror that allows people with a lower viewing level to see their reflection.

Photo courtesy of Cascade Architectural



Copper-clad wire fabric is naturally antimicrobial and can be used to divide spaces or provide solar and shade control.

Photo courtesy of Inpro



Privacy curtains can contribute to a safer, hygienic, and dignified health-care environment.

It also allows access to medications without assistance by allowing the user to lower the interior shelving down to a comfortable level. This innovative design addresses equity and safety—two key concerns in health-care facility design.

Copper-Clad Wire Fabric

Copper-clad wire fabric is an innovative product that can be incorporated into building interiors as part of an overall design scheme or to temporarily partition rooms. The material is lightweight and will not interrupt airflow, an important consideration for ensuring airborne pathogens do not build up within a space. The fabric consists of pure copper metallurgically bonded to the surface of low-carbon steel wire. Left in its natural state, copper-clad steel wire has demonstrated antimicrobial properties, reducing the risk of cross contamination and enhancing the safety of health-care facilities.

Antimicrobial Privacy Curtains

Privacy curtains are often used to divide cubicles in emergency departments. Although single-patient rooms are preferred, privacy curtains are also used to provide privacy to patients who must share rooms. These frequently touched curtains can serve as a vector for disease organisms. However, fabrics that utilize silane-based technology have been tested and proven to be permanently antimicrobial and inhibit the growth of mold and mildew. These fabrics also repel liquids and are highly resistant to most stains.

The rest of this course will consider design choices in several key categories: hygienic and accessible restrooms; the creation of hygienic, flexible, and healing interiors; materials and products that reduce the spread of contaminants via surfaces; and design choices for critical care environments.

HYGIENIC AND ACCESSIBLE HEALTH-CARE RESTROOMS

Restrooms offer a special challenge for health-care design. These rooms must be easy to clean and hygienic, but they also must be safe and accessible. Health-care facilities provide treatment for a higher proportion of people with physical challenges. These include physical disabilities as well as conditions such as obesity and age-related declines in vision and motor function. In addition, some patients and residences may suffer mental disorders that make them more prone to harming themselves.

As required by the ADA, all public buildings must be accessible for people with disabilities. This is especially important in hospitals and health-care facilities because they typically serve a much larger population of users with disabilities.

There are specific requirements for ADA-compliant restrooms that guide everything from how much weight certain fixtures must be able to bear to how much space must be allowed around fixtures. Architects and designers should also be aware that there is a trend in hospital design toward more "home-like" interiors. Colors, textures, and styles can impact patient comfort and well-being; this awareness is driving an aesthetic that feels more residential rather than institutional.

Accessible Medicine Storage

People who need health care usually need medications. Someone who is also wheelchair bound must be able to access these medications and other health-related items, such as bandages and toiletries. Many people typically store

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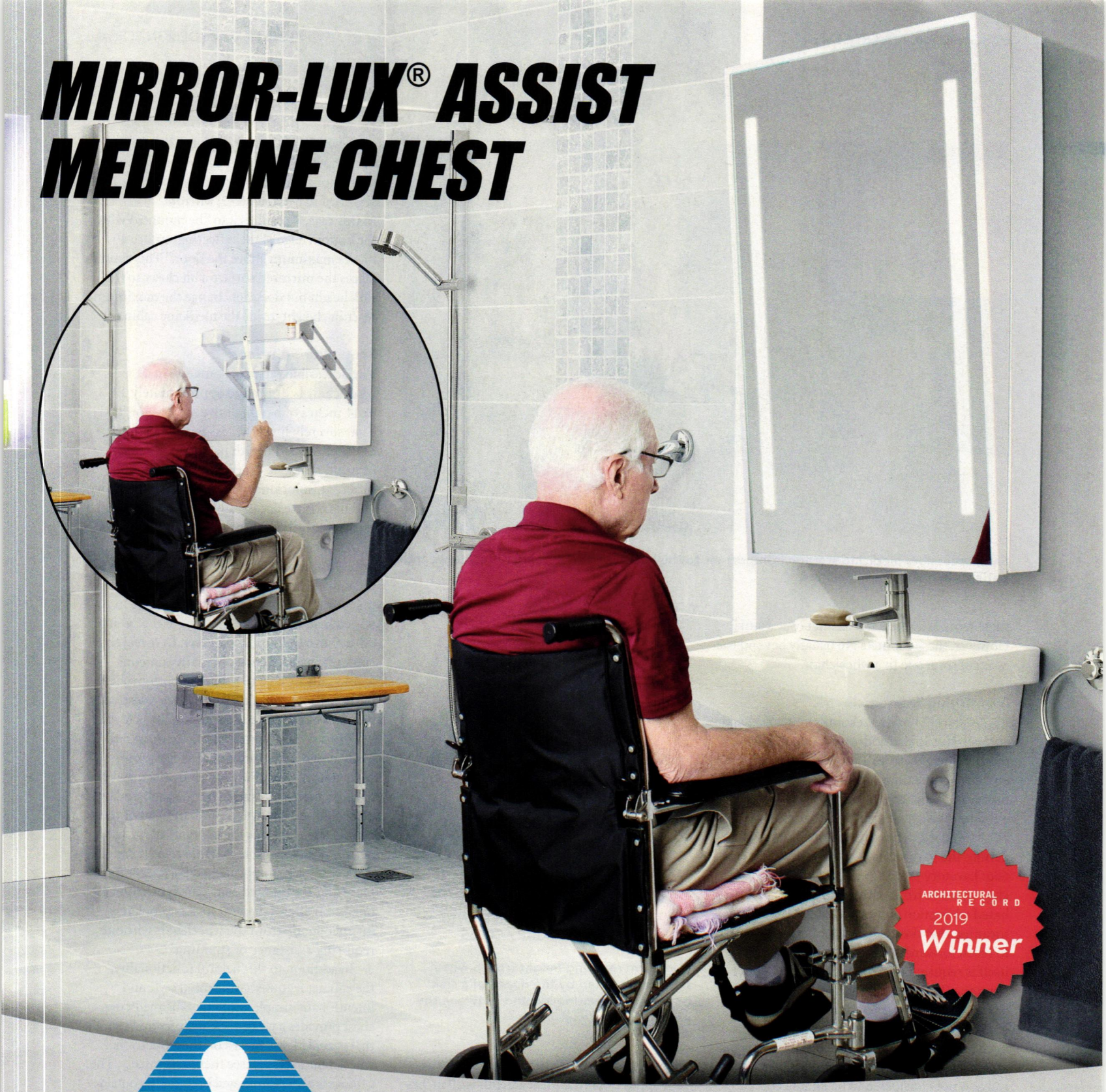

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Photo courtesy of AAMSCO Lighting



Safe, accessible medicine storage is important to the health and well-being of residents and patients in health-care facilities.

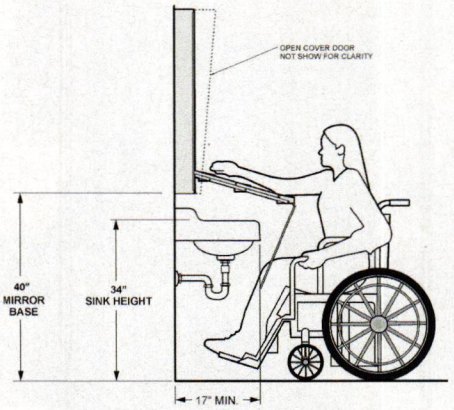
such items in a medicine cabinet over a sink. However, these cabinets are usually beyond the reach of someone in a wheelchair.

Identifying Standards

ICC ANSI 117.1 addresses sinks and wheelchair accessibility. It also addresses high and low reaching heights from a wheelchair and differentiates between unobstructed and obstructed reaching conditions. A medicine cabinet over a sink creates an obstructed situation. The 117.1 standard defines that obstruction since it defines the parameters for the sink in Section 606: Lavatories and Sinks. First, the required clear space in front of the sink is defined based on Section 305 and a forward approach, meaning that the person in a wheelchair is able to reach forward to access the sink. The sink itself is required to be no higher than 34 inches from the floor. An enhanced reach range is acknowledged if the sink is no more than 11 inches deep. If a more standard condition occurs where the sink is in a countertop that is approximately 17 to 24 inches deep, the reach range is not considered to be enhanced.

In terms of reaching something above the sink, Section 308: Reach Ranges is the applicable part of the 117.1 standard. Section 308.2.2 related to Obstructed High Reach points out that "the clear floor space complying with Section 305 shall extend beneath the element…" thus allowing full access by pulling forward to reach the wall above the sink. It goes on to indicate that there are two different high forward-reach

Image courtesy of AAMSCO Lighting



ADA MIRROR REQUIREMENTS FOR HANDICAP ACCESS

Maximum reaching height from a wheelchair is governed by the depth of a sink or other obstruction located between the person and the wall.

height limits: a 48-inch maximum above the floor applies where the reach depth is 20 inches or less, while 44 inches is the maximum reach height if the depth exceeds 20 inches but up to a maximum of 25 inches.

In the case of providing an accessible medicine cabinet over a sink, the standard dictates that the bottom of that cabinet (and the access to anything in it) must fall between 34 inches above the floor (maximum sink height) and either 44 or 48 inches above the floor depending on the depth of the sink/counter. Where a mirror is on the face of the medicine cabinet, the bottom of the mirror is dictated in the 117.1 Standard in Section 603.3: Mirrors. In this case, it requires it to "be mounted with the bottom edge of the reflecting surface 40 inches maximum above the floor." This simply places the mirrored surface a bit closer to the sink height but does not change the maximum reaching height inside the medicine cabinet.

Providing Solutions

The accessible range of someone in a wheelchair is limited to approximately 10 to 14 inches of height above a sink—or less. That severely limits access to medications or other needed health products. Keeping in mind that every individual's needs are different, solutions that emphasize flexibility and maximize accessibility usually serve the greatest number of people.

An excellent example of such innovation is found in a medicine cabinet now on the market that combines accessibility and ingenuity. This cabinet allows someone in a wheelchair to reach the bottom of the cabinet door above the sink and open it to reveal the contents inside. While normally someone would only be able to reach the bottom shelf of the cabinet, this design includes a vertically hanging handle that is connected to a cleverly designed shelf system that the user can pull easily downward. Individual shelves adjust with gravity as they are lowered, allowing all of the contents to remain on the shelf and be placed directly above the sink in front of the person. Hence, all of the contents of the cabinet are now accessible to the user. When done, the shelves are simply pushed back up into place and the door closed. This synchronized operation allows the user to act completely independently from the wheelchair without requiring assistance or standing.

In addition to this helpful functionality, the cabinet features a residential style and intentionally simple aesthetic. The medicine chest provides a clean-looking mirrored cabinet that is angled downward on the front so that wheelchair users can see themselves easily. The cabinet is also illuminated both on the outside and inside, providing light above the sink and easy visibility of the contents inside the chest.

Liz Congero, vice president of sales and marketing for Aamsco Lighting, notes the positive impact of this type of innovation, saying, "The overall net effect is that elderly or physically challenged people can remain in their homes or a long-term care facility and maintain a level of independence. This helps

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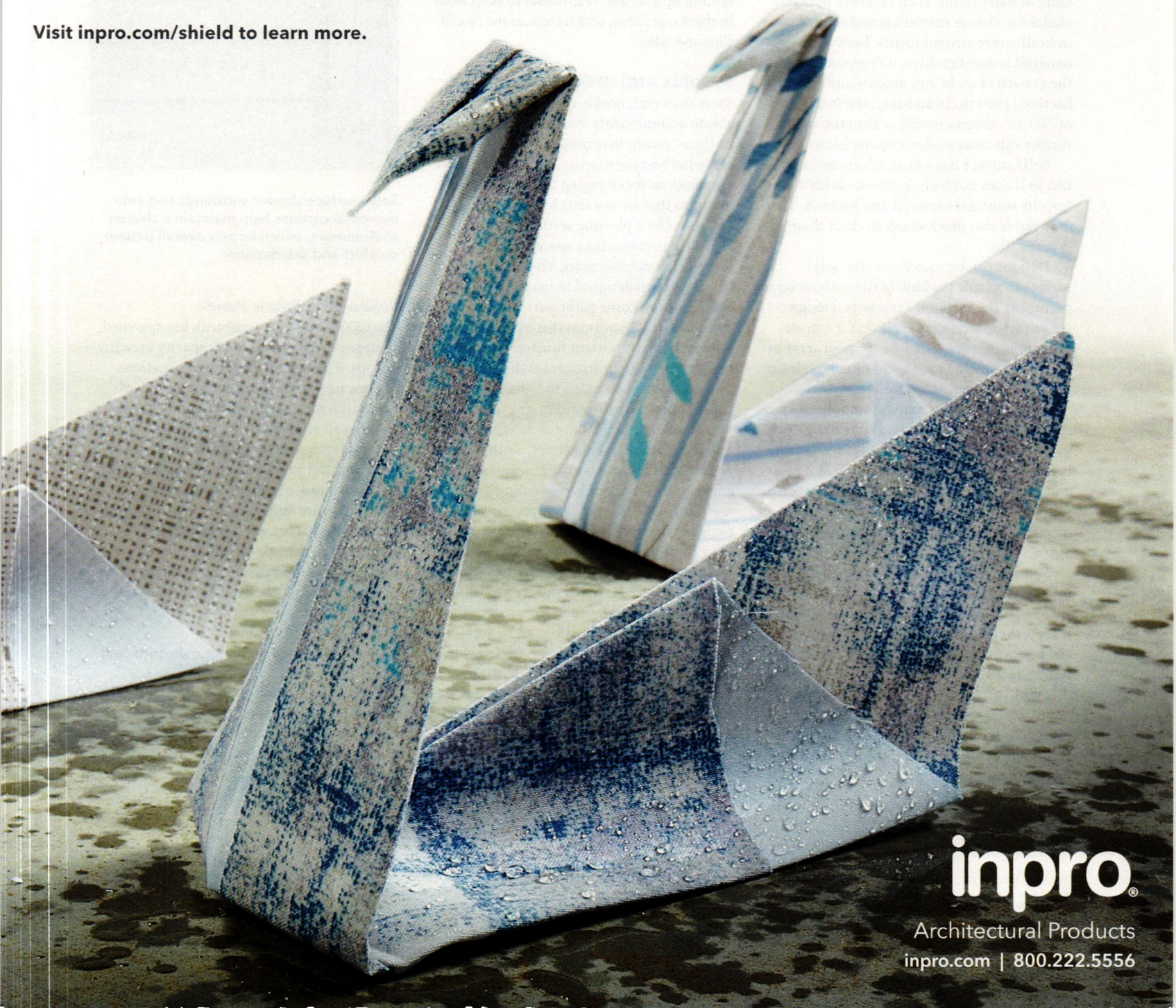

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with a person's well-being, which can also be linked to addressing concerns about having access to their medications without assistance." This innovative solution combines accessibility and architectural design, providing a model for the types of features we should expect in today's health-care facilities.

Solid-Surface Shower Surrounds and Pans

Showers in health-care facilities must be easy to clean, sanitary, and safe for the patients and residents who use them. Solid surface, typically made from a combination of acrylic and polyester resins, is an excellent material choice for shower surrounds and shower pans in health-care environments. Because the material is non-nutritive, it does not promote the growth of mold and mildew and resists bacterial growth. In addition, the inclusion of "active" antimicrobials within the solid surface can reduce odor-causing bacteria.

Solid surface has a huge advantage over tile, as it does not include grout, which is a favorite substrate for mold and bacteria. The material is also much easier to clean than grouted tile.

Designs can be routed into the solid surface to mimic the look of tile without compromising the material's integrity. Designers can select smooth panels or, for a more residential aesthetic, choose from an array of decorative designs such as diamonds, subway tile, basic squares, and beadboard.

Receptors or pans made from solid surface can be poured into squares and rectangles of varying sizes. The integral non-skid surface helps prevent slips and falls, and ADA edges and ramps can ease the transition from floor to receptor. Drain locations can be set to match existing plumbing; trench drains are also an option.

Shower bases can be poured and fabricated into an almost unlimited array of custom shapes. In addition, factory-fabricated shower receptors ensure consistent quality and material performance through rigorous production standards.

Solid-surface products boast a long life cycle, reducing maintenance and replacement costs. The material is extremely durable and will not degrade. Most importantly, it looks new for a very long time.

Fabric Shower Curtains

Designers have several options when it comes to enclosing a shower. While new designs are incorporating doorless showers or glass doors, many facilities still have shower curtains for privacy. The right choice of curtain material can be enlisted to help keep mold and mildew in check.

Bio-static shower curtains resist mold and bacteria and are made from durable, multipurpose vinyl for easy cleaning and low maintenance. These curtains are also available in a variety of colors and styles and can contribute to the room's aesthetic. ADA models feature a bottom lip and side Velcro seals to keep water in the shower area, which reduces the risk of slips and falls.

FLEXIBLE AND HYGIENIC INTERIORS

More than ever, health-care facilities must be able to accommodate fluctuating caseloads. At times, rooms may need to be partitioned to make the best use of space. Fortunately, there are solutions for changing the configuration of rooms that are not only hygienic and safe but also offer a pleasing aesthetic.

When partitioning a space, there are several factors to consider. The HVAC system has likely been designed to maintain airflow and ensure airborne pathogens do not accumulate. It is important that a partition does not block this important function. In some cases, it may also be important that the partition does not block access to light. Finally, it should not obscure wayfinding signage.

Although functionality and cleanliness are critical in health-care facilities, aesthetics play an important role in creating an appealing environment that promotes healing. Increasingly, these facilities are incorporating design elements that feel warm and welcoming rather than cold and sterile. Many of these elements also bring a touch of nature into the facility—a strategy which has been shown to promote well-being and healing and even reduce the length of hospital stays. This can be accomplished through a combination of elements, including finishes and flooring, partitions, curtains, wallcoverings, and lighting. Artificial lighting and daylighting in particular play a key role in illuminating a space and creating an appealing indoor environment in which to live, work, and heal.

Photo courtesy of Inpro



Solid-surface shower surrounds and antimicrobial curtains help maintain a cleaner environment, which boosts overall patient comfort and satisfaction.

Coiled Wire Fabric Panels

The COVID-19 virus outbreak has spawned an urgent need for medical capacity in many regions. There are many design situations where a need arises to provide a degree of separation for safety or different uses where a solid wall or partition is not needed. In fact, it may even be desirable to provide for some connectivity between spaces for visual, airflow, sound, or other considerations.

Coiled wire fabric panels are an excellent solution for partitioning spaces in health-care facilities. The panels can be used in common areas requiring wayfinding and to create temporary dividers or partitions for check-in stations.

Continues at ce.architecturalrecord.com

Juliet Grable, *is an independent writer and editor focused on building science, resilient design, and environmental sustainability. She contributes to continuing education courses and publications through Confluence Communications.* ***www.confluence.com***

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PRODUCT REVIEW

Health-Care Design for All

Aamsco Lighting

Photo: Kelly Nielsen, Studio 92



Mirror-Lux® Assist Medicine Chest

The Mirror-Lux® Assist Medicine Chest is a mirrored, LED-illuminated medicine chest that is uniquely designed to allow the user to lower the interior shelving down to a comfortable level.

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Cascade Architectural

Photo: © CCD 2020



Children's Hospital New Orleans Parking Garage Draped in Fabricoil®

Cascade Architectural provided a stainless steel Fabricoil® facade for the new parking garage at Children's Hospital New Orleans. "Cascade Architectural presented a more cost-effective solution to wrapping the garage in metal mesh, and we also just preferred the inherent coiled design of Fabricoil over other products," says Moses Waindi, senior project architect at EYP.

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Exterior venetian blinds, like the ones on this LEED Platinum project in San Diego, are a classic shading option with lowering, raising, and tilting capabilities.

Photo: Nick Merrick, Hall + Merrick

Mitigating Glare and Solar Heat Gain with Exterior Shading Systems

Fabric zip systems, venetian blinds, and rack arm systems are highly effective strategies for optimizing daylighting, occupant comfort, and energy savings

Sponsored by Draper, Inc. | *By Barbara Horwitz-Bennett*

Harnessing the sun's free energy in the form of daylighting, the benefits of natural light are numerous indeed. But only carefully calibrated shading designs will optimally deliver the potential health and wellness benefits from natural daylighting as well as occupant comfort and productivity and energy savings.

With a goal of optimizing solar control and mitigating unwanted heat gain and glare, exterior shading systems are a proven and highly recommended strategy for optimizing performance.

DAYLIGHTING BENEFITS

In a recent study, Cornell University researchers reported a high 84 percent decrease in eyestrain, headaches, and blurred vision symptoms that often result from prolonged computer and device use at work, which can detract from productivity.[1] The study also found that workers sitting close to a window that optimized daylight exposure were 2 percent more productive, which equates to an additional $100,000 per year of value for every 100 workers.

CONTINUING EDUCATION

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Learning Objectives

After reading this article, you should be able to:

1. Review key research establishing the health and wellness, occupant comfort and productivity, and energy savings benefits of daylighting.
2. Explain how solar heat gain occurs, and why exterior shading systems are an appropriate and effective way to manage it.
3. Identify the main variables that must be evaluated to select the optimal exterior shading system for a project to improve the health and well-being of occupants.
4. Describe the advantages, limitations, and applications of exterior fabric zip systems, venetian blinds, and rack arm systems.
5. Discuss how to integrate control systems into exterior shading devices to maximize solar control and the impact on occupant health and wellness.

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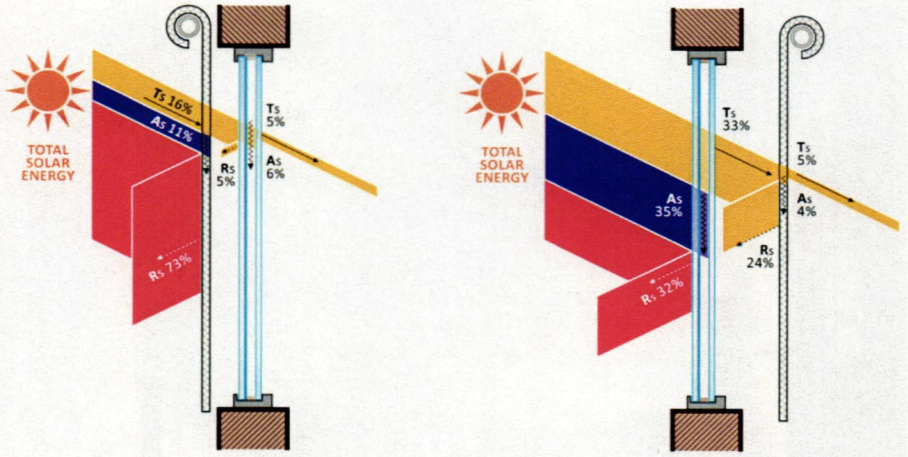
Similarly, a 2018 poll of 1,614 North American employees by the human resources advisory firm Future Workplace discovered that access to natural light and outdoor views is the number-one most important attribute of the workplace environment.[2] On the contrary, the absence of natural light and views actually hurts the employee experience, as more than a third of workers feel that they do not get enough natural light in their workspace, 47 percent acknowledge feeling tired in the absence of natural light or a window, and 43 percent report feeling gloomy without daylight.

As for cost savings, the National Institute of Building Sciences's (NIBS') Whole Building Design Guide (WBDG) states that a combination of reduced electric lighting and associated building cooling energy usage through the use of shading and daylighting strategies can reduce total energy costs by as much as one-third.[3]

Image courtesy of Mermet USA



To minimize solar heat gain inside of a building, the reflection (Rs) must be as high as possible, while the absorption (As) and transmittance (Ts) must be as low as possible (left). Upon adding a basket-weave 3 percent interior white shading system, the solar heat gain coefficient (SHGC) entering the glass into the interior drops down to 0.16 for a 58 percent reduction. If the shading is located on the exterior, the SHGC comes down further to 0.10 for a 74 percent decrease (right).

DEFINING TERMS

To better understand the variables involved in achieving good quality shading and daylighting design, some definitions are in order.

Solar control is the ability to manage the sun's energy. To optimally benefit from the sun's energy, a solar control system seeks to maximize the use of natural daylight in a building, while ensuring that problems do not occur as a result of excessive heat gain and glare.

Sunlight is made up of energy with a range of different wave lengths covering what is known as the solar spectrum. The solar spectrum is divided into three main sections—ultra violet, visible light, and infrared—and all have a short wavelength, with the latter carrying very little heat.

When sunlight reaches the earth and hits a surface, however, some of it is reflected back into the atmosphere, while the balance is absorbed into the ground, vegetation, water, and people, for example. The absorbed part of the solar energy is then emitted as long wave energy, and this is what produces heat.

The solar equation is as follows: Total solar energy = As + Rs + Ts = 100 percent, where As is absorption, Rs is reflection, and Ts is transmittance. To minimize heat gain inside of the building, the Rs component needs to be as high as possible, and the As and Ts components should be as low as possible.

The solar equation determines what happens to the solar energy when it reaches a glazing assembly and defines the solar heat gain coefficient (SHGC). The value of SHGC ranges from 0 to 1; the lower the SHGC, the more effective the system. With an exterior venetian blind, the SHGC can be 0.10 or lower, meaning that more than 90 percent of the solar energy is prevented from entering the building and generating heat gain.

INTERIOR VERSUS EXTERIOR SHADING

To minimize unwanted heat gain and drive down the SHGC inside a space, as noted, shading systems can be very effective, particularly exterior shades.

Consider a double-glazed unit with a high light transmittance of 68 percent and a low-e coating on surface 2, which is the inner side of the outer piece of glazing. Without shading, the SHGC registers quite high at 0.38.

Now add a basket-weave 3 percent white shading system on the interior, and the SHGC drops down to 0.16 for a 58 percent reduction. By placing that same shading fabric on the exterior, the SHGC comes down further to 0.10, which is a 74 percent decrease compared to the glazing without shading.

In analyzing the transmittance in these three cases, 33 percent of the total solar energy passes through the glazing and enters the room when there is no shading. After adding internal or external fabric, this declines to just 5 percent.

In terms of absorption, however, there will actually be an increase when shading is added to the interior, as an additional 4 percent is absorbed into the fabric, bringing the As value from 35 percent to 39 percent. With an exterior shading system, however, the As value is cut in half to 17 percent.

In addition to controlling solar heat gain and providing thermal comfort, an effective shading system will also assist in achieving good daylighting, which, as shown by many studies, is essential for occupant productivity and job satisfaction, not to mention energy savings. To this end, NIBS' WBDG states that electric lighting accounts for 35 percent to 50 percent of the total electrical energy consumption in commercial buildings.

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Based in Spiceland, Indiana, Draper has manufactured custom window shading solutions since 1902. Its products reflect sunlight and heat and reduce or eliminate glare. Draper works with architects and designers on flexible and scalable solutions for interior, exterior, and dual-facade applications that allow them to control natural light, manage solar heat gain, reduce energy costs, and improve employee productivity and comfort. **www.draperinc.com**

All images courtesy of Owens Corning



Steinway Tower, a 1,400-foot, 82-floor residential high-rise in New York City, has the distinction of being the world's skinniest skyscraper. Completed in 2018, the project incorporated enhanced fire protection in curtain wall and perimeter fire-containment (PFC)systems.

Successful Perimeter Fire Containment

Shedding light on common misconceptions about PFC systems

Sponsored by Owens Corning | *By Juliet Grable*

In 2005, a fire broke out on the 21st floor of The Windsor, an iconic high-rise building located in Madrid, Spain. The fire spread quickly from floor to floor. After burning for 20 hours, the floor spans of the upper stories collapsed.

There are few visions as terrifying as a skyscraper with multiple floors ablaze. High-rise buildings present a special problem when it comes to protecting occupants from the risk of fire. Large numbers of occupants must travel long vertical distances to exit the building using limited points of egress. Despite these challenges, building codes and design practices have greatly improved the safety of these buildings over the years.

There are three major strategies when it comes to protecting the life safety of building occupants: detection, suppression, and compartmentation. Detection consists of alarm systems such as smoke and heat detectors. Suppression includes active systems that rely on switched mechanisms to function—for example, a sprinkler system that is triggered by rising temperatures. Compartmentation, also known as passive fire protection, is a strategy that divides a building into compartments through the

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Learning Objectives

After reading this article, you should be able to:

1. Discuss the importance of perimeter fire containment (PFC) as it relates to the health and safety of building occupants.
2. Identify the code requirements for PFC.
3. List the six basic design criteria that are used when designing and installing PFC systems.
4. Name five common misconceptions about the design, installation, and inspection of PFC systems.
5. Explain why all-vision glass curtain wall systems should not default to the ASTM E-119 exception within the building codes.

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HOW FIRES SPREAD



When a fire breaks out in a high-rise building, it can spread through an interior wall or grease ducts and other penetrations. It can also spread at the building's perimeter. The void at the edge of slab, if unprotected, becomes a chimney that channels fire and hot gases from floor to floor. Flames and hot gasses can propagate through the joint between the wall and the slab edge, but the heat from a fire can also break the vision glass in curtain wall systems. Once this happens, flames and hot gases escape outside the building and spread up the exterior face of the curtain wall, breaking through the vision glass on the floor above—a phenomenon known as "leapfrog." In addition, if the spandrel panel is not properly protected, the fire can breach through it and compromise the wall via the interior and exterior.

A fire that broke out on the 12th floor of the First Interstate Bank building in Los Angeles in 1988 illustrates how fire can rapidly propagate on building exteriors (see photo above). Flames spread through the unprotected joint between the curtain wall and floor slab, and once the heat broke the curtain wall glass, the fire leapfrogged up the outside of the building, eventually reaching the 16th floor. One person was killed and 40 people were injured in what was one of the most destructive U.S. high-rise fires in recent history. Properly designed and installed perimeter fire-containment (PFC) systems effectively seal off this pathway, limiting the fire to the room of origin and giving occupants time to safely evacuate.

It should be noted that a sprinkler system had been installed but was not yet operational, highlighting the importance of redundant active, passive, and detection systems.



This photo of the Windsor Tower located in Madrid, Spain shows the results of "leapfrog" fire propagation. Note how the fire has spread vertically along the outside of the high-rise.

use of fire-rated walls and floors and keeps a fire contained at the source of origin.

A passive system prevents or slows the spread of fire from the room of origin to other building spaces, limiting building damage and providing more time for the building occupants to safely evacuate or reach an area of refuge. Compartmentation also allows first responders to effectively fight the fire. Passive systems do not require on/off mechanisms; once properly installed, they provide protection continuously.

Detection systems and active strategies may be tampered with or purposely disarmed. Both of these strategies are also subject to electrical and mechanical failures, and therefore may not always function properly. For the best protection, buildings will utilize all three strategies; this way, if one fails, there is a backup system in place to increase escape time and occupant safety.

The size and number of buildings being constructed today are bigger in every dimension, and they contain more occupants than ever before. Consequently, high-rise fire protection has never been more critical. Curtain wall systems are becoming increasingly common in these buildings. These nonstructural exterior building coverings typically consist of exterior cladding made from lightweight, durable materials, such as aluminum panels, thin stone panels, or glass infill in a combination of spandrels and vision glass.

Although curtain wall systems enable distinctive and dynamic designs while protecting buildings against the elements, they have a unique feature that makes them vulnerable to spreading fire from floor to floor.

Upon installation, curtain wall systems create a void between the fire-rated floor slab and the edge of the nonrated curtain wall. In the event of a fire, this unprotected space at the edge of the slab acts as a chimney for fire and hot gases, helping a fire to rapidly spread from floor to floor. Though it may seem like a small space—theses joints are often just a few inches wide—when multiplied by the number of lineal feet on all four sides of the building and by the number of stories in the building, this space becomes a significant pathway for smoke and hot gases.

This is exactly what happened in the case of The Windsor. This high-rise was built at a time when building codes did not require the perimeter void to be protected. Consequently, fire was able to rapidly propagate from floor to floor.

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Juliet Grable *is an independent writer and editor focused on building science, resilient design, and environmental sustainability. She contributes to continuing education courses and publications through Confluence Communications.* ***www.confluencec.com***

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Exposure to natural light is essential for human health and well-being.

Photo: 22 Waves Creative

Trends in Daylighting and Tunable Lighting

New strategies and technologies can bring health benefits to commercial and residential spaces

Sponsored by Marvin | *By Juliet Grable*

Circadian rhythms regulate body processes and contribute to overall health. They are in part reliant on cues from the natural environment, particularly cycles of daylight and darkness. However, modern lifestyles and the built environment can interrupt these natural cycles by either introducing too much artificial light at the wrong time or depriving people of sunlight.

Designers can help ensure that occupants of both residential and commercial buildings have access to natural light throughout the day. That said, sometimes there is simply not enough natural light available; in these cases, research is showing that artificial lighting can play a role by mimicking natural sunlight. This course will describe the latest trends in fenestration that combine both high-performance glass and tunable LED lighting to help create indoor environments that promote health and well-being.

CIRCADIAN RHYTHMS AND NATURAL LIGHT

Circadian rhythms are physical, mental, and behavioral changes that follow a daily cycle. These cycles are set by a "master clock" in the brain and respond primarily to light and darkness in an organism's environment.

CONTINUING EDUCATION

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Learning Objectives

After reading this article, you should be able to:

1. Describe the connection between natural sunlight and well-being, and the role of the body's circadian rhythms in promoting overall health.
2. Identify design trends in daylighting and the use of natural light in both residential and commercial projects.
3. Discuss innovations in fenestration that are facilitating and/or replicating natural light conditions and diurnal cycles.
4. Explain how tunable lighting can impact the well-being of building occupants by mimicking natural light conditions.

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Photo: Sara Tramp

Exposure to daylight at the right times can promote both wakefulness during the day and quality sleep at night.

Most living creatures, from whales to plants to bacteria, have some sort of master clock. In mammals, it is called the suprachiasmatic nucleus. Located in the hypothalamus of the brain, this group of cells helps regulate many of our daily cycles, including sleeping, eating, and hormone fluctuations.

The clock is generated internally, but it relies on signals from the external environment to synchronize it. Light is the primary cue governing our sleep and wake cycles.

The circadian cycle is close to but not precisely 24 hours; consequently, the biological clock must be reset every day to sync with the earth's rotation and periods of day and night. The amount and quality of light exposure depends on geographic location, a person's immediate environment, and a person's behavior. In addition, every individual person's biological clock (and sensitivity) is slightly different.[1]

You likely recall that the eye contains special receptors called rods and cones, which enable us to detect light and color. The retina also contains a third type of photo-sensitive cell that is directly tied to the master clock. These cells are most sensitive to short wavelengths in the blue region of the light spectrum.

When light enters the eye, these receptors send neurological signals to the suprachiasmatic nucleus, or SCN, via the optic nerve. The SCN communicates information about light and dark to the pineal gland. Located deep within the brain in a region called the epithalamus, the pineal gland is primarily responsible for the production of melatonin.

Melatonin can be thought of as the "sleep hormone," as it helps regulate cycles of sleep and wakefulness. When light is present, the SCN sends a signal to the pineal gland that interrupts melatonin production. When light is absent, the SCN secretes a substance called glutamate, which triggers a series of actions that result in melatonin production.

Production of melatonin ramps up after the sun goes down, and levels remain elevated throughout the night. Production drops off as soon as the sun comes up and morning light hits the retina.

The SCN also sends signals to other parts of the brain to regulate body temperature and the production of other hormones, including cortisol. Sometimes called the "stress hormone," cortisol is correlated with alertness or wakefulness, while melatonin levels correlate with feelings of sleepiness. Hence, when melatonin levels peak at night, body temperature and cortisol levels are low; conversely, when body temperature and cortisol levels rise in the morning, melatonin levels dip.[2]

Melatonin levels also wax and wane on a seasonal basis. As day length increases in spring and summer, levels fall; in fall and winter, with the lengthening nights, melatonin levels increase.

Once melatonin is secreted from the pineal gland, it travels through the bloodstream (and via fluid surrounding the brain and spinal cord) to various tissues throughout the body. Melatonin receptors are not only found in many areas of the brain but also in the cells of the immune system, gonads, kidney, and cardiovascular system.

Melatonin helps synchronize the circadian rhythms with the environment and the body. In addition to regulating metabolism and sleep patterns, the circadian system influences important functions such as heart rate, blood pressure, body temperature, hormone levels, and urine production.[3]

Continues at ce.architecturalrecord.com

Juliet Grable is an independent writer and editor focusing on building science, resilient design, and environmental sustainability. She contributes to continuing education courses and publications through Confluence Communications. ***www.confluencec.com***

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Coiled wire fabric is used creatively on building interiors and exteriors in combination with natural and electrical lighting to produce distinctive results.

Lighting Effects with Coiled Wire Fabric

Stunning results can be achieved by combining natural or electric lighting with coiled wire fabric

Sponsored by Cascade Architectural | *By Peter J. Arsenault, FAIA, NCARB, LEED AP*

Le Corbusier is attributed with the quote, "Architecture is light." Indeed, most architects spend a lot of their design time working natural and artificial lighting into buildings in ways that are both functional and beautiful. Of course, it is really the interplay of that light onto materials and surfaces and the way it is spread throughout a three-dimensional space that produces a total experience. Factor in time of day and different lighting conditions, and the total process is a very dynamic one rather than just a static event.

Among the materials that are part of an architect's palette for incorporating light into buildings, coiled wire fabric is becoming a more widely used medium. With variable light transmission or reflection qualities, it provides a very customizable but cost-effective and durable option for achieving a wide range of design outcomes. This course delves into the specifics of this versatile material and looks at the variety of ways that it enhances architecture through the use of light. Starting with an overview of the material, we then look at the ways it can be a means of control and enhancement of both natural daylight and electrical lighting. Further, we explore its use as a surface where still or moving imagery can be projected.

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Learning Objectives

After reading this article, you should be able to:

1. Identify and recognize the specific nature of coiled wire fabric with its abilities to impact lighting, ventilation, and well-designed healthy spaces.
2. Assess the use of coiled wire fabric to control or enhance the use of sunlight to create improved indoor environments for the welfare of their occupants.
3. Explain the options available for using electrical lighting, including low-voltage or energy-efficient LED lighting, for interior and exterior installations.
4. Determine ways to use coiled wire fabric as a means to receive projected imagery, both fixed and moving, for artistic or performance purposes.

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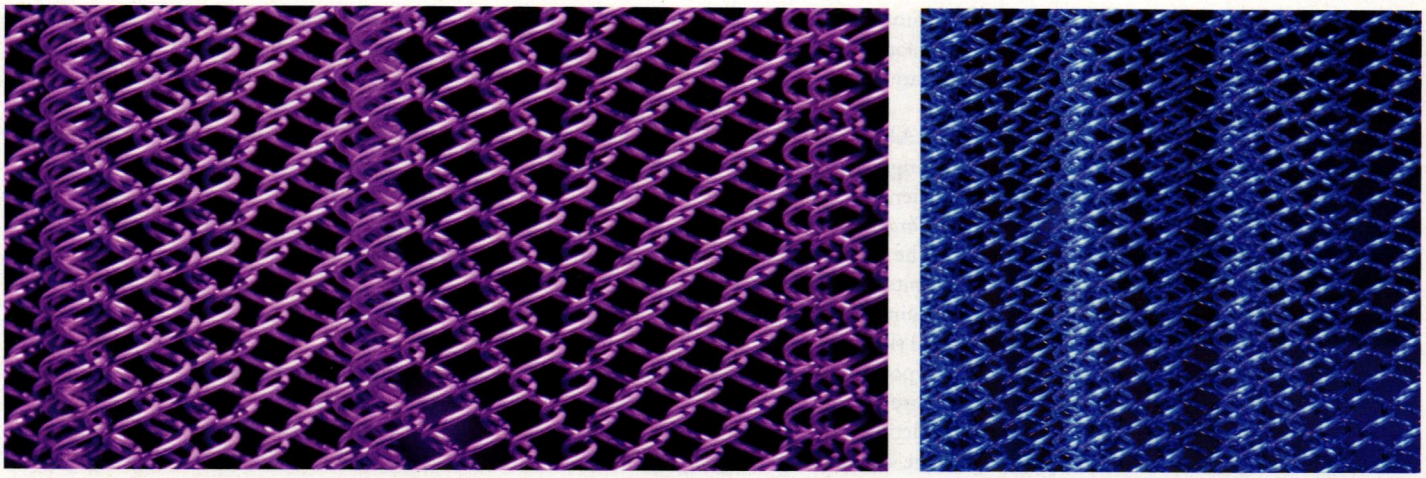

Coiled wire fabric can have different features and attributes that change the way it looks and performs.

Ultimately, it is the combination of design prowess, materials, and lighting that create beautiful, functional architecture as seen in examples cited.

COILED WIRE FABRIC OVERVIEW

From a design standpoint, coiled wire fabric is truly an intriguing material. As a semi-transparent material, the interplay between the woven metal and light combines architecture and art in ways that are noticeable and can stimulate the senses of the observers. It does so by being fundamentally different from traditional metal mesh materials. The essential difference is that coiled wire fabric is designed as an architectural product for use as a finish material, not just a utilitarian one. As a durable, thin material, coiled wire fabric is lighter in weight than traditional wire mesh and offers more design flexibility. For interiors, architects and designers use coiled wire fabric for window curtains, ceiling treatments, wall coverings, security gates, and even as complete sculpting partitions, all adding elegance and purpose to the spaces where it is used. On building exteriors, coiled wire fabric can provide sun shading, fall protection, and visual facade treatments. In each of these cases, it can allow for ventilation or the controlled passage of air and light.

Coiled wire fabric is manufactured by interlocking metal wire coils via a simple corkscrew method: weaving the spirals together to create a flexible metal fabric panel. Beginning with a choice of the metal material, manufacturers combine skilled craftsmen with inventive machinery to form the wire into a spiral of a specified weave size. Typically the length of the fabric is fabricated to match the height of the opening at the project site. The edges are usually hand crimped, and the finished fabric is ready to be secured using a choice of attachment systems.

To better understand this innovative material and how it works with light, a closer look at the attributes of coiled wire fabric systems follows.

- **Material makeup:** Coiled wire fabric systems begin with a base metal wire in varieties of steel, aluminum, brass, copper, or stainless steel. The choice of the wire material and its gauge ultimately impact the weight, functionality, and aesthetics of the final fabric. By selecting the fundamental makeup of the fabric (i.e., the base metal, weave thickness, wire gauges, weave pattern, finishes), the properties of strength, rigidity, and light transmittance can all be determined to meet the design or performance characteristics that are being sought. It is worth noting that the fabric is available in virtually unlimited widths and up to 40 feet in length, so large installations can be achieved with a single panel in many cases. For projects needing more than a 40-foot span of fabric, multiple coils can be spliced together at the job-site in a routine fashion and still create a continuous or seamless appearance.
- **Attachment systems:** The means of attaching the wire fabric to the building can be done in a variety of ways with a wide range of appearances. The material can be left to hang (i.e., flowing freely, secured at both the top and bottom, and even be pulled taut to create a semi-rigid condition. Because of its fabric nature, curved and undulating shapes are easily achieved, providing facades and interiors with more character and vitality than rectilinear shapes alone. Products are available in either fixed or movable configurations along track attachment systems that are engineered to fit the precise aesthetic and performance requirements of a project. Many attachments are offered in aluminum, steel, or stainless steel and available with optional ceiling, wall, or suspended mounting systems. Engineered attachment systems can be manufactured flat or undulating to varying degrees, then finished with the coating or color of choice.

Continues at ce.architecturalrecord.com

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

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Ongoing Exhibitions

Barkow Leibinger—Revolutions of Choice
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Through October 4, 2020
This retrospective at the Haus am Waldsee shows over 25 years of work that demonstrates material exploration. Models and installations are presented on both floors of the exhibition space and in an adjoining outdoor sculpture park—including the Serpentine Summer House from 2016, *Thicket*, and the *Kinetic Wall*. For more information, go to barkowleibinger.com.

The Shape of Abstraction: Selections from the Ollie Collection
St. Louis
Through October 11, 2020
This exhibition at the Saint Louis Art Museum presents paintings, drawings, and prints by five generations of Black artists, starting in the 1940s. The exhibition includes Norman Lewis's gestural drawings, Sam Gilliam's paintings, James Little's experiments with color, Chakaia Booker's prints, and more. See slam.org.

RAIMUND ABRAHAM: Angles and Angels, Drawings Models Prototypes
Vienna
Through October 18, 2020
The MAK (Museum of Applied Arts) presents works by Austrian-American architect Raimund Abraham. On exhibition are over 50 sketches, collages, models, furniture prototypes, and designs—for both realized and unrealized projects—that explore the conflicting interplay between the individual and the sociopolitical challenges of his time. Part of the 1960s avant-garde, he also worked with Vito Acconci, Peter Eisenman, and Lebbeus Woods, among others. See more at mak.at.

Yves Klein: Les Elements et Les Couleurs
Massignac, France
Through January 29, 2021
Taking place at the 2,500-acre private estate's La Laiterie art space is a career-spanning showcase of 60 essential works by Yves Klein, the French artist best known for the color Klein Blue. The documents and films on display, which include *Architecture de l'air*, his utopian vision to build more flexible cities from the elements of fire, air, and water, explore his spiritual connections to both nature and the cosmos. More information at yvesklein.com.

Events

AIA Austin Homes Tour
Austin, Texas
October 16–19, 2020
The 2020 event will be held virtually and feature houses by the following local architects: Alterstudio Architecture and Mell Lawrence Architects (combined project), baldridgeARCHITECTS, Tim Cuppett Architects, Charles Di Piazza Architecture, Mark Odom Studio, Thoughtbarn, Jobe Corral Architects, Studio 512, and Hugh Jefferson Randolph Architects. Ticketholders will have online access to resources in-





cluding pictures, plans, models, videos, and 360-degree virtual walk-throughs, with live sessions from architects and collaborators. Visit aiaaustin.org.

Open House Chicago
Chicago
October 16–25, 2020
The Chicago Architecture Center has reconfigured its annual event for outdoor and online attendance this year; more than 20 Chicago neighborhoods and two suburbs will be highlighted, focusing on areas prioritized by the city's INVEST South/West initiative. Attendees can supplement their self-guided exploration with free resources available online and through an application for mobile devices in order to select routes, learn more about buildings and sites of interest in each neighborhood, and participate in online programming. For more information, go to openhousechicago.org.

New York City Architecture Biennial
New York
October 20–23, 2020
The online conference series, which will be free of charge, focuses on social inclusion in the workplace and in design. Programming will include sessions by New York City Architecture Biennial advisory board members, and architects Maria Hurtado de Mendoza and Jack Travis. Registration opens on October 1. See at nycarchitecturebiennial.org.

Competitions

2020 Architecture Drawing Prize
Deadline: October 2, 2020
The World Architecture Festival's competition showcases the art and skill of architectural drawing. Architects, designers, and students can submit in the following categories: hand-drawn; digital; and hybrid, combining the two. A special prize, focused on the global lockdown during the Covid-19 pandemic, will be awarded to one of the above categories based on a drawing completed during lockdown or a drawing relating to the changes that Covid-19 will bring to architecture. Submissions across the three categories will be evaluated on the basis of their technical skill, originality of approach, and ability to convey an architectural idea. See worldarchitecturefestival.com. ■

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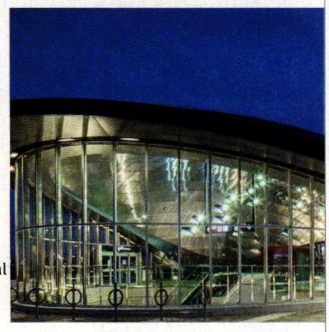

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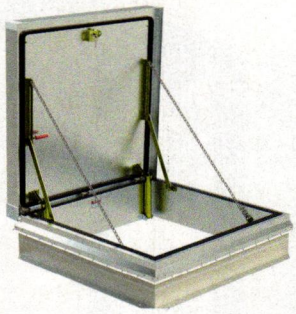

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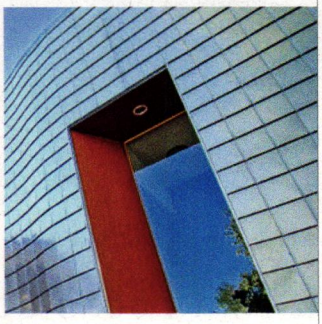

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Advertisers Index

Advertiser	Page
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Architectural Record - Women In Architecture	**44**
Architectural Record - Build Your Skills	**120**
Architectural Record - Call 4 Entries	**113**
Architectural Record - Education Exchange	**80**
Architectural Record - Innovation Conference	**4, 5**
Architectural Record - NOMA	**38**
Architectural Record - October Webinars	**119**
ARCHtober	**70**
Arktura LLC	**61**
Armstrong World Industries	**56**
ASI Visual Display Products	**13**
ATAS International	**31**
Belden Brick Company, The	**53**
Benjamin Moore & Co.	**27**
Bilco Company	**21**
Bison	**63**
Bobrick Washroom Equipment	**16**
C.R. Laurence Co., INC.	**45**
Cascade Coil	**CVR 3, 146, 147**
CAST CONNEX	**59**
Certainteed	**36**
Draper Inc.	**39, 140, 141**
Dri-Design	**15**
Endicott Clay Products	**48**
Feeney Architectural Products	**71**
Forms & Surfaces	**82**
Fry Reglet	**28**
Georgia-Pacific Gypsum	**40**
Goldbrecht	**34**
Greenheck	**55**
Hoover Treated Wood Products	**64**
Huntco Supply	**18**
Inpro Corporation	**127, 137**
Invisible Structures, INC	**54**
Joto-Vent System USA, Inc.	**81**
Julius Blum & Co., Inc.	**7**
Kingspan Light+Air | CPI Daylighting	**30**
Koala Kare Products	**22**
Landscape Forms, INC.	**32**
Lorin Industries	**23**
Lumion	**CVR 4**
Marvin	**144, 145**
Modernfold	**43**
MOZ Designs	**47**
NanaWall	**19**
National Terrazzo & Mosaic Association	**49**
New Millennium	**129**
Owens Corning	**142, 143**
Petersen Aluminum	**CVR 2, 1**
Raydoor	**149**
Reef Industries	**148**
RH Tamlyn & Sons	**123**
Rieder	**8**
Rocky Mountain Hardware	**125**
Seves Glass Block	**46**
Soprema,Inc.	**25**
The Skyscraper Museum	**148**
Tournesol Siteworks	**60**
Vitro Architectural Glass (Formerly PPG Glass)	**10, 11**
Western Window Systems	**2, 3**
Wooster Products	**42**
Wrightwood659	**65**

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SNAPSHOT

When São Paulo–based firm MK27 designed the Valcotos compound in Madrid, the architects' goal was to create a calm, secluded community in the bustling Spanish capital. The gated collection of 10 single-family homes—all just under 2,000 square feet—is a "simple, playful game of volumes," says MK27 director Suzana Glogowski, each with two stories of living space, a small balcony, a private pool, and garden. Wood wraps around the individual perimeters, while white ceramic Cobogó brick facades create elegant, lace-like veils over the residences' second stories for added privacy. White gravel throughout the shared central courtyard and driveway "creates the feeling of a linear park" within the minimalist complex, says Glogowski. *Kara Mavros*



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