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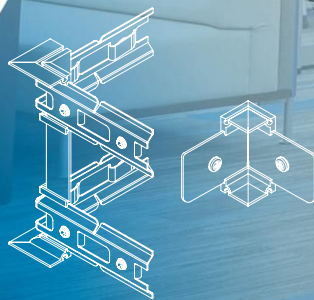
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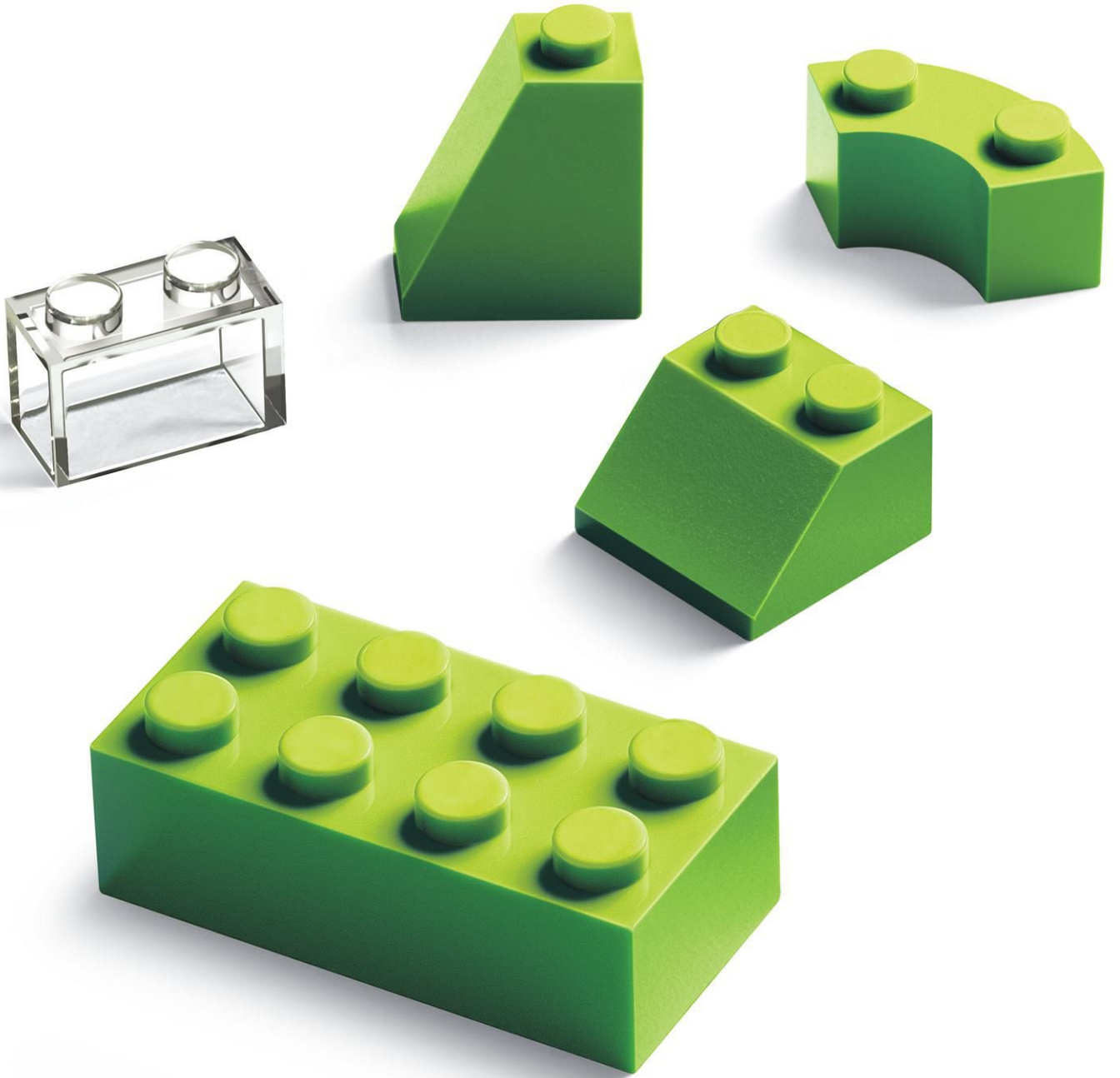
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Shaking Bad

In New York, passing subways can shake entire buildings, but that wasn't an option for Columbia University's new **Jerome L. Greene Science Center**. Home to sensitive laboratory and imaging equipment requiring exceptional stability, the design by **Renzo Piano Building Workshop** relies on a steel structure to reduce floor vibrations to a miniscule 2,000 mips. Even as the elevated No. 1 train roars past, this helps ensure that nothing distracts from the scientific advances being made within the center's unshakable walls. Read more about it in **Metals in Construction** online.

 **Steel Institute of New York**

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Page Turner

Queens' new **Elmhurst Community Library** serves one of the most diverse and vibrant communities in New York. Designed by **Marpillero Pollak Architects**, the LEED Silver-rated facility features two structural glass-encased reading rooms that allow light to flood in during the day and offer glimpses of the state-of-the-art library setting at night. Erected by **W&W Glass**, its glazed features have become beacons for the community, drawing its knowledge-hungry members to the wealth of information within. Read more about it in **Metals in Construction** online.

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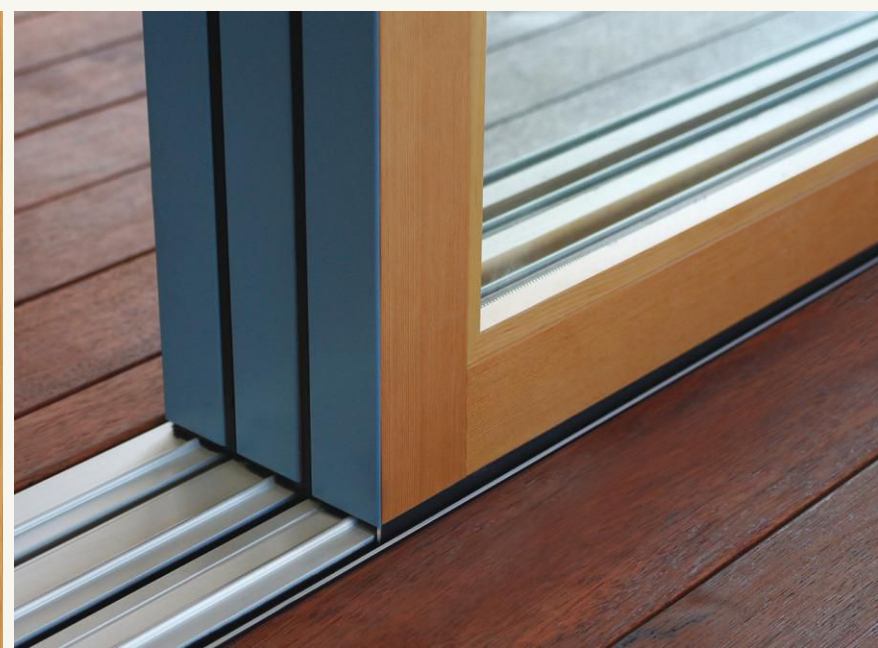


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Mastering the Art of the Kitchen Sink

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Fenestration Considerations in Contemporary Custom Homes

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Stunning Facades with Sintered Stone

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Photo: David Sundberg + Gray Organschi Architecture



Exceeding Thermal Performance Goals by Choosing Wood

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Sustainability and the Textile Industry

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Fire and Sound in Multifamily Floors

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THIS PAGE: PRIVATE CHAPEL, BY ÁLVARO SIZA. PHOTO BY JOÃO MORGADO.

COVER: PLANAR HOUSE, BY STUDIO MK27. PHOTO BY FERNANDO GUERRA.

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MID-CENTURY HYGGE

Michele Alfano

It heightens your senses, whether you're soaking in the tub, standing on the fur rug or sitting on the bench with a warm cup of coffee. That's hygge.

Copenhagen Suggesting life on a houseboat, this bathroom brings the city of Copenhagen indoors with its use of natural materials like hewn beams, water-inspired colors and a living moss wall. But the purpose is beyond a nod to nature.

In the hygge modern bathroom, the sensorial design elevates the everyday.

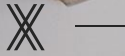
To achieve a sense of Nordic coziness, I balanced light-colored materials with the occasional geometric pattern and pop of color. The design flexibility of the DXV Modulus Collection was a natural fit, including its looks. It's a combination of angles and organicism, a perfect match. Finally, I added a hint of luxe with a built-in towel warming drawer and coffee bar—just right for achieving hygge.

For more on Michele's room,
visit us online at dxv.com



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This DXV bathroom was designed by **Michele Alfano**.



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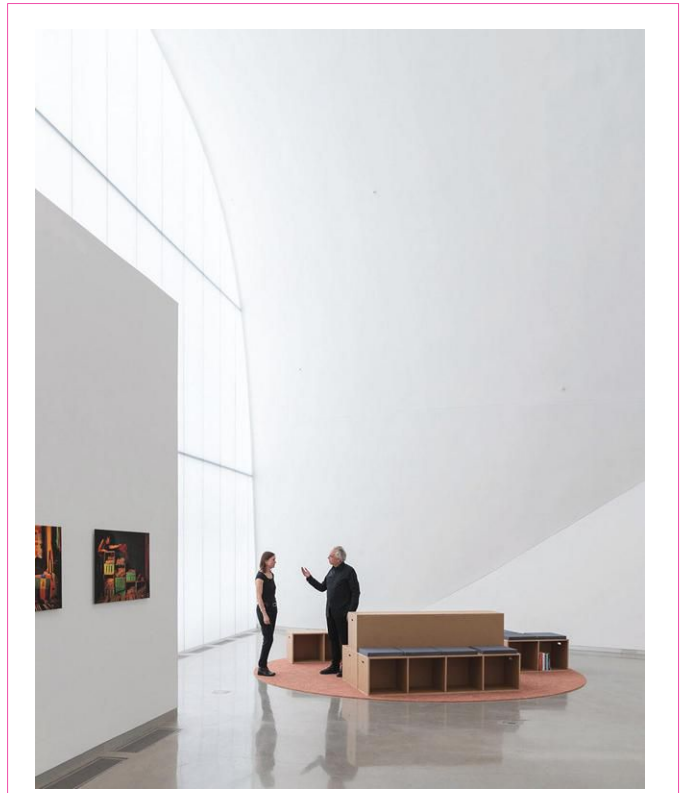
SECRET CITIES EXHIBITION

A new show at the National Building Museum called *Secret Cities: The Architecture and Planning of the Manhattan Project* explores the three cities built for the workers who produced the atomic bomb. Read our review. [ONLINE NEWS]



AIRPORT CONSTRUCTION

Beyer Blinder Belle is restoring Eero Saarinen's landmarked TWA Terminal at John F. Kennedy International Airport in New York as part of a new hotel project. See more photos from Record's visit on social media. [INSTAGRAM]



VISITING THE PROJECTS

Managing editor Beth Broome toured Virginia Commonwealth University's Institute for Contemporary Art [page 64] in Richmond, Virginia, with Steven Holl Architects senior partner Chris McVoy. [PROJECTS]



DISHING OVER DESIGN

Record editor in chief Cathleen McGuigan spoke with Renzo Piano at a luncheon in New York celebrating the 2019 opening of his Academy Museum of Motion Pictures in Los Angeles.



LIGHTS IN MOTION

Watch a video of the dynamic lighting in the basement cafeteria of an HSBC headquarters building [page 142] in Düsseldorf, Germany. [LIGHTING]

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LED REVEALS



INSIDE OUTSIDE LIVING.



The frameless insulated sliding doors by Swiss manufacturer Sky-Frame blend naturally into their surroundings, creating a seamless continuity between indoors and outdoors and blurring the line between where the living space ends and the view begins. SKY-FRAME.COM

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Gimme Shelter

While we celebrate the annual issue of Record Houses, let's not forget the housing crisis.

WELCOME TO the 2018 edition of Record Houses, a perennial favorite among readers. Custom houses are the most personal forms of architecture, obviously, reflecting an intimate collaboration between architect and client (and occasional tension between artistic expression and the desires of the person writing the checks). This year's winning houses all have powerful stories to tell, from the discovery of the perfect site to unexpected challenges of construction to the transformation of design ideas into habitable space.

A magical setting plays a lead role in the tale of High Horse Ranch in the mountains of northern California, where modules constructed off-site were craned in to minimize disturbing the land and the trees (page 82). Meanwhile, a house in Tokyo turns its back to its urban street to create its own scenario as a temple-like enclave in a garden (page 106). The designs of other houses are strongly driven by narrative concepts: a weekend place outside São Paulo, Brazil (page 100), and a home in Toulouse, France (page 112), are designed with a sequence of spaces—compressed and expansive—that create an experience that is almost cinematic.

But these houses—largely second homes—are a rare form of residential construction. What if architects who are using their creativity to design houses for the well-off turned their skills and ingenuity to housing for those with no guarantee of a roof over their heads?

Two years ago in this column, I wrote about *Evicted: Poverty and Profit in the American City*, by Matthew Desmond, a social scientist who followed eight poor families as they cycled in and out of substandard rentals in Milwaukee over the course of a year. An extraordinary book, both in its clear-eyed reporting and its beautiful writing, it went on to win a Pulitzer Prize and was on the 2017 favorite-book lists of Bill Gates and former president Obama. Now Desmond has expanded his research, mining data from court proceedings through his Eviction Lab at Princeton University, to give a detailed national portrait of an extremely troubling problem: nearly 900,000 cases of court-ordered evictions in 2016 alone, touching 2.3 million people. The research forms the basis of a new exhibition at the National Building Museum in Washington, D.C. (page 35), on view until May 2019.

Evictions are just one part of a growing housing crisis that deserves far more attention than it is getting. Just as the *Evicted* exhibition opened last month, a report was released stating that the U.S. fell short of housing demand from 2000 to 2015 by 7.3 million units. And the homeless population is rising once again. In places where the market is especially tight—such as California—rents have soared to the stratosphere. And rents have risen much faster than wages—twice as fast in New York, for example, but even too fast in places like New Hampshire. Many low-income families are spending far more of their paychecks on housing than the HUD recommendation of 30 percent. According to a study by Harvard University's Joint Center for Housing Studies, nearly half of renter households—and there are 43 million U.S. residents who rent—are “cost burdened.”

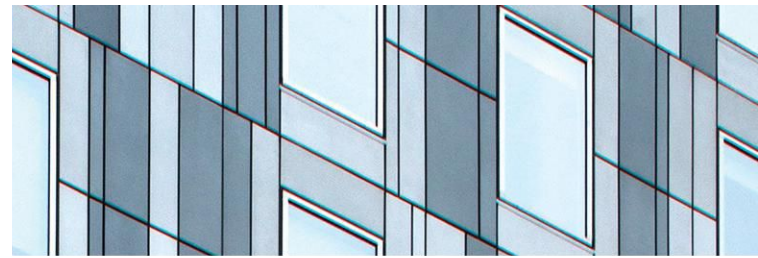


It's not a problem about people not working—the jobless rate is at a low 4.1 percent—it's about a market economy that's not working.

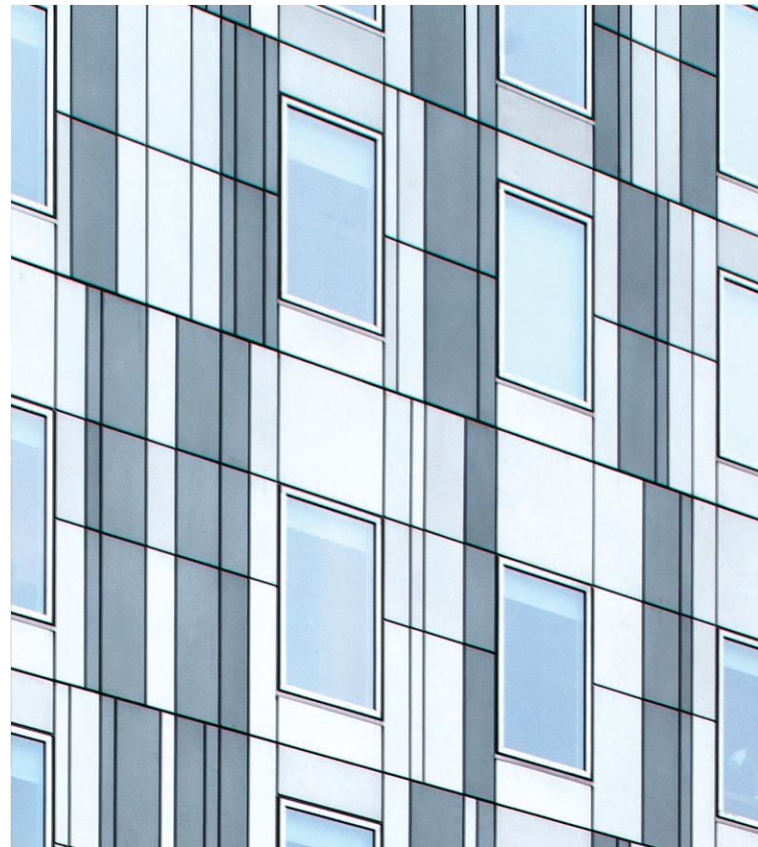
The solution? Provide housing vouchers for all those in the lowest income brackets, as Desmond recommends, and start building more affordable housing now—much more. Last fall, the state of California passed several bills to begin to address its housing shortfall, including new fees on certain real-estate transactions and approval to put a \$4 billion bond issue on the ballot in November, both to raise funds for affordable housing.

Shouldn't architectural quality be part of the equation as states and municipalities grapple with how to create an abundance of affordable and low-income housing? Europe has long surpassed the U.S. in residential design of housing at varying scales and price points, and more architects here should explore the potential of multifamily housing—bringing the same inventive approach as they do to the best single-family dwellings.

Cathleen McGuigan
Cathleen McGuigan, Editor in Chief



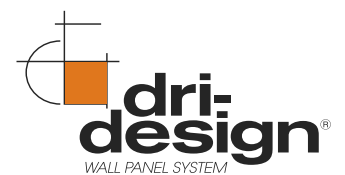
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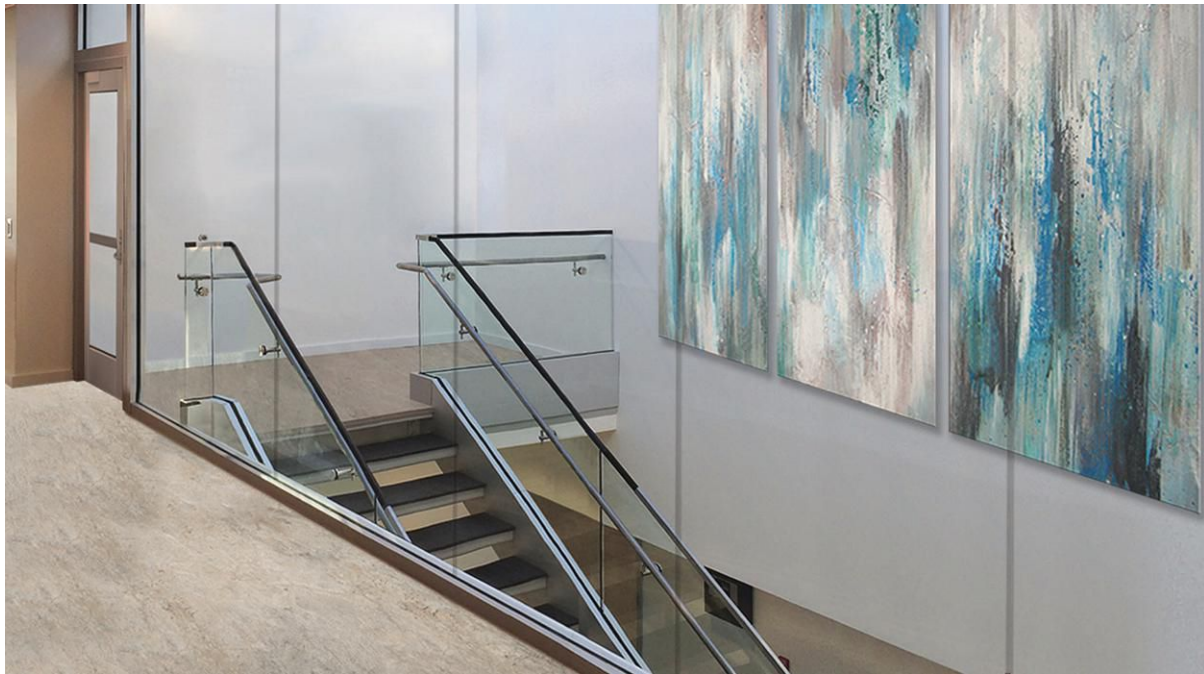
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Cinema is the best way to tell stories, but architecture is not bad.

—Architect **Renzo Piano**, at a luncheon in New York for his Academy Museum of Motion Pictures in Los Angeles.

Building Boom for U.S. Airports

BY ERIN HUDSON

NO MATTER the destination, a trip to the airport seems to land you in the same place these days—another construction site. It's not just your luck; work on airports is surging throughout the country, and over the next three years, an estimated \$70 billion will be spent to modernize aging aviation infrastructure at over 50 airports.

"These major airports have squeezed as much blood out of stone as possible," says T.J. Schulz, president of the Airport Consultants Council. "Airport authorities and designers have done all they can to account for differing airline service trends and new technologies coming into play, and now they're in a position where they have to either refurbish or rebuild."

This is not a surprise; the average U.S. airport is about 40 years old, though Schulz says facilities can be rendered obsolete in even less time, thanks to rapidly changing technology and business arrangements.

The main focus of the current building boom is on terminals, where passengers' impressions of a city and airline are made. New York's LaGuardia Airport can be held up as a cautionary tale for what happens if airport authorities postpone desperately needed updates too long. In 2014, then-vice president Joe Biden famously singled the airport out for its crumbling structures, saying after landing at LaGuardia, "You'd think, 'I must be in some third world country.'" (President Donald Trump first made a similarly phrased observation in 2011.)

LaGuardia, and most other American airports, rarely make it into international rankings of top facilities unless the sheer number of passengers are taken into account.

"We all knew Biden was right," HOK president Carl Galioto, FAIA, said at a public presentation last month. "I used to joke, after being delayed for flights there, that I wanted to take a sledgehammer to the building." Galioto got his wish; his firm is designing LaGuardia's new \$4 billion Central Terminal B, which began officially in 2016 as part of a



HOK's redevelopment of LaGuardia Airport in New York will create an interconnected facility, starting with Central Terminal B (top). At Denver International Airport (above), an outdoor public plaza sits between the Westin hotel (at left) and the peaked Jeppesen Terminal by Fentress Architects. The airport plans to add 39 new gates by 2021.

public-private partnership agreement to update the whole facility. For Terminal C, another HOK commission, the architects are employed directly by Delta Air Lines. Both projects represent financial models that are becoming increasingly common, according to Schulz.

"Airports are looking more to alternative project-delivery mechanisms like design-build

or public-private partnerships to divest some of the risk of these complicated projects from the public to the private sector," he says. "We've also seen a noticeable uptick in airlines' themselves funding projects—almost circumventing the airports just to maintain their facilities."

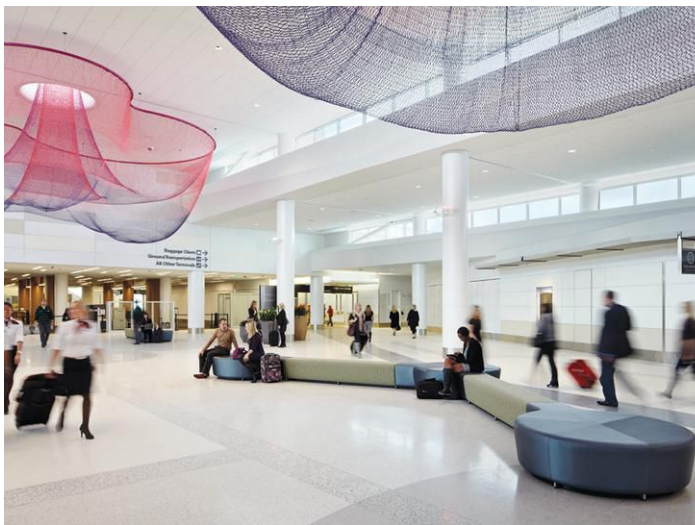
LaGuardia's new central terminal, expected to be completed by 2022, is being delivered by the private consortium LaGuardia Gateway

As part of a 2011 renovation, Gensler designed rest areas in San Francisco International Airport's 640,000-square-foot Terminal 2. Bay Area artists were commissioned to create original works for the project.

Partners, to which HOK belongs. The Port Authority of New York and New Jersey hired the group to design, construct, and then operate the terminal until 2050. HOK's 1.3 million-square-foot facility will be built adjacent to the existing 1964 terminal, which will probably continue operations until the new terminal's completion. (Operations' coexisting with construction is common to nearly all projects, Schulz says.)

There's also a broader significance to Central Terminal B's site; the architects demolished a parking structure, long an eyesore, to make way for the new building, which symbolizes the waning role of car parking and rentals at airports—a significant change that hits airport authorities' bottom lines, according to Schulz.

"There's research under way on what airports can do to reconstitute parking facilities into different facilities," he says, noting that many airports have seen car-related revenues decline, despite the near doubling of congestion on airport roadways, a trend attributed to the rise of services like Uber and Lyft. But there



are grounds for optimism, says Schulz: "Airports have got a lot savvier in trying to run more like businesses."

Much of that happens inside terminals, where amenities like restaurants and retail, which are enjoyable for passengers and profitable for airports, are housed. At Denver International Airport, which is planning a \$1.5 billion expansion, facilities include an

outdoor plaza and seasonal beer garden, while San Francisco International Airport's ongoing multibillion-dollar upgrades incorporate features such as specially commissioned artwork, yoga rooms, and play areas for children.

At LaGuardia, HOK's design plays off a metaphor of islands and bridges, beginning in an expansive glass hall where concessions will be grouped on upper levels, leaving paths to the gates easily visible throughout

the transparent building. The firm says Terminal C for Delta will be comparable.

So, buckle your seat belts; there will almost certainly be turbulence ahead, but, about a decade from now, travelers can expect a smoother, much improved pre-flight experience. ■

Neel V. Patel contributed reporting.

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Van Valkenburgh, Adjaye to Design Riverfront Park in Detroit

BY VICTORIA NEWHOUSE AND ALEXANDER GORLIN

THE DETROIT RIVERFRONT CONSERVANCY has selected Michael Van Valkenburgh Associates (MVVA), with David Adjaye, as the winner of a \$50 million competition to redesign the 22-acre West Riverfront Park in Detroit. The team's concept has, as its centerpiece, a new beach for swimming and ice-skating, carved out of a cove and protected by a jetty that juts diagonally into the waterway. The site is part of the Conservancy's grand plan for the Detroit River waterfront west of Belle Isle to the Ambassador Bridge, a 5½-mile stretch of former factories and rail yards, abandoned over time.

Detroit has had a long and complex relationship with its riverfront. Fredrick Law Olmsted was hired by the city in 1880 to design Belle Isle, a 700-acre park in the middle of the Detroit River, east of the city center. His elegant plan was deemed too simple; he resigned in disgust, and only parts were realized. Architects including Cass Gilbert modified Olmsted's vision into a Beaux-Arts formal garden, and the park continues to evolve.

Skidmore, Owings & Merrill (SOM) has been

working with the Conservancy for the last decade on a plan for the East Riverfront District, and 80 percent of that 3½-mile framework is complete. The West Riverfront Park will supplement this effort.

The MVVA/Adjaye proposal defers in a pragmatic manner to the way people use parks, mixing passive recreation with more formally programmed spaces. In addition to the beach, their scheme adds areas for fishing and play, potentially including an amphitheater and a series of pavilions. Van Valkenburgh attributes his inspiration to "having fallen in love with Detroit, and with the power of the river. I brought the two together with the cove."

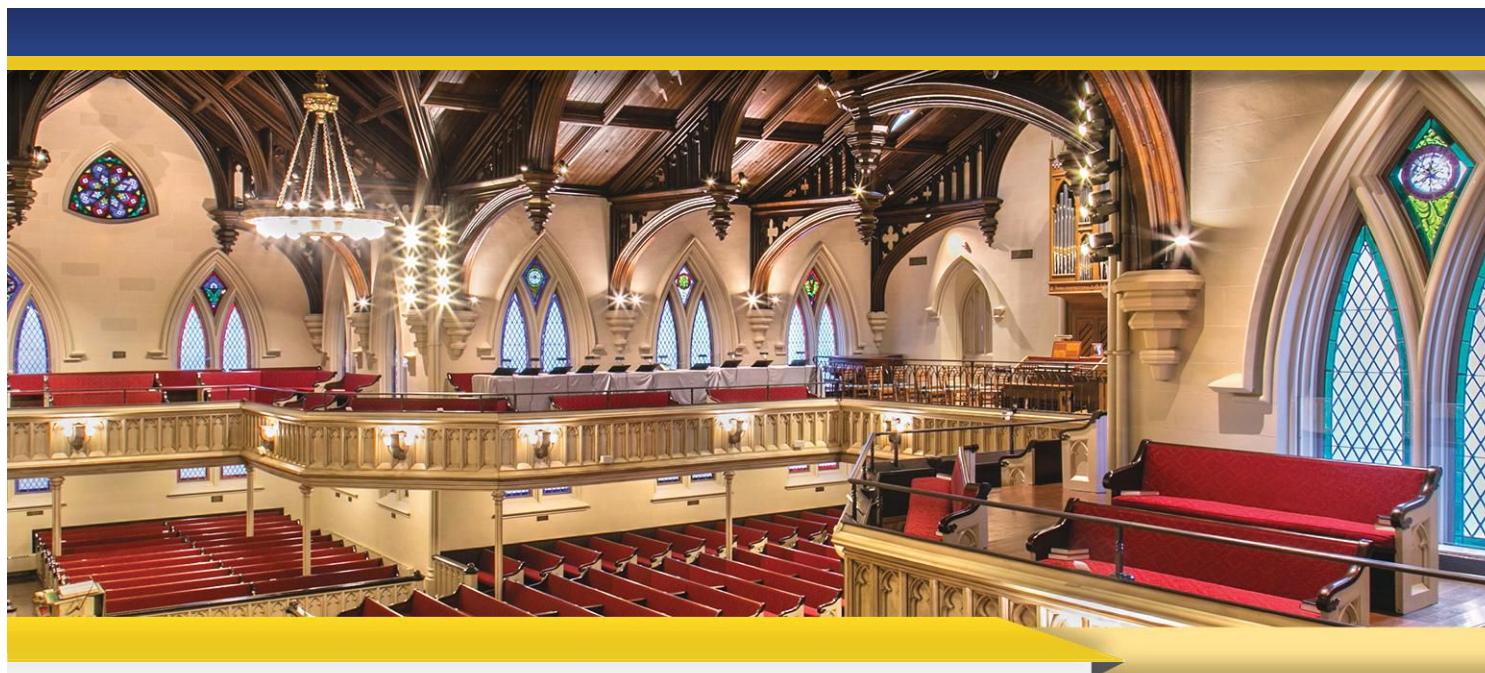
More than 80 design teams entered. Finalists were Gustafson Guthrie Nichol with Rossetti; Hood Design Studio and West 8 with Diller,



MVVA and Adjaye's plan includes a new beach, protected from strong currents by a jetty, where visitors can swim in the summer and ice-skate during colder months.

Scofidio + Renfro; and James Corner Field Operations with nArchitects. MVVA's consultants include Utile, Mobility in Chain, and Emmanuel Pratt, with local partners Limno-Tech (Ann Arbor), PEA (Detroit), and NTH Consultants (Northville). ■

IMAGE: COURTESY MICHAEL VAN VALKENBURGH ASSOCIATES



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Evicted Opens at the National Building Museum in D.C.

BY DEANE MADSEN

WHAT HAPPENS when one's home is taken away? That's a question that far too many people have had to ask when faced with eviction, and one that looms in *Evicted*, a new exhibition at the National Building Museum in Washington, D.C.

"We now know from looking at 80 million eviction records from across the country that in 2016, 2.3 million people were touched by eviction," says sociologist Matthew Desmond, whose Pulitzer Prize-winning book, *Evicted: Poverty and Profit in the American City*, serves as the prompt for the exhibition of the same title. *Evicted* tells the stories of those who have returned home to find all of their personal belongings stacked curbside—or, worse still, shrink-wrapped and carted away to a bonded storage warehouse. It shows the courtrooms where landlords appear with their lawyers, and former tenants often don't show up, knowing that their failure to pay rent has decided their cases whether they appear or not. The exhibition maps eviction data, proving this to be not just a local or regional problem but a nationwide epidemic that, as Desmond explains, is as much a cause of poverty as a result of it. "This is a problem that is affecting the streets of communities all across the country," he says. Through working at the Eviction Lab, a Princeton University-based group that researches evictions in America, "we've been able to see this and take a problem that's been invisible and bring it to light and literally put it on the map."

The map to which Desmond refers covers the first wall of the exhibition with moving boxes distributed across the U.S., scaled according to the number of evictions per state, painting a tangible picture of just how widespread the phenomenon has become. "You can see the weight of this problem at a national level that we were never able to before," Desmond says. "For me, housing should be a right for everyone who lives in this country. It should be part of what it means to be an American, because without it, everything else falls apart."

As alarming as the statistics are—one in nine renting families were evicted last year in Richmond, Virginia; one in 13 were evicted in Wilmington, Delaware; one in 21 in Albuquerque, Desmond says—the stories told within the exhibition are even more jarring. In his book, Desmond follows eight Milwaukee families on their eviction journeys over the course of 19 months. The exhibition presents a smaller sampling of narratives in brief video documen-



Photographs from the show depict scenes of evictions in progress. Faced with forced eviction, some tenants opt for the movers to place their belongings curbside rather than have to store them in a facility for a fee (above). A sheriff serves an eviction notice to a family (left).

infographics with statistics on housing costs: 88 percent of extremely low-income (ELI) families spend more than 30 percent of their income on rent; 75 percent of ELI families spend more than half their income on rent.

The final gallery of the exhibition features signs of promise and hope beyond the devastation that eviction wreaks upon families, their jobs, and their futures. Exhibition curator Sarah A. Leavitt introduces another map that points to the eradication of nuisance ordinance laws, which allow landlords to evict tenants at properties to which the police have been called on multiple occasions. Right-to-counsel legislation in some localities, Leavitt adds, would provide funding for attorneys on the tenant side of evictions, and efforts to promote that legislation are under way.

"I hope people do get upset," says Leavitt, who describes feeling grief-stricken after reading Desmond's book. "That may be a strange thing to say. But I hope that leads to action. We are actors, we can make change, we can do the work."

Evicted runs through May 19, 2019, at the National Building Museum in Washington, D.C. ■

taries, the screens housed within four gabled forms rendered in square steel tubes with Homasote walls. These video installations introduce visitors to the epidemic of eviction, then to two young women who share their intensely personal stories within the intimate confines of these small structures, the last of which showcases the court system, which almost inevitably fails to deliver justice or even reprieve to evicted tenants. The wallpaper on the outside of the minihouses displays

[NEWSMAKER]

Eyal Weizman

BY ALEX KLIMOSKI

BORN IN ISRAEL and educated at the Architectural Association (AA), Eyal Weizman could be considered more a detective than an architect. In 2011, Weizman established Forensic Architecture, an agency based at the Centre for Research Architecture at Goldsmiths, University of London. He directs the center. The group, whose funders include the European Research Council, combs through data such as smartphone footage, satellite imagery, maps, and phone logs to create three-dimensional spatial maps of conflict sites, using architectural rendering software and other analytic tools. Significant projects have included full-scale replicas of key elements of Auschwitz gas chambers and incinerators for an exhibit at the 2016 Venice Architecture Biennale, and an investigation into the U.S. bombing of a Syrian mosque last year. The firm is currently scrutinizing the deadly blaze at London's Grenfell Tower in June 2017, mining publicly available footage to create a 3-D model that will serve as an open resource for people to better understand the events that led to the fire. Weizman spoke to RECORD from the group's office at Goldsmiths.

When did you realize that you didn't want to build but instead to pursue the investigative architectural research that you do?

As a student at the AA, I was very research-oriented and interested in politics and theory. About halfway through my education, I began mapping Israeli settlements in the West Bank and the human rights violations that were occurring there. My study was featured in several human rights reports and was also presented as evidence to the International Court of Justice. So that experience really showed me the political power of architectural analysis and how it could become a counter-cartographic tool in confronting injustice.

You have a degree in architecture, and your office is called Forensic Architecture, but your work is the result of a very multidisciplinary effort. Do you consider what you do architecture?

Yes. But for us, architecture is a place we depart from; it's more like an airport than a prison. To provide architectural evidence of, say, a destroyed building in Syria, we are often

unable to actually go on-site. We need to locate, verify, analyze, and stitch together user-generated content in order to make a narrative. Spatial analysis involves understanding components such as media or the memories of survivors, so we have software developers and forensic psychologists; we have to understand the theoretical implications of certain types of ammunition used, for example, so we have lawyers in our group.

Following the evidence means setting up a team composed of multiple skills and talents.

The Grenfell Tower project is different from some of your other investigations in that you aren't trying to find a culprit per se. We know that the cladding and insulation are to blame for the fire's rapid spreading. So what are you trying to achieve?

I think the Grenfell Tower tragedy is a defining tragedy for Londoners, especially those in

my generation, because we have seen the ways in which privatization and other features of the neoliberal economy have started to affect the very fabric of our cities and buildings. The story of the night of the fire is connected to a set of decisions that reveal a history of the deregulation processes that have taken place. The Grenfell Tower is not simply the story of the cladding; it's a combination of microstories—stories of families, of policy, of material elements. By creating a spatial database from video footage, interviews, telephone calls, Facebook posts, text messages, radio communication, etcetera, we can have a precise picture of this tragic event and honor what took place.

We live in tumultuous times; how do you see Forensic Architecture's role evolving in the near future, with such global unrest?

I think that work such as ours has a very important political meaning now, considering the populist-right movement that is rising in Hungary, Poland, Turkey, Israel to a certain extent, and, of course, with Brexit and the Trump administration. All of these things have something in common—not a dispute of facts but rather an attack on the very possibility of establishing fact-based politics. The idea of calling everything fake news is slowing down the potential for evidence-based work. We think that there's great importance in finding new ways of producing solid evidence on which to base our discussions and our political decisions. We plan to continue to use architecture as an off-place to understand, analyze, and intervene in political situations worldwide. ■

**noted****David Adjaye Wins Louis I. Kahn Memorial Award**

Philadelphia's Center for Architecture and Design will honor the founding principal of Adjaye Associates for his contributions to the field. The annual award is presented at an event that raises money for a public charter high school for students interested in architecture and design.

Towers by Studio Gang and Álvaro Siza to Rise in New York

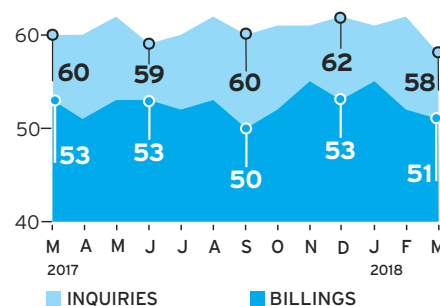
A 35-story condominium tower designed by Siza and planned for Manhattan's Hell's Kitchen neighborhood will be the Pritzker Prize-winner's first project in NYC, while a 51-story building by Studio Gang in Downtown Brooklyn will be the Chicago firm's first residential tower in the city.

Mississippi Institute of Arts and Letters Honors Robert Ivy, FAIA

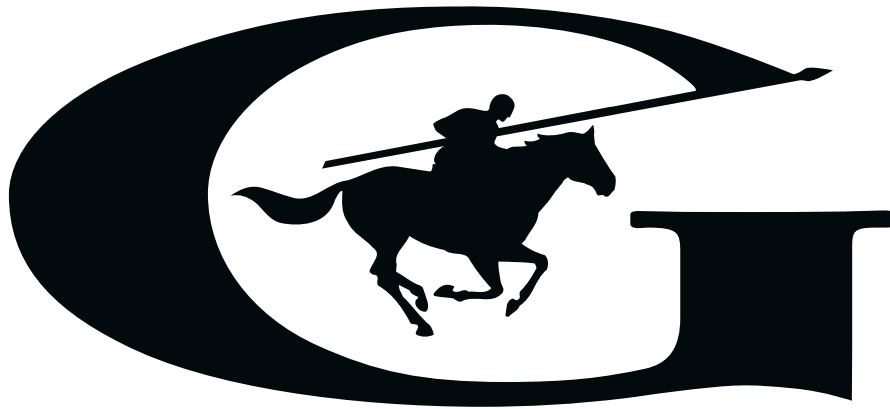
The AIA chief executive officer (and a former RECORD editor in chief) is the first architect to win the Noel Polk Lifetime Achievement Award, which goes to living Mississippi-connected artists and art patrons. Past recipients include writer Eudora Welty (2001) and actor Morgan Freeman (2007).

Frick Collection Unveils Selldorf Architects' Design for Renovation

The New York museum plans to launch a \$160 million renovation and expansion project after years of fraught attempts. The design will preserve a garden by Russell Page and insert a 220-seat auditorium beneath it, open the Frick family's private living quarters as new gallery space, and reconfigure the main lobby.

**Billings Stay Strong for Six Months**

The latest data from the AIA show that billings grew for the sixth consecutive month in March, slowing slightly from February. The Architectural Billings Index dipped by 1 point to 51. (Scores above 50 indicate an increase in billings.) The new projects inquiry index dropped from 62.4 to 58.1; the new design contracts index fell from 54.5 to 51.5. Still, new project activity “continues to grow at a solid pace,” says AIA economist Kermit Baker.



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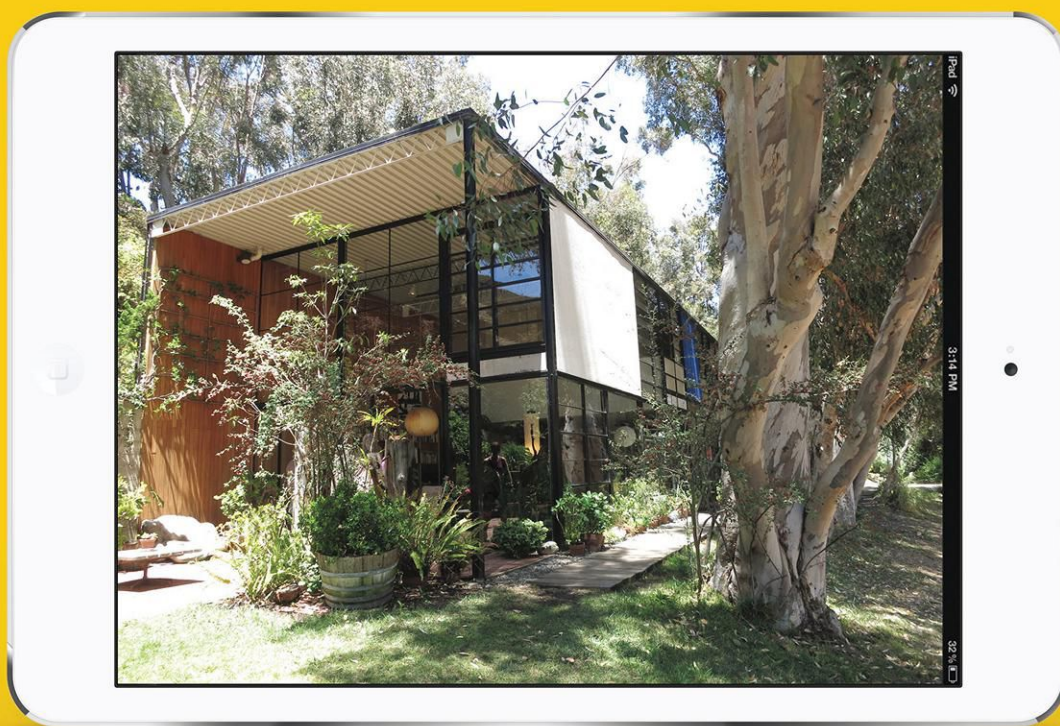
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DAVID ROCKWELL REIMAGINES A BROADWAY LANDMARK AND PRODUCTION REVIVAL FOR SECOND STAGE THEATER. BY LINDA C. LENTZ



WHAT INTERESTS David Rockwell most about theater, he says, is the ability to enable storytelling through architecture—an undertaking he and his eponymous firm embraced when New York's Second Stage Theater asked them to revive an old Broadway house for the company's new home, and also design the set for its first production in it.

Called the Little Theater when it was built in 1912, the landmarked neo-Georgian building was designed by Harry Creighton Ingalls and F. Burrall Hoffman for impresario Winthrop Ames, to evoke an intimate, salonlike experience, with only 299 seats. Five years later, its interior was renovated by the noted theater architect Herbert Krapp, who added a balcony. It received another overhaul in 1979 and was renamed the Helen Hayes four years later.

After a two-year renovation, it reopened again in February as the Hayes Theater—with about 600 seats, the smallest house on Broadway. Rockwell's scheme echoes its beginnings, with a beautifully rendered mural on the auditorium walls based on copies of 18th-century French tapestries that



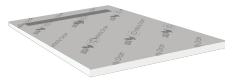
Designed in 1912 to feel like a salon, with 299 seats and windows at the back, the Hayes Theater is, after enlargements, still the smallest Broadway house at about 600 seats (above). Rockwell Group wrapped the auditorium with a pixelated mural (left) based on copies of 18th-century tapestries that hung in the original space.

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David Rockwell created a suggestion of place for the refurbished theater's first production, Kenneth Lonergan's *Lobby Hero* (above). The exterior of the neo-Georgian brick landmark (left) on West 44th Street was designed in 1912 to resemble a residence.

hung in the original space. Working with EverGreene Architectural Arts, Rockwell Group devised a pixelated version of one tapestry scene, stenciling it over the walls, which were painted underneath in blue ombré hues. The existing seats were refurbished and covered in a coppery crushed velvet. To bring the theater up to 21st-century standards, the architects installed new restrooms, an elevator, and insulated glazing, plus HVAC, electrical, fire-safety, and rigging systems. They also restored a lower lobby and historic entrance, updating each with contemporary colors.

Rockwell, who has designed more than a dozen sets—winning a Tony Award for last year's Broadway revival of *She Loves Me*—created a spare production for Second Stage's first show here: a revival of Kenneth Lonergan's 2001 drama *Lobby Hero*, which takes place in and outside of a Manhattan apartment house lobby. He did this with an environment onstage that provides a mere suggestion of place—elevator doors, desk, dropped ceiling, and entrance—allowing the audience to see it as the characters do by rotating the lobby sporadically throughout the play. Streetlights and a backlit textural backdrop for the outdoor scenes evoke the city at night.

"I can't think of any other art form where physical transformation happens in front of you," says Rockwell. As with his firm's thoughtful renovation of the Hayes Theater, this deceptively simple and fluid staging captures the audience with its subtle spell. ■

Create Aesthetic Adaptable Spaces

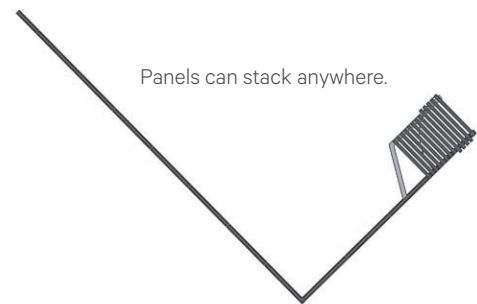


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The architect for the April issue's contest is Austria-born **HANS HOLLEIN**, the 1985 Pritzker Prize laureate. The Retti Candle Shop (left), completed in 1966, won him recognition for his playful use of aluminum and mirrors along with the entrance's allusion to a classical column.

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A Separate Peace

Álvaro Siza's secluded chapel in Portugal offers moments of serene beauty for quiet contemplation and prayer.

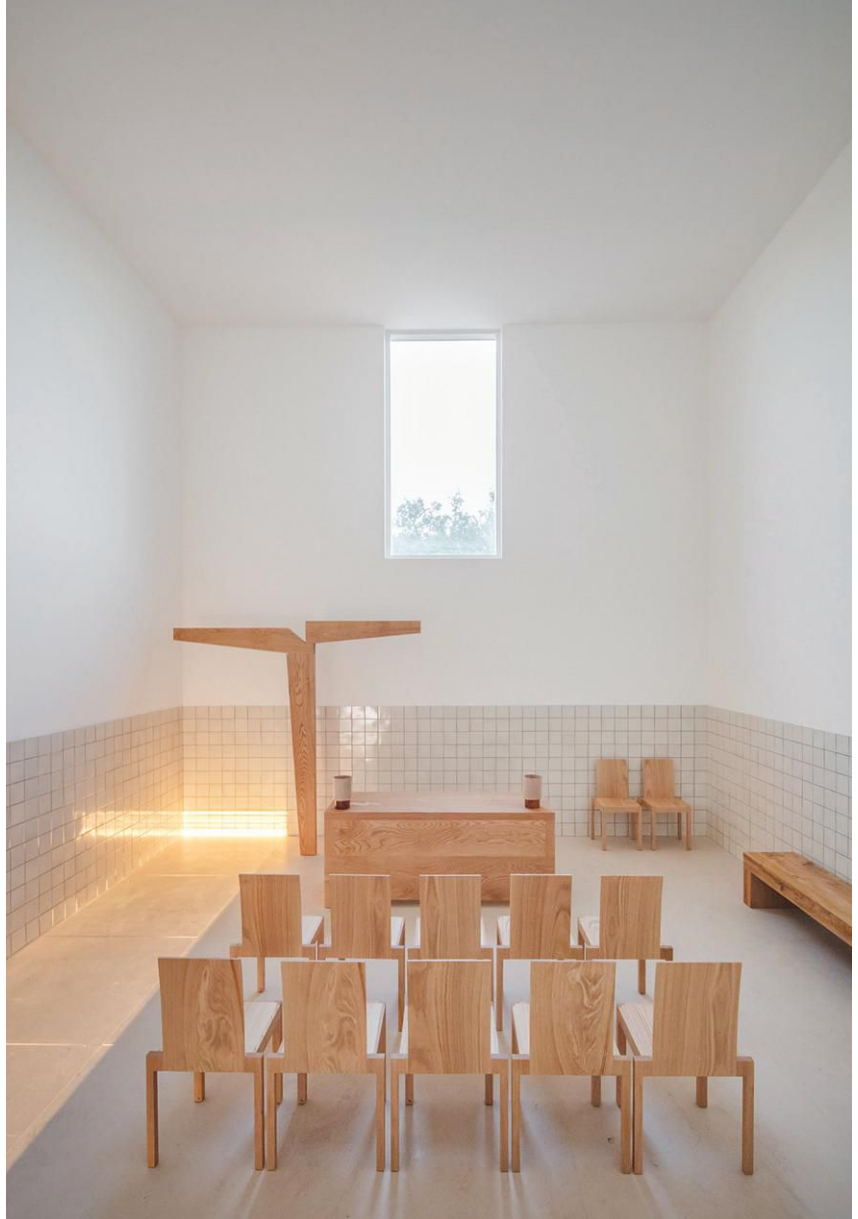
BY ANA MARTINS
PHOTOGRAPHY BY JOÃO MORGADO



"IT WAS LIKE returning to the roots of architecture," Álvaro Siza says about the experience of creating a small chapel at the top of a hill, on former farmland in Portugal. The first project by the Portuguese Pritzker Prize-winner to be built in the Algarve, the country's southernmost region, it would also be the first part of a larger spiritual retreat. The pristine sanctuary is pure form—devoid of plumbing, HVAC, and electrical systems.

The plan took shape two years ago, when the clients, a Swiss/American couple who met and married in Portugal in the 1980s, approached the architect. They wanted to develop a self-sustaining project in the region and asked him to design a focal point. "A chapel seemed like a good way to start," they explained. Overlooking their property, such a building, they felt, would set a positive tone for the land's future development.

The architect was no less mindful and detailed-oriented in his design, despite its very small scale, than in larger projects, such as the church and community center he recently completed in Rennes, France (RECORD, April 2018). "Not to degrade a beautiful landscape" was his biggest challenge. Only 22 feet high, the one-story, 702-square-foot building not only respects but elevates its surroundings, appearing as a spiritual oasis at the end of a footpath, its only means of access. A forecourt extending on the west is roughly the same footprint as the structure and helps inte-



grate the chapel into the sloped terrain by creating the right balance between its vertical and horizontal planes.

A south-facing entry leads to an open passage where three murals, drawn by Siza on Portuguese ceramic tiles, depict the birth, baptism, and death of Jesus Christ. Strategic openings in the roof and walls allow for natural ventilation as well as ample daylight to flood the white, partially tiled interior. The brick structure, coated in plaster, and a green roof insulate the chapel from weather extremes. The architect also designed the furniture inside, and the simple 7½-foot wood cross.

The building's context, says Siza, informed his selection of materials. "This is but one more building in a farm with other small buildings nearby, close in spirit and in terms of materials." He chose cream Portuguese limestone to line the courtyard and interior floors, while the plaster on the facade is beige, to blend with the sand-colored soil of the landscape.

Completed and consecrated in March, the humble house of prayer appears at peace with its surroundings. "For a moment," says Siza, "architecture has been freed from its typical specialties and their regulations." ■

Netherlands-based freelance journalist Ana Martins writes about architecture and design.

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The Way We Were

Addison Mizner: The Architect Whose Genius Defined Palm Beach, by Stephen Perkins and James Caughman; photography by Craig Kuhner. Lyons Press, 350 pages, \$50.

Reviewed by Wendy Moonan

A **HANDFUL** of books published in the last few decades brought to light the residential achievements of American architect Addison C. Mizner (1872–1933), who popularized the Mediterranean Revival style in the 1920s in Florida and other parts of the U.S. Now Stephen Perkins and James Caughman add more knowledge and understanding of this inventive architect through a book that is both social history and architectural compendium.

Mizner’s eclectic style, where touches of Gothic architecture supplemented Spanish colonial motifs, romanticized an era and helped its occupants deal with the heat: he provided high ceilings, fans, tiled and stuccoed walls, and aligned windows for cross ventilation. His houses cooled off their inhabitants outdoors too, through covered terraces, deep porches, and fountains.

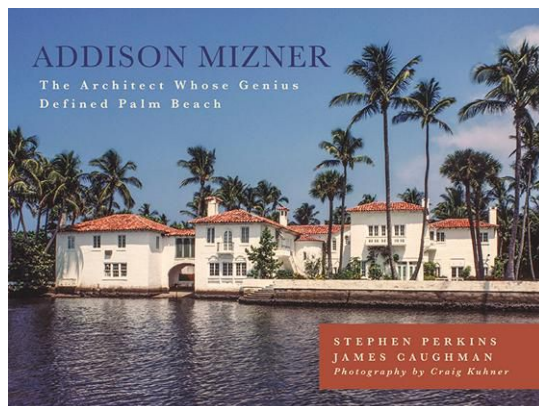
Mizner’s training was—as Perkins, a hotel architect, and Caughman, a furniture and design historian, relate—unconventional. At age 16, Mizner accompanied his parents to Guatemala, where his father held an ambassadorial position. Mizner traveled widely in Central America, learned Spanish, and sketched 16th-century architecture. Soon after he returned home to San Francisco he left again, for Spain, enrolling at the University of Salamanca and drawing local medieval architecture, saving the results in voluminous scrapbooks. He then developed an affinity for the design of the Far East when accompanying his older brother to China.

At 21, Mizner began an apprenticeship with Willis Polk, a socially prominent San Francisco architect who sought to create a Mission Revival style inspired by California’s Spanish colonial past. In Polk’s office, Mizner learned draftsmanship and the building trades, but, after three years, the firm went bankrupt. Mizner, broke, became a gold miner, first in the Sierras and then in Alaska.

With a modest stake in gold, he arrived in New York in 1904, using his San Francisco

society connections to secure architectural commissions for houses in town and for mansions on the North Shore of Long Island.

In 1918, as World War I ended, Mizner went to Palm Beach at the invitation of his friend Paris Singer, the sewing machine heir and developer. The two bon vivants shared a passion for art and architecture, and Singer commissioned Mizner to build him the Moorish-inspired pink-stuccoed Everglades Club on Worth Avenue. Houses for Edward T. Stotesbury, president of the Drexel Company in Philadelphia; John S. Phipps, son of a partner of Andrew Carnegie; and Anthony Drexel Biddle Jr. followed. Not only did Mizner get 35 residential commissions between 1919 and 1925, but he also figured out how to build a grand mansion



in one summer, so it could be occupied by Christmas. Early on he allied himself with the top local builder and organized Mizner Industries, a group of small artisanal factories to supply red roof tiles, cast stone, “Spanish” furniture, wrought-iron chandeliers, and colorful patterned ceramic wall tiles.

While Mizner was not the first to introduce the Spanish colonial style to Palm Beach, he did it so well in proportions, scale, and embellishment that he was enthusiastically imitated by those who succeeded him. However, his end was sad: his ambitious scheme to develop Boca Raton in 1925 proved a disaster and left him bankrupt. When he returned to Palm Beach, he continued to work, but younger rivals were scoring most of the new house commissions. Nonetheless, you can’t help being captivated by the still extant architecture of this eccentric man, who charmed the world and helped revive Spanish colonial architecture. ■

Wendy Moonan, an architecture and design writer, is completing a book on private New York interiors.




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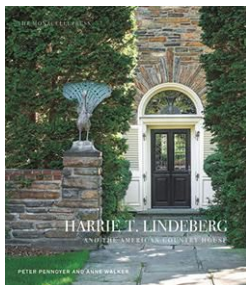
AGC

Why We Should Be Wild About Harrie

HARRIE T. LINDBERG and the American Country House, by Peter Pennoyer and Anne Walker; photography by Jonathan Wallen. Monacelli Press, 256 pages, \$60.

Reviewed by James Gauer

IN THE EARLY part of the 20th century, American architect Harrie T. Lindeberg designed dozens of distinguished dwellings inspired by historical sources. His work is similar to that of his celebrated English contemporaries C.F.A. Voysey and Edwin Lutyens, but Lindeberg's name is less familiar. Architect Peter Pennoyer and historian Anne Walker think his refined but idiosyncratic style, which reinterprets rather than replicates both classical and vernacular precedents, is long overdue for recognition.



Pennoyer and Walker's book, with sumptuous photography by Jonathan Wallen, is their fifth exploration of early 20th-century architecture by eminent New York practitioners. If you've only seen Lindeberg's houses in the monochromatic photos of previous monographs published in 1912 and 1940, viewing them in color—not just as architectural artifacts but as intricately detailed, richly textured settings in lush green landscapes—comes as a splendid surprise.

The son of Swedish immigrants who settled in New Jersey, Lindeberg had both talent and pluck. During a five-year stint at McKim, Mead and White in New York, he learned not only about making architecture but also about dealing with wealthy patrons. In 1906, he and Lewis Colt Albro left the firm to form a partnership. Their work was so abundant that RECORD devoted 20 pages to five of their houses in its October 1912 issue. After striking out on his own in 1914, Lindeberg created large houses for bankers, brokers, and captains of industry from Rhode Island to Texas. After the onset of the Depression, he made do with fewer and smaller residential projects and found more substantial commissions in a handful of U.S. embassies and consulates. Only one, however, the Colonial-style U.S. embassy in Helsinki (1940), was realized. He also experimented with Modernism in unbuilt houses based on prefabricated modular steel panels.

The book showcases 20 works completed between 1906 and 1940. Their selection was undoubtedly influenced by accessibility for new color photography, though five of these projects are presented only in black-and-white archival photos. Handsomely rendered plans supplement the carefully curated images, and scholarly chapters about client, site, program, and design take this book far beyond the coffee table genre. Among the featured houses is Lindeberg's own weekend retreat in the Long Island hamlet of Locust Valley, shown on the cover. Its simple massing, articulated in variegated ledgestone and extending into the landscape with terraces and gardens, is typical of much of his work. Another example is the Armour Estate in Lake Forest, Illinois, which combines shifting axes in plan with brick-and-limestone elevations punctuated by casements, oriels, and gables.

The authors argue persuasively that Lindeberg's genius lay in "extending the historical continuum of architecture." His synthesis of rational but gracious planning with simple yet picturesque form-making should be an inspiration to any architect—regardless of stylistic inclination—who seeks to learn lessons from history and apply them to new work that is both subtly original and enduringly beautiful. ■

James Gauer, an architect and author based in Victoria, B.C.; Chicago; and San Miguel de Allende, Mexico, contributes regularly to RECORD.



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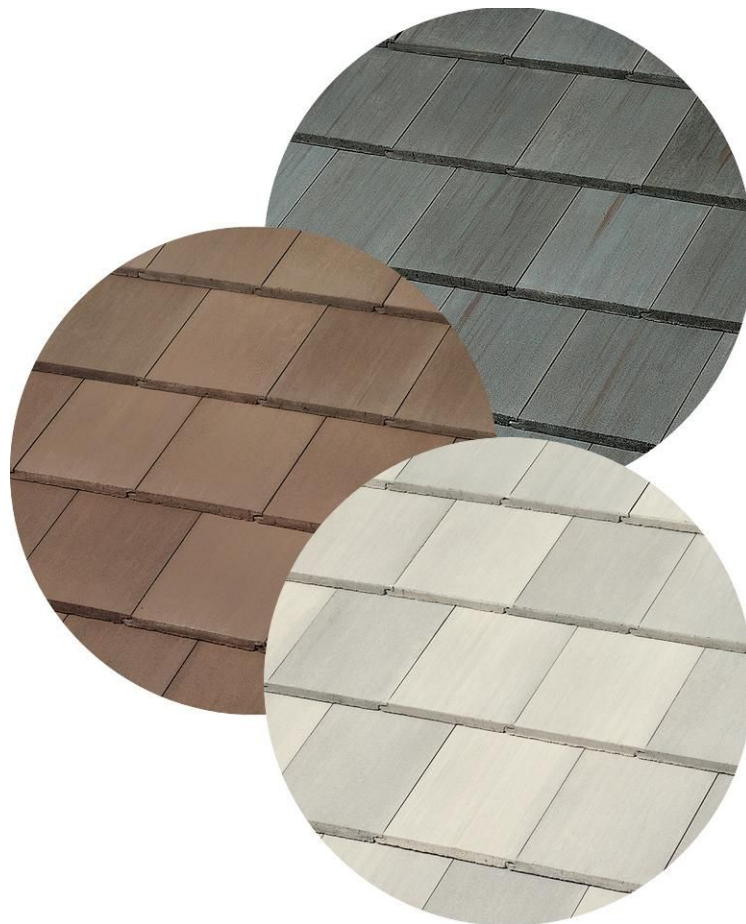
By Kelly Beamon



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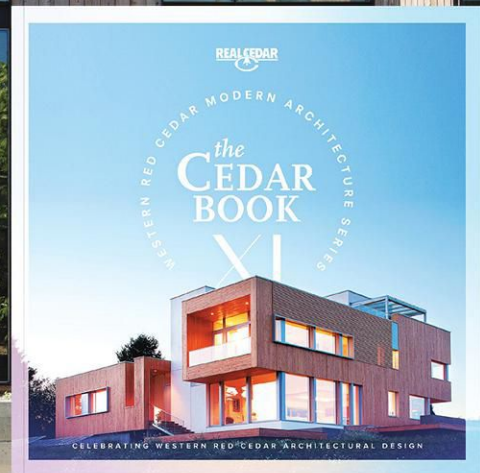


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Institute for Contemporary Art at VCU
Richmond, Virginia | Steven Holl Architects

Turning the Corner

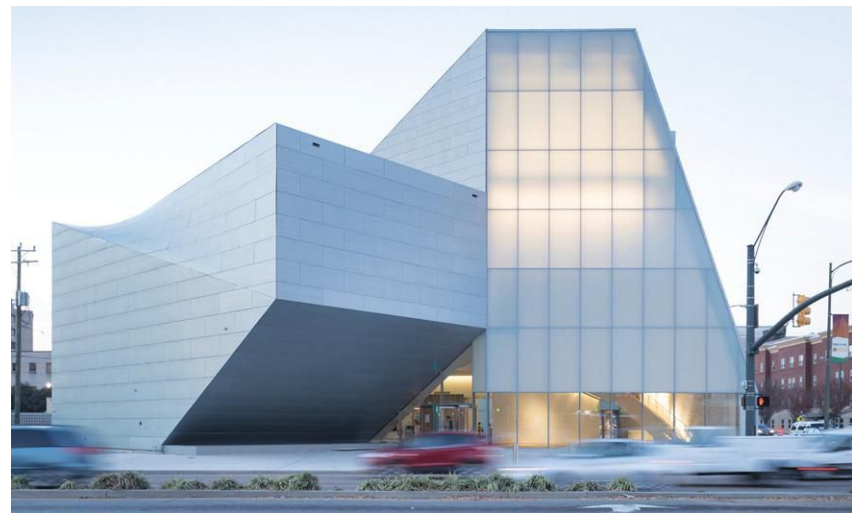
A busy intersection becomes the unlikely home for a university's forward-looking arts center.

BY BETH BROOME

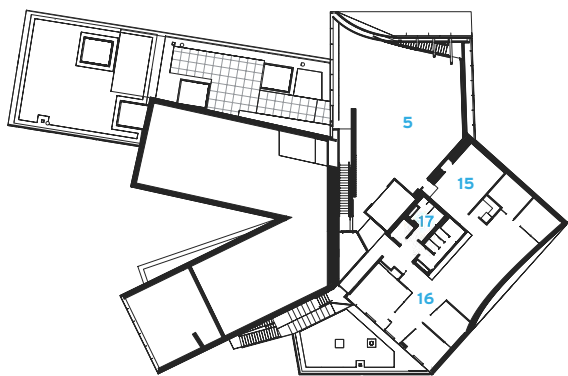
PHOTOGRAPHY BY IWAN BAAN

THE NEW MARKEL CENTER at Virginia Commonwealth University's Institute for Contemporary Art (ICA) in Richmond anchors its busy corner site at the edge of campus like an urban-scaled sculpture, its cool, pre-weathered titanium zinc and etched glass acting in concert to form a building that, in certain lights, appears monolithic. Designed by Steven Holl Architects (SHA), the ICA is a calming antidote to the rough-and-tumble intersection on which it sits, where trucks rumble by and car radios blare out of sunroofs. With its intriguing torqued geometry and camouflaged porosity, it is a gateway that metaphorically links art to the larger world and literally connects the surrounding neighborhood to the university.

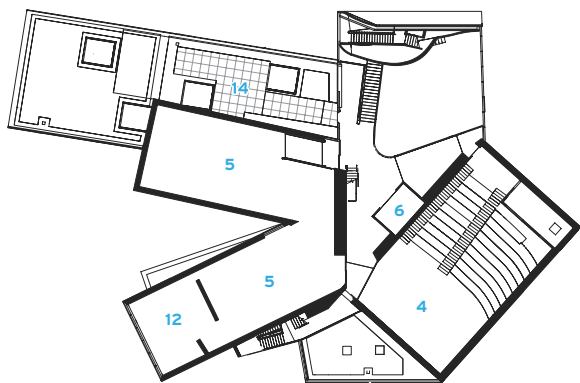
Richmond is better known as the historic capital of the Confederacy than for its more recent role as the center of a vibrant arts scene—including as the home of Virginia Commonwealth University's (VCU) top-ranked School of the Arts. But, says Joseph Seipel, interim director of the institute



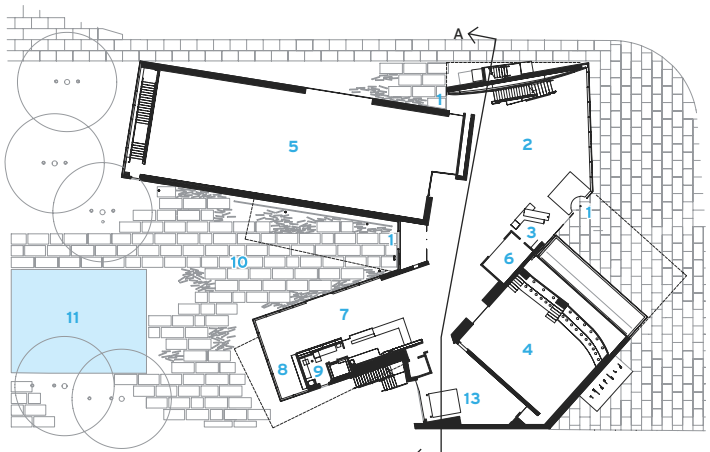
IN FINE FORM The rectilinearity of the auditorium volume (above, at left) is interrupted by an upward scooping gesture. Its raked seating is reflected in an overhang above the entry to the Forum (at right), whose etched glass casts a warm glow. The east side of this volume (left) also torques skyward. The bar-shaped first-floor gallery shoots off behind.



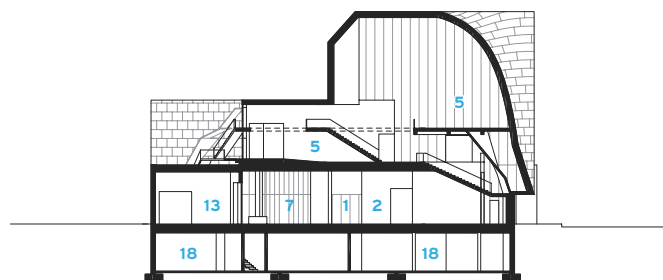
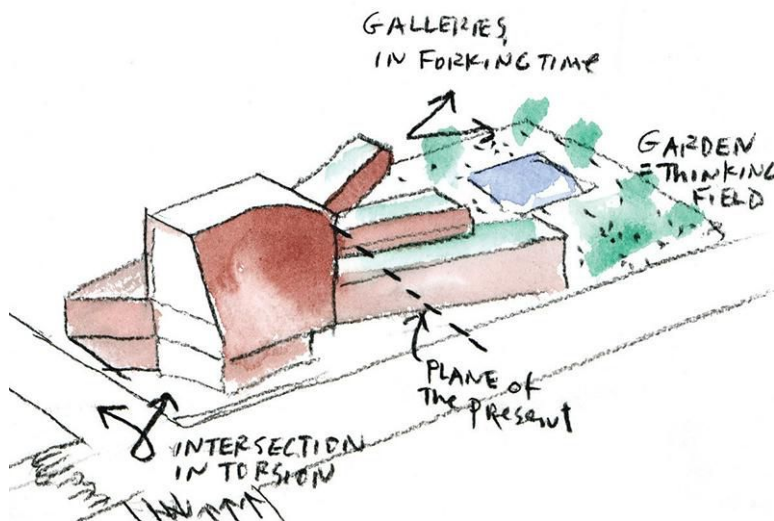
THIRD-FLOOR PLAN



SECOND-FLOOR PLAN



GROUND-FLOOR PLAN



SECTION A - A

- | | |
|---------------------|----------------------|
| 1 ENTRANCE | 10 GARDEN |
| 2 FORUM | 11 REFLECTING POOL |
| 3 RECEPTION | 12 CLASSROOM |
| 4 PERFORMANCE SPACE | 13 LOADING DOCK |
| 5 GALLERY | 14 SCULPTURE TERRACE |
| 6 ELEVATOR | 15 MEETING |
| 7 CAFÉ | 16 ADMINISTRATION |
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and dean emeritus of the arts school, “there was one thing that was missing—neither the school nor the city had a contemporary-art institution. It was the last building block the university needed to stand out as a creative campus.”

The idea for such an institution was initially proposed in the early 2000s by local gallerist Beverly Reynolds; some years later, a design by Charles Gwathmey for another location was scrapped. It wasn’t until a group of benefactors assembled and the VCU Real Estate Foundation donated the current site—which had been a parking lot flanked by gas stations and a Chinese restaurant and that once marked the divide between the city’s black and white communities—that things started to happen. After an RFQ, Steven Holl and his partner Chris McVoy

won, in a unanimous decision, the commission to design a noncollecting institution, with exhibition, education, and performance spaces, that would be free and open to the public. On a sprawling campus with little noteworthy architecture, SHA’s international stature and extensive arts-institution experience would raise the bar, notes one donor, Bill Royall, with a building “that would match the caliber of the School of the Arts” while turning the challenging site into a welcoming portal.

As a gateway building dedicated to the arts, there was great potential for cross-connections. “We’re at a wonderful moment where there is this recognition that the arts are not a closed-in discipline,” says McVoy. “This building is a physical manifestation of that.” Exploiting the corner became a starting point, while at the same time the architects wanted the



building to reflect the idea that contemporary art is pluralistic and moving in many directions at once. Inspired by Jorge Luis Borges's "The Garden of Forking Paths," a story where all possible outcomes of an event happen simultaneously, the architects came up with the metaphor of "a fork in time."

"There is no grand narrative in art today, like abstract expressionism or conceptual art," says Holl (who adds that the same is true in architecture). "Where are we now? For me, time forks toward innumerable futures, and there is a kind of optimism. And, so, the question became, how could the building express this moment?"

Simply put, the building (which is LEED Gold-certified) is composed of an elegant, 240-seat cherry-lined auditorium and a lobby called the Forum, topped by an exhibition space; these are housed in two colliding volumes that torque as they rise. They intersect at a wall of translucent glass (Holl calls it the "plane of the present") where they are linked to four bar-shaped forms that shoot out at angles into a garden with a reflecting pool. In addition to a café and bookshop, those branching volumes contain, aptly enough, the galleries of "forking time."

Metal- and glass-clad, the ICA provides a counterpoint to its redbrick surroundings, announcing that something different will be going on here. Though the architecture is dramatic, the 41,000-square-foot



MONOLITHIC MOMENT In certain lights, the ICA (above) appears as a solid object. Broad Street's dense corridor has been seeing a renaissance, with dozens of new businesses. The bar-shaped volumes (top) containing the galleries of "forking time" branch off, shaping a space for a contemplative garden and reflecting pool.



SILENCE IS GOLDEN In the Forum (above), insulated units with asymmetric-thickness laminate lites reduce sound transmission, making the space a hushed oasis, as traffic rushes by outside. Second-floor galleries (left) meet at an acute point. The top-floor gallery (opposite) is a soaring, light-drenched space for hosting site-specific installations.



concrete-and-steel-frame center has a sense of intimacy. You enter it through the garden, along the café, or from the street side, below a 72-foot-high wall of matte translucent glass, with a transparent ribbon below. The scooped geometry of the 33-foot-high Forum reflects the twisting exterior and is sculpted from white acoustical plaster; designed to host gatherings, it is a gracious space flooded with daylight, while outside you can see the traffic speed by noiselessly. Vertical circulation, including an oversize elevator and a bold stair that cuts through the Forum, is organized along the glazed wall that links all the programmatic components.

To make the exhibition spaces more versatile, the architects turned the two galleries originally programmed into four, three of which occupy the bar-shaped volumes, and a fourth tops the Forum as a swooping, cathedral-like space with diffused daylight filtering in through the double glass walls. The galleries vary in scale: each offers a unique environment (the rectilinear ones are all designed to the golden ratio), and each plays differently with daylight—entering through skylights and translucent and transparent windows—while keeping a connection to the sky or the energy of the street outside. “It’s great to have a balance of spaces that allow flexibility and yet also are distinct,” says chief curator Stephanie Smith, noting how the building has encouraged investigations and influenced programming, such as site-specific installations and performance art that will flow beyond the confines of the auditorium. The most literal manifestation of “forking time” occurs where the walls of the two second-floor galleries meet at an acute point, allowing visitors to gaze into two worlds simultaneously. This bifurcation has inspired a future exhibition series, “Dialogues,” that will pair, side by side, the work of related artists or media.

As a polished object in a rough cityscape, the ICA mimics the precision and intentionality of a finished artwork. However, it aspires, in fact, to be a dynamic starting point. The spaces inside have the dignity of a museum, but they are also down-to-earth and accessible, with a human scale, an embrace of the messy world outside, and the acknowledgement of imperfections of concrete and hand-troweled plaster. The building has generated much curiosity in Richmond, and it is not hard to imagine it as the origin of divergent, exploratory paths leading into the future. ■

credits

ARCHITECT: Steven Holl Architects – Steven Holl, design architect, principal; Chris McVoy, design architect, partner in charge; Dominik Sigg, Dimitra Tsachrelia, project architects; Garrick Ambrose, Rychiee Espinosa, Scott Fredricks, Gary He, Martin Kropac, JongSeo Lee, Yasmin Vobis, Christina Yessios, project team

ASSOCIATE ARCHITECTS: BCWH Architects – Charles Piper, principal; Bo Fairlamb, project manager; Jason Dufilho, project architect

ENGINEERS: Robert Sillman Associates (structural); Arup, Ascent (m/e/p); Vanasse Hangen Brustlin (civil)

SIZE: 41,000 square feet

PROJECT COST: \$41 million

COMPLETION DATE: April 2018

SOURCES

METAL PANELS: Rheinzink (fabricated by Zahner)

ROOFING: Hydrotech

GLAZING: Cristacurva, Acurlite

METAL DOORS: ASSA ABLOY

PAINTS & STAINS: Sherwin-Williams

LIGHTING: Lutron, Bartco, Soraa, Lumenpulse, Lucifer, Targetti



Qatar National Library | Doha | OMA

Diamond in the Rough

An otherworldly building, as surprising on the inside as it is on the outside, emerges in the desert.

BY JOSEPHINE MINUTILLO

THERE'S NO MISTAKING that the new Qatar National Library was designed by the Rotterdam office of OMA. Like a lot of OMA's built work, it is slightly odd, slightly off-putting, but impossible to ignore. And the building quite literally borrows from earlier OMA projects, most conspicuously from the Casa da Música in Porto, Portugal (RECORD, July 2005), with its unusual crystalline geometry and large swaths of corrugated glass, and, inside, from the Bibliothèque Alexis de Tocqueville in Caen, France (RECORD, March 2017)—though Rem Koolhaas would say otherwise.

As Koolhaas described the design during a recent tour of the building, “We started with a square, then lifted two corners.” The resulting structure appears as a rocky outcrop amid a bizarre hardscape of craters and faux mounds (by Dutch design firm Inside Outside) that might fit as easily on the moon as in this desert setting. Massive columns, nearly 4 feet wide, protrude from the building's concrete underbelly—where the main entrance is—to support the entire structure and its 80-foot-long sloping spans. As one circles the exterior, the library changes appearance from different angles—the “pinched” corners are unquestionably the most intriguing aspect; where the building meets the ground opposite those corners, not so much.



**BY THE BOOK**

The arena-like main room features terraced stacks (above). The sunken, travertine-covered heritage library houses rare items (opposite, bottom). Parts of its ceiling are accessible to visitors as terraces (opposite, top).

The 485,000-square-foot building started life as a university library in Education City, a 3,700-acre campus master-planned by Arata Isozaki, about six miles from downtown Doha—but it evolved to serve the general public as well. In a hot desert city, other air-conditioned public space is limited to shopping malls. OMA's design needed to cater to the varied cultures of expatriates (from South Asia, North Africa, and other Arab nations) and activities that include around 500 workshops and events each year—even if its main purpose clearly remains as a center of learning and research. “You enter and are completely surrounded by books,” says Koolhaas. “Everything is evident.”

Despite the books, the vast, pitched main room feels more like an arena than a library. In fact, one of OMA's early plans for the lower central space included programming for sporting events. It now houses the heritage library where rare manuscripts are kept and exhibitions mounted; its exposed sunken, mazelike, travertine-covered walls suggest the excavated pit of the Colosseum in Rome. As in the OMA design for Lab City outside Paris (RECORD, November 2017), parts of this pit are covered with platform-like expanses accessible to visitors and, since the building opened last November, where musicians play recitals.

This building's primary allure is this light-filled main

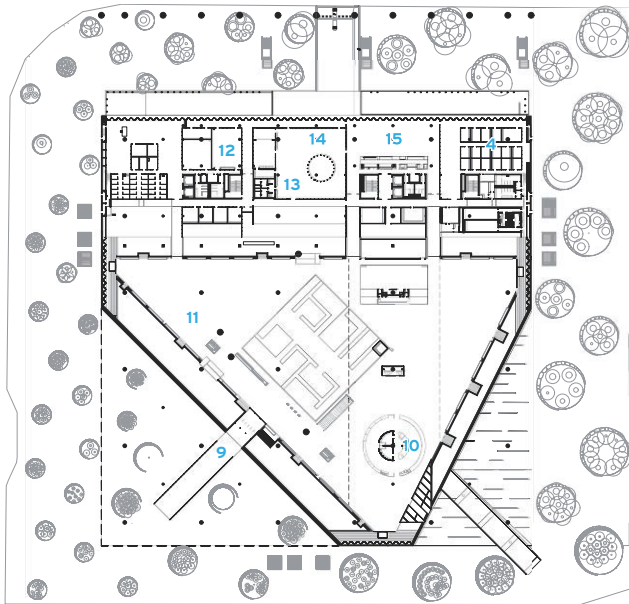


PHOTOGRAPHY: © DELFINO SISTO LEGNANI AND MARCO CAPPELLETTI (TOP, RIGHT AND BOTTOM, RIGHT; OPPOSITE; AND PREVIOUS SPREAD)

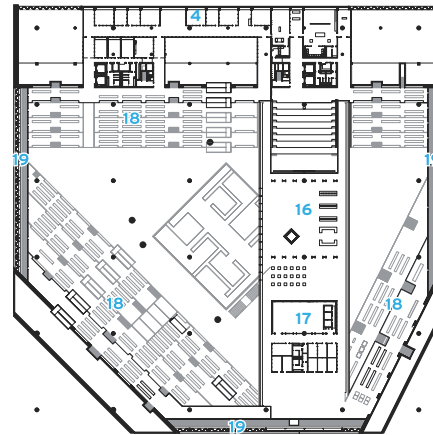
space. The reflective ceiling, which reaches 48½ feet at its highest point, is clad in glossy white glass-fiber-reinforced plastic panels that bounce daylight coming from skylights and the expansive areas of glass on three sides. The more than 1½-inch-thick wavy glass of the facade (offering hazy, mirage-like views of the outside) is self-supporting, though it includes horizontal steel shelves connected to interior columns to brace against wind loads. The glass panels—insulated against temperatures that regularly surpass 100 degrees Fahrenheit—are as tall as 18 feet. They feature a 50 percent silver-colored frit but no shading option. “The client wanted solar blinds, but we said no,” recalls OMA on-site architect

Vincent Kersten. “You never know how it will work until it’s there. We took a risk.” It paid off. The effect is glorious.

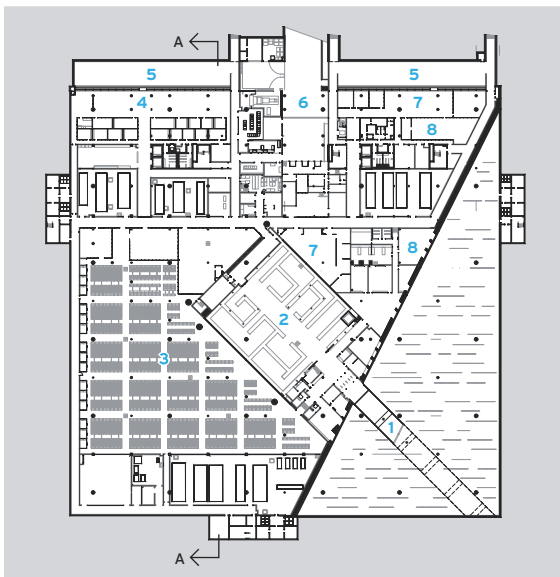
The sheer scale of the space is astounding. Where you might expect bleachers, there are terraced levels with stacks and stacks of books; where you might expect carpeting, boldly patterned stone. Where the room begins to feel too vast, an 82-foot-wide mezzanine—what OMA calls the “bridge”—spans from one end of the building to the other, hovering over the central area and the heritage library below. The bridge provides flat, open areas for study. Where it meets the back of the building—which is not lifted off the ground—it incorporates a large, flexible, curtained auditorium.



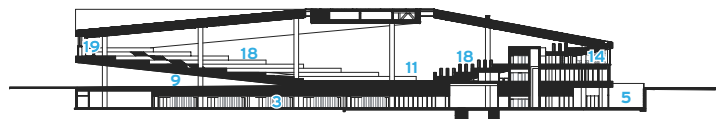
LEVEL-ONE PLAN



LEVEL-TWO PLAN



LEVEL-ZERO PLAN



SECTION A - A

- | | |
|-----------------------------------|-----------------------|
| 1 ENTRANCE TO HERITAGE COLLECTION | 10 CIRCULATION DESK |
| 2 HERITAGE COLLECTION | 11 PUBLIC SPACE |
| 3 COMPACT SHELVING | 12 COMPUTER LAB |
| 4 OFFICES | 13 MULTIPURPOSE ROOM |
| 5 PATIO GARDEN | 14 CHILDREN'S LIBRARY |
| 6 LOADING AREA | 15 CAFETERIA |
| 7 DIGITIZATION | 16 THE BRIDGE |
| 8 CONSERVATION & BINDING | 17 AUDITORIUM |
| 9 MAIN ENTRANCE | 18 STACKS |
| | 19 PEOPLE MOVER |





NIGHT LIGHT The library's "pinched" corners are visible from certain angles (opposite). By contrast, the headquarters for the Qatar Foundation is a simple cubic building (this photo). Inside it, however, is a jumble of volumes of different shapes and sizes (bottom).

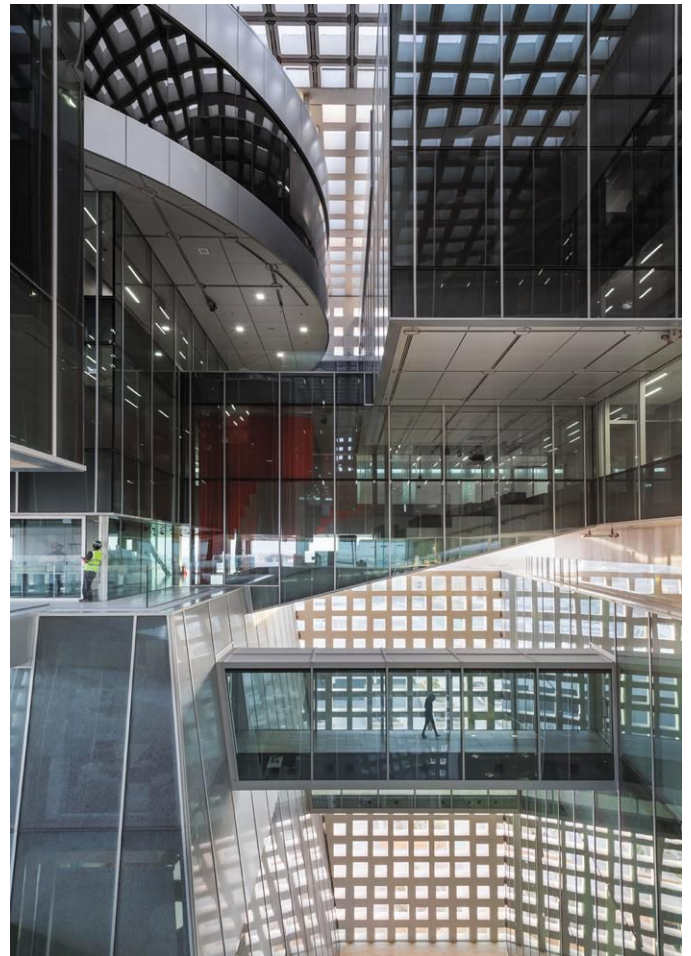
Stacked within that multilevel portion of the building are auxiliary spaces, including offices, computer labs, storage, a children's library, and a cafeteria. (The glass of the windows at the offices is flat, so workers aren't exposed to distorted views all day.) The flood-proof basement—even in the desert, occasional big storms can lead to deluges—houses compact shelving and the book sorter, as well as a conservation studio where historic pieces from the collection are restored.

A mechanical people mover along the interior's perimeters makes the terraced stacks accessible to the disabled and the elderly, and lets service staff transport heavy equipment. Those terraces are also bisected by zigzagging ramps, installed more for life-safety reasons—to quickly evacuate the building in case of fire—than for accessibility.

As a library and as a gathering place, the building has already been an overwhelming success, drawing over 160,000 visitors in its first four months of operation. More telling, nearly 25 percent of its 875,000-volume collection is checked out at any given time. "For most libraries, that number is in the single digits," says executive director Sohair F. Wastawy, who ran several university libraries in the United States and was chief librarian at the Snøhetta-designed Bibliotheca Alexandrina in Egypt.

OMA also designed the recently completed headquarters for the Qatar Foundation, which helps fund Education City. That cubic, perforated building, a few hundred feet from the library, "looks deceptively simple from the outside," says Koolhaas. Inside, a naturally ventilated, central L-shaped void reveals a jumble of volumes of different shapes and sizes. Hung from a rooftop truss, they contain air-conditioned offices and conference rooms. There is also a covered bridge across the space. Midway up the building's exterior, an 8-foot-tall incision slices horizontally around the entire perimeter, becoming a low-ceilinged terrace. Clad entirely in travertine, the terrace is a sharp contrast to the soaring volume of the atrium, which it wraps around. "When you feel compressed, it forces you to look outside," explains Koolhaas—to the view over the campus, where the otherworldly library building figures prominently, and to the Doha skyline in the distance.

Koolhaas's partners at OMA exercise considerable independence on many of the firm's global projects, but in Doha, Koolhaas played the central role. Despite





the library's echoes of elements from earlier OMA buildings, it—together with the foundation building—reflects an approach where space, light, air, views, materials, landscape, and user experience trump brazen experiments and radical form. It's also an approach in deference to a vigilant, and less than thrill-seeking client. The result is an architecture that's appropriate and striking but not quite the breakthrough design of OMA's Seattle Central Library (2004)—nor as extreme as its CCTV Tower in Beijing (2008), and, it seems, Koolhaas's next major project, the much-delayed Taipei Performing Arts Center. ■

credits

ARCHITECT: OMA – Rem Koolhaas and Ellen van Loon, partners in charge; Kunle Adeyemi, associate in charge; Vincent Kersten, Gary Owen, executive team on-site

ENGINEER: Arup

GENERAL CONTRACTOR: Multiplex

CLIENT: Qatar Foundation

SIZE: 485,000 square feet

COST: withheld

COMPLETION DATE: September 2017

SOURCES

CORRUGATED GLASS: Cricursa

MARBLE: Campolonghi

TRAVERTINE: Solid Nature

BOOKSHELVES AND TABLES: Unifor

FURNITURE: Vitra, Quinze & Milan, Artifort, Molteni, Cassina

LIGHTING: Artemide, Lumina, Vondom

A LINE IN THE SAND The compressed terrace of the foundation building (above) offers views of the library. The terrace makes an incision along the perimeter of the cubic building, a few hundred feet from the library, and is a prominent feature (top).



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Vitae Restaurant, New York, NY | Architect: Niels Guldager | Photographer: David Laudadio



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Record Houses 2018

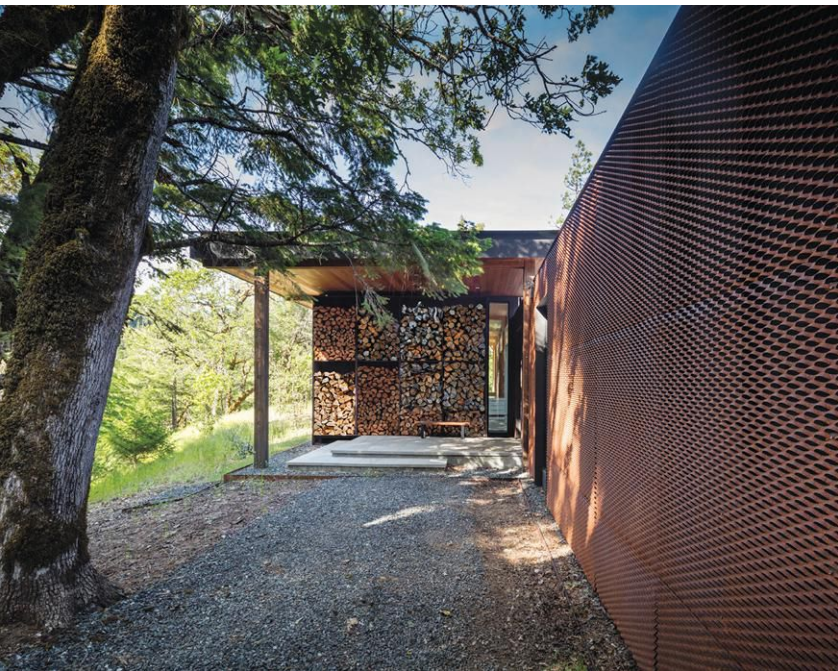
- 82 High Horse Ranch | Willits, California | KieranTimberlake
- 88 Casa Bruma | Estado de México | Fernanda Canales and Claudia Rodríguez
- 94 Pound Ridge House | Pound Ridge, New York | Tsao & McKown Architects
- 100 Planar House | Porto Felix, Brazil | studio mk27
- 106 Lath House | Tokyo | Hiroshi Nakamura & NAP
- 112 Maison Malecaze | Toulouse, France | RCR Architectes

High Horse Ranch, in Mendocino County, California, has abundant wildlife—deer, bobcats, chorus frogs, juncos, and more—but nothing equine. Echoing the names of such nearby places as Dead Horse Canyon, this mountainous 64-acre property playfully honors owner Clive McCarthy, who, as his wife, Tricia Bell, puts it, “enjoys getting on his high horse, now and then, for a good-natured rant.” It’s also a nod to the land’s former use: as a marijuana farm. But no longer committed to such crops, the property is now a retreat for this couple and their guests—a remote getaway designed for comfort and an intimate experience with wild terrain in dramatic surroundings.

The pair first came here looking to create an escape from San Francisco, 150 miles to the south, where they inhabit a converted industrial warehouse. They welcomed the idea of getting above the Northern California fog, on a site that reaches an elevation of 2,300 feet. After driving up switchbacks on a gravel road—through steep, mossy terrain, amid soaring firs and craggy oaks draped in lacy lichen—they’d barely entered the property when they caught an unexpected glimpse of a spectacular mountain cleft beneath them; they were smitten. As Bell, then a practicing physician, recalls, “Right then, we both knew we wanted to buy the place.”

They considered local architects before encountering a book by Philadelphia-based KieranTimberlake on Loblolly, a house fabricated off-site (RECORD, April 2007). “I loved the precision,” says McCarthy, a British-born former electrical engineer turned tech executive, who now makes digitally inspired artworks. He and Bell were impressed that Loblolly had been assembled (rather than built) without even a chainsaw on-site. They too hoped to tread lightly, preserving the abundant trees on their nearly pristine land.

Soon KieranTimberlake partner James Timberlake visited the property. As he recalls, “It was a once-in-a-lifetime site, and we all hit it off.” Apart from Loblolly, designed by partner Stephen Kieran for



MATERIAL MATTERS The main house’s expanded-Cor-Ten rainscreen and large, built-in firewood bin give texture to its entry side (above). At the back, a wall of pivoting glass doors opens the living/dining/kitchen area to a patio with spectacular views (right).



High Horse Ranch | Willits, California | KieranTimberlake

Take the High Road

A mountain retreat touches the ground lightly and offers breathtaking views.

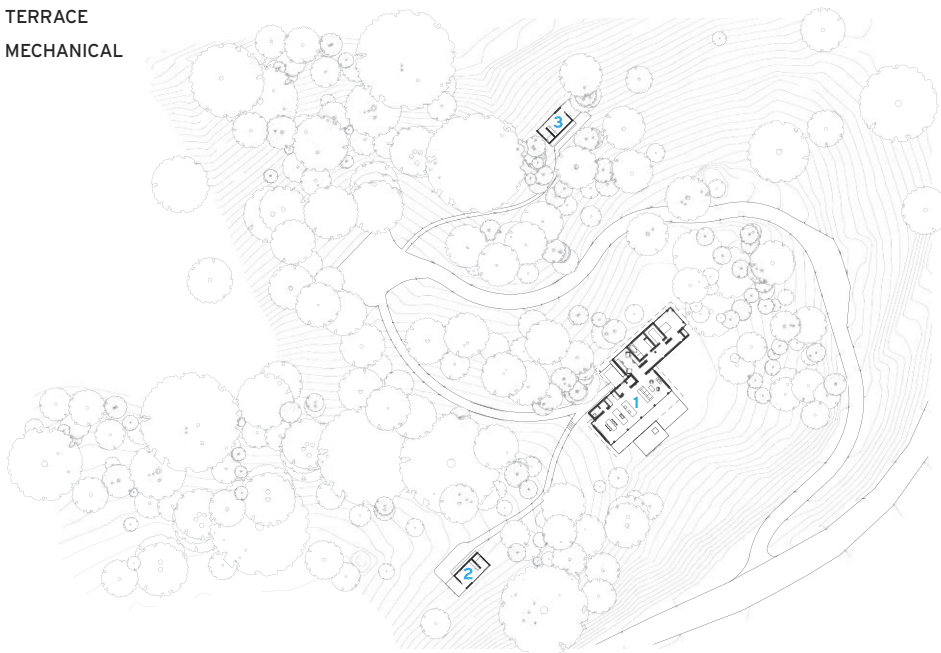
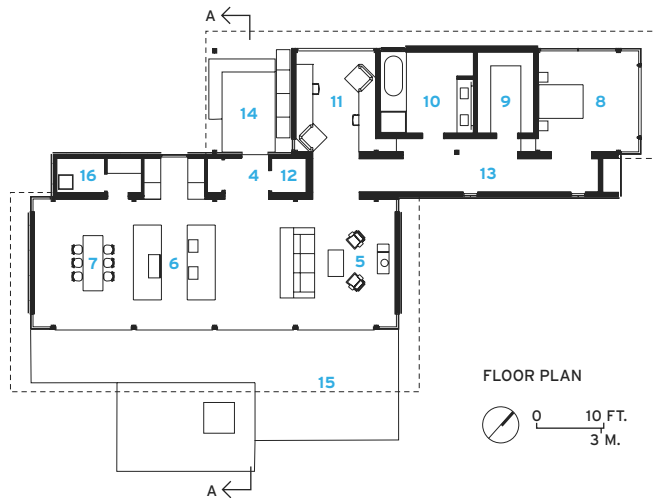
BY SARAH AMELAR

PHOTOGRAPHY BY TIM GRIFFITH





- 1 MAIN HOUSE
- 2 UPPER CABIN
- 3 LOWER CABIN
- 4 ENTRY
- 5 LIVING
- 6 KITCHEN
- 7 DINING
- 8 MASTER BEDROOM
- 9 WARDROBE
- 10 BATHROOM
- 11 STUDY
- 12 POWDER ROOM
- 13 GALLERY
- 14 PORCH
- 15 TERRACE
- 16 MECHANICAL



his own family, and the temporary Cellophane House in a parking lot at MoMA, the firm hadn't tried other off-site residential fabrication, much less for a "real" client in a challenging spot.

The couple envisioned a mountaintop house with a seemingly casual, yet orchestrated, approach. The quarter-mile ascent on their grounds would offer that teasing initial peek into the valley before meandering back through dense forest. Then, all cars would park 200 feet downslope from the house in a well-hidden area (doubling as the obligatory fire truck turnaround). Everyone would walk the last stretch or ride in a motorized cart. "Finally, finally, you'd enter the house from its more solid [northwest] side and—blam-mo!" says McCarthy. A long, southeast-facing wall, mostly of glass, would reveal a phenomenal mountain view, akin to the original glimpse but much more revealing and dramatic.

The narrative also drew on the couple's experience at Post Ranch Inn, in Big Sur, with its balance between totally private cabins—each nestled in the landscape yet open to a sublime panorama—and a main building, where guests gather over food and drink. Bell and McCarthy wanted a home that would be as comfortable for the two of them alone as it would feel with visitors.

The architects responded with a 2,580-square-foot main residence and two secluded 290-square-foot cabins, all sharing common traits. Rectangular, flat-roofed forms, partially constructed off-site in 12-foot modules, they all play Cor-Ten-clad elevations against a view-framing back wall of floor-to-ceiling, operable glass. The main house consists of two single-story volumes, offset in plan but joined by a service-circu-



OPEN-DOOR POLICY The master bedroom (opposite) is tucked into the forest. The “great room” (above and right) has radiant-heated limestone floors, exposed Douglas fir framing and ceilings, and pivoting floor-to-ceiling glass doors. Kitchen counters and cabinets are made of a paper-resin composite.

lation spine. There, the prime entry crosses into the “great room.” Beneath 11-foot ceilings clad in reclaimed Douglas fir, this dining/kitchen/living area spills out, through pivoting glass doors, onto a terrace. A deep roof overhang and sandblasted-limestone floors (radiant-heated indoors) extend from inside. With doors and windows open, air flows from the glass elevation through a clerestory opposite it. Offering unobstructed sight lines, this 53-foot-long space has large-scale artwork anchoring its ends and an open kitchen with paired work islands, faced in a black paper-resin composite. Giving the interior’s almost-Miesian geometry a slightly rustic twist, exposed Douglas fir structural members mark the rhythm of the house’s 13 modules, which were roughed out off-site,





FOREST DWELLING Through the living area, the study is visible from the patio (left). The glassy master bedroom evokes a pavilion in the forest (left, bottom). Like the main house, each guest cabin receives cross-ventilation through operable clerestory windows on the approach side (opposite, top) and, at the back, a sliding wall of framed glass (opposite, bottom).

craned onto concrete foundations, and bolted together.

The building's more private volume contains a study and the master suite, where corner-joined glass walls immerse the bedroom, pavilion-like, in a forest of mossy boulders amid the trees. On a recent visit, the spring weather shifted from misty rain—bringing out mushrooms and the scents of pine needles and wet earth—to a picturesque dusting of snow.

Like the main residence, the elegantly simple cabins have facades textured by expanded Cor-Ten rainscreens and exterior built-ins stacked with firewood. But, unlike the firmly grounded house, these satellites perch on concrete piers over steep terrain. Inside, against a reclaimed-redwood floor and ceiling, each cottage has a bedroom, study area, bathroom, and an entire wall that slides open to the landscape. The cabins, each a single shipping-containerlike module, were craned in over the trees, “barely breaking a twig,” recalls Bell. “It’s where the project,” says Timberlake, “best realizes the potential of off-site fabrication.”

The owners had gravitated toward that process for such advantages as swiftness and efficiency. But, on this remote mountain with rudimentary roads and limited regional personnel, the method fell short of expectation. While the trees emerged unscathed, prefabrication is only as good as the contractors who construct the modules and stage their on-site assembly—and that team missed the mark, year after year losing the narrow opportunity to build in a climate with long rainy seasons. Fortunately, the local contractor, who took over once the basic structure and volumes were finally in place, completed the project with skill and finesse, and more traditional means. (The San Francisco-based owners rode out the delays spending weekends in a converted farm outbuilding, elsewhere on the property.)

The final results did not disappoint. “I was over the moon!” says Bell. “We couldn’t believe how great it was to sleep there and be in those spaces, looking into that incredible landscape.” Even from indoors, the couple takes in star-filled skies and the chorus of birds and frogs. “Now, two years later,” she adds, “the delight doesn’t end.” ■





credits

ARCHITECT: KieranTimberlake – James Timberlake, design partner; Johann Mordhorst, principal in charge; Andrew Cronin, Kate Czembor, Andrew Schlatter, Jon McCandlish, Shawn Protz, team

CONSULTANT: Sean O'Connor Lighting

ENGINEERS: CVM (structural); Engineering 350 (m/e); Adobe Associates (civil)

GENERAL CONTRACTOR: Buckeye Construction, Moderna Homes

SIZE: 2,580 square feet (main house); 290 square feet (cabins)

COST: withheld

COMPLETION DATE: February 2016

SOURCES

PVC ROOFING: Sika Sarnafil

GLASS: Guardian

SKYLIGHTS: VELUX

DOORS AND WINDOWS: Fleetwood

HARDWARE: ASSA ABLOY, Halliday + Baillie, Krownlab

SOLID SURFACING: Corian

LIGHTING: USAI Lighting

LIGHTING CONTROLS: Lutron

PLUMBING: Duravit, Kohler, Dornbracht



Casa Bruma | Estado de México | Fernanda Canales + Claudia Rodríguez

Into the Shadows

A refuge of clustered structures merges with its untamed landscape.

BY JOANN GONCHAR, FAIA

PHOTOGRAPHY BY RAFAEL GAMO

A house made of black concrete, inside and out, sounds aggressive and brooding—not an inviting place to live. And a black concrete country house? If you knew anything about its setting, you would assume such a dwelling would be terribly out of place in a forested rural environment.

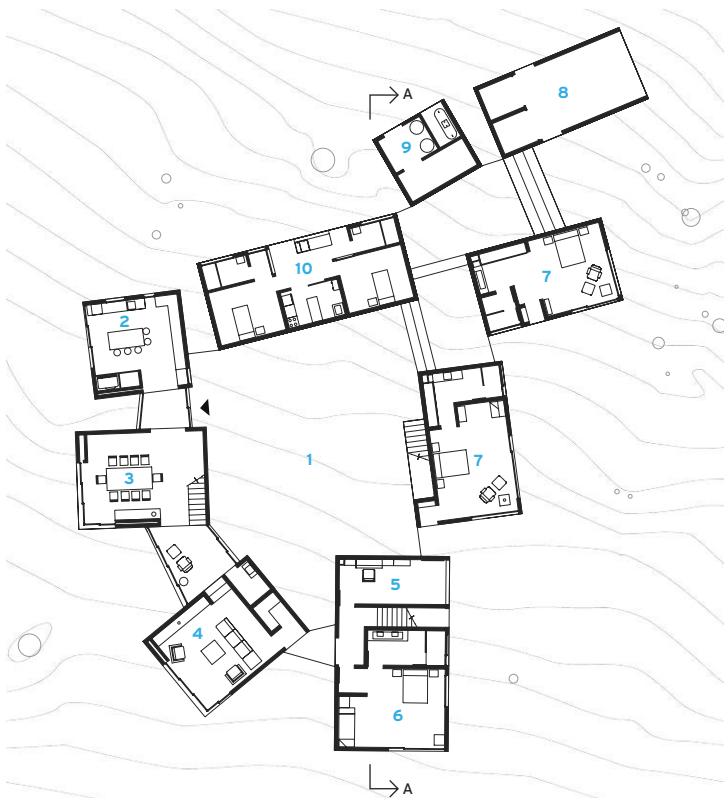
But a recently completed residence made almost entirely of exposed black concrete defies all expectations. Designed by collaborating architects Fernanda Canales and Claudia Rodríguez, the

house, located in the mountains about 100 miles southwest of Mexico City, is an engaging cluster of rustic board-formed boxes that are nestled at angles into their site around an irregularly shaped courtyard. Dubbed Casa Bruma for the mist that often shrouds the surrounding landscape, the 6,500-square-foot assemblage is a weekend retreat for an attorney, his marketing-executive wife, and their two young children. It is one of the first buildings to be constructed within a secluded community that will eventually contain only 70 houses on 500 mostly untamed acres.



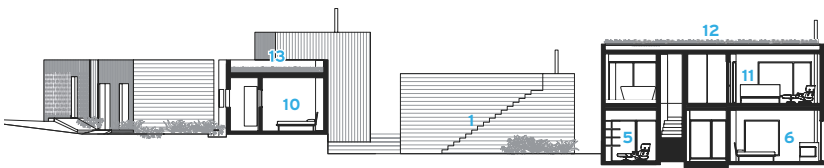
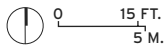
BOXED SET Casa Bruma comprises nine volumes (above) of poured-in-place concrete, set at angles in its partially wooded site to create an irregularly shaped courtyard (opposite). The pavers here conceal a below-grade cistern for collecting and storing rainwater, the house's only water source.





- 1 COURTYARD
- 2 KITCHEN
- 3 DINING
- 4 LIVING
- 5 STUDY
- 6 BEDROOM
- 7 GUEST HOUSE
- 8 GARAGE
- 9 UTILITIES
- 10 CARETAKER'S APARTMENT
- 11 MASTER SUITE
- 12 ROOF TERRACE
- 13 GREEN ROOF

GROUND-FLOOR PLAN



SECTION A - A



The clients sought out Canales—known for her small but impressive body of residential and cultural projects, as well as her books and exhibitions on Mexican architecture—because they wanted an architect “who is hands-on.” Canales spends much of her time on construction sites and does not have a traditional office or employees. But she often forms alliances, this time turning to Rodríguez, whom she has known since their days in architecture school at the Universidad Iberoamericana, in Mexico City.

Rodríguez had helped create the master plan for the new development and so was well versed in the construction restrictions, intended to restore the ecology of the land. For decades, it had been used for grazing cattle and logged for its once-plentiful supply of old-growth oak trees. The master plan placed few constraints on architectural form but included several pertaining to the individual homeowners’ sites. Among them was: a requirement that the houses be designed so that all of their water, even for drinking, come from collected rainwater; a restriction on nonnative vegetation, and on cutting down trees. The idea, says Rodríguez, “was to allow freedom in expression of the houses, but strengthen the identity of the landscape.”

In keeping with this philosophy, Canales and Rodríguez opted not to build on a flat, meadowlike portion of the clients’ 2.7-acre, roughly rectangular property. Instead they chose a sloping spot at the edge of a wooded area, carefully tucking pieces of the residence among the trees. Canales explains that a desire for camouflage was one of the reasons for

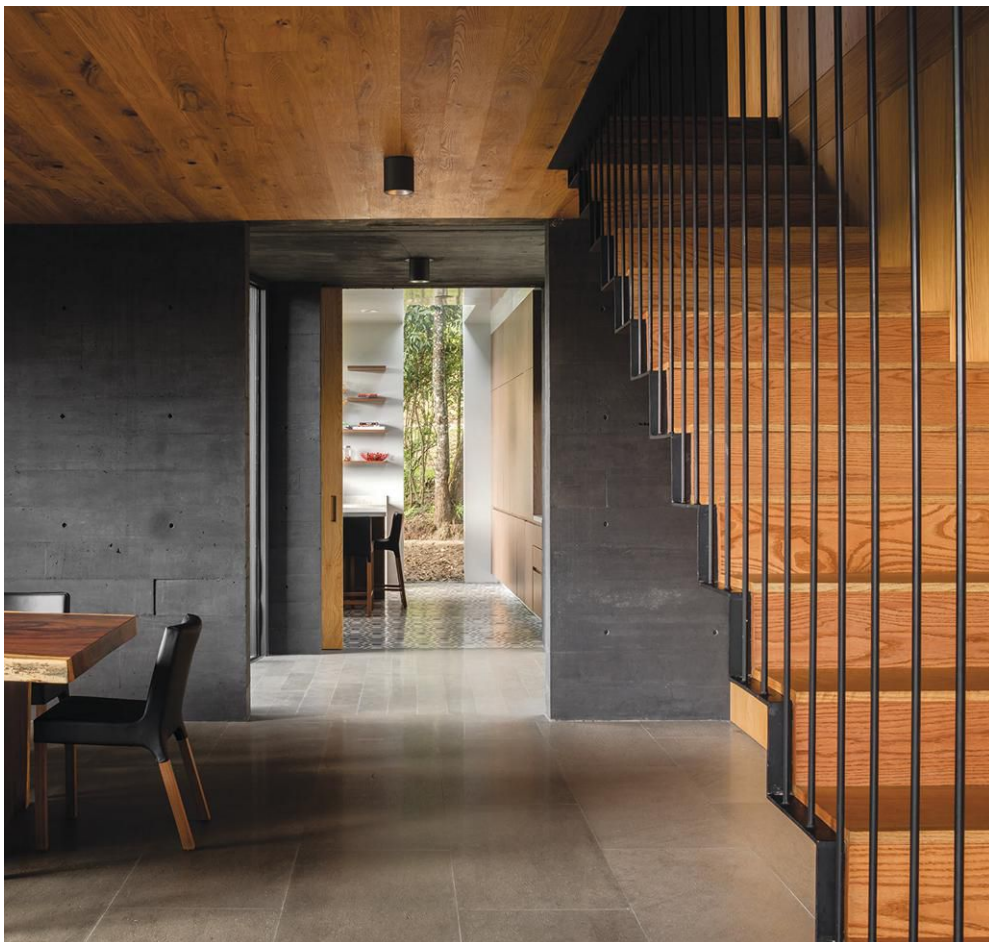




MAKING CONNECTIONS

The family's primary shared spaces, including the living room (right) and the dining room (middle ground, above) are linked with glazed connectors (opposite). In addition to the exposed concrete walls, finishes in these rooms include polished basalt floors and oak ceilings.





DOUBLE EXPOSURE Most of the rooms, including a guest house (bottom), have windows on two sides. Many apertures, such as one in the kitchen (background, left), are placed to create long views through multiple spaces. Though nominally black, the concrete, especially on the exterior, has considerable color variation (opposite).

this placement and why Casa Bruma is “exploded” into nine discrete one- and two-story volumes. It was also the rationale for adding the black pigment to the concrete mix for the site-cast walls. The dark color, she says, makes the house recede into the shadows.

This strategy had another benefit: it allowed the architects to create the courtyard, building on a long history of such spaces in Mexican architecture. “It is a typology I’m always rethinking,” says Canales. In fact, a house she just completed for her own family in the same development is organized as barrel-vaulted elements surrounding rectilinear open-air living spaces. But at Casa Bruma, the almost villagelike grouping defines a less traditional, more organically shaped courtyard. Here clover sprouts between the stone pavers that conceal the below-grade rainwater cistern, and fringing ferns grow at the perimeter—almost as though the forest is intruding and trying to take over.

Four shaggy green roofs—another requirement of the master plan—and two planted roof terraces reinforce the impression that the architecture is an extension of nature. A variation in the texture and color of the concrete walls’ exterior surface—shades from inky black to medium gray—also support this effect, making them appear to be products of weather and nature rather than man-made. “We thought of the buildings as rocks,” explains Rodríguez.

Although Casa Bruma’s exterior is almost wild and rough, the inside is more refined. The four volumes that contain the primary living areas—the kitchen, the dining room, the living room, and bedrooms—are linked with glazed connectors. The remaining five stand-alone concrete boxes, meanwhile, house two guest pavilions, a caretaker’s apartment, a garage, and the utilities. Many of the spaces feature a pleasant palette of basalt floors, polished to reflect light, and oak ceilings, stairs, and doors made by local artisans, which add warmth and richness to the otherwise black interiors.

Almost all of the rooms have windows or generously sized glass doors on two exposures. These offer views of the woods, the courtyard, and the surrounding hills, as well as allow cross ventilation. The operable doors and windows, along with wood-burning stoves and fireplaces, are sufficient to keep the house comfortable despite temperatures that can





swing more than 30 degrees Fahrenheit over the course of single day. Casa Bruma has no mechanical climate-control systems.

Throughout the house are clues revealing how the architects were constantly thinking from their clients' point of view. These range from the choice of concrete as the primary material, which should be almost maintenance-free, they point out, to ingenious touches like built-in bunk beds concealed behind sliding doors in the guest quarters. These allow the rooms to be used by families with small children or by single friends. The designers insist that addressing such practical concerns is a priority. "I never sacrifice comfort for image," says Canales. "Otherwise, the occupants suffer the consequence." No sacrifices have been made at Casa Bruma. She and Rodríguez have created striking architecture that is as effortlessly inhabitable as it is inventive. ■

credits

ARCHITECT: Fernanda Canales + Claudia Rodríguez – Fernanda Canales, Claudia Rodríguez, partners in charge; Hugo Vargas, Aarón Jassiel, Alejandra Tellez, project team

ENGINEER: Grupos SAI

GENERAL CONTRACTOR: CM2

CLIENT: Eduardo González and Mayra Osorio

SIZE: 6,500 square feet

COST: withheld

COMPLETION DATE: November 2017

SOURCES

METAL WINDOWS: Cortizo, Venster

WOOD FLOORS AND CEILINGS: Fine Floors

STONE FLOORS: Marmoles Arca

KITCHEN CABINETS: Quetzal Cocinas

PLUMBING FIXTURES: Duravit

PLUMBING FITTINGS: Urrea

LOCKSETS: Baldwin

LIGHTING: David Pompa, Estevez, Flos

Pound Ridge House | Pound Ridge, New York
Tsao & McKown Architects

Idyll in the Wild

A strong craft tradition defines a forested weekend getaway.

BY SUZANNE STEPHENS

PHOTOGRAPHY BY SIMON UPTON

Most architects would be pleased to design a weekend house for loyal clients in a picturesque country setting. But when Calvin Tsao and Zack McKown heard that Josie and Ken Natori wanted a Japanese-style modernist retreat, it gave them pause. The partners in the New York-based Tsao & McKown Architects, feared creating something that looked like a set from *Teahouse of the August Moon*, especially in the village of Pound Ridge, an hour north of New York City, known for its charming old fieldstone and clapboard houses. “We didn’t want to do Disney,” says Tsao.

Of course, the Natoris didn’t want that either. But Josie, the Filipino-born lingerie designer, and Ken, a third-generation Japanese American and her company’s chairman, did have an affinity for the wood framing, delicate details, and flowing spaces of traditional Japanese architecture, along with a wish for easy connections to the outdoors. While neither Tsao (born in Hong Kong and schooled in the U.S.) nor McKown (raised in South Carolina) claimed to have personal experience with Japanese architecture, they are both familiar with Asian cultures through their travels and tastes. In the end, they came up with a discreet and elegant solution. “We sought to create the feeling of Japanese architecture, but not replicate a style,” says Tsao. The evolution of the design was immeasurably aided by the close relationship of the architects to the clients: they had designed residences for the couple in New York and Palm Beach, as well as show rooms and boutiques for the Natori fashion business. “It is a real joy to work with architects who understand what you have in mind,” says Josie. “Calvin can finish my sentences.”

The 29-acre property, studded with rocky outcroppings as well as pines, birches, and hemlocks, came with a pre-Revolutionary house near the road where the Natoris had spent weekends since buying the place in 1984. While the cottage had been remodeled over time, it stayed true to the town’s historic character. When the couple finally decided that small windows and separate rooms, however quaint, were too claustrophobic, they turned it over to their son and his family, and contacted their architects.

After closely studying the grounds, Tsao and McKown decided the house should be set on a ledge of glacial rock, looking down a slope toward the original house, a pond, and the road. “The actual siting was the exciting part,” says McKown about finding the right location where



the architecture could act as an extension of the natural landscape.

The house itself is simple and informal: a one-story, one-bedroom dwelling composed of a series of rectangular volumes that extend in a line across the crest of the ridge. The Douglas fir post-and-beam structure is wrapped largely in expanses of double glazing, while wood pergolas shade terraces and the long entrance ramp. Inside, interlocking, light-filled pavilion-like rooms open onto each other, yet each has its own distinct spatial quality. The architects positioned two 16-by-18-foot angled skylights—one above the dining area and one above the living room—to amplify the ceiling heights and suffuse the interiors with daylight, giving those spaces a sense of calm and clarity. The light seems to emphasize both the lines of the refined wood structure and the serpentine curves of the sofas and chairs.

While the exposed timber structure gives the architecture a lightness, the reality of the loads from the steel, copper, and wood-framed skylights had to be addressed. Working with Silman engineers, the architects found a structural system to replace the traditional wood dovetail joinery throughout the house: it is formed of steel plates that carry perpendicular and parallel loads and can be subjected to tension and compression without being visible. “We also found this solution

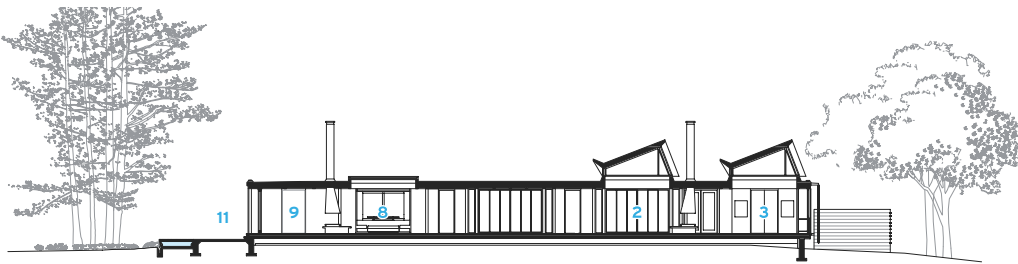


LONG VIEW Hardly visible from the road, a one-bedroom cottage sits on the crest of the site's slope (above). The country retreat is positioned so that its living spaces and verandas look down the grassy lawn (right) to the pond and a 1741 house that are part of the property.

allowed fast assembly and installation,” says project manager Jonathan Hoover. The team employed a shear wall system to supplement the timber construction, one that came with integrated channels for electrical wiring and plumbing. In addition, the architects capped the columns and beams with decorative wood over the exposed timber to create a thermal break between the outer surface and the actual structure. A burned finish for the Douglas fir—a favored Japanese technique—darkens the grain of the gray-brown wood.

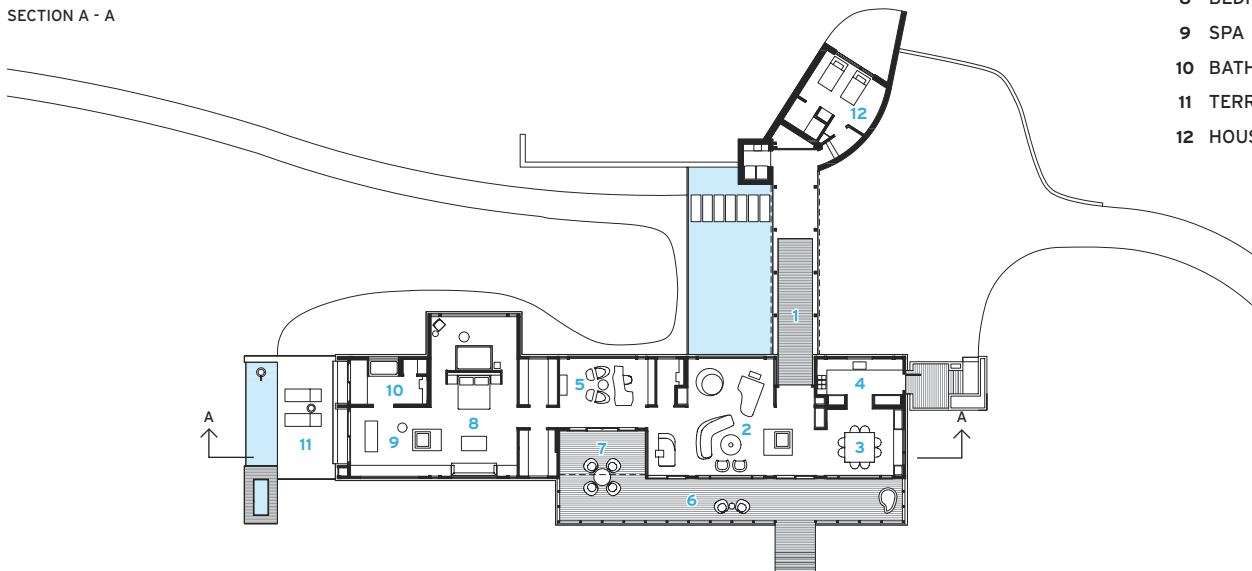
The project turned into a Gesamtkunstwerk, with Tsao and McKown designing most of the furnishings and fittings. While there were some exceptions (a baby grand piano, a George Nakashima desk, chairs by Nanna Ditzel, overhead lighting by Edison Price, and a number of antiques) the amount of custom work was unusual. The juxtaposition of unique sculptural chairs and sofas against a background of linear framing elements results in a luxurious understated ambience heightened by a carefully conjured color scheme of gold, pale purple, and



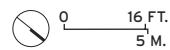


SECTION A - A

- 1 ENTRANCE RAMP
- 2 LIVING AREA
- 3 DINING ROOM
- 4 KITCHEN
- 5 STUDY
- 6 VERANDA
- 7 PATIO
- 8 BEDROOM
- 9 SPA
- 10 BATH
- 11 TERRACE
- 12 HOUSEKEEPER/GUEST ROOM



FLOOR PLAN





LINES OF BEAUTY The entrance at the site's uphill side features a gradually inclined ramp sheltered by a wood pergola (opposite). Tsao and McKown contrasted the rectilinear lines of the delicate post-and-beam timber structure with the serpentine ones of their own custom-designed sofas and chairs, demonstrated dramatically in the living area (above and right). The interior is suffused with luminosity owing to two 16-by-18 foot skylights over the living and dining areas. The resin-and-bronze illuminated dining table was designed by the architects to match the upholstery of their custom dining chairs.





WALK RIGHT IN The bedroom suite includes a large spa (with fireplace), which in turn opens onto a terrace and garden that Tsao designed. The architects also created the lava-stone-top coffee table (above). The one-bedroom cottage seems larger and longer due to its flowing spaces arranged in a loose enfilade manner (opposite).

green for textiles and carpets. The architects designed the shimmering resin-and-bronze dining table to precisely match the warm gold upholstery of the custom chairs. In the master bedroom suite, a free-standing case of dark brown lacquered wood frames the bed and the headboard fashioned from antique wall panels.

Outdoors, just beyond the bedroom suite, Tsao created a protected garden with earth excavated for the house's construction, forming berms that echo the contours of the topography elsewhere on the property. Continuing around part of the exterior, this cultivated area forms a buffer between the house and the land in back, where tall trees loom.

The combination of old and new, Japanese artifacts and midcentury-style furnishings goes a long way to make the argument that this is not a replica of anything, but, instead, is a singular expression. The architects have created a distinctive response to the Natoris' wishes, one that reflects in its entirety their clients' wishes—in a process, as Tsao points out, that is really like painting their portrait. "We feel like John Singer Sargent," he says. ■

credits

ARCHITECT: Tsao & McKown Architects
– Calvin Tsao, Zack McKown, principals;
Jonathan Hoover, project manager,
architecture; Richard Rhodes, project
manager, interior design

ENGINEERS: Silman (structural);
CES Engineers (m/e/p); Geodesign
(geotechnical)

CONSULTANTS: WALD Studio (lighting)

CLIENT: Josie and Ken Natori

SIZE: 2,900 square feet

COST: withheld

COMPLETION DATE: September 2016

SOURCES

SKYLIGHTS: Kawneer

STEEL PLATES: Sherpa Connection
System

SHEAR WALL: Simpson Strong-Wall
Shearwalls

MASONRY: Endicott Brick

WOOD/METAL FRAME: Quantum

PAINTS AND STAINS: Pratt & Lambert

TIMBER FRAMING AND WOOD

FLOORING: Architectural Timber &
Millwork

LAVA-STONE TOP: Pyrolave

BATHROOM WALLS AND COUNTERS:
Corian

CUSTOM RUGS: Vanderhurd



Planar House | Porto Feliz, Brazil | studio mk27

Reign of the Plane

A flat roof planted with grass defines a long house and its indoor-outdoor spaces.

BY TOM HENNIGAN

PHOTOGRAPHY BY FERNANDO GUERRA

Even as you approach, it is hard to spot the new house by Marcio Kogan, it blends so well into its natural setting. The concrete roof of this low-lying country retreat, two hours by car from São Paulo, is camouflaged by a grassy lawn on its top, making the strongly horizontal structure almost invisible from a road on higher ground. “We seek an architecture that has the least impact possible on the environment,” says Kogan, Brazil’s best-known architect. “The house becomes a continuation of the surrounding topography.”

The rectangular, poured-in-place concrete structure is large—11,000 square feet—but is all on one level (plus a basement), so the family can have immediate access to the outdoors from all parts of the dwelling. In conceiving the scheme, Kogan explored his interest in expressing a sense of horizontality, a fascination that goes back to his younger days, when he flirted with filmmaking and became obsessed with wide-screen cinematography. (Since then, he has combined filmmaking with architecture in a handful of short films, the most known of which is *Cat Kamillo’s Point of View of the Toblerone House* of 2012.)

In much of Kogan’s architecture with his firm, studio mk27, strong horizontal roofs have become increasingly important. Here the roof functions as a plane that extends dramatically past the perimeter walls of the house, jutting out to shelter open-air living and dining areas to the south and car parking on the north. While the grassy roof is only accessible to the gardeners (using a ladder), it provides a natural means to insulate and cool the living quarters below, and was one reason the architects have applied for a sustainability rating from the Green Building Council Brasil.

At a slight remove, a freestanding perforated redbrick wall swoops around the house in serpentine curves along the east elevation, partially enclosing both short ends of the rectangular form. “It is probably the first curve in the history of the studio,” jokes Kogan about this subtle means of shielding the house from the road without sealing it off behind a solid wall.

The plan itself is divided lengthwise by a central corridor. On one side, facing east and the undulating brick wall, Kogan placed the kitchen, staff bedrooms, and a gym. On the other side are located the family’s bedrooms and baths, with views facing west within the sequestered community, out to a garden and a lake beyond.

When you arrive at the house from the parking area, you enter, by way of a retractable glass wall, the television room before stepping into the elongated hall that leads past bedrooms and services to the living and dining areas on the south. You can almost imagine a filmmaker’s

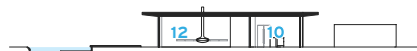


FLATTOP The house is 11,000 square feet on one story (with a basement), so that all the spaces may have direct access to the outdoors (above). A long, serpentine, perforated brick wall shields one side of the house from the road; skylights in the roof bring daylight into bathrooms (opposite). The grassy lawn on the roof is accessible by ladder to gardeners.

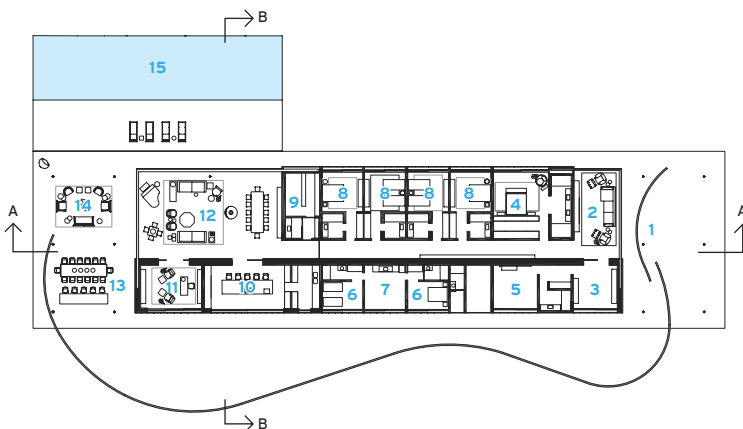




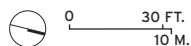
SECTION A - A



SECTION B - B



GROUND-FLOOR PLAN



- | | | |
|------------------|---------------------|---------------------------|
| 1 CAR PARK | 7 STAFF LIVING ROOM | 12 LIVING/DINING AREA |
| 2 TV ROOM | 8 FAMILY BEDROOM | 13 OUTDOOR KITCHEN/DINING |
| 3 PLAYROOM | 9 SERVICE | 14 TERRACE |
| 4 MASTER BEDROOM | 10 KITCHEN | 15 POOL |
| 5 GYM | 11 SITTING ROOM | |
| 6 STAFF BEDROOM | | |

tracking shot as you walk its length: while this axial route functions as a warm, wood-paneled gallery for the client's photography collection, its dark, compressed space dramatizes your ultimate arrival at a large, glazed pavilion-like room where family and friends gather. Here the interior living/dining areas open up to expansive terraces, as well as a long, rectangular swimming pool.

In taking the journey from one end of the house to another, you may have wondered, "Where is the main entrance to this place?" Then you realize there isn't one. But there is always nature beckoning: the floor-to-ceiling glass doors enclosing the interior communal spaces allow you to move effortlessly to a covered outdoor porch, past delicate steel columns supporting the roof, to the ipe-wood deck edging the pool.

The main architectural element shaping the space is the ceiling of exposed concrete, whose tactile board-formed surface directs the eye continually to vistas beyond. The floors, paved with a Brazilian basalt, and walls sheathed in yellow Brazilian freijo paneling add to the strong sense of planarity.

Altogether, the forceful concrete ceiling plane, the delicate steel

SPATIAL DEFINITION The perforated, serpentine brick wall curves around the house on the south end (top), partially shielding the outdoor dining area. The architects kept both that area (right) and the living room (opposite) simple and open, where slender steel columns, perforated brick, and the concrete ceiling dominate.







columns, and the sinuous outdoor wall of perforated bricks dominate. By deploying these three elements, Kogan dramatizes the architectural experience of the domestic environment while hiding the structure in the landscape. You wish Cat Kamillo would make a comeback, prowling around these spaces, and somehow figuring out how to get up on that grassy roof. ■

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

credits

ARCHITECT: studio mk27 – Marcio Kogan, designer; Lair Reis, codesigner; Diana Radomysler, interiors; Carlos Costa, Carolina Castroviejo, Laura Guedes, Mariana Simas, Oswaldo Pessano, Pedro Ribeiro, Raquel Reznicek, Renato Périgo, Ricardo Ariza Miyabara, Suzana Glogowski, Tamara Lichtenstein, Thauan Miquelin, project team

CONSULTANTS: Maria João d'Orey (landscape); CTE (sustainability)

ENGINEER: Afaconsult (structure, m/e/p, foundation)

SIZE: 11,000 square feet

COST: withheld

COMPLETION DATE: February 2018

SOURCES

WOOD CLADDING, PANELING, WINDOW FRAMES, AND DOORS: Plancus

METAL FRAMES AND SKYLIGHTS: Tecnosystem

CUSTOM WOODWORK: Marvelar

INTERIOR AMBIENT LIGHTING: Lumini

PERSPECTIVAL PLAY

Walls for the bedrooms (opposite) and the central gallery (here) are paneled in freijo wood. Its glossy vertical surfaces counterbalance the tough horizontal thrust of the poured-concrete ceilings.





Lath House | Tokyo | Hiroshi Nakamura & NAP

Hiding in Plain Sight

Classic Japanese architectural motifs enhance a surprising enclave.

BY NAOMI R. POLLOCK, FAIA

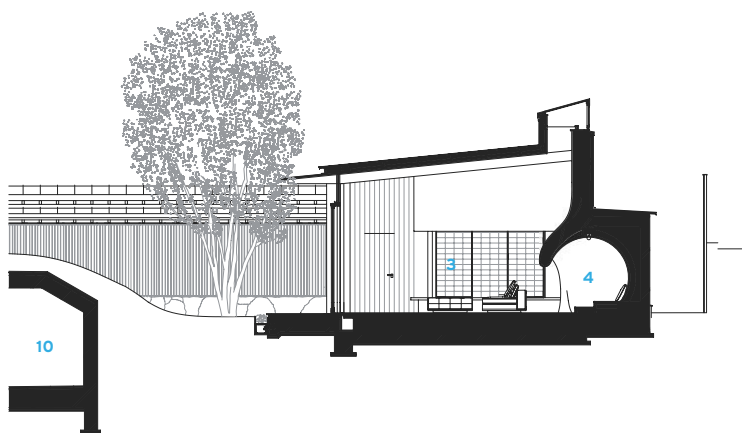
PHOTOGRAPHY BY KOJI FUJII / NACASA AND PARTNERS



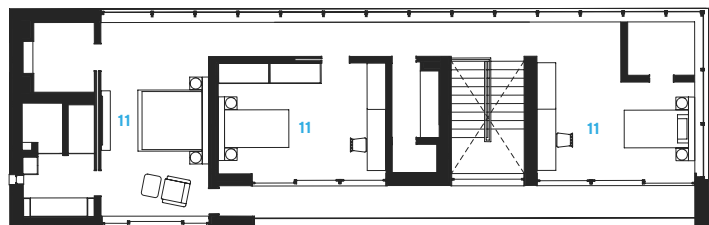
Far from the chaos of the city, Hiroshi Nakamura's Lath House forms a quiet oasis in Tokyo, concealed from the public street in its own private realm. Reminiscent of the traditional Japanese house and garden, its barriers disappear and boundaries dissolve once you are inside. Here the design reveals a luxurious sweep of space that surrounds a courtyard filled with a man-made hill. The mound had to be high enough to accommodate a two-car garage underneath yet low enough not to overwhelm the interior spaces. Borrowing the concept of the traditional *tsukiyama*, an artificial hill that reflects moonlight, the sloping surface bounces light inside, illuminating the home's tactile surfaces and rich materials. An unexpected bonus, this landscape offers an informal place for play and relaxation, much like an American backyard.

REINTEGRATION: Protected by Nakamura's characteristic deep eaves, *engawa*-type porches on the ground floor and glass-enclosed balconies upstairs (opposite) open toward the hilly garden. Bands of materials (top), such as Aji stone, metal lath, and white plaster, emphasize the house's horizontality and shield the interior from the street (above).

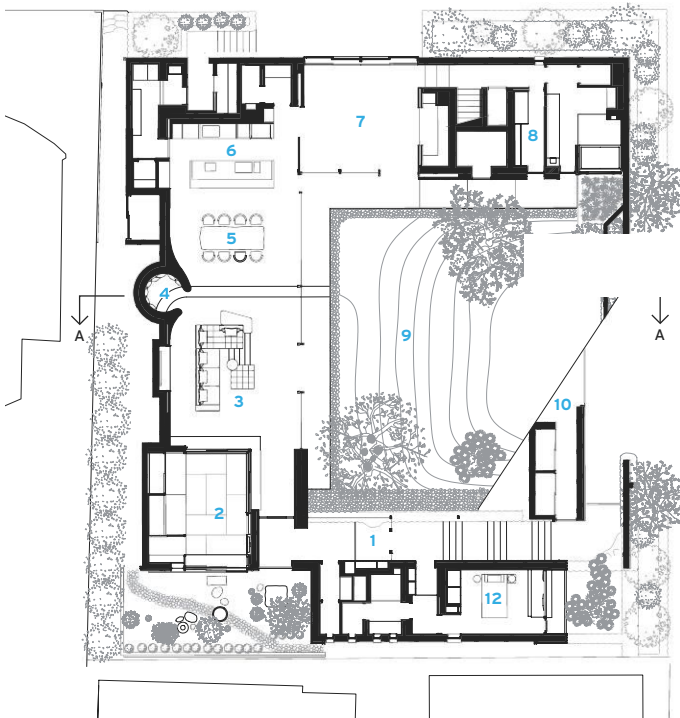
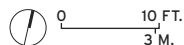
The merging of architecture and nature has a long history in Japan. For centuries, many of the country's houses were built according to additive plans whose rectangular rooms literally stepped out into the garden. With those precedents in mind, Nakamura approached his clients' 9,150-square-foot corner site—a generous parcel, but saddled with building-setback and size and height constraints. Nakamura responded to these conditions with a single-story, C-shaped volume (only the north side holds two floors) surrounding a 2,420-square-foot,



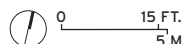
SECTION A - A



SECOND-FLOOR PLAN



MAIN-FLOOR PLAN



- | | | |
|-----------------|------------------|------------------|
| 1 ENTRANCE | 5 DINING | 9 GARDEN |
| 2 JAPANESE ROOM | 6 KITCHEN | 10 GARAGE |
| 3 LIVING | 7 PLAYROOM | 11 BEDROOM |
| 4 NOOK | 8 SERVICE SPACES | 12 GUEST BEDROOM |



square void for the sloping garden in the middle. A gridded fence walls off the fourth side of the garden from the street, although cars can take a ramp beneath it to go down to the garage.

On foot, you enter the compound from the street via a stepped breezeway that leads up to the front door, as well as to the independent guest quarters occupying the building's south side. Within the main part of the residence, the rooms are arranged in a linear fashion, flowing from one to the next and setting up a spiral path of movement around the garden. "We designed the house as if plotting a story instead of molding a sculptural object," explains Nakamura. Fittingly, the sequence starts with a multipurpose Japanese-style room whose sliding shoji screens may be pushed aside, merging its tatami-floored space with the adjacent living area. This latter space is surfaced in textured white plaster that morphs into a quirky, cavelike nook intended for relaxation. "It's kind of an homage to the fireplace in Gunnar Asplund's own summer house," says Nakamura. A few additional steps take you to the dining area, followed by the open kitchen and various service spaces. Upstairs are bedrooms, including the master suite.

On both levels, window walls are oriented toward the grassy knoll. "From each room, you get a different perspective on the garden," says project architect Kohei Omori. Intended to block as little of the view as possible, the hybrid structural system includes timber rafters suspended from concealed roof beams made of wood and steel, slender steel columns ringing the courtyard, and reinforced-concrete walls and foundation.

In contrast to the mounded landscape in the center, Nakamura tucked a smaller, Japanese-style garden off to the side meant mainly for viewing. This careful composition of stone and plant elements was created with the aid of a skilled gardener, while the hill's shape grew



LIGHTNESS OF BEING

A point of interest between the living and dining areas, the womblike nook showcases the plasticity of plaster forming the back wall (opposite). Glass expanses, topped by clerestory windows along with skylights, fill the dining and living spaces with natural illumination (above), supplemented by ceramic pendant fixtures over the dining table (right).





STAYING CALM A large window in the guest bedroom frames a view of the pine tree near the entrance to the house (left). Enclosed with shoji screens, the tatami-mat room looks out at the Japanese-style garden in one direction and the living area in the other (opposite, top). Stone steps leading up from the gated entrance (opposite, bottom right) merge with the entrance vestibule (opposite, bottom left).

out of the architect's many model studies.

Throughout the house, teak plays a prominent role, covering the floors, kitchen cabinetry, and the *engawa*-type ledge wrapping around two sides of the Japanese-style room. Created in consultation with a renowned carpenter, the room quotes from history in its use of wood, paper, and bamboo elements. Natural bamboo surfaces the ceilings of the bedrooms as well—another reference to the past.

Outside, the architect chose an equally expressive palette. From the street, the house reads as a rectangular volume articulated by horizontal bands of different materials. Quarried and cut on the island of Shikoku and then trimmed to fit on-site, rust-tinged Aji stones make a strong statement; these huge rocks, crafted by a stonemason, form the base of the house. A notable feature of the dwelling is the gridded fence above the base, modeled after *yoshigaki* bamboo lath, which is what spurred the architect to call this Lath House. Originally the substructure of utilitarian rammed-earth walls, these delicate constructions were admired by Japan's tea masters, who left them exposed as windows in their teahouses. Rendered here in welded aluminum, with a rust-colored powder coating and resin ties, Nakamura's version bows politely to this legacy. ■

credits

ARCHITECT: Hiroshi Nakamura & NAP – Hiroshi Nakamura, managing architect; Kohei Omori, Takeshi Ito, registered architects; Hidenori Sakai

ENGINEERS: Yamada Noriaki Structural Design Office (structural); Akeno Facility Resilience (m/e)

GENERAL CONTRACTOR: Satohide

SIZE: 6,470 square feet

COST: withheld

COMPLETION DATE: September 2017

SOURCES

ROOFING: Shinsei Shoji

WOOD-FRAME WINDOWS AND DOORS: IH Wood Window

INTERIOR CEILING PANELS: Takagin Wood Works

GARAGE DOOR: World Garage Door

SKYLIGHT GLAZING: Nissho Grasys



Maison Malecaze | Toulouse, France | RCR Architectes

Set in Concrete

A small dwelling is expanded and reinvented in a masterful response to strict regulations on a prized site.

BY ANDREW AYERS

It was, as is not infrequent in these cases, all about the view. For if Professor Malecaze had acquired a modest property in this sparsely built suburb of Toulouse, it was precisely because of the stunning panorama it offered across the valley of the Garonne River toward the Pyrenees on the far horizon. But he wasn't so keen on the small 1970s house that came with the lot, which he found not only too poky for his needs but also too closed with respect to the natural splendors the site enjoyed. And his chosen architects—discovered by chance on a trip to Spain, long before their 2017 Pritzker Prize win—agreed. “The view across the valley is so powerful that we wanted to do a house based around it,” says Carme Pigem, the C in Catalonia-based RCR Architectes.

Malecaze's requirements were clear: besides championing that view, he wanted a house big enough to accommodate his three grown children when they came to stay; he wanted everything on one level, since he and his wife weren't getting any younger; and, given the warm summers in the region, he wanted a pool. Which left RCR with a conundrum, since the local planning regulations made combining all of that rather complicated. What Malecaze was essentially asking for was a new house, but demolition of the old one was prohibited: to prevent

overdevelopment on these rolling green hills, the regulations specified that, once a building was torn down, its site became *inconstructible* and could never be built upon again. Moreover, the percentage of the plot that could be covered by any extension was restricted, which meant—given that Malecaze wanted everything on the same level—there would be no room for a pool. Then there was the site's steep slope, and the fact that major embankment work was not allowed. It was from these constraints—essential grist to the artist's mill—that RCR's Maison Malecaze was born.

Rules are there if not to be broken, at least to be bent, and in the end just two walls of the old house were retained (altered beyond recognition, no less). The client's wishes were also bent in the interests of practicalities and spatial poetics, so, rather than being on exactly the same level, the “extension” is about 3 feet lower, reducing embankment work and allowing a Raumplan. As for the swimming pool, the only place left to put it was on the roof. “But it's good when the constraints are on your side,” says Pigem wryly, “since we wanted to leave the site as untouched as possible.” The rooftop pool determined the structure: two massive concrete bookends—one containing the dressing room and



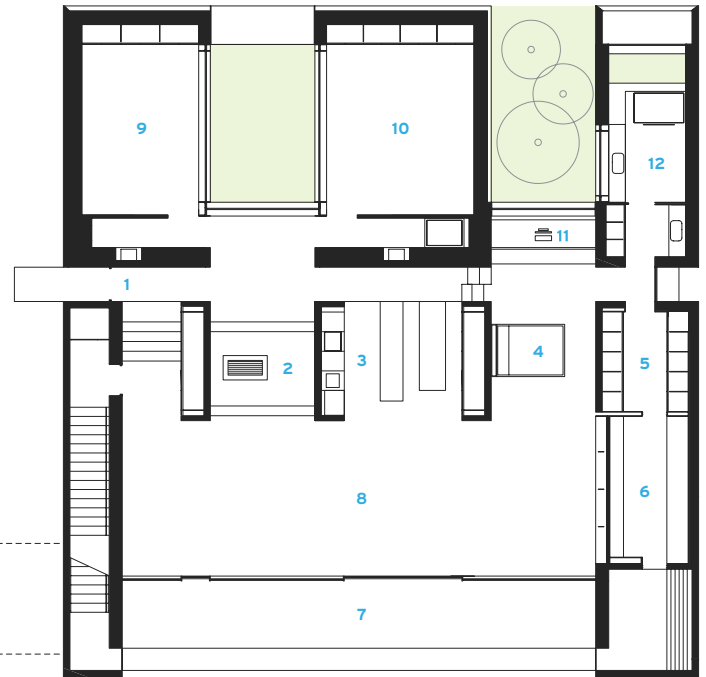


ROLL WITH IT The house's main level, above the garage, conforms to the rolling hills it sits upon (here). The main entrance is beneath a large hood (bottom, left). The concrete striations give way to loosely spaced vertical metal rods over existing walls and windows (below).





COZY UP One of the two courtyards is planted with a cherry tree (above). A fireplace defines a small nook off the large living area (opposite, top). Views from that main living space are compressed by the swimming pool's underside above the terrace (opposite, bottom).



GROUND-FLOOR PLAN



- | | | |
|------------------|-----------------|-----------------|
| 1 ENTRANCE | 5 DRESSING ROOM | 9 BEDROOM |
| 2 INGLENOOK | 6 LAUNDRY | 10 BEDROOMS/GYM |
| 3 KITCHEN | 7 TERRACE | 11 OFFICE |
| 4 MASTER BEDROOM | 8 LIVING/DINING | 12 MASTER BATH |





MATERIAL EXPRESSION
Concrete is variously utilized within the house to form washbasins in the master bath (left), to embed the cantilevering counters in the kitchen (bottom), and to alternate the treads of the steps that separate the master suite from the spinal corridor (opposite).



laundry, the other the stairways down to the basement garage and up to the rooftop—that carry the beams supporting the pool. The bookends also flank the fluid new living spaces—but this is rather jumping the gun.

Arriving at the house, you are confronted by a blind fortress of a facade, in pale striated concrete, with an equally pale path leading up to the low hood of the entrance canopy. (In other parts of the facade—over the existing exterior walls and new glazed areas—the striations take the form of vertical metal rods.) Once inside the hood's somber gloom, you're suddenly faced with an enormously tall steel door, the first in a series of compressions and dilations that modulate your experience as you move around the house. The door opens into an equally tall entrance corridor, lit from above, off which one can access the three guest bedrooms to the left (located within the perimeter of the old house), the parents' quarters at the end, and the main living area down steps to the right. Taking the latter, you arrive in a long, airy, spacious volume where you are immediately met by another violent compression, since the swimming pool (although one doesn't realize that yet) dramatically narrows the band of glazing running along the entire facade, clenching one's first experience of the famous view into a frame even more stretched and panoramic than Cinemascope. (The pool's width also creates a protected terrace, sufficiently deep to prevent rain's reaching the fenestration.)

More dramatic compression is just behind us, in the form of a modernist inglenook at one end and the master-bedroom alcove at the other, while between them is another dilation—the kitchen. All three open onto the spinal corridor, thus forming “a single but highly differentiated space, allowing both a unitary vision and rich spatial variety,” as Pigem explains. Furthermore, RCR set itself the added constraint of inscribing all the Maison Malecaze's accommodation within one strict rectangle in a more or less symmetrical plan. “We wanted to integrate the old house into a new ensemble using measured proportions,” Pigem explains. Thus the new master bathroom completes the rectangle at the back, with two courtyards breaking up the perimeter, one planted with a cherry tree onto which looks a small office space (part of the master suite), while the other contains a pebble-filled reflecting pool surrounded by the fully glazed inner facades of the guest bedrooms.

As well as a bravura response to logistics, the Maison Malecaze is a dwelling of endless subtleties: you can look from the master



INFINITY POOL

A canyonlike staircase (bottom) leads to the rooftop pool (here) and its views over the valley of the Garonne River.



bathroom washbasin through the rest of the house out to the famous view; two of the guest bedrooms can be combined as a gym thanks to a sliding wall; the kitchen table and drawers are realized in levitating cantilevered steel, as is the master bed (“We don’t like furniture legs,” says Pigem. “We want everything to appear light”); alternating-tread steps separate as much as they join the parents’ quarters and the spinal corridor; and the house’s cream-colored concrete is used as a language, grammatically inflected in different ways—*brut de décoffrage*, bush-hammered rough, bush-hammered polished, molded to form baths, washbasins, and so on. “In our architecture, we avoid using lots of different materials,” clarifies Pigem. “We prefer to bring out the intrinsic richness of just one or two.”

The color of the concrete was the one point where Malecaze put his foot down (the architects wanted it dark gray), otherwise giving RCR entirely free rein to interpret his “unspoken wishes.” One such unexpressed desire is the dramatic stairway to the rooftop, where that view takes over again. While stopping short of the Villa dall’Ava’s Koolhaasian contrariness (Rem famously didn’t want it to be all about the rooftop-swimming-pool view of the Eiffel Tower), the

route up top here is the final sequence of compression and dilation, as you move from a narrow dark canyon of a staircase to a platform in the sky, the spinal corridor now a parapet pushing you forward toward a thin ribbon of blue, a last deliquescent strip of sensuality between you, the Pyrenees, and infinity. ■

Andrew Ayers is a Paris-based writer, translator, and educator, and chief docent at the Maison de Verre.

credits

ARCHITECT: RCR Architectes – Rafael Aranda, Carme Pigem, Ramon Vilalta, partners; A. Moura, I. García, A. Saez, S. Figueras, D. Breathnack, K. Fujii, project team

CONSULTANT: Blázquez-Guanter (structure)

GENERAL CONTRACTOR: Àrids Vilanna

CLIENT: François and Marie Malecaze

SIZE: 3,175 square feet

COST: withheld

COMPLETION DATE: March 2016

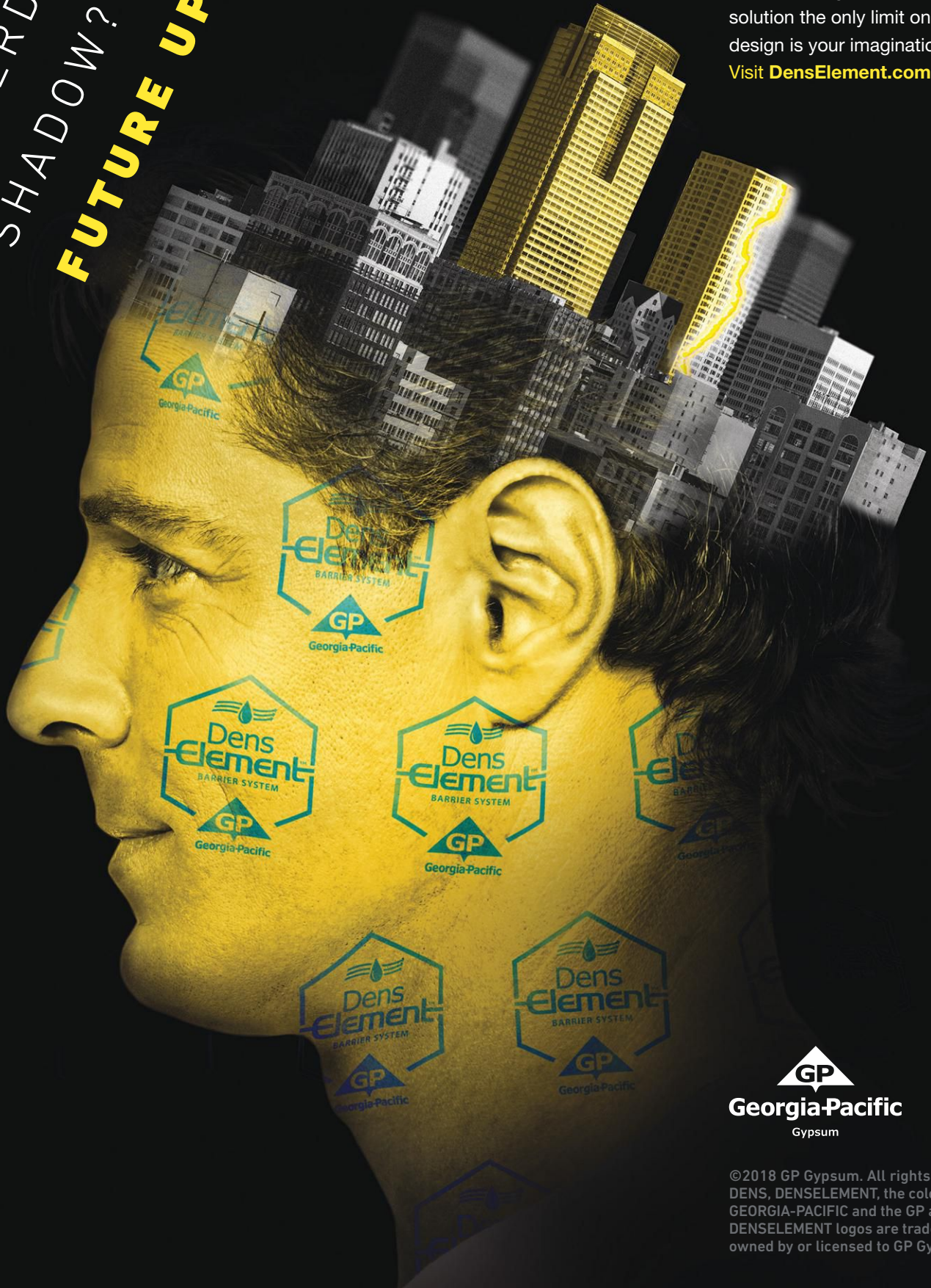
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METAL AND GLASS CURTAIN WALL: Alumulux

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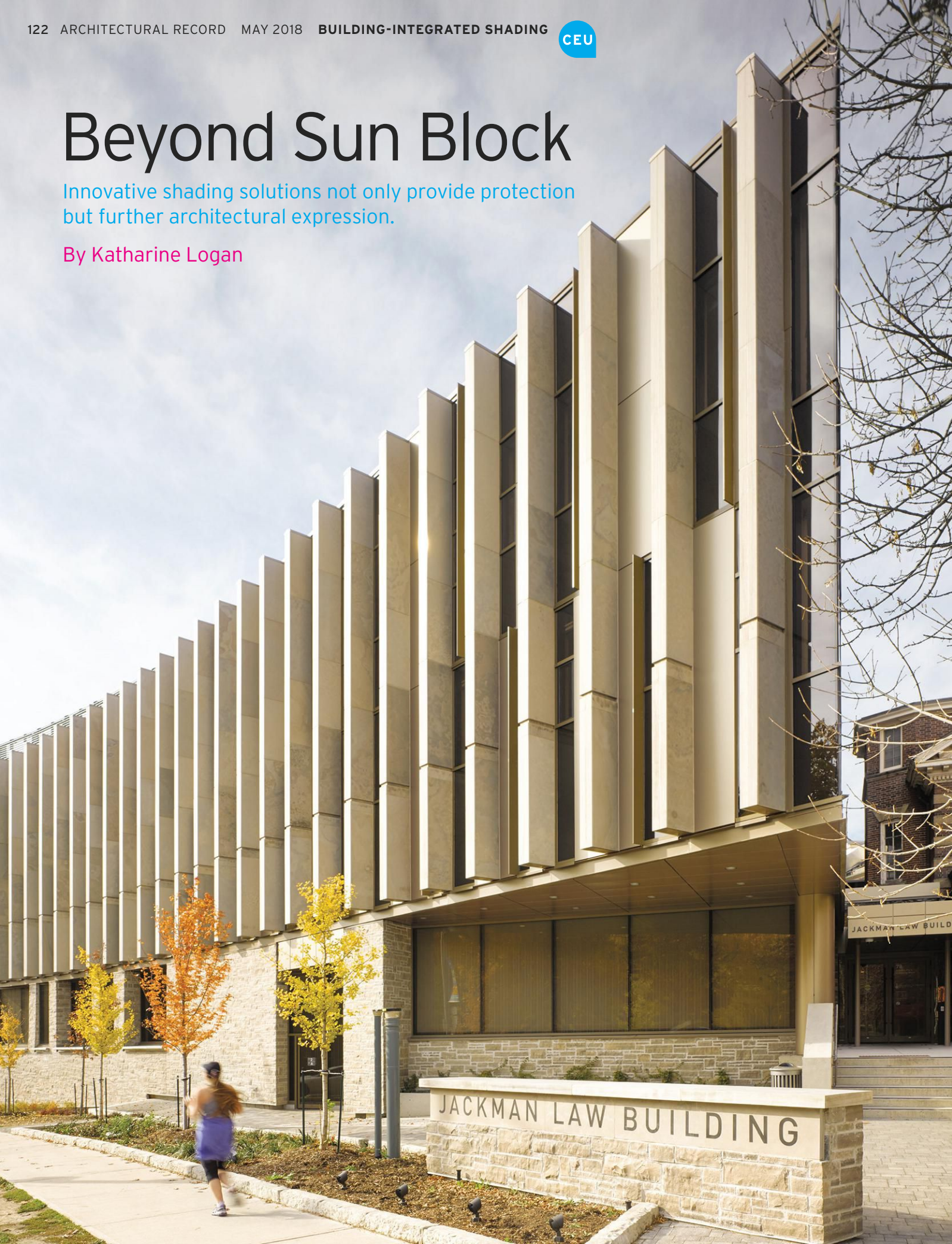
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Beyond Sun Block

Innovative shading solutions not only provide protection but further architectural expression.

By Katharine Logan



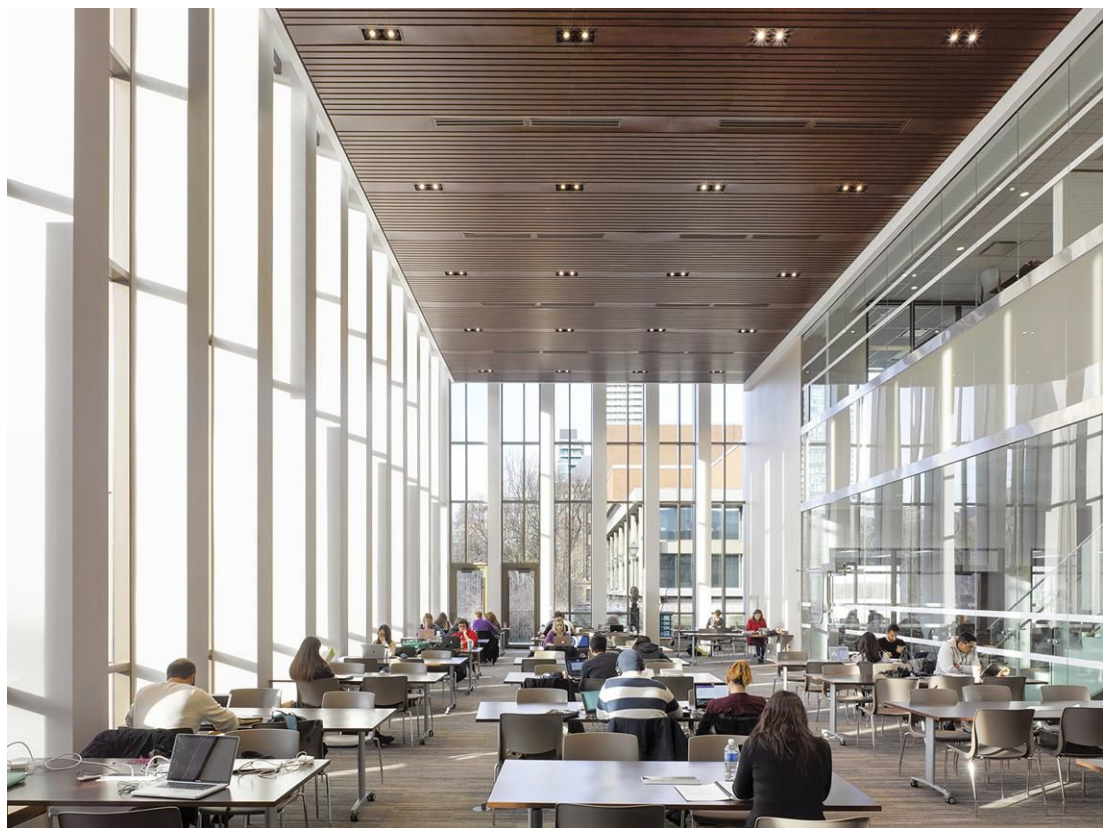
BY THE TIME solar radiation hits an interior blind, the fight to save energy has been lost. The great advantage of exterior shading devices is that they block the heat outside, before it can penetrate the building envelope. Depending on their design, they can also improve daylighting by reducing glare and bouncing indirect light deep into interior spaces. They can even strengthen a building's identity. But North American construction culture has been slower than that of many other countries to embrace exterior shades.

From the 1990s until quite recently, architects on this continent often envied the textured and articulated building envelopes their international counterparts were creating, while their own shade designs were regularly stripped in cost-cutting rounds. As energy conservation has become a top priority, however, and integrated design teams with access to increasingly sophisticated modeling tools are able to quantify the benefits of shade, those sad old days are receding. Building envelopes in North America are now incorporating shading that is as inventive and expressive as anything architects here might once have envied.

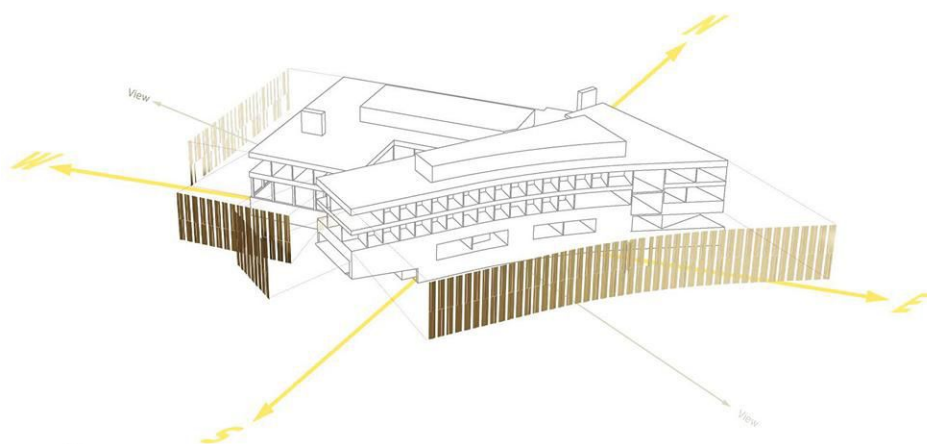
Exterior shades' best chance of surviving the process euphemistically known as value engineering is to serve more than one goal. The Jackman Law Building, by Toronto-based Hariri Pontarini Architects (HPA); the John A. Paulson School of Engineering and Applied Sciences, by the Boston office of Behnisch Architekten; and the Kendeda Building for Innovative Sustainable Design, by Lord Aeck Sargent (Atlanta) in collaboration with the Miller Hull Partnership (Seattle), exemplify a new generation of shading-integrated exterior envelopes that do more than keep their cool.

For the Jackman Law Building, a 2016 renovation and addition to the University of Toronto's Faculty of Law, the challenge was to unify the school's disparate and organizationally disjointed pieces, built over a span of nine decades, and to give it a physical expression commensurate with its institutional significance. The brief included recladding and renovating a library, and creating new classrooms, offices, and gathering space. Says Siamak Hariri, principal at HPA, "The need for shading gave us a way in, to do something that gives an order and a presence to the entire building."

Located on a prominent site with five major frontages, the irregular building's new and renovated parts are wrapped in a simple rhythm of vertical shade fins. (Because the building has almost no exposure due south, vertical shades are an effective solution.) Executed in local limestone, the fins make multiple references, from the columns supporting the portico of the school's neoclassical



ALL WRAPPED UP The renovated Jackman Law Building (opposite) is animated by vertical shade fins. Within the reading room (above), the fins are continued as white-painted pilasters that act as vertical light shelves.



JACKMAN LAW BUILDING - EXPLODED AXONOMETRIC DIAGRAM

main facade, built in 1902, to similar fins on the courthouse a few blocks south, and, metaphorically, to the pillars of justice.

In response to client concerns about whether the fins would block too much light, HPA conducted comprehensive daylight studies. The architect relied primarily on physical models, supplementing them with digital simulations, to prove the concept to their clients and to themselves. The fins' 2-foot depth and 5-foot-on-center spacing is informed

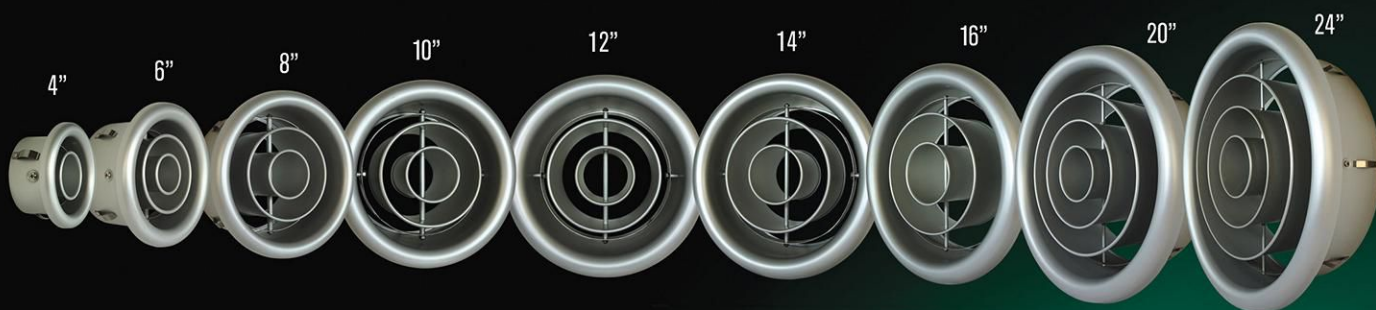
by these analyses—and by the need for an office-friendly module—as is the 18-inch depth of white-painted pilasters on the library interior. The latter act as vertical light shelves, mitigating glare and reflecting light more deeply into the space.

The choice of stone for the shade fins stems from an aspiration to counter a look of mindless mediocrity that Hariri sees being inflicted on cities by the widespread use of ersatz mate-

(continued)

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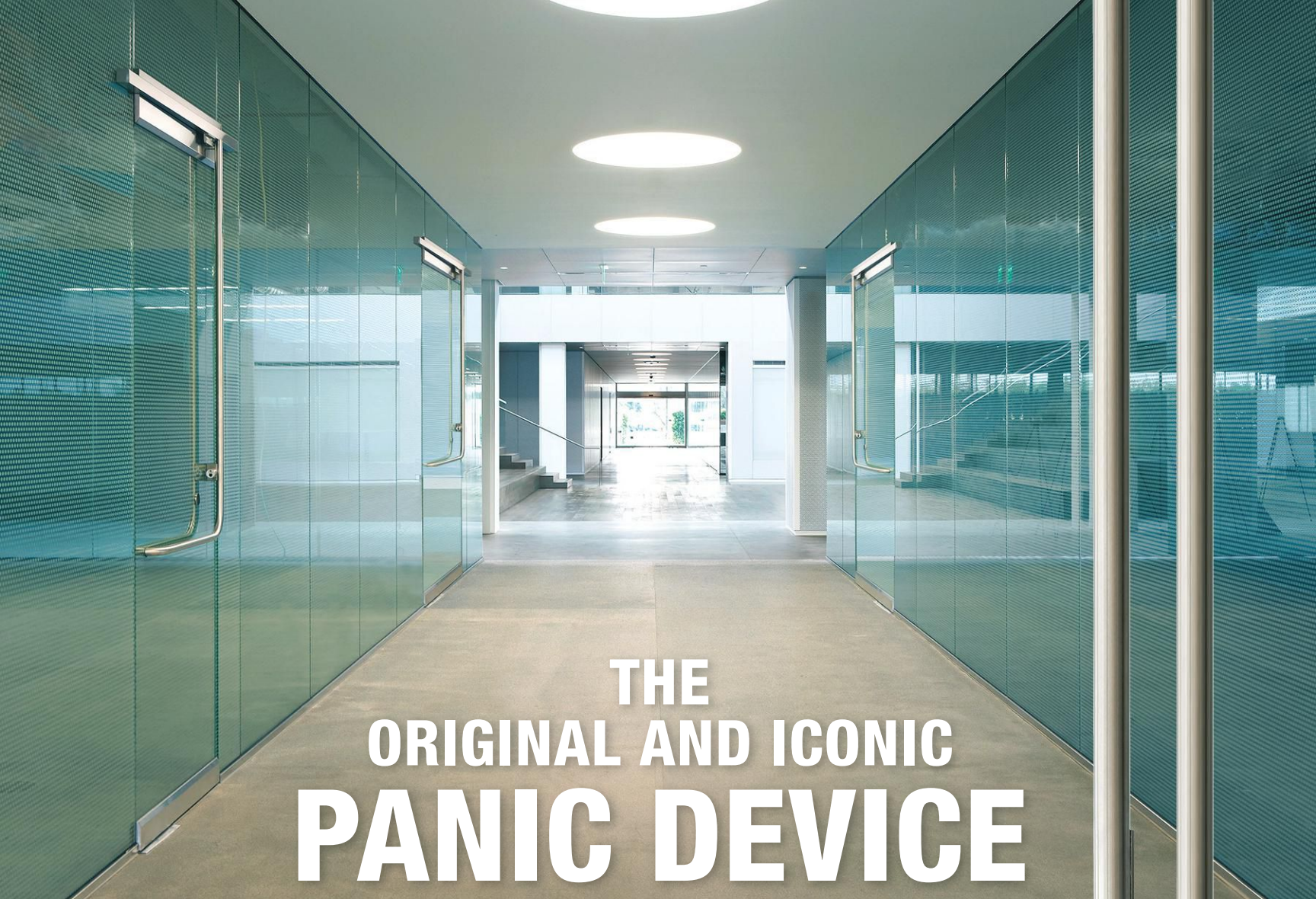


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(*"Beyond Sun Block" continued*)

rials. Imitations lack the dignity, patina, and subtle variety of natural materials, he says, and he advocates for beauty as a value in its own right, as well as for its contribution to durability: "A really good building is one that people will not let be taken down."

There's still the immediate reality of cost, however, and the project budget of \$42 million had no room for extras. Working closely with the supplier, HPA designed a shop-fabricated assembly that brought stone into the price range of its precast-concrete competitor. The fins are built up with straight sections of limestone clipped to a steel armature that is suspended from the slab edge (with careful detailing to mitigate thermal bridging). Rather than appearing as solid, which the natural variety of the panels precludes anyway, the fins are designed to express their assembly, with reveals at panel joints. The underside of the armature is closed with a bronze metal plate, and the section of the stone cladding is visible from the street below.

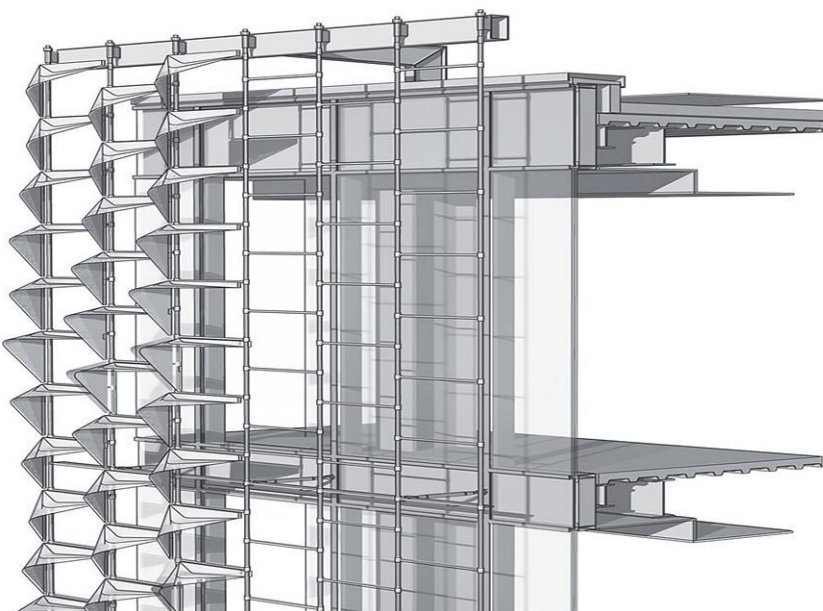
Within the shade fins' uniform rhythm, the thermal envelope syncopates in response to the programmatic requirements and the facade's different exposures. A play of glass and metal cladding balances the wall-to-window ratio for energy performance, and the double-glazed units incorporate their own type of shade with a spectrally selective coating. (SCC reflects the infrared, or heat, segment of the solar spectrum while admitting a higher portion of visible light.) The SCC on the interior surface of the outboard lite has a bronze tint to complement the stone, while a low-E coating on the exterior surface of the clear inboard lite further improves the glazing's ability to shield against solar gains.

Where the Jackman project leverages a shading requirement to bring identity and gravitas to what was previously a motley cluster of volumes, the six-story, 497,000-square-foot Paulson School of Engineering and Applied Science (SEAS), a teaching and research complex under construction at Harvard University's Allston campus, uses a shade structure to dissolve a single large building's apparent mass. "The challenge of the SEAS was its sheer size," says Matt Noblett, a partner at Behnisch. "We were looking for ways to disguise typical visual clues to scale, and shading helped us achieve that."

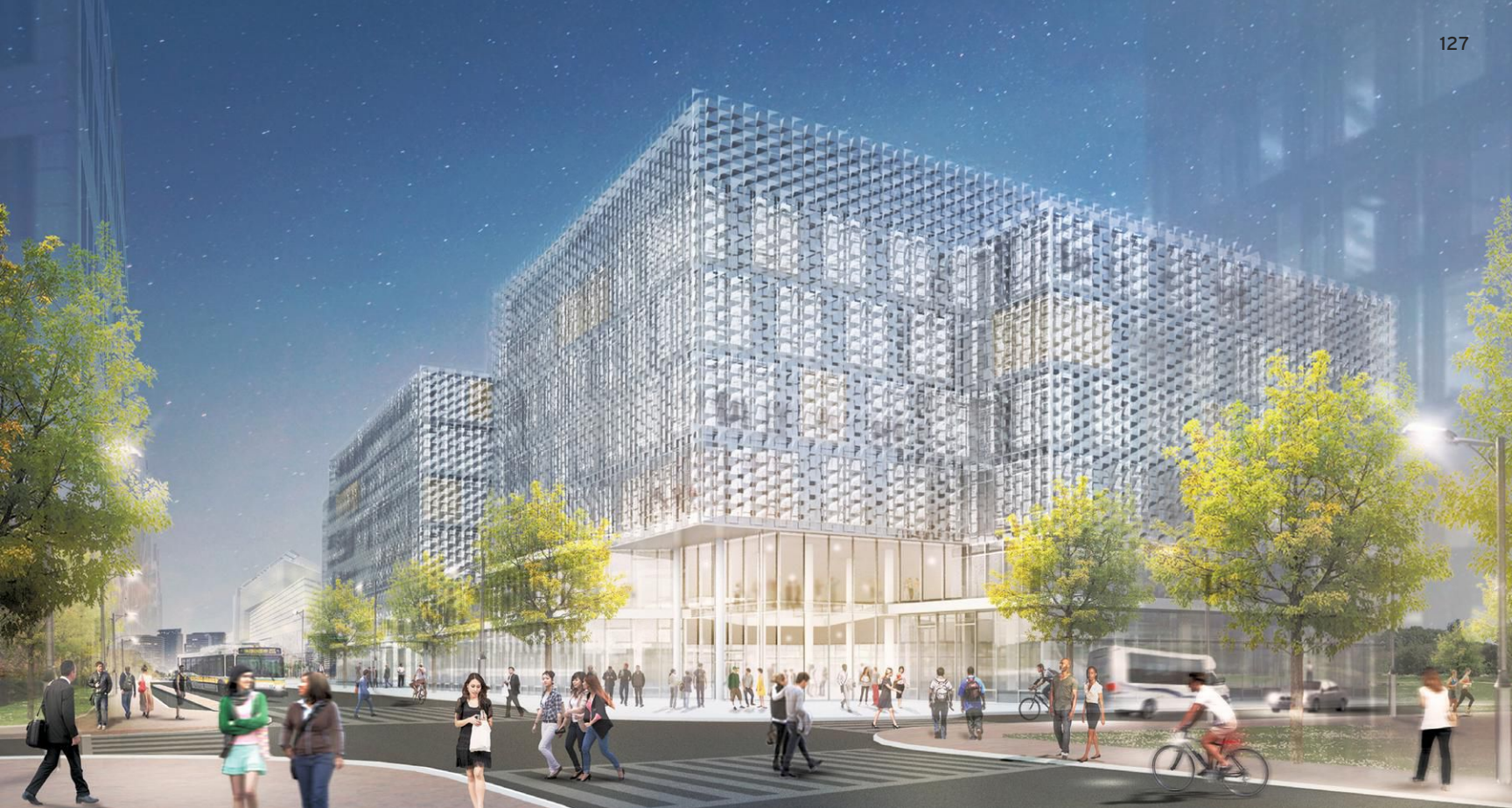
Building on the firm's recent work with fixed-shade wraps on the AGORA Cancer Research Center in Lausanne, Switzerland, and the Adidas headquarters expansion in Herzogenaurach, Germany—and bearing in mind what Noblett characterizes as the U.S. market's "skittish" response to operable shad-



SEAS SHADING BRACKETS - ISOMETRIC DIAGRAM



SEAS FACADE - PERSPECTIVE DIAGRAM



LACE VEIL At Harvard University's SEAS (above), a textured screen of 48,000 hydroformed stainless-steel brackets (opposite, top) will dissolve the large building's apparent mass.

ing devices—the architect focused on developing a system of fixed elements. The goal was to achieve the effective coverage of an active system, but without the maintenance associated with moving parts.

After breaking the program into three smaller (but still big) volumes, and perching them on a glassy base, the design team deployed a textured shade veil to prevent windows from telegraphing the upper volumes' scale while maintaining occupants' quality of daylight and views. The veil consists of a lattice of stainless-steel brackets shaped to optimize sun protection for each orientation. The modular brackets, 2½ feet square, affix to a laddered framework, which in turn fastens to the steel mullions of the curtain wall. Behind the lattice, a weather envelope of glass comprises clear and opaque units. The latter, which account for every third panel and include insulation, strengthen the building's thermal performance; staggered from floor to floor, they also contribute to the facade's pattern.

On south-facing elevations, cowl-shaped brackets block overhead summer sun and provide ancillary side protection against morning and afternoon sun angles. On east- and west-facing elevations, L-shaped shades protect against low sun angles. And on the nominal north (actually northwest), a slender, C-shaped

visor provides protection on summer afternoons. In addition to these orientation-specific types, three or four variations within each facade add complexity to the texture.

To mitigate potential glare from a high contrast between the shades' undersides and a bright sky, the shades are perforated to create a zone of intermediate brightness. This dissolving of the bracket edges also reiterates at the aperture scale the idea of dematerialization that gave rise to the veil in the first place.

The 48,000 shades are fabricated in Germany using hydroforming technology, a process common in automobile manufacture but rare in architecture. For each of the 14 unique shade shapes, a 3-foot-3-inch-square stainless-steel block is milled with a CNC (computer numerically controlled) machine to create a negative. A ¼-inch thick sheet of steel is placed between the negative and a top mold, with water injected to press the sheet precisely into the form. A five-axis laser then trims the excess and perforates the edges. Advantages of the technology include the brackets' fluid forms, their geometric precision, and their light weight—with consequent cost savings in the support structure compared to welded options.

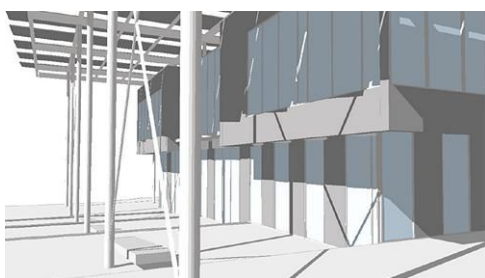
The effectiveness of the SEAS's shade veil enables the project to rely on low-energy environmental controls, including passive ventilation, chilled beams, and radiant slabs, with more intensive cooling, dehumidification, and ventilation in areas, such as labs,

where these are specifically required.

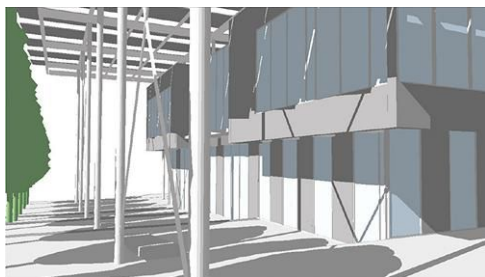
The ability to rely on low-energy environmental controls is even more crucial for Georgia Tech's Kendeda Building for Innovative Sustainable Design, which is targeting Living Building Challenge (LBC) certification. In order to attain this status, the two-story, hybrid mass-timber structure, scheduled for completion in 2019, will have to satisfy a number of stringent requirements. One of the more difficult will be keeping occupants comfortable in Atlanta's heat and humidity while using no more electricity than the project itself can generate.

"In a perfect world, an east-west orientation would help control heat gain, harvest daylight, and create a high-performance building," says Joshua Gassman, sustainable-design director at Lord Aeck Sargent. But other siting factors, such as connecting to campus open space and circulation paths, took priority. "We ended up with a design strategy where the building is oriented the 'wrong' way," says Gassman, "with a large west-facing facade."

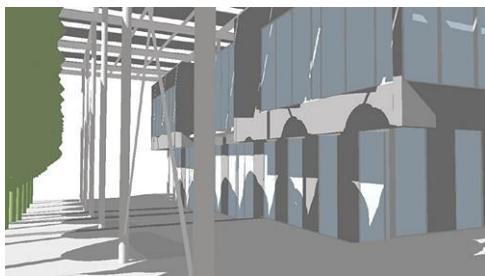
To maintain occupant comfort within the capacity of Kendeda's super-low-energy systems, the design team began with the notion of comfort itself, using the on-line Thermal Comfort Tool from the Center for the Built Environment at the University of California, Berkeley, to play with variables, and Georgia Tech's environmental testing chamber to understand the role of humidity. Working with the parameters from these investiga-



KENEDA WEST FACADE - NO TREES



KENEDA WEST FACADE - 30' TALL TREES



KENEDA WEST FACADE - 40' TALL TREES

tions, the team performed extensive modeling to optimize the window-to-wall ratio, the glazing specifications, and shading to keep cooling loads within the energy that the building's photovoltaic (PV) array could supply.

Keneda's big shading move draws on the architects' studies of regional and international vernacular examples for hot, humid climates. Reinterpreting the traditional front

PHOTOVOLTAIC PARASOL A rooftop PV array will shade Keneda's second story. Motorized exterior blinds will protect the first floor until trees grow in (left). The PVs will also help shade the south facade (above).

porch, which creates both shade and a connective social space, the 455,000-kWh-per-year rooftop PV grid is shifted west to create a 5,900-square-foot west overhang. This porch completely solves the west shading for the second story (with additional overhang helping the south), expands the water-collection surface to meet the LBC's net-positive water requirement, and creates sheltered teaching and gathering spaces adjacent to the building.

On the ground floor, however, the porch leaves some of the west facade exposed to summer insolation. (Not to be confused with insulation, insolation is the amount of solar radiation reaching a given area in a given unit of time.) In the long term, a row of trees will provide seasonal shade and contribute to the vitality of the gathering spaces. For the shorter term, until the new trees fill out, the design team evaluated options for fixed exterior shading around the porch, but issues such as head clearance, lack of visual openness, loss of daylight, and increased wind loads made these options less than ideal for the circumstance. Instead, the west facade—and the east, where there's no room for overhead shade—will use motorized and automated exterior blinds of clear anodized aluminum.

The clients did not immediately warm to the active-shade proposal. In fact, "they were adamantly against it," says Gassman. But the energy analysis, combined with reassurance from the building manager at the LBC-certified Bullitt Center, which Miller Hull designed in Seattle, and which now has several years' trouble-free experience with active shading, convinced them in the end.

Gassman describes the quest to integrate the Keneda Building's conservation strategies into a balanced whole—shading among them—

as a four-dimensional puzzle, with the element of time as the fourth dimension. He quotes naturalist and conservationist John Muir: "When we try to pick out anything by itself, we find it hitched to everything else." For this project, as for the SEAS and the Jackman Building, a holistic approach to shade design—hitching it to multiple priorities—generated vigorous, multifaceted solutions that are integral to their projects' architecture. ■

Katharine Logan is a designer and writer focusing on architecture, sustainability, and well-being.

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Learning Objectives

- 1 Discuss shading strategies that can strengthen a building's architectural identity.
- 2 Explain how the shading schemes discussed in the article help save energy while maintaining occupant comfort.
- 3 Describe the modeling, simulation, and analyses that helped produce each of these shading schemes.
- 4 Define technical terms relevant to shading, such as "SCC" and "insolation."

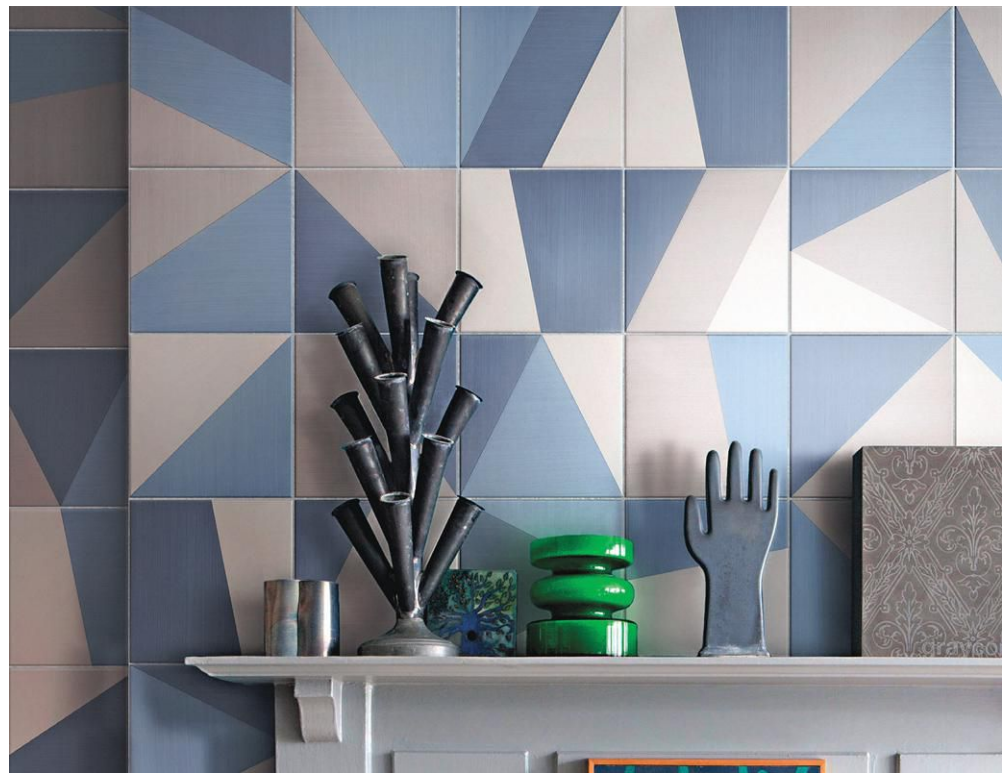
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By Chris Foges

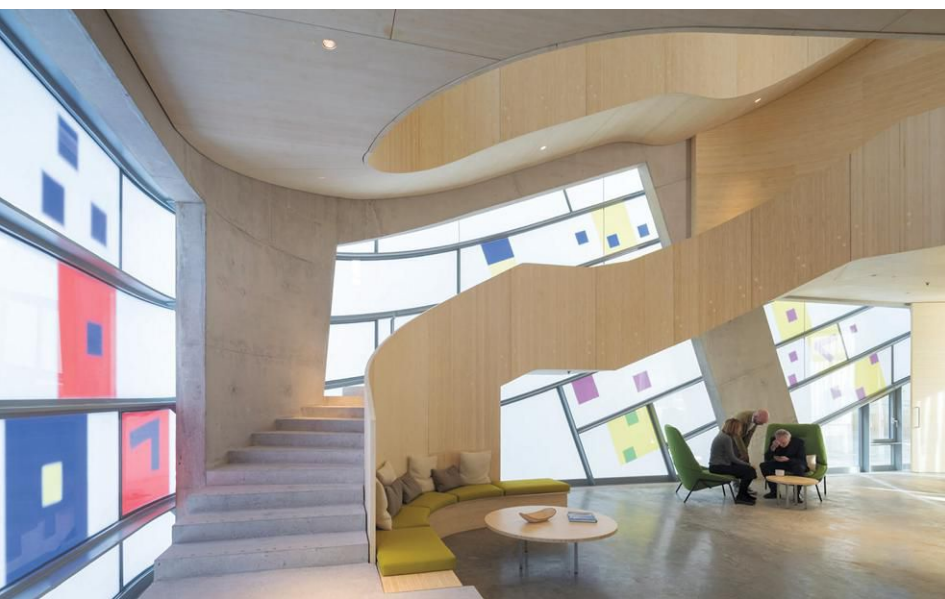
"LIGHT HAS always been my favorite building material," says architect Steven Holl. At his new Maggie's Cancer Caring Center at Barts Hospital in London, light does seem to assume near-tangible properties. Commissioned by a charity that has created more than 20 such freestanding centers designed around the UK by top architects, the facility offers cancer patients and their families practical and emotional support. This center uses carefully moderated illumination to draw in those who feel anxious, to lift their mood and foster intimate conversations. "This small building is important because it can change the way people feel at a difficult time," says Holl. "Light is essential in doing that."

The compact three-story structure sits at the heart of the hospital campus, tucked into the north corner of a grand quadrangle, adjoining an 18th-century stone building. With a site overshadowed by neighbors, Holl chose an insulated, translucent glass as a facade for good light transmission and to protect the privacy of visitors and staff. By day, its etched outer face has a matte-white appearance that resembles

limestone, blending with its setting. As dusk falls, the facades begin to glow as if the building were a lantern. So, says Holl, "if you're in that courtyard, and it's dark and raining, this luminous thing is inviting you in."

This glow from behind the glass, a result of the building's interior ambient light alone, on the outside reveals silhouettes from the asymmetric concrete columns and the blurry traces of people moving within, and brings to life an assortment of abstract, bright-colored graphics the architect scattered across the elevations. Holl worked with glazing manufacturer Okalux to add pieces of UV-protected film to the insulation filling of translucent capillary tubes sandwiched between the glass, like "21st-century stained glass." The iconography stems from the term for early plainchant notation, *neume*, deriving from the Greek *pneuma*—the breath of life.

During the day, the effect is even stronger inside, where a bamboo-lined stair spirals around an atrium from a communal kitchen on the first floor, past consulting rooms on the second, to an activity room and roof terrace at the top. Holl likens the vivid panels to



CORNER LANTERN Graphic panels in the insulated glass are arranged on glazing bars intended to resemble musical staves. These wrap the building's curved corners and follow the spiraling stair.



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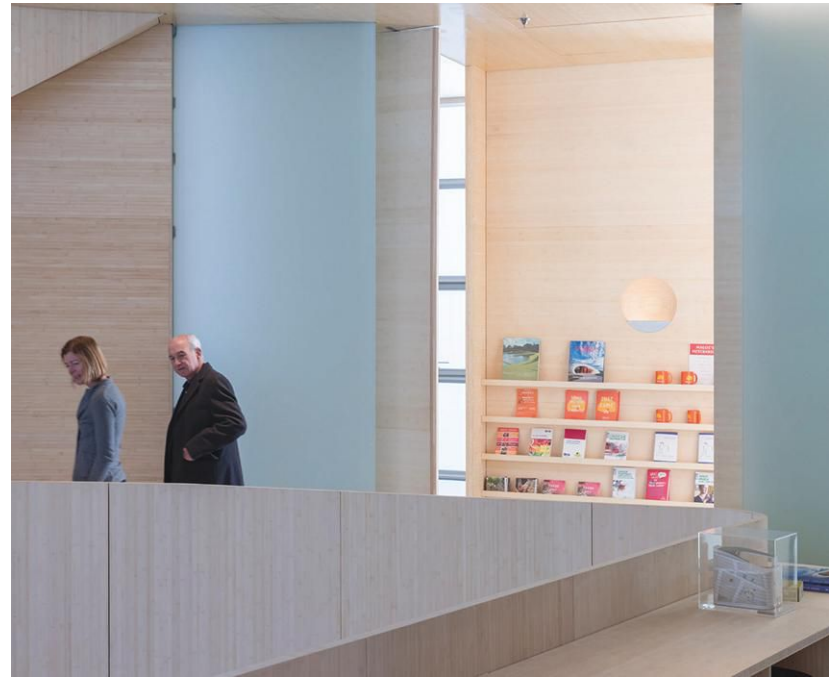
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- Accident & Day Unit
- St Bartholomew's Theatre
- St Bartholomew's Hall
- St Bartholomew's Chapel
- St Bartholomew's Church
- St Bartholomew's School
- St Bartholomew's Hall
- St Bartholomew's Chapel
- St Bartholomew's Church
- St Bartholomew's School

→ East Wing
→ King George V Building (KGV)



GENTLE GLOW Clear glass is used at the entrances (right) and for views of the roof terrace from the activity room (opposite, bottom). Electric lighting is integrated into the bamboo surfaces (opposite, top right and left).

Rothko paintings—a comparison suggested by their saturated colors and hazy outlines when viewed through the glazing. The ever-present white glass walls are like Japanese shoji screens, transmitting a soft, balanced light even on overcast days. Holl was alert to London’s capricious climate, having studied in the city in the 1970s. “That experience was embedded in my thought—how can we make this place a celebration of light, even when the weather is gray and depressing?”

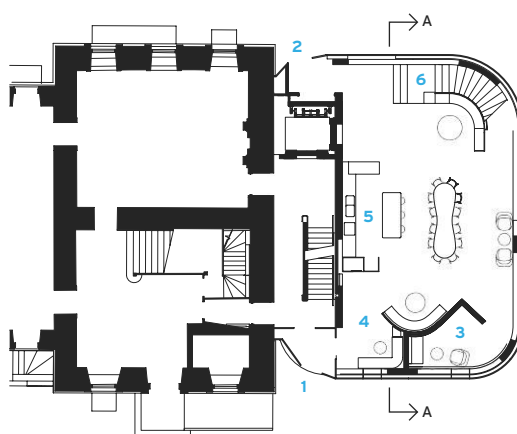
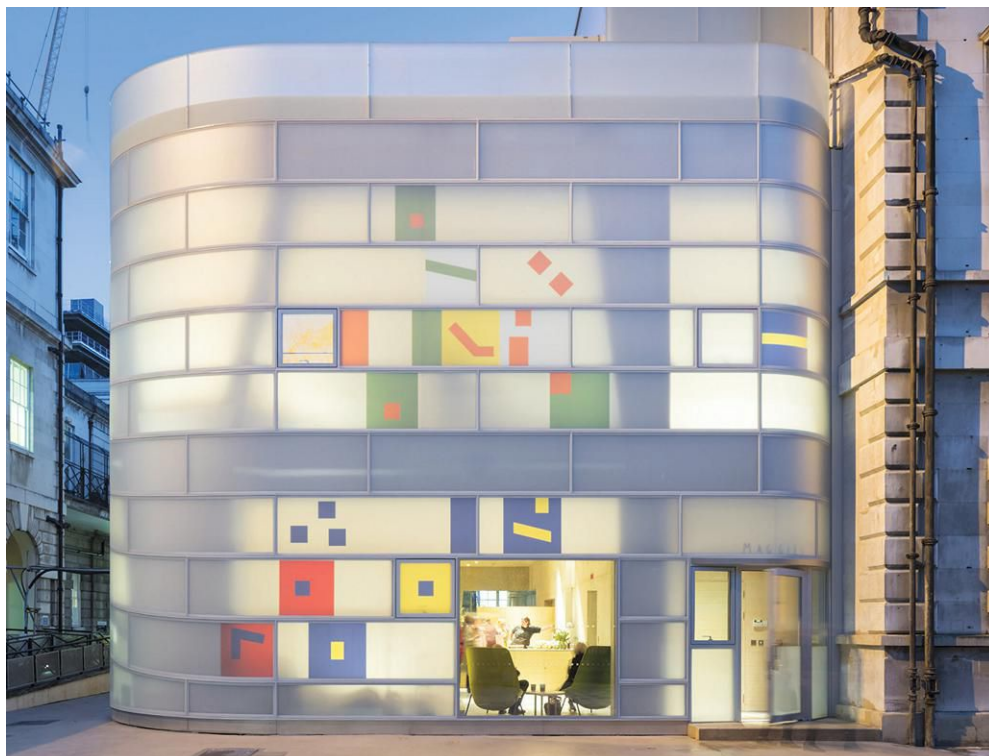
Electric light is deployed sparingly for economy and “because people having personal conversations don’t want to be blasted by uniform, general illumination,” says L’Observatoire lighting designer Hervé Descottes. “We wanted more contrast. The lighting offers a bit of intimacy, like putting a candle on a table that people gather around.”

Warm, 2700-Kelvin LED luminaires are recessed into bamboo ceilings and sloping staircase soffits. Amber light pools in significant places—the kitchen table or base of a stairway. Fixtures also are positioned to wash the bamboo walls and balustrades, enhancing their color and grain. “We don’t think in terms of lighting something,” says Descottes. “Light is a part of the thing, revealing its texture.”

Though the glass walls provide ample daylight, the electric light is left on and only subtly adjusted at night. “We want the lighting to be extremely warm and soft—like a cocoon—for a feeling of welcome and safety, regardless of the time of day,” says Descottes.

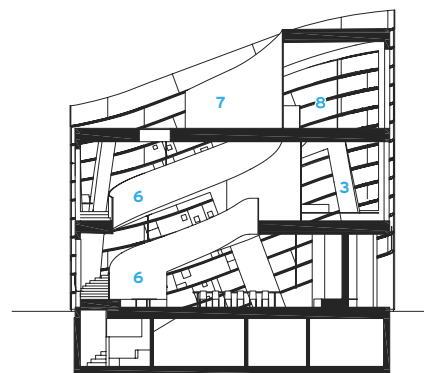
In the consulting rooms, floor and desk lamps create intimate zones, and the feature lighting in the common areas is unobtrusive. Bowl-like bamboo fixtures, made on CNC machines at Holl’s studio, are set into the bamboo walls, LEDs concealed behind metal plates at the base of each. Integrating fixtures with the paneling reinforces the character of the architecture and enhances the apparent depth of the material. Bamboo collars around each of the recessed ceiling lights have a similar effect. “We fought to achieve that detail, which was expensive but important to the spirit of the project,” says Descottes.

Like the white glass walls, the wood-warmed lighting suggests that the building itself is the source of illumination. Together they give the interior a calm stillness and luminous aura captured and held within the space. Holl describes the layers of the building’s structure as a “vessel within a vessel within a vessel,” and this seems apt for a protective, enveloping container of light. ■



GROUND-FLOOR PLAN

0 10 FT.
3 M.



SECTION A - A

- | | | | |
|----------------------|----------------------|-----------|--------------------|
| 1 MAIN ENTRANCE | 3 SITTING/COUNSELING | 5 KITCHEN | 7 TERRACE |
| 2 SECONDARY ENTRANCE | 4 PAUSE SPACE | 6 STAIR | 8 GROUP ACTIVITIES |

credits

ARCHITECT: Steven Holl Architects – Steven Holl, design architect/principal; Chris McVoy, senior partner in charge; Dominik Sigg, project architect

LIGHTING DESIGNER: L’Observatoire International – Hervé Descottes, principal

ASSOCIATE ARCHITECTS: jmarchitects

ENGINEERS: Arup (structural, m/e/p, climate, civil)

GENERAL CONTRACTOR: Sir Robert McAlpine

CLIENT: Maggie Keswick Jencks Cancer Caring Centres Trust

SIZE: 6,500 square feet

COST: withheld

COMPLETION DATE: December 2017

SOURCES

LIGHTING: Lucent (downlights and projector); Traxon; Feelux (ambient); LED Linear (task and custom sconces); JCC Leviton (exterior)

CURTAIN WALL: Okalux; Seel



Float Station, California

Jensen Architects

By Lydia Lee

FLOTATION THERAPY, in which one lies suspended in a sensory-deprivation tank, became popular in the 1970s as a way to reach another level of consciousness. Recently, the minimalistic design approach of San Francisco-based Jensen Architects is aiding its revival as a way to de-stress and deal with chronic pain. Located in the Silicon Valley town of Campbell, California, Float Station offers light-filled transparent spaces offset by hefty concrete, stone, and wood, and also meets rigorous programmatic requirements.

To help clients transition from their harried lives, Float Station co-owner Ryan Ariko wanted to create an environment that would draw them in gradually. He also didn't want the space to feel like a spa, with dim lighting, because, he says, "The experience is very different and enlivening."

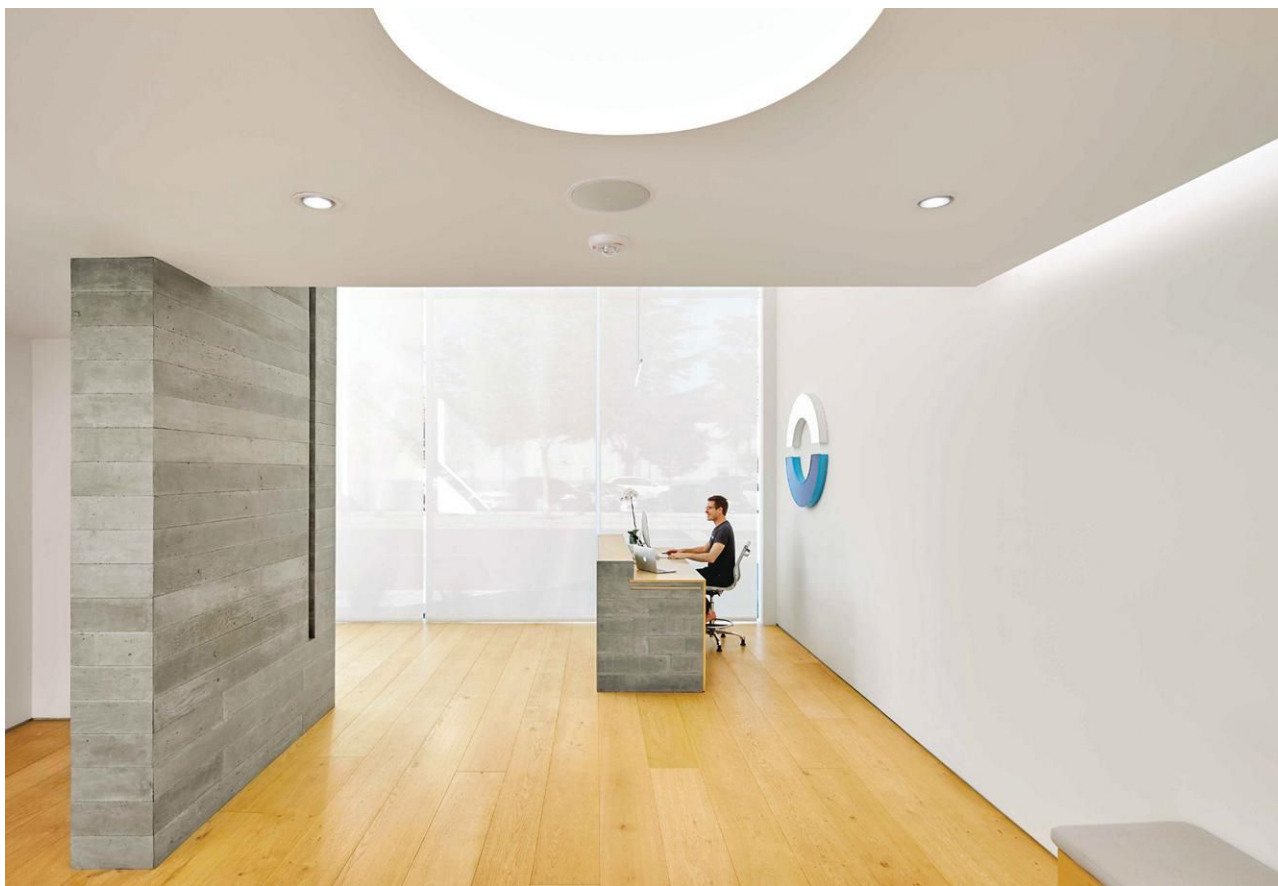
For the 2,400-square-foot project, the architects reimagined an existing one-story commercial building, removing everything but the roof and concrete-masonry unit walls on either side. First they added a double-height, double-glazed reception area in full view of the street. According to firm principal Mark Jensen, the program "is ultimately quite intimate, so it may seem counterintuitive, but we wanted to be transparent about what was going on in here."

Jensen and his team then created a new masonry facade for the remaining structure on its south side. Clad with concrete veneer that looks board-formed, this textured wall transects the glass volume, providing an outdoor surface that displays an illuminated sign and that, once indoors, partitions off the entrance, where clients are prompted to sit and remove their shoes before checking in. Just beyond this area is the guest lounge, where an adjoining corridor leads to the five acoustically insulated, 150-square-foot float rooms, each dominated by a fiberglass flotation pod enclosing a shallow pool of buoying, heated salt water.

To avoid spa clichés, the design team chose materials that were substantial and gave a sense of permanence, such as the concrete veneer and an enormous marble-clad coffee table. Against a backdrop of white drywall, this quiet materiality keeps the space from feeling clinical, as does the strategic use of light.

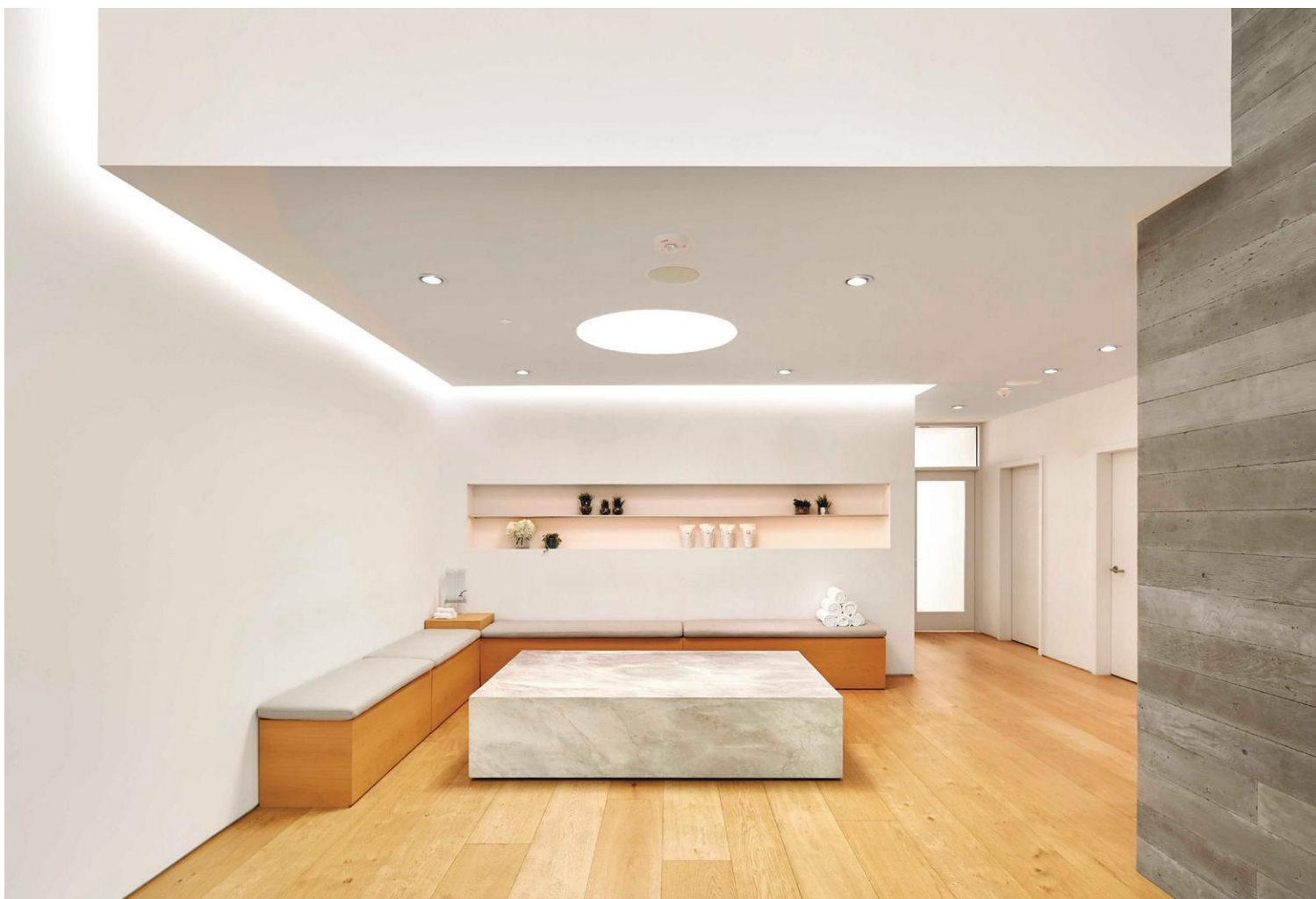
In addition to abundant daylight in the open public area, resulting from the glazed addition, and circular skylights in the lounge and corridor, the design team inserted a band of color-changing LED cove lighting that continues into the private float rooms. Creating an illusion that the ceiling is floating within walls that continue beyond the ceiling plane, this device acts as an architectural foil for any fears of potential claustrophobia. The coves also conceal air supply and return vents in the float rooms.

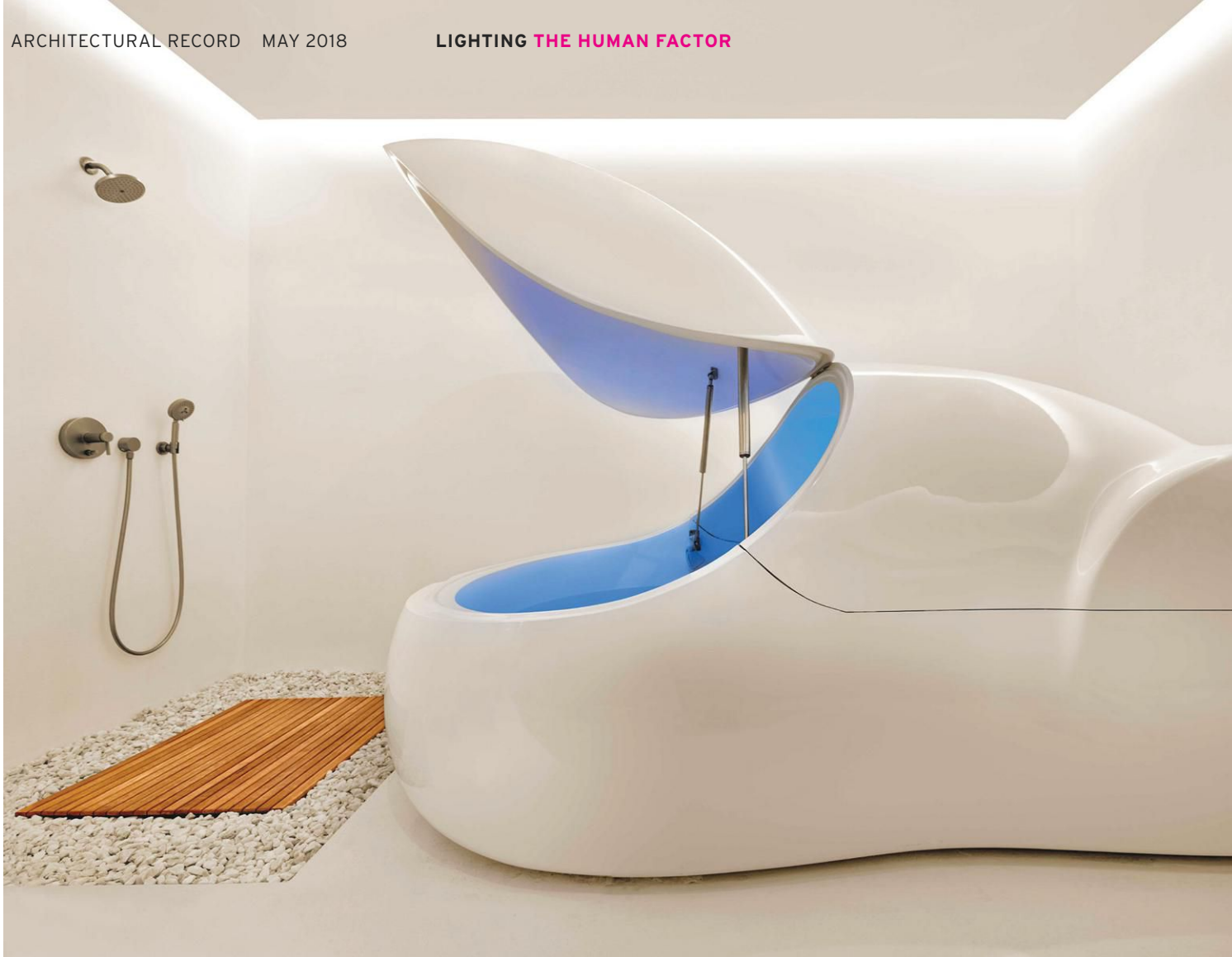
In the reception area, the cove lighting is programmed to correspond to the hour, changing its hues like daylight in order to support the body's circadian rhythms. The coves in the float rooms provide a



WELCOME SIGNS

A transparent addition (opposite) allows passersby to view the goings-on inside. The double-height glazing, along with a circular skylight, brings abundant daylight into the reception area (left) and guest lounge (below).





GRADUAL PROGRESSION

Station's luminous, open reception area welcomes visitors (right). Private treatment rooms (above) feature ceiling cove lighting and illuminated tubs. Walls and ceilings are coated in white epoxy to resist the corrosive effects of salt water. Wood and white quartz rocks for shower floors add a natural element.



gentle white light that Ariko plans to dim and brighten automatically in order to control the float experience without disrupting the client's meditative state. After entering, they can operate the lights inside the tanks.

The architects were able to integrate the functionality in such a seamless way that the luminous spaces here seem fluid and uncomplicated. However, says Jensen, "a wonky, geeky interest in technology was important, because there's a lot of back-end stuff to make this all work." ■

Bay Area–based Lydia Lee writes about architecture, design, and urban development.

credits

ARCHITECT: Jensen Architects – Mark Jensen, principal

ENGINEERS: Coffman Engineering (structural, m/e/p); Acoustic Arts and Engineering (acoustical); Nterra Group (civil)

GENERAL CONTRACTOR: Duerson Construction

CLIENT: Float Station

SIZE: 2,400 square feet

COST: withheld

COMPLETION DATE: March 2017

SOURCES

CURTAIN WALL: Arcadia

CONCRETE VENEER: 2Stone

LIGHTING: Ketra (cove, LED smart lamps, controls); Halo (recessed downlights); Edge (pendant); B-K, Cooper (exterior); ETC (controls)



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HSBC Canteen, Düsseldorf

ttsp hwp seidel

Licht Kunst Licht

By Mairi Beautyman

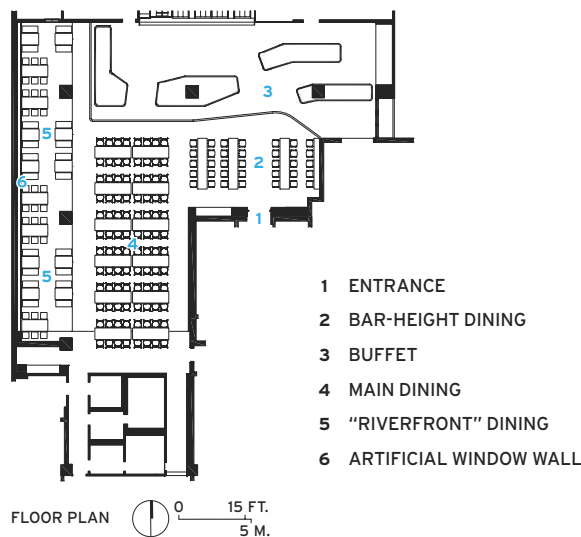
FEW WOULD PICK a daylight-deprived basement as an ideal setting for a cafeteria. Yet, thanks to an imaginative scheme by the Frankfurt-based firm ttsp hwp seidel with lighting design by Licht Kunst Licht (LKL), employees at the HSBC Global Asset Management headquarters in Düsseldorf are transported to the Rhine River while a soothing circadian-rhythm-based illumination program supports their internal biological clocks.

The company's 5,000-square-foot cafeteria was a relic from the 1970s, when the building by HPP Architekten was built. In addition to a much-needed interior update, the \$15.4 million modernization project also addressed the installation of 21st-century HVAC and acoustical systems, as well as kitchen, safety, and infrastructural upgrades.

Strict criteria from the local government specified the injection of daylight into the windowless space. However, structural restrictions to the building's polished red stone facade—which is protected—limited openings to a tiny light well and a few small windows. "We did calculations and realized there just couldn't be much daylight at all," explains LKL lighting designer Isabel Sternkopf.

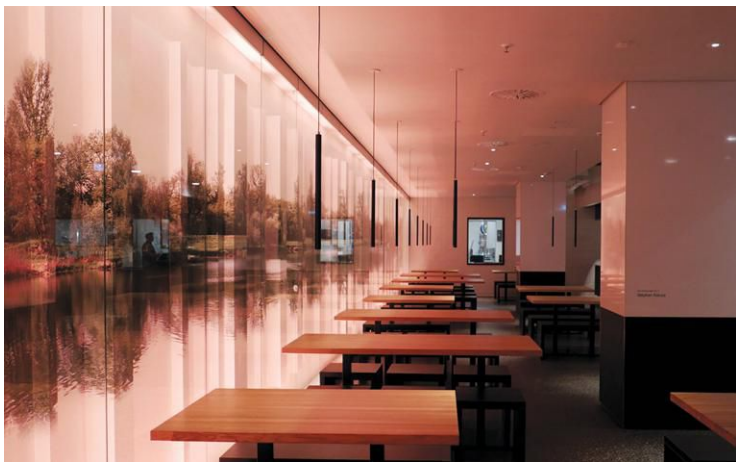
As an alternative, the design team proposed the installation of an artificial-window wall backed by a photo panorama that would span the rear of the canteen. The scale of the image would mimic a view one might see from a ground-level space. An "intelligent" human-centric lighting (HCL) control system would respond to the color, direction, and intensity of the actual daylight outside to augment the illusion. When the authorities learned this solution would infuse abundant light into the underground facility and be just as beneficial for employees than more intrusive and expensive interventions, they gave it a go.

Visible throughout the dining and self-serve areas, the ½-inch-thick, 69-foot-long, 9-foot-high, floor-to-ceiling window showcases a work from Das Rheinprojekt, a series by artist Stephan Kaluza, who traversed the 766 miles of the Rhine, documenting his journey with a camera every few minutes. Applied to an existing concrete wall, it



PHOTOGRAPHY: © JOHANNES ROLOFF/LICHT KUNST LICHT

RIVER VIEW The design team illuminated a photo panorama of the Rhine River on a concrete wall behind an artificial window, transforming this basement employee cafeteria into a popular "room with a view."



ALL IN A DAY Floor- and ceiling-mounted LED strips between the glass and the image cycle through a program that corresponds to the effects of the sun outside, providing varying hues and degrees of light throughout the day, from sunrise to sunset.

depicts the river flowing in the same direction as Düsseldorf's own stretch of the Rhine, a seven-minute walk away.

The photograph—printed on pleated plasterboard for depth and richness—is illuminated from above and below. Contiguous, 59-inch lengths of tunable-white, ceiling-mounted LED strips, sandwiched between the glass and the image, gradually shift from a 2700 Kelvin (K) in the morning up to a cool 6000K at midday and back down to warmer hues in the evening. Similar floor-mounted RGBW LED strips allow for the grazing of light upwards over the scene to highlight and enhance its texture and provide the burnt-orange hues that the controlled system will cycle through at sunrise and sunset.

Project architect Tanja Nopens describes the space as “more restaurant than canteen,” with a buffet and three dining areas, all with custom solid oak tables and black-painted seats. As in a restaurant, the lighting is inviting. Fast, “on-the-go” bar-height tables are lit by cylindrical, powder-coated aluminum 2700K LED pendants that blend into a newly exposed ceiling, painted white to camouflage the HVAC system. Brass Alvar Aalto pendants offer a shiny jolt of hospitality to this casual spot.

A suspended black-painted ceiling above the buffet houses LED downlights specified by Sternkopf “for a high color-rendering index that makes food look tasty.” Some of these are fixed at 2700K, while others are tunable and programmed to correspond to the changing nature-like hues of the light wall. The circadian-rhythm-sensitive lighting and all the other luminaires are programmed together to create

realistic atmospheres that change automatically throughout the day, as they would in a daylit room reinforced by a lighting system.

In keeping with the restaurant design language, the artist Kaluza was commissioned to create an illuminated installation over the central dining area. His latticelike work, comprising 10 black powder-coated aluminum beams ranging from 18 to 38 feet long, houses 55 LED spots that provide an intimate 2700K glow.

The most dramatic dining area flanks the scenic light wall. Here, discreet matte-black aluminum 2700K LED pendants drop over tables. The pendants, which are so lean they don't obstruct, are assisted by round, adjustable 2700K pinhole spots in the ceiling. The success of this ingenious trompe l'oeil scheme, as with a real waterfront café, is clear: the prime “riverfront” seats are the first go at lunchtime. ■

Mairi Beautyman is a design and travel journalist based in Berlin.

credits

ARCHITECT: ttsp hwp seidel
Planungsgesellschaft – Tanja Nopens,
project architect; Isabelle Oberle, Jo
Meyer, design team

LIGHTING DESIGNER: Licht Kunst Licht –
Andreas Schulz, principal; Isabel Sternkopf,
project designer

ENGINEERS: Ingenieurbüro Heimig,
Energie- und Gebäudetechnik (electrical)

SIZE: 5,000 square feet

COST: withheld

COMPLETION DATE: January 2017

SOURCES

LIGHTING: iGuzzini (window wall,
downlights); XAL, Artek (pendants); Soraa
(grid module spotlights)

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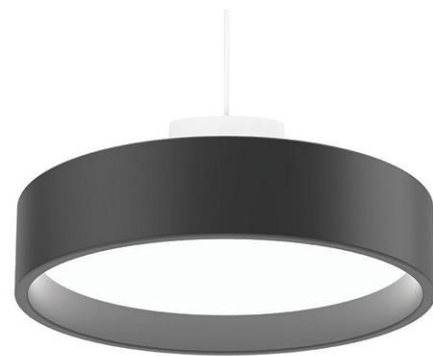
By Kelly Beamon



Rush Sharp

This new version of Coronet's popular profile beefs up the original with features such as a reflector optic to direct the beam and an optional Power Over Wire mounting system, which combines the fixture's suspension cable with the power cord to minimize the latter's visibility. Available in four color temperatures.

coronetled.com



LP Circle

Louis Poulsen is offering its contract-friendly LP Circle in new colors. Working with Mikkel Beedholm, who designed the original fixture in 2013, the company developed a Pale Petroleum and yellow as powder-coated finish options. Circle emits light through a frosted-acrylic diffuser inside its colorful collar and can be specified with a 3000K, 3500K, or 4000K LED and in surface-mounted, semi-recessed, recessed, or pendant versions (shown).

louispoulsen.com



Tracking Magnet and Running Magnet

These flexible systems from Flos Architectural include a lightweight track of extruded aluminum that carries a 24- or 48-volt electrical core, to allow architects to recess thin track lights into plaster walls and ceilings. Specially designed fixtures attach to the track magnetically and include light strips by Niels Bentsen (shown) and spotlight projectors by Antonio Citterio.

architectural.flosusa.com

Divergence Outdoor Pendant

Vermont artisans fabricate this steel chandelier by hand for Hubbardton Forge. It is damp-rated, UL- and CUL-listed, and provides 200 lumens from six globe or tube bulbs. The adjustable stems can extend the fixture's hanging length to 53" on the standard version and 65" on the long model.

hubbardtonforge.com

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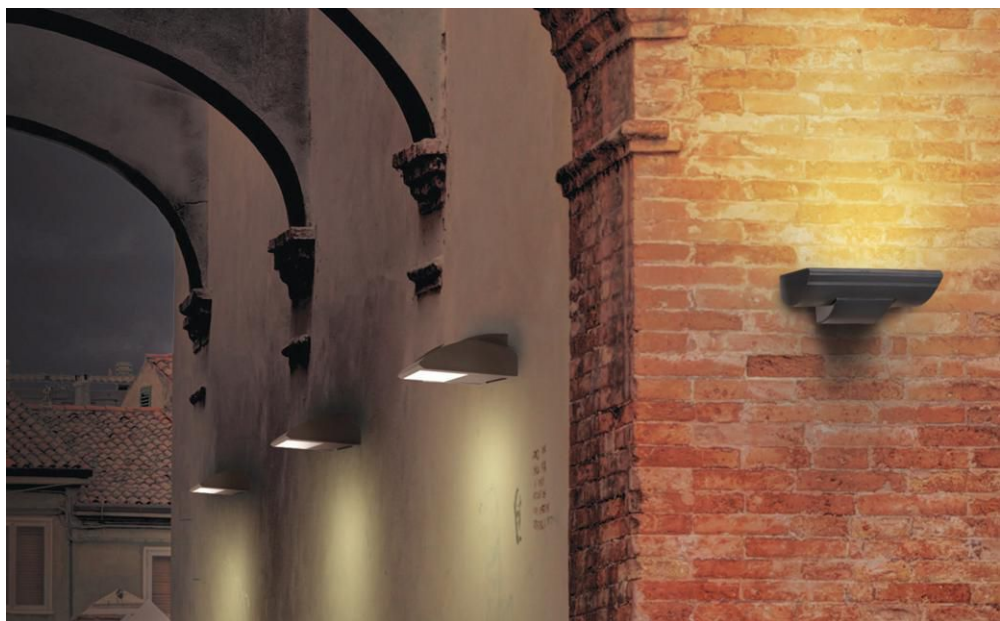
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Doric

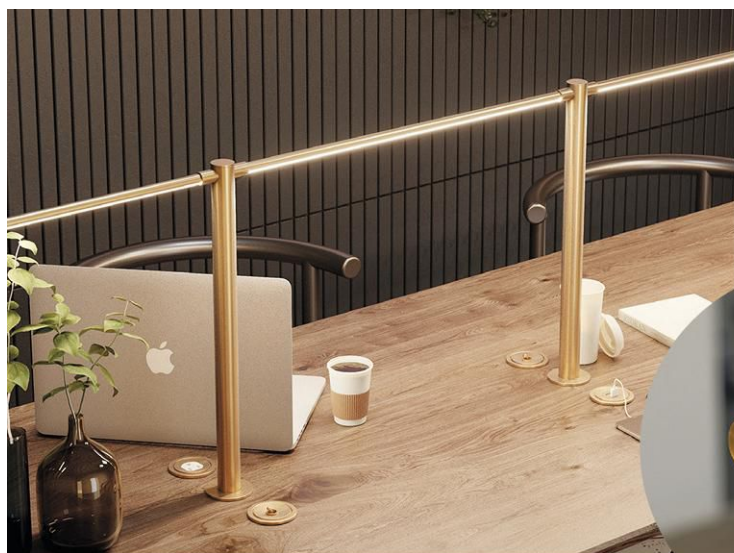
This marbled pendant is actually translucent resin, which makes its profile durable enough for contract settings. The shades are available in four colors and three sizes, with diameters measuring 3", 11", and 24". Their glow ranges from 2700K to 6000K.
innermost.us



Wall Director 2.0

This LED floodlight updates an earlier version from KIM Lighting (a Hubbell Lighting company). The fixture has an efficacy range of 95 to 145 lumens per watt and features lockable tilt adjustment and two modes for the beam—Wall Graze, for large-scale, dramatic nighttime effects and security lighting, and Spot/Column for accenting finer building details. The aluminum fixture can be used as a downlight or uplight and comes in nine finishes.

hubbell.com/kimlighting/en



THIN System

This dimmable 3000K LED task light was built for sharing. Installed as a single 24"-long fixture or three linked modules, the light source sits 19" above the work surface on 1"-thick posts, leaving worktops clutter-free. It is available with a clear or frosted lens in three finishes.

juniper-design.com



Everett

Rejuvenation designed this wet-rated 3000K LED wall sconce for commercial and residential use. Assembled in Portland, Oregon, Everett features lamping with a high color rendering index of 90 and a brass body in Aged, Old, and Unlacquered finishes, as well as Oil-Rubbed Bronze (shown) and Polished Nickel.

rejuvenation.com



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Photo courtesy of TAMLYN



p154

Multifamily Market Design Methodologies

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Mastering the Art of the Kitchen Sink

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p168

Stunning Facades with Sintered Stone

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Multifamily housing continues to be a significant part of the overall design and construction activity in the United States, such as the Metropolitan Columbia building in Columbia, Maryland, shown here.

Multifamily Market Design Methodologies

Strong activity continues to drive innovative design and impact localities

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Multifamily housing continues to be a building type that is providing a significant part of the overall design and construction work in 2018. A review of industry and trade publications continues to point out that all of this activity is being driven by market demands, fostering innovative design, and making notable social and economic impacts.

The market for multifamily units has continued to be strong. An independent study reported by RENTCafe.com indicates that between 2010 and 2015, the United States saw an increase of 9.4 percent in the share of renter households, bring-

ing the 2015 percentage of households that are rented (versus owned) to 36.2 percent. Some of this growth can be attributed to shifting preferences, particularly among the baby boomer generation that is looking to downsize and the millennial generation that is looking to rent or buy multifamily units. Developers are picking up on these trends and providing amenities that appeal to each of these demographic groups with pricing and packaging options suited to the market.

In Vancouver, British Columbia, a city known for its plethora of recently built high-rise multifamily buildings, Pritzker Prize-winning

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1 AIA LU/HSW

Learning Objectives

After reading this article, you should be able to:

1. Discuss the significance of selecting structural systems for multifamily housing buildings in regard to fire safety, cost, and comfort.
2. Assess the choices in exterior cladding to create multifamily buildings that create well-designed facades while assuring durability and cost effectiveness.
3. Explain the importance of providing integrated and continuous air- and water-resistant barriers in multifamily housing.
4. Determine ways to select appropriate hardware systems for multifamily settings that assure security and proper access.

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architect Shigeru Ban is bringing innovation and sustainability together beautifully. The 232-foot-tall Terrace House has recently received official approval to use exposed mass timber in the top seven stories of the 19-story building. This approval from the Chief Building Official's Office means that Terrace House will be the tallest hybrid wood structure approved for construction anywhere in North America. According to the *Vancouver Sun*, "The new building has been designed as a tribute to its neighbor Arthur Erickson's Evergreen building. Triangular shapes, natural materials, and terraces are used to connect the two designs." Ban's design uses innovation and design to maximize natural light and connect indoor and outdoor environments.

In terms of impacts on the localities, industry analysts such as CBRE Econometric Advisors have reported that as of December 2017, nearly 23 percent of all multifamily housing units under construction in the United States are being built in urban cores. While that is good for density, it also appears to be good for stable rental rates. The same firm reports that rental growth in urban markets has only risen about 0.5 percent in the prior two years compared to suburban markets where the rent growth has been nearly 3.5 percent in the same time period.

With all of the above trends and influences in mind, we will look at four different but significant architectural building systems related to the design and construction of multifamily housing. Each one will be examined based on the ways it can be used to provide more innovative design, influence the local market, and provide residents with an attractive, comfortable, and desirable housing option.

ADVANCED STRUCTURAL FLOOR SYSTEMS

Multifamily projects usually require multi-floor construction. Determining the best type of multi-floor structural system to use for a particular project involves a review of the project needs compared to the range of available construction options. Making the most informed decision on which

system to use is often a collaborative effort between architects and structural engineers, but increasingly they can benefit from talking with the technical assistance teams of system suppliers and manufacturers too. An advantage for the design team in this approach comes in the form of assistance in the selection of a building system that will not only excel in design intent but also holistically take into account the set of related issues, such as material costs, erection costs, and project timelines effects.

Combining the Strength of Steel and Concrete

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 not only for structural strength but also for fire safety, sound separation, and coordination with other building systems and finishes. Some of those criteria are dictated by code and safety concerns and others by comfort and marketing issues. To address all of those, 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. It can also optimize multistory construction since the floor-to-floor heights may be 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. In some cases, an additional building story may be possible using a long-span composite floor system compared to a conventional steel or reinforced concrete structure. This is particularly true in locations where the overall building height is limited due to zoning requirements. An added story means more income for a building owner

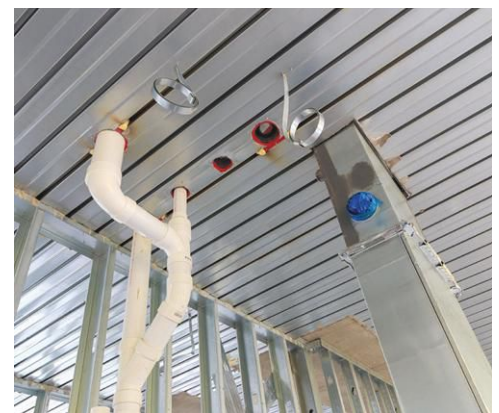
and may improve the overall project financial picture considerably.

Long-span composite floor systems are available in different deck profiles and a variety of depths. The steel supporting deck can be low profile and 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. Together, 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.

Improving Performance and Lowering Cost

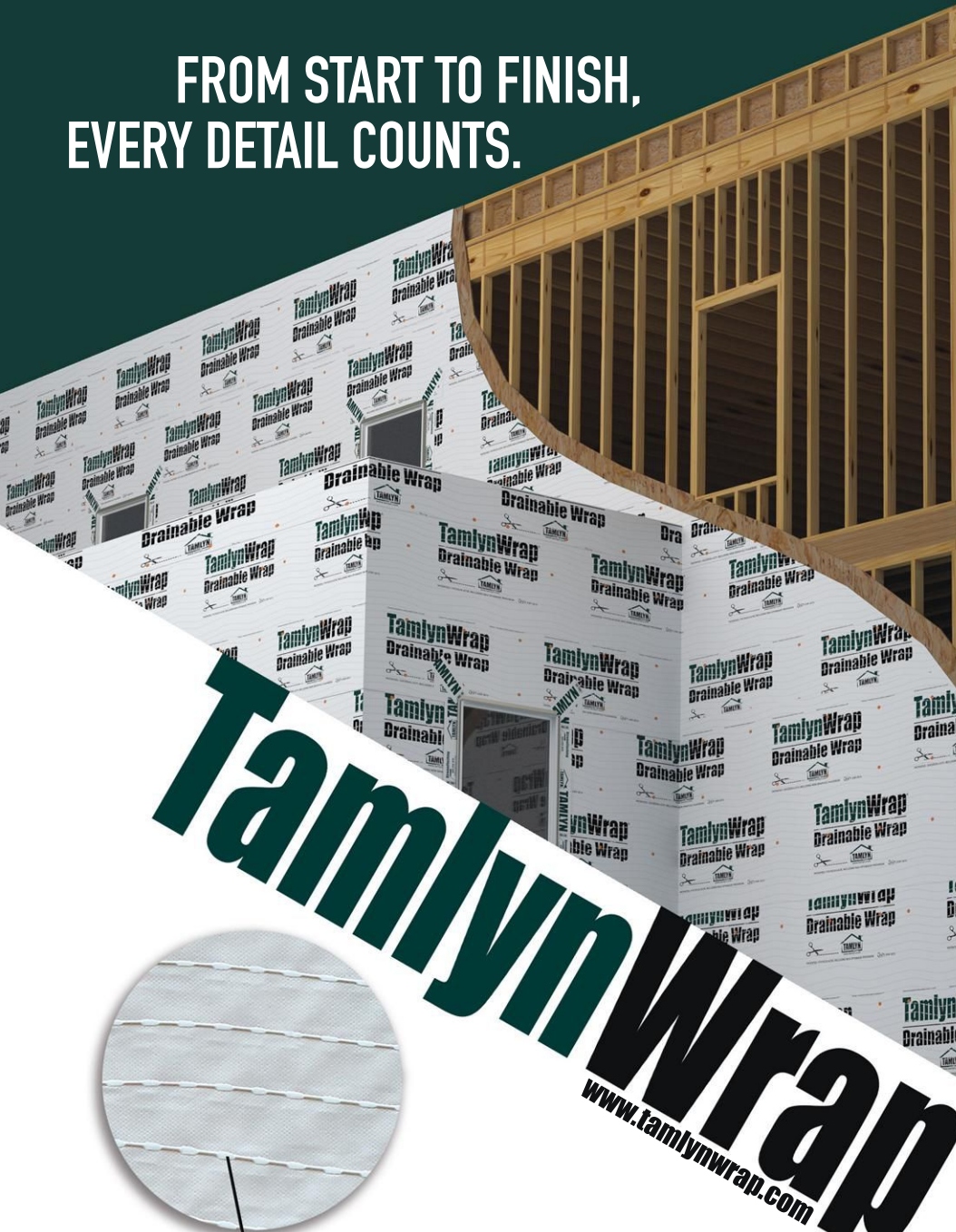
In a typical multifamily layout, the composite floor system can allow spans from the exterior walls to interior corridor walls or beams, thus reducing design coordination and construction costs associated with intermediate load bearing walls between residences. For example, a long-span composite floor system can achieve open bays up to 1,200 square feet, with clear wall-to-wall spans up to 36 feet without intermediate support columns. For longer spans, a support column can be thinned to half the size of equivalent reinforced concrete columns. Thin-slab floor and roof designs also align with LEED v4 because they support a holistic, long-term view of project performance and costs, both to the building owner and to the environment.

Among the other characteristics of long-span composite floor systems, fire resistance ranks high with ratings available up to 4 hours—particularly relevant in urban settings. Similarly, concerns over vibration or acoustical control can be addressed quite predictably with design and fabrication options available to meet those demands in multifamily living. From a construction coordination standpoint, flush spandrel beams can be incorporated for glass curtain walls to be connected and properly integrate with the overall building structure.



Optimized floor-to-ceiling spaces and heights are a distinct advantage of a thin-slab, long-span composite floor system used in many modern multifamily buildings. As seen here, the exposed steel deck can also serve as an attractive ceiling for the unit below and can easily integrate MEP components.

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There are also standardized methods for dealing with mechanical, electrical, and plumbing components. In some cases, the corrugations in the steel deck can provide continuous channels to run and/or conceal piping, wiring, conduit, etc. In other cases, specific means for through-floor penetration of these items can be incorporated.

One of the benefits of the exposed structural steel deck is that it can serve as the ceiling of the unit below the floor. Architectural finish options are available to allow for streamlined, attractive, finished appearances, or a factory-applied primer can be selected allowing unlimited paint options. In other cases, a finished ceiling treatment can be applied to the underside of the steel deck with any design characteristic desired. Overall, long-span composite floor systems can be an ideal floor structure solution for multifamily buildings.

INTEGRATED SHEATHING SYSTEMS

The continued high level of activity in new multifamily housing construction in many cities and towns has put a particular burden on the availability of skilled labor to do the needed work. The rotation of crews from one jobsite to another and the coordination between different subcontractor specialties can have costly impacts on project schedules due to delays when labor pools are thin. In that regard, general contractors and developers have been seeking out ways to overcome those issues while still meeting or exceeding quality standards. One of the more common ways of addressing the skilled labor shortages is to rely more on integrated products that combine several materials or systems in a factory-controlled condition. This approach can provide a high-quality, high-performing product that requires less labor and less time in the field for installation, thus creating efficiency and savings overall.

One of the best examples where this shift in construction technique is playing out, particularly in multifamily construction, is in the use of integrated exterior wall and roof sheathing systems. This type of product is purposely designed to streamline the installation process of multiple exterior wall and roof performance needs by including structure, weather resistance, air leakage protection, and in some cases a continuous thermal barrier all in a single panel and tape system. This is a change from the previously traditional method of separately specifying and installing each of these critical exterior barriers. The move to incorporate these next-generation sheathing materials into more and more multifamily projects has also

Photos courtesy of Huber Engineered Woods, LLC – Zip Systems ©2018



Integrated sheathing and tape systems are popular in multifamily construction because of their high performance and jobsite labor savings.

increased attention on some related construction details. Architectural designs and specifications that proactively anticipate the use of these integrated sheathing products can also include easy-to-install transitional flashing details into areas like deck ledgers, wall-to-concrete foundations, and windows. This attention to detail helps assure the continuous integrity of all barriers is maintained.

Efficiency through Panelization

In many locations, the use of panelized construction has taken hold as a further means of creating factory-based quality while reducing the need for onsite skilled labor. Prefabricated exterior wall and roof panels have been used for some time in residential and light commercial construction of all types. Traditional framing and sheathing methods are often employed with the preassembled panels shipped to the project site and set into place using appropriate equipment. Because integrated sheathing products already have multiple layers of protection, they also reduce steps in the panelization process. Hence it is becoming equally popular to use integrated sheathing in factory-constructed structural panels as much as it is site-built construction.

For either panelized or on-site work, integrated sheathing eliminates the need for other products such as housewrap air barriers, water-resistant membranes, or even additional exterior continuous insulation. The preinsulated products are available with different insulation thicknesses that can provide thermal resistance from R-3 to R-12. The insulation is intended to be installed against the studs creating the continuous insulation layer called for in many energy-conserving designs. But that also means the structural sheathing is separated from the studs by the thickness of the insulation. Hence, the engineered nature of such products addresses this condition with nailing requirements called out to meet prescriptive code



requirements for bracing and shear values. Manufacturers' engineering data and installation instructions should be followed closely for best results, particularly for multifamily structures four stories and above.

With or without insulation, integrated sheathing provides a water-resistant barrier and air barrier on the face of the exterior face of the sheathing. The seams and joints of the sheathing are addressed most commonly with tape products that are easily installed with very effective results. Such advanced acrylic seam-sealing tape can be combined with stretchable flashing tape that stretches in all directions for efficient sealing of window sills, door frames, and penetrations. In addition, a liquid flashing material is available with these integrated systems for excellent air sealing around any rough openings with intricate curves and corners, such as recessed windows. Altogether, the taped and flashed sheathing can be specified to meet or exceed the requirements of an "enhanced drainage plane" according to ASTM-E2273-03 testing requirements. Sheathing and tape systems are even available with a 180-day exposure guarantee and a 30-year limited warranty as a testimony to their durability and effectiveness.

Aaron Mathews, director of commercial sales for Huber Engineered Woods, has seen the rapid growth in the use of integrated sheathing since it was first introduced in 2006. He points out, "The real distinction of these products is not only that they are innovated from a place of solving real job site problems but that manufacturers support their implementation from specification consideration on individual projects through product installation on the job site. From in-office presentation and specification consultations to preconstruction meeting participation, mock-wall trainings, and observation reports, the goal is to be a resource for design and construction teams throughout a project."

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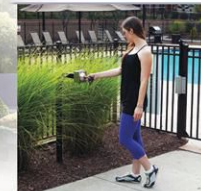
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EXTERIOR AND INTERIOR TRIMMED PANEL DESIGNS

The rise in urban multifamily buildings and the marketing influence of younger residents such as millennials has prompted design teams to look at different aesthetics suited to these situations. Favoring more contemporary or even modern appearances on the exterior facade and interior wall surfaces, architects are embracing the market forces that are moving more multifamily buildings in that direction. Urban mixed-use buildings with a commercial podium below several stories of living units have become the vanguard of contemporary, hip locations with carefully articulated facades and surfaces. But the urban contemporary look has begun to show up in a wider range of property types too, including suburban garden/walkup properties (sometimes by the same property developer/owner as urban projects) and even in senior housing as well. The clean lines and modern details of the exterior facades have also spread to the interior spaces of these buildings for not only shared public spaces but also into the living units.

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 made from fiber cement, composite material, engineered wood, or even thin composite aluminum panels. It might also include siding of different types made from some of the same materials. 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 of the panels are addressed. Typically, some sort of trim has been applied to accomplish this using wood, composite, or plastic materials. While those are effective and can work well 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 materiality 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 can 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 within its product category, which helps to take a strong, well-known product in drywall and give architects and designers the opportunity to add new details, patterns, and design impacts. This can include communal or private spaces in multifamily developments, where the aluminum trim can be used to create bold corners or wall bases in addition to delineating wall panel patterns.

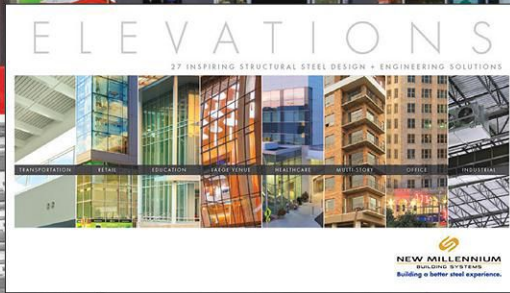
Of course, the color of the trim is an important design consideration, regardless of the exterior or interior location. Fortunately, there are many options beyond the standard mill finish aluminum coloring. Extruded aluminum trim can be specified as finished with a paint primer only ready to receive 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 the performance level can be controlled.

Architects who have used this approach include Russell A. Hruska, AIA, principal and co-founder of Intexture Architects in Houston, Texas. He points out, "Using extruded aluminum trim between panel joints becomes an architectural element and is a way of expressing the joints and defining their deliberate placement. It adds a level of architectural refinement." From a performance perspective, he adds, "Aluminum trim, when used with fiber cement panels or lapped siding, is more cost effective than stucco and provides long-term durability while achieving our design aesthetic." Val Glitsch, FAIA, confirms this experience, indicating, "The alternative to premanufactured aluminum trim is wood, which gives a very different aesthetic, is bulkier, and, for water infiltration concerns, can only be used for vertical joints. The best way to get a quality, consistent, properly installed, and cost-effective result is to use extruded aluminum trim designed for that purpose."



Exterior cladding panels can be held in place along their edges using extruded aluminum trim that also contributes directly to a more contemporary and market appealing facade design, such as at the Artisan in Huntsville, Alabama, shown here.

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Access control for safety and security in multifamily buildings can take on different forms, including individual unit locking systems, electronic and smart phone access, and outdoor full-height turnstile systems, all as shown here.

ENTRANCE ACCESS AND CONTROL

Safety and security are fundamental aspects of any building, but they are particularly notable in multifamily housing situations where a lot of people can be coming and going. This is especially true in multiuse buildings with multiple occupancies and different types of tenants. Of course, residents want to be able to freely access their building and living units, but they also want to be sure that access is controlled when it comes to nonresidents or unwanted intruders. The means to address these access and security controls usually get translated into door and access hardware and systems. Some systems rely on conventional, physical barriers and locks, but increasingly, a reliance on electronic controls of those physical barriers is becoming common. As a result, the range of hardware and access control systems used in a multifamily facility can be multifaceted and take on a variety of types and forms. We will look at some of the common ones here as follows.

- **Entrance systems:** Most multifamily buildings, particularly in urban locations, have common doors or entrances where residents, guests, vendors, and others enter and exit the building, often into a shared common space. There may or may not be a person there to monitor the people entering and leaving, but there will certainly be a door of some type with the ability to control its opening and closing. In some cases, that can be a revolving door for better control of conditioned air escaping to the exterior, or it can mean automatically operated doors for the convenience of the users. Whatever the type or location, the entrance system needs to have the flexibility to suit the project needs, the security capability to

withstand unwanted entry, and the ability for control of its operation.

- **Exterior space access:** Many multifamily developments pride themselves on the outdoor public space amenities that they provide, such as swimming pools, eating areas, recreation spaces, and even garden plots. Those spaces are intended for the exclusive use of residents and guests so providing appropriate forms of physical access control is desired or even mandated by local circumstances. Full-height turnstiles located within a fencing or other barrier system are one option that is effective and common. In the locked position, it restricts entry to those not authorized to be there, while the use of proper credentialed controls allows residents the ability to freely access the spaces.
- **Interior separations:** Some buildings have common areas that are more public than others. A public lobby or entry space may have different security needs than a nearby semi-private gathering space for residents. Separating the two may be called for, but visibility may also be desirable. In those cases, providing interior glass partitions or even horizontal sliding glass walls can provide the flexibility yet separation that is being sought after. These types of operable panel systems, whether manual or automatic, can reduce pathway obstacles, increase transparency, reclaim occupied square footage, and create reconfigurable spaces.
- **Conventional and electronic hardware:** Once all of the entrance, access, and separation systems are identified, then attention can turn to the types of hardware that are appropriate for each. All will have a physical component in

the form of locks, handles, latches, etc. If they are intended to utilize electronically interfaced components, then those need to be assessed based on the existing and emerging options and the particular needs of the multifamily project. Some of the options might include electronically interfaced hardware with discreet programmable functions for tiered control for residents, managers, and security/ maintenance personnel. There are also evolved card, wireless, and Bluetooth technologies that can provide a multitude of control options using software apps downloaded onto smart phones or similar devices. And, because multifamily projects can vary greatly in size and number of users, there are scalable solutions that recognize, translate, and integrate with many different software platforms to suit particular project and user needs.

The key to success in designing and specifying entrance and access control systems is to collaborate with manufacturers or suppliers of systems who can provide technical assistance. In this manner a comprehensive and coordinated approach can be formulated that integrates the whole package of physical entrance items, hardware, and electronic interface where desired. In this way, the many and diverse technologies available can be integrated into a singular manageable access control system.

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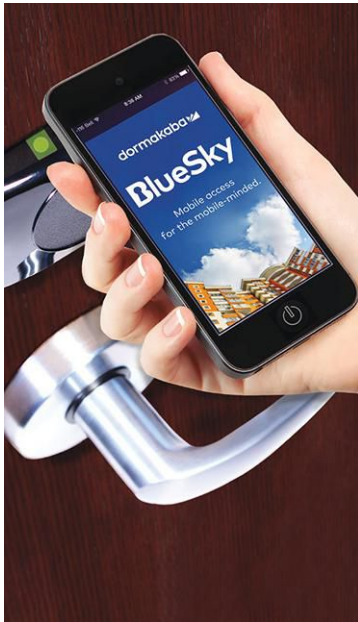
Peter J. Arsenault, FAIA, NCARB, LEED AP, is a nationally known architect, consultant, continuing education presenter, and prolific author advancing building performance through better design.
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“The more you know, the more you can create. There’s no end to imagination in the kitchen.” —Julia Child

The kitchen is heralded as the heart of the home, and, in this role, it is the center for family, food, and entertainment. It is also the hardest working room in the home—required to be stylish, aesthetically pleasing, functional, durable, and hygienic.

Today’s kitchens face additional demands from diverse user groups. Kitchens may be placed in a universal design, requiring accommodation of users aged infant through to the elderly; serving multiple duties in a tiny home; or simply trying to keep up with a young and growing family. As home designs increasingly remove walls in favor of open plans, kitchens are integrating fully with living space, transforming them into living kitchens.

At the center of this busy kitchen space is the sink. Since a significant part of the work in a kitchen happens at the sink, having one that is easy to use and properly designed is extremely important. To have a beautiful, usable kitchen sink, there are several design parameters helpful in guiding sink selection. First among these is to ask how the

kitchen is going to be used. That is followed by consideration of how the various flows and different work areas are going to be integrated throughout the kitchen. Finally, the designer and architect must address the question of who will be using the kitchen. Asking about “who” means thinking about “how”—how can the kitchen best enable productivity, safety, and the welfare of its users?

“As far as specifying sinks, there are a few things we look for,” says Alex Duran, project architect, Godden Sudik Architects. “These are material, configuration, and setting.” The sink is the most important workplace in the kitchen. Sixty percent of time spent in the kitchen is spent at the sink. Sinks allow for food preparation, washing, and cutting, and the best sink design should make these tasks as efficient as possible.

Paying attention to the unique combination of client needs and required functionality will guide the selection of the best size, material, and style of kitchen sink.

THE MATERIALS OF THE ART

When selecting a kitchen sink, its attributes will impact its ergonomics and functionality. First and foremost, a sink’s material dictates its

CONTINUING EDUCATION



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Learning Objectives

After reading this article, you should be able to:

1. Identify what materials are available for sinks today and discuss the comparative aesthetic, strength, and durability attributes of these materials.
2. Describe how to specify an easy-to-maintain, hygienic sink and its details that meet the design scheme and user group needs.
3. Explain how to specify a sink that meets ADA and what design requirements to be aware of under ADA compliance.
4. Recognize new trends in kitchen sinks and how these can be best utilized for your clients and design plan.

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cost, functionality, and lifespan. Secondly, a sink's material helps to support and enhance a kitchen's design and aesthetic.

Regardless of material, there are several key parameters that designate a quality sink. The best kitchen sink design will have an equal measurement at the top and bottom to make the most of every inch. Sinks with smaller bottom measurements reduce usable space. The design should direct water straight toward the drain. Quality sinks are crafted with smooth, easy-to-clean corners, either perfectly square or slightly rounded, with no weld lines to ease cleaning and keep the bowl hygienic. All finishes must be even since uneven finishes invite bacterial growth in flaws. While aesthetics are typically linked first to material, the sink's material has a major effect on how healthy and usable the sink will be. Different materials require different maintenance strategies and can create hygienic benefits.

Stainless Steel

The most popular material for kitchen sinks today remains stainless steel. Because of its flexibility as a material, stainless steel sinks are available in a wide variety of sizes, styles, and types. Stainless steel is heat, stain, and chip resistant.

Stainless steel is classified in terms of gauge. A lower gauge number means slightly thicker steel was used in the sink's construction, while a higher gauge number means thinner steel

was used. Most sinks fall within the 16- to 24-gauge range, with the majority of residential sinks falling between 18 and 22 gauge. However it is important to note that the actual difference between gauges is small. For example, the difference in thickness between a 16-gauge and 18-gauge sink is only $\frac{1}{16}$ inch.

To add an extra aesthetic to the stainless steel, manufacturers may offer different finishes, from satin to glossy.

A superior stainless steel sink is made of 304 series alloy stainless steel, featuring the highest-quality $\frac{18}{10}$ chrome-nickel formulation. This nonporous material provides a hygienic, rust-free, and extremely durable product. Certain manufacturer finishes, such as a satin polished finish, help to create an enduring, easy-to-clean luster that is impervious to water stains and calcium deposits.

Stainless steel sinks do have several drawbacks. As a material, stainless steel easily conveys noise, so sound-deadening pads or a spray coating should be incorporated to reduce sink noise from running water and the garbage disposal. Stainless steel can also scratch more easily than other sink materials and is liable to show water spots. Cheap stainless steel sinks with uneven finishes can quickly discolor and may allow bacteria to grow in finish flaws.

While prices are dependent on the gauge of the steel, its size, and its mounting type, stainless steel offers an affordable and durable material choice for the kitchen sink.



Farmhouse-style sinks lend a rustic aesthetic and are a popular trend for kitchen design.

Cast Iron

One of the oldest materials used for sinks, cast iron remains a popular design choice. To manufacture the sink, a glossy porcelain enamel finish is fused over a cast iron base. Because the outer finish is an enamel, cast iron sinks come in a range of colors that offer good resistance to fading. The durable, glossy enamel also resists stains and scratching.

Cast iron sinks do have several drawbacks; principle among these are their weight. Cast iron sinks can easily weigh in at more than 100 pounds, up to three times more than a stainless steel sink, meaning difficulty in installation and the requirement of additional supports for certain installation methods. The weight of cast iron also impacts cabinet choices; selected cabinets must be structurally sound to provide adequate support for the sink over time. Additionally, if the sink's enamel coating does chip, the cast iron beneath is highly susceptible to rust, necessitating repair.

Cast iron also is more expensive than stainless steel, with designer color selections carrying a premium price tag.

Composite Sinks

An emerging sink material over the past decade, composite sinks are usually made from either a granite or quartz composite. The crushed stone is mixed with a resin filler, in an average ratio of 80 percent stone to 20 percent resin. This combination produces a material that shares aesthetic qualities with real granite or quartz without the maintenance and durability issues associated with solid stone sinks. It also allows for a range



Stainless steel sinks remain the most popular material choice for kitchens today. Certain manufacturer finishes, such as a satin polished finish, help to create an enduring, easy-to-clean luster that is impervious to water stains and calcium deposits.



The kitchen sink at the Garrett Residence reflects the overall aesthetic of the home, marrying modern materials with rustic design.

of color options, depending on the manufacturer. The variable color palette gives it the ability to pair well with a variety of natural stone and granite countertops.

Composite sinks are tough and highly resistant to stains and scratching, but, as a general rule, granite composites have a higher durability than quartz. The leading granite composite sinks also boast heat resistance up to 536 degrees Fahrenheit, exceptional cleanability with hydrophobic finishes, and resistance to household acids and alkali solutions.

Entry-level composite sinks have a price point comparable to cast iron and can increase in price from there, depending on composite material and color.

Fireclay

Fireclay sinks are manufactured by molding ceramic clay into the desired shape, allowing the clay to dry, and then applying porcelain enamel at extremely high temperatures. This process effectively fuses enamel to the clay, helping to enhance the sink's strength. Because the clay base determines the shape, fireclay sinks are available in a wide variety of sizes and shapes and can suit any installation method. Fireclay sinks are highly resistant to scratches, staining, and chipping and are easy to clean. Fireclay sinks are most commonly associated with farmhouse or apron-style sinks. Both the shape and material bring a rustic countryside aesthetic to any classic or contemporary kitchen design.

However, fireclay can be more prone to chipping than other sink materials, requiring proper installation and care to minimize this risk. The enamel coating can also chip under impact from dropped pots and pans.

Fireclay kitchen sinks do command a price premium, and tend to be one of the more expensive material options.

Copper

As a material, copper offers durability as well as being naturally rust resistant and antimicrobial. The copper surface may be hammered for a rustic aesthetic, and the material develops a patina as it ages.

Careful selection is a must when considering a copper sink. A quality copper sink is at least 99 percent pure copper. A small amount of zinc, added for strength, is allowable. The sink should also be properly sealed by the manufacturer and maintained according to manufacturer instructions. No harsh chemicals may be used on copper, as it will destroy the finish.

Copper sinks command a price premium, making them one of the more expensive sink materials.

Alternative Materials

- **Natural Stone:** Designers are experimenting with natural stone sinks to match or complement natural stone countertops in kitchens. While some materials, like soapstone, resist stains well, many natural stone sinks easily stain and will need proper maintenance and sealing to remain hygienic.
- **Glass:** Tempered or safety glass offers a strong and striking sink material, par-

ticularly for contemporary design. However, contact with heavy objects can cause scratches or chips, and the glass surface clearly shows water and soap spots.

- **Fiberglass:** Fiberglass-reinforced plastic can be molded into a variety of shapes and sizes, and is inexpensive, strong, and lightweight. However, these sinks have a short lifespan, are not as durable, and do not maintain their surface finish as well as other materials.

THE DETAILS OF THE ART

Sensible space utilization, ergonomic design, and ease of cleaning are watchwords for both general kitchen design and kitchen sink specification. Although residential codes govern outlet placement, list mechanical requirements for exhaust, and, in certain locations, may even dictate plumbing standards, no official codes outside of the Americans with Disabilities Act (ADA) currently apply to kitchen sinks or kitchen design. The designer and architect are free to develop their own principles and approaches to defining best design and to support health, safety, and welfare.

When setting goals for a prospective sink, it helps to frame those details within overall goals for kitchen design.

There are five general areas in a kitchen:

- **Pantry area:** food storage space, canned goods, refrigerator
 - **Storage area:** appliances, utensils, cookware
 - **Sink area:** cleaning
 - **Preparation area:** counter space
 - **Cooking area:** stove and oven
- The pantry, sink, preparation, and cooking areas are permanently melded in pursuit

RANDI GARRETT, INTERIOR DESIGNER, RANDI GARRETT DESIGNS

Personal Residence, Phoenix

The elegant all-white kitchen that is a showpiece of Garrett's personal home was inspired by photos gathered by the designer over time. The designer took bits and pieces from rooms she was drawn to and created a kitchen that was her exact style.

Garrett wanted her personal kitchen to be timeless yet current. With five children, the kitchen design demanded large appliances and durable finishes.

Her husband wanted a farmhouse sink while Garrett wanted something a little more transitional. One day while searching for inspiration on the internet, Garrett came across a photo of a stainless steel sink that checked all of the design boxes: it was a farmhouse style for her husband, had the clean lines her transitional aesthetic demanded, and had an architectural towel bar running across the apron front, creating character. The marriage of modern material with rustic design helped Garrett achieve a timeless, transitional look with the sink, while also tying in the stainless steel from the range beautifully.

"I would say my biggest design challenge was really choosing a sink," Garrett says. "I searched forever to find one that would meld with the look I was going for. I didn't want a standard porcelain farmhouse sink because it was too country for the look I was trying to achieve. A standard stainless sink would have made my husband sad." Finding a sink that blends both elements makes it the star of the kitchen island, according to Garrett.

of preparing a meal in the most efficient way possible. Ideally, the arrangement of the sink, preparation, and cooking areas produce a narrow, triangular work area.

Ergonomics and functionality, therefore, become key virtues for any kitchen and any kitchen sink.

The Occupational Safety and Health Administration (OSHA) defines ergonomics as fitting a job to a person. This fit helps lessen muscle fatigue, increases productivity, and reduces the number and severity of work-related musculoskeletal disorders. These same principles are at work in a residential design. Thinking about potential user groups and adapting design usability means crafting a best fit and selecting a sink to improve productivity and alleviate potential stressors and irritants during the course of everyday use. The size, depth, drain location, ease of maintenance, and mounting type of a sink all impact its potential “fit” profile. These considerations then develop a project’s sink specifications.

Sink Size

A sink is one of the hardest-working fixtures in the kitchen, and the bottom of the sink is the surface where the homeowner takes care of most of the work, like cleaning and prepping. Maximizing the size of any sink at its base is critical to its functionality. Verifying that a sink has the same width at both top and bottom means exploiting every inch of the sink’s utility, especially at the base.

Today, single-basin sinks are available in a full range of sizes, from super to compact. Compact single basins are ideal for situations where overall space is at a premium or where user-specific design calls for multiple sinks. Across the board, single-basin sinks are the fastest-growing sink type. The basin of a single-bowl sink will offer more usable space than that of a double-bowl sink designed to fit into the same opening. A larger basin makes cleaning large dishes and pans much easier.

Double-bowl sinks—once the standard in kitchen design—do offer flexibility to the user, effectively creating two workstations. The best double-basin designs should still be able to comfortably accommodate large dishes and pans to maintain their functionality.

Sink Depth

Ergonomics and sink depth are vitally linked. As most work takes place at the base of a sink basin, that basin should never be so deep as to force the user to bend over, placing stress on his or her back, shoulders, and arms. The ideal sink depth should be based on the individual needs and physicality the client.



A sink’s depth, size, drain location, and ease of maintenance play crucial roles in its functionality.

While there is no perfect formula for identifying an ideal sink depth, sinks are typically mounted 36 inches from the floor and can span anywhere from 6 to 12 inches in depth, with the majority of modern sinks ranging between 8 to 10 inches. Specific calculations may be made in correlation to a user’s height. “A shallow 6- to 8-inch bowl will be most comfortable for those who are either fairly short (5 foot 4 inches or shorter) or very tall (6 feet or taller). This will allow both types of figures to work at the bottom of the sink without having to crouch or hunch over. Individuals between the 5-foot-4 to 6-foot range will find most comfort in the 8- to 10-inch-deep basins.”

Designers and architects need to consider not only the sink’s basin depth but also the planned method of installation. For undermount sinks, the countertop may add up to 2 inches to the final sink basin depth.

Drain Location

Sinks today not only feature center or center-rear drains but also offer rear corner or offset drains. To determine the best location for a

drain, the main functions of the sink and the preferences of the client should be considered. Avid home chefs stacking multiple large dishes in a single-basin sink may become frustrated over a blocked central drain and prefer an offset drain located to the side. Regardless of drain’s location, the basin should provide for an uninterrupted path for draining and should not allow for pooling of water.

Ease of Maintenance

The kitchen sink is the revolving door for heavy objects, food, and potential bacteria, meaning the best sink must be durable and easy to clean. Sinks with rough, uneven, or brushed finishes can become a breeding ground for bacteria. A rough finish introduces food and food protein into the grooves and crevasses, providing a perfect environment for bacteria to grow.

➤ Continues at ce.architecturalrecord.com

Amanda Voss, MPP, is an author, editor, and policy analyst writing for multiple publications. She also serves as the managing editor for Energy Design Update.



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Building facades using sintered stone help create lighter, stronger, more durable, and more sustainable buildings with a full range of design and performance capabilities.

All images courtesy of Neolith by TheSize Surfaces

Stunning Facades with Sintered Stone

High strength and durability combine with environmental properties for excellent designs

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

Designing a building facade, whether commercial, residential, new, or retrofit, can be both artistically enjoyable and technically complex. While part of any series of facade studies looks at the relationships between glazed and opaque areas, the planar and three-dimensional aspects of the building, and the overall building image being created, the specific materials used to create the facade can influence the design process as well as the outcome. Similarly, when the performance characteristics of the facade are being addressed, a host of issues come into play that can overtake the effort expended on glazing options. These include things like noncombustibility, insulated wall assemblies that address thermal bridging, pressure equalization of facades, and other technical issues. From a materials standpoint, the outer surface, or cladding, needs to demonstrate integrity and durability, ease of detailing, manageable weight, and general code compliance. While many traditional materials have been used on facades for centuries to address this variety of design issues, new building

technologies and owner requirements have prompted the need for new materials to be considered too.

Sintered stone is an excellent example of such an emerging product that is being discovered by architects around the world for use in building facades. With an array of impressive characteristics, sintered stone helps create lighter, stronger, more durable, and more sustainable buildings. As a product choice, it can provide the artistic appeal, technical performance, and sustainability for green construction to satisfy the wide range of needs for successful facade design. In this course, we will explore what sintered stone is and how its unique characteristics are quickly making it a very popular choice for all types of buildings, particularly those that are green and sustainable.

WHAT IS SINTERED STONE?

Sintering is a well-known method for creating objects from powders, including mineral, metal, and ceramic powders. As such, sintering has been traditionally used for manufacturing ceramic objects, but there are common applications found across many industrial fields.

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1 AIA LU/HSW



1 GBCI CE HOUR

Learning Objectives

After reading this article, you should be able to:

1. Identify and recognize the code-compliant characteristics and beneficial environmental properties of sintered stone facades.
2. Investigate the manufacturing process of sintered stone and the suitability of the product for a full range of building types.
3. Assess the functional contributions of sintered stone slabs as they contribute to green and sustainable building design.
4. Specify quality control based on updated relevant standards for sintered stone facades for green and conventional buildings.

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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The study of sintering and of powder-related processes is known as powder metallurgy and is well established. It is basically the process of using natural materials in powder form and processing them, usually under heat, pressure, or both, to create a desired product.

Looking more closely, sintering is based on atomic diffusion of particles, which occurs most quickly at higher temperatures. The atoms in powder particles diffuse across the boundaries of the particles, fusing them together and creating one solid piece. A simple observable example of sintering can be seen when ice cubes in a glass of water adhere to each other. The edges of the ice cubes, although not powder, can become irregular in the relatively warmer water surrounding it. The water atoms in each of the adjacent ice cubes react and bond together, creating one combined mass, even though they were originally separate.

Applying this same process to sintering stone produces a thin, lightweight, and very strong material with properties similar to but more advanced than porcelain ceramic tile. The difference is that sintered stone products are made from selected natural minerals with minimal amounts of water. This combination of powdered minerals densifies first under pressure and then becomes nonporous during firing at temperatures below the melting point of the minerals. The powder particles thus bond together due to the applied pressure and heat, which force all surfaces of the particles to be

directly connected to all of the surfaces of the adjacent particles, initiating the atomic sintering to create one mass with a very dense and strong end result.

MANUFACTURING SINTERED STONE

Regardless of how sintered stone is ultimately used, the basic manufacturing process is the same. There are some variations, of course, to produce slightly different end products, but they all start with raw materials, move to a pressing process, are fired in a kiln, and then are put through final product fabrication. We will look closer at these four steps in the following sections.

Raw Materials

Sintered stone typically requires a combination of different materials mined or sourced from different locations. Four specific groups of natural materials are selected based on their ability to provide certain desired characteristics. First are granite minerals such as quartz and feldspars, which are used to provide hardness and strength. Second are silica and glass minerals, which add chemical stability. Third are clay minerals, which contribute adhesive properties and whiteness. Fourth, in order to create different colors or chromatic properties in the final product, natural mineral pigments of different types can be used. Once all of these ingredients are located and mined, they are transported to the manufacturing facility where they are separated and stored until

ready for processing. Since these are all natural materials, they can contribute to a green and sustainable design in the context of environmentally responsible mining practices.

Pressing Process

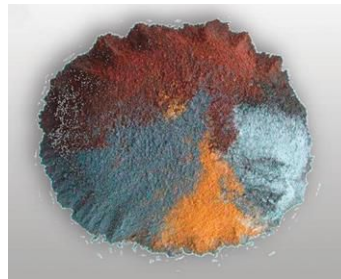
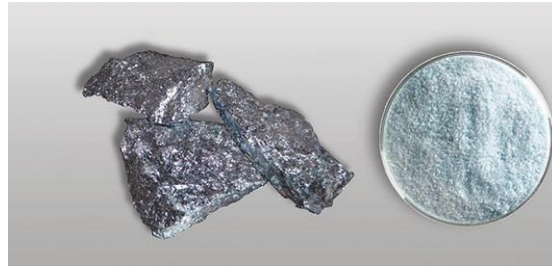
With the raw materials ready and stored at the manufacturing plant, the first step is to process them so they are all reduced to fine powders. These powders are then measured out and mixed into a form until they are evenly distributed to an engineered thickness. The colors and patterns of the sintered stone are directly determined in this mixing and placing of the powdered minerals. Up until this point, everything has been a dry process, but now a very small, predetermined amount of water is added, creating what is referred to as the compact. The mixture is then pressed using a pressing process requiring up to 15,000 psi to properly densify the compact into an unfired slab. Once pressed, it can be further decorated or colored to suit specific design requirements.

Firing

When the unfired slab is ready, it is moved into a large kiln and fired at temperatures below the melting point of the minerals at normal atmospheric pressure. Due to the normal vitrification effects of firing, some limited shrinkage may occur in the slab. Nonetheless, this is the point where the sintering takes place, allowing the material to bond atomically and become nonporous. Note that there is no extrusion involved as is common in other materials. Instead, the pressing plus the kiln heating produce strong, thin slabs on the order of 1/8 inch, 1/4 inch, 1/2 inch, or even 3/4 inch when finished. The actual thickness plus the overall face size of the final sintered slab can vary by manufacturer, particularly since many provide metric sizes due to their location in countries that rely on metric measurements. At least one manufacturer, however, offers non-metric sizes in 4-by-12-foot and 5-by-10-foot panels, among others, to match American construction sizes. Once fired, the raw slab will be processed as needed at the factory to cut it to its final size or sizes and smooth the edges. It is then ready for shipping and any final field fabrication.

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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.
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Sintered stone is made of all natural ingredients, including granite materials (quartz and feldspar) for hardness and strength, silica and glass minerals for chemical stability, clay minerals for adhesive properties and whiteness, and natural pigments for chromatic properties.



TheSize was founded in 2009 with the objective of expanding and improving the thriving ceramic sector prevalent in the company's headquarters in Castellón, Spain. In 2010, the company launched all-natural sintered stone Neolith, a durable material created through a high-temperature, high-pressure process called sinterization. www.neolith.com



Common Ground High School

Photo: David Sundberg + Gray Organschi Architecture

Exceeding Thermal Performance Goals by Choosing Wood

Understanding how wood can help contribute to significant energy savings in the built environment

Sponsored by Think Wood | *By Andrew A. Hunt*

The benefits of choosing wood in commercial and nonresidential projects are many. Both light frame and mass timber structural systems offer flexibility in design options. They also are economical and relatively easy to construct, providing ease of use on the job site. Yet one important benefit that should not be overlooked is the thermal performance that wood can provide. Thermal performance contributes to a range of important goals for most projects, including energy efficiency, comfort, durability, code compliance, structural integrity, and sustainable outcomes. Designing with wood not only meets performance requirements for commercial and nonresidential buildings—it can also exceed goals.

Designing with wood offers architects the flexibility to design projects with increased insulation. From a thermal perspective, wood-frame building enclosures are inherently more efficient than steel-frame, concrete, or masonry construction.¹ This advantage stems from the insulating qualities of the structural elements of wood, including studs, columns, beams, and

floors, but also the fact that wood stud walls are easy to insulate. Wood has the bonus benefit of allowing less thermal bridging, as the relative R-value of wood is higher than steel and masonry.²

THE NATURAL THERMAL PROPERTIES OF WOOD

Wood naturally provides insulation benefits due to its inherent structure. Air pockets within timber's cellular structure create a barrier to heat and cold, similar to air pockets found in most types of insulation. The air pockets reduce the thermal conductivity of wood, slowing heat transfer and helping to reduce thermal bridging. Thermal conductivity, or the ease with which heat energy flows through the material, declines as the density of the wood decreases. This means that modern softwoods have a thermal performance edge over traditional hardwoods.

As an organic material, other aspects of wood can alter thermal performance. Grain direction can significantly impact thermal conductivity. For example, thermal conductivity of

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1 AIA LU/HSW

Learning Objectives

After reading this article, you should be able to:

1. Discuss the thermal advantages of building with wood.
2. Describe how designing with wood can enable design flexibility to maximize building performance
3. Explain common methods for controlling heat and airflow in wood-frame and mass timber buildings
4. List common insulation, airtightness, and vapor permeability strategies often employed with wood construction to achieve effective thermal efficiency.

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Source: CLT Handbook, U.S. Edition, Chapter 10

pine in the direction of the grain is 0.22 W/moC (which is equivalent to degrees Celsius/W) and perpendicular to the grain 0.14 W/moC. This is important to know, as dimensional lumber in studs will have less thermal conductivity through the wall and greater heat transfer between the floor and ceiling.

Moisture also plays a part in wood's thermal performance. Increasing moisture in wood increases thermal conductivity, so kiln-dried wood or fully aged and dried wood will allow less heat transfer than "green" or wetted wood. Keeping wood at the optimum moisture level is important to ensure performance goals are met and maintained over time.

When compared to steel or masonry, wood has a higher thermal resistivity, which improves energy-efficiency performance, especially when used in wall assemblies. Wood studs have nearly four times the thermal resistance of steel studs or masonry blocks. A nominal 2-by-4 stud has an R-value of 4.38, whereas a 3½-inch cold-rolled steel stud has an R-value of 1.34, and an 8-inch nominal

Thermal resistance of typical softwood at various thickness and 12% moisture content				
Thickness	1 in. (25 mm)	4 in. (100 mm)	6 in. (150 mm)	8 in. (200 mm)
R-value (h·ft. ² ·°F·Btu ⁻¹)	1.25	5.00	7.50	10.00
RSI (m ² ·K·W ⁻¹)	0.22	0.88	1.30	1.80

The thermal resistance of typical softwood varies depending on thickness and moisture content.

concrete masonry unit (CMU) has an R-value of 1.11. The 2018 International Energy Conservation Code (IECC) recognizes this difference and requires continuous insulation on steel and CMU wall assemblies.

THERMAL VALUES AND CODE CONSIDERATIONS

While wood-frame buildings have a history of cost effectively achieving energy-efficiency objectives, energy codes and standards maintain the minimum thermal requirements for building enclosure assemblies. The IECC sets minimum energy-efficiency provisions for both residential and commercial buildings and offers two methods for showing compliance: the prescriptive path and the performance path. The most recent IECC requirements are from 2018; however, for commercial wood-framed walls, there have been no changes or updates since the 2015 edition, so the previous standards still apply.

The prescriptive path of the code sets specific minimum performance levels for each of the components of the building envelope. The design of the building is parsed out into each component of the envelope, including wall insulation, window U-factor, air infiltration, and solar heat gain coefficient (SHGC). Under the prescriptive path each component must meet or exceed specific performance requirements, without the ability to tradeoff between components. Although the prescriptive path can be more rigid to follow, this option is very straightforward and can be easier to meet. The prescriptive path can be considered the R-value path in which each material (component) must meet a specific numerical requirement for resisting thermal or heat transfer. Note that a higher R-value is better when considering the reduction of heat transfer.

The performance path can be thought of as a U-factor guide that allows for tradeoffs between components, as energy calculations are used to determine if the tradeoffs result in performance that is equivalent to the

prescriptive requirements. The U-factor is the reciprocal of the R-value and indicates the rate of thermal transfer. The lower the U-factor, the lower the transmission rate and the better the thermal performance or efficiency. While the performance path offers more flexibility, it requires a closer look at each specific building envelope component and how they perform together to ensure ultimate compliance. At times, use of the prescriptive path is required if, for instance, a commercial building design exceeds 40 percent window to wall area.

A third path for compliance is to follow the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) 90.1 path. This standard was developed jointly by the American National Standards Institute (ANSI), ASHRAE, and Illuminating Engineering Society of North America (IESNA) and provides the minimum requirements for energy-efficient design of most buildings, except low-rise residential buildings. It offers, in detail, the minimum energy requirements for design and construction of new buildings and their systems, new portions of buildings and their systems, and new systems and equipment in existing buildings, as well as criteria for determining compliance with these requirements. The most recent update to ASHRAE 90.1 is the 2016 edition that requires building envelope verification in support of reduced air infiltration.

Because of the flexibility that wood provides during the design stage, it is an ideal material to comply with the prescriptive, performance, or ASHRAE 90.1 requirements.

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



Steel and masonry materials are both energy intensive to produce and do not offer the same inherent thermal properties as wood.

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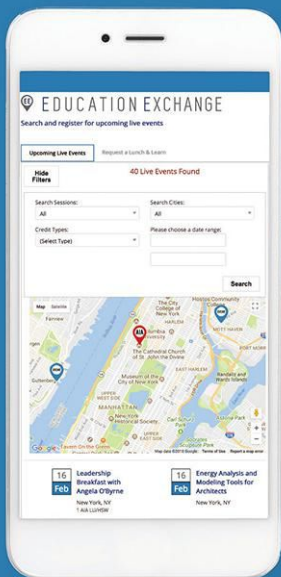


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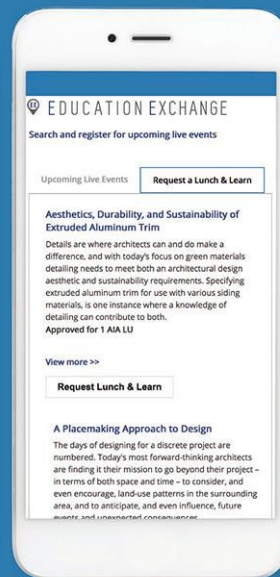
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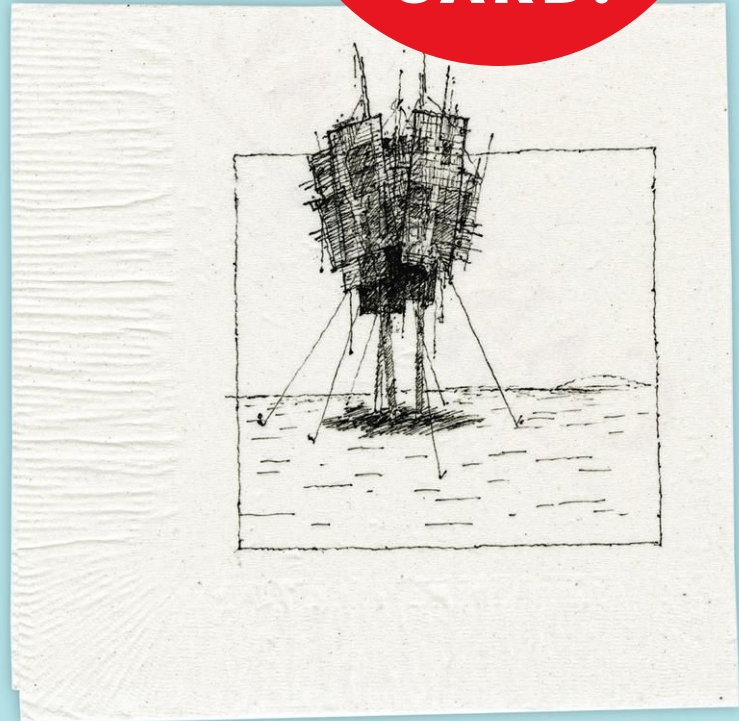
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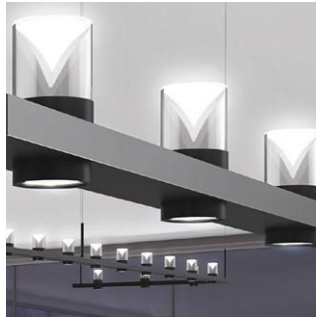


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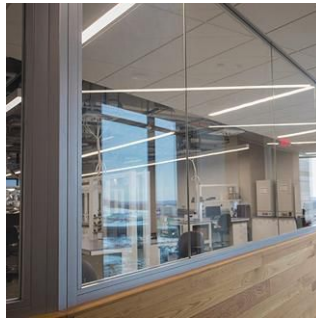
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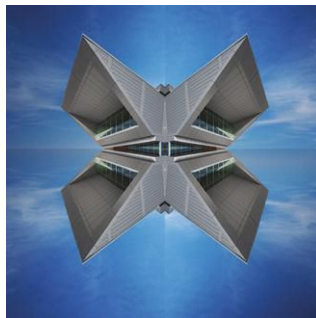
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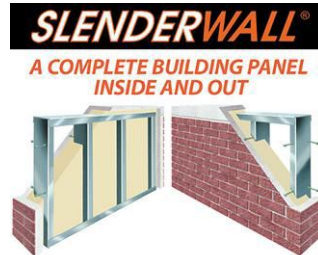
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New and Upcoming Exhibitions

David Chipperfield Architects Works 2018

Vicenza, Italy

May 12–September 2, 2018

The architect's exhibition of 15 projects, at the Basilica Palladiana, will be the first contemporary architecture show at the venue in 12 years. Chipperfield will show projects from London, Berlin, Milan, and Shanghai. For more information, visit chipperfield.abacoarchitettura.org.

16th International Architecture Exhibition | La Biennale di Venezia

Venice

May 26–November 25, 2018

Curated by Yvonne Farrell and Shelley McNamara, the theme of the 2018 edition of the biennial exhibition is "Freespace." Participating architects include Weiss/Manfredi and Michael Maltzan Architecture. Part of Robin Hood Gardens, a 1972 East London housing complex by Alison and Peter Smithson, will be transported to the Biennale grounds for the exhibition. More information at labiennale.org.

We Make Carpets: Crêpe Paper Carpet

Houston

June 9–September 8, 2018

The Dutch artist collective We Make Carpets is installing a site-specific exhibition of their large fabric works in the Moody Center for the Arts' Central Gallery. The artists will be using vibrantly dyed crepe paper to create the Houston installation. At Rice University. Visit moody.rice.edu.

Christo and Jeanne-Claude: Barrels and The Mastaba

London

June 19–September 9, 2018

This exhibition at the Serpentine Gallery presents a history of the artists' work since they began collaborating in 1961 to Jeanne-Claude's death in 2009. Through six decades' worth of drawings, collages, scale models, and photographs, the show examines how the artists, famous for their outdoor sculptures and installations, incorporated barrels into many of their designs. The show coincides with Christo's most recent temporary sculpture, *The Mastaba*, which is inspired by an ancient type of bench and will float in Hyde Park's Serpentine Lake through September 23. For more information, go to serpentinegalleries.org.

Ongoing Exhibitions

Perriand in the Mountains

Chicago

Through May 27, 2018

This exhibit features furniture designed by French architect Charlotte Perriand for a ski resort in the French Alps between 1968 and 1985. She also worked with Le Corbusier and ran her own practice. Her minimal furnishings, made from local materials, maintained harmony with the surrounding landscape and existing chalets, and came to represent a new standard for design in Alpine environments. At the Matthew Rachman Gallery. Details at matthewrachmangallery.com.

Women House

Washington, D.C.

Through May 28, 2018

Conceived as a sequel to the famous 1972 exhibit *Woman House*, by Judy Chicago and Miriam Schapiro, this exhibition, organized by La Monnaie de Paris, examines stereotypes about the house as a feminine space through photography, video, sculpture, painting, and installations by female artists from the 1960s to the present. At the National Museum of Women in the Arts. More information at nmwa.org.

Junya Ishigami: Freeing Architecture

Paris

Through June 10, 2018

For the first time, Fondation Cartier pour l'art contemporain is staging a solo architecture show, featuring the work of acclaimed Japanese architect Junya Ishigami. The exhibit highlights 20 of the architect's projects and includes films, drawings, 40 custom-made models, and other relevant documents. See more at fondationcartier.com.

Arakawa and Madeline Gins:

Eternal Gradient

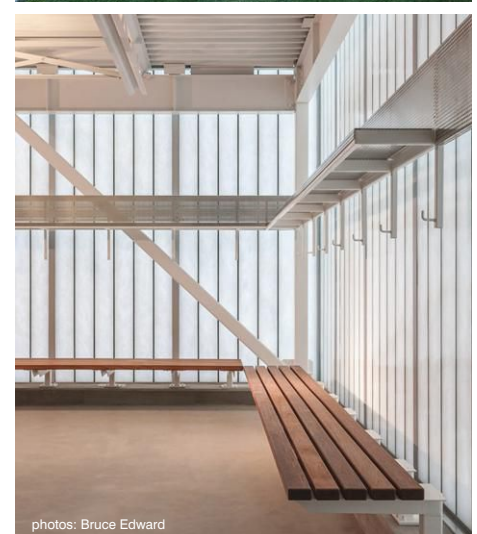
New York City

Through June 16, 2018

This exhibition looks at the nearly five-decade collaboration between artist Arakawa and his partner, poet and philosopher Madeline Gins, which culminated in architectural designs realized on four sites across Japan and one in East Hampton, New York. Hand drawings, archival material, manuscripts, slides, and an architectural model are among the objects featured in the display, designed by Norman Kelley. Visit arch.columbia.edu for more.

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dates&events

Image Building: How Photography Transforms Architecture

Water Mill, New York

Through June 17, 2018

This exhibit, organized by guest curator Therese Lichtenstein, is a survey of historical and architectural photographers' work from the 1930s to the present, exploring the relationship among architecture, photography, and the viewer. At the Parrish Art Museum. More at parrishart.org.

Bibliothèque nationale de France: Portrait of a Project, 1988–1998

Paris

Through July 22, 2018

Commemorating the 20th anniversary of the Bibliothèque nationale de France, this exhibition, curated by its architect, Dominique Perrault, reexamines the project from its design to its furnishings, landscaped gardens, and place in what was a newly created neighborhood. Perrault includes films, sketches, plans, and models from both his own archive and public collections to reevaluate the well-known library. More information at bnf.fr.

Public Parks, Private Gardens: Paris to Provence

New York City

Through July 29, 2018

This exhibition focuses on the 19th-century boom in landscape design that transformed France's public spaces and personal gardens. The movement is illustrated through paintings, photographs, and various objects by artists, from the Metropolitan Museum of Art's collection. Details at metmuseum.org.

Hiroshi Sugimoto: Still Life

Brussels

Through September 19, 2018

Forty of Japanese photographer and architect Hiroshi Sugimoto's photos will be displayed in two rooms at the Royal Museums of Fine Arts of Belgium, juxtaposed with ancient Flemish artworks that are posited as photography's "true precursors." See more information at fine-arts-museum.be.

Lived Space: Humans and Architecture

Lincoln, Massachusetts

Through September 30, 2018

This exhibition at the DeCordova Sculpture Park and Museum focuses on the link between architectural elements and psychology. It uses paintings, photographs, and drawings from its permanent collection, arranged to reflect the architectural history of the museum, which was converted from a private home to a public gallery in 1950. For more information, go to decordova.org.

Palmyra: Loss and Remembrance

Los Angeles

Through May 27, 2019

This installation at the J. Paul Getty Museum includes historical engravings and photographs from its collection, along with sculptures from the Ny Carlsberg Glyptotek in Copenhagen, to show life between the 1st and 3rd centuries AD in the ancient Syrian city of Palmyra. For details, go to getty.edu.

Lectures, Conferences, and Symposia

Iconic Houses 2018

New Canaan, Connecticut

May 15–18, 2018

Hosted by the Iconic Houses Foundation, the fifth edition of the conference will consist of a series of lectures focused on Modernist dwellings on the East Coast by Philip Johnson and the Harvard Five, as well as residences in Latin America. Tours of nearby buildings will include a Frank Lloyd Wright Usonian house in Pleasantville, NY, and Russel Wright's Manitoga home in Garrison, NY. See more at iconichouses.org.

Entangled Urbanisms: History, Place, and the Shaping of Cities

Chicago

May 17–18, 2018

This symposium examines the challenges and methods for studying the relationships between cities in an increasingly interconnected world. Papers to be presented will include case studies from cities in Africa, Asia, Europe, and the Americas from the 16th century to the present; moderated panel discussions will follow each presentation. More information at arthistory.northwestern.edu.

2018 Ontario Association of Architects Annual Conference: Bold by Design

Toronto

May 23–25, 2018

The three-day annual conference focuses on contemporary issues in the profession, with sessions that offer continuing-education credits devoted to new technologies, materials, and construction strategies. Tours of locally significant projects will also be offered. At the Metro Toronto Convention Centre. Visit oaa.on.ca.

2018 Tall + Urban Innovation Conference

Chicago

May 30–31, 2018

The two-day annual innovation conference, organized by the Council on Tall Buildings and Urban Habitat, includes a program of 93 speakers for an audience of 500 delegates comprising

architects, developers, and engineers. Featured firms include Renzo Piano Building Workshop, Heatherwick Studio, igenhoven architects, and KPMB Architects. At the Aqua Tower and Radisson Blu Hotel. For more information, go to tallinnovation2018.com.

2018 Festival of Architecture

Saint John, New Brunswick
May 30–June 2, 2018

The four-day conference, cohosted by the Royal Architectural Institute of Canada and the Architects' Association of New Brunswick, will feature lectures, continuing-education sessions, a trade show, and an exhibition titled *Music of the Eye: Architectural Drawings of Saint John and its Region, 1822–1914*. Keynote speakers include architects Odile Decq and Diébédo Francis Kéré. More information at festival2018.raic.org.

SAHGB 2018 Annual Symposium: Architecture, the Built Environment, and the Aftermath of the First World War
London

June 8–9, 2018

This edition of the Society of Architectural Historians of Great Britain's two-day symposium focuses on the interwar period in the 20th century. Presentations and discussions will examine the effect of the Great War on the built environment following the conflict's conclusion, in contrast with the reconstruction efforts after the Second World War. At the Institute of Historical Research. Details at sahgb.org.uk.

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Competitions

Energy Overlays, Melbourne 2018

Deadline: May 6, 2018

The Australian state government of Victoria is soliciting proposals from architects, engineers, and artists for the design of a site-specific public art installation in Melbourne that will generate carbon-neutral electricity for the city. The competition is run by the Land Art Generator Initiative. More at landartgenerator.org.

The Iconic Mosque at Dubai Creek Harbor

Deadline: May 21, 2018

Dubai-based developer Emaar Properties is seeking conceptual proposals for a mosque to be located within a 5.6 million-square-foot mixed-use complex that can accommodate 7,500 worshippers. The winning entry and four short-listed designs will receive cash prizes of \$40,000 and \$10,000, respectively. For more, search *emaar mosque architectural design competition*.

2018 Suichang "Neo-Toilet" International Design Competition

Deadline: May 30, 2018

As part of a rural community's efforts to promote tourism in China's Yangtze River Delta, Suichang County is inviting designers of all experience levels to submit a proposal for public toilet facilities for a tea plantation in Suichang County that maximizes sustainability, health, and safety. The competition is organized by the local government and two global organizations that administer design competitions, Leliving and Young Bird Plan. For more information, see youngbirdplan.com.cn/en/

A Bridge Over Troubled Water

Deadline: May 31, 2018

This competition, run by the Paris School of Architecture, asks for ideas for the design of a 20-mile bridge connecting France and the UK post-Brexit. The conceptual project will not be constructed and is meant to facilitate conversation about French and British relations. More at parisarch.fr/bridge.

Q City Plan: Qinhuangdao International Student Design Competition

Deadline: June 16, 2018

This competition for student architects and designers seeks proposals for small-scale, low-cost interventions that can enhance the quality and use of public spaces in the Chinese port city of Qinhuangdao. More information at qcityplan_qhd.uedmagazine.net.

The 2018 Architectural Photography Awards

Deadline: July 1, 2018

The annual awards series for professional and amateur architectural photographers will consider images that fall into the categories of exterior and interior images, as well as photos that capture a sense of place or depict the buildings in use. The overall winner will be decided by vote at the World Architecture Festival in November 2018. The shortlist, and additional awards, will be determined by judges including architect James Timberlake and photographer Richard Bryant. See photocrowd.com.

CTBUH International Student Tall Building Design Competition

Deadline: July 23, 2018

The seventh edition of the Council on Tall Buildings and Urban Habitat's annual competition solicits conceptual designs of towers from eligible university students. The top five finalists will present their work to a jury at the annual Middle East conference in Dubai in October 2018. More at ctbuh.org.

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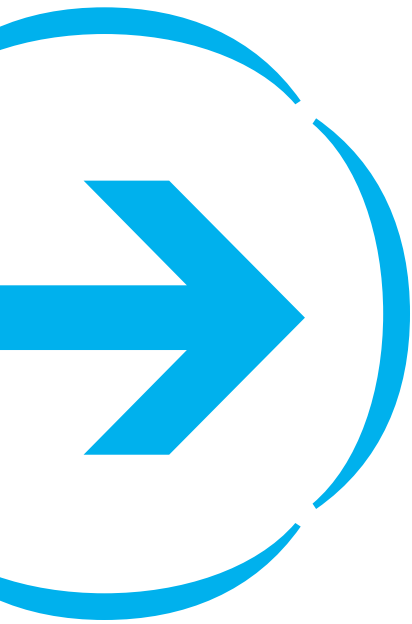
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CALL FOR ENTRIES

Record Interiors

The editors of **ARCHITECTURAL RECORD** are currently inviting submissions for the **2018 RECORD INTERIORS** issue. All architects registered in the United States or abroad, as well as interior designers working in collaboration with architects, are welcome to submit interiors-only projects that have been completed in the last year. The projects may be new construction, renovation, or adaptive reuse; commercial or residential; domestic or international. Special consideration will be given to works that incorporate innovation in design, program, building technology, sustainability, and/or materials. The winning projects will be featured in the September 2018 issue. The fee is US\$75 per entry.



SUBMISSION DEADLINE: MAY 18, 2018

For full details and to submit your entry, visit: architecturalrecord.com/call4entries.

E-mail questions to arcallforentries@bnpmedia.com. Please indicate the contest name as the subject of your e-mail.

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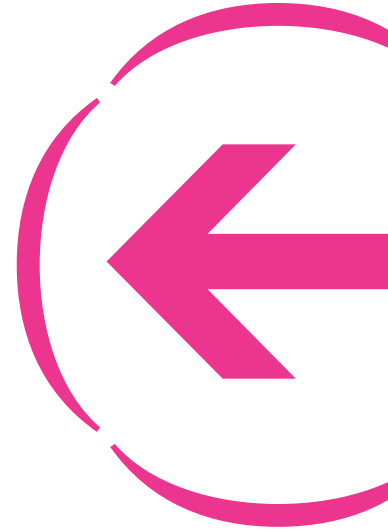
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CALL FOR ENTRIES

Record Kitchen & Bath

The editors of **ARCHITECTURAL RECORD** are currently accepting submissions for the **2018 RECORD KITCHEN & BATH** competition. Entry is open to any registered architect, as well as any designer working in collaboration with architects, who has completed an innovative residential and/or commercial kitchen or bath project in the last year. We are looking for projects that feature unexpected materials, address unique client needs, or are designed in a manner that allows these utilitarian spaces to be functional, sustainable, and beautiful. Winning projects will be featured in the September 2018 issue. The fee is US\$75 per entry.

SUBMISSION DEADLINE: MAY 18, 2018



For full details and to submit your entry, visit: architecturalrecord.com/call4entries.

E-mail questions to arcallforentries@bnpmedia.com. Please indicate the contest name as the subject of your e-mail.

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