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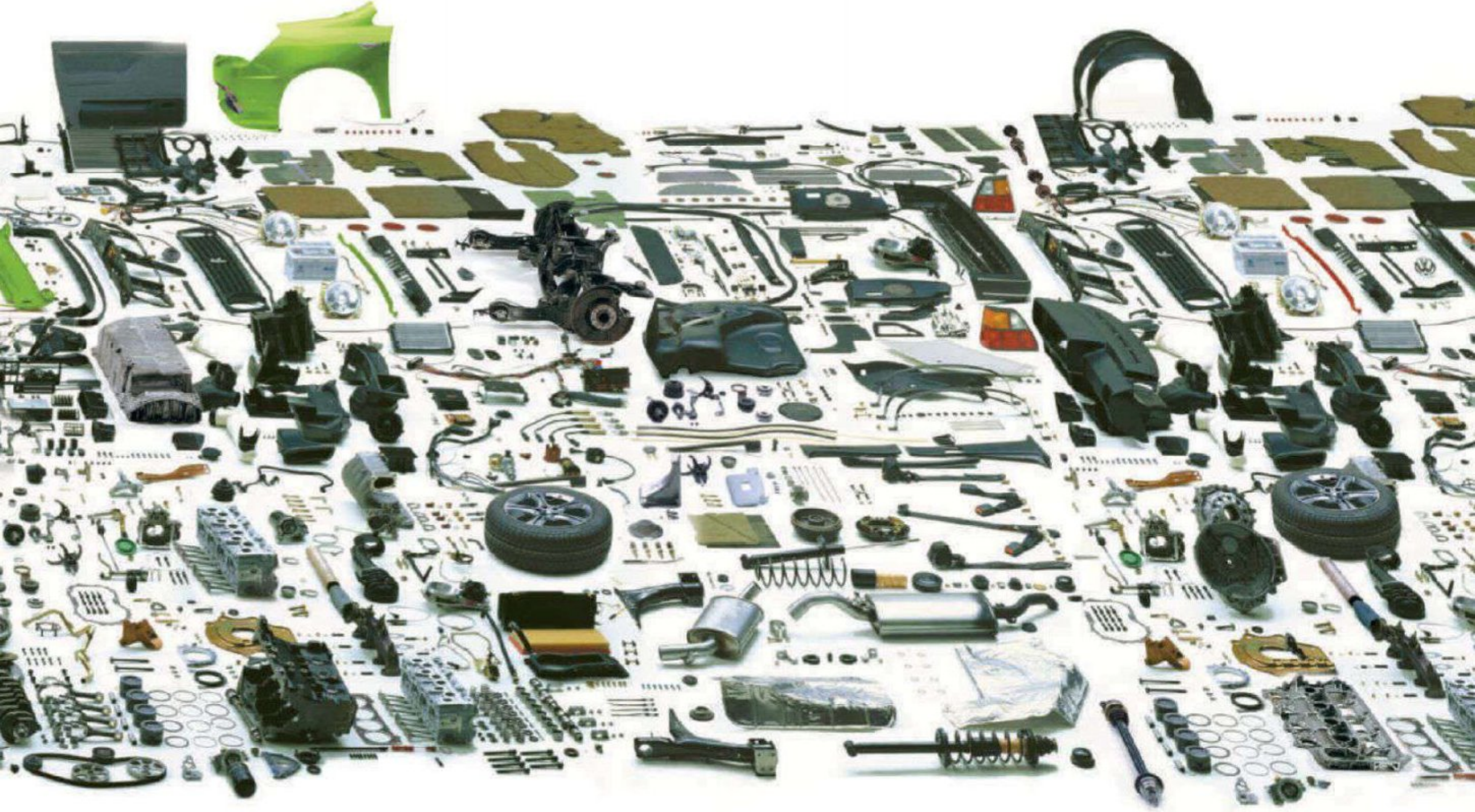
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EDITOR IN CHIEF	Cathleen McGuigan, cathleen.mcguigan@mfhi.com
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SENIOR GROUP ART DIRECTOR	Francesca Messina, francesca.messina@mhfi.com
DEPUTY EDITORS	Clifford A. Pearson, pearsonc@mhfi.com Suzanne Stephens, suzanne.stephens@mhfi.com
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PRODUCTS EDITOR	Rita Catinella Orrell, LEED GA, rita.catinella@mhfi.com
SPECIAL SECTIONS EDITOR	Linda C. Lentz, linda.lentz@mhfi.com
WEB EDITOR	William Hanley, william.hanley@mhfi.com
NEWS EDITOR	Laura Raskin, laura.raskin@mhfi.com
ASSISTANT EDITORS	Asad Syrkett, asad.syrkett@mhfi.com Laura Mirviss, laura.mirviss@mhfi.com
EDITORIAL INTERN	Anna Fixsen, anna.fixsen@mhfi.com
MANAGER, CONTENT OPERATIONS	Juan Ramos, juan.ramos@mhfi.com
EDITORIAL PRODUCTION	Rosa Pineda, rosa.pineda@mhfi.com
ART DIRECTOR	Helene Silverman, helene.silverman@mhfi.com
ASSOCIATE ART DIRECTOR	Gordon Whiteside, gordon.whiteside@mhfi.com
CONTRIBUTING ILLUSTRATORS, PRESENTATION DRAWINGS	I-Ni Chen Peter Coe
EDITORIAL SUPPORT	Monique Francis, monique.francis@mhfi.com
CONTRIBUTING EDITORS	Sarah Amelar, Fred A. Bernstein, Robert Campbell, FAIA, C.J. Hughes, Blair Kamin, Jayne Merkel, Robert Murray, David Sokol, Michael Sorkin, Ingrid Spencer
SPECIAL INTERNATIONAL CORRESPONDENT	Naomi R. Pollock, AIA
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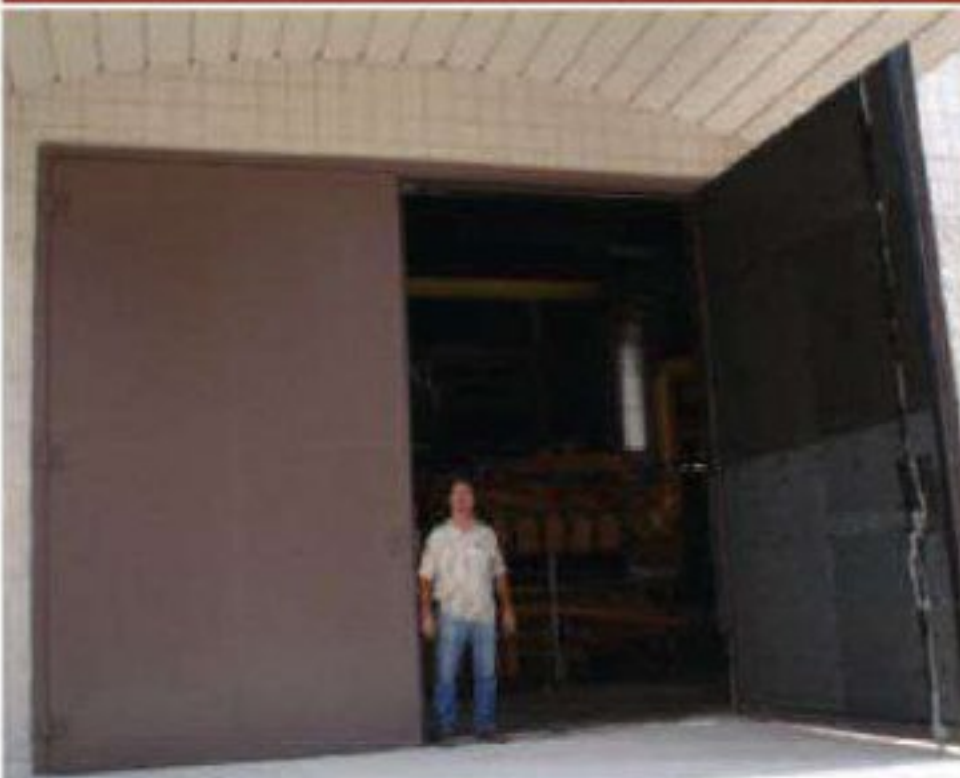
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DIRECTOR, CREATIVE SERVICES William Taylor, william.taylor@mhfi.com
PRODUCTION MANAGER Marilyn DeMilta, marilyn.demilta@mhfi.com
FINANCE DIRECTOR Ike Chong, ike.chong@mhfi.com
FINANCE MANAGER Tom Maley, tom.maley@mhfi.com
MANAGER, MANUFACTURING OPERATIONS Mitchell Sherretz, mitchell.sherretz@mhfi.com
ASSISTANT TO MEDIA DEPARTMENT Pina Del Genio, pina.delgenio@mhfi.com

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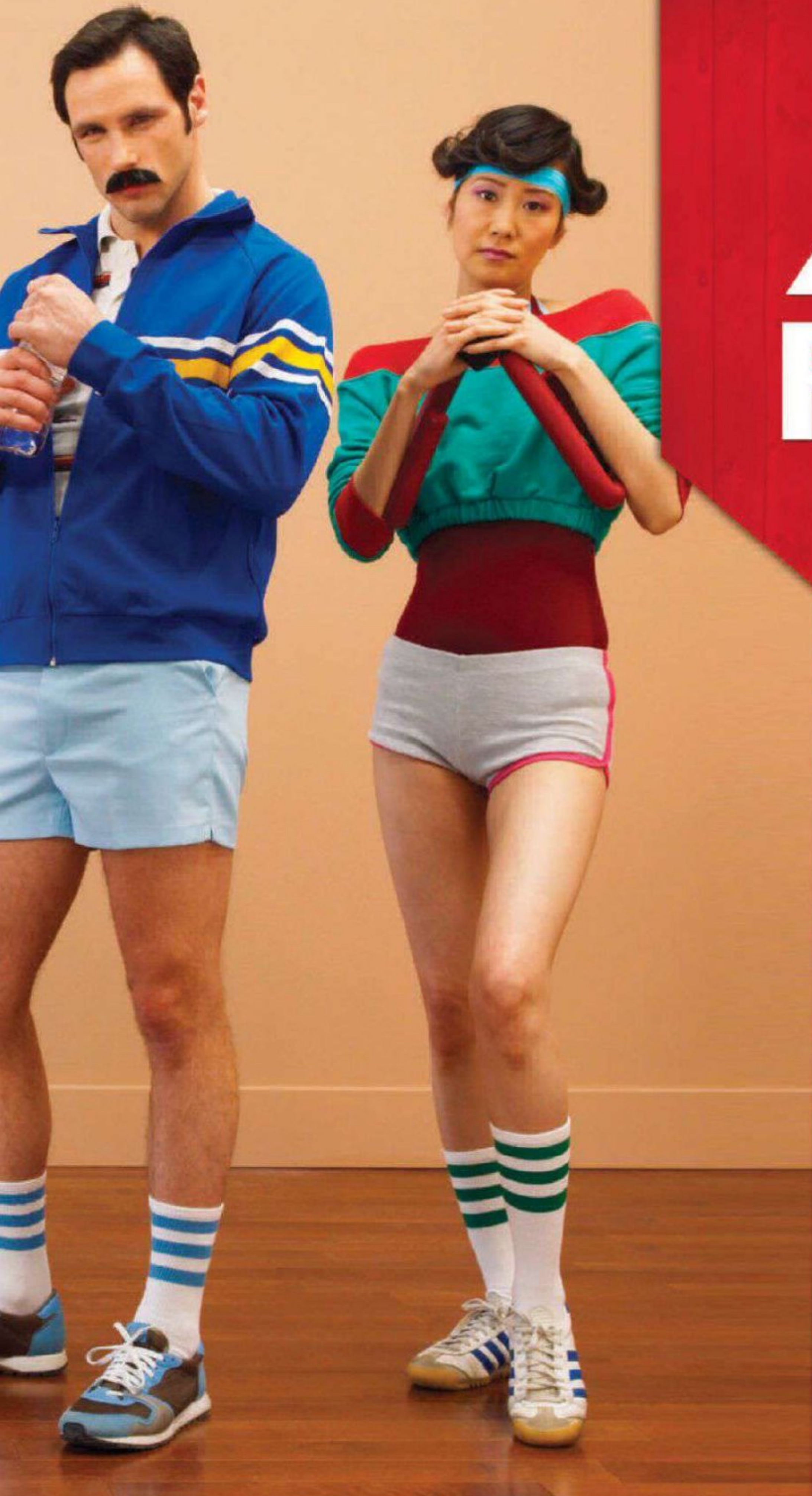
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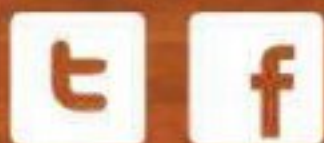
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Food for Thought

With good design as a key ingredient, contemporary culinary culture is having a big impact on neighborhoods, cities, and towns.

WE ALL KNOW that American cities are undergoing a renaissance, with growing populations, the renovation of parks and waterfronts, the proliferation of bike lanes and pedestrian promenades. But here's another leading indicator of renewed urban vitality: food, in the form of new restaurants, cafés, and the farmers' markets that have sprouted everywhere in the last few years, even in the most precarious urban centers.

Take Detroit. When the über-cool barbecue joint Slows Bar BQ opened in 2005, just across from the crumbling symbol of the city's lost grandeur, the hulking ruin of Michigan Central Station, it became an instant hit with young urban pioneers and out-of-towners alike. Along with the increased bustle of the city's historic Eastern Market, it is part of a 21st-century culinary story that has been repeated across the Rust Belt. In downtown Cleveland on East Fourth Street, once moribund after dark except for drug dealers, there are now more than a dozen restaurants along a vibrant two-block stretch—including Lola, the flagship of Iron Chef Michael Symon, and chef Jonathon Sawyer's Greenhouse Tavern, central to the city's locavore scene.

As urban jump-starters, restaurants are often the first catalysts to turn around a declining neighborhood. New York chef and consultant Rozanne Gold explains it this way in "Dining by Design" (page 64): "Restaurants used to want a good address. But now out-of-the-way locations actually add to the cachet of a place."

Architects have long played a big role in the success of restaurants, matching the visual aesthetics to what lands on the plate. You can see how gracefully that can be done in such projects as Workshop Kitchen + Bar in Palm Springs, California, by the firm SOMA (page 106). Its starkly elegant concrete interior and warmly lit bar (by the lighting designers at .PSLAB) complement the subtly sophisticated cuisine.

In this issue, we also look at design across the culture of food—from farm structures to market stands to a vineyard to a bake shop, as well as spots for fine dining. The chief concept behind every phase of food production, marketing, preparation, and consumption these days is "authenticity"—a reflection of consumer demands for sustainability and locally sourced edibles—expressed in both foodstuffs and the architecture that surrounds them. A perfect example is SHED, a pointedly simple emporium in Healdsburg, California, that possesses an



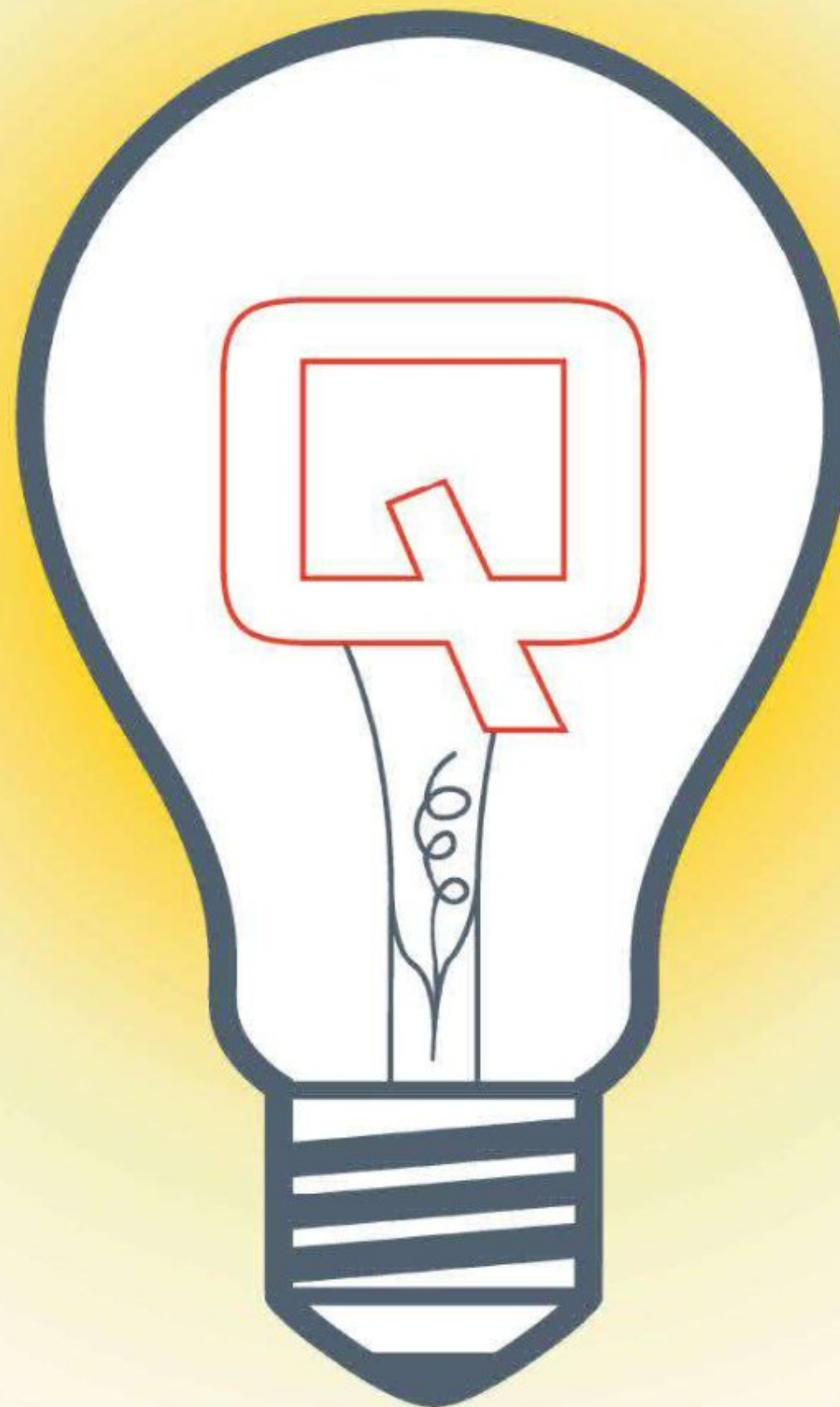
earthiness missing from the precious establishments that dominate the upscale Sonoma County town (page 96). Designed by Jensen Architects of San Francisco, SHED employs a standardized metal-and-glass building system to create a two-story retail outlet of local gourmet products and modestly stylish housewares, as well as a café and a contemporary "grange" for community events.

Designers are applying their talents all along the food chain—from a beautifully crafted dairy barn for teaching at Cornell University by Erdy McHenry Architecture (page 80) to an elegant egg-shaped cedar-wood chicken coop by Matthew Hayward and Nadia Turan (page 48). Even farm animals, it turns out, benefit from high-design habitats, which can help cows produce more milk and hens lay more eggs.

Who knew good architecture could do all that? ■

Cathleen McGuigan

Cathleen McGuigan, Editor in Chief



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“Ada Louise was a writer who got into arguments with buildings. In New York, you see people doing that on the street. But she got paid for it.”

— **Garrison Keillor** in a recorded message at the June 4 memorial service for Ada Louise Huxtable at New York’s Metropolitan Museum of Art.



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This Year’s Serpentine Is Ethereality in 3-D

LOCATED IN London’s Hyde Park, the Serpentine Pavilion this year is the product of the Tokyo architect Sou Fujimoto. Containing a café and a soaring multipurpose area suitable for lectures and large dinners, the temporary building is an amorphous composition of white steel-frame boxes piled up in a 3-D grid—one of the designer’s signature elements. “I wanted to create something between architecture and nature,” explains Fujimoto.

Measuring 16 or 32 inches square, the cubes were fabricated and welded together in sections at a factory in York and trucked to the site, where it took a month to bolt them together. Partially enclosed with transparent polycarbonate sheets—round ones lapped like roof tiles overhead and rectangular inserts shielding the sides—the delicate structure connects easily to its scenic setting while defining functional space. But, like all Serpentine Pavilions, it will be dismantled at the end of its four-month tenure for rebuilding elsewhere. *Naomi R. Pollock, AIA*

Made Here: A Manufacturing Revival at Brooklyn’s Navy Yard

BY BEN ADLER

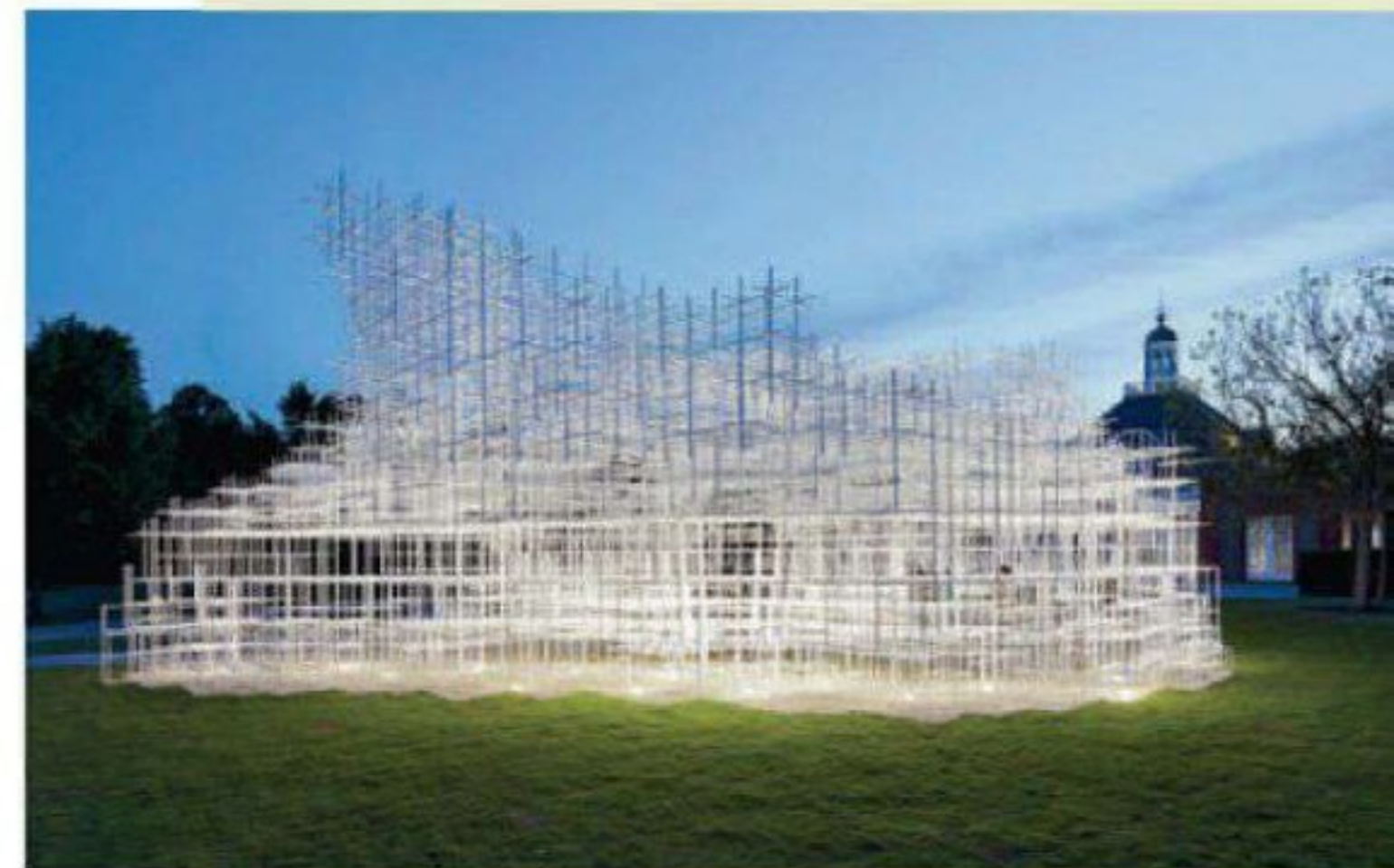
THE BROOKLYN Navy Yard once stood as a hulking emblem of American industrial might. Located in a semicircular bend on the East River, it is spread out over 300 acres and encompasses 40 buildings, three dry docks, and four active piers. In the early 20th century, it was where some of the nation’s famed battleships, such as the USS *Arizona*, were built. But it closed in 1966. The New York City government used it as a car-impound lot and stored Department of Justice files there.

Now, much like the Brooklyn neighborhoods that surround it, the Navy Yard is on the upswing: a handful of high-end design and fabrication firms are showing the way to a revival of urban manufacturing. The Brooklyn Navy Yard Development Corporation (BNYDC) works to replace storage with active uses that will create more jobs.

Steiner Studios, where HBO’s *Girls* is filmed, was greeted with fanfare when it opened in 2004. But the growing trend at the Navy Yard

is to lease space to design firms that can work with one another. Situ Studio is one example. Founded in 2005 by four architecture students from Cooper Union, the design firm has an office in nearby DUMBO, but it needed a larger space for its growing fabrication business, Situ Fabrication. Its friends at Crye Associates, a firm founded by fellow Cooper Union alums that uses emerging technology to design and prototype products such as body armor and helmets for the military, was already located in the Navy Yard. “We found the Navy Yard an incredible incubator for progressive, technologically innovative manufacturing,” says Brad Samuels, a Situ partner. Next door is Ferra Designs, which does fine metal fabrication. “They have a water-jet cutter,” explains Samuels. “So if we need parts cut out of metal, we would use theirs.”

Situ’s Navy Yard space is in a 10,000-square-



Sou Fujimoto’s 3,770-square-foot Serpentine Pavilion in London’s Hyde Park opened on June 8.

foot brick building that looks like a cross between a hangar and a barn and is only a 15-minute walk away from the firm's design office. "Part of the appeal of the Navy Yard is the historic buildings," notes Andrew Kimball, president and CEO of BNYDC. "People want to be in buildings with character, and

open in 2015. Located in a former machine shop with 70-foot ceilings and 84,000 square feet of space, including mezzanines, it will allow small design and manufacturing companies to collaborate and share machines for 3-D printing and metal laser sintering that would be prohibitively expensive for any of them to

own individually. This kind of collaboration means that such firms can now quickly produce their own prototypes in-house.

Most of the tenants will be small, Brooklyn-based operations. For example, Terreform ONE, a nonprofit design group and "ecological lab," will be located there. It is currently housed in a temporary space next door. Terreform explores green design in cities and recently stud-

ied how New York could produce its own food, water, and energy.

Meanwhile, the Navy Yard is trying to soften its edges by reconnecting with the surround-

ing neighborhoods. In places it is still hidden behind a shabby metal fence and a sign reading "No Trespassing: Government Property." But elsewhere it is opening outward. A wall at its southwestern edge that was constantly being defaced with graffiti was replaced with a mural depicting the Navy Yard's history, painted by children from the public elementary school across the street.

The Navy Yard also makes its history available in a free museum that features relics such as cannons constructed on-site. The museum is housed in a restored Colonial brick building designed by Thomas Ustick Walter, who also did parts of the U.S. Capitol building. A new addition was designed by Beyer Blinder Belle and built by Capsys, a modular builder based in the Navy Yard.

The tenants view the area as a cross between an artists' colony and Silicon Valley. Jordan Brandt, a self-described technology futurist who rents space in the Navy Yard, characterizes it as "the nexus of entrepreneurship." Down the hall, Ed Jacobs, who runs D.N.I., a design-consulting company, calls it "an environment of ideas." That it certainly is, but it all comes down to one very important idea: that things are still being made in Brooklyn. ■



The Navy Yard (foreground, right) is located in a bend on the East River across from Manhattan's Lower East Side. It includes 40 buildings.

there is a shortage of them in New York."

This is the model that the Navy Yard is trying to expand upon with New Lab, an incubator for small start-ups that's projected to

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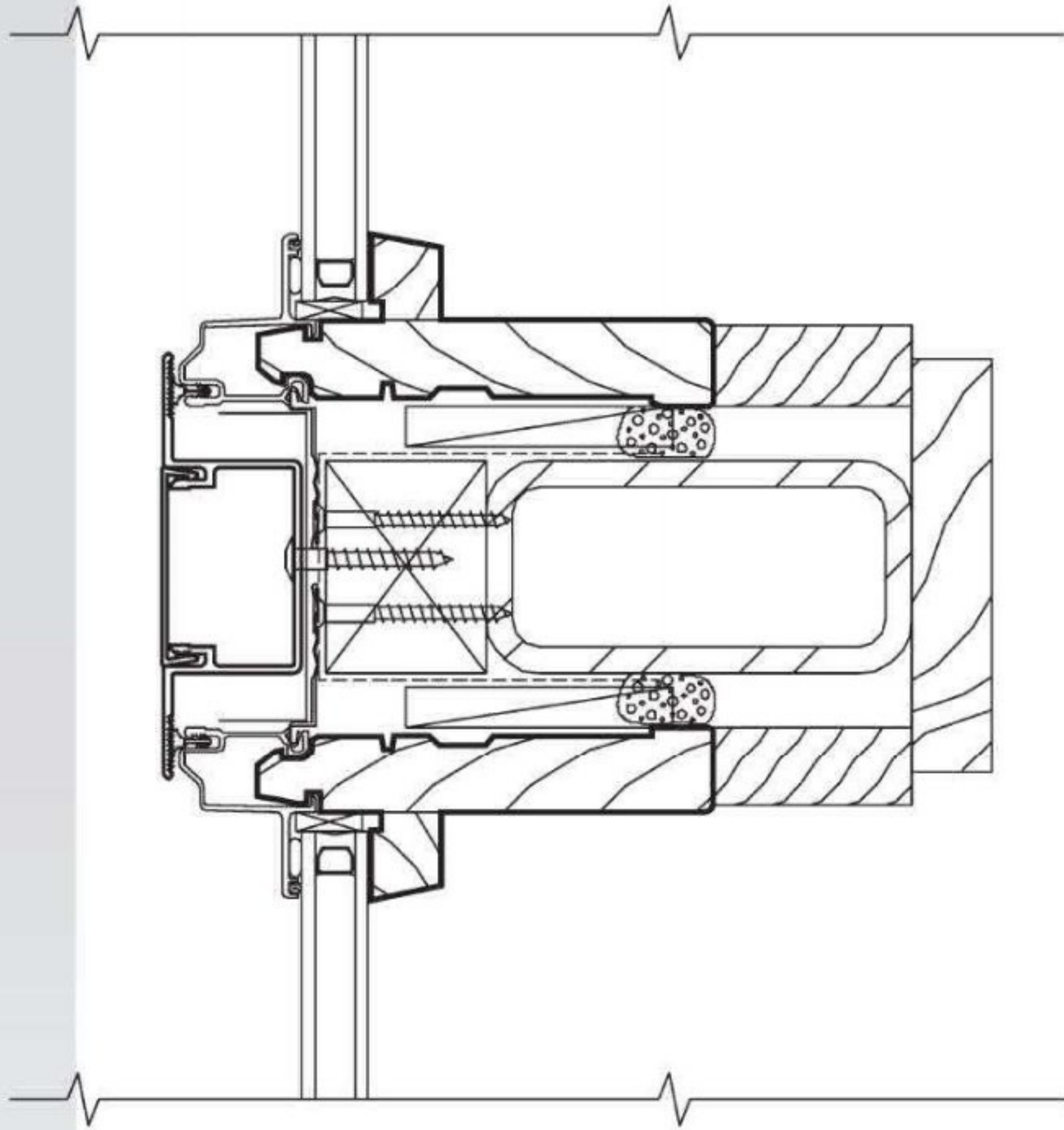


**ALL WEATHER
INSULATED PANELS**

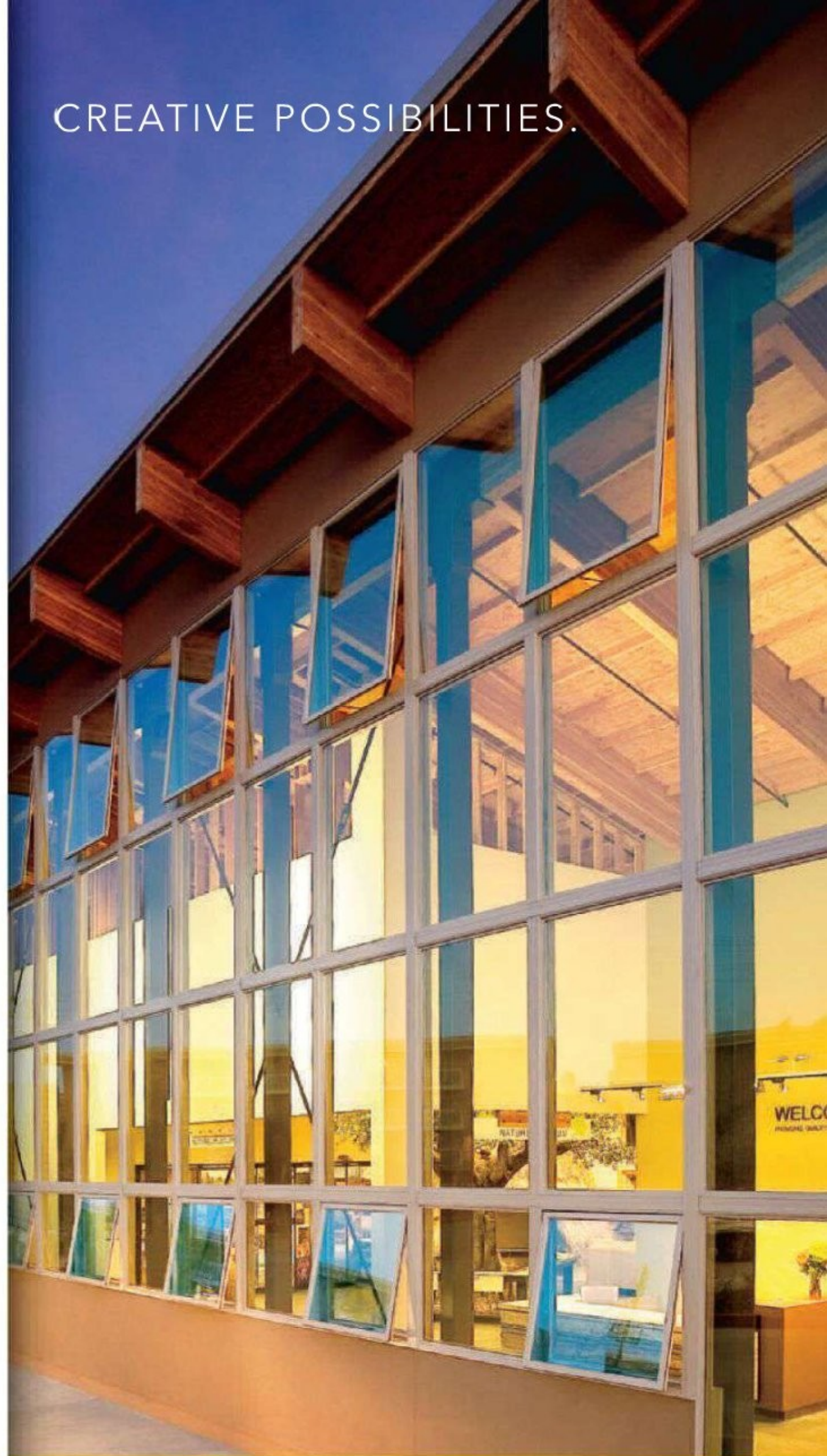
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CIRCLE 26

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Chipperfield Adds to St. Louis Museum

BY JOSEPHINE MINUTILLO

AS THE ONLY permanent structure built for the 1904 World's Fair in St. Louis—an event that looms large in the collective consciousness of the city to this day—the Palace of Fine Arts, later known as the Saint Louis Art Museum (SLAM), persists as a cultural and architectural icon. The handsome Neoclassical pile, designed by Cass Gilbert, sits atop a rolling hill in the city's beloved Forest Park, where admission through its porticoed main entrance to view an encyclopedic collection has remained free for over a century.

Needless to say, alterations to the museum, including a patterned brick addition at the rear of the building and a distinctively post-modern Charles Moore–designed West Grand Stair, were met with resistance and controversy. British architect David Chipperfield has largely been spared such drama with his modest scheme for the new East Building, which opened June 29.

Known for his rigorous design approach, Chipperfield was appointed unanimously by



The new East Building of the Saint Louis Art Museum (seen from the east) has 21 galleries.

museum commissioners in 2005 to create an expansion to SLAM. No stranger to merging old and new, Chipperfield received the prestigious Mies van der Rohe Award in 2011 for his restoration of the Neues Museum in Berlin. But unlike his other cultural projects in the U.S.—for the Figge Art Museum in Davenport, Iowa, and Alaska's Anchorage Museum expansion—which feature predominantly glass facades, the St. Louis project, in what is perhaps its boldest design statement, is defined by massive dark panels of polished concrete that contrast sharply with the light-colored masonry of the existing Beaux-Arts structure.

The other defining feature of the one-story “pavilion in the park,” as Chipperfield calls it, is the 4-foot-deep concrete coffered ceiling containing skylights that provide daylight to

almost all the new building's 21 galleries. Used primarily to display modern and contemporary art, the flexible galleries accommodate temporary walls. HOK served as architect of record, working

with Chipperfield's office to achieve LEED Gold accreditation. Paris-based landscape architect Michel Desvigne is designing the campus, including a future sculpture garden, in phases.

The 211,000-square-foot addition—more than half of which comprises below-grade parking—increases the museum's total gallery space by 30 percent. It also allowed for the reinstallation of 68 galleries in the Gilbert building. Chipperfield's intervention there was minimal, save for a new grand stair leading to that structure's lower level.

Chipperfield's project is marked by deference to an illustrious past, both architectural and symbolic, but it is clearly a building of its time. It remains to be seen if his elegant restraint will bring the increased recognition this world-class institution seeks. ■

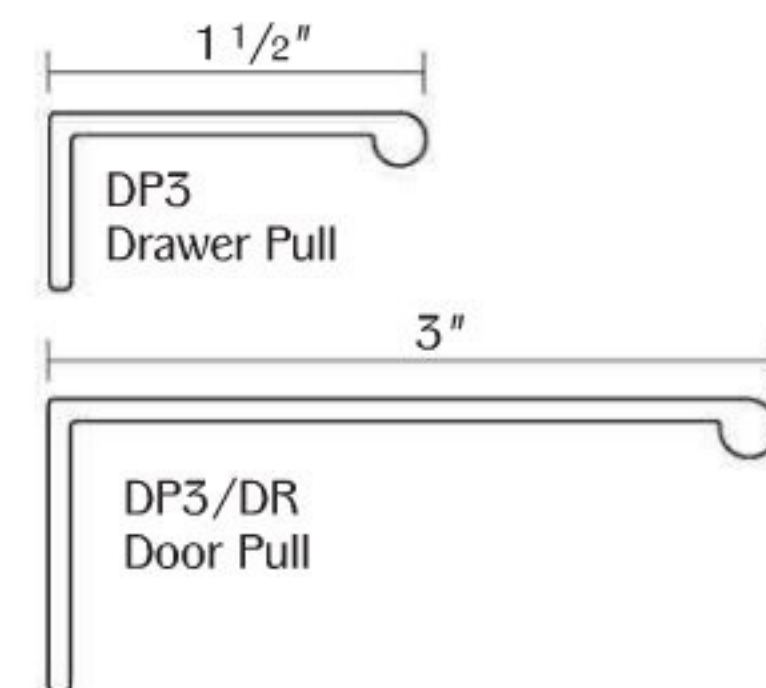
PHOTOGRAPHY: © JACOB SHARP

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[NEWSMAKER]

Peter Zumthor

BY CARREN JAO

THE PRESENCE of the Past: Peter Zumthor Reconsiders LACMA, on view at the Los Angeles County Museum of Art through September 15, showcases the architect's ambitious plans to unify the institution's problematic east campus. His scheme would raze William L. Pereira's original 1965 buildings and a 1986 addition by Hardy Holzman Pfeiffer Associates, replacing them with an amoebalike structure that oozes out to the city. The museum has been clear, though, that Zumthor's plans are far from finalized. For one thing, LACMA still needs to raise \$650 million. RECORD spoke with the architect about his proposal.

Your practice is based in Haldenstein, Switzerland, an environment very different from Los Angeles. How were you able to get a feel for the city?

I lived here in the late '80s. I was teaching at SCI-Arc and running around town with my bicycle. That was tough at the time. Now, this project has been going on for several years. I often come here, and I studied the site. I'm a site lover, so I like to study places. I like to absorb the atmosphere and the history.

How does your proposal reflect your impressions of the city and what it could be?

If you look at it, you can see it has an organ-

ic shape much like a lake or a tree. It reacts to all the things around it, to all this big development and the tar pits and so on—to the trees and to the existing park.

How would you describe your collaboration with [LACMA director Michael] Govan?

Both of us are quick in our minds, and we don't have to explain a long time to understand what the other one wants, thinks, and feels. It's perfect.

I hear there were conversations over tennis games as well.

After tennis or when we drive to the tennis court [laughs].

You have historically worked with very sensual building materials such as wood or stone.

What made you decide to go with the dark, gray concrete for the museum?

At the moment, this is a model choice, but certain things will probably stay dark. As you know, if you have something dark, nature becomes much more present. But as you go into the building the galleries will not be dark. **In your proposal, you invert the classic circulation of a museum. Instead of hallways to the center, you create a perimeter walkway. Why did you feel the need to do that?**

Circulation is one of the biggest problems in the museum. I think it would be a great relief to come into the museum galleries or come out to the veranda and go around. It's like being in the forest and looking for the clearing.

Some concerns were raised, though, that because the interior had so many walls, it would feel boxy and enclosed. How do you respond?

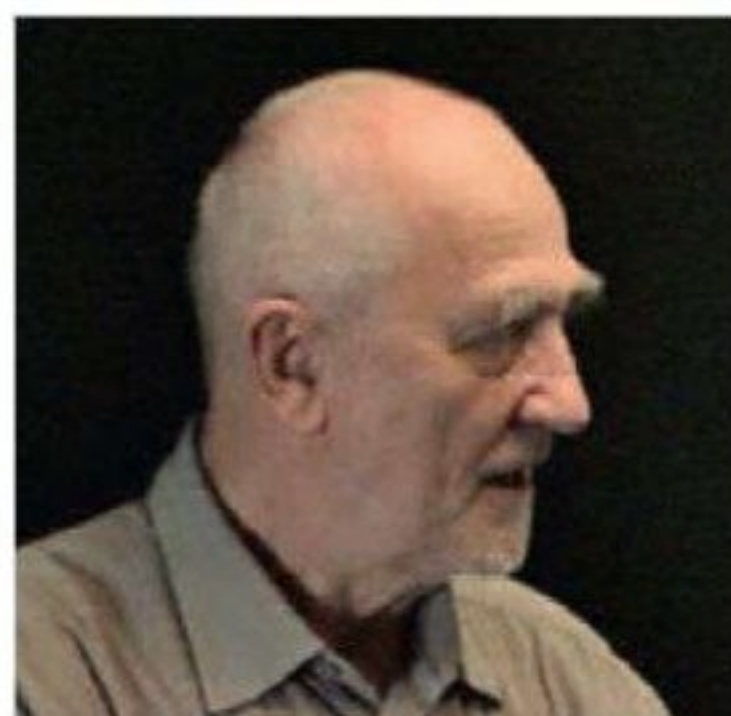
They're wrong [laughs]. I don't do boxy and enclosed buildings. There has to be a series of very different spaces, which give identity to the seven cores [within the museum]. If you go in, they will be absolutely beautiful, grand spaces. Some people cannot read models well. This is also a sketch. It isn't the finished product.

How do you feel about Govan's strategy of unveiling your proposal before it's finalized?

I think this is a brilliant idea. It's nice that people can see it from concept and we can talk about it. It's not presented like everything is holy and everything is finished. We will draw our conclusions from what we learned. ■



Below: Zumthor in a still from the film *The Museum Reimagined*. Above and below right: his models for LACMA.



View additional images at architecturalrecord.com.

noted

Humanscale Designer Niels Diffrient Dies at 84

Forbes magazine once called Niels Diffrient, who died on June 8, "the granddaddy of ergonomic design." Diffrient worked with Eero Saarinen and Henry Dreyfuss, and then formed his own consultancy, creating comfortable chairs based on how people ought to sit.

NYC Mayor Outlines \$20 Billion Flood-Protection Plan

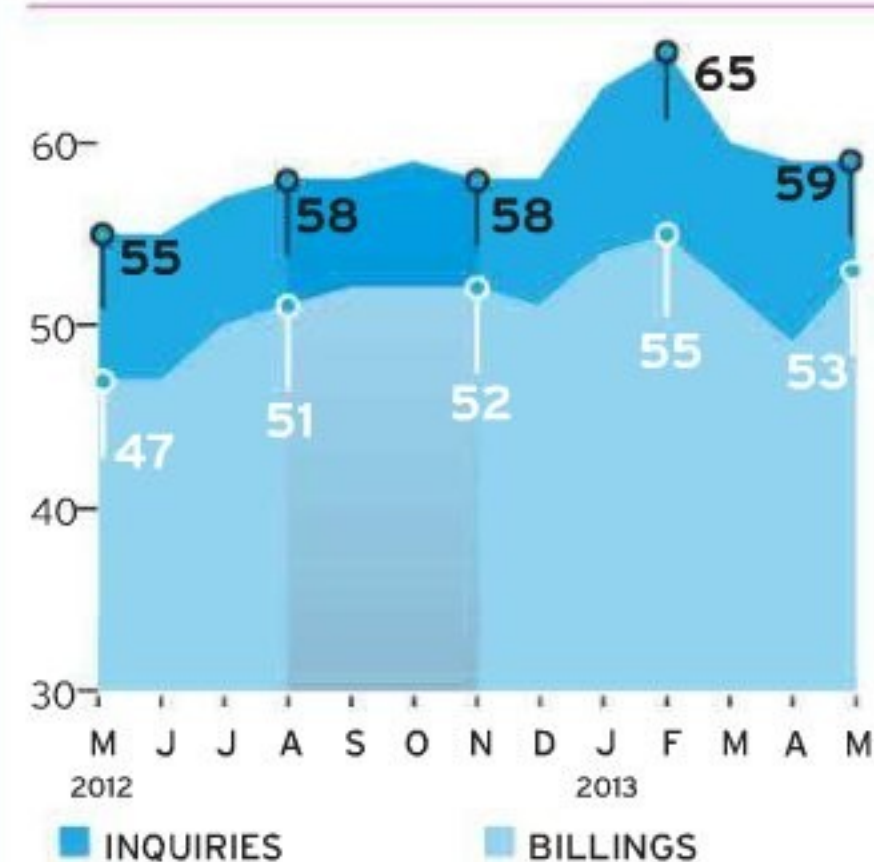
In June, New York City Mayor Michael Bloomberg announced a sweeping \$20 billion plan to protect the city from storms like last year's Hurricane Sandy and other severe weather. The report calls for everything from building a levee to protect Staten Island to a "Seaport City" in Lower Manhattan.

Three New Appointments at Major U.S. Museums

Caroline Bauman was named director at the Cooper-Hewitt, National Design Museum; the Metropolitan Museum of Art announced Susan Sellers as its head of design; the San Francisco Museum of Modern Art promoted Jennifer Dunlop Fletcher from assistant curator of architecture and design to department head.

London's Olympic Village Transformed Into Housing

Ten months after the London Olympic Games, the Olympic Village housing for 17,000 athletes is undergoing a transformation into 2,800 apartments. About half will be rented to low-income Londoners, while the other half will be listed at market rate. The first 100 units are expected to be complete in August.



ABI Creeps Up Again

After dipping below 50 in April for the lowest mark since July 2012, the Architecture Billings Index (ABI) was back in positive territory in May with a score of 52.9 (any score above 50 indicates an increase in billings). The new-project-inquiries index rose from 58.5 to 59.1. Commercial/industrial billings dropped from 47.5 to 47.0.

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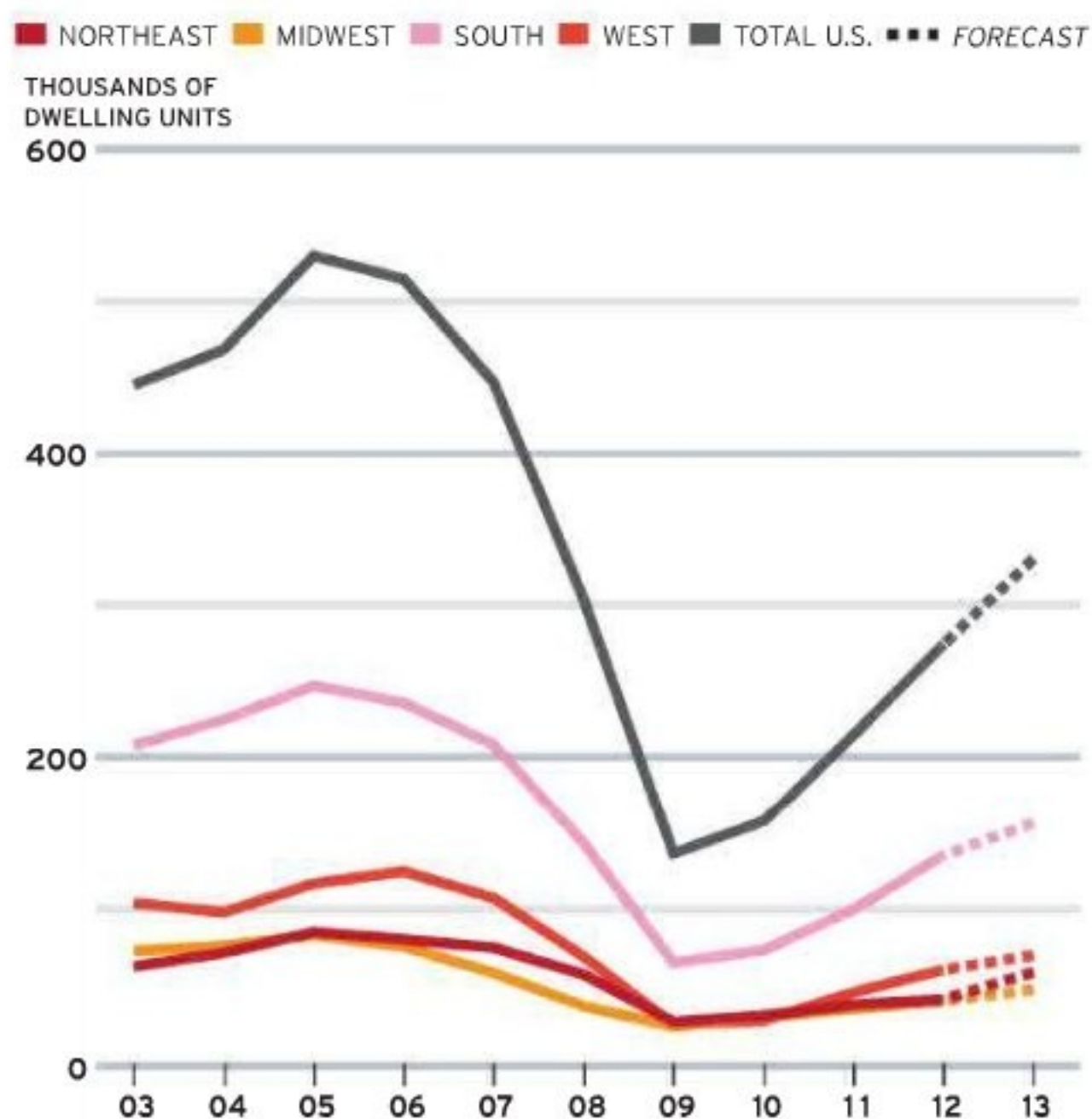
MARKET FOCUS

MULTIFAMILY HOUSING

After hitting bottom in 2009, the multifamily housing market has shown steady improvement. Since 2010, construction starts in the sector have grown by double digits in each of the four regions of the U.S.

Multifamily Housing Starts by Region

In addition to U.S. total and 2012 forecast figures



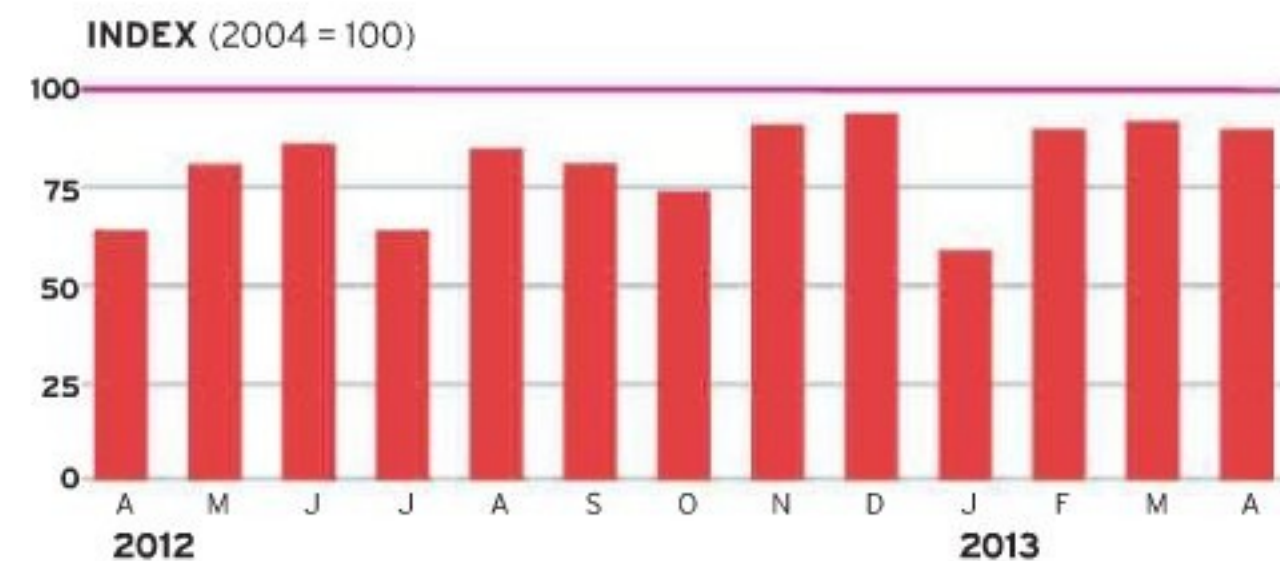
Gethsemane Lutheran Church/Dekko Place Apartments; Olson Kundig Architects, SMR Architects (page 128)

Top Metro-Area Markets

Ranked by total multifamily starts 1/2012 through 4/2013

REGION	\$BILLIONS
1 NEW YORK CITY	9.0
2 WASHINGTON, DC	2.8
3 LOS ANGELES	2.3
4 MIAMI	2.3
5 BOSTON	1.9

The Dodge Index for Multifamily Construction 4/2012-4/2013



The index is based on seasonally adjusted data for U.S. multifamily housing starts. The average dollar value of projects in 2004 serves as the index baseline.

Top 5 Design Firms

Ranked by multifamily construction starts 1/2011 through 4/2013

- 1 SLCE Architects
- 2 Goldstein Hill & West Architects
- 3 Humphreys & Partners Architects
- 4 Niles Bolton Associates
- 5 BGO Architects

Top 5 Projects

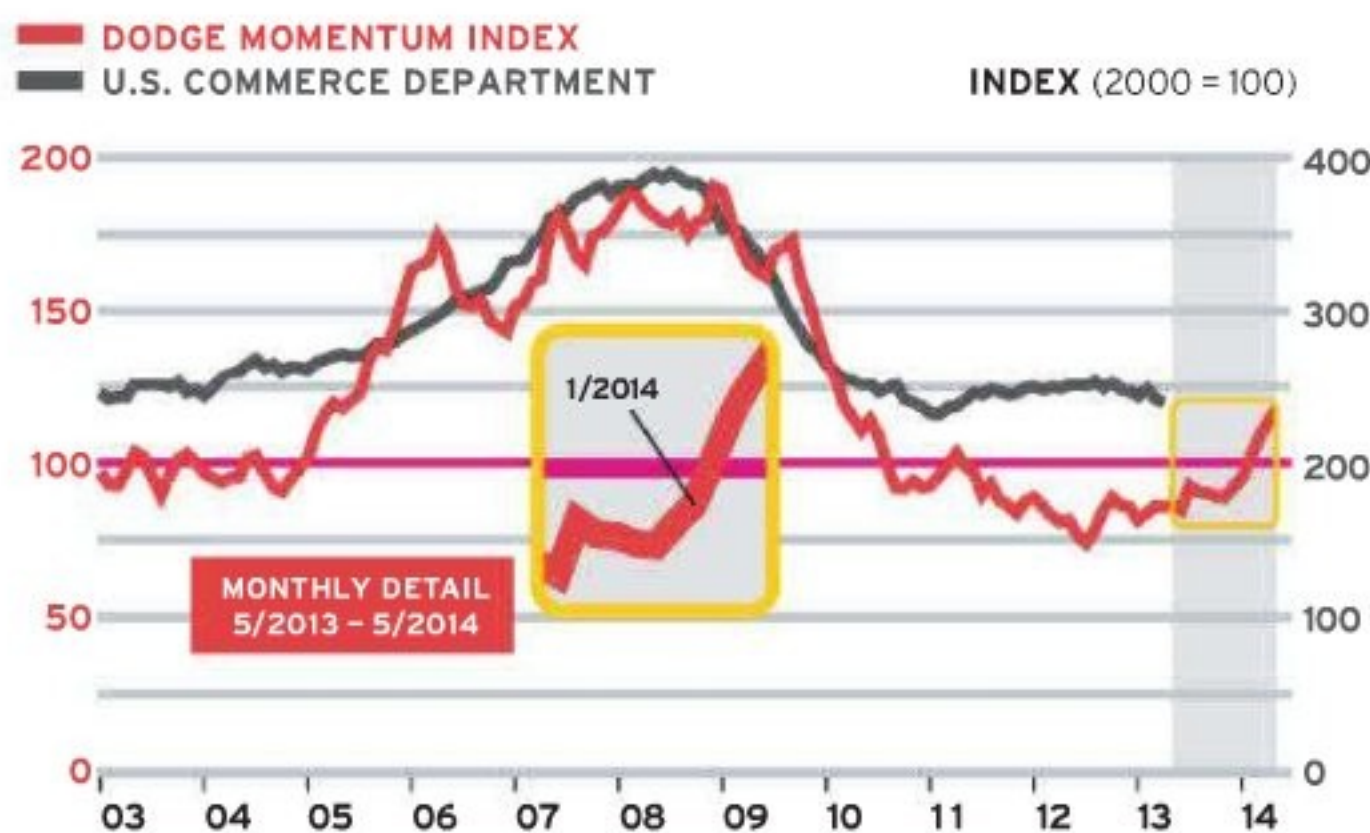
Ranked by multifamily construction starts 4/2012 through 4/2013

- \$500 MILLION**
 PROJECT: 50 UN Plaza
 ARCHITECTS: Foster and Partners, SLCE Architects
 LOCATION: New York City
- \$384 MILLION**
 PROJECT: 56 Leonard Street
 ARCHITECTS: Herzog & de Meuron, Goldstein Hill & West Architects
 LOCATION: New York City
- \$295 MILLION**
 PROJECT: 605 West 42nd Street
 ARCHITECT: Goldstein Hill & West Architects
 LOCATION: New York City
- \$231 MILLION**
 PROJECT: Brickell CityCentre
 ARCHITECT: Arquitectonica
 LOCATION: Miami
- \$225 MILLION**
 PROJECT: West 57th Residences
 ARCHITECTS: BIG-Bjarke Ingels Group, SLCE Architects
 LOCATION: New York City

MOMENTUM INDEX GROWTH HAS LEGS

The climate for nonresidential construction continues to improve, according to the Dodge Momentum Index. In May the index advanced for the sixth consecutive month, rising 3.6% to 117.4.

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



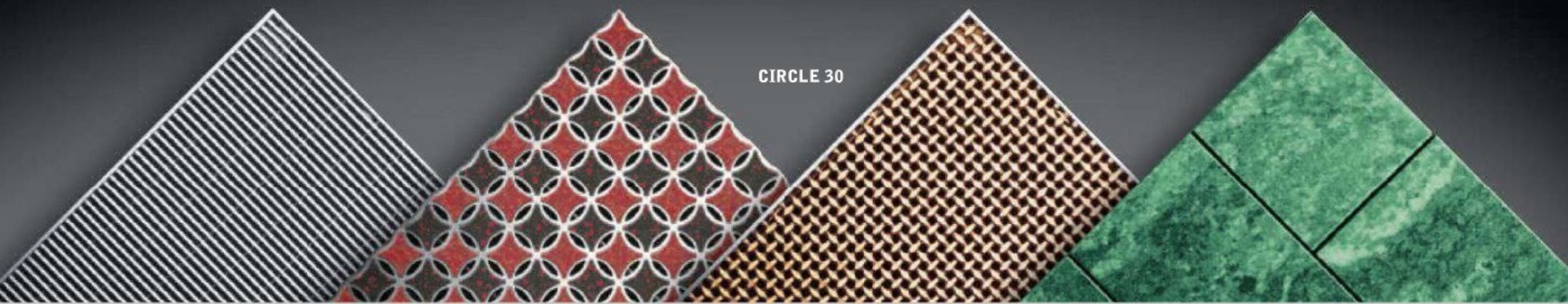


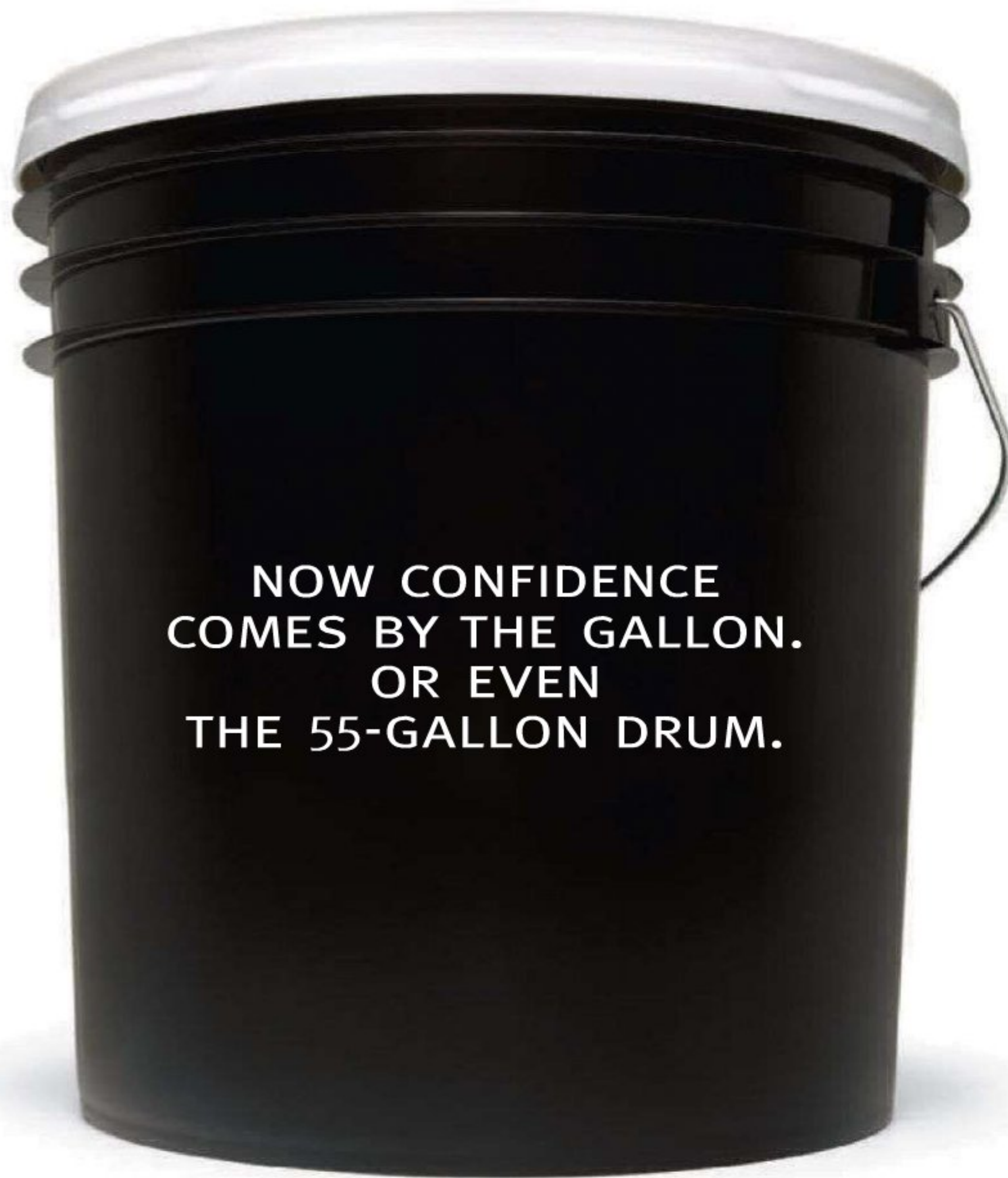
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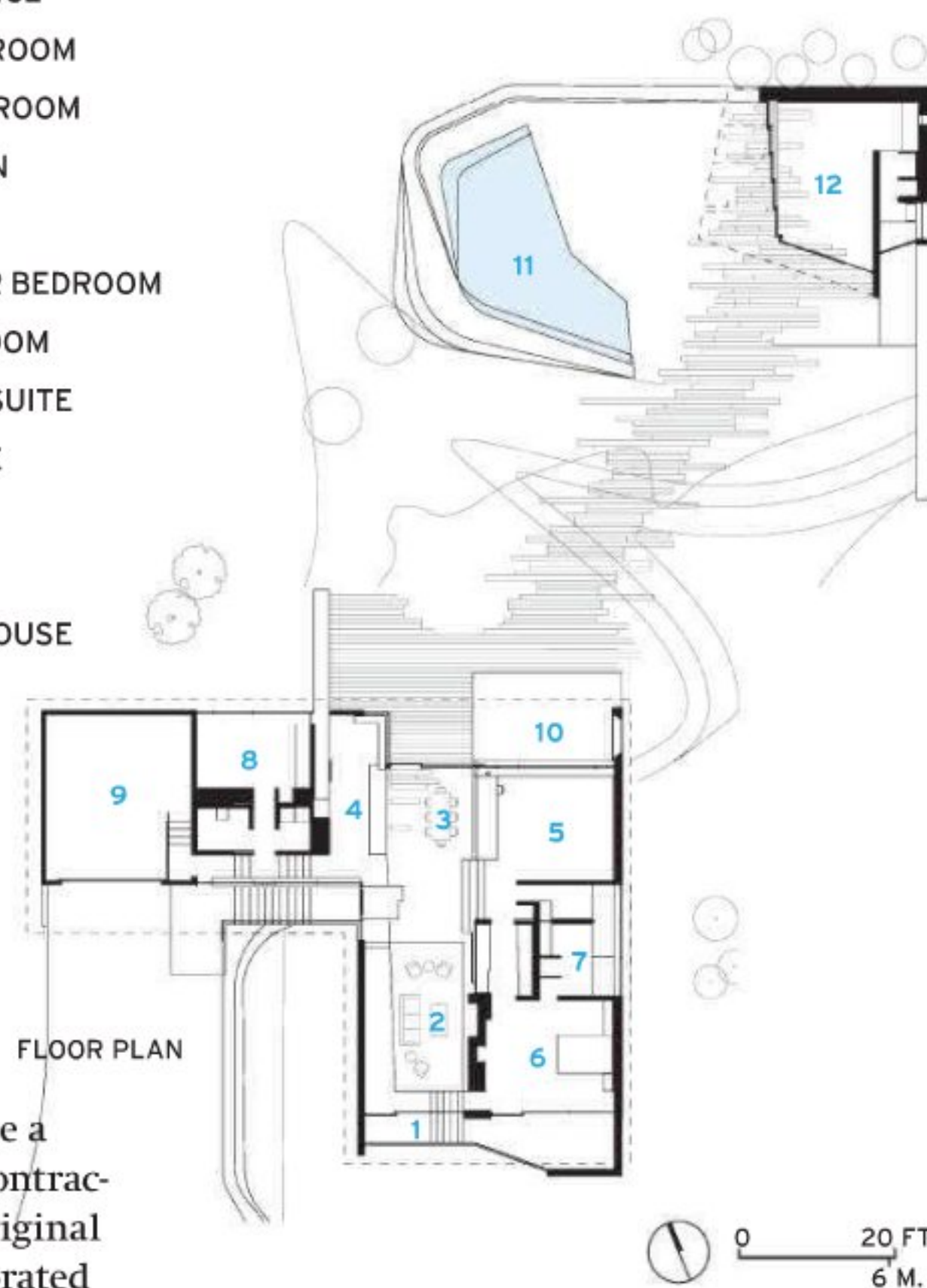


perspective **house of the month**

FLOUTING THE DE RIGUEUR STYLE IN A HAMLET NORTH OF NEW YORK CITY, JOEL SANDERS ARCHITECT AND BALMORI ASSOCIATES CRAFT A MID-CENTURY-STYLE HOME ON A FORESTED SITE. BY ASAD SYRKETT



- 1 ENTRANCE
- 2 LIVING ROOM
- 3 DINING ROOM
- 4 KITCHEN
- 5 DEN
- 6 MASTER BEDROOM
- 7 BATHROOM
- 8 GUEST SUITE
- 9 GARAGE
- 10 DECK
- 11 POOL
- 12 POOL HOUSE



PHOTOGRAPHY: © IWAN BAAN

A long gravel driveway sweeps up to the front of the house (top left). Inside, unpartitioned common areas flow freely from one to the next, delineated only by level changes (top right). At the rear of the house (above), a glazed facade opens to a deck, which leads to a stepped garden and pool house.

IN SLEEPY Bedford Corners, New York, 40 miles north of New York City, houses can command eight-digit prices. And they look it: in certain Bedford enclaves, rambling Tudors sit on lawns manicured into a perfection that could only be surpassed by AstroTurf. The Bedford Residence, designed by New York City-based Joel Sanders Architect (JSA) in collaboration with landscape architect Diana Balmori, breaks from convention. The clients, a professional couple with adult children, sought a low-key refuge from city life.

Built atop the foundations of the 1950s-era home that occupied the site, the Bedford Residence takes after its predecessor in both form and material.

“We really thought this would be a renovation,” says Sanders. But contractors soon realized the house’s original cedar-clad structure had deteriorated beyond salvaging and razed it, erecting a new timber-frame one with walnut paneling and glass-and-steel curtain walls. JSA glazed sections of the front and rear facades to open the home to views of the surrounding woodland, and then worked with Balmori to create a landscape scheme that allowed views down to the new concrete pool house in a corner of the sloped site.

Inside, the living room, dining room, and kitchen unfurl in a series of unpartitioned spaces. Areas where the clients desired seclusion, such as

the master-bedroom suite, are tucked away from the communal rooms, which are united by a wide stripe of poured-concrete flooring. Bluestone appears throughout the residence, in the living room as the fireplace wall, and outside in the front and rear as barriers and enclosures. A deck at the rear of the house leads down to the pool, enclosed on three sides by the ubiquitous bluestone. “Our idea was to connect inside and outside with a uniform material palette,” says Sanders. ■



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CIRCLE 24

A Master Gets His Due

A retrospective exhibition of Le Corbusier's architecture opens in New York City.

BY SUZANNE STEPHENS

YOU MIGHT say it's about time. Finally, a retrospective of the pioneering master of modern architecture has been mounted by the Architecture and Design Department at New York's Museum of Modern Art. *Le Corbusier: An Atlas of Modern Landscapes* (on view until September 23) presents a vast range of the work of the influential architect who was born Charles-Édouard Jeanneret in La Chaux-de-Fonds, Switzerland, in 1887. After practicing most of his life in Paris, Le Corbusier died in 1965. As the show demonstrates, he never stopped innovating with the language of architecture, developing a vocabulary of taut, layered planes, open plans, and gridded structures, then reinterpreting vernacular building methods for new applications, or generating organic, sculptural forms with poured-in-place concrete. Yet the procession through space, or *promenade architecturale*, remained paramount. Organized by guest curator Jean-Louis Cohen, an architect and historian, with Barry Bergdoll, chief curator of architecture and design, the exhibition includes more than 300 objects from Le Corbusier's prodigious output. Cohen frames the work in terms of its relationship to the landscape—no matter the scale. With an impressive array of drawings, original models, still-life paintings, and films by the architect as well as re-creations of four room-size interiors, Cohen has brought to life the outpouring of this creative force of the 20th century. Just before the show's June 15 opening, RECORD discussed the exhibition with Cohen. Our conversation is posted in full at archrecord.com and excerpted below.

Why did the Museum of Modern Art (MoMA) take so long to present a retrospective of Le Corbusier? As you point out in the show's catalogue, he was included in the landmark *Modern Architecture: International Exhibition of 1932*, plus smaller exhibitions in 1935, 1963, 1978, and 1987. But no retrospective.

In 1953, Philip Johnson [then head of the architecture department] proposed a retrospective at the museum that would have opened in 1955. Le Corbusier wanted very high royalties, plus total control over both the selection of works and their installation. He asked that paintings as well as architecture be included, and he attempted to sell paintings to the museum. MoMA finally abandoned the idea. After Le Corbusier's death the interest



Le Corbusier, *Model for the Assembly, Chandigarh, 1964* (above); *Nature Morte, 1920* (right).

was not as strong as in the heyday of Modernism. Also, MoMA's perspective has long favored the architecture of Ludwig Mies van der Rohe, Frank Lloyd Wright, and Alvar Aalto. **Your own perspective for this show concerns the relationship between Le Corbusier's architecture and his experience of the landscape in various parts of the world. Why?**

Le Corbusier's lifelong observation of the landscape led me to examine the way he developed his building projects and city plans. Not only was he interested in the siting of buildings and their immediate environments, most notably the gardens that surrounded them, but also the distant horizons onto which they opened. He transformed territories into landscapes that responded to the machine age, addressing specific topographies, as the projects for Lake Geneva or Algiers reveal. He was also one of the first global architects, going off to Moscow or Rio, and this exhibition, an "atlas," pays attention to images accumulated and the extensive geography of his activities. **Is that theme in danger of being a Procrustean bed where only the works of Le Corbusier that involve the landscape are included? And is there a problem that if a well-known work is**



shown, such as the Villa Savoye (1929–31), its presentation is limited to the aspects that make a thematic point?

In the exhibition, I am developing ideas of memory and urban landscape according to Le Corbusier's visual and verbal records: he would repeatedly return in thought and in design to the places that moved him—for instance, Athens and Rome—transforming them into what could be called "landscape types" after the "object types" he used in his Purist paintings. There are many layers that need to be seen together to show a real constellation of positions. With 75 buildings to include in one show, discussing them according to one theme seemed the only way to do it. But we arranged the installation according to biographical and geographical themes within that framework. ■

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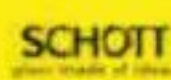
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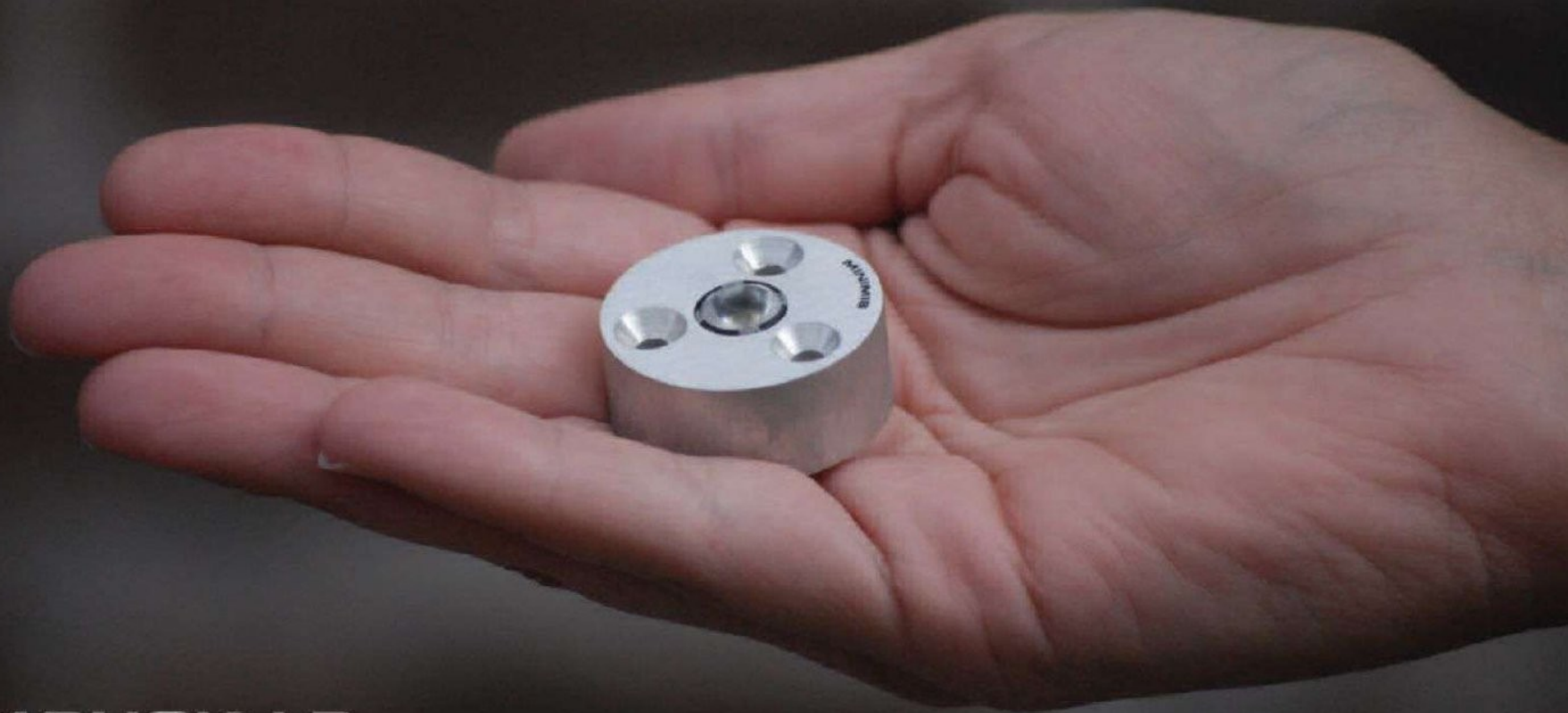


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What's Cooking

The latest kitchen designs include a supersmart fridge that can keep food three times fresher than conventional models, and a line of wood-veneer doors and panels specially designed to customize IKEA's affordable, off-the-shelf systems.

By Rita Catinella Orrell



Sorpresa Range-Hood Collection

Best has expanded its award-winning Sorpresa collection of Italian-inspired range hoods to include 13 designs in island, chimney, and ceiling models. The collection includes the curvy stainless steel Intrigue island hood (shown), which requires a minimal 6"-diameter duct size. Intrigue features two 25-watt halogen lamps and a four-speed electronic push button with LED indicators. The hood base measures 31½" x 16⅞". bestsorpresa.com CIRCLE 205



BK2 System

Italian modern kitchen maker Effeti unveiled its BK2 system during New York City's first official design week in May. The system, along with its predecessor, BK1, will be displayed in a new flagship showroom designed by Murdock Solon Architects in the Terminal Warehouse Company Central Stores Building on the west side of Manhattan. The BK2 system (shown) features textured oak doors finished in a matte lacquer and a peninsula table finished in a thermo-treated chestnut. (Thermo-treated wood is heated and smoked, rather than stained.)

effetiusa.com CIRCLE 206



Miele Brilliant White Plus

Miele's new Brilliant White Plus series of built-in appliances (right) includes a 30" convection oven, steam oven, speed oven, and whole-bean coffee system and cup warmer. The streamlined chrome handles, sleek white glass doors, and Miele's intuitive Navitronic touch control pad subtly help the assembly appear integral within a contained space. mieleusa.com CIRCLE 207

Shaws Apron Front Fireclay Kitchen Sink

Rohl's Shaws Original Waterside Apron Front Fireclay Kitchen Sink (left) was named the year's best new kitchen product at the 2013 Best of KBIS awards. The latest addition to Rohl's fireclay collection, the sink comes in a variety of shapes and styles. Each is still hand-poured and hand-shaped in a process developed by the company more than a century ago. The fireclay construction makes it extremely durable and resistant to acid, alkali, and scratches. rohlhome.com CIRCLE 208





SBS 244 Built-In Refrigerator

The new SBS 244 48" built-in stainless steel refrigerator introduces Liebherr's patented BioFresh Plus technology. Stored at an ideal temperature and humidity, food in the BioFresh Plus compartments retains its vitamins, aroma, and fresh appearance up to three times longer than in a conventional fridge. An independent electronic control system allows the temperature in the three compartments to be adjusted from 28°F (for fish) to 48°F (for exotic fruits). The fridge features LED lighting and a water and ice maker on the door.

www.liebherr-appliances.com

CIRCLE 210



Solna Kitchen Collection

The Brizo Solna kitchen-faucet collection has been updated with a single-handle, pullout model that can be used in compact spaces where high-arc pull-downs may not fit. In addition to its new model, the CALGreen-compliant collection features single-hole, single-handle pull-down kitchen and bar/prep configurations. The full collection is offered in polished chrome, Brilliance stainless, and matte-black finishes. Matte-white and Brilliance brushed-bronze finishes are also available on both pull-down models.

brizo.com CIRCLE 211



Customized Wood-Veneer Facing System

A winner in the Kitchen and Bath category in the 2013 ICFF Editors Awards, Semihandmade is a customized wood-veneer door, panel, and drawer facing system that is designed and measured to fit IKEA kitchens (IKEA does not require customers to purchase doors with its systems). Semihandmade can be used in commercial or residential settings. Facing options range from unfinished, DIY-inspired designs to classic, specialty, reclaimed, and premium woods.

semihandmadedoors.com CIRCLE 209



Kiora Sink

Duravit has expanded its range of kitchen ceramics with the new Kiora sink. Sieger Design created a rectilinear sink for Duravit with a 2"-wide frame that tapers inward with a slim, elegant appearance to provide splash protection. The easy tilt of the drain board allows water to flow off plates, pots, and pans back into the sink. Kiora is available in surface-mounted and drop-in variations. The sink is reversible as a right- or left-handed bowl, thanks to the axial layout of the tap, overflow, and pop-up waste control. duravit.us CIRCLE 212

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NanaWall Kitchen Transition NanaWall Systems nanawall.com

Designed to connect indoor and outdoor kitchens, NanaWall's new system combines the company's folding glass windows, which replace traditional windows over a kitchen countertop, with folding glass floor-to-ceiling walls. The window and wall portions operate independently and work with both wood and aluminum systems. **CIRCLE 200**

Array Light Control System ODL ODL.com

ODL's Array Light Control System is a doorglass panel design that uses two sliding panels of perforated, powder-coated aluminum to provide users with a simple way to control privacy and light levels. With a simple turn of the ergonomically designed SunDial control, the panels move from open to closed. Array features ODL's TriSys frame system, which can be painted or stained to suit any home style. **CIRCLE 201**

Bamboo Door Collection GreenLeaf greenleafdoors.com

GreenLeaf bamboo doors are made to order by master craftsmen using independently certified green materials. Standard offerings include flush (above), stile-and-rail, and French styles; custom options provide unlimited configurations of the inner panel. The core of the flush doors is constructed of agricultural wheatboard, finished with a 1/8" solid bamboo veneer. The stile-and-rail, French, and designer doors are locally sourced with cores of 100% poplar wood and a 1/8" solid bamboo veneer. All inner panels have an SCS recycled-content- and clean-air-certified MDF core covered with a solid bamboo veneer. The flush doors come with microbevel and inlays in stainless steel or brass. Bamboo grain can come in a single panel running vertically or with a number of panels running horizontally. **CIRCLE 202**

Sliding Barn-Door Hardware

Sun Valley Bronze sunvalleybronze.com

Designed and handcrafted in Idaho, this modern bronze sliding barn-door hardware from Sun Valley Bronze is suitable for wood or glass doors in interior or exterior residential or commercial applications. The hardware comes in standard lengths ranging from 4' to 12'; custom lengths are also available. **CIRCLE 203**

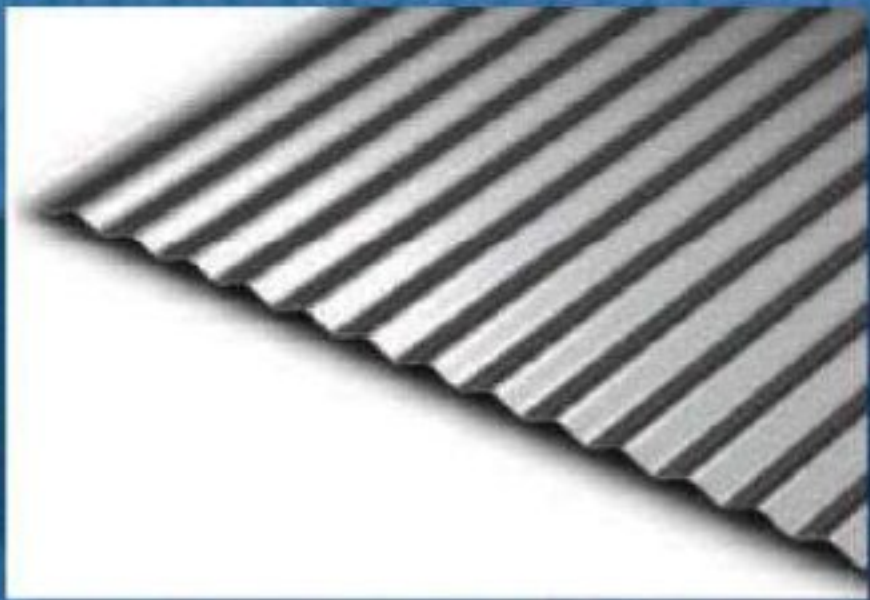
Centor 200 Series Centor centor.com

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- Jesse Forst, project manager for RS&H design firm



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Environment

Welcome to the Animal House

Designer shelters for the birds and the bees elevate our view of food production.

BY BETH BROOME

A MODERNIST roost for a chicken? A bespoke cow barn on an English country estate? A luxury high-rise for a colony of bees? Some people might say that these structures are unnecessarily extravagant, given the simple programmatic needs of the occupants. But, as architect Stephen Taylor says of the barn he designed at Shatwell Farm in Somerset, England, that responds to the dignified, centuries-old architecture around it: "Every building is always part of something bigger." While it was a growing interest in urban farming that led to the proliferation of backyard chicken coops, the trend's latest wave has upped the ante with features like solar-powered LEDs and green roofs. "As architects we try to think of things a little differently, and, for example, elevate the pigsty to another level," says Keith Moskow, one of the Boston architects behind Rolling Pig Pen. "Whether for a person or a pig, we are always asking how we can make an experience better," adds his partner, Robert Linn. Grabbing attention also increases the value of these shelters as teaching tools, much as the Elevator B beehive has generated awareness of the crisis of the declining honeybee population known as colony-collapse disorder and its larger implications for the ecosystem. The vogue of rejecting industrialized food production and celebrating authenticity and pedigree took hold a generation ago, and continues to evolve. Structures like these—whether motivated by grassroots activism or the current zeitgeist—encapsulate this particular moment in time. ■

CHIC ADDRESS The Breed Retreat, by Amsterdam-based furniture designer Frederik Roijé, is a bold experiment in luxury condolike living for urban birds. Responding to the natural "pecking order" of chickens (in which the dominant ones occupy the highest, or safest, roost or tree branch), the dark-stained pine structure is composed of five connected boxes arranged in a stepped formation. Solar panels on the roof power LEDs within the roost, tricking the hens into thinking it is summertime year-round so they will produce eggs even in winter, when they typically take a break. "It is important to create beautiful spaces where people and animals can coexist in urban settings," says Roijé, "so we don't lose the connection to where poultry and eggs come from."



GOOD EGG Hatched in response to the backyard-chicken-raising fad, Nogg, a compact egg-shaped abode, offers a fresh take on the utilitarian coop. By creating a sculptural, self-contained object, furniture designer and engineer Matthew Hayward and his partner Nadia Turan hoped to build on the growing enthusiasm for small-scale domestic farming by eliminating the visual and olfactory mess typically associated with the activity. Made of sustainably sourced cedar, the structure, which can house two to four hens, benefits from the wood's antibacterial properties and pleasant scent. A glass skylight twists and pops up for ventilation; at night, the drawbridge can be raised and fox-proof latches secured to create a safe and sound roost.



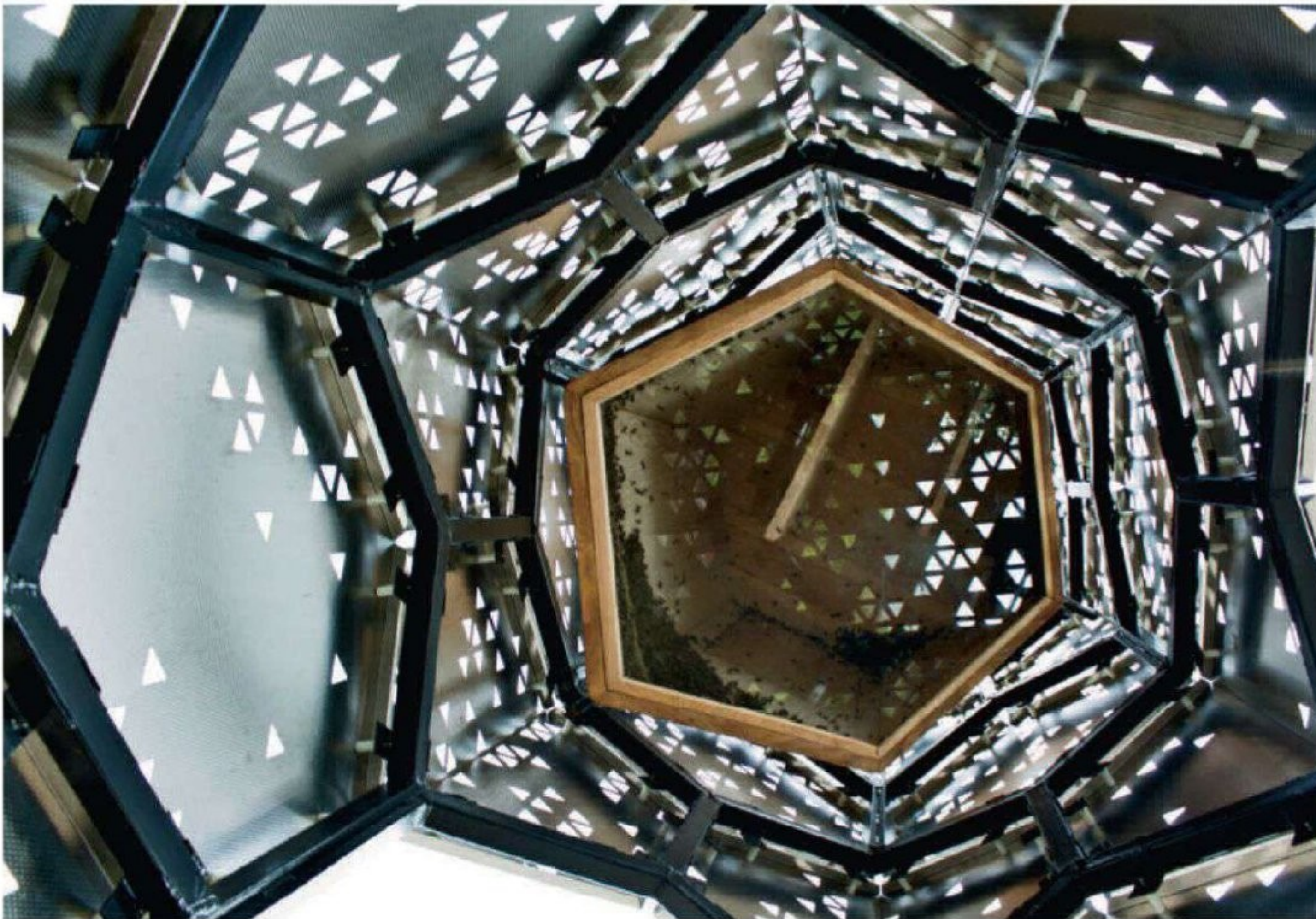
PHOTOGRAPHY (CLOCKWISE FROM BOTTOM LEFT): COURTESY STUDIO FREDERIK ROIJÉ; NOGG; MOSKOW LINN (2); © DAVID GRANDORGE (2)

HOLY COW Designed by London-based Stephen Taylor Architects, this comely cowshed (below and bottom)—part of Shatwell Farm on the Hadspen Estate near Castle Cary in Somerset, England—is the first phase of the historic farm's revitalization. Composed of an off-the-shelf steel-frame shed, it is clad with an open-slat wood rainscreen and fronted with a colonnade of poured-in-place orange-beige concrete made from stony clay dug from the site. The material references the estate's other buildings made from locally sourced stone. "My client has this long tradition where agricultural buildings have a worth beyond their simple function," says Taylor. "On one level it's just a cowshed. But every building has an obligation to its setting—it should not be unto itself."



WHAT A PIGSTY Rolling Pig Pen (above and right) is the creation of Studio North, a six-day design-build program held on a farm in Norwich, Vermont, and led by Boston architects Moskow Linn. Made of standard pine framing stock, the structure sits atop heavy-duty axles and wheels, enabling it to be pushed by hand. It includes a translucent fiberglass canopy, offering protection from the elements, as well as a trough and storage for feed for its two occupants. "The idea was to build an enclosure that could easily be moved, allowing pigs to both cultivate and fertilize a field," says principal Keith Moskow. With constant access to fresh soil to turn over with their snouts, he notes, "the pig's life is better for the short time that it is."





WHAT'S THE BUZZ?
The winner of the University at Buffalo's Hive City competition, Elevator B provides a new home for a colony of honeybees relocated from an abandoned office building. The 22-foot-tall steel structure evokes nearby defunct grain silos and is clad in hexagonal stainless steel panels with parametrically determined perforations that enable solar gain in the winter and shading in the summer. Visitors may enter the tower and gaze up at the bees, which occupy the "bee cab," a cypress box with a laminated glass bottom. A pulley system allows beekeepers to lower and raise the hive. "We wanted to make something with a physical presence, that would have an impact as a teaching tool," says Joyce Hwang, assistant professor of architecture and one of the project's organizers.

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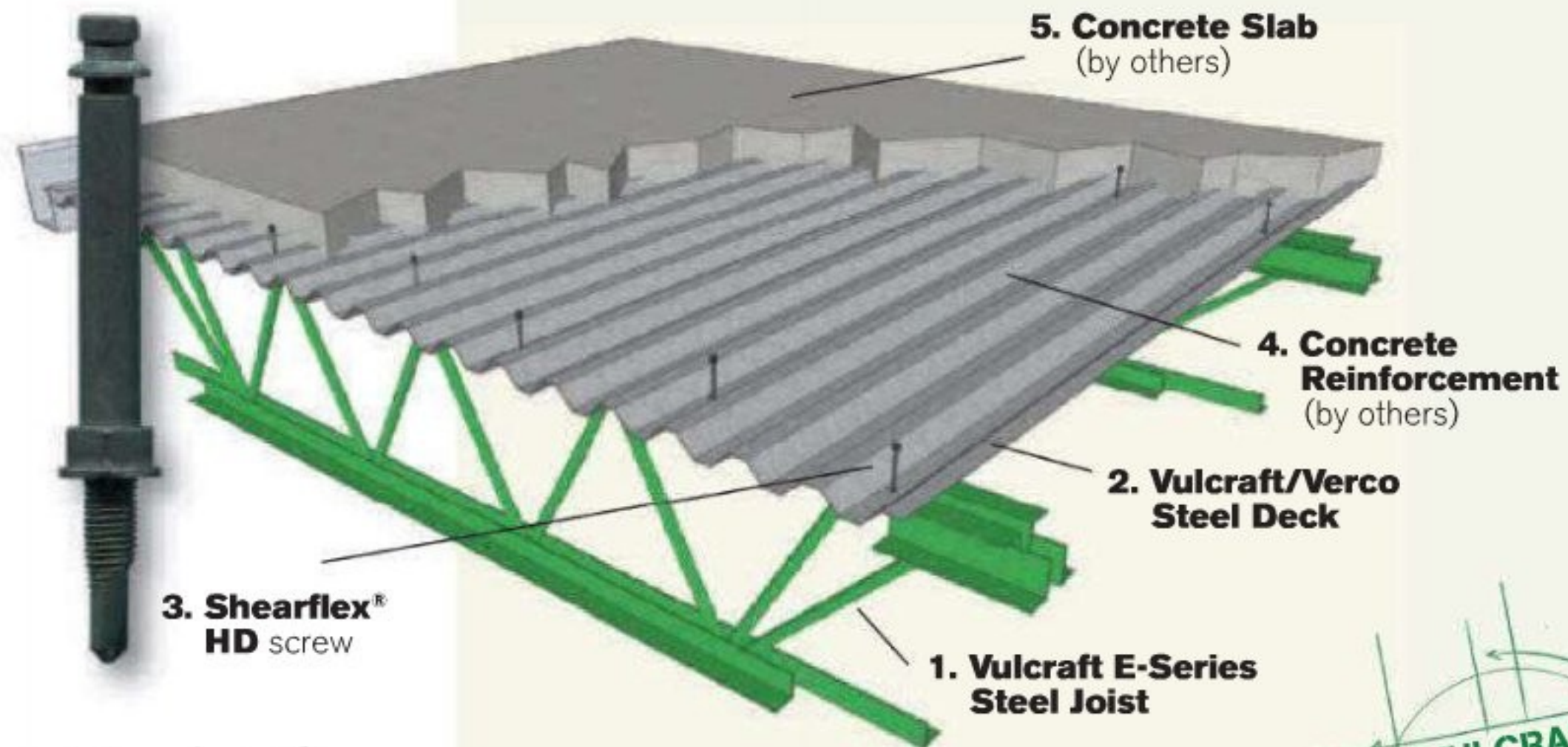
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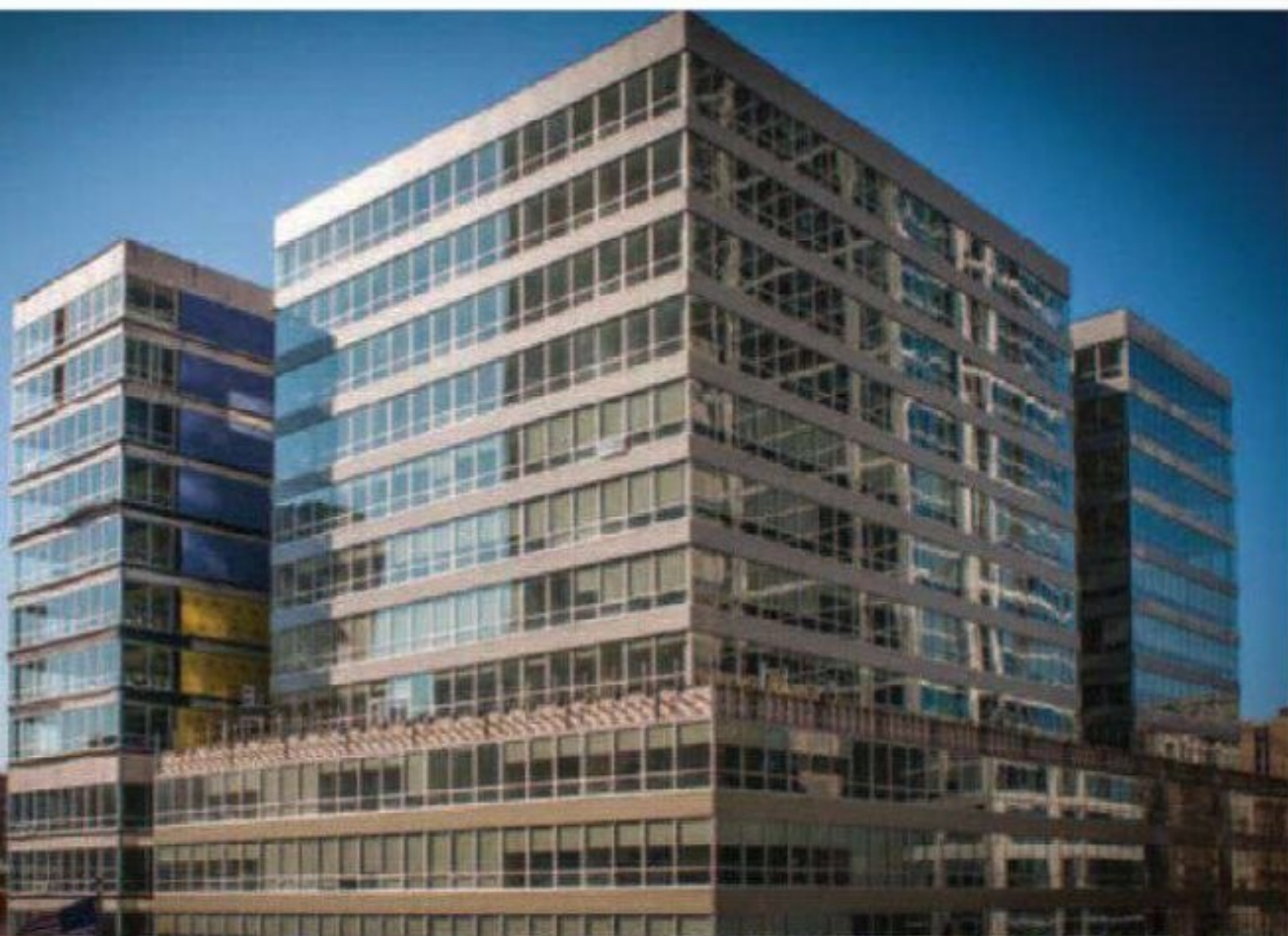
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Urban Oases

Projects from mobile markets to full-on farms are greening America's food deserts.

BY LAMAR ANDERSON

IN A SECTION of Seattle's Delridge neighborhood, residents who rely on public transportation face a daunting choice: take two buses to get to the nearest grocery store—or trek up a large hill. “What we found was that most people were either going to the grocery store much more infrequently, or they were becoming heavily dependent on convenience stores,” says Carrie Ferrence, a cofounder of Stockbox markets who studied access to fresh food in the city while completing her M.B.A. at Seattle's Bainbridge Graduate Institute.

That scenario is typical of urban food deserts—city neighborhoods with poor access to fresh fruit, vegetables, and other healthy foods. While there is no official measure of how scarce a carrot has to be for an area to qualify as a desert, a 2009 report by the U.S. Department of Agriculture found that 23.5 million people live in low-income neighborhoods more than a mile from a supermarket, which could contribute to poor eating habits, obesity, and diet-related diseases. But in the vacuum left by traditional stores, urban innovators are experimenting with alternative models for delivering fresh food to underserved areas.

One notable success has been Chicago's Fresh Moves Mobile Markets, city buses repurposed as one-aisle grocery stores that make stops on the West and South Sides of the city five days a week. (The project was featured in the exhibition *Spontaneous Interventions: Design Actions for the Common Good*, which debuted at the 2012 Venice Architecture Biennale and is on view at the Chicago Cultural Center through September 1.) A pro bono team assembled by Architecture for Humanity Chicago and led by Katherine Darnstadt of the firm Latent Design retrofitted the first bus in 2011. Fresh Moves reached more than 11,000 customers in its first year, and a third bus will join the fleet this month.

In East New York, Brooklyn, Abruzzo Bodziak Architects is extending the mobile idea to agriculture with a pair of butterfly-roofed greenhouse modules based on prefab components. At 1,100



FRESH DIRECT Students at Tulane's design-build program converted a former New Orleans golf course into the 4-acre Grow Dat Youth Farm, which includes a 6,000-square-foot education center made from shipping containers (top). The program teaches high-school students to grow—and cook—fresh produce, and in March it added the Go Dat mobile farmstand (above), a converted boat trailer with a sail-like canvas roof that folds down for transit.



square feet, the larger design fits the common sizes of New York City lots. The firm's client, the nonprofit Cypress Hills Local Development Corporation, has access to 11 such sites through short-term leases. Pending financing, the group hopes to begin construction on its first hydroponic greenhouse next spring. "The benefit of having a kit that you can move from place to place or use in multiples is that you don't have to wait to remediate the site, which can be costly and take a lot of time," says partner Emily Abruzzo.

Back in Delridge, Ferrence and her business partner, Jacqueline Gjurgevich, took a step toward solving the neighborhood's food problem with a pop-up market in a 160-square-foot mobile construction office. Stationed in a parking lot for two months in 2011, the first Stockbox sold a mix of produce, dairy, meat, and grocery staples. The project was a success, but the duo found that they needed more space to meet demand for a wider variety of items. Last year they opened a permanent 550-square-foot storefront in nearby South Park, and this summer Stockbox will add a 2,000-square-foot location in the First Hill neighborhood.

Improving food access alone won't end health problems associated with food deserts, notes Fresh Moves designer Darnstadt. "Getting that produce is just one step of the process that goes into a healthy lifestyle," she says. At Grow Dat Youth Farm in New Orleans, high-school

SCALING UP Stockbox began in Seattle's Delridge neighborhood with a mobile construction office turned grocery (above). When its founders conceived the project, they imagined an itinerant network of temporary markets fanning out across the city's food deserts, but in response to demand, they have begun building larger, permanent stores. Abruzzo Bodziak Architects has applied the pop-up model to urban agriculture; its design for a hydroponic greenhouse (rendering below) is intended to temporarily fit into the vacant lots that dot low-income neighborhoods in Brooklyn.



students not only tend 4 acres of crops in City Park, they also learn how to cook with them. To create the farm, architecture students from the Tulane City Center—the design-build program at the Tulane School of Architecture—converted a disused golf course damaged by Hurricane Katrina into agricultural land, which began production in January 2012, and built an adjacent education pavilion. With each crop, the high-school students learn several recipes, explains Emilie Taylor, design-build manager for the project. "Many students are in single-parent households, and often end up cooking for the family," she says. "If we can give them skills and access to food, they'll cook better for their siblings."

In March, Grow Dat began hitting the road, too. For his thesis project, Tulane master's student Justin Siragusa created a mobile farmstand from a modified boat trailer. That evolution underscores the potential for these types of interventions to build on one another. "It's such a simple idea," says Darnstadt. "You can grow tomatoes in the garden, then sell them to a mobile market, and you see this whole small-scale network of neighborhood enterprises form around food." ■

Lamar Anderson is based in San Francisco and frequently contributes to RECORD.

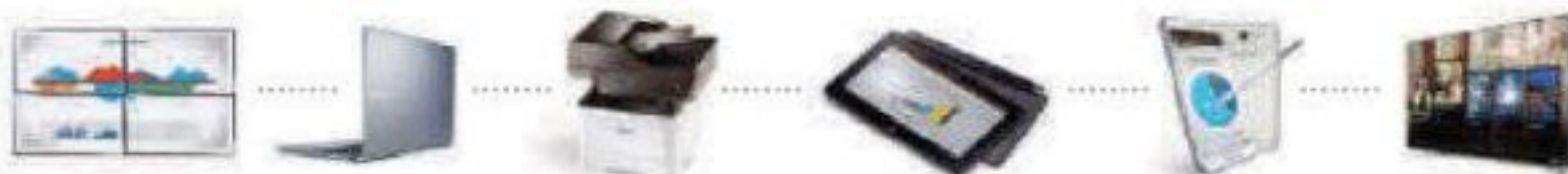


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County Fare

Since it was founded in 1993 by Samuel Mockbee and Dennis K. Ruth, Rural Studio has provided first-rate architecture for disadvantaged populations in and around Hale County, Alabama. Houses, chapels, and community centers are among the structures designed and built by the firm with undergraduate architecture students at Auburn University. After Mockbee's death in 2001, British architect and educator Andrew Freear assumed the helm of the program, which under his watch has taken on a number of food-related projects. Here we show four, all built to foster community in a traditionally underserved region.

BY ASAD SYRKETT



PLAY BALL! In 2005, Rural Studio and the Lions Park Committee in Greensboro, Alabama, embarked on a multiphase, multiyear project to rehabilitate the playing fields, playground, and environs of 40-acre Lions Park (RECORD, March 2012, page 63). In 2008, Rural Studio began work on the Lions Park Concessions Stand. Over nine months, in a contractor's workshop in Birmingham, a student design-build team erected the structure, composed of a tubular-steel frame, and later clad it in aluminum. "We based the stand's shape on a mouth," explains Freear, describing the abstracted clamshell-like form, which opens and closes with a winch-and-steel-rope mechanism. In addition to providing income for the park, the amenity gets Greensboro's baseball fans outside and socializing. "It's the lifeblood of the park," says Freear.



DOWN ON THE FARM Despite Alabama's reputation for lush farmland, Hale County residents have had limited access to fresh produce. Local farmers wishing to sell their food, Freear explains, did not previously have a place to do so. The Greensboro Farmers Market (top and above) was created in 2011 to fill this void, and comprises a series of plywood stalls with corrugated metal roofs. Now residents can regularly shop for fresh fruits and vegetables and local meat. It's all been a unifying agent for the community, says Elena Barthel, an assistant professor of architecture at Auburn University and a member of the Rural Studio team: "It's really encouraged parts of Greensboro's racially and culturally segregated population to interact." The Jones Valley Teaching Farm (2012), in nearby Birmingham, is a smaller project geared toward education. The two wood-and-metal structures (left and above left) are used for selling the farm's crops to the public and raising awareness of agricultural operations.



FOUR-ALARM FLAVOR In 2005, Rural Studio designed and built a fire station for the volunteer squadron in Newbern, Alabama. In 2011 it constructed a new town hall nearby. The two buildings form a small courtyard that, today, members of the volunteer fire department use for fundraising barbecues. At the heart of these efforts is the Newbern Town Hall Barbecue Pit, finished last year. The pavilion is made of 4-foot-wide metal panels that gain their structural stability from being folded. A canted, corrugated metal roof protects users from the sun and directs rainwater away from cooking areas. The structure's back wall acts as a trellis for creeping confederate jasmine, which will eventually grow to shield the nearby parking lot from view altogether. Fires are started in a brick fireplace, and their coals are moved to each of the four grilling pits. Once cooked, the food can be passed through a large window (left) into the town hall's kitchen, where many events are held. "The barbecue pit has been great for fundraising," says Freear.





good state



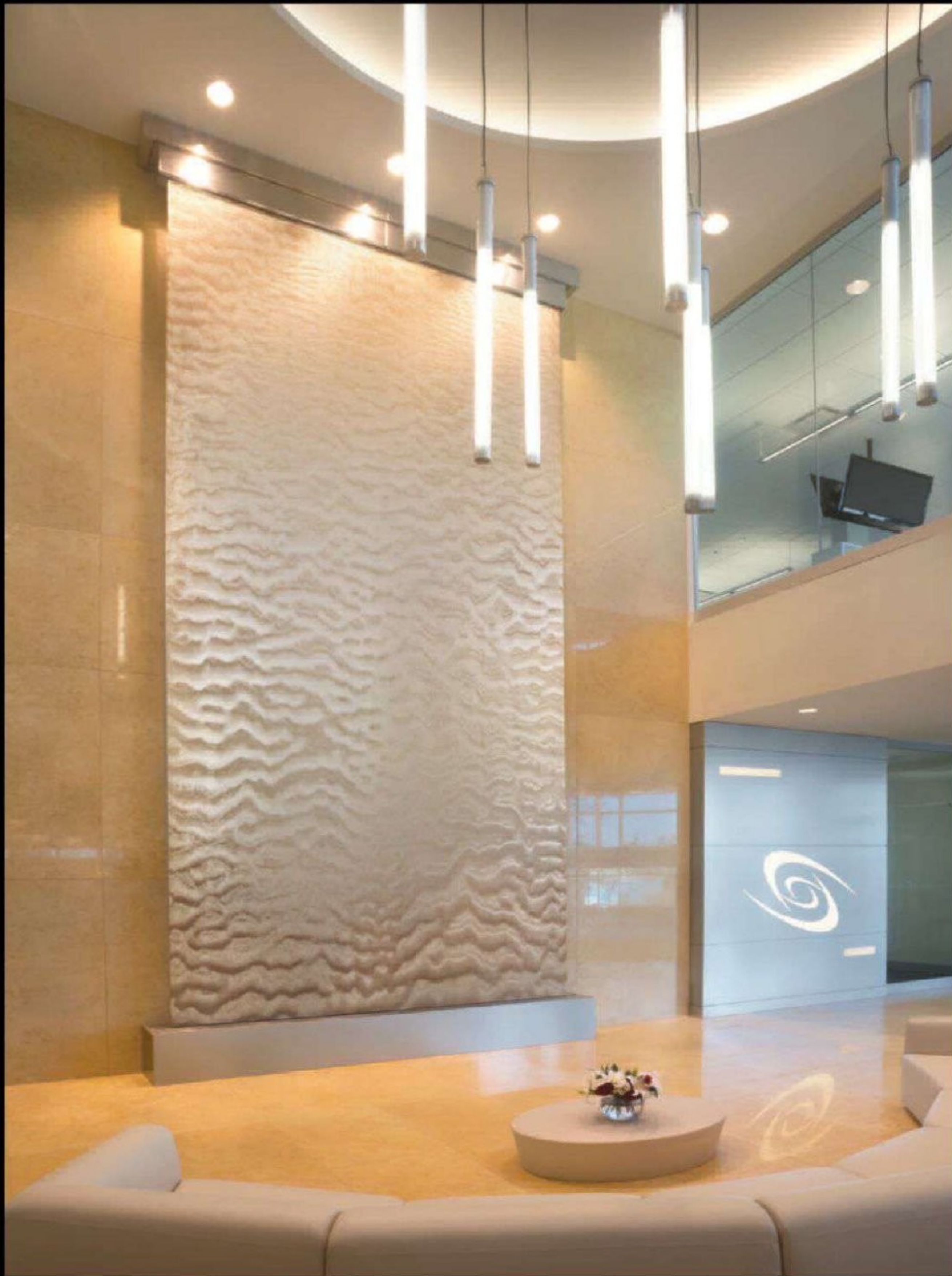
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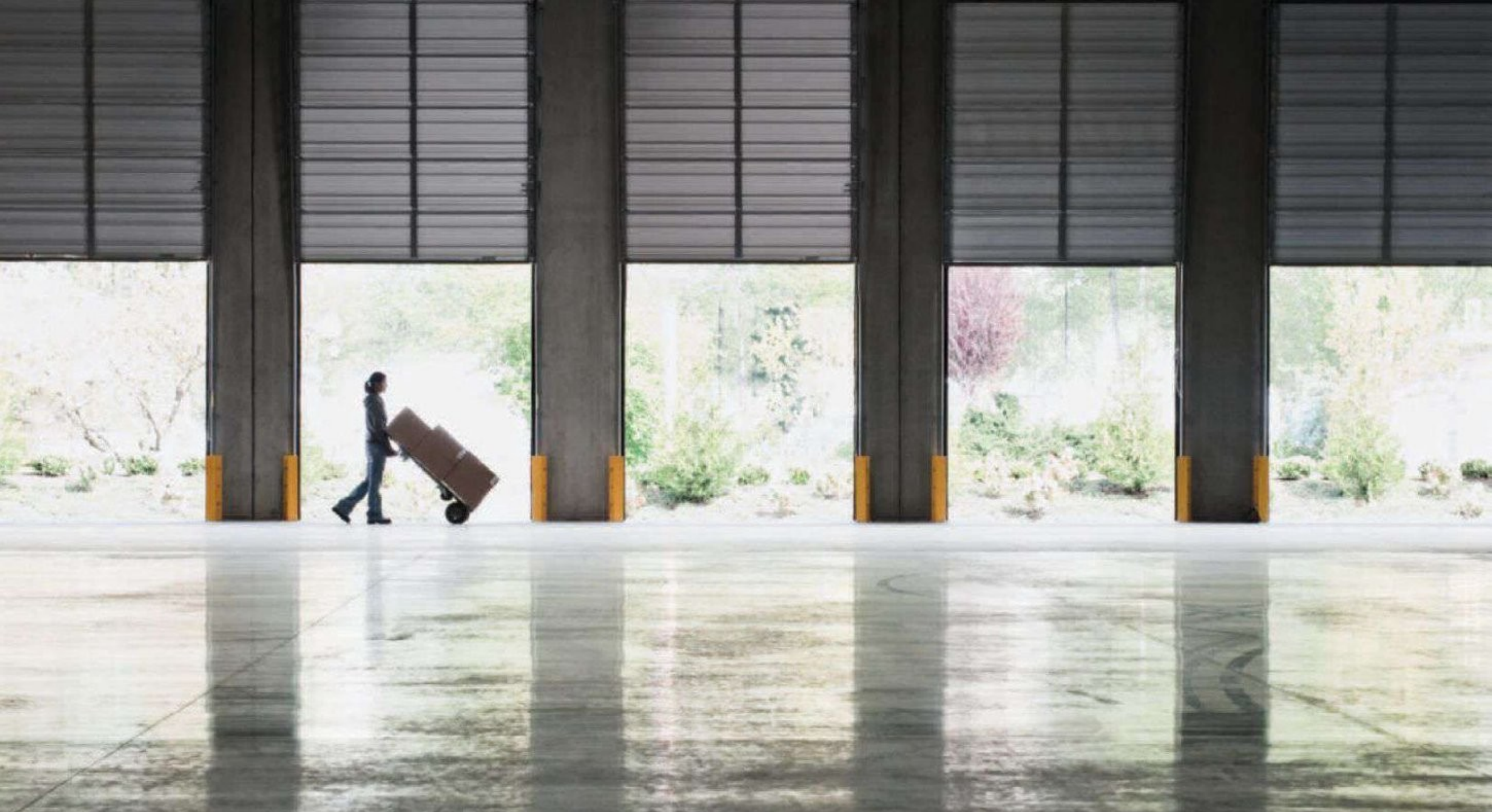
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DINING BY DESIGN

Restaurants, bars, and cafés have long shaped the character of neighborhoods, cities, and entire cultures, but in recent decades, architecture took its place alongside the cuisine as a defining feature of a meal. Now, as chefs reach for local ingredients in their craft-focused cooking, designers are creating a new idea of authenticity with their food-focused spaces.

BY JERRY ADLER

SOUND BITE

Ruth Reichl

Food critic and writer

The more transparency we have in our food, the more you think about what's on your plate, the better off we'll be. The world cannot sustain everybody on earth eating the way Americans have been eating. The changing role of food in American society has put the kitchen at the heart of the house. And these new restaurants and markets where people are cooking in front of other people, where it's no longer hidden away, mean that everybody has to consciously start thinking about what it means to eat. As Wendell Berry said, "Eating is an agricultural act." All these design decisions are leading us back to that notion.

IN HER captivating memoir, *Blood, Bones & Butter*, the chef Gabrielle Hamilton writes about opening her signature New York City restaurant, Prune, on a block of the Lower East Side still populated by "random derelicts" who would leave their messes behind in her side alley. That was in 1999, at the moment when the lamp of urban gentrification was passing from the hands of artists to those of chefs, where it remains still. In any American city old enough to have an old downtown, the frontier between derelicts and gentrifiers is a street of 19th-century brick warehouses or new glass-walled condominiums, lined with folding chalkboard menu signs and outdoor café tables, irrespective of the local climate. Increasingly in this postindustrial era, the preparation and sale of food are what drives urban development, leapfrogging ahead of actual changes in demographics. "Restaurants used to want a good address," muses Rozanne Gold, a New York chef and restaurant consultant. "But now, chefs starting up are looking for cheap rents, and out-of-the-way locations actually add to the cachet of a place."

A city by its very existence calls into being wholesale markets, grocers, bakeries, taverns, and restaurants, which in turn become part of its identity. Think of Pike Place Market in Seattle, Zabar's in New York, Bookbinder's in Philadelphia, or for that matter Applebee's, which evokes a generic American suburb the way the Tour d'Argent does Paris. And restaurants also evoke their period: step into a room where gilded Buddhas gaze at artful arrangements of black river stones and you are transported back to the lemongrass-scented, ponzu-dipped world of a decade ago. People still eat duck-kimchi samosas, but the design world has moved on. The fields of organic mâche on which the herd of urban sophisticates now grazes must be watered regularly with the blood of architects.

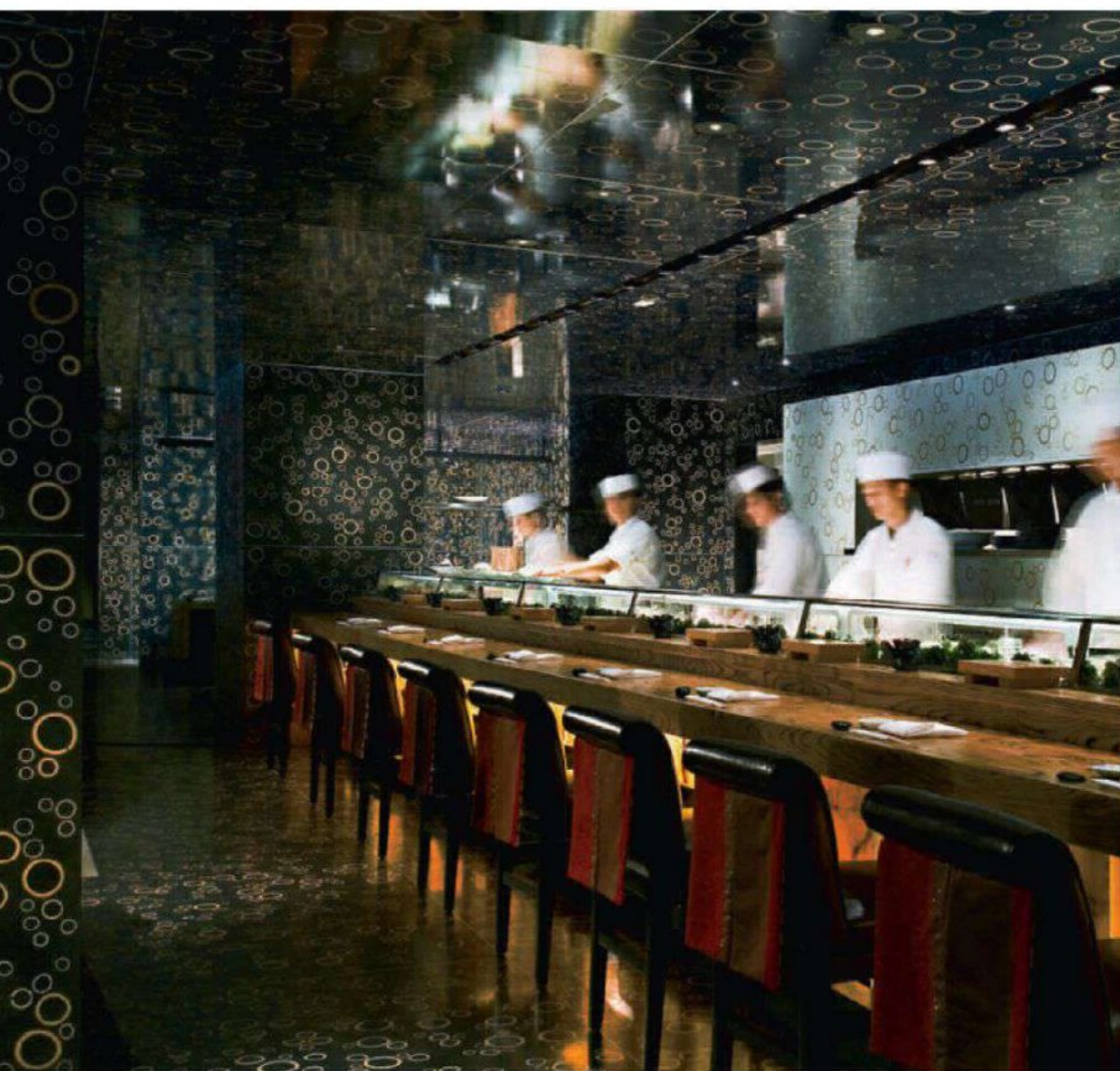
It was only in 1959, when the Four Seasons opened in the Seagram Building with Philip Johnson's electrifying High Modernist design, that fine restaurants began to think seriously about architecture as part of a total aesthetic experience. Before that, temples of haute cuisine like New York's Le Pavillon hewed to a formula of one part foie gras to three parts pomp in a setting of generic Continental luxury. But for decades since, it has been assumed that a high-end restaurant needed a high-concept design. By the time Adam Tihany was designing suave

POWER LUNCH
Like a postcard view of Seattle's Pike Place Market (opposite), places for buying, selling, and consuming food form the identity of a city. They can also define an era. Philip Johnson's Four Seasons (right) still embodies the ambition of mid-20th-century Manhattan with its refined Modernism. When it opened in 1959, it marked an early example of architecture playing a lead role in the overall experience of a restaurant.



showplaces like Le Cirque 2000 in Manhattan, David Rockwell had brought his brand of high-voltage “entertainment architecture” to restaurants as diverse as Planet Hollywood and Nobu. His Nordic-ski-lodge design for the now-closed Christer’s in New York was described, admiringly, as “L.L. Bean on acid,” while Barbara Lazaroff’s fuchsia-drenched design for Chinois on Main, Wolfgang Puck’s Asian-fusion palace in Santa Monica, California, flaunted the description “Felliniesque.” Restaurant design was also a launchpad for some of today’s most ambitious avant-gardists, such as Morphosis, the studio whose signature project of the 1980s was the glass-walled Kate Mantilini in Beverly Hills. Five years after it was closed by a fire, the Brasserie, the more modest sibling of the Four Seasons, was reimagined by Diller + Scofidio (now Diller Scofidio + Renfro) in 2000 as a homage to the original 1959 design. A bank of video screens showing customers descending an updated version of Johnson’s iconic staircase automated the business of making a grand entrance, which so many ingenues once struggled to master on their own. Translucent panels separating the men’s and women’s rooms, which share a sink, lend a touch of titillation to these previously overlooked spaces, and helped propel the trend toward making restaurant bathrooms a design statement in their own right.

If designs inspired by Fellini or acid trips no longer have the same salience, it’s because the zeitgeist has shifted toward “authenticity.” This is a concept originally applied to restaurants where the pagodas on the wallpaper signified an authentically Chinese No. 1 combination plate. (Dragons and bamboo now constitute a hip, ironic counterpoint to the updated Chinese-American dishes at Mission Chinese Food in New York.) Today, authenticity more often connotes the trio of values exalted by chefs like Alice Waters of Berkeley’s Chez Panisse and food writers like



SOUND BITE

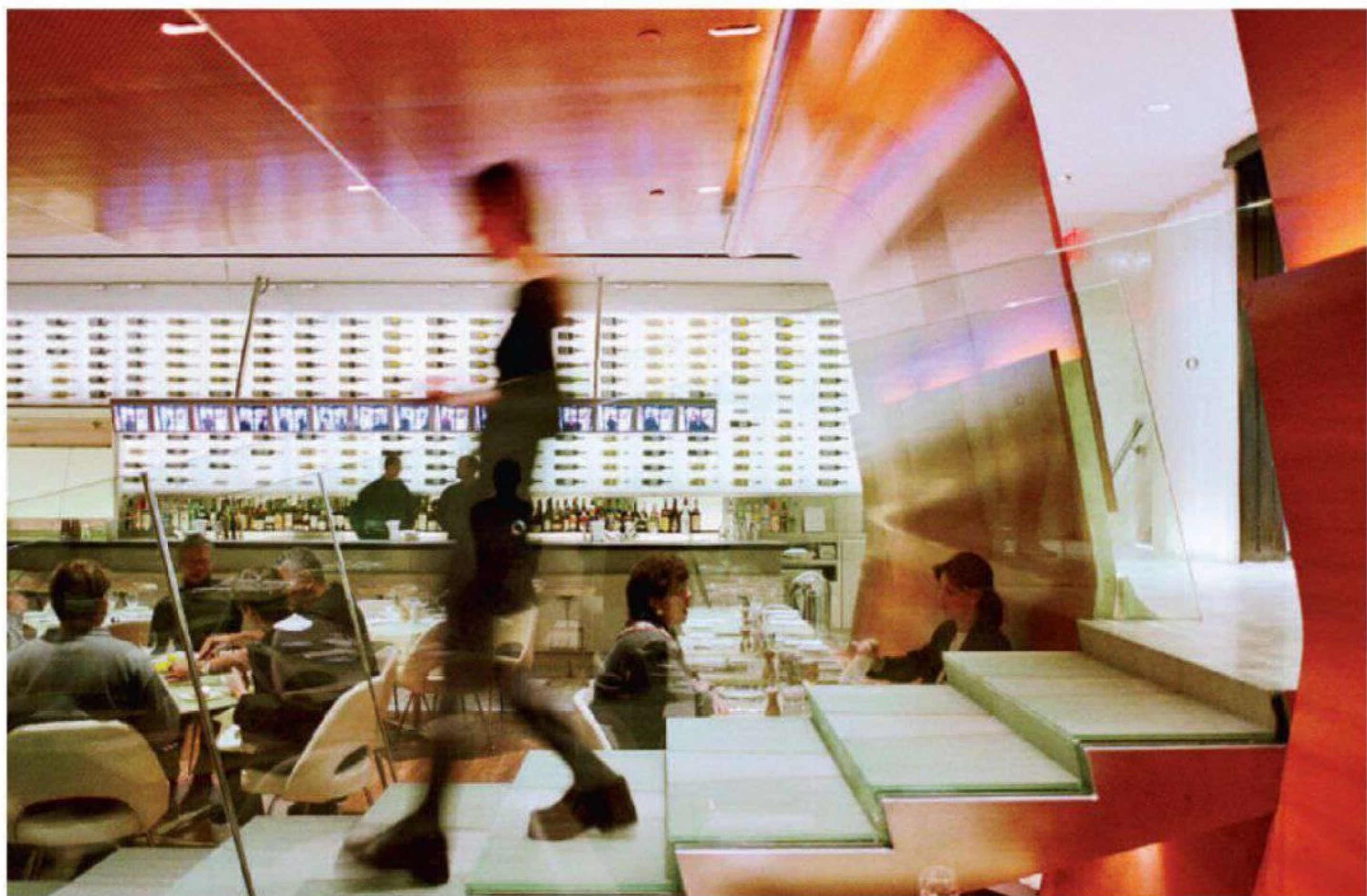
Drew Nieporent

Owner, Nobu (left), Tribeca Grill, Corton;
New York, London, Dubai, and other locations

Design is critical to making a restaurant work. It’s like meeting someone for the first time. Within 45 seconds, you know whether you like it or not, even before you’ve tried the food. Comfort is really important to me, getting the right chairs, the right lighting, and keeping the noise down. I hate common tables. If I want to share space with someone, I’ll go to the subway. A lot of restaurants have problems with their lighting because they’re designed during the day but used mostly at night. At Corton [RECORD, January 2009, page 100], we worked with Stephanie Goto to create a sense of intimacy and a bit of mystery.



AMUSE-BOUCHE
 With glass walls and an oculus hung with a sculptural model of the solar system, Morphosis made architectural spectacle a part of the appeal of Kate Mantilini in Beverly Hills (above) when it opened in 1987. Diller + Scofidio did the same in 2000 with its voyeuristic entrance to the Brasserie in New York (right), where patrons at the bar watch new arrivals descend a flight of stairs on a row of video screens. The Rockwell Group brings a similar brand of theatricality to its restaurants, including Nobu Fifty Seven (2005; opposite, bottom), where it pairs with design-driven platings (opposite, top).



“Authenticity” doesn’t have to conjure ceramic cows on painted wood shelves. Done right, it means local, historically appropriate, and functional.

CRAFT CONSCIOUS
Rough materials and rustic finishes dominate contemporary projects, including the Publican in Chicago (2009; below), by Thomas Schlessler of Design Bureau, and Tucker Booker Donhoff + Partners' Garage Bar (2011; opposite, top) and Decca (2012; opposite, bottom), both in Louisville.

Michael Pollan: fresh, local, seasonal. In an era when you can buy strawberries at any supermarket in February, the appeal of exotic, out-of-season ingredients has faded; chefs now pride themselves on serving fiddlehead ferns, ramps, and morels foraged in the local woods, harnessing the restless appetites of the bourgeoisie for sustainability. Authenticity implies beer brewed within the city limits in a brewery housed in an old power plant and vegetables that arrive at the kitchen in the back of a farmer's pickup, or from a nearby urban garden.

“Farm” is perhaps the most powerful word in the restaurant lexicon today; if anyone kept a list of new restaurant names the way the Social Security Administration does of baby names, “Farm” would probably rank near the top for the past decade, along with its derivatives, such as “Crop” and “Harvest.” There is a Farm of Beverly Hills, whose rustic knickknacks, slat-back side chairs, and chicken pot pie evoke nostalgia for a bygone era that cannot possibly have been experienced by one customer in a thousand. Brooklyn has a restaurant called Flatbush Farm and a Brooklyn Pharmacy, a soda fountain serving artisanal sandwiches and house-made soft drinks in a penny-tiled, tin-ceilinged old drugstore. There's a Harvest in Philadelphia as well as an unrelated one in St. Louis and another in Louisville. The Kentucky restaurant has a Zenlike austerity of design, featuring not much more than large photographs of the farmers who grew the food and a stark sculpture of woven bare twigs.

But “authenticity” doesn't have to conjure ceramic cows on painted wood shelves. Done right, it means local, historically appropriate, and functional—like Jensen Architects' design for the Healdsburg, California, SHED (page 96), a market, café, and “fermentation bar” in a metal-and-glass interpretation of a 19th-century grange hall. Crop, in downtown Cleveland, is housed in an immense, high-ceilinged bank building, with a vault that serves as a private dining room. The location of Reilly Craft Pizza & Drink, in Tucson, was known from 1908 until 1990 as the Reilly Funeral Parlor.

Down the street from the Louisville Harvest, in a neighborhood (NuLu) of brick storefronts and shotgun houses, are Garage Bar, in an abandoned service station, and Decca, occupying a former homeless shelter—both products of the Louisville firm Tucker Booker Donhoff + Partners. (Decca, named after the record label, was a collaboration with architect Charles Gabhart.) Decca is a small monument to the idea of sustainability, from the geothermal wells that temper the air inside to chef Annie Pettry's menu of locally sourced ingredients cooked on a wood-burning grill fired with fruitwood harvested by Dave the Mountain Man, whose informal title is “wood sommelier.” The unpretentious design, of bare-brick walls and floors in a basketweave parquet of dark and light corkwood, are meant to be sustainable, too, in the sense of sustaining the interest of customers over what co-owner Chad Sheffield hopes will be a long run: “You can go to these beautiful places that knock your eyes out, but once you go two or three times the effect is gone.” Some of the most interesting work in the design world right now is taking shape around food, and several noteworthy projects appear on the following pages. Which of them will stand the test of time? ■

Jerry Adler is a former senior editor of Newsweek and author of High Rise (Harper Perennial, 1993).



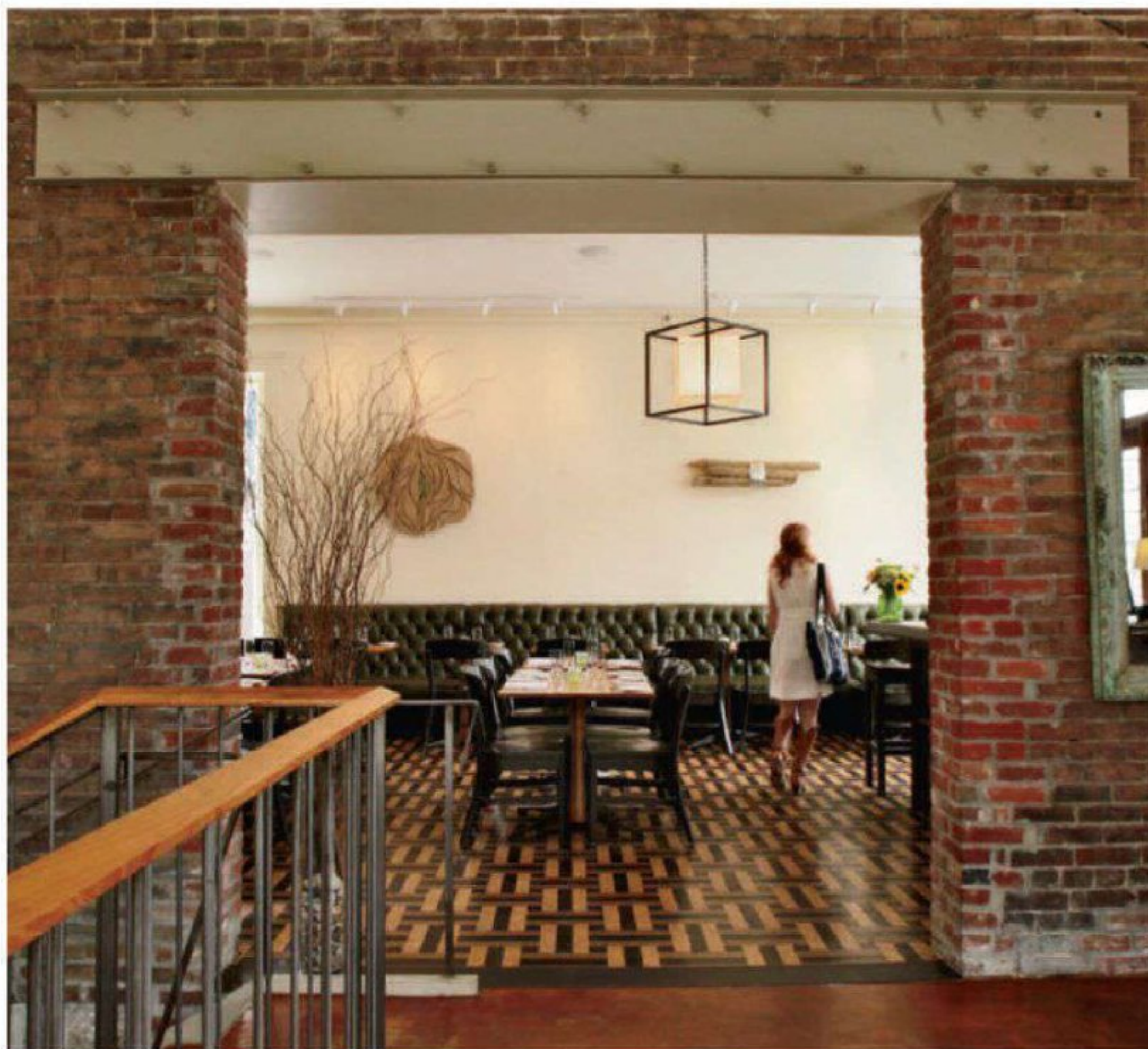


SOUND BITE

Paul Kahan

Executive chef/owner, Blackbird, Avec, the Publican (opposite), the Violet Hour, Big Star; all in Chicago

We work as a team—my business partner Donnie Madia, our designer Thomas Schlessler, and me—to develop a concept and make sure that everything relates to everything else. We take influences from travel, other restaurants, and history, then let the ideas unfold organically, so everything down to the details feels right. Our first restaurant, Blackbird [RECORD, May 2000, page 258], was an anomaly, though, because it started with Thomas's design, which was stark and minimal. I realized I couldn't do quaint country food in a place like that, so I created a menu that would fit the space.





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SAINT-GOBAIN

design from farm to table

Chefs once plied their trade behind the scenes; today they're at center stage, celebrities even—sometimes with their own reality TV shows. In the years since the open kitchen became standard fare, the production and preparation of food have grown into cultural obsessions, and design has played an important part. The projects featured here, from a cow barn in upstate New York to a winery in Tuscany, all reveal and elevate various steps in the food cycle, from fields to farmers' markets, kitchens to plates. With smart designs and joie de vivre, they collectively present a snapshot of food's role in contemporary culture.

Stella 34 Trattoria | New York City | Studio V Architecture

MIRACLE ON 34TH STREET

Macy's Herald Square has opened a new restaurant, which the venerable emporium plans as being a destination dining spot.

BY SUZANNE STEPHENS

PHOTOGRAPHY BY JAMES EWING





AL FORNO

A serpentine bar of crema delicata marble extends the length of the restaurant and terminates at wood-burning ovens for Neapolitan pizza and other dishes. The stainless steel panel above is laser-cut and backlit with graphic evocations of the volcanoes of Etna, Stromboli, and Vesuvius. The curvilinear bar acts as a backdrop for the main dining area that overlooks Herald Square. Its 12-foot-high bay windows also offer glimpses of the Empire State Building.

A 240-FOOT-LONG, sculptural white marble bar in the Stella 34 Trattoria sinuously snakes through the city-block-long new restaurant on the sixth floor of Macy's Herald Square in New York City. The crema delicata marble spills like lava over a stainless steel base to adventurously unite an assortment of Italian cooking and dining activities, including a Vivoli gelateria—its first location outside Florence—a wine bar, an antipasto display, and three wood-burning ovens baking Neapolitan pizzas (margherita is a favorite). In reinventing department-store dining, Macy's plans to attract not only shoppers but office workers and residents who seek a more refined experience than is available from the fast-food joints and steak houses clotting the blocks around Herald Square. Here you can order prosecco to drink with your wood-roasted funghi.

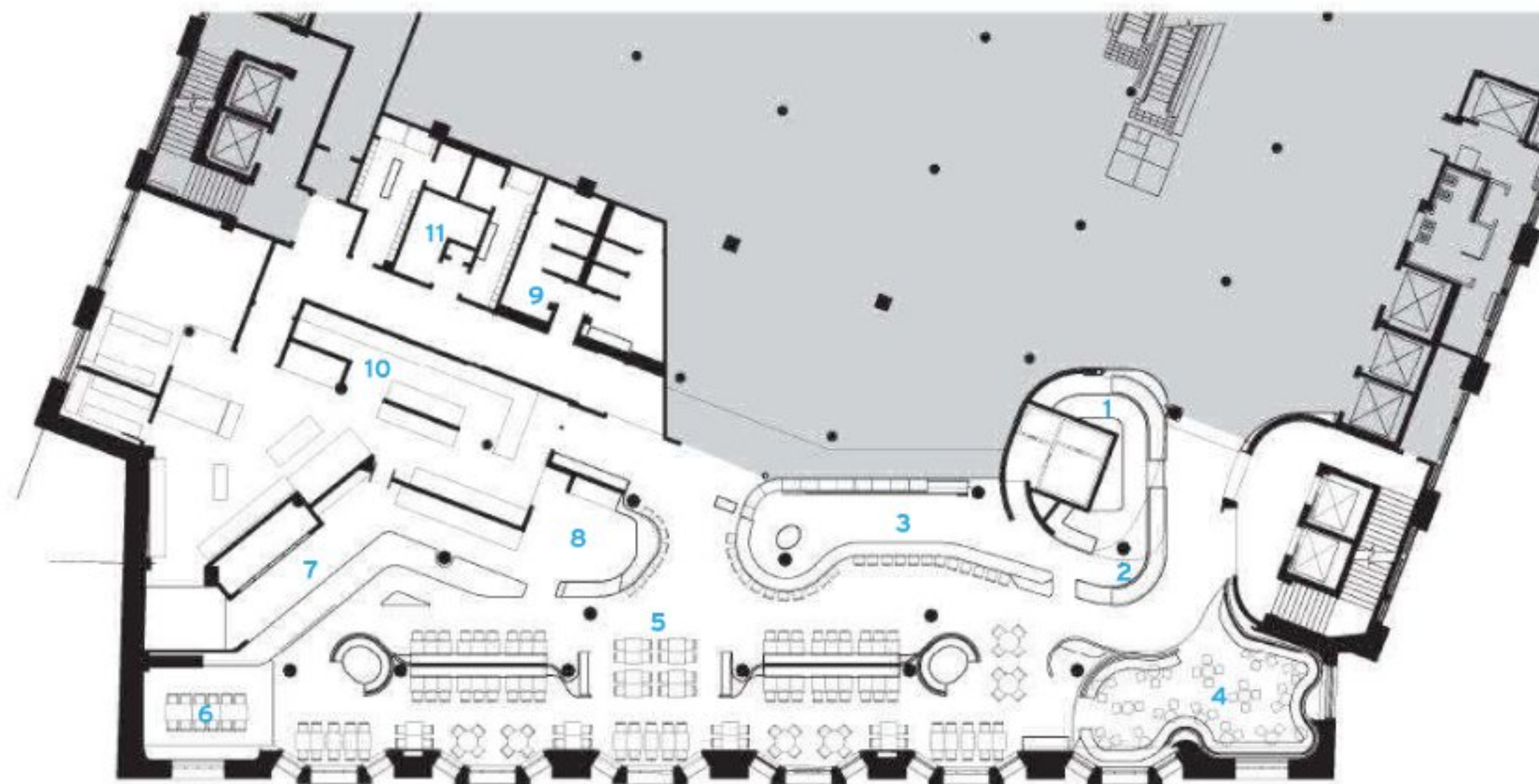
Marking the termination of the serpentine counter at the south end, the fiery ovens are topped by a stainless steel panel that has been laser-cut and backlit (in flaming orange) with graphic evocations of three Italian volcanoes: Etna, Stromboli, and Vesuvius. The contoured marble bar provides an active backdrop for the dining section, where curvilinear banquettes and walnut-topped tables arrayed along the east wall look out over treetops toward the Empire State Building. "We wanted just one long room—to create a sense of grandeur," says architect Jay Valgora of Studio V Architecture, the restaurant's designer, about the white, light-filled volume of 22,500 square feet, where only pale, diaphanous curtains divide a private dining salon at the south end and a lounge at the north from the main dining area. Punctuated by wall panels of tan avodire veneer, the color palette, dominated by shades of white, creates an ambience reminiscent of *ristoranti* from 1960s Italian films. You want to see Marcello Mastroianni or Gina Lollobrigida saunter in for a Negroni.

For the past few years, Valgora and Studio V have been executing a \$400 million renovation for the Macy's emporium, which the store claims is the largest in the world. Composed of the original Broadway building designed by De Lemos & Cordes (1902) with additions on Seventh Avenue by Robert D. Kohn (1924, 1928, 1931), the National Historic Landmark structure is a jumble of layered history. As part of the new makeover, Macy's CEO Terry Lundgren decided a "destination" dining spot for the flagship store was needed, and had a special express elevator designated for Stella 34 at the 35th Street and Broadway entrance. Currently the trattoria serves dinner until 9:30 p.m. (9:00





CONTRAPPOSTO
 Studio V renovated a former stockroom for the new restaurant, removing plywood over the windows and exposing the barrel-vaulted ceiling. Since the vaults follow both the diagonal of Broadway and the city's orthogonal street grid, the architects emphasized the collision (opposite) with lighting and the detailing of the new column casings. The serpentine marble counter swerves to include an elongated wine bar (above).



- 1 GELATERIA
- 2 CIBI RONDA
- 3 WINE BAR
- 4 LOUNGE
- 5 DINING
- 6 PRIVATE DINING
- 7 PIZZA STATION
- 8 FOOD BAR
- 9 RESTROOMS
- 10 KITCHEN
- 11 STAFF

FLOOR PLAN





credits

ARCHITECT: Studio V Architecture – Jay Valgora, principal; John MacCallum, project manager and senior designer; Michael Bevivino, Florence Orlando, senior designers; Zongye Lee, Michael Caton, design team

ARCHITECT OF RECORD: Shea

ENGINEER: Highland Associates (structural, m/e/p)

CLIENT: Macy's

CONSULTANTS: Lighting Workshop (lighting); Cini-Little International (food service)

SIZE: 22,500 square feet

COST: withheld

COMPLETION DATE: March 2013

SOURCES

FURNISHINGS AND WOOD DOORS: Wesnic

GLASS-FIBER-REINFORCED GYPSUM (CEILING): Formglas

SOLID SURFACING: Corian

MOSAIC-TILE FLOOR AND MARBLE BAR: Stone Source

WALNUT AND AVODIRE-WOOD VENEER: Brookside Veneers

on Sundays), although Warren Wolfe, the group vice president of food services for Macy's, says, "We plan to extend the nighttime business in the near future."

Working with restaurateur Nick Valenti and his Patina Restaurant Group, which manages the 270-seat restaurant, Macy's brought in chef Jonathan Benno of Lincoln Ristorante at Lincoln Center to oversee the menu. Jarett Appell, an American trained in Italy, acts as executive chef for the Neapolitan cuisine, which Wolfe explains was chosen for its broad appeal to all cultures.

In renovating the space, a stockroom for the last 50 years, Valgora says the team "peeled off plywood and scraped paint" to bring back the 12-foot-high bay windows of the original structure. The architect and his team also decided to expose the barrel-vaulted ceiling; one series of vaults follows the diagonal direction of Broadway, while the other moves in the east-west direction of 34th and 35th streets, the store's south and north boundaries. To cut down on the din from combining marble counters with new mosaic-tile floors and solid-surface booths, Valgora covered the concave areas of the vaults with glass-fiber-reinforced gypsum (GRG). It almost works—especially when the restaurant isn't crowded.

Except for the mosaic-tile floor, which does look as if it came with the architecture, Valgora kept the distinction between existing architecture (barrel vaults) and new column casings (of cast gypsum with fluted contours trimmed in stainless steel). "Old should be old and new should be new," says the architect, adding, "We tried for the effect of *contrapposto*." The term seems to be taken most literally in the way Valgora's capital-free columns smack into the soffits between the barrel vaults, which leads to some architecturally awkward moments: a mild collision more than a *contrapposto*. Fortunately, the complex topography of the ceiling lets the cove lighting work to great effect, creating ripples of light and shadow along the wall of windows overlooking Broadway.

In an area of New York frequently described as either a culinary wasteland or architectural sinkhole, Macy's entrepreneurial spirit in joining dining and design is both generous and brave. ■

DOLCE VITA At the north end of the trattoria (below), Studio V designed a lounge where the avodire-wood-veneer panels and pendant lighting create a sfumato ambience at night. During the day, the space is turned over for quick bites from the *cibi ronda* takeout section, where prepared food is on display in curving glass cases (opposite, top). The destination dining spot has its own elevator in the oldest part of the 1902 building facing Broadway (opposite, bottom).



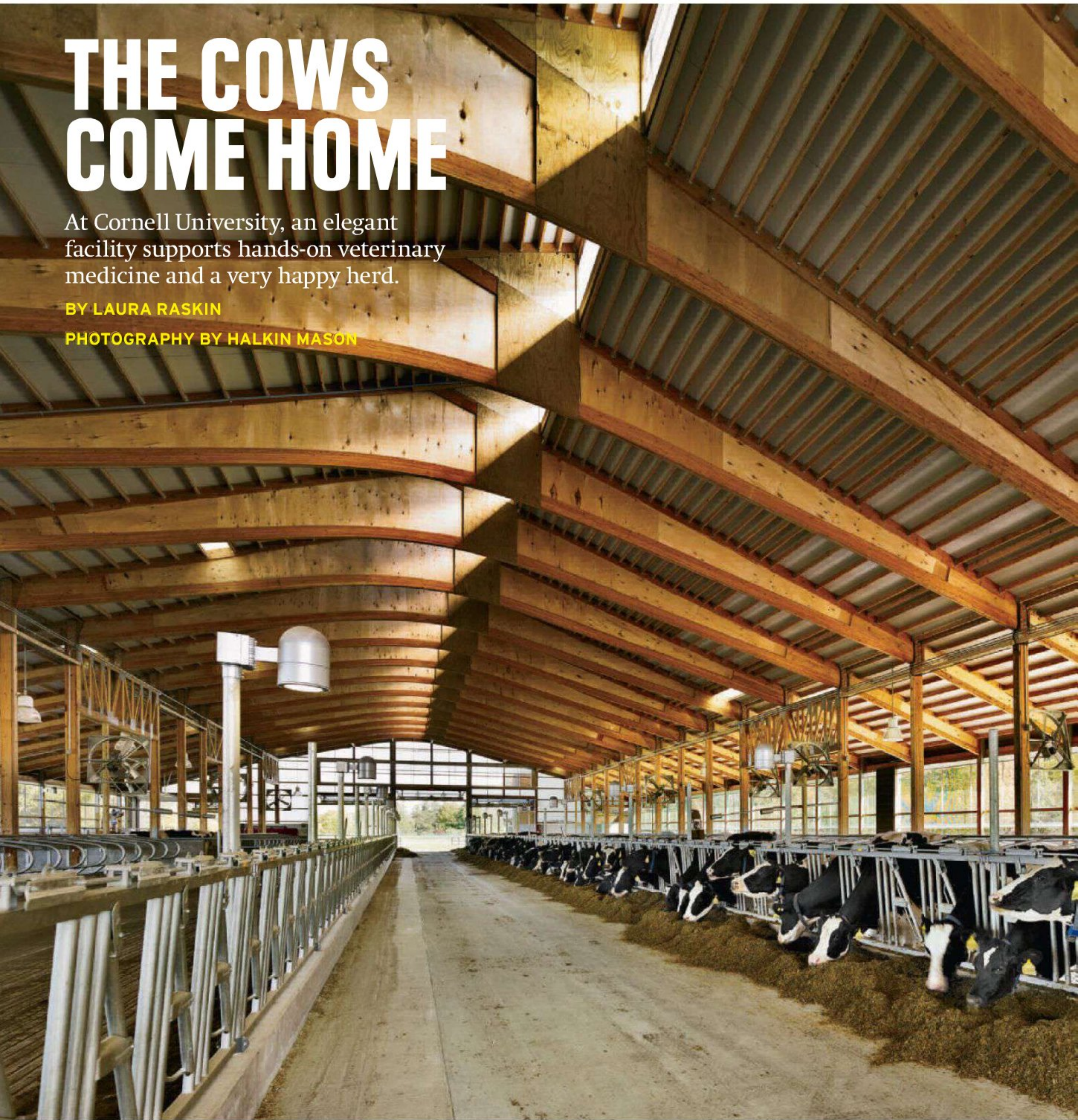
Teaching Dairy Barn | Ithaca, New York | Erdy McHenry Architecture

THE COWS COME HOME

At Cornell University, an elegant facility supports hands-on veterinary medicine and a very happy herd.

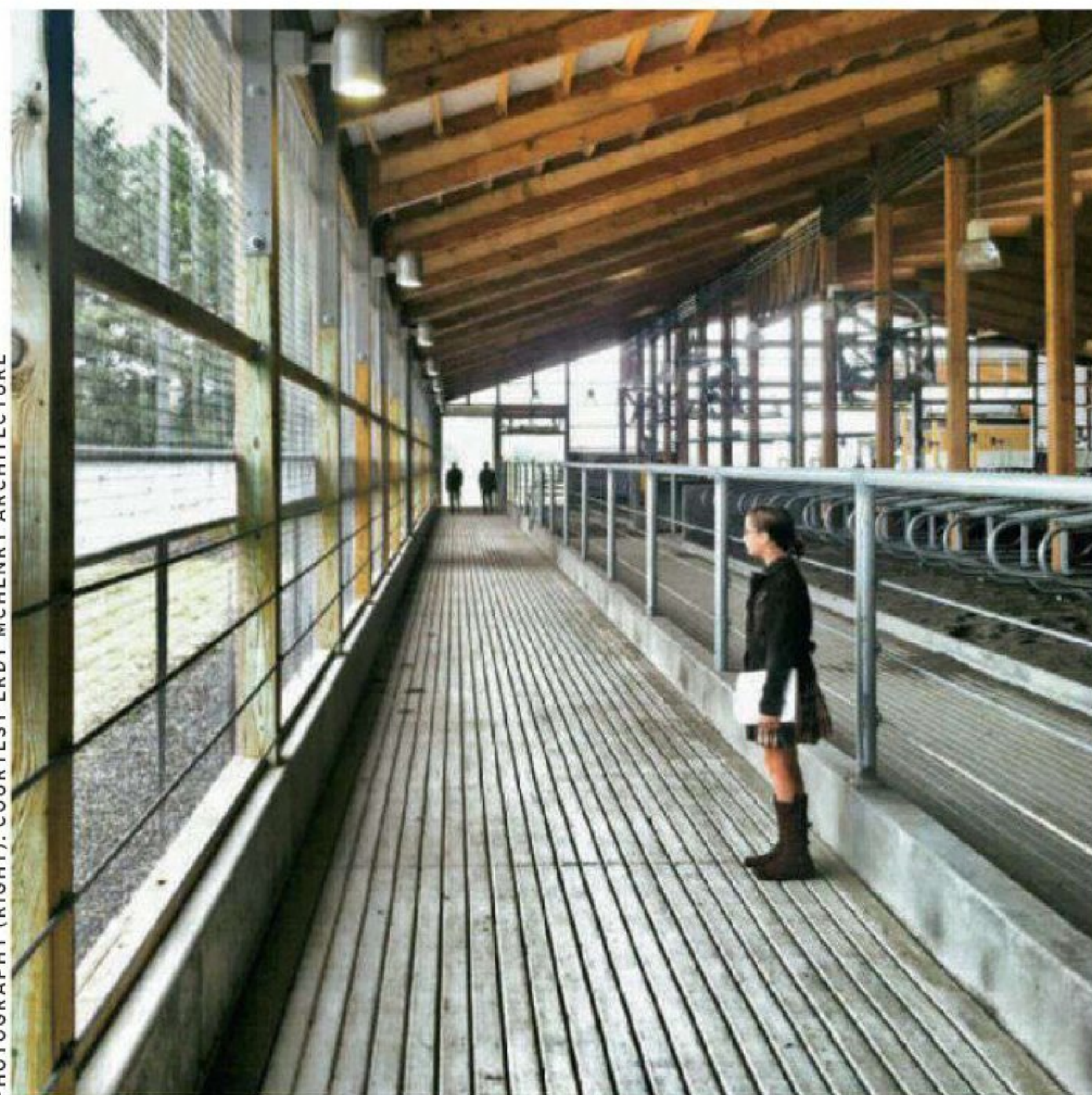
BY LAURA RASKIN

PHOTOGRAPHY BY HALKIN MASON





PHOTOGRAPHY (RIGHT): COURTESY ERDY MCHENRY ARCHITECTURE



COW NO. 1026 approaches a yellow-bristled electric back scratcher at Cornell University's Teaching Dairy Barn in Ithaca, New York. The round brush begins to rotate and roll over her body and apparently makes her feel great: clean, contented, and itch-free, which results in her ability to produce more milk. A neighbor waits for her turn.

"Cow comfort" gets mentioned a lot at the dairy barn, where cows produce an average of 97 pounds of milk per animal per day. Comfort is crucial to the barn's mission: to support dairy-cattle husbandry and food supply veterinary medicine (which comprises everything from infection control to food safety and public health). It is also implicit to the barn's design by Philadelphia's Erdy McHenry Architecture. An earlier campus dairy barn was razed in 2008; the new facility opened in September 2012 to provide hands-on training for students at the College of Veterinary Medicine and the College of Agriculture and Life Sciences. Whether beautiful design also makes for happier cows is up for debate, but the barn is gorgeous.

Sited on the eastern edge of the campus, on a ridge near an old-growth forest, the wood-frame building is not out of

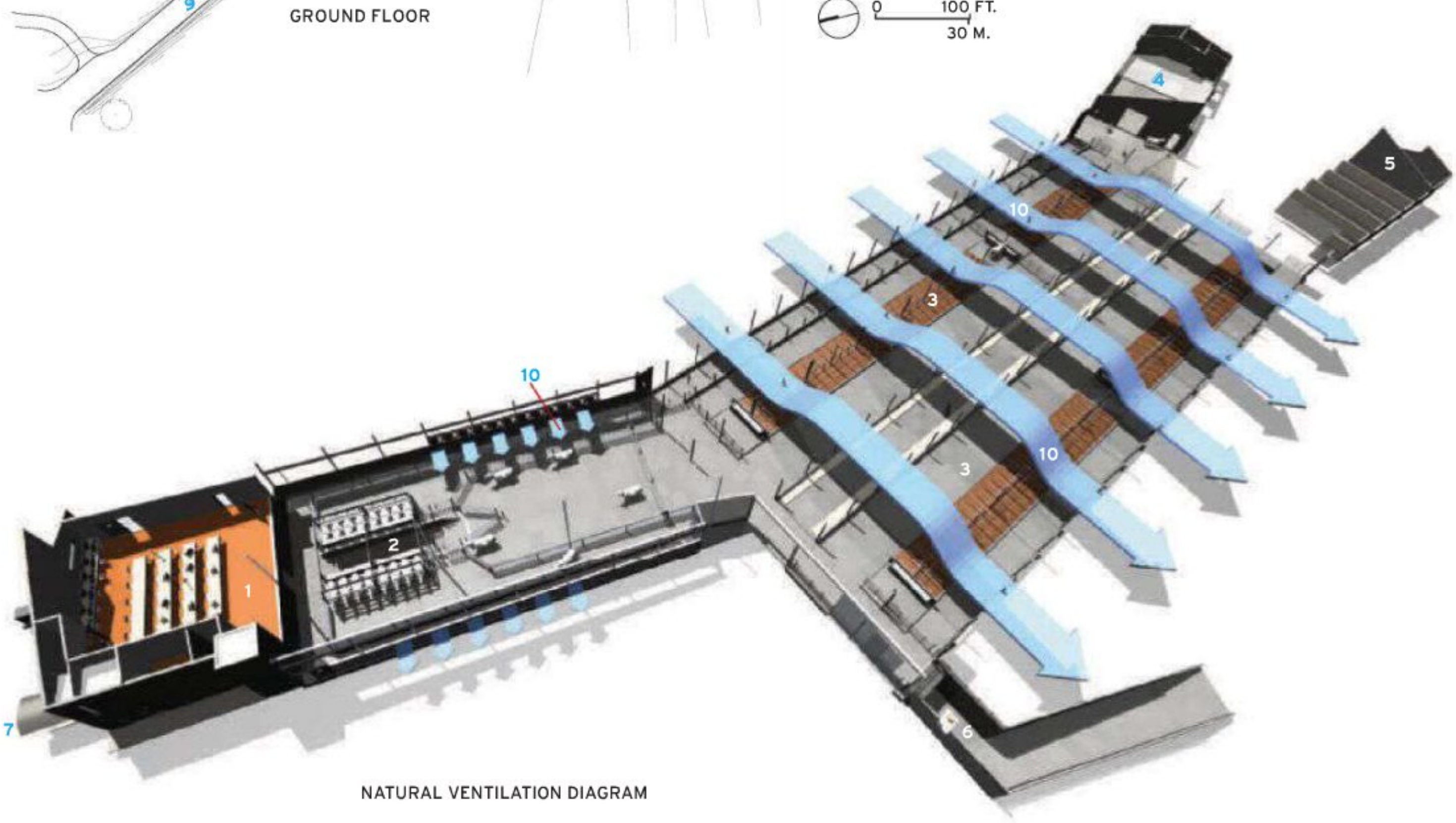
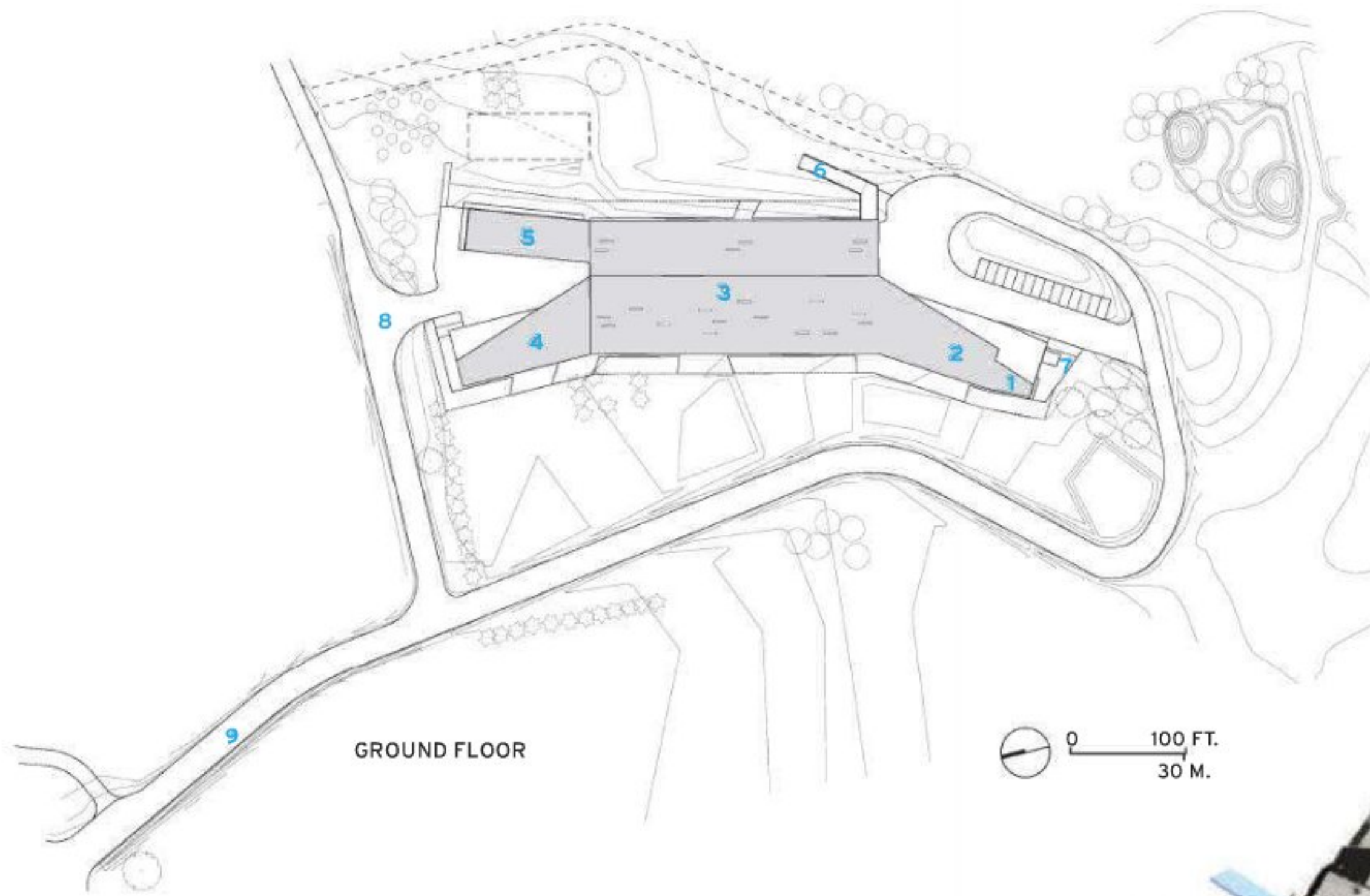
DAIRY QUEENS

Laminated plywood trusses in the freestall barn prevent the bird perches found in traditional open-web trusses, and therefore minimize the spread of disease; cows are free to dine whenever they please (left). The perimeter walkway allows visitors, students, and supervisors to observe the barn without interfering in the cows' daily routine (above).

CREATURE COMFORTS

The barn's torqued shape takes advantage of wind flow and helps with ventilation and temperature control. Nylon-fabric curtains can enclose the freestall barn in the winter, while the milking parlor (foreground) has operable polycarbonate panels.





- 1 CLASSROOM
- 2 MILKING PARLOR
- 3 FREESTALL BARN
- 4 SPECIAL NEEDS (PLANNED FOR PHASE 2)
- 5 FEED STORAGE
- 6 MANURE-HOLDING PIT
- 7 MILK-STORAGE PIT
- 8 MCGOWAN WOODS ROAD
- 9 TULIP TREE DRIVE
- 10 AIRFLOW THROUGH BARN

credits

ARCHITECT: Erdy McHenry Architecture – Scott A. Erdy and David S. McHenry, principals; Mark Miller, associate; Alexandra Brinkman, Kyle Robinson, Patrick Stinger, project team

ENGINEERS: AKF Engineers (m/e/p); Harman Group (structural); T.G. Miller (civil)

CONSULTANTS: Five-G Consulting (dairy); Studio Bryan Hanes (landscape)

CLIENT: Cornell University College of Veterinary Medicine

GENERAL CONTRACTOR: Welliver

SIZE: 43,000 square feet (gross)

COST: \$5.8 million

COMPLETION DATE: September 2012

SOURCES

METAL PANELS: Weatherbest Roofing and Siding

MASONRY: Oneonta Block Company

WALL PANELS: Sun-North Systems

WINDOW SYSTEM: Vetrotech Saint-Gobain

place in its rural setting—this is farm country, and barns abound. But the architects played with the vernacular form, elongating and extruding the rectangular volume and adding a torqued wing for the milking parlor. “The barn’s shape is meant to take advantage of the natural topography, and also the prevailing winds,” says principal Scott Erdy. “After the wind comes through the barn, it is filtered through the woods. There is no smell in this dairy barn.” Other moves make the structure stand apart. Skylights punctuate the ribbed metal roof, and on mild days, visitors can see into the mostly open-sided barn. “It was fun to work with the requirements of a dairy barn and express them architecturally,” says Erdy.

Cornell has no shortage of signature architecture, from its Gothic towers to OMA’s Milstein Hall (RECORD, February 2012, page 44). The dairy barn needed to be a “piece of architecture” in part because of its gateway placement at one edge of campus, says university architect Gilbert Delgado. Those involved in running the facility, however, were skeptical: they insisted that no fancy architecture was needed—just a dairy barn. “We were in a tough position,” says Erdy, who laughs recalling how his team navigated both desires, one of them strongly opposed to anything with strange angles. Gerald Lewis, the barn’s supervisor and a lifelong dairy farmer, says the barn works perfectly for his purposes.

The interior features two main spaces: the freestall barn, where the cows can roam, eat, and sleep, and the milking parlor, which students observe from a second-story classroom. As Delgado says, “The milking process has an expressive schematic. The form is born out of that purpose.” The most striking feature of the freestall barn—the “wow factor,” as Lorin Warnick, the associate dean for veterinary curriculum, calls it—is its openness and grand ceiling with a wood truss system. An offset roof peak with a clerestory helps with air circulation and brings in daylight. Stalls are pushed to the sides of the barn (at capacity, it can hold 200 cows), and are filled with a soft, cool sand mixture.

What looks simple belies intricate planning and mechanics—from the system of gates that is used to control the flow of the cows to and from the milking parlor, to the length of the stalls. These details were part of the architects’ learning process. Erdy describes an initial design that, if built, wouldn’t have allowed the motorized manure scraper to reach the manure-holding pit. “These guys were furious with us!” he recalls. The architects also had to include an imperceptible detail: the barn floor slopes 1 percent toward the manure-holding pit to let wastewater run out.

The barn is on track to receive LEED Silver, a great example for the local industry, says Warnick. Cornell students have welcomed the facility, requesting that more classes be held on-site. And the cows are so content that they now need to be milked three times a day. As Delgado told the architects, “You guys really got under the skin of what being a cow is all about.” ■

BARN RAISING An exterior stair leads directly to a classroom overlooking the milking parlor (top). A polycarbonate truss system in the milking parlor mimics its wood counterpart in the freestall barn but can be hosed down, a sanitation requirement. Cows are milked mechanically three times a day, 20 at a time; the process takes about three hours from setup to cleanup (near right). A feed-storage wing connects to the back of the freestall barn (far right).





Cantina Antinori | Bargino, Italy | Archea Associati

UNDER THE TUSCAN SUN

A Florentine firm blends tradition with innovation for the headquarters of a centuries-old winemaker, deep within a vanishing point in the hills of Chianti.

BY HUGH PEARMAN

PHOTOGRAPHY BY LEONARDO FINOTTI





**AMONG THE VINES**

Using rustic and local materials such as concrete and terra-cotta, the architects created a landform building that is at once bold, with undulating Cor-Ten steel structural elements and corkscrew terrace stairs (previous spread and below), and discreet. Built into the hillside, enveloped and surrounded by a working vineyard and olive trees, the three-level structure is barely visible from the road below (left).



IN TUSCANY, they tell you, wine is close to being a religion. If so, the 600-year-old winemaking dynasty of Antinori is an oenological priesthood, the current high priest being the Marchese Piero Antinori, widely regarded as a hero of the post-World War II Italian wine industry. His company developed the luscious, long-lived wines called Super Tuscans, which challenged both archaic Italian winemaking laws and the finest wines of Bordeaux. Now the Antinori descendants have gone right back to their roots, building a new winery and headquarters among the hilly vineyards of the Chianti Classico region outside their ancestral home of Florence. For all the family history, there is nothing remotely traditional about this earth-sheltered building.

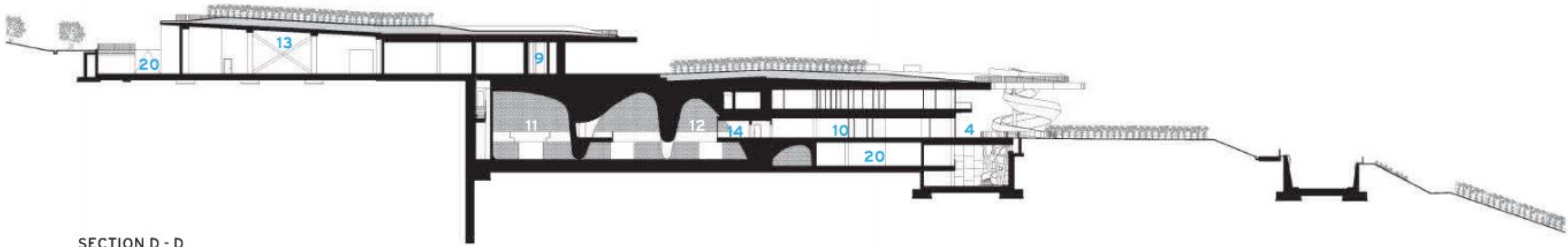
Designed by Archea Associati, a Florence-based firm with offices around the world, the new Antinori HQ is just outside the village of Bargino. It is a building that is simultaneously industrial (a winery is, after all, a factory with warehousing), a visitor destination complete with museum and restaurant, and an office housing 120 people, including senior Antinori family members. The public face and administration area are at the front, factory functions are

set higher at the back, and a sequence of wine vaults dug into the slope links the two.

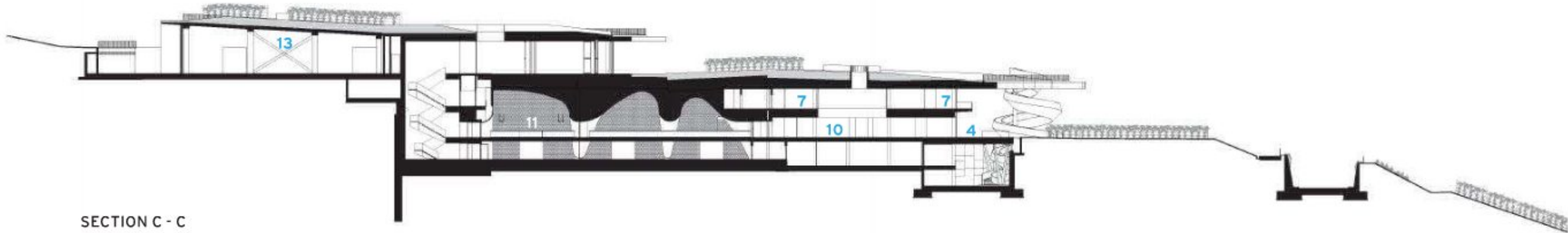
The complex is large by European standards. Excluding landscape, it is some 550 feet long by nearly 500 feet deep on a staggered section, and 60 feet tall in total, arranged over four interlocking levels. Despite this, there is no visible bulk and little by way of elevations. Using a selective palette of materials in harmony with the color of the soil, the architects worked with the idea that it should appear from a distance as no more than a couple of horizontal slashes in the terrain. Some costly engineering was needed to achieve this. When excavation began in 2005 the land turned out to be unstable, requiring extensive piling and horizontal ground anchors. Made mainly of poured-in-place concrete, the building boasts a curvilinear steel canopy along the main terrace with a very deep cantilever, an especially formidable feat considering the weight of soil on top.

Now complete after a slow and difficult build, this “earth ship” is successfully merging with its surroundings, though it will take another season before the hillside, still raw in places, fully greens up. The profile of the excavated ground—

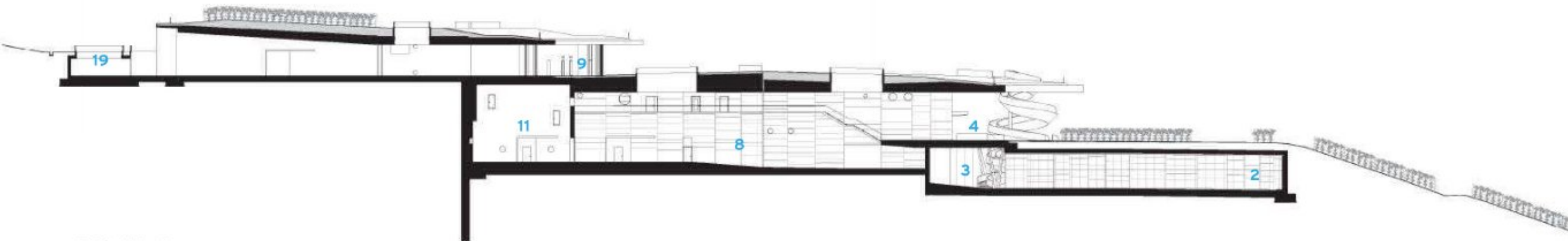




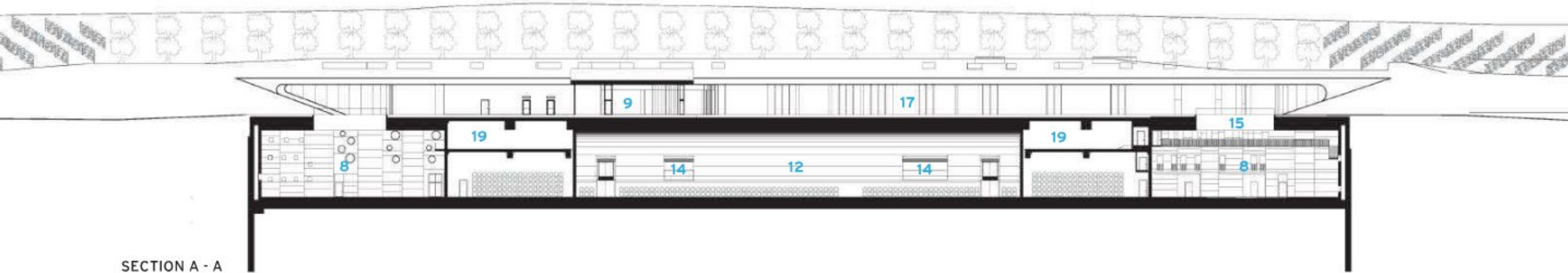
SECTION D - D



SECTION C - C



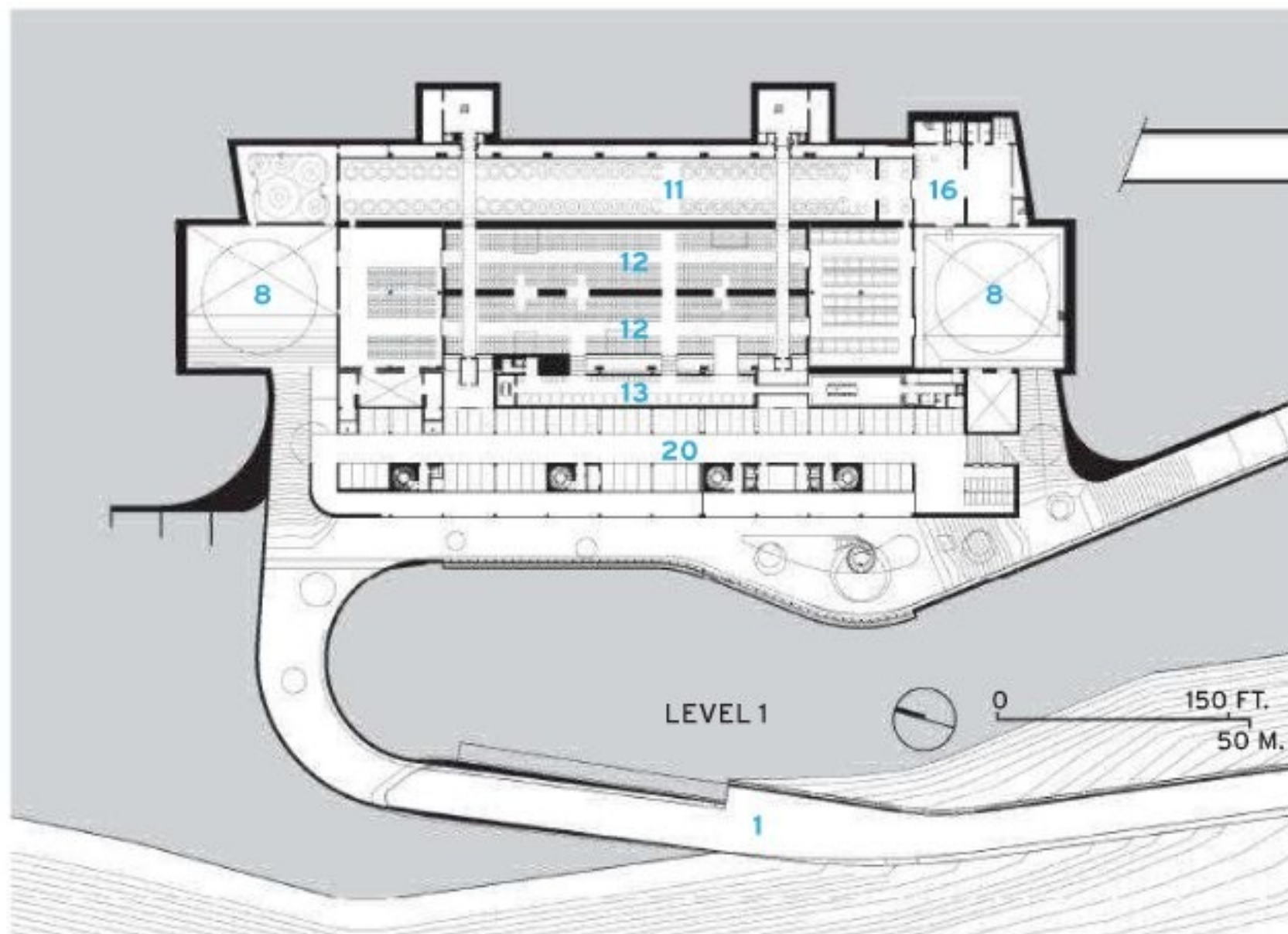
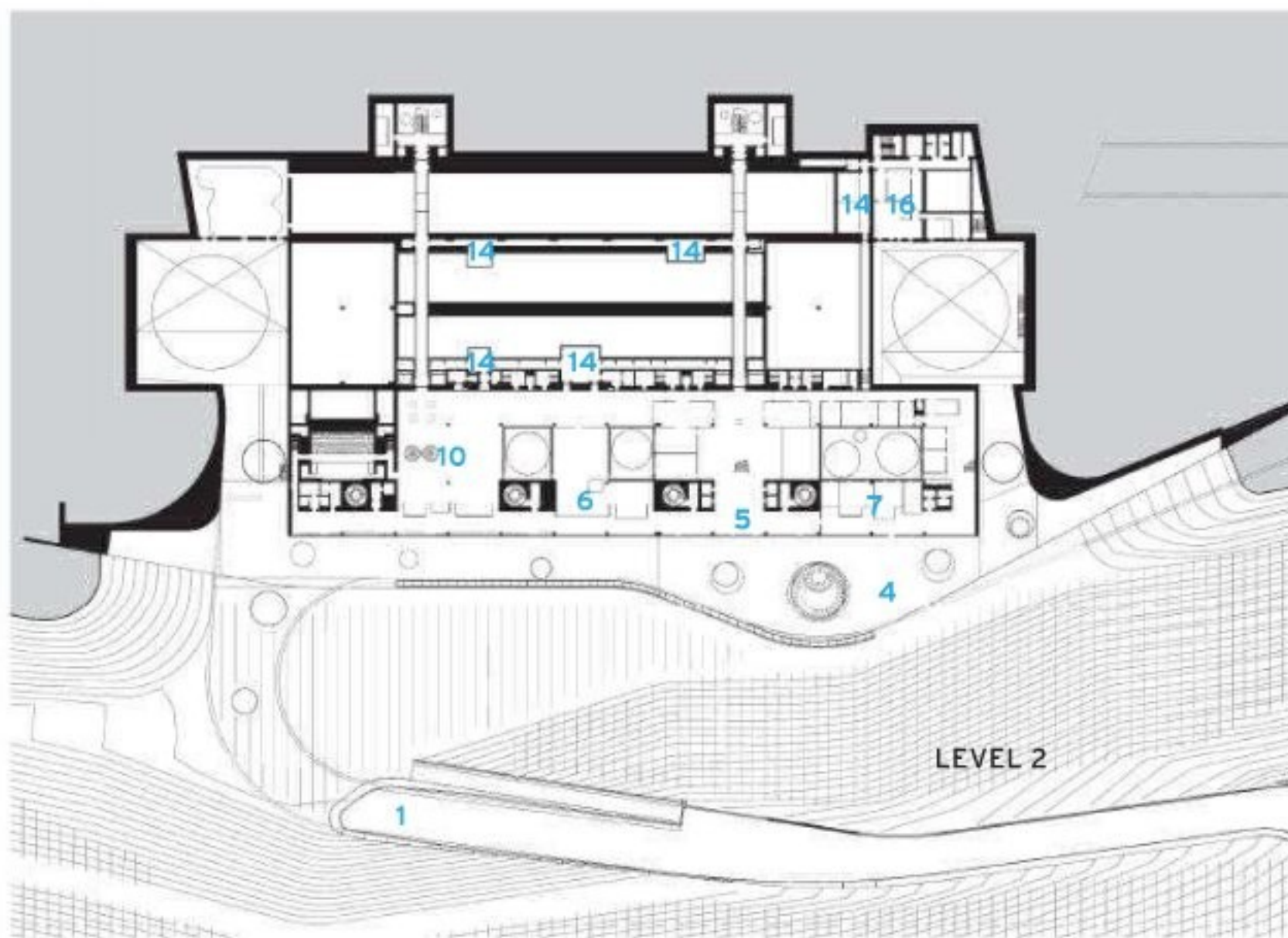
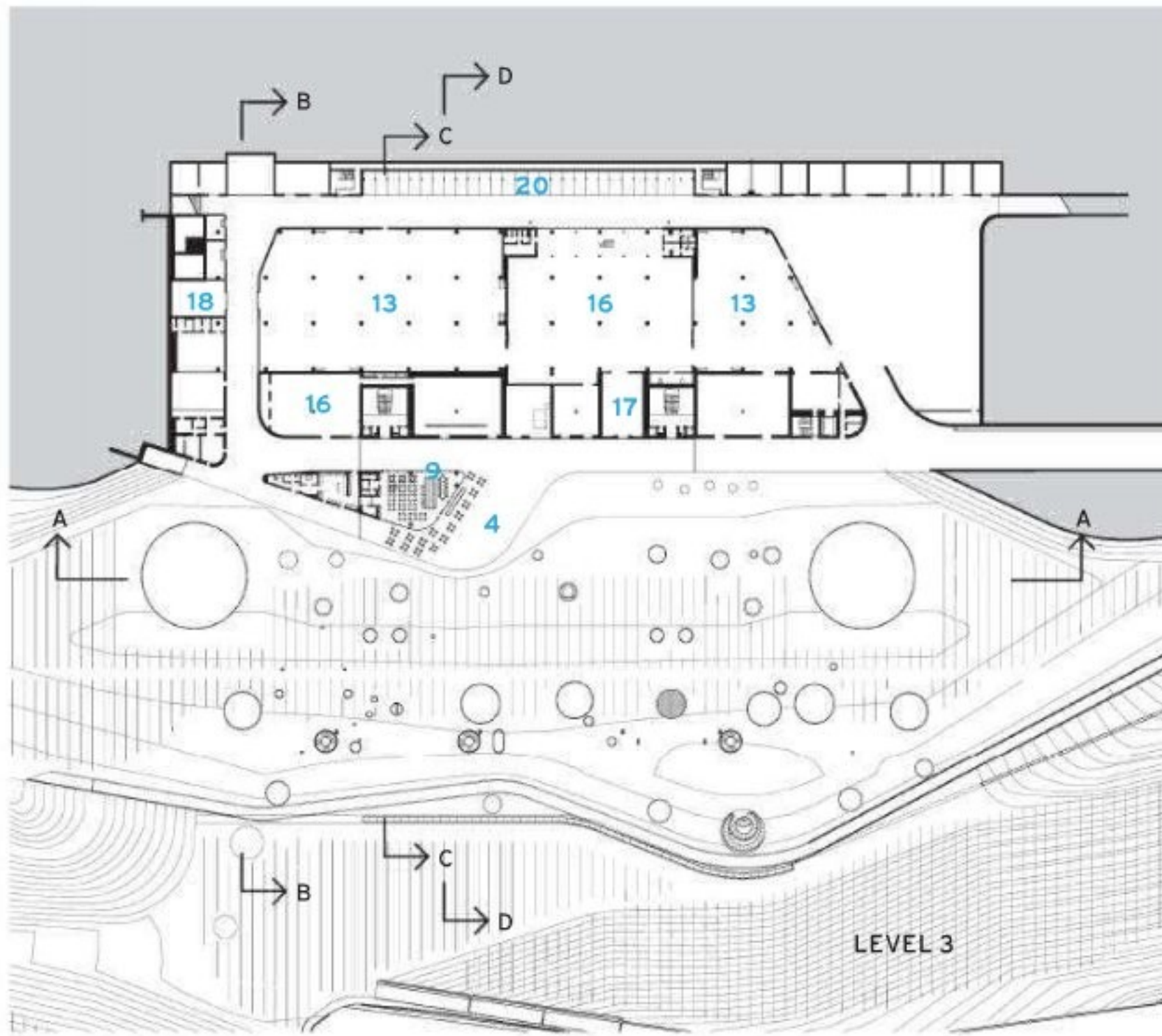
SECTION B - B



SECTION A - A

0 60 FT.
20 M.

- | | | | |
|-------------------|--------------|---------------------|-------------------------|
| 1 ACCESS ROAD | 6 SHOP | 11 STEEL-VAT CELLAR | 16 WINE PRODUCTION |
| 2 ENTRANCE TUNNEL | 7 OFFICES | 12 BARREL CELLAR | 17 OLIVE-OIL PRODUCTION |
| 3 VISITORS' LOBBY | 8 COURTYARD | 13 BOTTLE AGING | 18 WAREHOUSE |
| 4 TERRACE | 9 RESTAURANT | 14 TASTING ROOM | 19 TECHNICAL AREA |
| 5 RECEPTION | 10 MUSEUM | 15 CAFETERIA | 20 PARKING |



credits

ARCHITECT: Archea Associati – Marco Casamonti, Laura Andreini, Silvia Fabi, Giovanni Polazzi, Francesco Giordani, design team

ENGINEER: HYDEA

CLIENT: Marchesi Antinori

CONSULTANTS: AEI Progetti (structural design); M&E Management & Engineering (landscape design); Emex Engineering (oenological)

GENERAL CONTRACTOR: INSO

SIZE: 527,400 square feet

COST: \$111.2 million

COMPLETION DATE: October 2012

SOURCES

STEEL: Secco Sistemi

CONCRETE: CSP (prefabricated); ALPI (formwork)

GLAZING: Pilkington; Sunglass S.r.l. (curved)

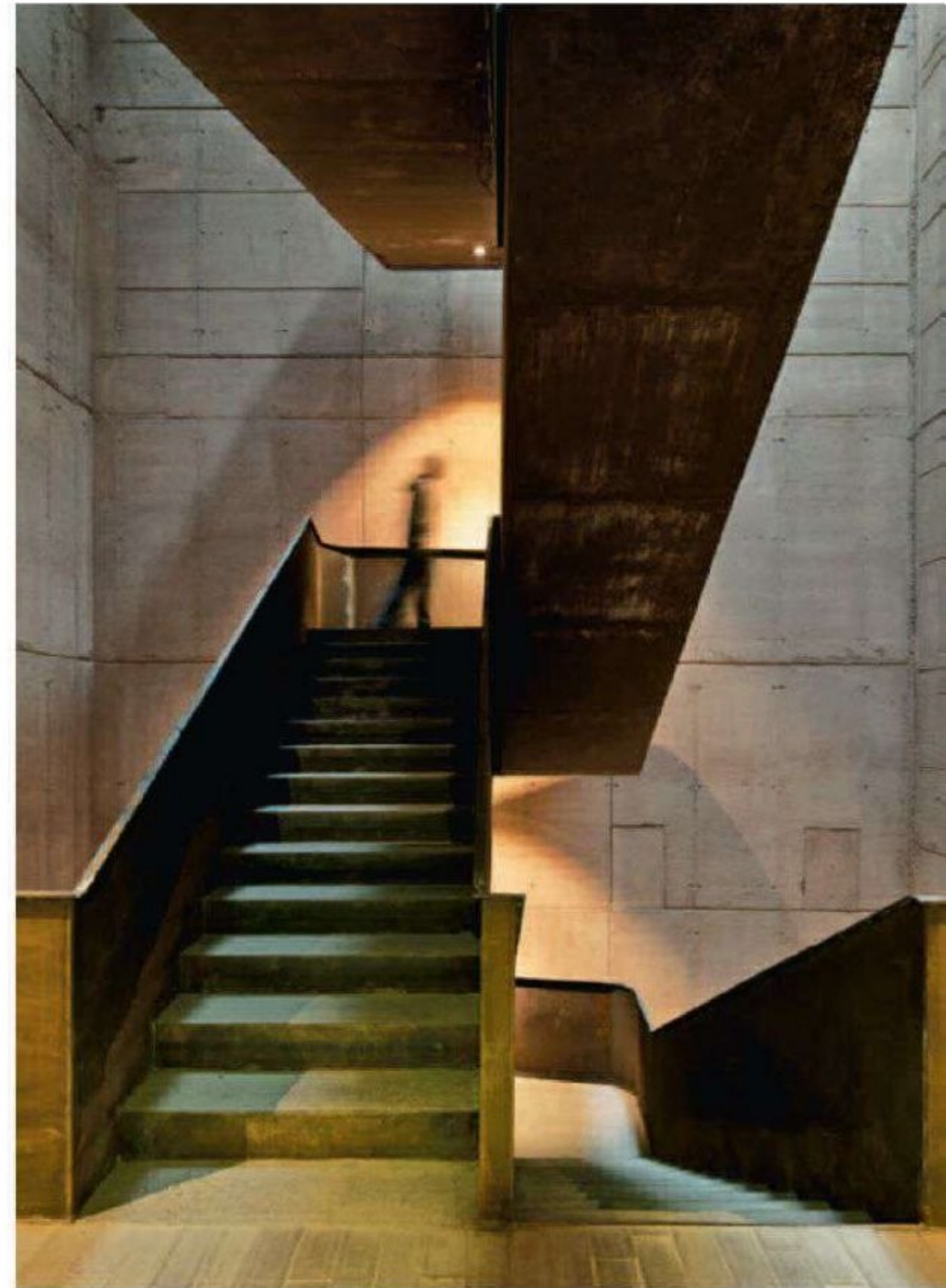
TERRA-COTTA: Sannini Impruneta; Ceipo Ceramiche

ADHESIVES: MAPEI

RAISED FLOOR: Teknofloor
LIGHTING: Zumtobel; Martini Illuminazione

FURNITURE: Estel (office); Castelli (chairs); Moroso

ELEVATOR: Kone



TRADITIONAL ROOTS Three earth-tone materials dominate, continuing throughout the back of house, where a Cor-Ten steel stair connects all three levels (above), the walls are fabricated with reddish concrete (an iron-oxide mix), and the floors are paved with long terra-cotta bricks.



a roughly rectangular, steeply sloping 35-acre site that resembled a quarry during construction—has been restored. Vines are planted over the building, olive trees above and behind it. From the road below, you are aware only of a retaining wall in reddish concrete with the company's name and crest emblazoned on it. At this point a driveway—quite large, to take trucks—snakes up the hillside, disappears beneath the building, and deposits you either at a drop-off point beneath the main terrace or in a sunken parking lot.

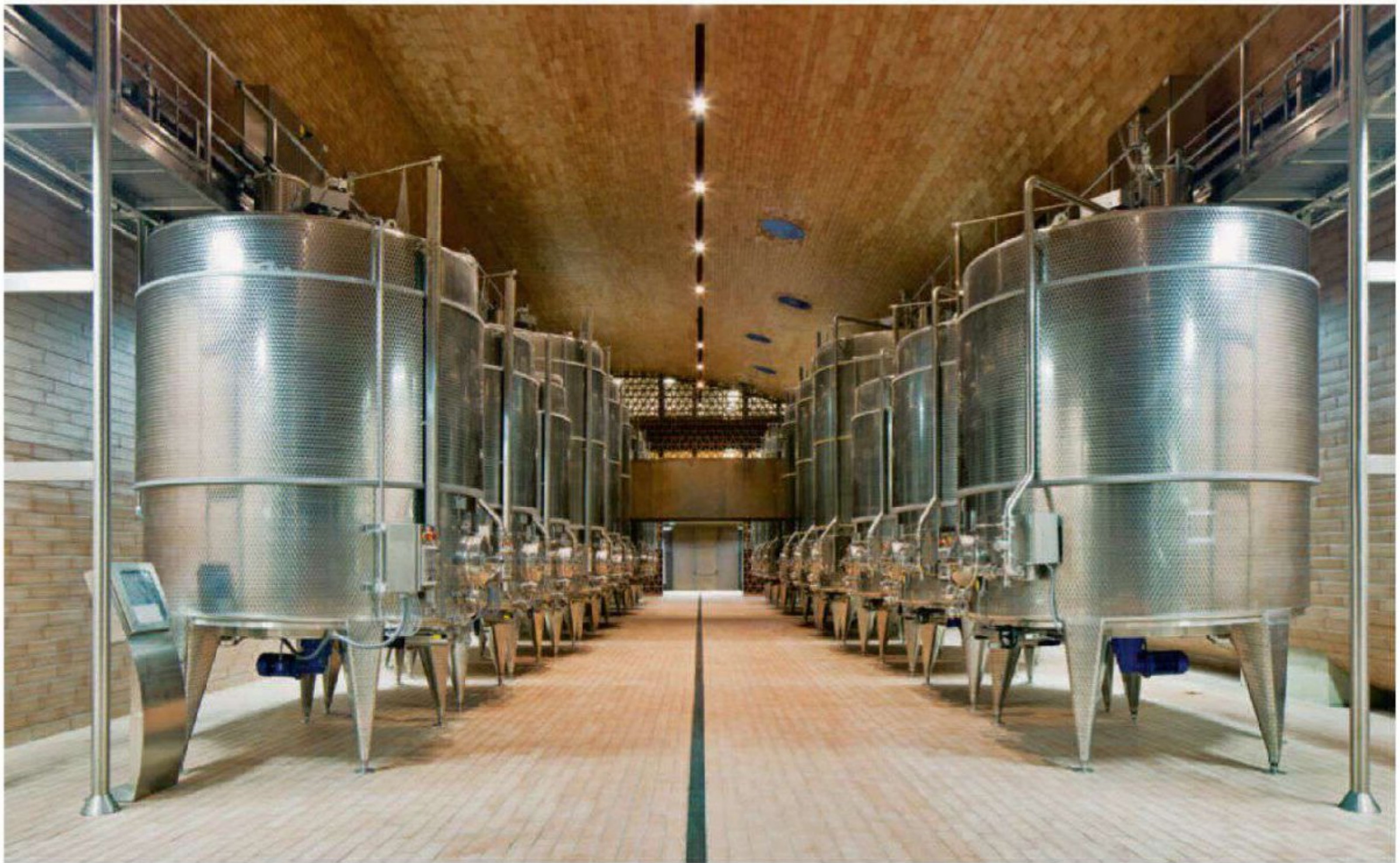
The design is all about gradual disclosure: you catch a glimpse of the Cor-Ten steel cornice of the main terrace as you drive up the approach, only for it to disappear as you move beneath the building. The visitor entrance is the visual fulcrum of the structure, expressed by a virtuoso asymmetric spiral staircase (also Cor-Ten)—sculptural as

much as practical, since elevators and more conventional stairs inside provide the main vertical movement. Nearly all finishes throughout are left rough and industrial, whether more of the oxidized steel used for handrails or sawn-oak interior wall surfaces.

Three earth-tone materials dominate: Cor-Ten steel; that reddish concrete (achieved through an iron oxide in the mix); and long terra-cotta bricks, similar in tone to the concrete, used variously for paving, soffit cladding, and walls. In the wine-storage vaults they wrap right around the interiors.

Although principally a single-aspect building, facing west across a valley, the structure was designed to bring in daylight both from above—through numerous circular apertures in the covering landscape—and more unexpectedly from the rear, where a service road for trucks and employee

GROWTH PATTERNS Spanning over 527,000 square feet, Cantina Antinori houses all aspects of the 600-year-old vintner's business and history: a museum with a Renaissance-era wine press designed by Leonardo da Vinci (opposite, top), terra-cotta-wrapped cellars with stainless steel fermentation tanks (opposite, bottom), and a shop with panoramic views (above).



parking is terraced high into the slope. This part of the facility is wholly for the wine-making process, from the arrival of grapes for crushing through fermentation, barrel aging, bottling, bottle aging, and eventual packaging and dispatch. Visitor tours include the Antinori museum, complete with a Renaissance-era geared double wine press designed by Leonardo da Vinci; tasting rooms, some of which project into the barrel vaults in the form of glazed boxes: a promenade along a high-level walkway traversing the vaults; a small restaurant perched on the main terrace looking out across the valley; and, of course, the shop, where the company's products are displayed in terra-cotta shelving units designed by the architects.

Since the cellars are a key part of the tour, they were conceived in dramatic fashion to be cavelike. Rather than being regularly arched, they form a sinusoidal sequence on a steel frame, built within a much larger concrete rectilinear space. The frame was then lined with the terra-cotta bricks, slid onto concealed metal rail fittings. In these vaults the oak barriques, or small barrels, associated with the best wines are stacked in rows. Less exalted wines are matured in larger barrels, some very large indeed. Perhaps most impressive of all are the tall stainless steel fermentation tanks, but few members of the public are allowed to see those overtly industrial objects. Seen or unseen, however, all enjoy the constant cool temperature that wine needs to mature, as a natural consequence of being sunk into the hillside.

Archea's cofounder, architect Marco Casamonti, talks of "a contemplative relationship with, rather than an emulation of, the natural landscape." The project implies a kind of equilibrium with nature, and takes a manifesto position: yes, a large manufacturing complex such as this can harmonize with a rural area.

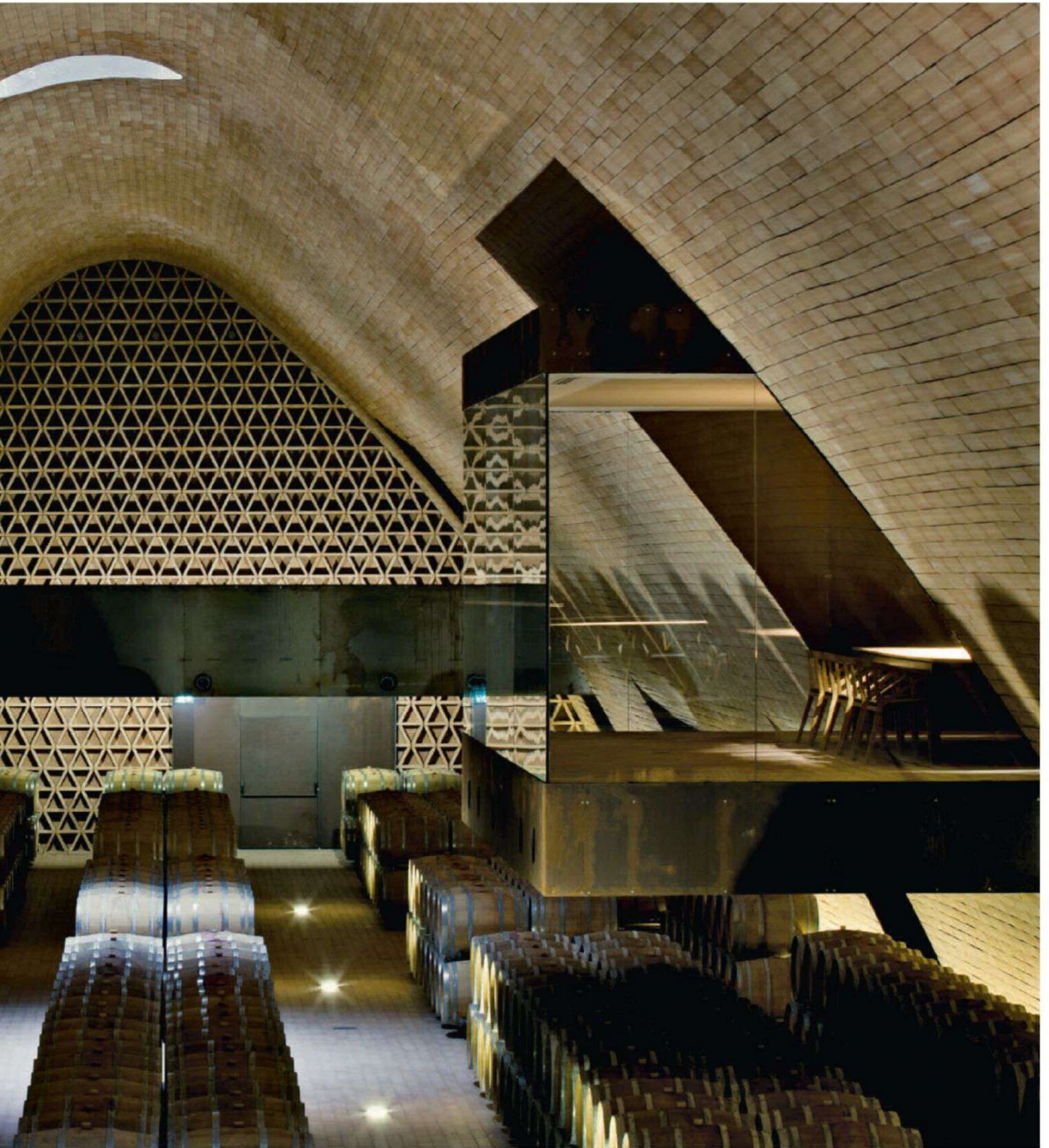
The time and effort that have gone into this building are palpable. But as one of the key movers in the ancestral business, Piero's elder daughter, Albiera, pointed out as we talked in their Renaissance palazzo in Florence: "Obviously the new building is very innovative. But this house has been the center of activity for us since 1506. It too was designed in a way that was modern for its time. It still works exactly as it did 500 years ago. It was looking forward, not back." Plainly, the 26th generation of the Antinori family has lost none of its perfectionist zeal. ■

Hugh Pearman is architecture critic of the Sunday Times of London and editor of the Journal of the Royal Institute of British Architects.



SUNKEN TREASURE

The dramatic vaulted cellars form a sinusoidal sequence on a steel frame, built within a much larger concrete rectilinear space. This is where the best wines are held in oak barriques, or small barrels—the ideal backdrop for guests and customers sipping wine in the glazed tasting rooms that project from the adjacent wall (shown).



SHED | Healdsburg, California | Jensen Architects

THE MODERN GRANGE



A San Francisco firm turns a workaday agricultural building into a gleaming display case for locavore living.

BY WILLIAM HANLEY

PHOTOGRAPHY BY MARIKO REED

NORTHERN CALIFORNIA—the region that gave birth to Chez Panisse and the French Laundry—is ground zero for the local-food movement, and SHED, an haute general store in the heart of wine country, lets you know it even before you walk through the door. Located in Healdsburg, a tiny city at the convergence of three vineyard-stripped valleys in Sonoma County, SHED stands just a few blocks from the wine destination's immoderately quaint town square. Its neighbors include preppy boutiques catering to affluent oenophiles and structures styled as faux chateaus. But SHED is literally a shed—an agricultural building made from pre-engineered components—with a classic, gable-sided form that signals the market's roots on the farm.

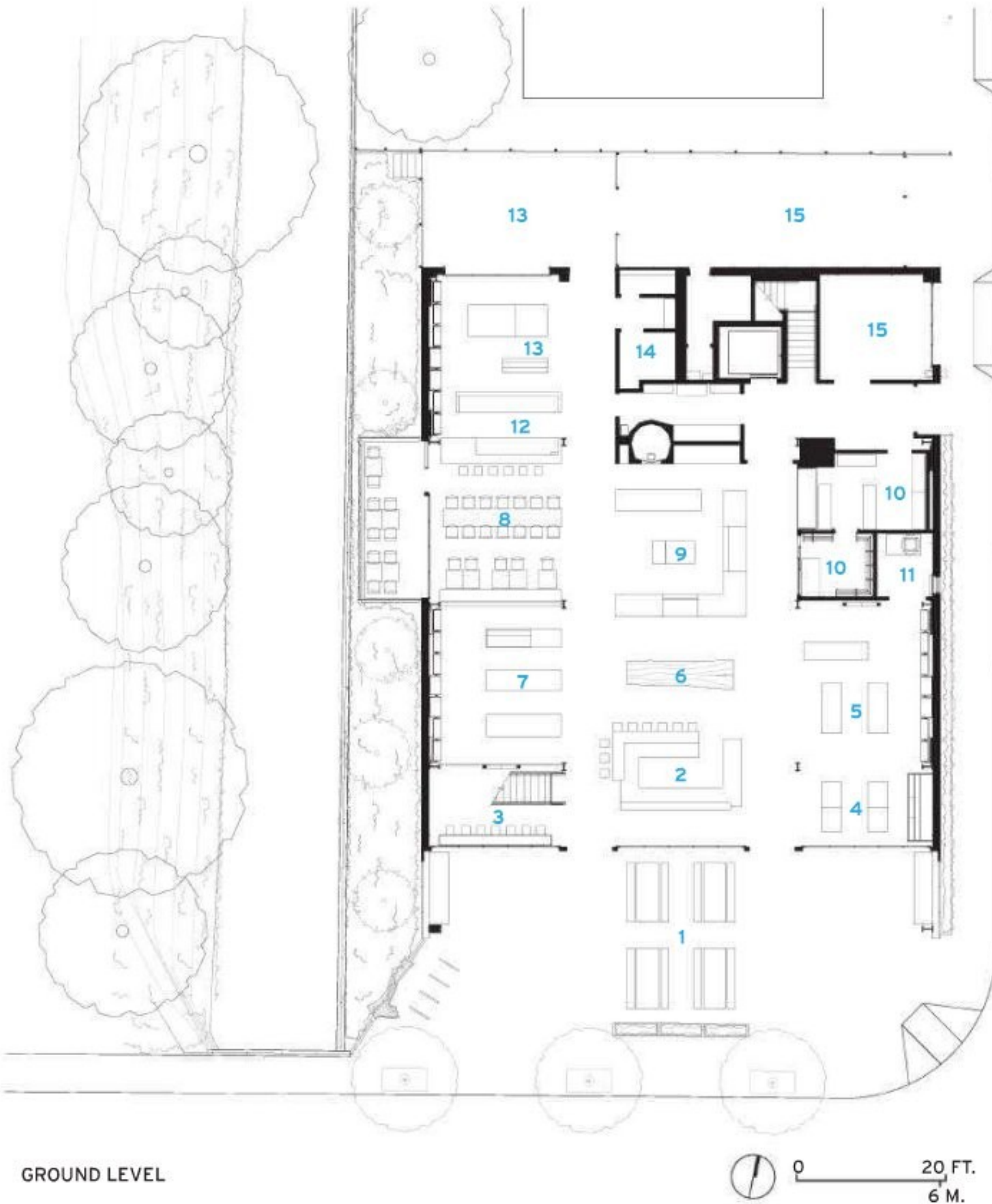
San Francisco architect Mark Jensen and his firm turned the standardized building system into a barn-size display case that venerates food preparation from seed to serving dish. "People don't want to see just the shrink-wrapped finished product," said Jensen over a lunch at SHED that featured local lettuces, pizza made with grain milled on-site, and a mildly fruity rosé. "They want to see how things get done."

Behind its glass facade, the 10,000-square-foot, two-story retail space offers a tightly curated selection of sustainably sourced goods and locavore lifestyle accoutrements. You can shop for fresh produce, artisanal dry goods, well-crafted cookware, and heritage-brand garden tools. You can also have a meal prepared with many of the same utensils and ingredients, sip a latte poured with a perfect leaf pattern, or drink a beer or a kombucha at the "fermentation bar." An upstairs space operates like a modern country grange, hosting everything from beekeeping workshops to jazz concerts. "It's not just a food place, but more of a hub," says SHED co-owner Cindy Daniel. "As much as possible, we want to show

SUPER MARKET An open plan, white walls, and polished-concrete floors give SHED an art-gallery feel. The effect carries through to Jensen Architects' custom refrigerator cases—designed as orthogonal vitrines—integrated into the café counter.



- | | | |
|------------------------------|----------------------------|---------------------------|
| 1 OUTDOOR SEATING AND MARKET | 5 FOOD RETAIL | 11 GRAIN MILL |
| 2 COFFEE BAR | 6 FEATURE DISPLAY AREA | 12 FERMENTATION BAR |
| 3 BAR SEATING | 7 HOUSEWARE RETAIL | 13 GARDEN AND FARM RETAIL |
| 4 FLOWER AND PRODUCE RETAIL | 8 CAFÉ SEATING | 14 RESTROOMS |
| | 9 CAFÉ KITCHEN | 15 BACK OF HOUSE |
| | 10 LARDER AND COLD STORAGE | |



GROUND LEVEL

credits

ARCHITECT: Jensen Architects – Mark Jensen, principal; Lincoln Lighthill, project lead; Dean Orr, Scott Davis, project team

ENGINEERS: ZFA Structural Engineers (concrete slab, curtain wall); Soule Building Systems/CBC Steel Buildings (pre-engineered metal building); Guttman & Blaevoet (m/e/p); PJC Associates (geotechnical); Atterbury & Associates (civil)

CLIENT: Cindy Daniel and Doug Lipton

GENERAL CONTRACTOR: Oliver & Company

SIZE: 10,800 square feet

COST: withheld

COMPLETION DATE: April 2013

SOURCES

METAL PANELS: Kingspan

CURTAIN WALL: Arcadia

GLASS: PPG Solarban

RECLAIMED WOOD: Arborica

OVERHEAD GARAGE DOORS: Clopay

SLIDING WOOD WALL: Hafele

FLOOR AND WALL TILE: Sonoma Tilemakers

the hand, the people, the process behind the food.”

Daniel and her partner, Doug Lipton, own a small farm a few miles outside of Healdsburg in the Dry Creek Valley. For years they had considered opening a store in town; they eventually found a site across from a parking lot that hosts a twice-weekly farmers’ market. They met Jensen through a mutual friend, and after playing with the idea of reusing an existing appliance store on the site, the architect persuaded them to replace it with the agricultural shed. Not only did the pre-engineered building—commonly known as a Butler building, though the project uses a different brand—save on construction costs and waste, it also saved time. A creek runs along one side of the lot, and the project required drilling 40-foot helical piles into the soft soil before the building’s concrete slab was poured. Once that was in place, the structure went up in a matter of weeks.

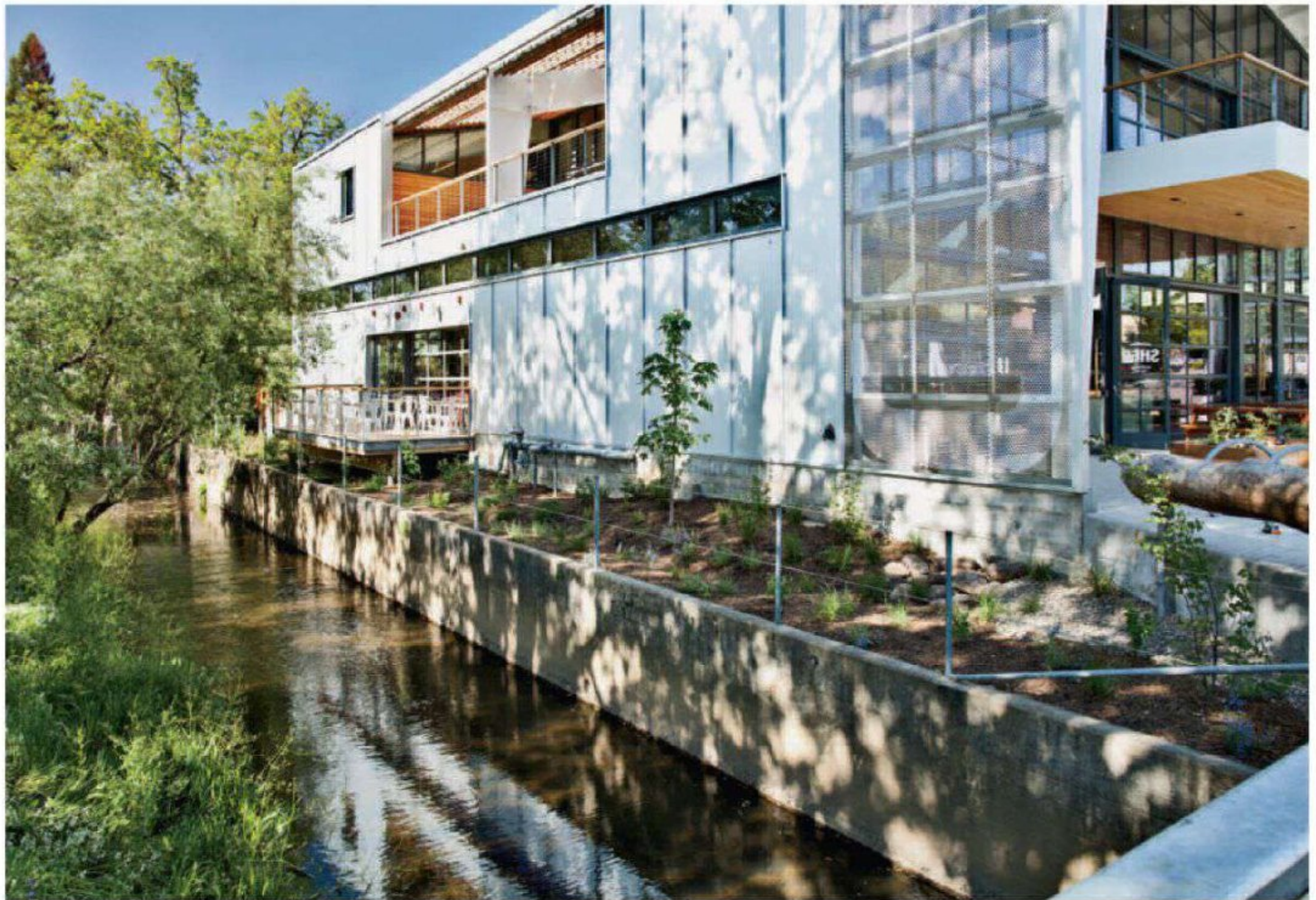
To turn the barn into a showcase, the firm used glazing for its entire front elevation, with transparent garage doors opening to the sidewalk and to a pair of terraces facing the



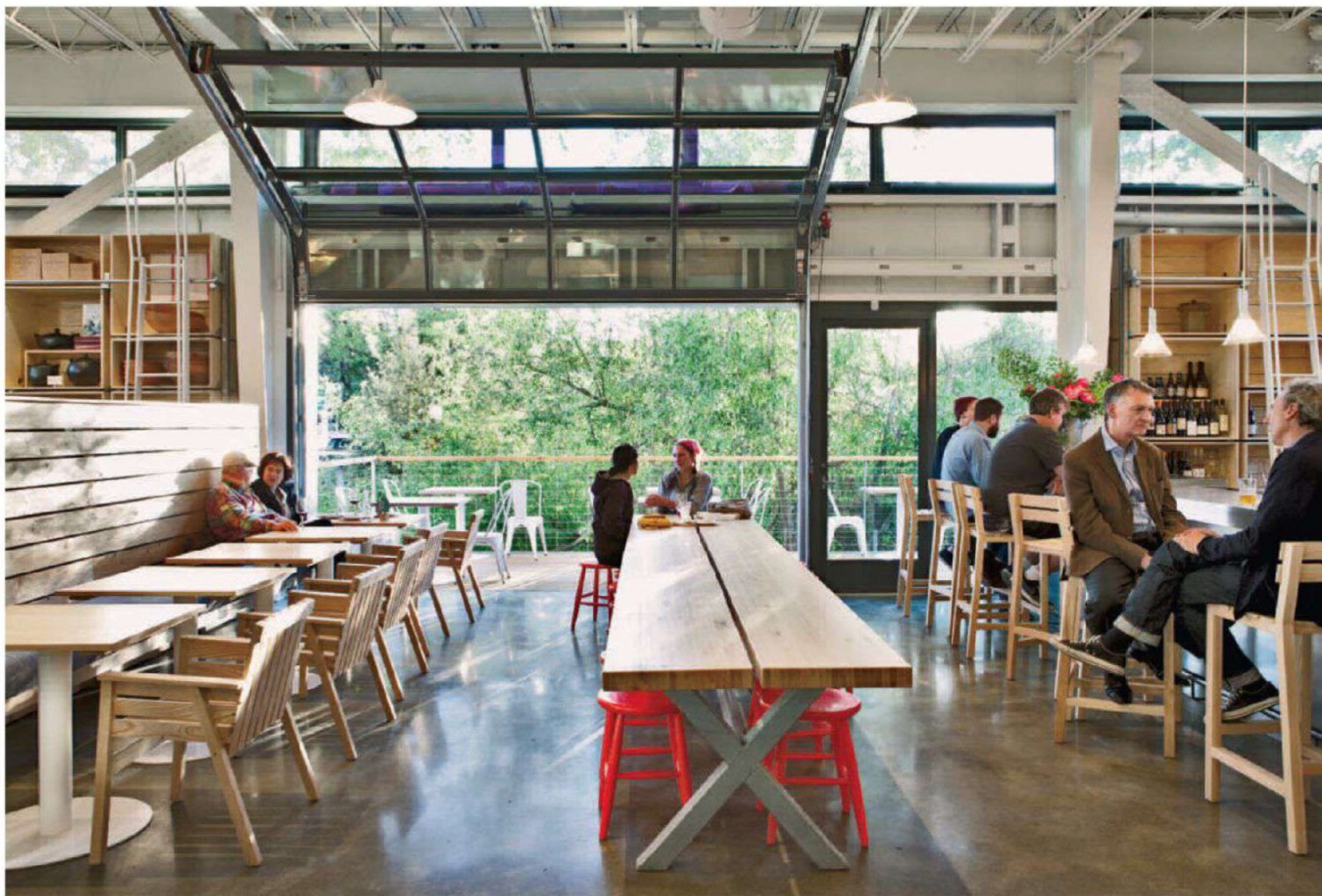
View additional images at architecturalrecord.com.



URBANE FARM
Under the clean geometry of SHED's gabled form, an outdoor seating area and clusters of planter boxes are shaded by a cantilevered deck (above) and signage printed on perforated metal screens (left) that extend the project's long sides past its front facade. Jensen Architects planted a rain garden along the adjacent creek (right) to manage runoff and added two terraces that overlook the water and vegetation.







recently restored creek. The building is otherwise clad in off-the-shelf insulated metal panels. Transom windows—which operate automatically to flush out hot air from the interior at night—run the length of the building, accentuating the ceiling height and bringing in a huge amount of daylight. Jensen’s team kept the building’s perfect, Monopoly-piece profile by tucking rain gutters into the roof and hiding HVAC equipment in a well toward the rear of the building. They punctuated the street-side facade with a second-floor deck that cantilevers 10 feet over an outdoor seating area. “This is technically vernacular in terms of what agricultural buildings look like today,” says Jensen. “We wanted to avoid a nostalgic wood-sided barn, the Disneyland approach.”

Inside, a coffee bar brings a social space to the entry, while different areas of the program pivot around a central kitchen and café counter anchored by a wood-fired oven. The structure’s large spans and the well-scaled partitions allow the components to flow into one another with an openness that mimics the owners’ approach to food. Items on the shelves end up on the menu at the café, cross-pollinating according to seasonal themes. “If we have cazuela bowls in

the housewares section, we’re also using them in the kitchen,” says Daniel. “We want to really arouse people’s curiosity—to encourage them to taste an ingredient or even learn how to grow it.”

On the loftlike second floor, the project’s main kitchen is separated from the event space by a sliding, wood-covered wall. It can open to display the cooking process; a screen rolls down to protect food preparation when the doors leading to two terraces are open. Or it can close completely to insulate performances from kitchen noise. Even without an event taking place, the project is a social space for Healdsburg’s culinary-minded locals as well as weekenders and wine tourists. “It’s kind of like the new post office,” says Jensen. “It’s the place where people come to meet and greet and hang out.”

The design strikes a note between rustic and rarefied, but it rings more toward the latter. A palette of light wood and bright-white walls elevates the workaday building into a gallery that fetishizes the growing, making, and serving of food. And on Healdsburg’s streetscape, it projects through its glass facade the ideas about culinary culture that made the region famous. ■

BARN DANCE

Jensen Architects gave SHED’s upstairs space (opposite) a countrified but refined finish with a wooden ceiling lattice made to resemble loading pallets; a sliding wall reveals and conceals a kitchen to meet the needs of different events and performances. Downstairs, café seating and the “fermentation bar” (above) open to a terrace overlooking the creek and separate the housewares section of the store from farm and gardening tools.

Pearl Brewery | San Antonio | Lake|Flato Architects

LONE STAR REVIVAL

A local developer has spent more than a decade converting an old brewery into a mixed-use complex where food is the main draw.

BY CLIFFORD A. PEARSON





WHEN THE PEARL Brewery in San Antonio shut down in 2001 after 120 years of operation, it left behind a 22-acre, asphalt-covered site in a crime-ridden part of town. The nearby branch of the San Antonio River was little more than a polluted creek dotted with encampments of homeless people. But local businessman Christopher “Kit” Goldsbury was looking for an interesting project, having sold his previous business—Pace Picante sauces—for \$1.1 billion a few years before. He asked real-estate consultant Bill Shown to evaluate the Pearl property. “I told Kit, ‘Don’t walk away from this, run away!’” recalls Shown. Goldsbury didn’t listen.

Twelve years later, the Pearl Brewery has become a thriving, mixed-use complex with restaurants, a branch of the Culinary Institute of America (CIA), a weekly farmers’ market, office space, and a growing number of residences. The formerly dank waterfront is now part of San Antonio’s famed River Walk with a park, an outdoor amphitheater, and a restaurant, La Gloria, serving fantastic Mexican street foods. Crime in the area has dropped dramatically. And Shown now

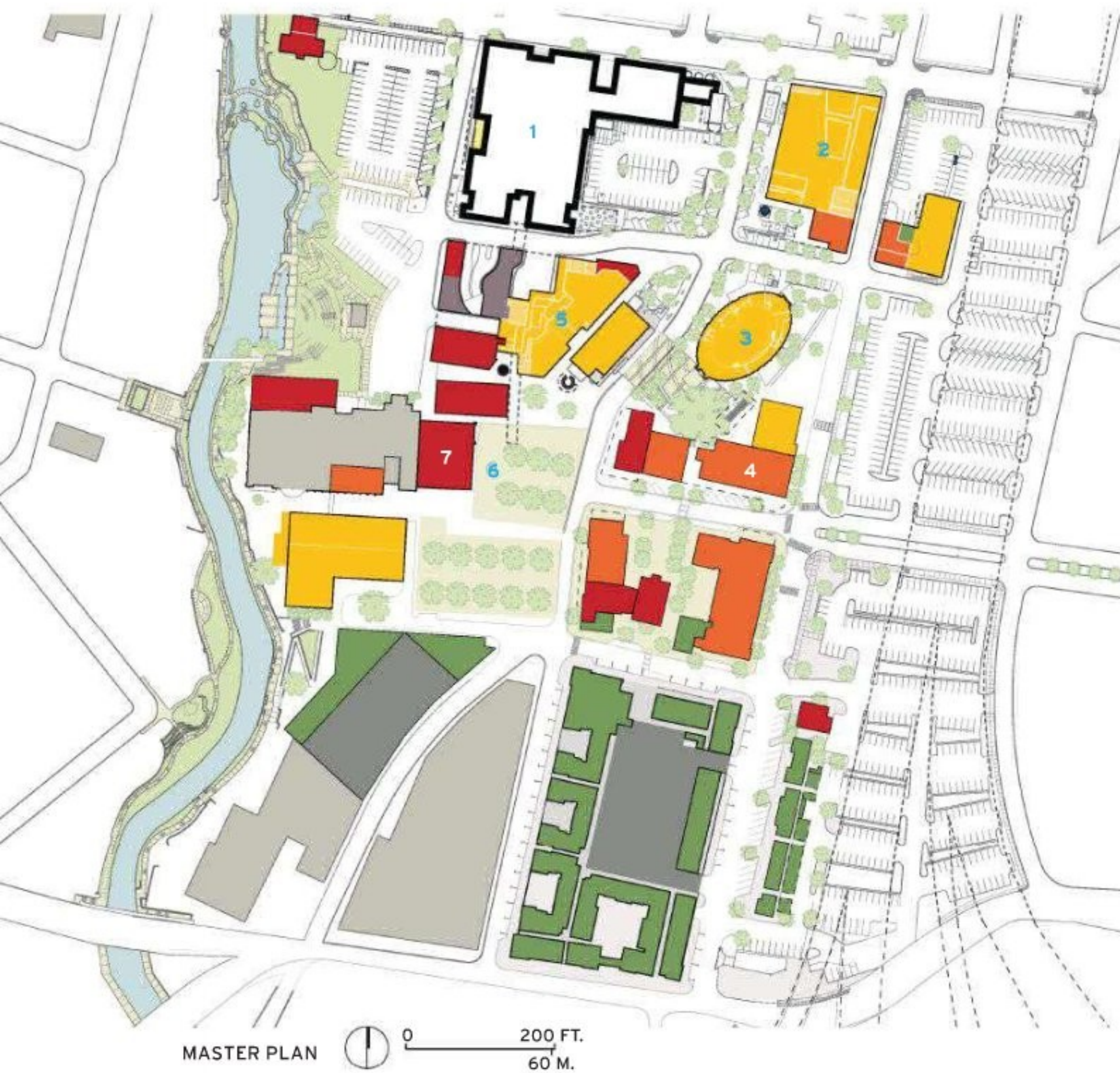
works as managing director of real estate for Goldsbury’s company, Silver Ventures, overseeing the development of a project he originally thought was hopeless. “I looked at all the problems,” says Shown. “But Kit saw the place’s incredible history and had an intuitive feel for the opportunity.”

After buying Pearl, Silver Ventures hired Lake|Flato Architects to design a master plan for the site and help figure out what to do with all the tanks, bottling equipment, conveyor belts, and cranes in the 10 million cubic feet of building space. It took one year just to inventory everything and two years to develop a vision of what the place could be.

“It was two miles from downtown and two miles from the closest residential area,” says David Lake, the partner in charge of the project at Lake|Flato. “It was a no-man’s-land, so we needed to give people a driving reason to go there.” From the start, the owners and architects wanted to create a place for San Antonians. “The River Walk and much of downtown had been ceded to visitors,” says Shown, “so we tried to make Pearl as local as possible—local businesses,

LONG VIEW

Lake|Flato removed some old buildings to open up views to the historic Brewhouse (center in photo above) and make way for new structures offering spaces for eating, shopping, working, and living. A farmers’ market takes place in front of the Brewhouse on weekends. A restaurant attached to the Full Goods Warehouse provides indoor and outdoor dining (opposite).



- | | | |
|------------------------|---------------------------------|-------------------|
| 1 FULL GOODS WAREHOUSE | 5 CULINARY INSTITUTE OF AMERICA | EDUCATION/MEETING |
| 2 AVEDA INSTITUTE | 6 FARMERS' MARKET | RETAIL |
| 3 PEARL STABLE | 7 BREWHOUSE | FOOD |
| 4 LAB BUILDING | | RESIDENTIAL |
| | | PARKING |



- | | | |
|--------------|----------------|--------------|
| A RETAIL | C OFFICE | E AIA OFFICE |
| B RESTAURANT | D MULTIPURPOSE | F LIVE/WORK |

local customers, and no national chains.” Lake recalls. “We kept asking ourselves what would bring people to Pearl on a regular basis, and we kept coming back to food.”

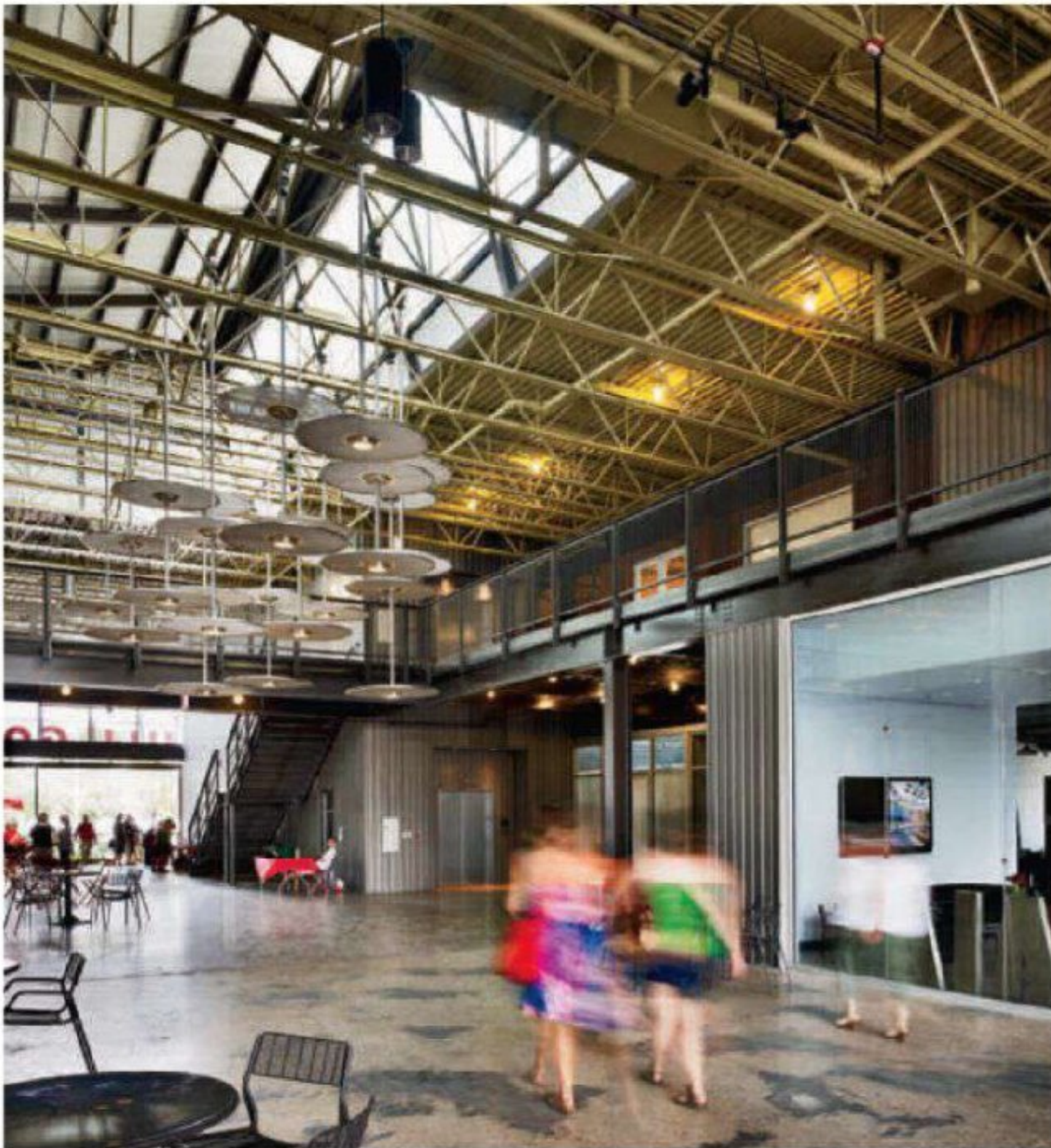
He and his team visited a number of places where old complexes had been successfully repurposed—including the Distillery in Toronto; the Pearl district in Portland, Oregon; the Ferry Building in San Francisco; and Granville Island in Vancouver, British Columbia. Granville Island seemed to offer the best model for the Pearl Brewery, says Shown, because of its distance from downtown; its mix of food, retail, and commercial uses; and its mostly unremarkable industrial buildings set in a landscape that uses varying surface materials rather than curbs to separate vehicular from pedestrian circulation.

To convert the isolated industrial campus into a lively urban district, Lake|Flato introduced a new street grid, reduced the width of some existing streets, shrank the ocean of surface parking into smaller lots, and planted more than 500 trees. “When we started, there were five healthy trees on the entire site,” reports Lake. The architects removed an old warehouse so people arriving on Pearl Parkway could admire the Brewhouse, an 1894 building topped by a cupola and a mansard roof. They also applied a broad range of sustainable-design strategies that included using permeable pavers, creating new bioswales, generating energy with photovoltaic panels on many roofs, and recycling rainwater stored in old brewing vats.

Driving the entire project are three key functions: food-oriented activities, education, and Latin American culture. The developers persuaded the CIA to focus its branch here on Latin American cuisine and helped local chefs such as Johnny Hernandez and Jesse Perez set up their first restaurants. Right now 10 restaurants and bars are scattered around the complex, so food is never far away. The first tenant to move in wasn’t food-related, but the Aveda Institute, which provides training in beauty and grooming skills, brings people to the site on a daily basis. Another early component was an old horse stable converted into a venue for catered events. With the Full Goods Warehouse (“full goods” being bottles filled with beer), the architects created a mixed-use facility mostly through subtraction—removing part of the huge steel-frame structure and slicing breezeways through the remaining portion to create spaces where people can eat or congregate before events hosted by office tenants like the local chapter of the American Institute of Architects. Future phases will include a hotel attached to the Brewhouse and more apartments.

“We said we’d be a success when people don’t see Pearl as a development but as a place,” says Shown. And in a sign that everything goes in cycles, plans for renovating the Brewhouse will include a microbrewery. ■

SECOND WIND The Full Goods Warehouse, which once stored full bottles of beer, has found new life as a multi-use structure with restaurants, stores, offices, and live/work units. The architects cut skylit breezeways through the building and inserted a second floor under the existing roof (opposite, bottom). Photovoltaic panels on the roof provide an alternative source of energy (opposite, top left). Old freight-rail tracks running through part of the site remind visitors of Pearl’s industrial history, even as new uses and landscaping give the place a very different identity (opposite, top right).



PHOTOGRAPHY: © CASEY DUNN (TOP LEFT AND BOTTOM); LARA SWIMMER (TOP RIGHT)

credits

ARCHITECT: Lake|Flato Architects – David Lake, Todd Wascher, Andrew Herdeg, Jonathan Card, Jonathan Smith, Jeremy Fields, design team

ARCHITECT OF RECORD (FULL GOODS WAREHOUSE): Durand-Hollis Rupe (DHR) Architects

ENGINEERS: Pape-Dawson Engineers (civil); Danysh & Associates (structural); Beyer Mechanical (mechanical); Triple R Electric (electrical)

CONSULTANTS: Rialto Studio (landscape); Contact Consultants & Architects (green design)

CLIENT: Silver Ventures

GENERAL CONTRACTOR: Artistic Builders (Full Goods Warehouse)

SIZE: 475,000 square feet in 21 buildings

COST: withheld

COMPLETION DATE: ongoing

SOURCES

CURTAIN WALL: Oldcastle BuildingEnvelope; Kawneer

METAL ROOF AND WALL PANELS: MBCI

Workshop Kitchen + Bar | Palm Springs, California | SOMA



A TEMPLE TO GOOD TASTE

A design team embraces a building's Spanish Colonial roots while infusing the restaurant inside with a new flavor of tempered minimalism.

BY SARAH AMELAR



IF A CARPACCIO of octopus, tender and razor thin, with notes of mellow olive oil, tangy citrus, and smoky pimentón, could be translated into restaurant design, you might end up with the Workshop Kitchen + Bar in Palm Springs, California. Though the interior bears little resemblance to the translucency and lightness of the octopus, this starter, often topping the restaurant's menu, shares an essential approach with the architecture.

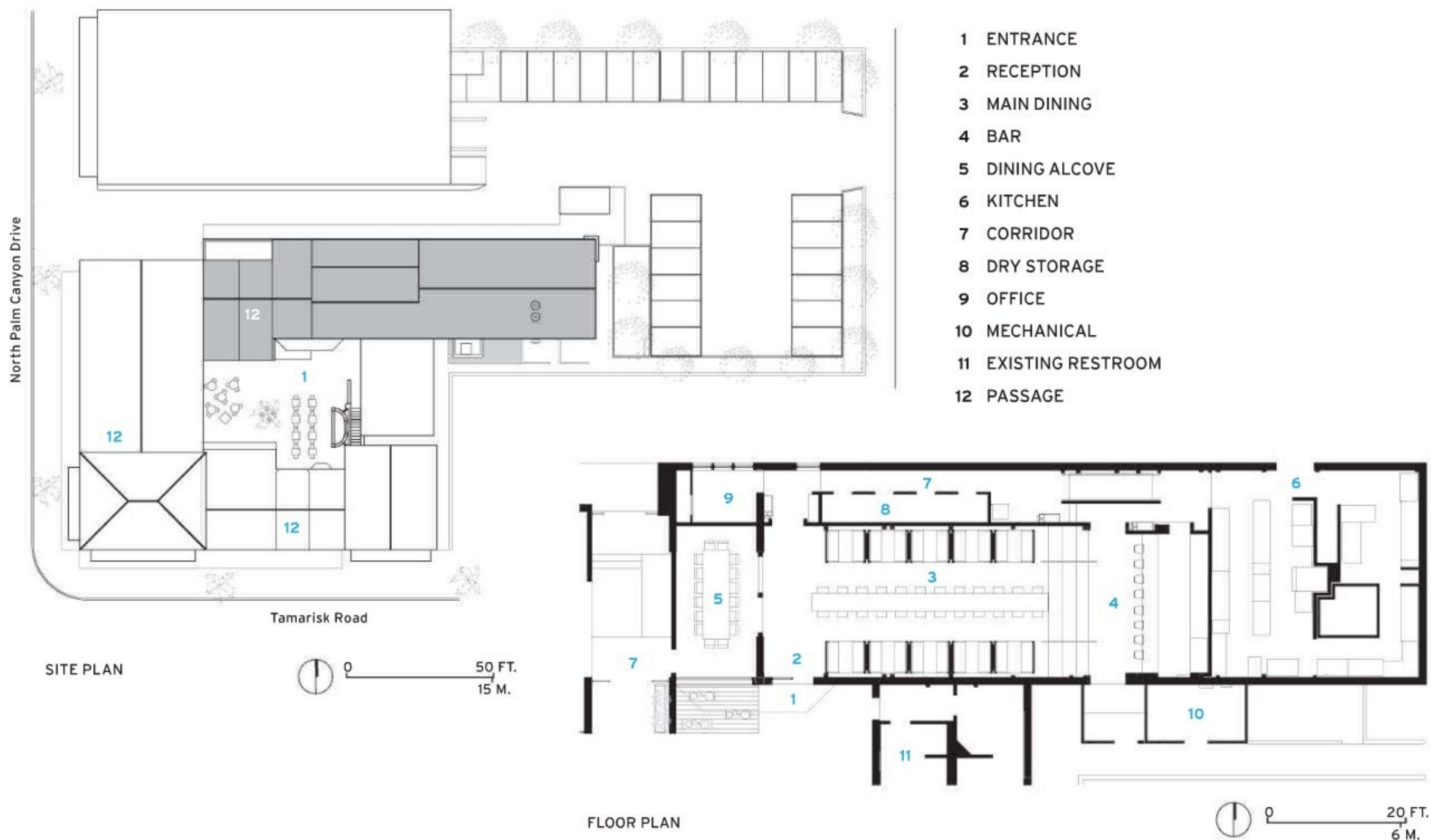
Like that dish, the design is precisely executed, relying on a few well-chosen ingredients, harmoniously combined, with each one singing through. Both the architectural and culinary styles temper minimalism with deep, familiar tones. And much the way tiny florets of pickled cauliflower accent the carpaccio, bringing out underlying flavors, the lighting, designed by .PSLAB, plays against SOMA's industrial-chic interior and the historic El Paseo Building housing it.

This 1926 Spanish Colonial landmark, with terra-cotta roof tiles, a courtyard, and a lofty main space rising to a wood-trussed cathedral ceiling, has been home to art galleries, the city council, a movie theater, and a furniture showroom. The surrounding desert resort town of Palm Springs, an epicenter of emerging Mid-Century design, attracted Hollywood glitterati and architecture by Richard Neutra and John Lautner. It's still design-focused, but with a retro, primarily 1950s flair. Now vintage Modernist furniture boutiques line stylish Palm Canyon Drive alongside the Workshop.

Over its threshold, though, is another world. Monolithic booths, "side chapels," cast in sleek concrete, flank the surprisingly intimate, basilica-like main space, where a

BAR NONE

Glossy epoxy floors (left) catch reflections of the exposed halogen bulbs. All concrete elements—including the booths' cantilevered tables—were cast in place. LED strips glow at the bar's base (above) and behind bottles. For other lighting fixtures, .PSLAB turned conduits into design elements, as in the parallel array over the bar.



34-foot-long concrete communal table runs down the central aisle beneath the 27-foot-high peaked ceiling. At one end of the axis, a daylight dining alcove offers a table for 16; at the other end, the nave descends a few steps into the mystically lit bar area (or is that the altar?). Not surprisingly, couples have begun booking the restaurant and its courtyard for weddings. But what makes this striking though potentially stark interior unexpectedly warm are its unusual, well-balanced proportions, its rhythms of new against old, and a lighting scheme that deftly seasons it all.

The Workshop is chef-owner Michael Beckman's first restaurant. To create a backdrop for his market-to-table, Mediterranean-inflected New American cuisine, he sought architects who would, he said, "respect and enhance, not mask, the beautiful Colonial bones" of the 3,500-square-foot space. With co-owner Joseph Mourani, a Beirut-based restaurateur who was Beckman's classmate at culinary school in Lyons, France, he enlisted design talent with a decisive Lebanese twist: SOMA, a small, youthful firm with offices in New York and Beirut, and .PSLAB, lighting designers/manufacturers headquartered in the Lebanese capital.

In pairing new and existing architectural elements, SOMA's strategy was counterpoint. So the contemporary concrete insertions play against cadences of old wood trusses and clerestory windows, without touching ceilings, walls, or other original features (though only the exterior is landmark-protected). Tall booths accentuate the hall's verticality—and also effectively reduce its width, giving the

communal table a more congenial zone.

A goal was to vary intimacy levels within the 98-seat restaurant, says SOMA lead designer Steven Townsend, who likens the booths to "cabanas around a hotel pool: you're in your own little villa watching the show, but still participating in the larger scene."

Spatial logistics required cast-in-place concrete, while budgetary constraints inspired architecture performing double duty as furniture. Leather upholstery and the bar's gypsum ceiling (thinly concrete-coated) soften the acoustics.

Besides laid-back crowds—men in shirtsleeves or black T-shirts, women in summery dresses, and occasional diners in shorts and flip-flops—the lighting also mellows (and sparks) the mood. .PSLAB met SOMA's industrial aesthetic with exposed, yet warm, halogen bulbs and parallel arrays of black conduits, as in the bar and alcove. LED strands glow at the bar's base and behind bottles; a tabletop variation on the black multi-conduit theme illuminates the booths; and a long line of custom fixtures resembling light-tipped microphones hangs from the ridge beam, down near the communal table, acting almost like a canopy over it.

With a glow on the food and a din of conversation filling the Workshop, a meal might end with Meyer-lemon tart and gingered beet sorbet—echoing the architecture in its zest-inflected earthiness and play of contemporary elements against an old classic. ■

Sarah Amelar is a contributing editor of RECORD.

OPEN TABLE

The luminous dining alcove (opposite, top), with courtyard views, is often a venue for private parties. Like the interior's other cast-concrete elements, this dining surface is 4½ inches thick, asserting its material heft. Guests enter the restaurant through the Spanish Colonial-style courtyard (opposite, bottom), as the Workshop has no street frontage.



credits

ARCHITECT: SOMA – Michel Abboud, principal
ARCHITECT OF RECORD: Allen Sanborn
ENGINEERS: BG Structural Engineering, A Degree of Freedom (structural); Scott Design & Title 24 (mechanical); Jack Bentson (electrical); Eglert Design (plumbing)
CLIENT: Michael Beckman
LIGHTING CONSULTANT: .PSLAB
GENERAL CONTRACTOR: Map Development
SIZE: 3,500 square feet
COST: \$875,000
COMPLETION DATE: October 2012

SOURCES

KITCHEN ENTRANCE DOOR: Eliason
ACOUSTICAL CEILINGS: USG
PAINTS AND STAINS: Benjamin Moore
HARDWARE: Schlage; Baldwin; Dorma
FLOOR AND WALL TILE: Daltile
CHAIRS: Emeco

Craftsman & Wolves | San Francisco | Zack|de Vito Architecture + Construction

TOUGH COOKIE

A new bakery forgoes the soft, sweet approach for a moodier sensibility.

BY LYDIA LEE

PHOTOGRAPHY BY BRUCE DAMONTE



“**THE REBEL WITHIN**” is a soft-boiled egg magically cooked within a savory muffin of ham and cheese—basic ingredients presented in a delightful new way. Such is also the case with the bakery/café that produced it, which uses the raw materials of architecture—wood, concrete, steel—to clever effect. Co-owner and chef William Werner labored over Craftsman & Wolves, located in San Francisco’s Mission District. He went through three false starts over four years—and as many design concepts—to get his own place off the ground. “The wolves in the name nods to past trials and tribulations,” says Werner with a laugh.

Like other metropolises, San Francisco has its fair share of upscale bakeries, offering enough pink cupcakes to fortify a whole squadron of runners in the Susan G. Komen Race for the Cure. But Werner wanted Craftsman & Wolves to have a more masculine feel.

So what does a man-bakery look like? The overall aesthetic is rugged and industrial. The counter is not Carrara marble but black engineered quartz. Breakfast pastries are artfully positioned on log sections, and black steel shelving displays bags of “Damn Fine Granola” and jams. Touches of the homespun pop up elsewhere: Werner taped a Frank Lloyd Wright quote about the price of success onto the wall.

The notably tight \$150-per-square-foot budget helped produce the space’s “high-end DIY” ambience. Occupying a portion of a hotel that survived the 1906 earthquake, the double-height store had previously been stripped down to its bare brick walls and timber beams and rafters, and reinforced with steel framing for use as an auto-repair shop over the last couple of decades.

Architect Jim Zack of the San Francisco firm Zack|de Vito Architecture + Construction, which had collaborated with Werner on other projects, knew that his client had a strong design sensibility. For example, after Zack came up with a simple gypsum-board-on-wood-frame box surfaced in steel-trowel stucco cement for the prep kitchen, Werner and his contractor added diagonal white seams. Countering the machine-age surface is the preprimed wood boarding below it. Also, Werner wanted the wall along the main seating area to be paneled, but not with “the same old reclaimed barn wood”: instead, he chose wood trim in different widths to create a simple but distinctive plane. The modest construction cost didn’t include furnishings and shelving, or Werner’s one big splurge: two Italian-glass refrigerated cases that display eclairs and cakes as if they were jewelry in vitrines.

Zack kept costs down by using such items as cabinetry from IKEA. The lower sections remain just as they came from the store, but the architect covered the upper cabinets in sheet steel so they can function as magnet boards. A steel rolling ladder allows access to these upper reaches.

Zack’s subtle tailoring includes cranking the counter out about 6 degrees so that it funnels people toward the register; the dropped ceiling above follows the same angle. It’s just one more move adding to the sense that this is a bespoke space—part of the overarching experience that distinguishes a Craftsman & Wolves pastry from, say, an Egg McMuffin. ■

Lydia Lee is a San Francisco-based architecture and design writer who has also written on technology.



HARDLY DAINTY
In a former auto-repair shop, Zack|de Vito left the exposed brick walls and timber ceiling (opposite) and inserted machine-age finishes for the kitchen and display areas (this photo).

credits

ARCHITECT: Zack|de Vito Architecture + Construction – Jim Zack, partner in charge; Joe Benveniste, job captain

CONSULTANTS: Chen Design Associates (graphics and interior signage)

CLIENT: William Werner

GENERAL CONTRACTOR: P.P.A. Development – Patrick J. Fellowes, president

SIZE: 1,230 square feet

COST: \$175,000

COMPLETION DATE: June 2012

SOURCES

COUNTERTOP: Eurostone Quartz

LIGHTING: Elko (interior ambient and downlights)

PAINTS AND STAINS: Benjamin Moore

Urban Agriculture Grows Up

A wave of rooftop greenhouses and vertical farms captures the imagination of architects while offering an alternative to conventional cultivation methods. *By Peter Fairley*



COMMUNITY-GARDENING ADVOCATES have sold urban farming as a sustainable local alternative to industrial-scale farming and as an educational platform for healthier living. And municipalities are buying in, adopting urban ag to transform vacant lots into productive civic assets. In the last two or three years, however, entrepreneurial urban farmers have opened a new frontier with a different look and operating model than most community gardens. Their terrain is above the ground, not in it. Working with help from engineers, architects, and city halls, they have sown rooftops and the interiors of buildings worldwide. “There’s a lot of activity right now, and there is huge potential to do more of it,” says Gregory Kiss, principal at Brooklyn-based architecture firm Kiss + Cathcart.

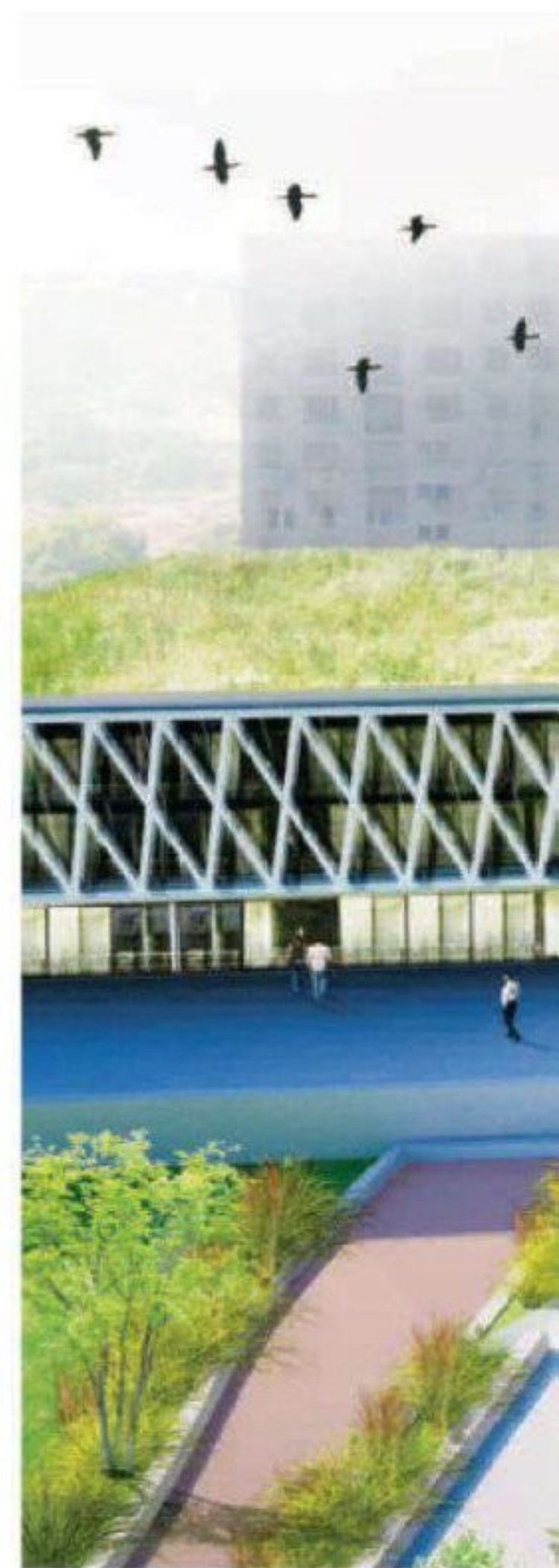
Exploiting the wide-open technology and design potential of these vertical farms—as building-based agriculture is increasingly known—should make them “more energy- and water-efficient and better integrated with their host buildings,” says Kiss.

The simplest vertical farms are soil-based agricultural extensions of the green-roof concept. Rather than covering rooftops with drought-resistant sedums to help control stormwater runoff and combat the urban-heat-island effect, they grow edible herbs and vegetables that deliver additional benefits. These roofs create jobs, provide fresh produce, and raise consciousness to combat the rising incidence of obesity, diabetes, heart disease, and other diet-related illnesses.

Adding a greenhouse, meanwhile, can add another level of verticality, in which the well-protected crops are stacked to multiply the growing area. Further enhancing output are high-tech additions such as automated conveyance systems, supplemental lighting, and hydroponics, which substitutes nutrient-enriched water for soil. Eliminating soil—which can weigh 50 pounds or more per square foot—slashes structural costs. And all these enhancements boost the output of fruit, vegetables, and herbs, creating additional revenue to finance the capital-intensive installations.

The most innovative vertical-farm designs are expanding urban ag’s potential by moving high-tech growing systems below the rooftop. Some current and future schemes include exploiting space deep in the belly of buildings, substituting grow lamps for sunlight, and encasing buildings in hydroponic greenhouses. Such projects would feed people more sustainably than current industrial practices, in the view of vertical-farming advocates. If they are right, these farms could feed the world’s growing population while shutting down many of today’s mega-farms.

As Kiss explains this most utopian view of vertical farming’s potential: “You eliminate the enormous pollution from agricultural runoff and pesticides, monoculturing of ecosystems, and water-usage problems, and allow land to return to nature, which restores habitats and sequesters carbon. It is a radical view of how the food system ought to be.”



TOUR VIVANTE

Paris-based SOA Architectes gave vertical farming its poster child in 2005 with a competition-winning scheme for a 30-story mixed-use tower. The design included a 75,000-square-foot greenhouse for growing tomatoes, greens, and strawberries that spiraled up the facade.



ROOFTOP FARM

For its latest vertical-agriculture project, SOA has proposed a set of rooftop greenhouses as part of the renovation of a public-housing complex in the Paris suburb of Romainville. The greenhouses' only source of heat will be the sun, requiring a shift to cold-resistant crops during the winter. The project is awaiting funding from the French state.

FROM CONCEPT TO REALITY

The term “vertical farming” and the concept of farming within buildings are often credited to Columbia University microbiologist Dickson Despommier and the graduate seminar on medical ecology he began teaching in 1999. His first class examined rooftop gardening’s potential impact on New York City’s food supply. When the students were disappointed by their estimate that rooftop farms could feed just 2 percent of the city’s population, Despommier suggested adding multifloor gardens within abandoned buildings. “Food was being grown indoors already in greenhouses,” he says. “It wasn’t much of a stretch to ask, ‘What happens if you stack them up?’”

Posting the seminar’s ideas online in 2005 sparked a global conversation. That same year, vertical farming got its poster-child design and entered architectural consciousness with Paris-based SOA Architectes’ *Tour Vivante*—the winning entry in a design competition for an integrated commercial and residential building proposed by the Urbanism Information Center of the city of Rennes. SOA’s hypothetical scheme delivered on the mandated uses and added a third programmatic element: hydroponic production of tomatoes, salad greens, and strawberries via more than 75,000 square feet of greenhouse growing area spiraling up the 30-story, 540,000-square-foot tower.

Vertical farms are now more than unrealized proposals. While Despommier could find none in operation when he

completed his 2010 book *The Vertical Farm: Feeding the World in the 21st Century*, he found three farms in three countries to add when the paperback edition appeared the following year. Since 2011 a profusion of projects has blossomed worldwide.

Most of the first-generation vertical farms are rooftop greenhouses employing some form of hydroponics. Greenhouses provide protection from harsh and variable environmental conditions and enable stacking, while hydroponics cuts weight and boosts productivity.

Consider Local Garden, a 5,700-square-foot greenhouse completed in February by clean-tech firm Alterrus atop EasyPark, a parking garage in downtown Vancouver, British Columbia. Alterrus offered to rent roof space on the long-underused garage to build a farm that would demonstrate its automated hydroponic technology—a system that supports vegetables on standardized rotating trays to maximize exposure to light and reduce waste of nutrients and water.

Alterrus claims to deliver 20 times the yield per growing area compared to land farming with just 8 percent of the water use. Atop EasyPark the company expects to produce 150,000 to 200,000 pounds of leafy greens per year. This hyperlocal food is sold in nearby shops, which means negligible transportation costs and energy input, and fresher food on the shelf, according to Sadhu Johnston, Vancouver’s deputy city manager for environmental and emergency affairs. He cites broader civic benefits, including local jobs and a high-profile symbol for eating fresh foods.



FARMING WITHIN

If rooftop greenhouses have an Achilles' heel, it is temperature regulation. Kiss, whose firm designed the educational greenhouse on top of Public School 333 on Manhattan's Upper West Side, which was New York City's first hydroponic rooftop farm when it opened two years ago, cites the heavy heating load required to produce tomatoes over the winter as one example. Doing so could, he says, consume as much energy as importing tomatoes from warmer climes, if not more. Readily available solutions such as opaque blankets that cover the glass at night are underused because, he says, "energy is cheap enough that it doesn't yet pay."

SOA takes a different tack in its latest vertical-farm design: a set of rooftop greenhouses as part of the renovation of a public-housing complex in the Paris suburb of Romainville. The project is awaiting financing from the French state. SOA's multistory greenhouse additions would be heated only by the sun, requiring a shift to cold-resistant crops in the winter, such as the presently in-vogue oyster leaf, a member of the borage family.

Ultimately, rooftop greenhouses could procure heat more

LOCAL GARDEN

Vertical-farming company Alterrus has built a greenhouse on the roof of a parking garage in Vancouver, British Columbia, that includes its proprietary system of stacked and rotating growing trays. The company claims the technology delivers 20 times the yield per growing area when compared to conventional land farming with just 8 percent of the water use.

FARMEDHERE

At this vertical farm, which occupies one-fifth of a previously vacant 90,000-square-foot warehouse near Chicago, layers of fluorescent lamps and trays of basil and arugula are stacked five or six levels high, nearly reaching the 24-foot-tall ceiling. The operation deploys two types of hydroponics: a misting technique known as aeroponics; and aquaponics, a technique that combines the cultivation of plants and aquatic animals.



sustainably by absorbing exhaust from a building's occupied space. Concerns about crop contamination via airborne microbes currently prevent this integration of airflows, but vertical farmers say filtering can ensure safety. SOA co-founder Augustin Rosenstiehl says the multilevel, soil-based growth system the firm plans to use at Romainville could do just that. He argues that growing in soil produces tastier and more nutritious food, much as *terroir*—which includes soil as well as climate and geography—defines the quality of a region's wines. But, he says, the soil could also serve as a medium for filtering microbes out of warm, CO₂-rich air.

Growing inside a building offers a more definitive solution to vertical farming's winter heating challenge and simultaneously multiplies growing potential. Of course, interior farms introduce a new energy load: lighting. While rooftop farms such as Local Garden have lights to provide supplemental illumination, interior farms are wholly dependent on electric lighting.

Vertical farms in the Chicago area are the first in the U.S. to begin testing this trade-off. The largest, FarmedHere, occupies one-fifth of a previously vacant 90,000-square-foot warehouse in Bedford Heights and looks like a marijuana grow-op on steroids. Layers of trays and fluorescent lamps stacked five or six levels high nearly reach the 24-foot ceiling, sandwiching an armada of basil and arugula plants whose roots dangle from reusable sheets of polystyrene. The farmers—many of whom are at-risk youth trained by a local nonprofit—tend the crops from moving platforms.

Two forms of hydroponics are in play. FarmedHere mists the arugula roots using a technique known as aeroponics, which reduces weight by eliminating water flows and boosts aeration to accelerate growth. Four varieties of basil, meanwhile, are grown via aquaponics: the water bathing their roots circulates through a tank of tilapia, whose droppings provide nutritional enhancement.

FarmedHere CEO Jolanta Hardej says a 5.5-ounce box of its arugula retails in local markets for \$4.99, 50 to 75 cents more than imported organic arugula. Still, she says it sells out because it is fresher and tastier. "We harvest one day and deliver to stores the next day. Produce coming from California or Mexico may have traveled three days," says Hardej. Growing in clean interior conditions also enhances flavor, she says, because the greens are marketed without washing, thus preserving essential oils on the leaf surface.

Controlled cleanliness is a selling point for the vertical farms that have mushroomed in Japan since the 2011 nuclear-reactor meltdowns that contaminated farms and fisheries. According to Despommier, there are now 211 vertical farms in Japan. Some of these, such as the 30,000-square-foot farm run by Kyoto-based Nuvege, have pioneered the use of efficient LED lighting. Powering lights accounts for 18 percent of FarmedHere's operating costs, and Hardej expects that number to drop considerably as it transitions to LEDs.

FARMING FACADES

The breakthrough moment for architecturally ambitious vertical farms akin to SOA's Tour Vivante could be a project awaiting municipal approval in Linköping, Sweden, where vertical-agriculture nonprofit Plantagon International has commissioned a 17-story office-farm hybrid one mile from downtown. CEO Hans Hassle hopes to clear permitting

PLANTAGON GREENHOUSE The vertical-farming nonprofit organization Plantagon is waiting for municipal approval to build a 17-story office-greenhouse hybrid in Linköping, Sweden. The building will be split vertically, with the southern half devoted to the cultivation of plants within a 190-foot tall, 60-foot-deep growing space. Plantagon plans to maximize energy efficiency via heat exchange with the office portion of the building and by using heat from a nearby trash-burning plant, among other strategies.



by early 2014 and complete the building one year later.

The \$30 million tower, designed by Swedish engineering firm Sweco, will split vertically. Roughly 67,000 square feet of office space will occupy the northern half; vegetables will occupy a south-facing, 190-foot-tall growing space that is the architectural equivalent of a 60-foot-deep double-skin curtain wall. Within, trays of plants will take a slow-motion roller-coaster ride to maturity, rising by elevator to the top and then descending on a helical track over several weeks.

The plan maximizes energy efficiency via heat exchange between the office and the growing space. The vertical farm will also be integrated with industrial facilities nearby, using heat from a trash-burning plant that supplies district heating in downtown Linköping and accelerating harvests with carbon dioxide from a garbage-composting biogas plant (which will, in turn, take its organic leftovers).



VERTICALLY INTEGRATED GREENHOUSE

Brooklyn-based Kiss + Cathcart has designed a vertical-growth system that integrates hydroponic food production into a multistory, double-skin facade. Plants are grown on trays suspended on cables, with planting and harvesting taking place at the bottom level. The angle of the growing trays can be altered in the manner of venetian blinds to provide shading for occupants.

Plantagon originally envisioned stand-alone glass towers and spheres that would maximize daylight exposure, but that turned out to be a tough sell, says Hassle: “It is easier to get investors if we combine vertical farming with other uses.” Kiss, meanwhile, sees growing food within as a way of boosting return on investment from double curtain walls, which rarely enhance efficiency enough to pay for themselves. Kiss’s firm has designed a vertical-growth system as part of a double-wall facade that also provides an adjustable shade and can be integrated with a building’s HVAC system to manage energy demand and enhance occupant comfort. Kiss + Cathcart hopes to incorporate the system into a community center it is designing in Maryland.

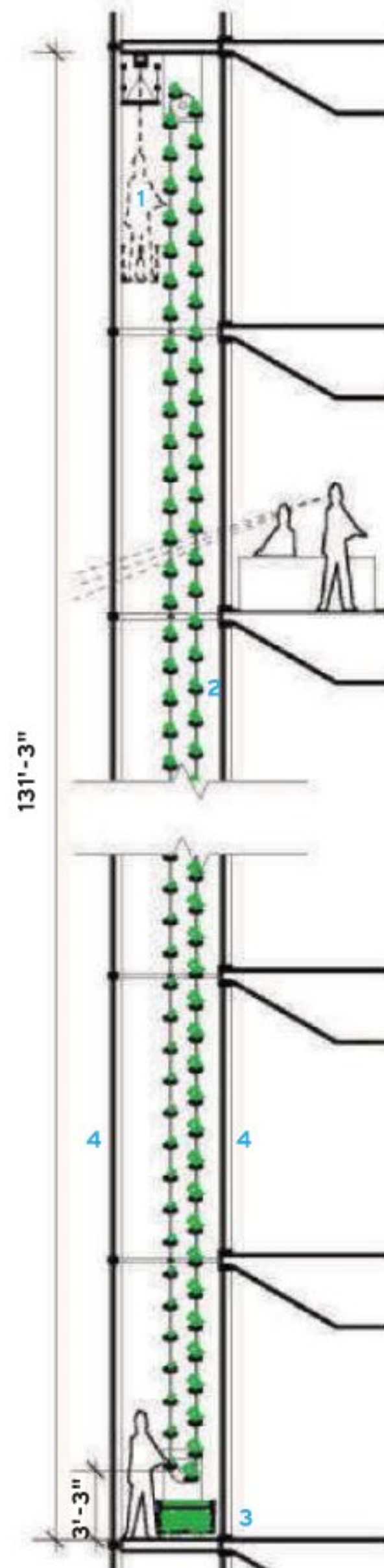
BOK CHOY FOR SWEDEN

Integration of vertical farming is an exciting prospect for architects, but the farming side must cover its costs if it is to thrive. This appears to be within reach. Hardej, for example, says FarmedHere is expanding from four growing lines to six and expects to be in the black when it has 24 lines. Pricier designs such as Plantagon’s may be able to recoup some costs by earning premium rents for their space.

While the high-end produce from such farms is better suited to feeding the upper-middle class than a hungry world, lessons from these first-generation growing systems could bring costs down and expand vertical farming’s impact.

Plantagon is already preparing to reach broad markets. At Linköping, the company plans to grow and sell 300 to 500 tons of an Asian vegetable that is high in fiber and protein but as yet unknown to most Swedish consumers: bok choy. “We have to show cities like Shanghai, Beijing, and Singapore that we can grow the food that they want,” says Hassle. He expects to be producing in China soon: “If we don’t have a building up and running in China within two to three years, we will be very disappointed.” ■

Peter Fairley is a journalist based in Paris and British Columbia who focuses on energy and the environment.



- 1 SERVICE SYSTEM
- 2 GROWING TRAYS
- 3 HARVESTING BIN
- 4 DOUBLE-SKIN FACADE

VERTICALLY INTEGRATED GREENHOUSE



Continuing Education

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

Learning Objectives

- 1 Define “vertical farming” and explain why advocates of the practice claim it uses land, water, and other resources more efficiently than traditional agricultural methods.
- 2 Outline the development of farming in urban environments and on top of or within buildings; discuss the potential public-health and social benefits.
- 3 Describe technologies relating to vertical farming, such as hydroponics, aeroponics, and aquaponics.
- 4 Discuss ways of incorporating food production into architectural elements, such as double-skin facades, and explain how such strategies can enhance energy performance and occupant comfort.

AIA/CES Course #K1307A

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Model Home

Sonoma, California

In response to a growing need, Leddy Maytum Stacy Architects and a Bay Area nonprofit developed a residential community for adults with autism.

By Lamar Anderson

119
124
128

SWEETWATER SPECTRUM

TORRE JÚLIA

GETHSEMANE LUTHERAN CHURCH/DEKKO PLACE APARTMENTS



PHOTOGRAPHY: © TIM GRIFFITH, EXCEPT AS NOTED

COZY CONTEXT
Sweetwater's single-story, four-bedroom homes have a decidedly domestic rather than institutional feel, with red-cedar and fiber-cement-board cladding.

ALTHOUGH LARGE population trends, such as the skyrocketing number of seniors in the United States, grab a lot of attention, the nation is also on the cusp of a smaller demographic boom. Between 2000 and 2008 the rate of autism diagnoses increased dramatically, up from 1 in 150 children to 1 in 88. Over the next decade, about 500,000 children with autism will reach adulthood, with no clear path to managing their lives on their own. “There’s not a solution for where they’re going to live long-term when their families are no longer able to take care of them,” says Marsha Maytum, principal of Leddy Maytum Stacy Architects (LMS).

In 2009, a group of parents and autism professionals began working on this problem. They formed a nonprofit, Sweetwater Spectrum, and bought a 2.8-acre urban infill site just off the old town square in Sonoma, California. The board of directors brought on LMS to conceive a new housing model grounded in the latest research. In addition to specific requirements—such as a legible, repetition-based site layout and interiors that reduce sensory stimulation—the board and the design team started with the premise that adults with autism should have the opportunity for self-determination.

The Sweetwater Spectrum residential community, which opened in January, consists of four single-story, 3,250-square-foot homes with four single bedrooms each, as well as a community center with a gym and teaching kitchen, a therapy pool, a greenhouse, an orchard, and a small organic farm. With its homey, wood-frame structures clad in fiber-

cement-board panels and accented in red cedar, the campus is not a hospital or even a social program: it is strictly housing. Sweetwater CEO Deirdre Sheerin likens the project to a retirement community with social activities. Residents still receive services—a few require round-the-clock supervision, for instance—but their families are the ones who coordinate their care, through state or private funding.

Autism is not a single disorder. But many on the spectrum share characteristics, such as a need for predictability and trouble with social interaction. LMS addressed these concerns by organizing the campus’s shed- and flat-roofed structures as a grid of nested spaces that gradually become more public. Private bedroom suites open to hallways; two suite pairs surround a living room and kitchen to form a house. Outside, the houses form pairs and then a foursome around the pool and community center. And at each entry point into a more social area, there is a protected pause—under a canopy, perhaps, or at a shielded bench or patio—so residents can assess their options before they engage, explains Maytum.

The nesting pattern also finds expression in Sweetwater’s position in the wider community, where some residents hold jobs and everyone ventures out for activities such as walks and bike rides. “One purpose of Sweetwater is to push toward normalcy and give choices,” says Sheerin.

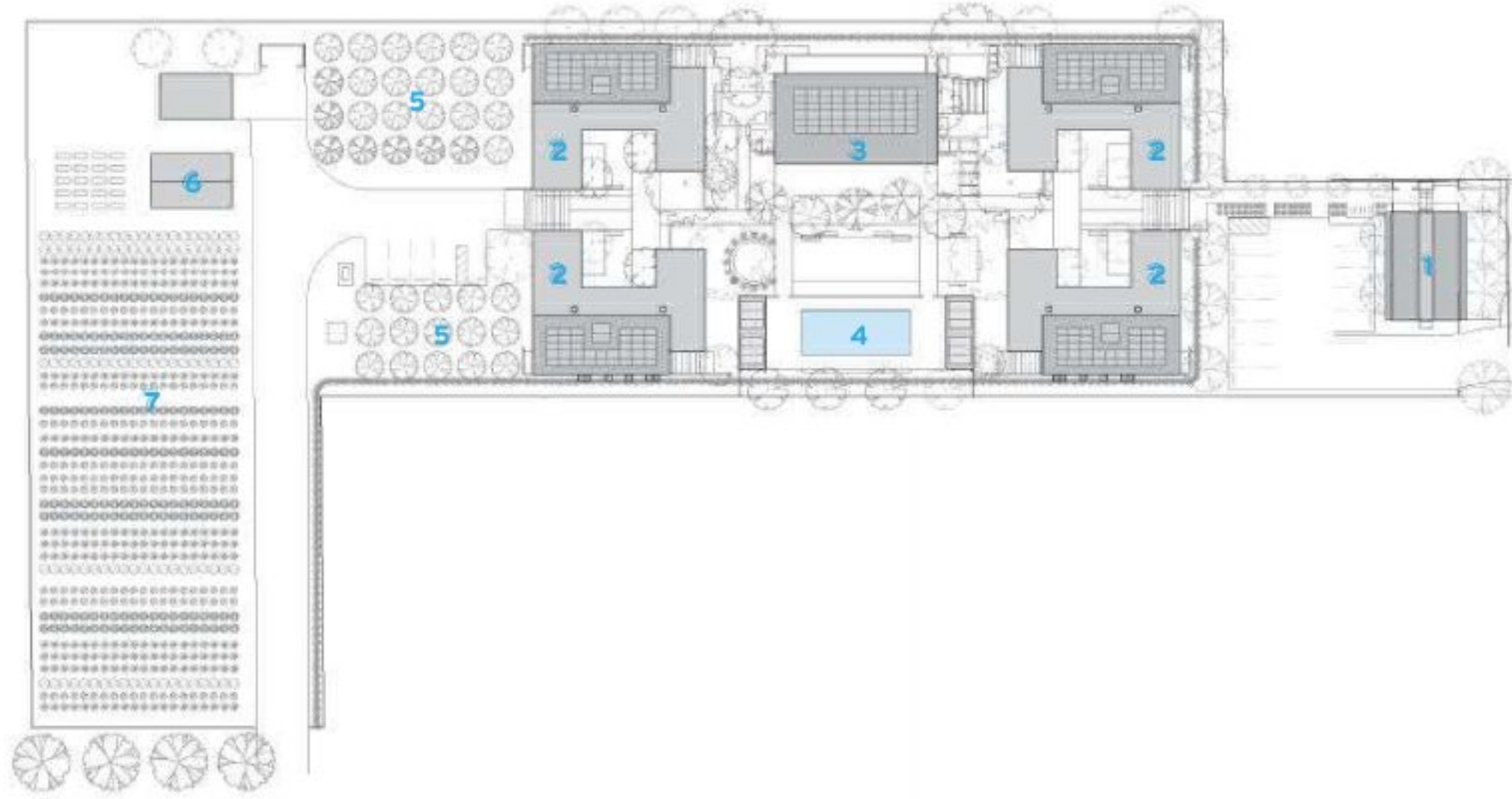
For the houses, the architects chose a palette of subdued colors and durable materials such as carpet tile, linoleum, and high-density gypsum board. They prioritized indoor air

PATTERN LANGUAGE

Since legibility and repetition help individuals with autism orient themselves in their surroundings, LMS configured the site in a predictable grid of residences with courtyards (below). Because daily exposure to water is important to many people with autism, Sweetwater’s campus includes a pool (opposite) and hot tubs, which are used year-round for therapy and also serve as a social outlet.

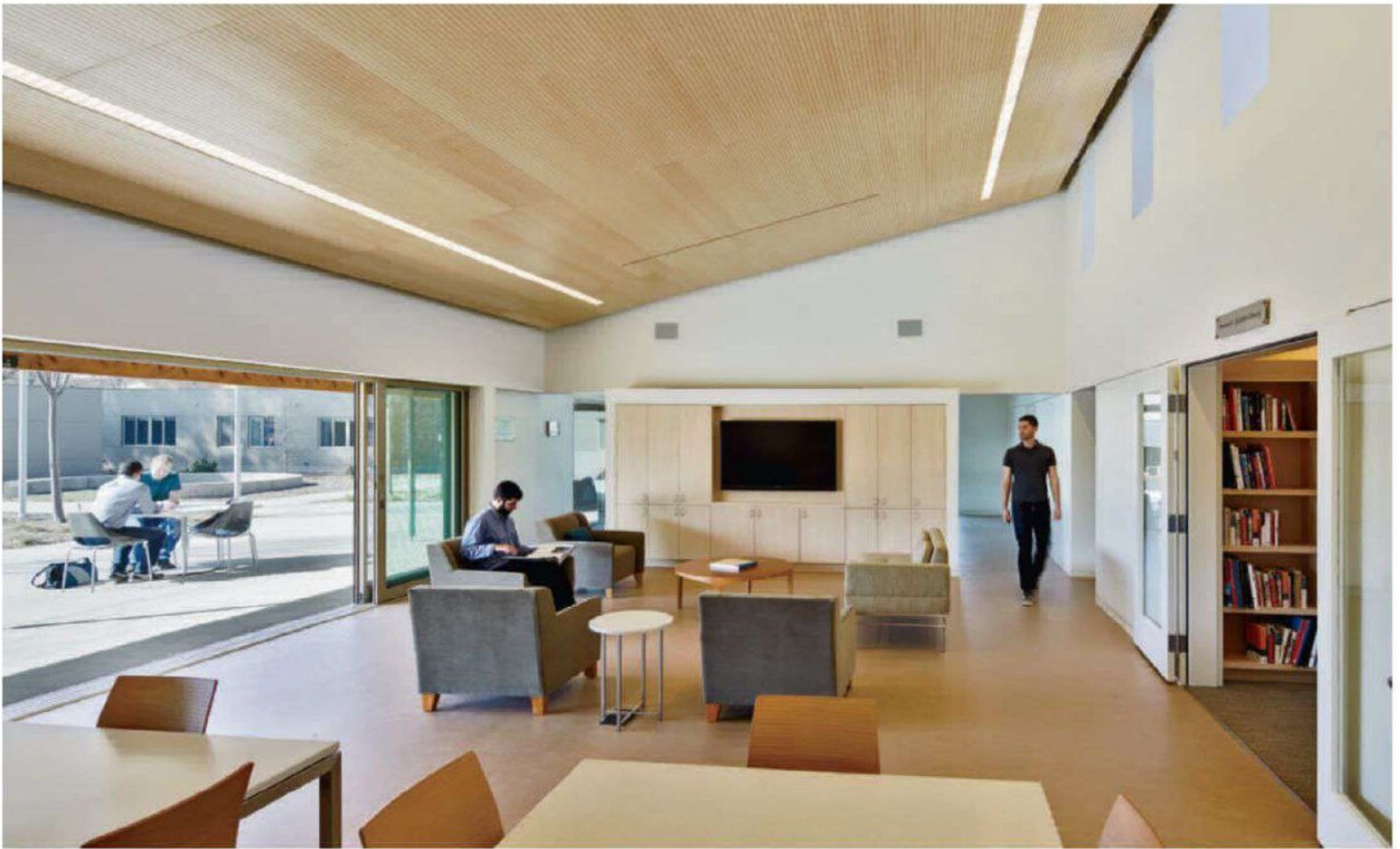


- 1 WELCOME BUILDING (PLANNED)
- 2 HOUSE
- 3 COMMUNITY CENTER
- 4 THERAPY POOL
- 5 ORCHARD
- 6 GREENHOUSE
- 7 ORGANIC FARM

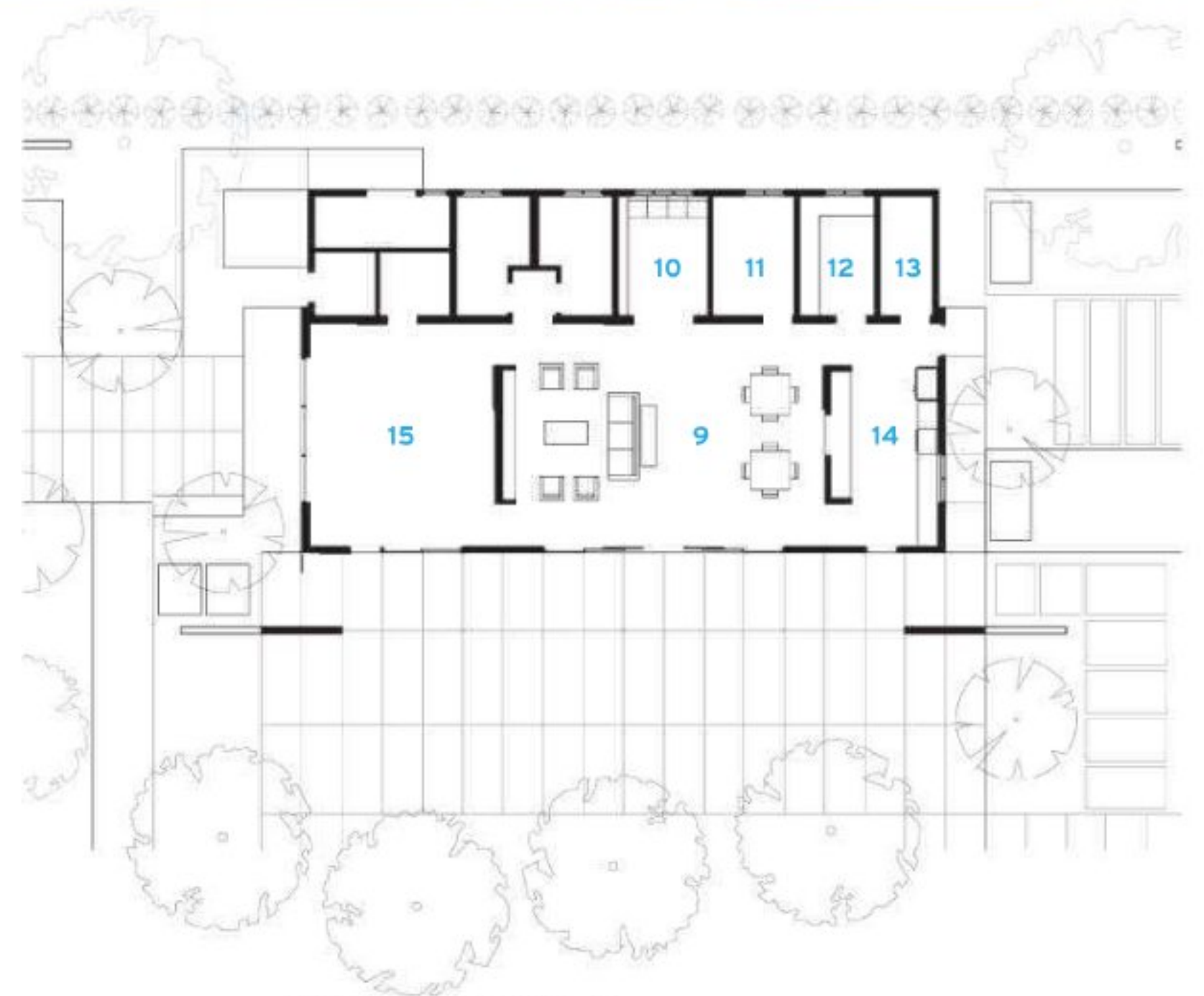


SITE PLAN





HOUSE PLAN



COMMUNITY CENTER PLAN

- | | | | |
|------------------|------------------|-----------------|---------------------|
| 1 ENTRY | 5 BEDROOM | 9 COMMON AREA | 13 PANTRY |
| 2 KITCHEN/DINING | 6 LAUNDRY | 10 LIBRARY | 14 TEACHING KITCHEN |
| 3 LIVING | 7 DINING TERRACE | 11 STAFF OFFICE | 15 FITNESS |
| 4 STAFF OFFICE | 8 TERRACE | 12 ART PREP | |



SAFE RETREAT

At each transition to a more public space, the architects created pauses that reveal opportunities for social engagement but allow residents to hang back if they wish, such as a bench outside a bedroom (above). The community center (opposite) picks up the residences' muted materials palette with earth-toned furnishings and a warm wood acoustic ceiling.

quality and indirect lighting because many adults with autism have sensory sensitivities. Ambient sounds are softened with perforated wood ceilings and a low-velocity ventilation system that incorporates radiant heating and cooling. (Ceiling fans were avoided because their rapid motion and flickering shadows can cause discomfort.)

Since Sweetwater was conceived as permanent housing, LMS built in accessible features: wide corridors, low counter-tops, and wheelchair-friendly bathrooms, for instance. "The plan is that residents will age in place," says Maytum.

The architects also looked ahead to 2020—California's target date for achieving net zero energy for all new residential construction. Rooftop solar panels, which supply about 72,000 kilowatt-hours per year, satisfy about 75 percent of the campus's energy needs; additional panels, if installed later, would bring the project to net zero.

But the project's largest ambition lies in the social ties its creators hope will take root, both among residents and between Sweetwater and the town. Residents who participate in the farm, for example, might gradually form friendships. And at harvest time, townspeople may gain some familiarity with autism through Sweetwater's roadside farmstand. "One of our responsibilities is to be educators to the community," says Sheerin, adding, "Autism is, and will continue to be, very much a part of our culture." ■

Lamar Anderson is a San Francisco-based writer and a frequent contributor to RECORD.

credits

ARCHITECT: Leddy Maytum Stacy Architects – Marsha Maytum, principal in charge; William Leddy, consulting principal; Christopher May, project architect; Gregg Novicoff, Vanna Whitney, Claudia Merzario, Andrew Hamblin, project team

CONSULTANTS: Structural Design Group (structural); Timmons Design Engineers (m/e/p); Miller Pacific Engineering Group (geotechnical); Adobe Associates (civil); Roche+Roche Landscape Architecture (landscape); Architectural Lighting Design (lighting); Charles M. Salter Associates (acoustical)

CLIENT: Sweetwater Spectrum

GENERAL CONTRACTOR: Midstate Construction

SIZE: 16,315 square feet (gross)

COST: withheld

COMPLETION DATE: January 2013

SOURCES

FIBER-CEMENT CLADDING: James Hardie

CEDAR SIDING: Lausmann Lumber

WINDOWS: Pella

STOREFRONT: U.S. Aluminum

GLASS: PPG

SKYLIGHTS: Velux

INSULATION: Icynene; Owens Corning; Dow

ACOUSTICAL CEILINGS: Architectural Components Group

PAINTS AND STAINS: Sherwin-Williams

RESILIENT FLOORING: Forbo

HIGH-IMPACT GYPSUM BOARD: National Gypsum

LIGHTING: Peerless; Pinnacle Architectural Lighting; Lithonia Lighting; Winona; USAI

PHOTOVOLTAICS: Suntech

SOLAR THERMAL PANELS: SunEarth

Social Network

Barcelona

A trio of young architects enlivens a housing block for seniors by cleverly manipulating its facades and creating a series of community spaces.

By David Cohn





ONE OF THE challenges in designing housing is finding a middle ground between monotonous repetition and arbitrary variety. For Torre Júlia, a 17-story municipal apartment building for senior citizens on the northern edge of Barcelona, a team of architects fresh out of architecture school—Ricard Galiana, Sergi Pons, and Pau Vidal—uses singular elements such as social spaces and circulation to cleverly navigate between these extremes. Developed after the trio won a 2007 competition for another project on the site that was subsequently canceled, their formal strategy is part of a larger aim to make the building into a community. “This is, after all, basically a social container,” explains Pons.

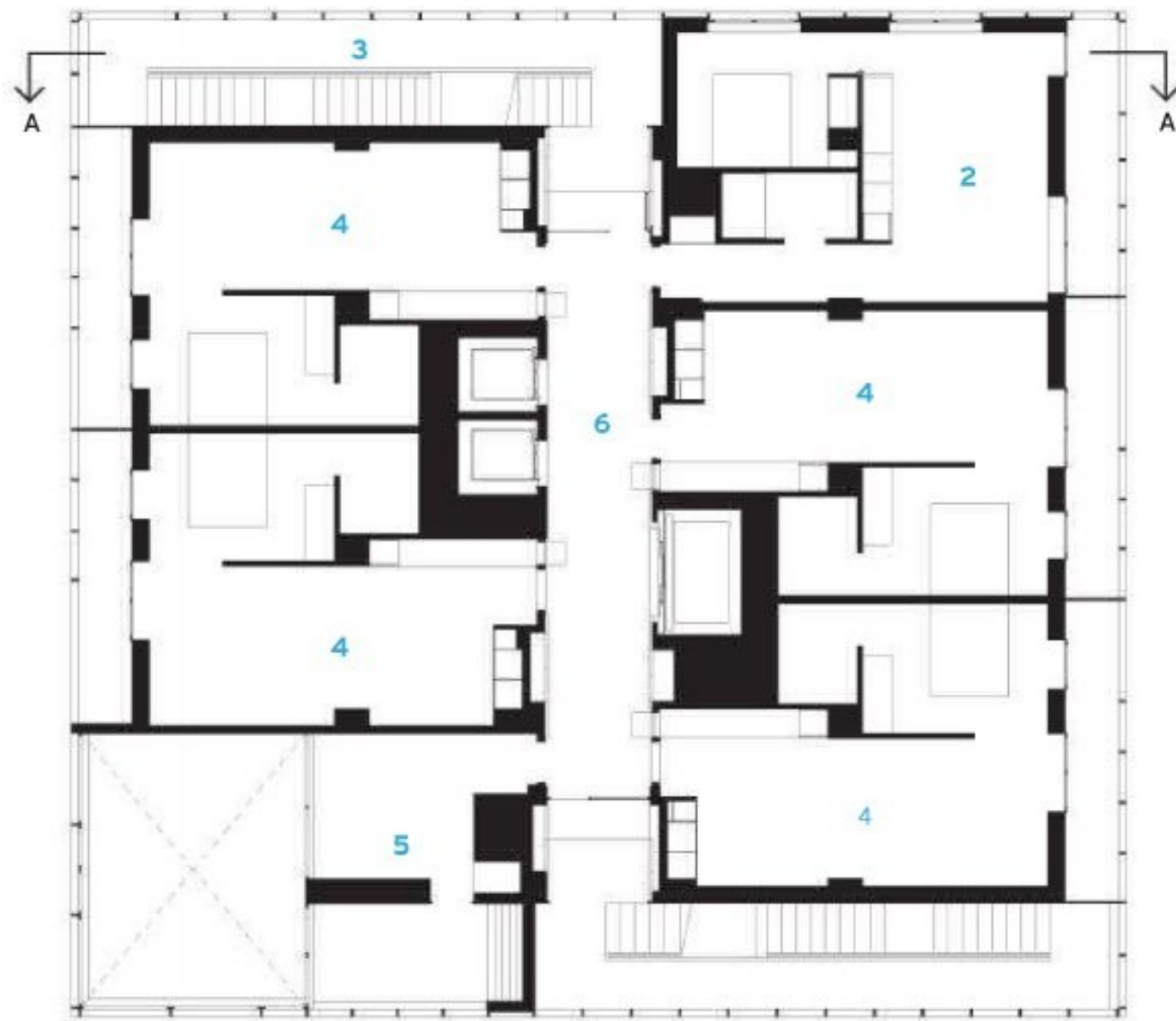
The design for the \$9.7 million, 90,000-square-foot tower starts from a premise as boring as that for a speculative office block: a reinforced-concrete structure with a square footprint and repetitive horizontal ribbons of openings and spandrels finished in white corrugated aluminum. But the architects treat this basic volume as a neutral field over which they deploy a series of variations. The 77 rental units, which overlook the northwest and southeast exposures, are pulled back behind continuous terraces, converting the facades into a sun screen. Outdoor stairs run down the other two facades, selectively interrupting the spandrel bands with dramatic, Constructivist-looking diagonals that reveal planes of yellow and green behind them—part of a color-coding system that groups several floors together into communities around corner common rooms.

These public living rooms are double-story, with full-height glazing, each with a 16-foot cantilever above supported by continuous concrete walls. Crowning the composition is a roof deck, open to the sky but surrounded by a ribbon of framed openings slightly taller than those below.

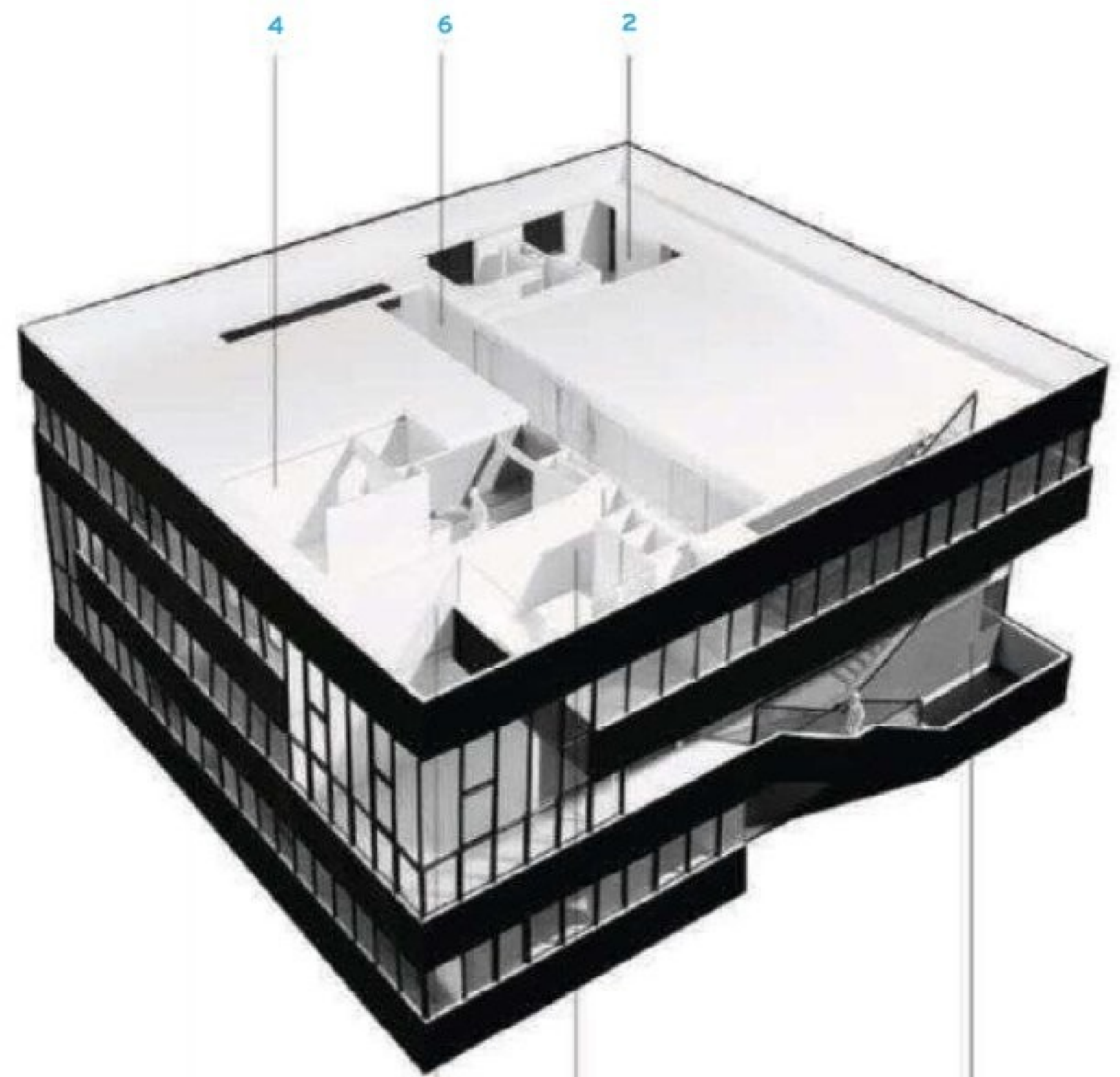


Inside, the architects push against the limits of subsidized-housing standards to encourage interaction among residents. Corridors are short and more than 7 feet wide (4 feet is the norm), with glazed ends opening to the exterior stairs, inviting visits to nearby floors. The 430-square-foot apartments, each with a single bedroom and a kitchen bar in the living area, have louvered windows facing into the corridors that residents can open to create cross-breezes and allow an auditory connection to the hall (fold-down seats in front of each unit were under-detailed, however, and can't support the weight of a sitter, though they're good for parking groceries). A midmorning trip through the building found residents' potted plants enlivening some of these bright spaces, sounds of a radio playing from one apartment,

CONSTRUCTIVIST COMPOSITION
Set diagonally on its site, Torre Júlia is animated by outdoor stairs and double-height common rooms on the corners (facing page). The continuous terraces of the apartment units further erode the facades (top). On the rooftop, the building has a public sun deck covered in artificial turf (above).



FOURTH FLOOR

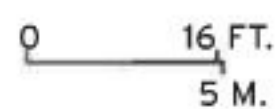


AXONOMETRIC DIAGRAM

- 1 ENTRY
- 2 CORNER APARTMENT
- 3 EXTERIOR CORRIDOR
- 4 TYPICAL APARTMENT
- 5 LAUNDRY ROOM
- 6 INTERIOR CORRIDOR
- 7 COMMUNITY SPACE



SECTION A - A



credits

ARCHITECT: Ricard Galiana, Sergi Pons, Pau Vidal; Gioia Guidazzi, Diana Sajdova, project team
ASSOCIATE ARCHITECT: Encarna García Ramiro
CONSULTANTS: L3J Tècnic Assosiats (mechanical); Boma Inpasa (structural)
CLIENT: Patronat Municipal de l'Habitatge de Barcelona
GENERAL CONTRACTOR: Acsa Sorigué
SIZE: 90,000 square feet
COST: \$9.7 million
COMPLETION DATE: September 2011

SOURCES

METAL/GLASS CURTAIN WALL: Acieroid
GLASS: Climalit
ACOUSTIC CEILINGS: Pladur
RESILIENT FLOORING: TAU Pavisa
ELEVATORS: Otis



SHARED SPACES
Apartments are grouped around the three common rooms (left) with balconies housing washer-dryers. Finishes include patterned wallpaper and the corrugated aluminum of the facades. Corridors (below) are extra-wide, with glazed ends opening to the outdoor stairs. The apartment units' louvered windows open to allow cross-ventilation.

aromas of baking from another, and a woman crossing over to call out to a neighbor. More social mixing takes place on the entry floor, which has a full-time social-services staff and a meeting room with a small stage. Here residents and staff interact in front of the elevators and the mailboxes.

Although the tower's site is something of a leftover space, it benefits from Barcelona's decades-old city-planning programs. It is situated at the end of Via Júlia, a commercial street where, in the 1980s, the city planted trees and created wide sidewalks, now filled with pleasant outdoor cafés. It stands beside the Ronda de Dalt ring road, built for the 1992 Olympics. Largely buried under plazas and boulevards, the busy thoroughfare is an acoustic presence but not overpowering. And the tower is grouped with other city services, including a nursing home, a public market, and a planned municipal swimming pool. Although the site is rather steeply sloped (an obstacle that the entry plaza, with trees and flower beds between meandering walks, handsomely overcomes), the location provides residents with panoramic views toward the Olympic Village and the Mediterranean. Such amenities, together with the skillful, committed design, make a big difference in a project built on a modest budget. ■



Mission Statement

Seattle

A Lutheran congregation in a rapidly developing part of the city revamps its campus to include affordable housing and an inviting corner chapel.

By Joann Gonchar, AIA



MANY-LAYERED Gethsemane's new seven-story building (left) includes 50 units of affordable housing stacked on top of two floors of church facilities. At one corner of the base, a double-height chapel and semi-enclosed garden (opposite, bottom) are defined by strips of colorful art glass. The apartments feel bright and open, despite their compact size, especially in the corner units (opposite, top), where the wood-framed windows extend almost from floor to ceiling.

COMMUNITY SERVICE has always been an important part of Gethsemane Lutheran Church's mission. Located just north of Seattle's downtown core, in a part of the city where glassy office and apartment towers are rapidly replacing low-scale residential and commercial structures, the church has long-standing programs providing free meals and accepting mail for people without a physical address. But for more than a decade, the congregation had been dreaming of doing more. And in 2007, after Gethsemane sold its air rights and a parking lot that was part of its campus, the parishioners got their chance, directing the proceeds of the deal toward construction of apartments for low-income individuals and families, the homeless, and the developmentally disabled.

With its partner, Compass Housing Alliance—a nonprofit

developer of affordable housing—Gethsemane came up with a plan to build the 50-unit Dekko Place Apartments on the site then occupied by its two-story parish building. The clients hired two local firms: SMR as architect of record and Olson Kundig as design architect for the church facilities that would be part of the \$12 million project, including administrative offices, a new chapel, and the renovation of Gethsemane's Mid-Century Modern brick sanctuary.

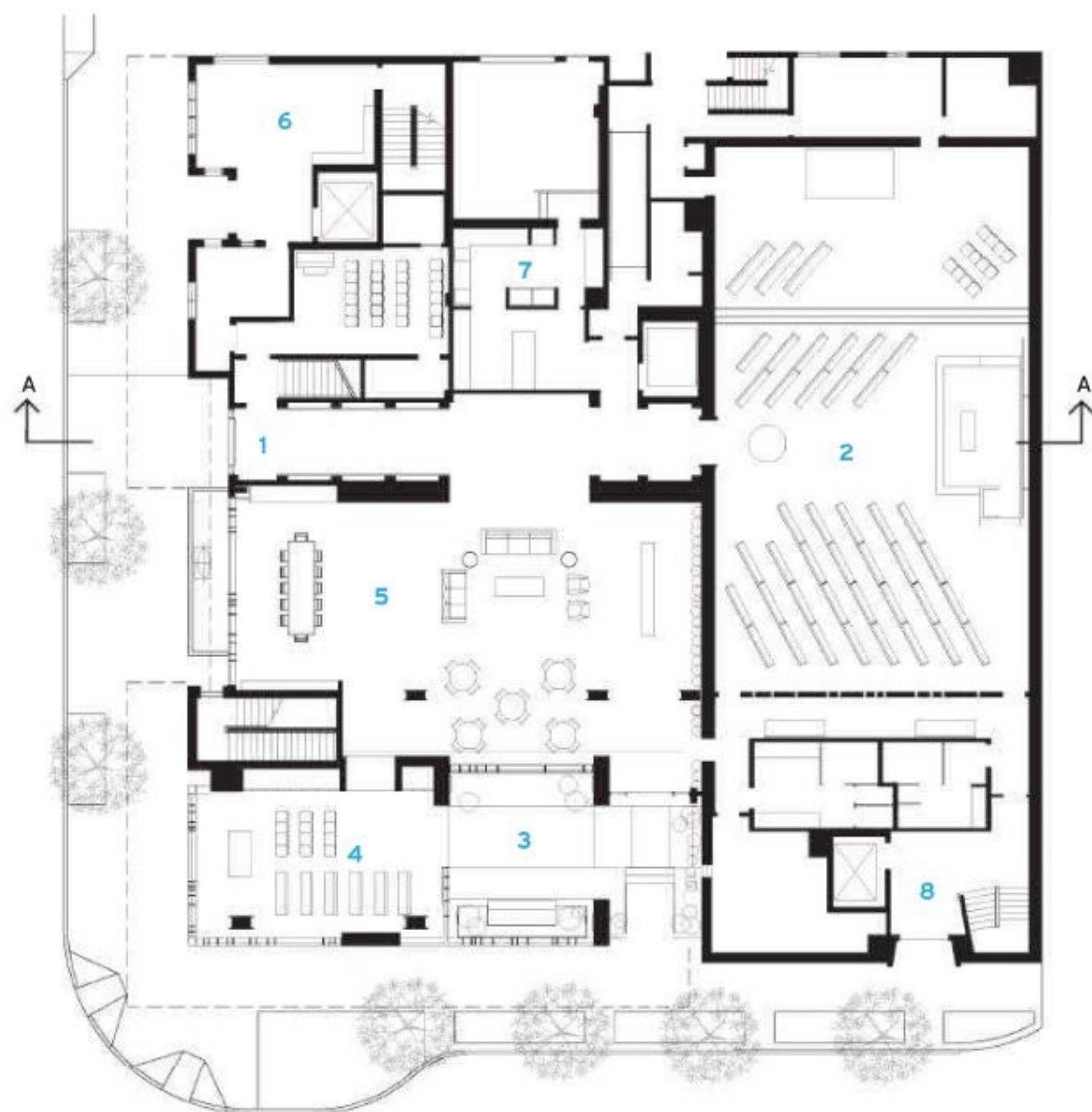
The architects devised a scheme for a new seven-story building that stacks five wood-framed floors of apartments above a two-story poured-in-place-concrete base for Gethsemane's chapel and its offices. And as part of the plan they created a below-grade space for a new tenant, Mary's Place, a day center for homeless women and their children. With its

new and renovated spaces for the congregation, facilities for social-service providers, and the affordable housing, “the building’s program is a three-legged stool,” explains Kimberly McKittrick, SMR’s project manager.

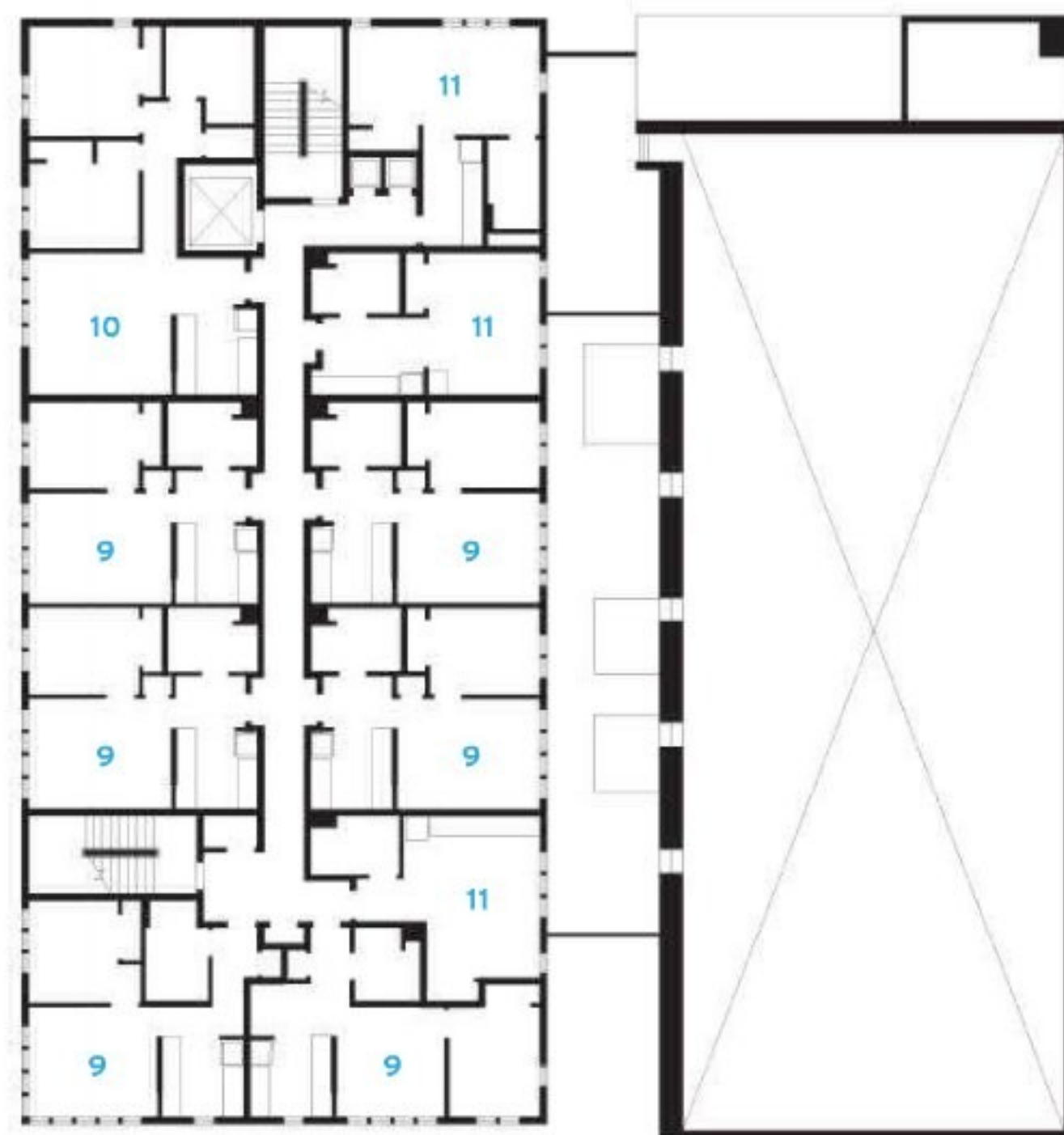
The facade cladding ties the disparate pieces together, literally and figuratively, say the designers. Ocher, terracotta, and deep-red steel panels overlap horizontally and vertically to suggest Christian crosses or woven fabric. The theme continues on the planted roof terrace, where different types of sedums achieve a similar crisscross effect—one that is visible from the nearby office and apartment towers. “The pattern,” says Jim Olson, principal at Olson Kundig, “is symbolic of weaving the parts of the program together.”

If the metaphor seems unnecessary, it doesn’t detract from the success of the project’s constituent parts. The building’s studios and one- and two-bedroom living units, for example, have efficient but comfortable layouts that range from about 350 to 850 square feet, each with its own kitchen and bath. And although they have no-nonsense finishes, like wood-grained strip-vinyl floor and plastic-laminate counters, the apartments also include decidedly noninstitutional



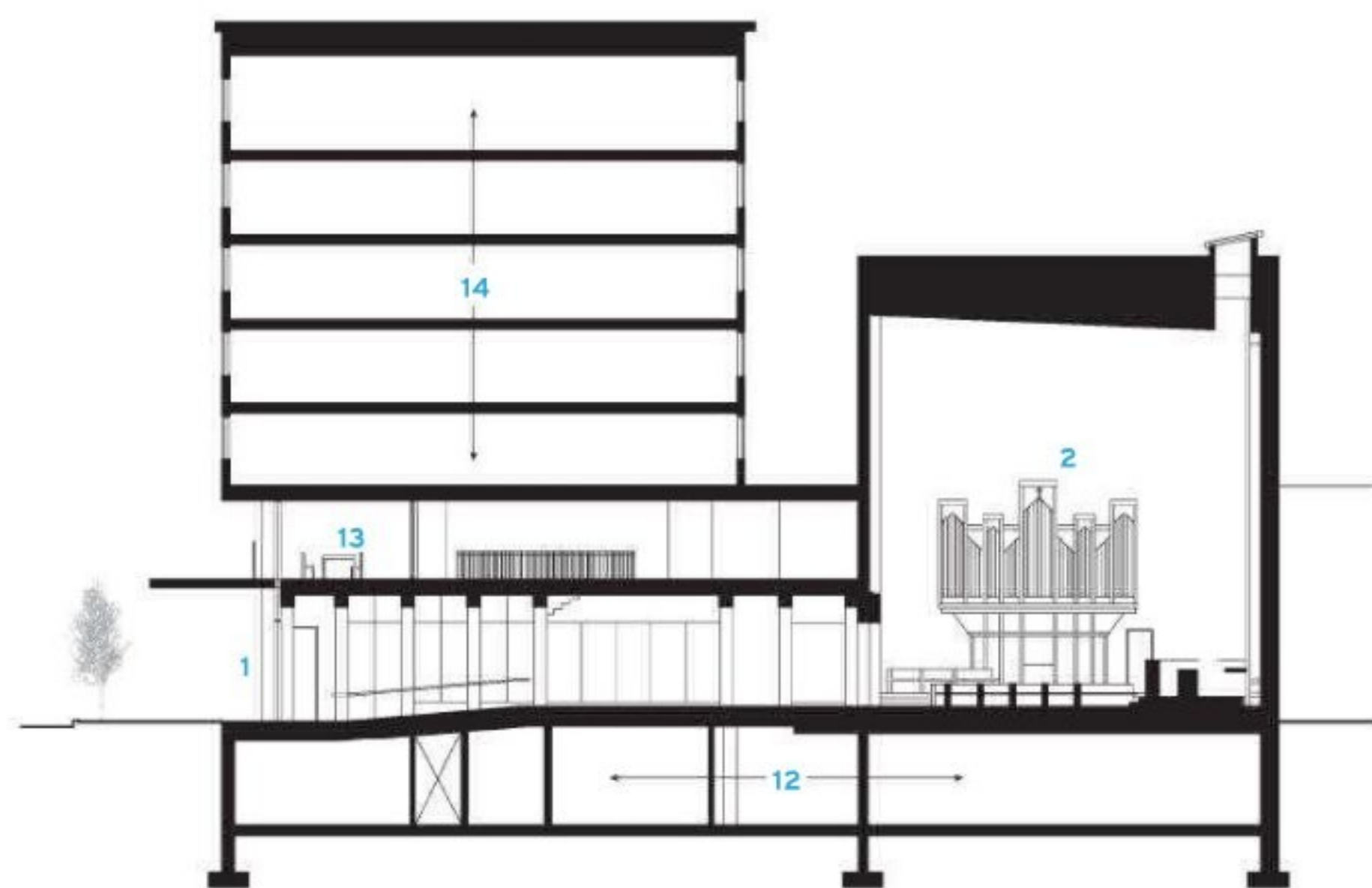


FIRST FLOOR



FOURTH FLOOR

- | | |
|-------------------|--------------------------|
| 1 CHURCH ENTRANCE | 8 SOCIAL-SERVICES LOBBY |
| 2 SANCTUARY | 9 ONE-BEDROOM APARTMENT |
| 3 GARDEN | 10 TWO-BEDROOM APARTMENT |
| 4 CHAPEL | 11 STUDIO APARTMENT |
| 5 FELLOWSHIP HALL | 12 SOCIAL SERVICES |
| 6 HOUSING LOBBY | 13 COUNCIL HALL |
| 7 KITCHEN | 14 APARTMENTS |



SECTION A - A



credits

ARCHITECT: Olson Kundig Architects – Jim Olson, principal in charge; Bob Jakubik, project manager

ARCHITECT OF RECORD: SMR Architects – John Woodworth, principal in charge; Kimberly McKittrick, project manager

CONSULTANTS: Coughlin Porter Lundeen (structural and civil); Sider + Byers (mechanical); Cierra Electrical Group (electrical)

CLIENT: Gethsemane Lutheran Church/Compass Housing Alliance

GENERAL CONTRACTOR: Rafn

SIZE: 64,000 square feet

COST: \$12 million

COMPLETION DATE: June 2012

SOURCES

FACADE PANELS: AEP Span

STOREFRONT: Pacific Aluminum

WOOD-FRAME WINDOWS: Pella

ART GLASS: Peter David Studio

features, such as radiant heating and wood-framed, operable windows. These windows, which are clear-coated on the interior and clad in aluminum on the exterior to match the facade panels, give the apartments an open and airy quality, especially in the units that stack above the building's west-facing corner, where the glazing extends almost from the floor to the ceiling.

For anyone walking by Gethsemane, the jewel-like corner chapel, along with an adjoining outdoor space protected from Seattle's frequent rain, will make the biggest impression. Unlike the much larger and inwardly focused main sanctuary, whose only connections to the outside environment are a skylight and a set of clerestory windows, the new 32-foot-long by 20-foot-wide chapel is defined by vertical strips of colored art glass that wrap the 21-foot-tall room on three sides. Sunlight shining through the glazing bathes the polished-concrete floor in a rainbow of hues, in the manner of stained glass. But the windows permit passersby to peer in, perhaps piquing their interest in what takes place within the chapel (the room has been the setting for events as diverse as informal prayer services, weddings, and yoga classes) and in the church and its mission. The room also allows its occupants to see the city surrounding them, serving as a reminder of the importance of ties to the community, explains Gethsemane's pastor, Joanne Engquist: "The chapel is our window on downtown." ■

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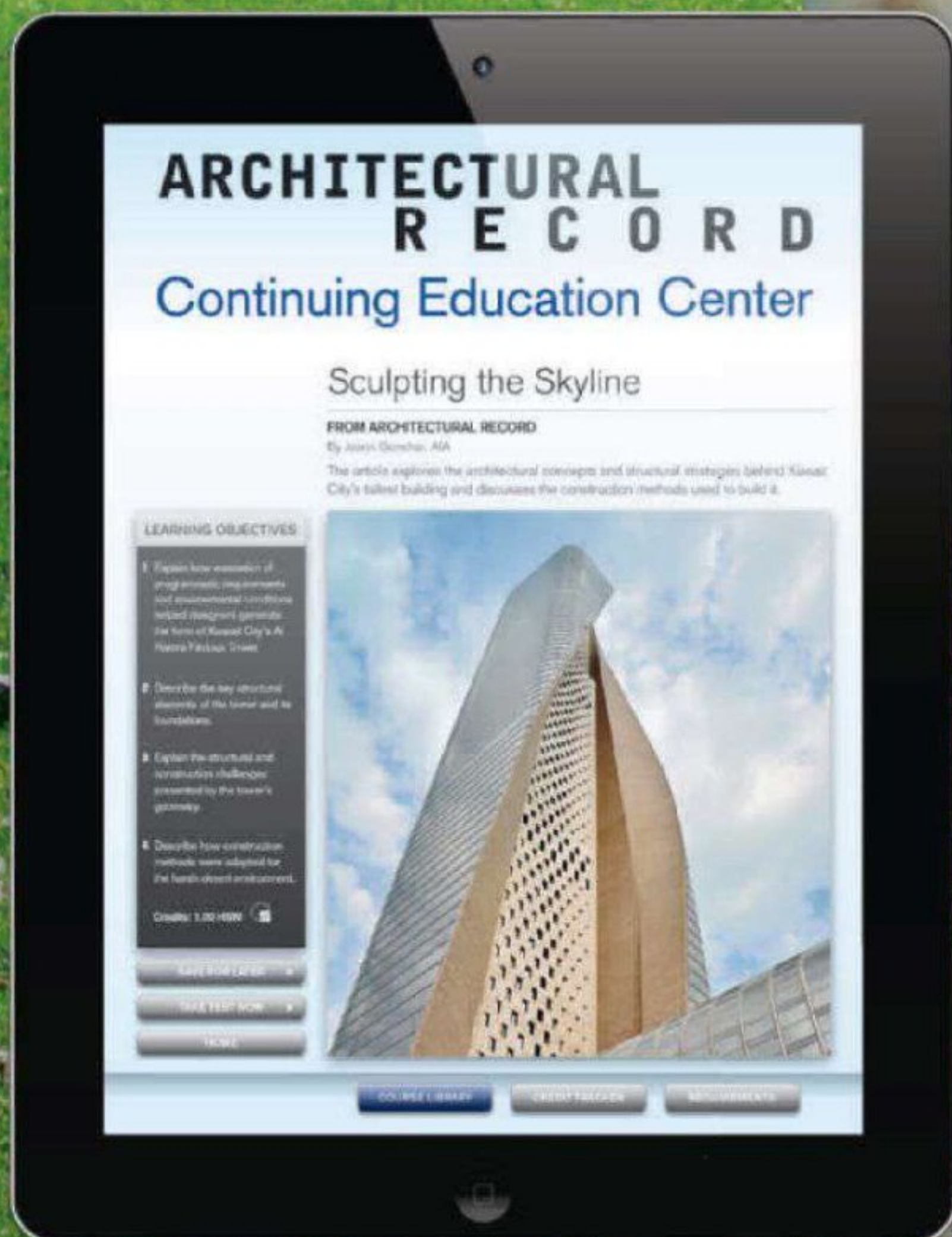
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p136

Full Transparency in Product Declarations

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p144

New Coatings to Help Support Cleaner and Fresher Healthcare Environments

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What Architects Need to Know About Specifying Wood Doors

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Innovations for Architectural Interiors

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SU SUSTAINABILITY

Full Transparency in Product Declarations

Specifying products that are consistent with environmental quality and human health

Sponsored by Forbo Flooring Systems | By Peter J. Arsenault, FAIA, NCARB, LEED AP



Products and materials used in buildings can either contribute to or detract from the health of the environment and human well-being.

When selecting and specifying building materials, architects and interior designers need to rely on data from manufacturers regarding the make-up and performance of those materials. In order to verify product claims, independent testing or certification is required so the building owner has some basis to feel comfortable and protected in the selections being made. This type of process has been routine for decades related to things like fire safety, structural integrity, and worker safety.

Another category of information is becoming common and in some cases being demanded related to building products of all types, namely the environmental impact of products and materials. Standardized Environmental Product Declarations (EPDs) are quickly becoming the tool that can inform those who specify products on a range of environmental issues.

The emerging use of EPDs is fundamentally viewed as a good thing since it makes the manufacturing process and the true make-up of the product more transparent to everyone involved. However, there are still some limitations in the data made available through the criteria behind the EPDs or disclosed by some product manufacturers. Recognizing this, a movement has begun that looks deeper into the impacts of building products not only on the natural environment, but also on human health as well. In order to get the whole truth about the environmental and human health impacts of the products being specified, complete transparency in reporting is needed by industries and individual product manufacturers.

DEFINING ENVIRONMENTAL PRODUCT TRANSPARENCY

Ever since 1987 when the UN-sanctioned Brundtland Commission convened, sustainable development or “sustainability” has been defined as the kind of development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Needs have been broadly and variously defined, but the intent is to allow all generations, all social classes, and all geographic locations around the world not only to sustain themselves, but in fact to thrive.

Working from this point, different industries and organizations have used this concept of sustainability as an overarching motivation to move their individual areas of expertise

forward. In terms of the design and construction industry, this focus took shape in the early versions of green building rating systems such as the USGBC LEED® program. As these programs have incrementally evolved, life-cycle assessment (LCA) has become an agreed upon basis for measurement of the total sustainability impact of a building or its component parts.

As the development and usage of LCA tools and computer software has matured, even the smallest of start-up companies and product manufacturers can now accurately assess their environmental and sustainability footprint. The key variable, of course, is how detailed and how complete an analysis should be performed.

There are certainly people in the design and construction industry who feel that some green building standards are the compromised result of pressure to reach consensus among diverse entities with differing interests. As such, a focus on selected “attributes” of materials and products rather than an assessment of the product as a whole has been blamed for manufacturers being able to “green-wash” their products over the past 20 years or so.

Similarly, there is a concern that the emerging use of EPDs focuses on certain environmental impacts but stops short of being fully transparent in all areas particularly in terms of human health. Full transparency requires steps beyond the current EPD process. So, let’s begin with the basics of this overall process which includes each of the component parts discussed briefly below:

Life-Cycle Assessment (LCA)

Properly performed, a life-cycle assessment is an analysis of every phase of a product’s manufacturing process and usage over time. Typically, this includes five basic phases:

- 1. Extraction phase.** (Sometimes called the “cradle.”) A true life cycle starts with the extraction phase where the raw material(s) of the product are identified along with the means of extracting and transporting that material to a manufacturing site such as a factory.
- 2. Manufacturing phase.** Next, the manufacturing phase is examined in terms of the processes and procedures needed to turn the raw materials into a finished product ready for delivery (when ready for delivery it is sometimes referred to as being at the “gate”).
- 3. Construction phase.** The third phase is where design and construction professionals usually see the products, namely the construction phase where the products are transported from a factory to the jobsite and installed as part of the normal construction process.
- 4. Use phase.** From there the product begins its useful service life or use phase as part of the building to the benefit of the building owner and users.

5. End of life phase. (Sometimes called the “grave.”) At the end of its usefulness in the building, the product moves to its end of life phase where it needs to be removed and either reclaimed, repurposed, recycled, reused, or disposed of.

Assessing the issues and impacts across all five of these phases makes up a full life-cycle assessment (sometimes called a full “cradle to grave” assessment) of a particular product or even a category of products and materials.

International Standards

The International Organization for Standardization (ISO) (www.iso.org) has become recognized around the world for establishing LCA standards and rules. This organization, while an independent body, is actually a network of national standards organizations from many countries. In the U.S., the American National Standards Institute (ANSI) is the member body that participates in and contributes to the standards that are promulgated under ISO. A process of global consensus is employed for these voluntary standards with the intentions of creating state-of-the-art specifications for products, services, and good practice, helping to make industries more efficient and effective, and helping to break down barriers to international trade.

It is the ISO 14044 family of published standards that specifies requirements and provides guidelines for conducting an LCA. In much the same way that building products are tested by independent laboratories for any range of other characteristics, an ISO-compliant LCA is meant to be conducted by an independent third party following the requirements of the standard, thus ensuring unbiased results and confidence by end users of the results.

Product Category Rules (PCR)

A product category rule (PCR) is the standardized method for conducting and reporting the results of a life-cycle assessment for a particular group (category) of products. The PCR ensures that all products in its defined category (e.g. concrete products, flooring products, etc.) are measured the same way in each of the five life-cycle phases. It also assures that their environmental impacts are quantified in the same way so comparisons can be readily made between different manufactured products within the same category. The PCR defines the means for measuring and reporting out by requiring that the same functional unit of measurement is used for all products within a category (e.g. impact per cubic yard of concrete, or per 100 square yards of a flooring, etc.).

PCRs are developed using a consensus-based, collaborative, and fairly transparent process by industry experts and stakeholders, following certain ISO guidelines. They are then verified

Photo courtesy of Forbo Flooring Systems



An Environmental Product Declaration should be independently verified for accuracy and completeness.

by an expert review panel. At present, however, there are only a limited, but steadily growing number of fully developed PCRs, although more are being developed each year.

Environmental Product Declaration (EPD)

An environmental product declaration (EPD) is a document created by a manufacturer to show the results of the life-cycle assessment performed on its product(s) in accordance with ISO standards. Where appropriate, the relevant Product Category Rule should be used to conduct the LCA and the completed Environmental Product Declaration should

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Learning Objectives

After reading this article, you should be able to:

1. Identify and differentiate emerging practices involved in quantifying the environmental impacts of building materials and products.
2. Investigate and distinguish between toxicity to the environment and toxicity to human health.
3. Explore the role of Environmental Product Declarations and other initiatives as part of green building certification programs.
4. Evaluate specific programs that address Health Product Declarations and the relative toxicity of materials.

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

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Products undergoing an EPD process are assessed on the basis of specific life-cycle impact categories such as emissions that contribute to global warming.

reflect that. Before being published, the EPD needs to be verified and approved by an independent entity such as UL Environment (ULE) or the Institute for Market Transformation to Sustainability (MTS).

The fully vetted EPDs thus enable everyone involved to make accurate direct comparisons of the environmental strengths and weaknesses of similar products, thus providing a degree of transparency in terms of the environmental impacts of using different building products. Many in the green products industry regard the EPD to be a standardized tool used to communicate the environmental performance of a product. It works in the same way that a nutrition label on a food product informs us about the fat, sugar, and cholesterol in the foods we eat. Only in this case, it is an environmental impact label informing us about energy, pollution, and resource depletion contained in the products that we select and specify.

Impact Categories

While the information contained in EPDs is clearly useful and desirable, it should be recognized that it is limited to the specific environmental impacts assessed. These environmental impacts are typically organized into different categories to describe the specific impacts during a product's life cycle (or individual phases) on specific areas of concern. The ISO standard requires that a minimum number of specific environmental impact categories must be measured and included in the LCA. Where applicable, PCRs further define which impact categories must be reported in each EPD. Of course, EPDs can

always report more impact categories than required by the PCR. Environmental impact categories generally include, but are not limited to, such things as:

- ▶ **Resource depletion (biotic/abiotic)**—the consumption of non-renewable resources including those used for energy (oil, gas, coal, metals, etc.)
- ▶ **Acidification potential**—the potential for the product to contribute to acid rain
- ▶ **Eutrophication potential**—the product's contribution to water or soil nutrients that cause algal blooms
- ▶ **Global warming potential**—the emissions of carbon dioxide or methane that affect the earth's atmosphere
- ▶ **Ozone layer depletion potential**—the reduction in beneficial environmental ozone caused by chlorofluorocarbon emissions
- ▶ **Photochemical ozone creation potential**—the contributions to smog caused by hydrocarbon emissions

It is important to recognize that all of the parts of the process as discussed above are inherently tied together. PCRs for a specific product type or category are developed following the guidelines authored by ISO. An LCA is then performed by an independent entity for a specific product or material according to the PCR and the specific minimum impact categories that indicate what must be measured and accounted for. The results of the LCA are then used to publish an EPD that comes from the manufacturer. When architects, engineers, or others request this EPD, then, it is a representation that the proper process has been followed to produce

it. It is the EPD that ultimately is used by the design team to assess different products and materials for sustainability and to provide documentation for green building certification programs.

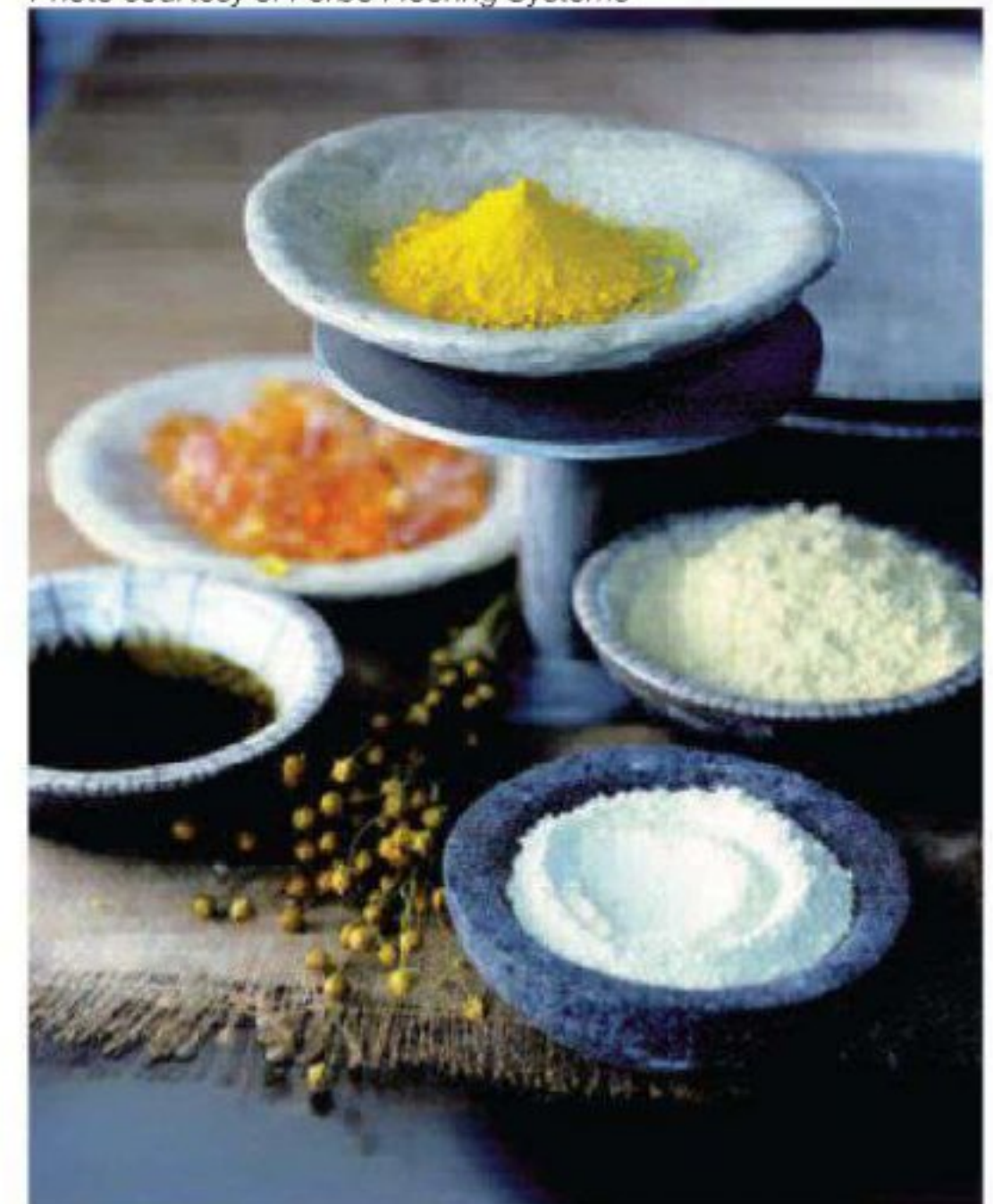
DEFINING PRODUCT TOXICITY

In order for a building product and its life-cycle impacts to be completely transparent, additional information is needed beyond the basic information provided in EPDs. The missing item in the process so far has been toxicity, that is, the presence of substances that can poison or create toxic conditions. Those substances come from the various ingredients, minerals, compounds, etc. that are included in or are the result of creating a building product. The concern over these ingredients is seen in two areas:

1. Ecotoxicity is the potential of biological, chemical, or physical stressors to adversely affect ecosystems. There are plenty of examples over the past 100 years or more of a product manufacturer polluting the air, water, or soil to the point that animals, birds, fish, or vegetation were destroyed due to the toxic nature of the pollution.

Of course, it is important to recognize that products can contribute to ecotoxicity during several or even all phases of their life cycle. Extracting raw material in a manner that kills off parts of an ecosystem immediately or over time have been seen in many products that are mined or harvested. Manufacturing plants that use industrial process to create products sometimes also create toxic by-products or emissions that can damage or kill living things of all types. And the disposal of some products

Photo courtesy of Forbo Flooring Systems



All building products are made up of selected and necessary ingredients, some of which have raised concerns over their toxicity to the environment, people, or both.

Photo courtesy of Forbo Flooring Systems



In addition to environmental impacts of building products, increasing attention is being paid to the human health impacts of products over their life cycle.

has led to landfills or incinerators producing toxic air or liquids emanating from them. This recognition of toxicity is a significant environmental impact, but not all PCRs or EPDs fully address the toxic potential to the environment over the life cycle of their products.

2. Human toxicity is the likelihood of an environmental toxicant to have an adverse effect on human health. In essence it talks about the ability of a product, its component materials, or its byproducts to be toxic (i.e. poisonous) to people.

Unfortunately, the construction industry can point to plenty of instances where some rather mainstream and standard materials proved to be detrimental to people. Products that contained asbestos, lead, and urea-formaldehyde garnered a lot of public attention and many companies are still paying the astronomical costs of abatement and legal liability from the real or threatened human harm that occurred. The business consequences were disastrous for the product manufacturers and the consequences were equally staggering for the architects,

specifiers, and building owners who unwittingly put these toxic products to use.

In recognition of these past issues and in the interest of avoiding such issues in the future, green building rating systems began to address indoor environmental quality (IEQ). This is definitely a step in the right direction and limits the use of particular chemicals such as urea-formaldehyde and volatile organic compounds (VOCs) in building products. However, there are plenty of other chemicals, compounds, and by-products that can be harmful or toxic to people over the life cycle of the manufactured products. It should also be noted that the concern here has often been the exposure to people during the building use phase but the reality is that people can be exposed throughout the full life cycle of the product.

Architects and interior designers have been aware of the need to address human toxicity in the built environment for some time. Diane Brandli, ASID, CID, LEED AP, is principal of dbdesign, a sustainability and interiors consulting firm in upstate New York. She has undertaken to independently research and investigate building products in depth and look at the substance behind different product certifications. She notes: "There are specific means by which human health is affected by building products. For example the very act of inhaling in an indoor environment containing VOCs exposes our airways and lungs to potentially serious harm." What if we are eating in a space that has toxic materials in it? Brandli warns that "ingestion of toxic dust particles is entirely possible when people are exposed to materials that contain toxins."

We don't even need to inhale or ingest to be affected. "Dermal exposure, which is toxic components absorbed through the skin, can come about just by being in contact with surfaces, furnishings, or finishes," says Brandli. She also points out that "human health reaction can be immediate (allergic) or long term (persistent bioaccumulative toxins or PBTs.) The long-term effects are the most insidious." Given all of the potential ways that people can be affected, it is clear that addressing human toxicity is not only the right thing to do from a health, safety, and welfare perspective, it is paramount to protecting life.

Ecotoxicity and human toxicity are broad and complex issues. They aren't always easy to categorize or inexpensive to quantify. For these reasons, it is tempting to simply deny or ignore them. Unfortunately, denial and ignorance can sometimes seem to be a fairly effective

marketing strategy but the evidence of history proves otherwise.

GREEN PRODUCT CERTIFICATIONS AND PRODUCT TRANSPARENCY

The growing availability and use of LCAs and EPDs as a means to assess and compare different materials and products for green buildings has led to their growing recognition and use in different green building and product certifications. These certifications set a performance standard and act as a benchmark for what acceptable or preferred levels should be sought in regards to environmental impacts. A summary of those certifications follows below:

SMaRT Sustainable Product Certification

Beyond conducting LCAs solely according to the ISO standard, a more stringent product certification program has been developed in this country known as the Sustainable Materials Rating Technology (SMaRT®) Consensus Sustainable Product Standard®. This ANSI standard acts as a PCR to define a category of exemplary certified sustainable products. It was developed by the Institute for Market Transformation to Sustainability (MTS) and uses environmental, social, and economic criteria applied to manufactured products (<http://mts.sustainableproducts.com>).

To achieve SMaRT® certification, an ISO-compliant life-cycle analysis is performed but some impact categories above and beyond those required by ISO must also be included, mostly related to human health and toxicity of materials used. Once complete, the LCA results are used together with other rating criteria to generate a LEED-style certification that is based on earning points in six categories:


- ▶ Safe for Public Health & Environment (PHE)
- ▶ Renewable Energy & Energy Reduction (RE&ER)
- ▶ Biobased or Recycled Materials (MATLS)
- ▶ Facility or Company Based (MFG)
- ▶ Reclamation, Sustainable Reuse & End of Life Management (EOL)
- ▶ Innovation in Manufacturing (IM)

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Peter J. Arsenault, FAIA, NCARB, LEED AP, practices, consults, and writes about sustainable design and practice solutions nationwide. www.linkedin.com/in/pjaarch



Forbo Flooring Systems has been creating better environments with its beautiful, durable flooring products for over 100 years. Forbo is committed to complete transparency in its products and the industry, and recently released a full and transparent Health Product Declaration (HPD) going beyond the industry standard EPD to include a product's impact on human health and ecotoxicity. www.forboflooringna.com



Properly specified doors help achieve the aesthetic, functional, safety, and environmental requisites that enhance the look and durability of a commercial space.

Photo courtesy of VT Industries, Inc.

What Architects Need to Know About Specifying Wood Doors

A primer on door components, construction, aesthetics, and sustainability

Sponsored by VT Industries, Inc.

Doors are a critical part of every building, and there are a plethora of options to satisfy a variety of needs. Today's marketplace is flooded with so many choices in types and styles of wood doors that selecting the right door for a given situation can often be a time-consuming and perplexing process. Yet properly specified doors go a long way to achieving the aesthetic, functional, safety, and environmental requisites that enhance the look and durability of a commercial space. Architects and design professionals who are researching, comparing, selecting, and specifying wood doors should be equipped with an understanding of the basic anatomy of a door, and the function of all constituent parts as well as a knowledge of industry standards that must be met. This article will serve as a primer on wood doors, their components, and construction methods and how to achieve optimum results from the perspective of performance, aesthetic, and environmental concerns.

ANATOMY OF A DOOR

Architectural wood doors are assembled products comprised of multiple components, each with its own purpose. All doors consist of:

- ▶ a core, the main component, and innermost layer
- ▶ stiles, the vertical lock, and hinge edges
- ▶ rails, the top, and bottom edges
- ▶ face materials, the outermost layer.

Depending on the door construction process, two additional components may be included. Crossbands are materials placed between the core assembly and face material, and backers, which are materials applied to the crossbands opposite the face.

In the architectural wood door construction industry the term "ply" is used to identify wood door components. The number of ply in door construction is distinguished by the number of layers of material in the door, which may be 3, 5, 7 or 11. The number of ply may also determine the technology and technique used

to manufacture the door. The core of the door is counted as one ply, with each extra component counted as additional ply. Symmetry, or equal ply surrounding the core, is important to avoid any warping during the manufacturing process.

Architects should note, however, that three-ply door construction, which consists of a core assembly and face materials attached to either side of the core, is not considered as stable or as durable as doors with more ply. Three-ply construction is primarily used for high-pressure decorative laminate doors in architectural applications such as office spaces or other low-use areas.

Three-ply doors are often not available with wood veneer face materials since the core may show or "telegraph" through the face laminate and distract from the door's aesthetic appeal.

For architectural applications, such as hospitals, full-service hotels, and class A offices, five-ply wood door construction is the most commonly used method and is preferred

by many architects because the crossbands provide increased stability, the face veneer is thicker than seven-ply, and the manufacturing technique provides a strong, durable bond between the ply. Seven-ply wood doors, which include a core, backer materials, crossbands, and thinner face materials, are commonly used for commercial applications. Nine- and 11-ply doors are generally residential doors.

Before delving further into door components, it is important to understand some fundamentals about performance standards. The Window and Door Manufacturers Association (WDMA, www.wdma.com) defines the standards of performance for windows, doors, and skylights in the residential and commercial building sectors and increases awareness of these standards among industry members by providing resources and educational professional programs.

WDMA standards for doors cover the aesthetics, performance (duty level, dimensional tolerance, flame spread), testing requirements, construction, and finishing expectations for a door for a particular opening. In 2011, the WDMA released two updated editions of its architectural wood flush door standards, the *WDMA I.S. 1A-11, Industry Standard for Architectural Wood Flush Doors*, and *WDMA I.S. 6A-11, Industry Standard for Architectural Stile and Rail Doors*. In addition, in 2011, WDMA established a new council, the WDMA National Architectural Door Council™ (NADC), to represent the interests of the leading manufacturers of architectural door manufacturers and their suppliers. In a three-fold mission, the council will not only develop and maintain industry standards for architectural wood doors, it will represent the industry before code and regulatory bodies, and the media, and promote WDMA architectural door standards to architects, specifiers, and contractors.

WDMA door descriptors are used to identify construction for architectural wood doors. Manufacturers use multiple naming systems or branding for their products and the WDMA descriptors standardize these offerings. They are critical for specification writers to identify doors without using proprietary names associated with a single door manufacturer, and they offer shorthand in specifying core, core assembly, and face material recognized by the door industry. For example, PC-5 describes a particleboard core door with veneer faces using five-ply construction with stiles and rails bonded to the core. PC-HPDL-5 is the same as above with high-pressure decorative laminate faces. An “F” is added to the descriptors to identify a non-bonded core assembly.

WDMA also specifies performance duty levels for architectural wood doors. The Extra Heavy-Duty level typically involves doors where use

Photo courtesy of VT Industries, Inc.



Commonly used for commercial applications, seven-ply wood doors include a core, backer materials, crossbands, and thinner face materials.

is considered heavy and frequent, and requires the highest minimum performance standards. Applications include classrooms, patient rooms, public bathrooms, dormitory rooms, auditorium entry, detention and correctional facilities, gymnasiums, locker rooms, and surgical entry/trauma centers. The Heavy-Duty designation typically involves doors where usage is moderate, and requires intermediate minimum performance standards. Applications here include assisted living room entry, office-interior passage, stairwell, mechanical service, hallway, hotel/motel room entry, storage, apartment/condo entry, X-ray, acoustic, or medical examination rooms. Finally, the Standard Duty level typically involves doors where frequency of use is low, and requires the lowest minimum performance standards. Usages may include a closet, wardrobe, private bathroom, or low-usage office.

Core Options

Since the core is the main component of a wood door, depending on the application and project requirements, the core material must provide durability, a fire rating, hardware, and meet environmental and acoustical performance expectations.

Particleboard. Composed of 100 percent recycled wood fiber, particleboard is the most widely specified core material and has been an industry standard for over 30 years. It is suitable for most construction requirements and is available in three-, five-, and seven-ply construction. Particleboard has screw-holding capability for closers and exit devices without through bolting, and it meets ANSI A208.1 Performance Duty and WDMA Heavy-Duty Level requirements without blocking, a material used for improved screw holding at hardware attachment points and used to replace the core material at specific locations where the core material does not meet applicable performance duty levels. Particleboard can also be fire rated up to 20 minutes, positive pressure. It’s

also important to note that positive pressure fire doors and openings typically require an intumescent seal or gasket applied either to the frame or concealed within the door itself.

Agrifiber core. Newer to the industry, agrifiber is made from fibrous agricultural products such as wheat and soybean stalks. These materials are both recycled and rapidly renewable. The manufacturing process uses specialized resins with no added formaldehyde as the bonding agent. Agrifiber core doors are interchangeable with wood particleboard as they meet the same ANSI A208.1 and WDMA Heavy-Duty levels and have the same WDMA door descriptors with positive pressure fire ratings up to 45 minutes.

Stave lumber core. This material is made from wood blocks or strips from drop-off material from other wood products that are glued together to form a core material. Before advanced engineered material cores were produced, stave lumber was the standard core material for wood doors. Today stave lumber cores can be Forest Stewardship Council (FSC) certified. There are drawbacks to stave lumber cores, however. The material is dry and will take on moisture differently from piece to piece, making the door susceptible to twisting and warping. Also, the lumber is subject to volatile availability demands, making it harder to get at certain times of the year.

Structural composite lumber (SCL) core. Made from small diameter hardwood trees, SCL uses the entire log so there is little waste of natural resources. Also referred to as laminated strand lumber (LSL), SCL is the most stable

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Learning Objectives

After reading this article, you should be able to:

1. Discuss the basic components of an architectural wood door and explain the function of each.
2. Compare the features, options, and benefits of wood door construction materials.
3. Describe wood door assembly and construction methods from a durability standpoint.
4. Name the industry performance standards that relate to wood door design and aesthetics.

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

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Images courtesy of VT Industries, Inc.



Structural Composite Lumber (SCL) Core



Crossbands: A Comparison



Wood Veneer Door

core material, weighs more than particleboard, does not require costly inner blocking to meet WDMA Extra Heavy-Duty levels, and has exceptional screw-holding capabilities. SCL core doors are available from some manufacturers in a 45-minute fire rating.

Fire-retardant core. Made from a non-combustible material, typically gypsum based, fire-retardant cores must meet rigorous smoke, flame, and pressure tests, and are available up

to 90-minute positive pressure ratings required to meet building fire codes for the life safety of building occupants.

Specialty construction cores. These cores are available for acoustic and lead-lined doors. Acoustical doors may range in thickness from 1¾ inches to 2¼ inches and are constructed to provide increased acoustical performance over standard core materials, though Sound Transmission Class (STC) ratings vary by manufacturer and type of construction. However, STC doors do require lite kits to be factory installed, and pairs of doors will void STC ratings. Lead can be applied to doors under the crossbanding material to provide radiation protection, with lead thickness varying by specific application requirements.

Stiles and Rails

Stiles and rails are composed of SCL, hardwood, or softwood materials, with SCL providing the best screw-holding capabilities and stability. Inner SCL stiles with matching outer hardwood stiles will meet both performance and aesthetic expectations.

Crossbands

Crossbands are applied to prevent telegraphing of the stile and rail through the face material and provide stability to the door. A crossband is a ply placed between the core and face veneer in five-ply construction and a ply placed between the back and face of a three-ply skin in seven-ply construction. Natural wood crossband materials are not recommended since colors may range from white to very dark, which could show through on light veneers. In addition, voids and lapped crossbands can occur, which are not acceptable under WDMA standards. Engineered wood crossbands, commonly made from high-density fiberboard (HDF), are durable, meet all industry standards, and have a uniform quality and appearance that will not show through the veneer. With this option, the possibility of delamination is eliminated with the consistent surface.

Face Options

Both AWS and WDMA quality standards recognize multiple face material options.

Wood veneers. Wood veneers are available in multiple grades, matches, and assemblies to meet design requirements, including domestic and exotic selections. Natural variations of the veneer and different cuts create unique textures, grains, figure, and color for each veneer piece and door. While seven-ply construction with three-ply skins is only available in limited species, many species are available including exotic veneers for five-ply construction. Plain sliced or flat cut, quarter sliced, rift cut, and rotary are common veneer cutting methods. Door manufacturers follow WDMA standards

for veneer grades, which are adapted from the Hardwood Plywood Veneer Association (HPVA, www.hpva.org).

High-pressure decorative laminate (HPDL). Offering endless design possibilities and increased durability over wood veneer, HPDL faces are consistent, durable, cost effective, and available with custom designs and in a full array of patterns, solid colors, and wood grain finishes. HPDL doors do not require on-site staining, sealing, or painting and have minimal maintenance costs. Edge-before-face construction minimizes the appearance of seams and reduces chipping by limiting potential contact areas.

Paintable surfaces. Mill option paintable surfaces provide paintable options and a uniform surface with no raised grain, knots, or flaws for opaque finishes. Doors are available pre-primed, reducing the need to sand or prime in the field.

Fiber-reinforced laminate (FRL). FRL is ideal for highest-traffic applications, such as schools, hospitals, and hospitality, because of stain resistance and increased durability over other face materials. FRL outperforms other engineered face materials in wear resistance and is available in a variety of patterns and wood grains, similar to those available with HPDL.

DOOR CONSTRUCTION AND ASSEMBLY

There are a variety of door construction and assembly methods, each with its own benefits.

Hot and Cold Press

Architectural wood doors are constructed using hot press or cold press technology. Controlling the press process is key to door manufacturing consistency and in most cases, certain factors during the cold press process are uncontrollable. In order to assure the greatest degree of control, consistency, and quality in door construction, the hot press technique is preferable.

Hot press technology involves pressing each door individually in a platen under controlled pressure, temperature, and time, based on the type and thickness of material. Hot press produces a uniform bond and uses Type 1 water proof glue versus Type II which is water resistant. Hot press is commonly used for the construction of three- and five-ply doors. Cold press technology, on the other hand, involves pressing a stack or pile of doors, one on top of another, at ambient building temperatures until the adhesives are cured. Depending on the surrounding temperature and humidity conditions, cold pressing takes much longer than hot pressing, and cannot produce doors of equal quantity or quality. With cold pressing, the pressure is uneven and the bottom door in the pile

receives more pressure than the top one. In addition, the skins for cold pressing are often outsourced, leading to further loss of control.

Drop-In Assembly

Drop-in core assembly is commonly used in seven-ply door construction and entails dropping the core material into a pre-assembled wood frame. The core must be smaller than the frame which may result in gaps up to ¼ inch wide. Also, the core and frame are not bonded or glued together, or sanded as a unit. In this type of door construction, telegraphing of the door is common.

Loose Lay-Up

Loose lay-up core assembly is also commonly used in seven-ply door construction and involves placing stiles and rails loosely around a core. Because the stiles and rails are not bonded to the core prior to placement of the face materials, gaps up to ¼ inch can occur. In addition, the core, stiles, and rails are not sanded as a unit. Similar to drop-in core assembly, this construction method commonly results in doors with telegraphing.

Bonded Core

In bonded core assembly the stiles and rails are securely glued to the core prior to application of additional plies resulting in no gaps or voids. The assembled core is sanded to plus or minus 0.0005-inch thickness to create a smooth surface that limits the possibility of telegraphing. Bonded core assembly is used in both five-ply and seven-ply door construction.

Ply Construction

Seven-ply wood doors are constructed using pre-manufactured three-ply door skins. The skins consist of a face, crossband, and back veneer. They are applied to each side of a drop-in core assembly using Type II, water-resistant adhesives using cold press technology. The skins are readily available

Photo courtesy of VT Industries, Inc.



Source: VT Industries, Inc.

Critical factor (for consistency in door manufacturing)	Hot Press Technology	Cold Press Technology
Pressure	Controlled (Each door individually pressed)	Uncontrolled (Doors stacked, therefore bottom door will receive more pressure than the top)
Temperature	Controlled (Based on the type of material and thickness of each door)	Uncontrolled (Based on ambient conditions of the building)
Time	Controlled (Based on the type of material and thickness of each door)	Uncontrolled (30 minutes to one hour, plus 4-8 hours to allow for glue curing)
Platen	Controlled (Each door individually pressed)	Uncontrolled (Stacked door to door to door in one press opening)

for face materials, which can be birch and oak, rotary cut or plain sliced, and mahogany, plain sliced. Exotic and AA veneer are difficult to source for three-ply skins and are often only available in book and running matched. In addition, seven-ply doors may have limited warranties.

Traditional five-ply doors are constructed with bonded core assembly using hot press technology. Manufacturers may offer two edge options: a compatible solid hardwood stile with exposed crossbands, or a compatible wood veneered or taped edge. Solid wood stiles are expensive and have the potential to warp and split. Also, the manufacturing process is not considered as environmentally friendly as the alternative veneered and hardwood edges because the natural resource is not fully utilized. Crossbands are exposed with the use of solid wood stiles, which create a less desired look. Wood tape edges are thin, which could lead to telegraphing issues, are easily damaged, and offer limited protection.

Advanced edge-before-face five-ply construction incorporates bonded core assembly construction with matching hardwood edges which are applied prior to the face material. This method eliminates unsightly crossbands and produces a seamless wood appearance. Matching hardwood edges provide design integrity and durability and all the materials meet industry performance standards for edge materials.

AESTHETIC CONCERNS

A key way to assure the aesthetics of an architectural hard wood door is to focus

on veneer and how the veneer components are matched.

Matching of Veneer Components

Once the decorative veneer cutting method is specified, the type of match at the joint line must be specified. The way in which the individual cuts are placed next to each other during the fabrication of the veneer face affects the appearance and aesthetic of a door. Leaf matching and assembly matching must be considered, as well as the matching of pairs of doors, sets of doors, and doors with transoms.

Book matching . The most commonly used method to match veneer leaves in the wood architectural door industry is known as book matching. Book matching requires every other piece of veneer to be turned over so adjacent pieces, or leaves, are “opened” like the pages of a book. The veneer joints match and create a mirrored image pattern at the joint line, yielding a maximum continuity of grain. It is commonly used with plain sliced cut and less often with other cuts of veneer. A natural result of veneer slicing is the accentuation of the dark-light-dark-light appearance of the veneer. Because the “tight” and “loose” faces alternate in adjacent pieces of veneer they may accept stain or reflect light differently resulting in a noticeable color variation, often called “barber pole.” These variations are not considered a manufacturing defect.

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Headquartered in Holstein, Iowa, VT Industries, Inc. is North America’s leading manufacturer of architectural wood doors, VT Dimensions countertops, and stone surfaces. The company’s three divisions serve customers from nine manufacturing facilities strategically located throughout the U.S. and Canada. For more information, visit the company’s website at www.vtindustries.com

New Coatings to Help Support Cleaner And Fresher Healthcare Environments

Advancements provide unexpected solutions and value

Sponsored by The Sherwin-Williams Company | By Jeanette Fitzgerald Pitts

Photo courtesy of The Sherwin-Williams Company



Advanced architectural-grade coatings improve the indoor environment of healthcare facilities in powerful ways.

There is a powerful new tool helping designers create better healthcare environments and it will probably surprise a few people. Traditionally considered solely in terms of color and finish, and the feelings it invokes in occupants in the space, commercial paint has been technologically advanced to now deliver much more to a healthcare environment than a sense of calm. These advanced architectural-grade coatings improve the indoor environment of acute-care and long-term care facilities by reducing respiratory irritants from the air and reducing the growth of mold and mildew on the paint film. They also support new cleaning and sanitation protocols by standing up to harsh disinfectants and more rigorous scrubbing regimens. Additionally, they help to reduce odors from the environment to maintain a facility that smells fresher.

When the cumulative benefits are examined, these high-performing coatings now generate real value for facility owners and give designers the option to specify a wall paint that is simply

visually stimulating, or a high-performance wall coating that is visually stimulating and actively helps to improve indoor air quality. Whatever the project, paint is the new partner in supporting a better healthcare environment.

NOW CLEANING WITH HARSHER DISINFECTANTS, MORE FREQUENTLY

The stakes for cleanliness in acute-care facilities are higher than ever. It was recently reported that hospital-acquired infections (HAIs) are the fourth largest cause of death in the United States, responsible for an estimated 90,000 deaths a year¹ and killing more people than AIDS, breast cancer, and car accidents combined. Nationwide, about one in 20 hospital patients will contract a potentially deadly infection, according to the federal Department of Health and Human Services.²

If the human cost was not a sufficient impetus for change, hospitals are also facing stiff financial penalties for HAIs that occur within their facility. Recently, Medicare, Medicaid, and other private insurance carriers have announced

that they will no longer reimburse for costs associated with treating HAIs, resting the blame and financial burden entirely on the healthcare facility. These prevalent, and now pricey, HAIs have forced healthcare facilities to overhaul their cleaning and disinfecting procedures in an attempt to prevent or reduce these devastating hospital-borne infections from occurring.

New protocols focus on employing more potent cleaning solutions, more frequently, with more elbow grease, more thoroughly throughout the hospital. The new, more exhaustive list of target areas includes spots that previously may not have been considered areas of high concern.

Two areas that now require rigorous cleaning: the walls and the doors in patient rooms, surgical suites, common areas, etc. These surfaces can serve as reservoirs for microorganisms and pathogens that could cause infections in patients and staff. As a result, hospitals are using new and harsher disinfectant products and more abrasive cleaning techniques on these coated surfaces to destroy the unseen pathogens where they like to hide.

Traditional Coatings Can't Withstand the Scrub

Unfortunately, the coating typically found on acute-care facility walls and doors does not have the chemical resistance or durability to withstand the abuse of these new disinfectants or the more rigorous cleaning schedule to which they are subjected. These harsher chemicals, used more frequently and with greater friction, more quickly erode the traditional coating. The damage in some areas is so extensive that the coating is entirely removed, exposing the drywall underneath. Once holes have been created in the coating, the aesthetic of the space is immediately downgraded from professional and healing to downtrodden and shabby. This is not an impression healthcare facilities can afford to make.

Until recently, the options for restoring the aesthetic of the acute-care healthcare space were somewhat limited. The holes could be covered up by strategically placed prints, calendars, whiteboards, etc., creating a veritable patchwork of items on the wall. While this approach may not convey shabby, it certainly does not convey organized. More commonly, the defiled wall or door would be repainted. However, even repainting the space offered only a short-term solution, because the underlying problem was that the coating was not strong enough to withstand the new cleaning regimen. Adding a new coat of paint addressed the immediate eyesore, but without changing the cleanser or cleaning method, it was just a matter of time until the coating failed again.

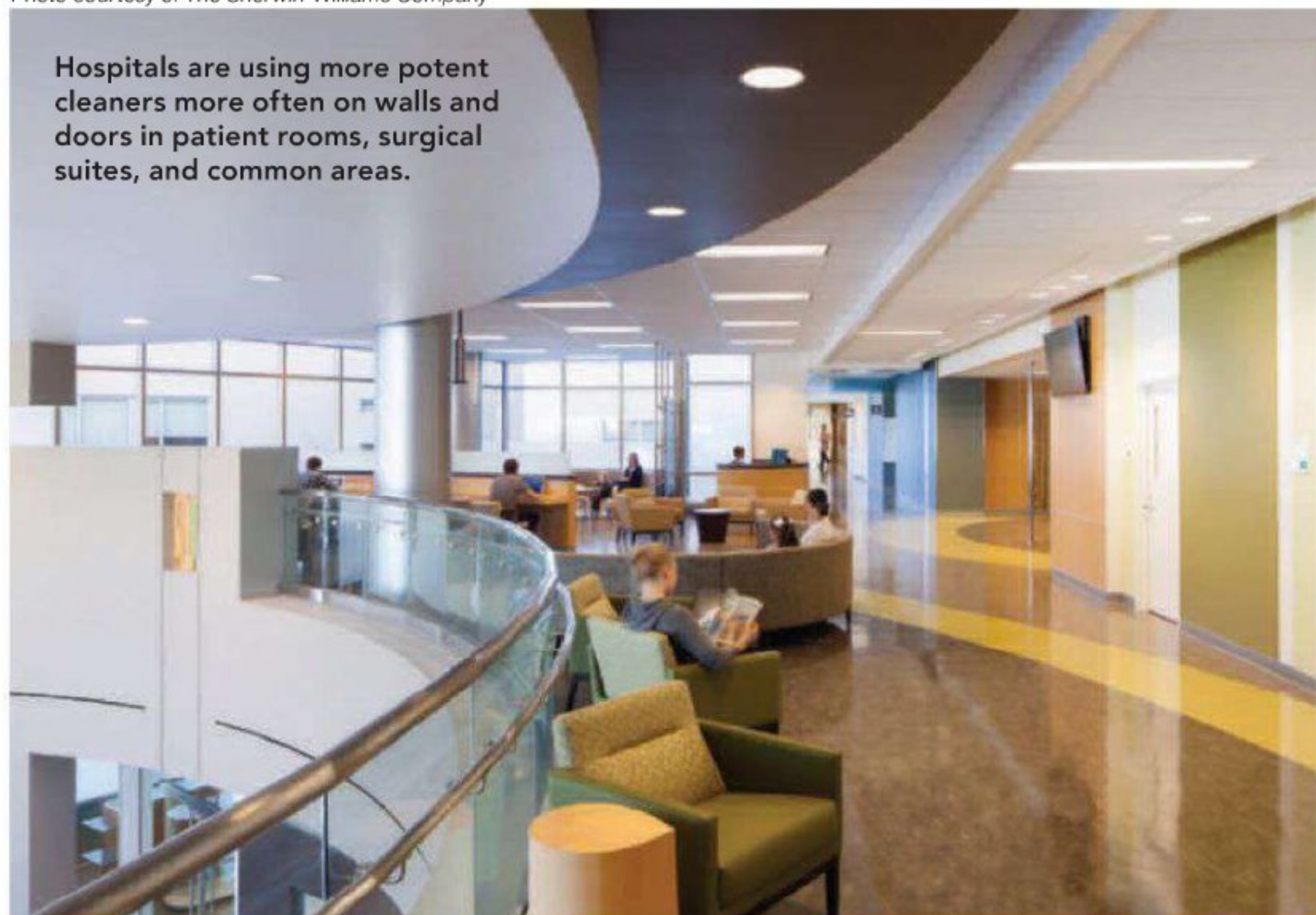
New Chemical-Resistant and Abrasion-Resistant Coating

Acute-care facilities needed a more durable wall coating that could withstand the new generation of disinfectants and a regular scrubbing. This better-suited coating would reduce the number of areas that needed to be repainted, without compromising the cleanliness or aesthetic appeal of the space. Luckily, a new, more durable, chemical-resistant and abrasion-resistant wall coating has been recently developed.

Advanced formula coatings are four times more durable than conventional wall paint. They are resistant to most commercial cleaners and withstand abrasion, impact, corrosion, and scrubbing better than standard wall coatings.

Epoxy is the substance that makes this new wall coating so tough. Epoxy is a thermosetting resin. It is often found in the high-performance adhesives used in the construction of aircraft, automobiles, boats, and other items where high-strength bonds are necessary. Epoxy is also present in tough coatings and laminates. Two-component epoxy paint is commonly used to cover industrial floors, because it is really hard

Photo courtesy of The Sherwin-Williams Company



Hospitals are using more potent cleaners more often on walls and doors in patient rooms, surgical suites, and common areas.

and it sticks to the floor well. Now, epoxy-based paint is ready for the wall.

Some epoxy-based wall coatings create a chemical-resistant and abrasion-resistant surface that is ideal for the cleaner healthcare environment. Walls coated with epoxy-based paint will easily withstand the more potent disinfectants and rigorous scrubbing now being used to prevent the spread of HAIs.

This more durable paint enables hospitals to maintain the cleaner environments they need, without sacrificing aesthetics, and it benefits the bottom-line as well. More durable paint saves money by reducing the number of times a space must be repainted. Fewer repaints also reduce the total number of days that a space must be cleared out for maintenance. Less downtime increases the number of days that patient rooms can be occupied and surgical suites can be used every year, generating more profit for the hospital.

Specify an epoxy-based coating for walls and doors in patient rooms, surgical suites, laboratories, kitchens, foodservice areas, showers, and restrooms to accommodate more rigorous cleaning regimens, protect the integrity of the original aesthetic, and reduce downtime caused by repainting.

CREATING A HEALTHIER INDOOR ENVIRONMENT

When trying to create a healthier acute-care environment, the quality of the indoor air seems especially important. Patients may have compromised immune systems, heightened sensitivity, or simply exhibit a greater vulnerability to respiratory irritants during

their sickness and recovery. As previously discussed, healthcare facilities are working hard to prevent infections spread by touching contaminated surfaces. They are also focused on improving the quality of the air that surrounds their staff and patients to minimize potential complications caused by exposure to the immediate environment.

CONTINUING EDUCATION



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Learning Objectives

After reading this article, you should be able to:

1. Explore how new coatings support the latest initiatives in acute-care facilities by incorporating chemical-resistant, formaldehyde-reducing, and anti-microbial technology.
2. Describe how a coating can help reduce odors in long-term care facilities.
3. Specify a high-performance coating that will best meet the specific needs of a healthcare facility.
4. Explain cost implications of specifying an advanced-technology coating for acute-care or long-term care facility projects.

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One important character to introduce in the discussion of indoor air quality is the volatile organic compound (VOC). The Environmental Protection Agency (EPA) defines VOCs as gases that are emitted from certain solids or liquids. These gases can have adverse effects on the health and well-being of the people exposed. Thousands of products commonly found in interior environments emit VOCs, including the traditional wall coating, and regulatory bodies have set VOC content limits in an attempt to control the cumulative exposure that a person may experience in any one space.

The lower the level of VOCs emitted by a material, the better it is for the interior air quality of the building. Technological advancements in wall coatings have resulted in low- and zero-VOC formulas that are now widely available. On healthcare projects, where indoor air quality is increasingly scrutinized, it is becoming critical to specify a low- or zero-VOC paint.

These low- and zero-VOC coatings can also contribute toward earning points in green building programs, such as the Leadership in Energy and Environmental Design (LEED®) rating system, as well as meeting guidelines from the Green Guide for Healthcare (GGHC) and a variety of other environmental regulations.

Now new technology wall coatings can help improve the indoor environments of healthcare facilities in two additional ways: Wall coatings can help reduce VOCs in the air and inhibit the growth of mold and mildew on the paint film.

Wall Coatings Now Clean the Air

The latest evolution of architectural wall coatings is now equipped to contribute more

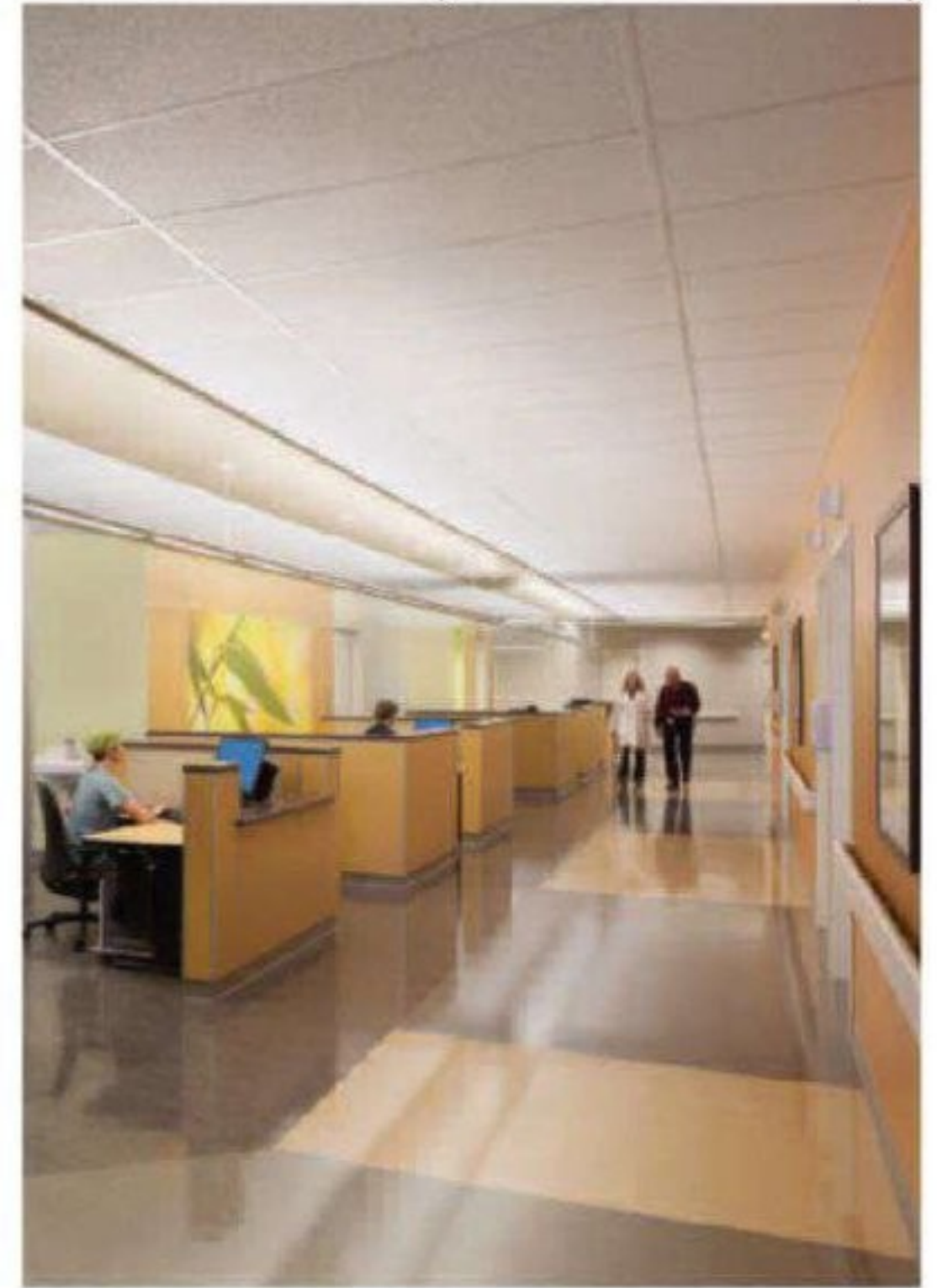
to the interior environment than low- or zero-VOC emissions. New wall coatings can actually help reduce VOCs emitted by other materials out of the air, improving air quality. This advancement in the wall coating formula is called formaldehyde-reducing technology and the VOC that it removes from the air is formaldehyde and other aldehydes.

Formaldehyde may be best known for its role as an embalming liquid, but it is also used in the manufacture of building materials, furnishings, and household products. In the healthcare setting, potential sources of formaldehyde emission include carpet, wood cabinets, fabrics, laminates, fiberboard, and glue.

Despite its prevalent use in everyday items and its subsequent presence in our everyday environments, formaldehyde is an organic compound that can pose a real threat, causing both short- and long-term adverse health effects. Formaldehyde exposure can cause watery eyes, burning sensations in the eyes and throat, nausea, wheezing, coughing, fatigue, and skin rashes. Formaldehyde has also been identified as a carcinogen and, as the EPA notes, may cause cancer in humans. It is certainly not a desired presence in an environment dedicated to recovery and the restoration of health.

In the past, healthcare facilities had a few limited methods for reducing formaldehyde exposure to patients, staff, and visitors. They could require that only low-emitting building materials, furnishings, and fabrics be used throughout the building. Increased ventilation, temperature and humidity control can be used, to some extent, to reduce the amount of formaldehyde emitted by different sources into the indoor environment. Now, specifiers

Photo courtesy of The Sherwin-Williams Company



Architectural wall coatings can improve indoor environmental quality by helping to remove formaldehyde from the air.

and designers have a new and powerful tool that helps to reduce formaldehyde from the air: formaldehyde-reducing paint.

When the formaldehyde gas comes in contact with a surface that has been painted with a formaldehyde-reducing coating, the paint breaks down the organic compound at a molecular level, literally disrupting the carbon chain and transforming the gas into water molecules and an inert gas that is harmless to people.

The result is an immediate and ongoing reduction in the presence of formaldehyde in the healthcare space and an improvement in the quality of the air throughout the facility. Less polluted air enhances the overall healing quality of the environment, and at the very least, reduces the potential for the indoor environment to cause additional irritation or infection for patients.

Specify a formaldehyde-reducing coating in patient rooms and public areas to improve the quality of the air for patients, staff, and visitors.

Coatings Inhibit Mold and Mildew Growth on the Paint Film

In addition to reducing VOCs in the air, these new and advanced coatings inhibit the growth of mold and mildew on the paint film.

The presence of mold and mildew severely compromises the quality of the indoor environment. In fact, the U.S. Centers for Disease Control and Prevention (CDC) recognizes exposure to mildew to be a serious health threat. Exposure can trigger asthma or



More durable paint reduces the repaints caused by paint failure and enables patient rooms to be occupied more days every year.

Photo courtesy of The Sherwin-Williams Company

allergies, even in seemingly healthy people. For people with compromised immune systems or chronic lung problems, inhaling or ingesting mildew can be very dangerous, increasing the likelihood of developing fever, infections, and pneumonia-like symptoms.

Because exposure to mold, mildew, and their spores can cause serious health complications in both the healthy and the sick, the presence of these fungi represents a potential threat to not only patients, but visitors and staff as well. This threat is compounded by the versatility of the fungi. Mildew and mold grow on surfaces that can be readily touched, and the mold spores can travel through the air to be inhaled or ingested by unsuspecting masses. The pool of potential victims and the dual nature of this organism can make it difficult to protect against once it takes root in a room.

The control and prevention of mold and mildew is of paramount importance in healthcare facilities. As previously mentioned, hospitals are stepping up cleaning efforts in an attempt to ward off HAIs and there is no doubt that the harsher disinfectants and more rigorous scrubbing will help to reduce the presence of these fungi in the healthcare environment. For example, on a hard surface, like a wall, mildew can be eliminated by spraying a mildew remover solution onto it or washing the mold and mildew in a bleach solution.

However, mildew is not always visible to the naked eye and it is difficult to scrub away what cannot yet be seen. These fungi can exist in a space for a while, before they are large enough or developed enough to be detected. These fungi are also proficient at growing in dark, damp areas or in areas like cracks that may be obscured or not be readily visible.

Now there is a new solution to bring to the battle against mold and mildew. It is an advanced wall paint that contains an EPA-registered anti-microbial agent that inhibits the growth of mold and mildew on the paint film. Coatings with anti-microbial agents can be specified in patient rooms, recovery rooms, exam and procedure rooms, wash rooms, food service areas, restrooms, and other common areas.

FIGHTING ODOR IN LONG-TERM CARE FACILITIES

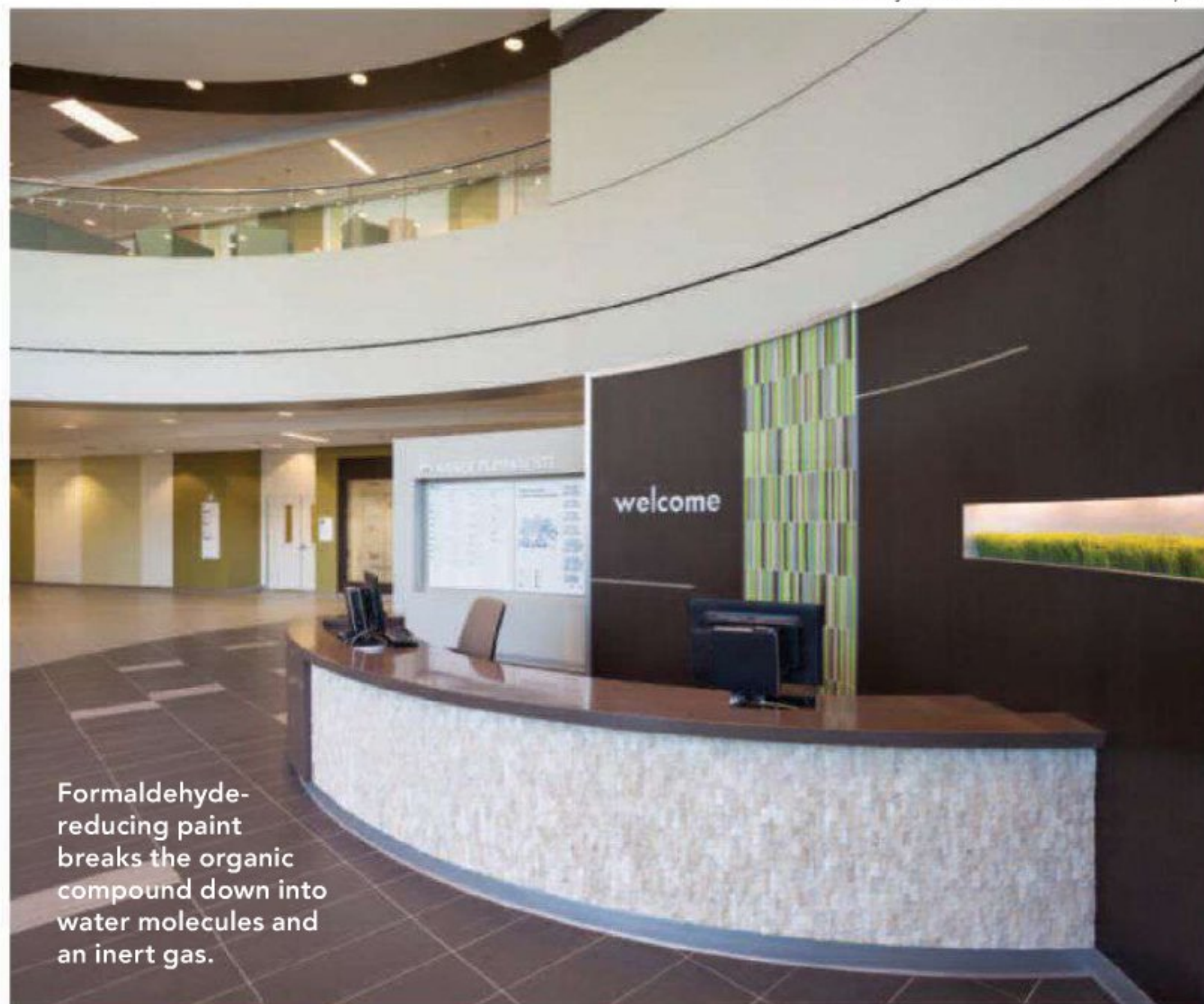
Now shifting focus from acute-care to long-term care facilities, the setting may be different, but the central premise is the same: the physical environment impacts the health and mental well-being of the residents, their families, and

facility staff in real and important ways. The architecture and design team on a long-term care project holds significant sway over the development of the physical environment. Unit layout, supportive features in common areas, signage, noise management, presence of daylight and outdoor views, furniture, and aesthetic design are all important pieces of the physical environment. Of all of the components that can be considered part of the physical environment, smell is perhaps one of the most critical and immediately obvious differentiators between the physical environment of one long-term care facility and another.

specifying equipment ensuring that a facility would smell fresh and clean fell outside the scope of what the design team could deliver.

The potential approaches to odor control are relatively straightforward. The source of the odor can be eliminated or the odor itself can be reduced. Between the two, odor elimination is by all means the more effective line of defense. Disinfectants, detergents, and scrubbing can be used to kill the source of the unpleasant smell and prevent the further release of noxious molecules into the air. There are a few pitfalls to the scrub and disinfect solution. It requires manual labor and, ultimately, the success of

Photo courtesy of The Sherwin-Williams Company



The nature of long-term care makes odor control an everyday battle. The environment is rife with sources of malodor. This list includes incontinence, infection, poor hygiene, trash, and food waste. Ideally, every long-term healthcare facility would smell fresh and clean. A fresh, clean smell helps to improve the comfort of residents and visitors and also may increase job satisfaction in employees. Unfortunately, the specification community lacked, until recently, a specification-grade product designed to help reduce odor, so

the odor removal is directly related to the time and elbow grease invested in the effort. Then there are some smells that, despite Herculean efforts, cannot be eliminated with cleaning and disinfecting. Some smells can have a tendency to linger and may require additional resources, such as odor-eliminating coating to reduce the odor, even though the foul-smelling material has been removed.

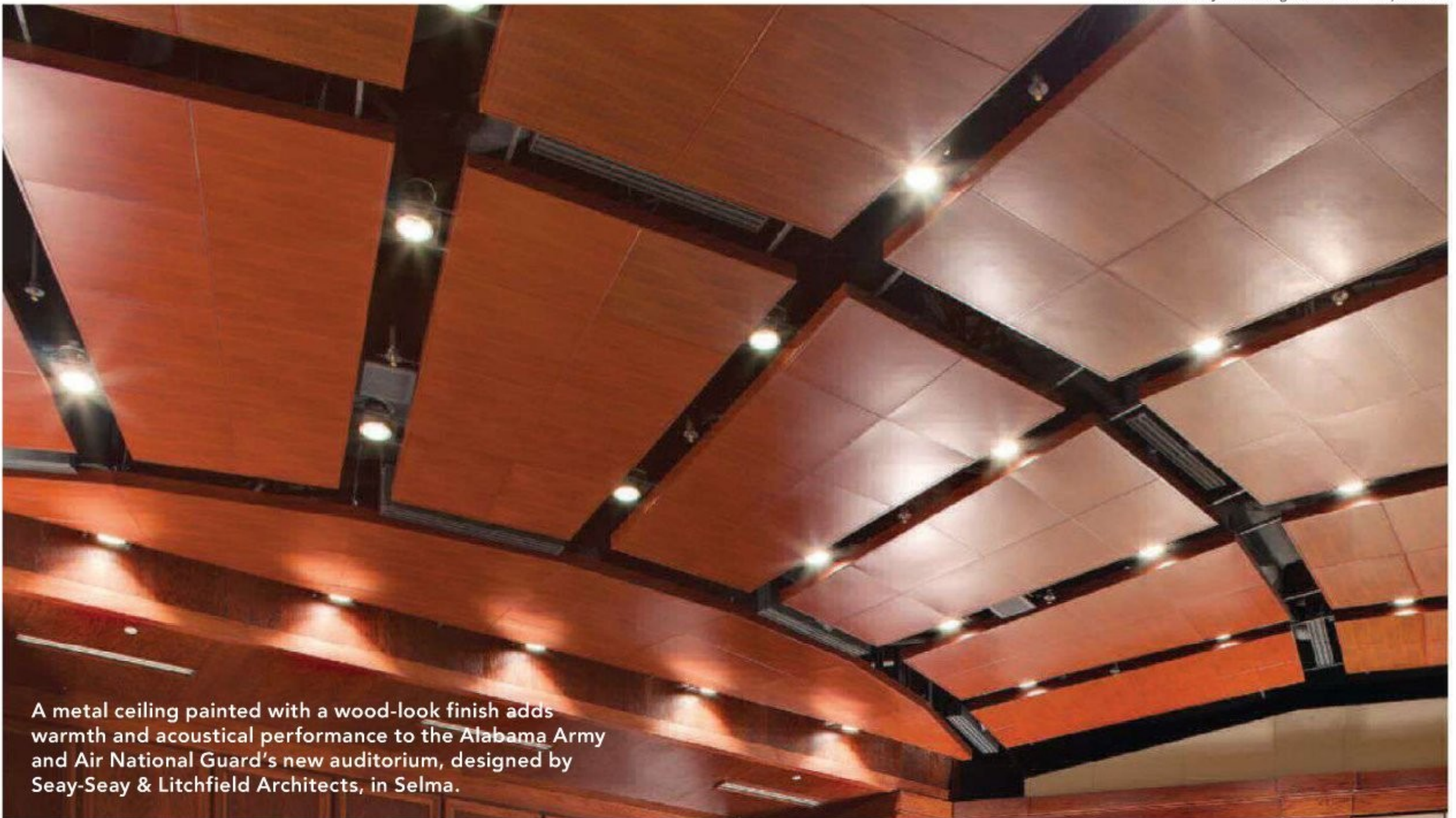
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Photo courtesy of Chicago Metallic® Corporation



A metal ceiling painted with a wood-look finish adds warmth and acoustical performance to the Alabama Army and Air National Guard's new auditorium, designed by Seay-Seay & Litchfield Architects, in Selma.

Innovations for Architectural Interiors

Novel technologies and products respond to research on interior architecture

Sponsored by Chicago Metallic® Corporation, IPC™ Door and Wall Protection Systems, a division of InPro Corporation®, and THE SLIDING DOOR COMPANY
By C.C. Sullivan

A few relatively new interior solutions have hit the market that offer architects innovative and even surprising ways to solve multiple design challenges for interior spaces and environments. More than that, these materials, systems, and techniques address the environmental quality (EQ) considerations that drive such bottom-line measures as workplace productivity, patient health, and student test scores. They also play into a number of factors for sustainable design certifications.

Behind these novel, yet tested approaches are recent findings from the so-called soft sciences: sociology, psychology, economics, anthropology, and education, among others. Taken together, they have formed the relatively new discipline—or *interdiscipline*, to be more precise—that is widely known as *environmental psychology*. The focus? Nothing less astounding than the relationships between our surroundings and the essential human condition: one's personal health, well-being,

personal state of mind, and the broader notion of a group's or entire society's well-being.

This area of inquiry extends past mere place and architectural means, of course: Social settings comprise people, for example. So environmental psychology must at once address the interrelationships and combined effects of:

- ▶ Nature and natural behaviors
- ▶ Social settings
- ▶ Building and interior design
- ▶ Educational places
- ▶ Informational environments

Evaluating these links between social and behavioral outcomes and architectural interiors is a truly modern endeavor, extending back only about 100 years. Among the earliest studies of the subject were by the Leipzig-born Willy Hellpach, who wrote *Geopsyché* in 1911 to describe climatic and geographical effects on

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Learning Objectives

After reading this article, you should be able to:

1. Describe findings from environmental psychology and how they can improve the architectural and sustainability performance of building interiors.
2. List recent trends in product development and application that respond to the major issues affecting building occupants and their performance in building interiors.
3. Explain why certain safety and security considerations are emphasized in building codes and standards, including green building certifications.
4. Discuss building materials and product solutions that improve building occupant experience or reduce health risks.

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people's activities, including the influence of the sun and moon, colors, shapes, and extreme heat or cold.

By the 1920s, scientists were applying these ideas to the layout and organization of workplaces, as well as isolated design elements. One seminal study considered the effects of various lighting and working conditions at a Western Electric plant in Chicago. An ominously named "Test Room" was created "to assess how factors of psychosocial interaction had greater effects on productivity than the changes imposed to the physical conditions at the plant," according to Enric Pol, a professor at the University of Barcelona in Spain. (The Hawthorne Works plant became famous for its "Hawthorne effect," however—that the workers' productivity gains were at least in part the result of the attention given them by researchers.)

By the end of World War II, the work of psychologist Kurt Lewin and followers of the so-called Chicago School of Sociology were using experiments and academic research to explore more deeply the effects of interior environments on people. "This is a period when modern environmental psychology comes fully of age," says Pol, with such branches of study as the "ecological theory of perception." This influential idea, posited by Ohio-born psychologist James Gibson, contended that "meaning is inherent in the environment, and that perception is a direct function of stimulation, that is the physical stimuli to which the individual responds," Pol writes. "In other words, people perceive directly the meaning already present in the environment, which they have learned through socialization."

Architects began to apply these and other ideas as early as the 1950s in both Europe and the United States. While the primary focus was interior environmental effects, the ideas of environmental psychology also applied to architectural objects and outdoor places, at varied scales. One practitioner, Kevin Lynch, wrote the influential 1960 book *The Image of the City* to apply the notion of "cognitive mapping" to urban space knowledge and assessment.

PRODUCTS AND MATERIALS FOLLOW SUIT

The use of certain materials and building systems stems directly from findings about environmental effects on mood and sociability, occupant satisfaction, visitor experience, and other psychological measures. Glass partitions and vision panels, for example, first came into use in mid-century modern interiors to take advantage of these beneficial perceptions; today, they are seen as valuable for improving worker experience and productivity.

"Varied applications of glass partitions can increase the flexibility of the space and help create a sense of privacy, while also enhancing the use of natural light and reducing acoustic issues," says Todd Schwartz, commercial sales manager at The Sliding Door Company, which makes demountable partition systems. "They allow users the option to close off their spaces for visual privacy, or to open them up for the ability to interact with colleagues and peers. People are usually looking for ways to make the most of the spaces, and glass walls offer benefits for communication, productivity, and overall usefulness."

Recent studies emphasize how daylight and other EQ factors contribute to these effects. "The potential contributions of windows and daylight to improved performance by office workers," according to observations by Heschong Mahone Group, for example, have included studies of hundreds of call center workers and general office workers, using cognitive assessment tests. Those subjects who enjoyed a "better view out of a window" tended to display improved work performance. Larger wall openings and those with views of vegetation correlated with the greatest increases in performance, with call center operators processing their calls 6 percent to 12 percent faster than workers with no view at all.

Photo courtesy of The Sliding Door Company



Consecutive glass partitions provide privacy and some acoustic performance while offering daylight and a sense of openness.

Another related trend has been the use of natural materials, colors, and patterns, such as stone and exposed wood grain finishes, for example, says Tom Larwa, senior product manager with IPC™ Door and Wall Protection Systems, a division of InPro Corporation®. The natural look of wood grain, for example, has a *biophilic* effect that is beneficial to occupants, as shown in studies of patient recovery and general perceptions of attractiveness—and in the studies that showed a positive effect on telemarketers when they had views of trees, grass, and shrubs outdoors.

The author and academic Stephen R. Kellert, professor emeritus at Yale University, has developed a list of six categories and 75 attributes of what he calls "restorative environmental design," which includes biophilic elements. Kellert's unique biophilic standards serve as "a pattern language to help people who want a checklist" for incorporating these design elements into interior spaces and building architecture. The first three categories include natural materials, natural shapes and forms, and natural patterns and processes; the example of exposed wood grain, posed by IPC's Larwa, touches on all three ideas.

In fact, interest in biophilia led to the use of durable wood-look materials in door and wall protection products, which are often less

Photo courtesy of IPC™ Door and Wall Protection Systems



Wood-look resilient wall panels in lobbies, conference rooms or corridors offers an upscale look with a natural feel and with improved durability over real wood.

expensive while being more resistant to impact and fire than real wood. “Wall panels are an example of these types of products, where vinyl sheet is formed around a particleboard core, giving the look of real wood panels with wall protection that can endure even the toughest commercial abuse,” Larwa explains. “So it’s an added level of protection with impact resistance that can cover a wall at any height in areas such as lobbies, patient rooms, and high-end conference areas.” He adds that architects should ensure wood-look materials are “safe and can stand the test of time,” with special edge protections such as fully wrapped boards, which help prevent damage to edges in areas of high abuse.

In addition to providing visual cues like biophilic finishes, interior environments also serve as refuge and sanctuary on a very fundamental level. This basic need for enjoyment of a given space—the feeling of safety and security—includes a number of visual cues but also a narrative element. For example, people might naturally feel exposed behind glass walls even when they are protected more effectively than with alternative opaque partitions. The field of *risk psychology* considers how humans think, feel, and act with regard to these protections and dangers. Some of these are group or societal considerations, while others reside at the individual level.

Codes for fire, wind, and seismic resistance focus on human safety; yet, often the architect’s role is to enhance the perception of safety and security through design cues. This has been a topic of concern in such areas as nonstructural building elements, says Tony Ingratta, an engineer with Chicago Metallic® Corporation, a maker of architectural products including ceiling systems. Much of the damage and

replacement cost of earthquakes occurs with nonstructural building elements, he explains.

“At recent conferences including the American Society of Civil Engineers’ Structures Congress 2013 in May, there’s been increased attention to the fact that 70 percent to 80 percent of the cost of a typical commercial building is attributed to nonstructural components and its contents,” Ingratta explains. “Suspended ceilings fall into that nonstructural category.” According to Ingratta, the Network for Earthquake Engineering Simulation (NEES) Program, created by the National Science Foundation, is studying such nonstructural components as steel stairs, fire sprinklers, elevators, and partitions as well as suspended ceilings to better understand seismic

performance. Studies are underway currently at University of Nevada–Reno, the University of California, San Diego, and at the University at Buffalo–SUNY.

Developed first in the early 1950s to improve acoustics, lighting reflectivity, and heating and cooling effectiveness, the suspended ceiling is a mixed blessing for interior environmental psychology. For example, the lightweight products provide immediate aesthetic benefits by obscuring ducts and wiring, and a grid for organizing building services that impact performance: power, lighting, and HVAC. Yet because the systems are light and attached by metal hangers to the slab or deck, they are prone to damage from seismic racking and vibration.

“Codes have evolved to make the suspended ceilings more robust, going back to changes made as early as the 1982 Uniform Building Code,” Ingratta explains. (See the Seismic Ceilings sidebar in the online version of this article.) For the year 2000, the first year the International Building Code (IBC) was published, a requirement was added to include a 2-inch wall angle and use certain attachments or supports, which may be required depending upon the Seismic Design Category in which the project sits. The highest Seismic Design Categories—those identified as D, E, and F—require the use of seismic separation joints to isolate ceiling sections into areas not exceeding 2,500 square feet.

These improvements influence not only the perception of reduced risk but also the behavior of building occupants during a seismic event or other emergency. “At a certain point, the ceiling perimeter becomes very important,” Ingratta explains. “If anything falls near the area of egress, that is a problem because it might divert people

Photo courtesy of Chicago Metallic® Corporation



At Marian Regional Hospital in Santa Maria, California, seismic performance was a factor in Moon Mayoras Architects’ choice of a suspended ceiling system.

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CROWDED SPACES, FOR GOOD AND BAD

In this way, even unseen improvements to the design of interior environments can be valuable in helping to improve the comfort and psychological response of building populations. These can have effects both large and small, notes Keith A. Porter, a fellow in Applied Mechanics and Civil Engineering at the California Institute of Technology, Pasadena, California, who has described the “involuntary nature of earthquake risk”—while one may avoid earthquakes by moving their home or business to a region of low seismicity, this effort is much greater than, for example, simply wearing a seat belt while in an automobile to avoid injury.

The level of voluntariness is important in understanding public perception of how risky certain hazards are. Human perception is colored by such factors as dread risk, which is associated with “lack of control, high catastrophic potential...and the belief that the risks are not easily reducible,” he says. A second factor is called unknown risk, associated with dangers “that are unobservable, new, and delayed in manifestation”—global climate change, for example. In addition, personal experience and the number of people exposed to a hazard also color public risk perception.

In fact, the number of people in an interior space is elemental to human behavior and perception. Increased density can improve communication, productivity, and response times, while sensations of crowding can quickly take on negative dimensions, according to the University of Barcelona’s Pol, including an adverse effect on

Photo courtesy of The Sliding Door Company



By using three-quarter-height partitions, office interiors provide “defensible space” to improve the work experience in open-plan environments.

Photo courtesy of IPC™ Door and Wall Protection Systems



Interiors can feature natural elements such as wood and wood-look finishes to exploit biophilia, the positive human response to nature.

mood and, at the extremes, stress-related illnesses and injuries. Studying the behavior of rats (and people) in crowded places, the American ethologist and behavioral researcher John B. Calhoun in 1947 determined that overpopulation would present a serious challenge for architects: to prevent the so-called “behavioral sink,” as Calhoun called it, when people display aberrant behaviors in overcrowded situations.

In the same year, Calhoun coined another term—*defensible space*—to describe the personal territory that a person can be given (or create themselves) in a public space. This has become a critical element of many architectural designs and interior furniture systems. Occupants also naturally create barriers and customize their surroundings, even with such minor flourishes as placing photos of loved ones near their work area or hospital bedside. “This increases cognitive control as one sees oneself as having control over the competitors to the personal space and therefore able to control the level of density and crowding in the space,” according to experts.¹ A variety of architectural solutions to achieving defensible spaces within increasingly dense workplaces and urban settings have been shown to markedly reduce stress. These include:

- ▶ **Fenestration.** Windows and openings reduce the sense of enclosure and crowding, especially if they are operable or have a view (or both).
- ▶ **Doors and partitions.** In close quarters, the value of access control using walls and doors increases greatly, according to the researchers Baum and Davis, who studied this effect in dormitories. Partitions may be partial height

yet remain effective; knee walls may have no impact. As much as they are maligned, cubicle workstations are successful as defensible space-makers.

- ▶ **Cognitive controls.** These include actual and perceived ways that building occupants feel in charge of their physical environment. Personal controls for ventilation, or mere access to window shades or a door they can close, are examples.
- ▶ **Spatial effects.** Higher ceilings, mirrored surfaces, and even trompe-l’œil paintings can confer an improved sense of sanctuary and dedicated personal space. Some psychologists have studied room shape, with results suggesting that square spaces can “feel less crowded” than equally populated rooms that are rectangular in plan (Dresor).

In general, context is essential to anticipating occupant behaviors. For example, the equivalent crowding density of a full sports arena may be intolerable for most people if experienced in a hotel lobby, grocery store, or bus station. Architects and interior designers can conduct a *cognitive appraisal* of a specific environment, whether in design as a mockup or in an equivalent space, or even after completion. These appraisals help the building owner or tenant to determine how occupants may react to various density levels.

See endnote in the online version of this article.

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C.C. Sullivan is a marketing communications consultant specializing in architecture and construction.

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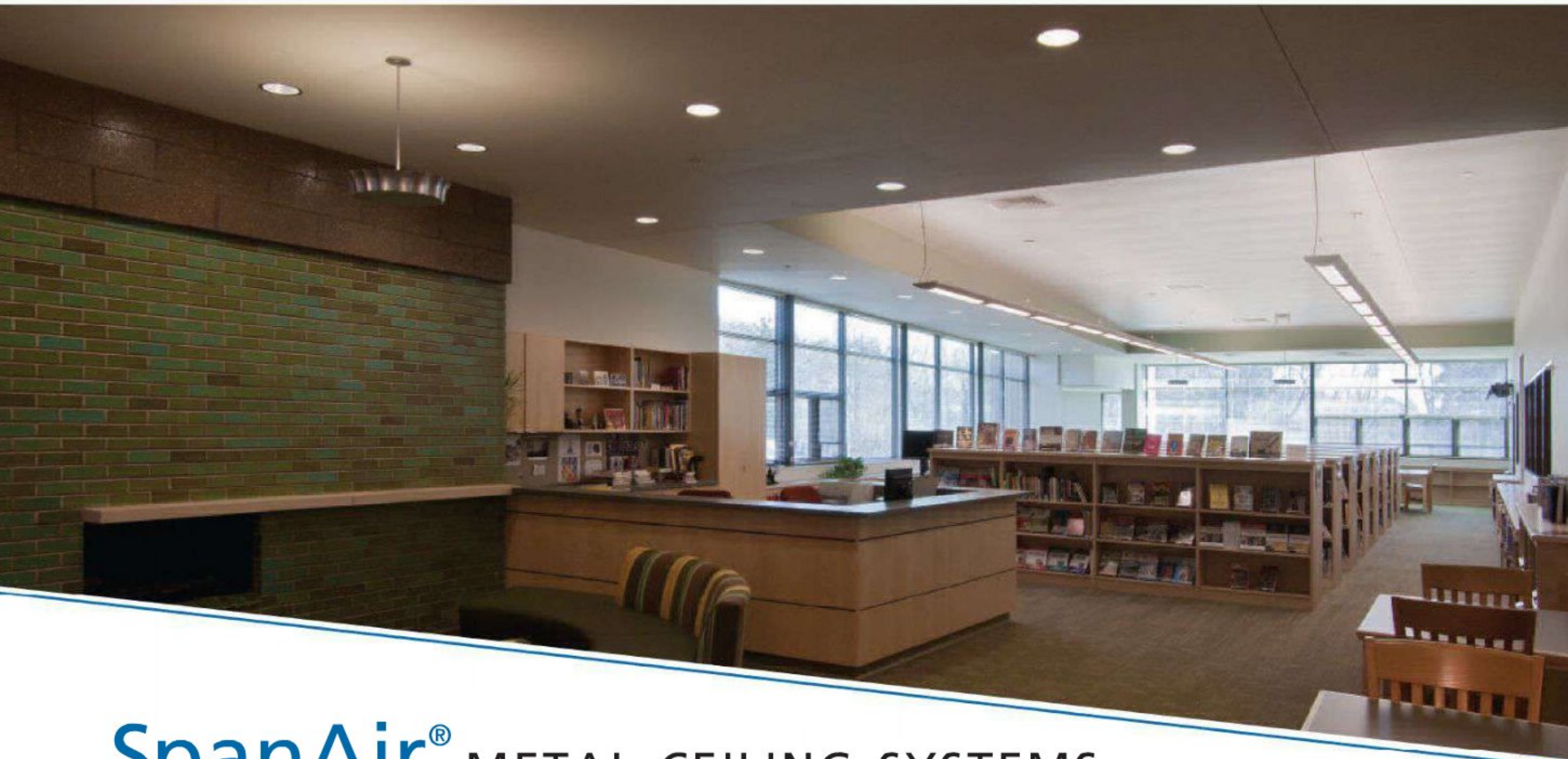
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FireLite® family of products from Technical Glass Products is UL listed and labeled and offers fire ratings up to 3 hours.

Product Application:

- Post Road Elementary School, White Plains, NY
- Seattle-Tacoma International Airport, Seattle, WA
- Shaklee Corporate Headquarters, Pleasanton, CA

Performance Data:

- High impact safety ratings
- Clear and wireless



www.fireglass.com
800.426.0279 | Contact: sales@fireglass.com

Circle 151

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WR | G

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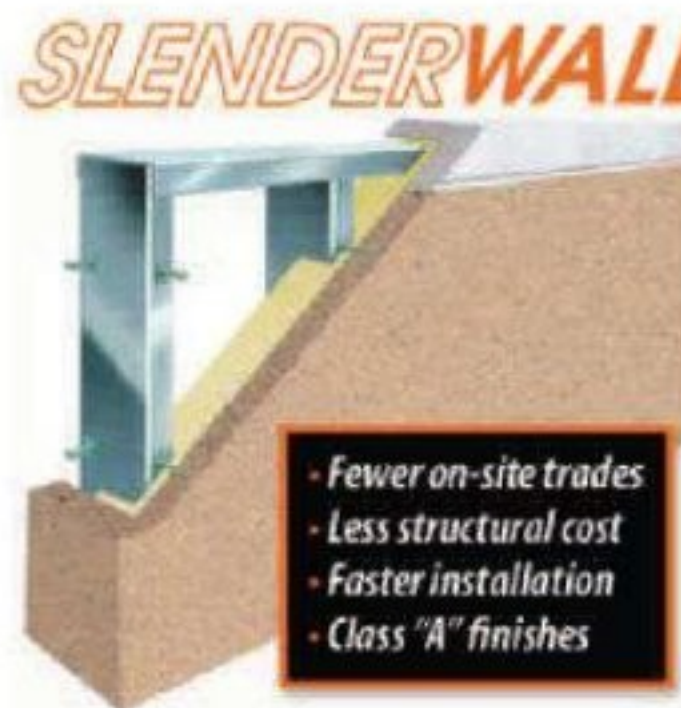
Slenderwall is a 30 lb./sf award-winning architectural precast concrete and steel-stud exterior panel system that can contribute to LEED and net-zero projects.

Product Application:

- BioInnovation Center, New Orleans, LA
- Hilton Gardens, Montreal, Quebec, Canada
- Westin Luxury Hotel, Virginia Beach, VA

Performance Data:

- Continuous insulation closed-cell foam and optional factory-installed windows
- No moisture intrusion guarantee



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www.slenderwall.com
800.547.4045 | Contact: Mofette Tharpe

Circle 152

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\$ | G | NEW

Stuc-O-Flex International, Inc.

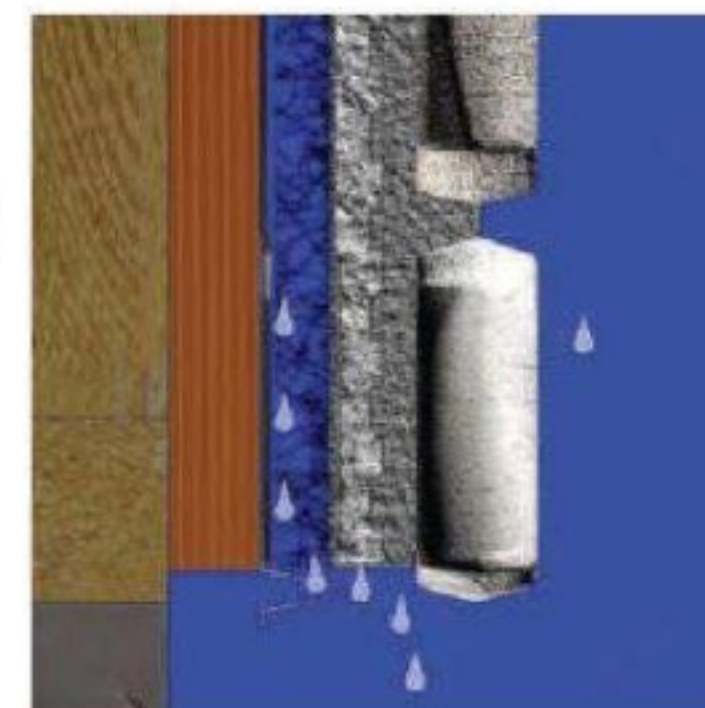
Consider the benefits of moisture protection and space that drains water 50 times faster than normal claddings while ventilating your walls.

Product Application:

- Bing Concert Hall, Stanford University
- Hilton, New Orleans, Katrina retrofit
- Stucco, stone, EIFS, siding, metal

Performance Data:

- Create space between your building and the elements; filter fabric functions like additional layer of WRB



www.stucoflex.com
800.305.1045 | Contact: Dan Johnson

Circle 153

SPECIALTY PRODUCTS

RAILING INFILL CABLES

WR | G

Feeney, Inc. (CableRail®)

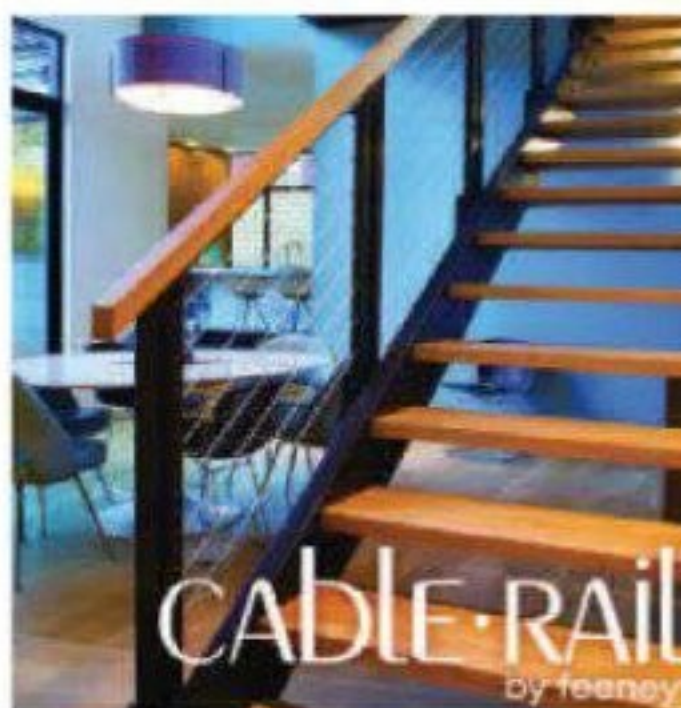
CableRail® stainless steel cables enhance any railing: durable, aesthetic, easy to install, low maintenance, 70% recycled content, and beautifully unobtrusive.

Product Application:

- Railings, fences, trellises
- Residential, commercial, institutional, industrial
- Interiors and exteriors

Performance Data:

- Wide selection of cable and hardware options
- Weather-tough 316-grade stainless steel



www.feeney10.com
800.888.2418 | Contact: Andrew Penny

Circle 154

SPECIALTY PRODUCTS

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WR | G

Feeney, Inc. (DesignRail®)

DesignRail® Aluminum Railings: Pre-engineered aluminum railing systems. Innovative designs, superior commercial-grade extrusions, powder-coated and custom anodized finishes, very low maintenance, recycled content LEED.

Product Application:

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- Black Gold Country Club, Yorba Linda, CA
- Palomar Airport, Carlsbad, CA

Performance Data:

- Glass, picket, and CableRail infill options



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800.888.2418 | Contact: Andrew Penny

Circle 155

SPECIALTY PRODUCTS

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Circle 156

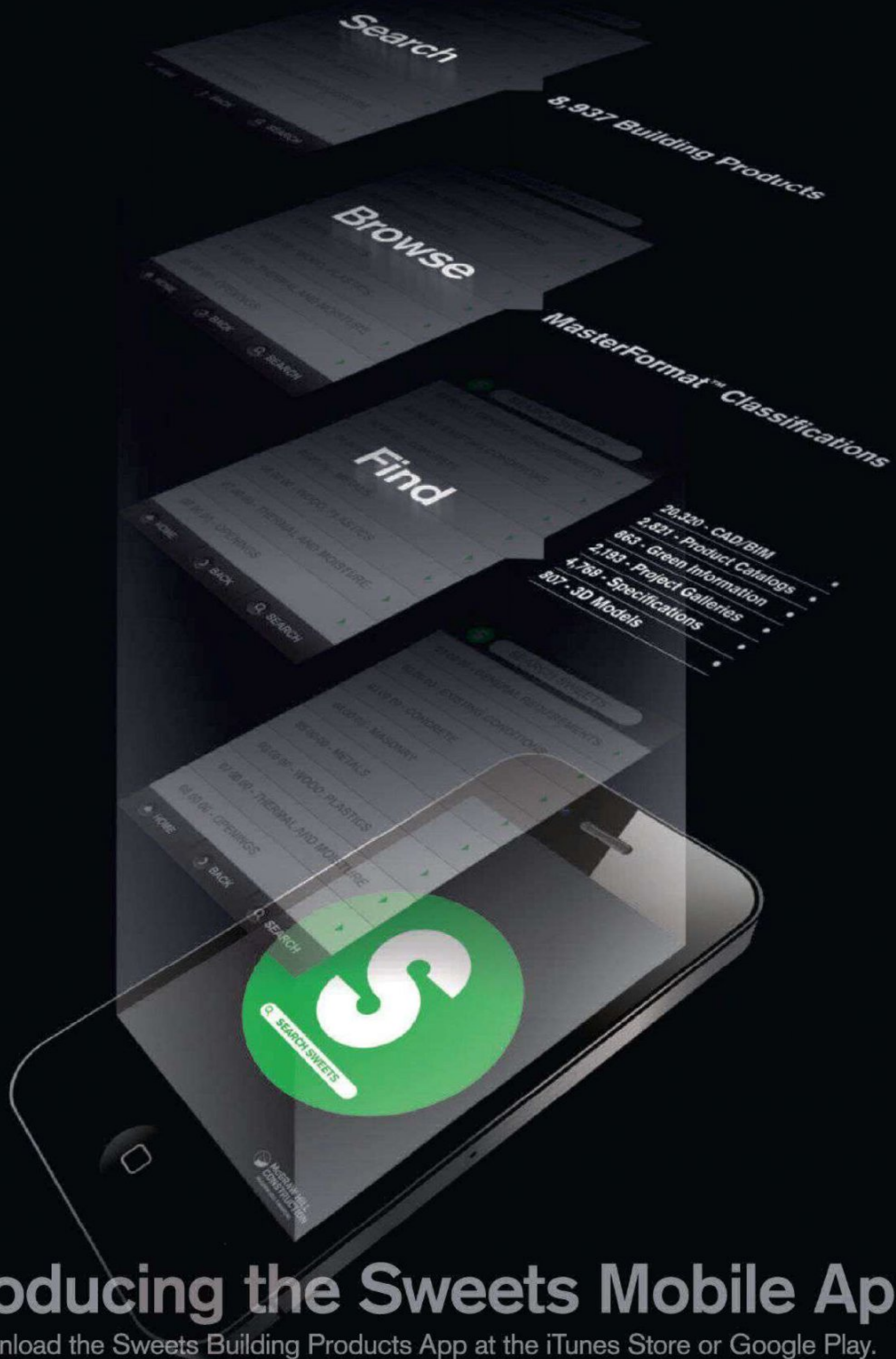
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Ongoing Exhibitions

The Woolworth Building @ 100

New York City

Through July 14, 2013

A masterpiece of early-20th-century art and technology, the Woolworth Building celebrates its centennial year in the process of conversion, with office space remaining below and luxury residences planned for the upper tower. Still radiant on the Lower Manhattan skyline, the landmark heralds both the past and future of New York. For more information, visit skyscraper.org.

Richard Meier: Architecture and Design

Montecchio Maggiore, Italy

Through July 28, 2013

This exhibition gives a complete overview of the works of one of the leading figures in contemporary architecture, Richard Meier. The show includes a selection of models, technical drawings, photographs, preliminary sketches, and some lesser-known design objects such as a tableware collection with Reed & Barton and in collaboration with Swid Powell. At the Bisazza Foundation for Design and Contemporary Architecture. For more information, visit fondazionebisazza.it.

BY-Right/BY-Design

Los Angeles

Through August 4, 2013

This installation explores the differences between market development and so-called high design for multifamily housing in Los Angeles. Created by Liz Falletta, the exhibition pairs common, basic residential structures by builders and real-estate developers with projects designed by noted architects working at similar scales, times, and locations. The pairings are linked to contemporary examples that bridge lessons from the past with ideas for how L.A. can further densify and develop to meet new challenges. At the Los Angeles Forum for Architecture and Urban Design. For more information, visit laforum.org.

Everything Loose Will Land

West Hollywood, California

Through August 4, 2013

This exhibition at the MAK Center for Art and Architecture at the Schindler House explores the cross-pollination between architects and artists in Los Angeles in the 1970s. Part of the Getty initiative *Pacific Standard Time Presents: Modern Architecture in L.A.*, this exhibition is the only one to explicitly connect the series' current focus on architecture with last year's emphasis on visual arts. For more information, visit makcenter.org.

How Small Is Too Small?

Los Angeles

Through August 4, 2013

Katrina Stoll Szabo and Takako Tajima, with Daina Swagerty, investigate the potential for micro-unit housing in Los Angeles. Szabo and Tajima are constructing a full-size 300-square-foot dwelling in the Los Angeles Forum for Architecture and Urban Design's gallery space, allowing visitors to simulate the experience of living in a micro-unit. Interest in such spaces has gained traction in cities like New York, Boston, Seattle, Chicago, and San Francisco as city governments have adopted housing codes that encourage high density and affordable units. For more information, visit laforum.org.

Folly 2013

Queens, New York

Through August 5, 2013

Folly is a competition cosponsored by the Architectural League and Socrates Sculpture Park that invites emerging architects and designers to propose contemporary interpretations of the architectural folly, traditionally a fanciful, small-scale building or pavilion sited in a garden or landscape to frame a view or serve as a conversation piece. The 2013 Folly winner is *Tree Wood*, designed by Toshihiro Oki, Jen Wood, and Jared Diganci. For more information, visit archleague.org.

Spontaneous Interventions: Design Actions for the Common Good

Chicago

Through September 1, 2013

Held at the Chicago Cultural Center, this exhibition is devoted to the growing movement of architects, designers, artists, and everyday citizens acting on their own initiative to bring improvements to the urban realm, creating new opportunities and amenities for the public. The Chicago installation will recreate the lively exhibition design of pull-down banners created by Brooklyn design studio Freecell and Berkeley-based communication-design firm M-A-D. For more information, visit spontaneousinterventions.org.

Composite Landscapes: Photomontage and Landscape Architecture

Boston

Through September 2, 2013

The Isabella Stewart Gardner Museum debuts the first landscape-architecture-focused exhibition in the Hostetter gallery of the museum's new wing, designed by Renzo Piano. *Composite Landscapes* examines one of landscape architecture's most recognizable representational forms: the montage view. The exhibition gath-

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ers work from a select group of influential contemporary artists and a dozen of the world's leading landscape architects, revealing practices of photomontage depicting the conceptual, experiential, and temporal dimensions of landscape. The first exhibition of its kind in North America, *Composite Landscapes* illustrates the analog origins of a method now rendered ubiquitous through digital means. For more information, visit gardnermuseum.org.

A New Sculpturalism: Contemporary Architecture from Southern California

Los Angeles

Through September 2, 2013

The Museum of Contemporary Art, Los Angeles, presents a scholarly examination of the radical forms that have become prolific in Southern California architecture during the past 25 years. The exhibition aims to rethink how museums display architecture, allowing visitors to experience it primarily in three-dimensional form with models, full-scale maquettes, and full-size built structures. The show includes works by 38 architectural firms based in Los Angeles, including Gehry Partners, Morphosis Architects, and XTEN Architecture. For more information, visit moca.org.

James Turrell: The Light Inside

Houston

Through September 22, 2013

Concentrating on the extraordinary collection at the Museum of Fine Arts, Houston, of work by artist James Turrell, this presentation makes many of the artist's installations accessible to the public for the first time. At the conceptual core of the exhibition is *The Light Inside*, a permanent work at the MFAH in the underground Wilson Tunnel. Also included is *Vertical Vintage*, a dozen light-based installations that allow visitors to test the limits of their perception, study the play of illusion, and witness how light shapes space. For more information, visit mfah.org/exhibitions.

James Turrell

New York City

Through September 25, 2013

James Turrell's first exhibition in a New York museum since 1980 focuses on the artist's explorations of perception, light, color, and space, with a special focus on the role of site-specificity in his practice. At its core is *Aten Reign* (2013), a major new project that recasts the Guggenheim rotunda as a volume filled with shifting artificial and natural light. The

installation reimagines Frank Lloyd Wright's iconic architecture—its openness to nature, curves, and magnificent sense of space—as one of Turrell's Skyspaces, referencing in particular his magnum opus, the *Roden Crater* project. For more information, visit guggenheim.org.

Energy: Oil and Post-Oil Architecture and Grids

Rome

Through September 29, 2013

More than 80 drawings and projects, three photographers, and seven international architects demonstrate the relationship between architecture and energy at this MAXXI exhibition. *Energy* explores new architectural ideas and an impressive depth of research in the field of spaces and grids that are linked to the distribution of energy for more efficient movement and tasks. For more information, visit fondazionemaxxi.it.

Theaster Gates: 13th Ballad

Chicago

Through October 6, 2013

Chicago-based artist Theaster Gates has designed a new large-scale installation at the Museum of Contemporary Art Chicago.

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The installation consists of objects and materials from the Huguenot House, a public-architecture project in Chicago and Germany, a set of repurposed pews from the University of Chicago's campus church, and a monumental double-cross sculpture. Gates created an ecclesiastical ambience to suggest that art museums, like churches, are sites of pilgrimage and thoughtful contemplation. *13th Ballad* is accompanied by a series of collaborative performances. For more information, visit mcachicago.org.

Archaeology of the Digital

Montreal

Through October 13, 2013

This exhibition at the Canadian Centre for Architecture delves into the genesis and establishment of digital tools for design conceptualization, visualization, and production at the end of the 1980s and beginning of the 1990s. Featuring the work of Frank Gehry, Peter Eisenman, Shoji Yoh, and Chuck Hoberman, *Archaeology of the Digital* highlights the dialogue between computer sciences, architecture, and engineering, which is at the core of the early experiments performed by the featured artists. For more information, visit cca.qc.ca.

Green Schools

Washington, D.C.

Through January 5, 2014

The National Building Museum is hosting the first-ever museum exhibition dedicated to the greening of American schools. Featuring more than 40 exemplary projects, from new construction to rehabs to modular classrooms, the exhibition will survey the breadth of green school design in the United States through sample building materials, photographs, video, and green products. For more information, visit nbm.org.

Palaces for the People: Guastavino and America's Great Public Spaces

Washington, D.C.

Through January 20, 2014

Palaces for the People sheds light on the story of Rafael Guastavino Sr. (1842–1908), arguably the most influential architectural craftsman working in late-19th- and early-20th-century America. An established master builder in Barcelona, Guastavino patented a tiling system—based on a centuries-old Spanish building method—enabling the construction of self-supporting arches that were simultaneously lightweight, virtually indestructible,

fireproof, and attractive. At the National Building Museum. For more information, visit nbm.org.

James Turrell: A Retrospective

Los Angeles

Through April 6, 2014

This Los Angeles County Museum of Art retrospective explores nearly 50 years in the career of James Turrell, a key artist in the Southern California Light and Space movement of the 1960s and '70s. The exhibition includes early geometric light projections, prints and drawings, installations exploring sensory deprivation and seemingly unmodulated fields of colored light, and recent two-dimensional work with holograms. One section is devoted to the Turrell masterwork-in-process *Roden Crater*, a site-specific intervention into the landscape just outside Flagstaff, Arizona, which will be presented through models, plans, photographs, and films. The exhibition includes a separately ticketed experience, *Light Reignfall*, from the artist's *Perceptual Cell* series, with a limited number of tickets available. For more information, visit lacma.org.



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Lectures, Conferences, and Symposia

International Urban Design Conference Sydney

September 9–11, 2013

Australia's cities face a number of long-term challenges: greater productivity, affordable and accessible housing, efficient public transportation, safe community spaces, services for a growing and aging population, and the implications of climate change. This conference, held at Novotel Sydney Olympic Park, is dedicated to the theme of "UrbanAgiNation" and will examine the livability, affordability, safety, and efficiency of Australia's cities. For more information, visit urbandesignaustralia.com.au.

Monterey Design Conference 2013

Pacific Grove, California

September 27–29, 2013

This biennial conference, hosted by the American Institute of Architects, California Council (AIACC), invites designers and architects to attend three days of lectures by international prize-winning architects including Marlon Blackwell, Odile Decq, Tom Phifer, Kengo Kuma, Marcio Kogan, and Anne Fougeron. In addition to speaker presentations, the program, held at the Asilomar Conference Center, will include social events, an exhibitor marketplace, tours, and opportunities for fulfilling AIA continuing-education credits. For more information, visit montereydesignconference.org.

2014 International Roofing Expo

Las Vegas

February 26–28, 2014

The International Roofing Expo brings all segments of the roofing construction and maintenance industry together for three days of face-to-face interaction, product review, education, and networking. The show will feature 450 exhibiting companies in 1,000 booths and draw 9,000 people in total attendance. Show highlights include 44 educational sessions, the Product Showcase, the Technology & Business Services Pavilion, the Metal Marketplace, and Exhibitor Product Clinics. At the Mandalay Bay Convention Center. For more information, visit theroofingexpo.com.

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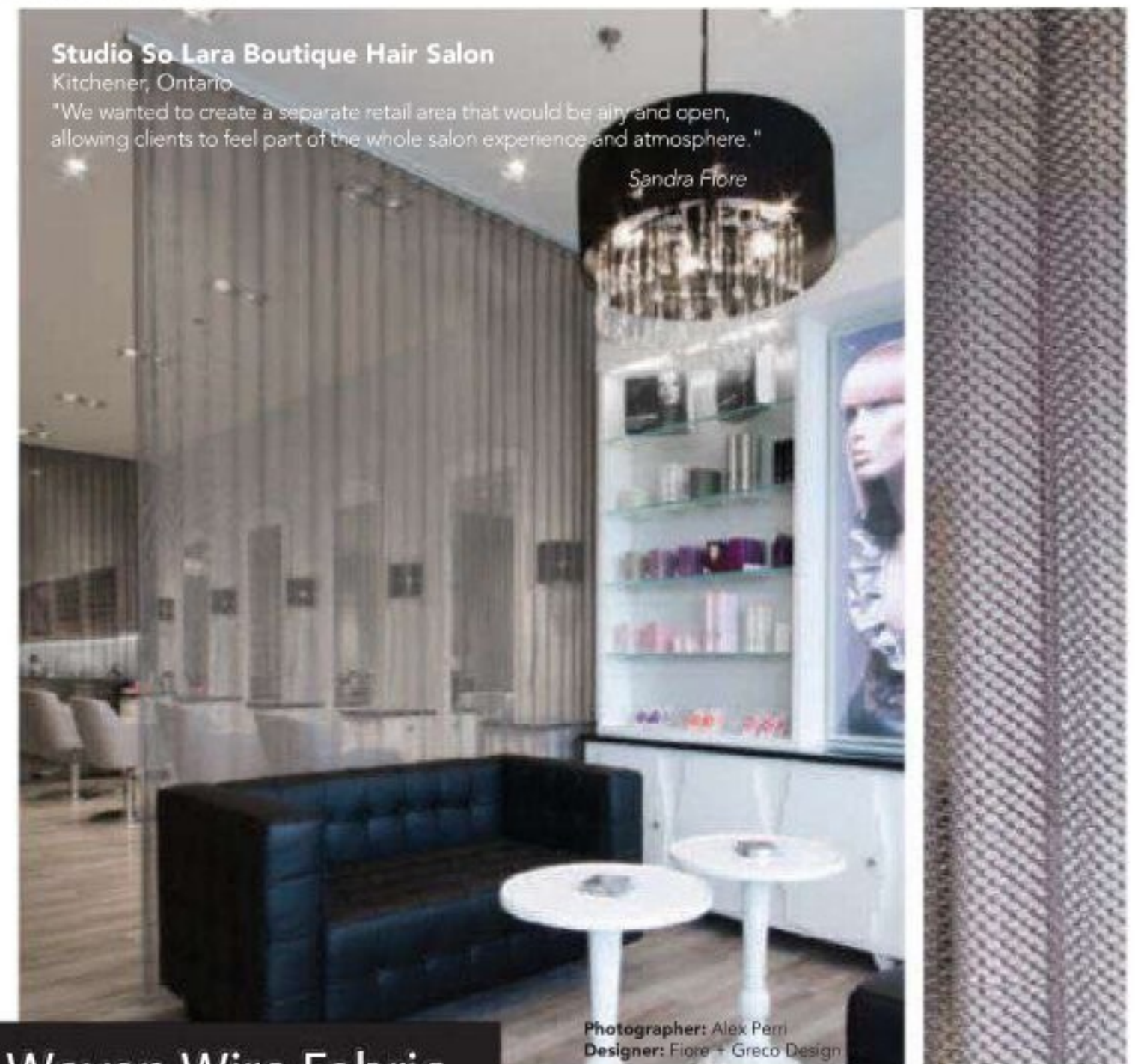
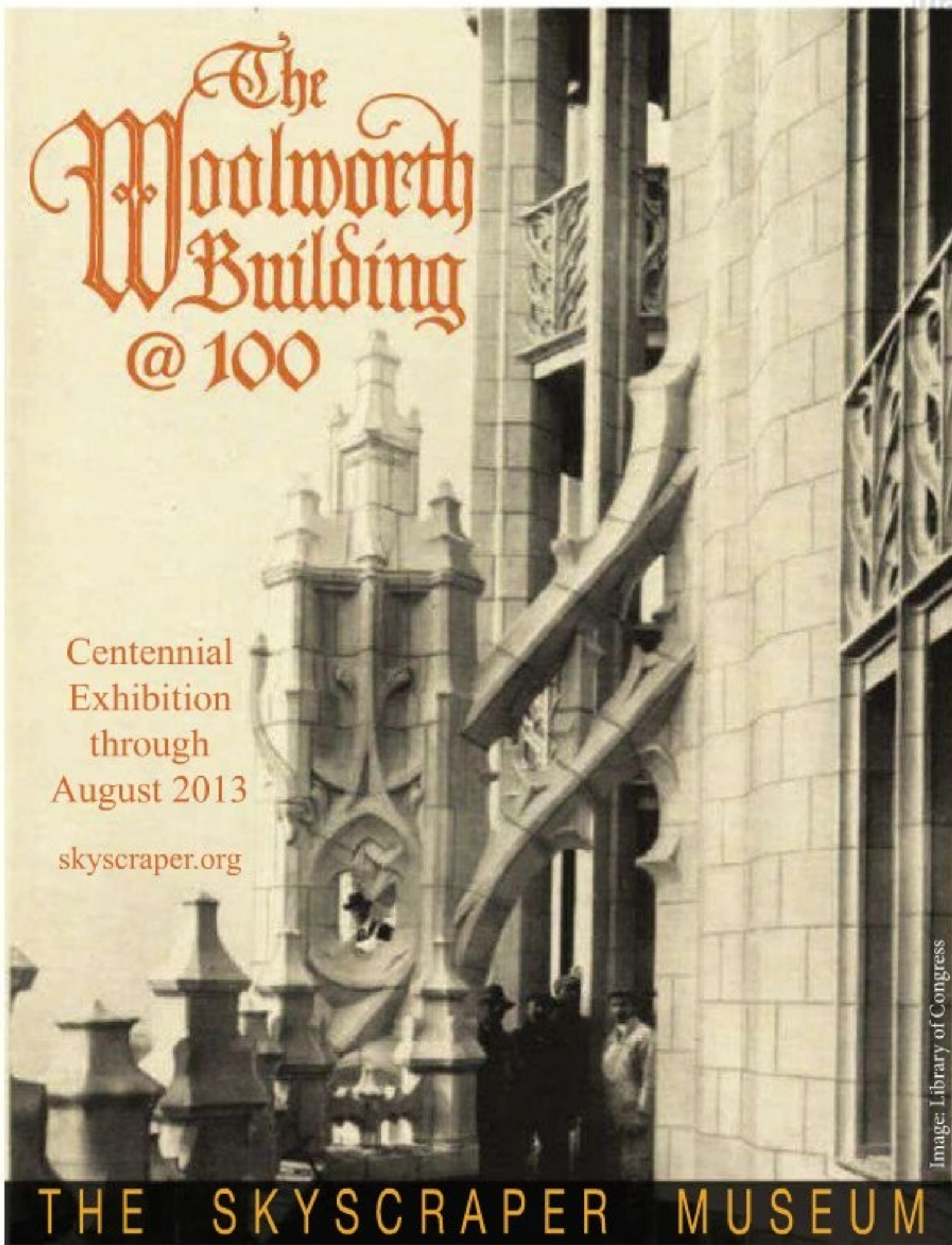
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THE FUTURE of food is already here. Everyone's favorite bit of technological wizardry, the 3-D printer—coveted by architects for models and others for its ability to extrude raw materials into three-dimensional forms—could one day be the standard in personal and commercial-scale food prep. Or so says Dutch artist Janne Kyttanen. The cofounder of Amsterdam-based, 3-D-printing-focused design studio Freedom of Creation, Kyttanen earlier this year created a series of 3-D-printed prototypes of pasta, hamburgers, and cereal using plastic and plaster. “Technically it’s possible now to make prototypes from sugar, chocolate, marzipan, and a bunch of other materials,” says Kyttanen. “It’s already happening. Anything you can stack, you can 3-D print.” Bon appetit! *Asad Syrkett*



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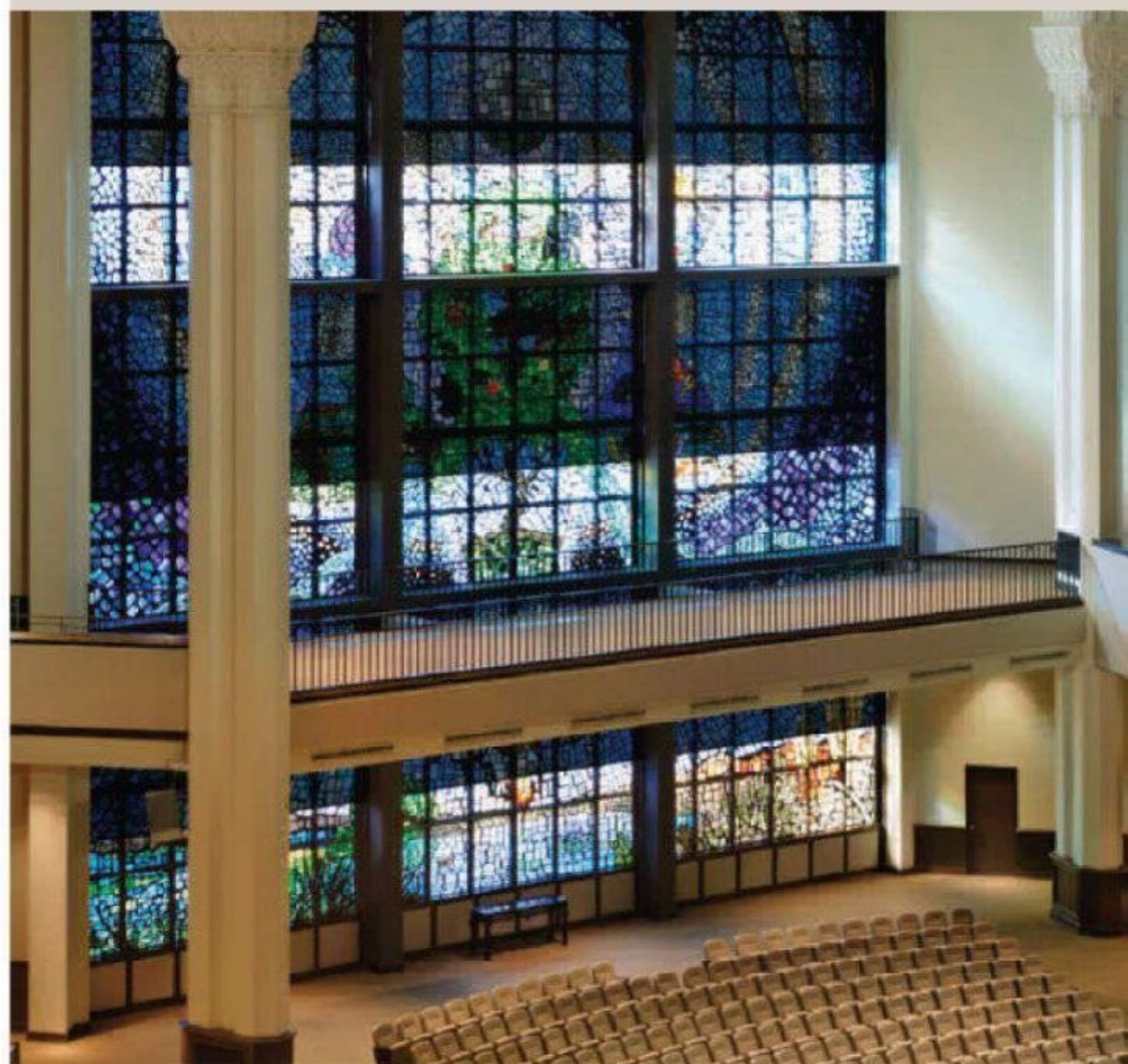
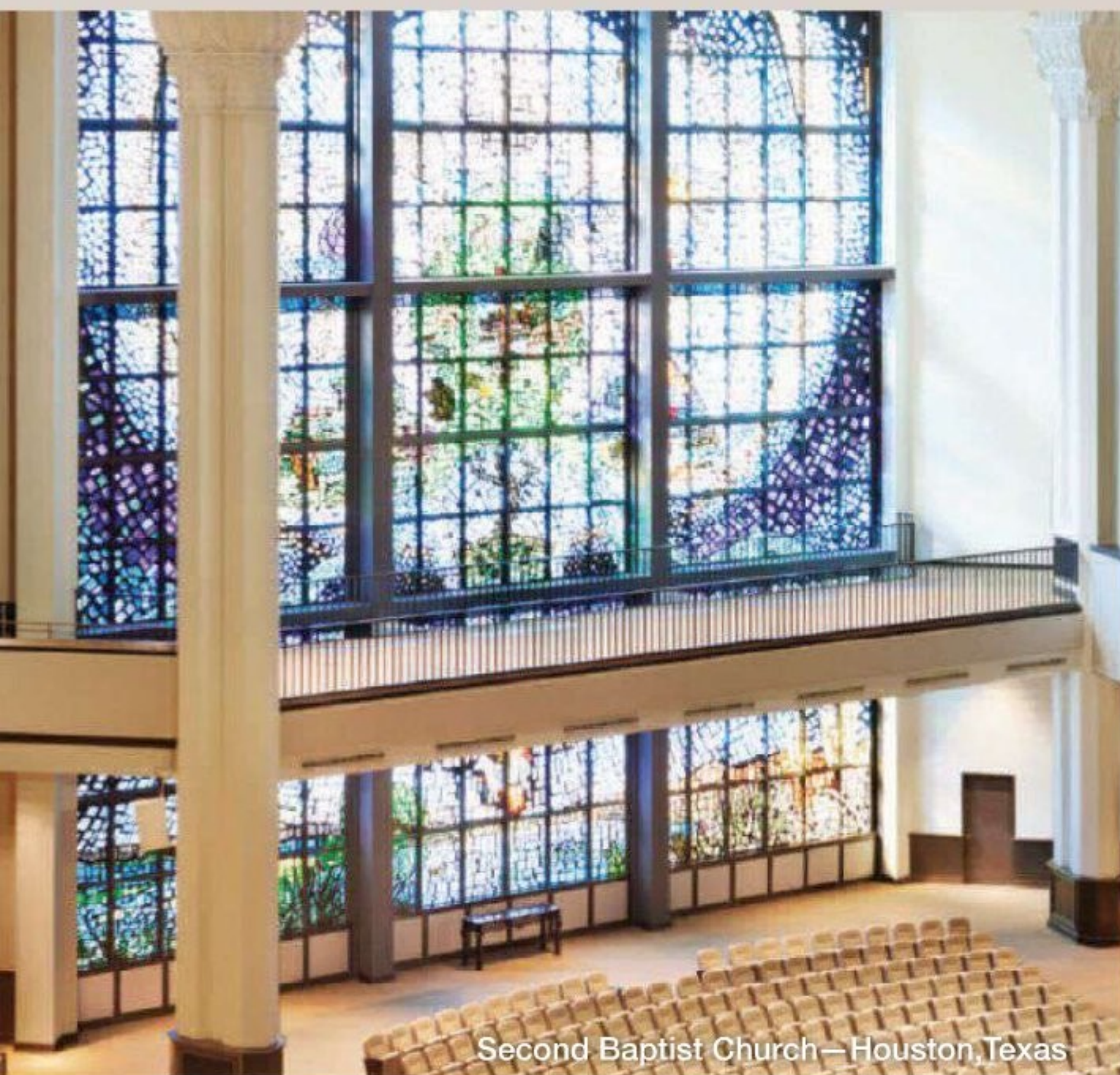
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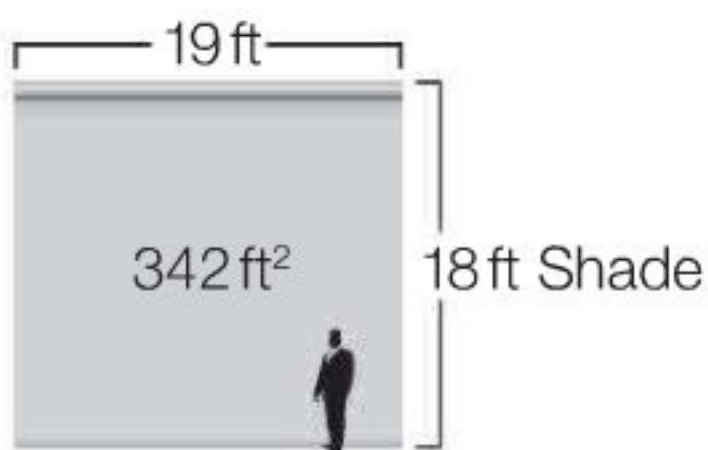
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