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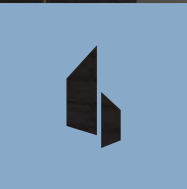
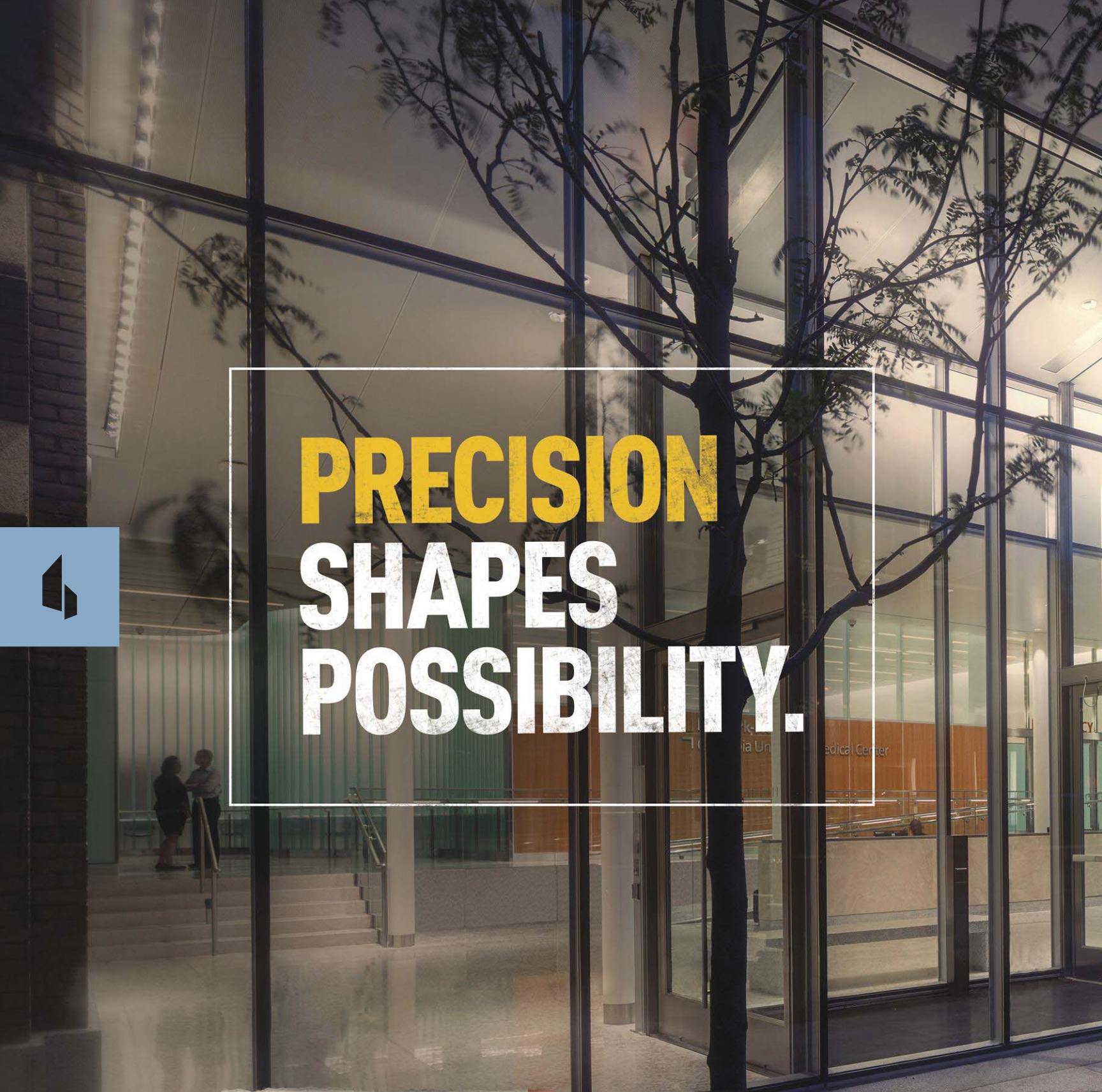
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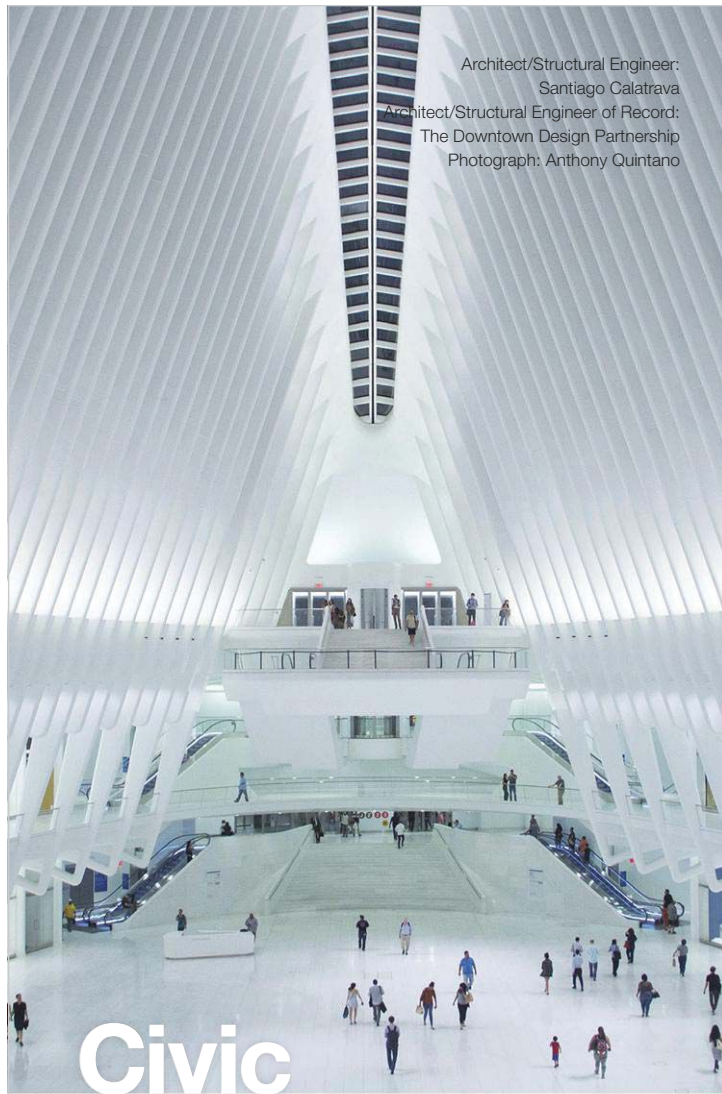


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Shape Up

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Man and Nature

While the struggle continues to slow the rate of environmental degradation, sensitive architecture can help connect us to the land.

THERE ARE FEW places on the planet untouched by man. Every day brings more alarming news: an iceberg the size of Delaware has broken off Antarctica, where global warming is even causing occasional rain in parts of the region rather than snow. Thousands of species, from barn swallows to king cheetahs, are in danger of disappearing from the face of the earth because of what scientists are calling the “sixth mass extinction”: the first five were caused by natural phenomena, but this one is mostly due to pollution, climate change, and the human destruction of habitats.

Yet we humans continue to crave interaction with “nature”—we like sunlight and fresh air; green trees and plants; the songs of birds and crickets; swimming at the beach or hiking in the mountains. Where we usually find access to nature, however—especially if we are urbanites—is in landscapes that have been adapted, planned, and planted by man. My own “backyard” in New York City is Central Park, one of the most glorious designs ever constructed, carefully composed of meadows, rocky outcrops, ponds, lawns, paved pathways, and allées of trees.

In this issue, we explore contemporary architecture engaged in the landscape, designed to enhance the human experience of cultivated nature. We are not talking about wilderness here—these are places that, for the most part, have nearby parking, facilities, and maybe a café or education center. They are buildings that focus on the views or meld with the landscape, where Eden is highly edited.

Among the most daring of these structures is a new pavilion in a Netherlands park by Junya Ishigami & Associates and Studio Maki, with its slender tentacles of glass walls curling through a landmarked park (page 84). In Melbourne, a stunning 1,280-foot-long pedestrian bridge by John Wardle Architects and NADAAA soars above and through the cityscape, connecting the famous tennis center to urban areas from which it was isolated (page 78). The Parc du Peuple de l’Herbe in suburban Paris tames an overgrown wasteland near the Seine, drawing those people of the grass—to translate the park’s name—to a whimsical viewing tower where they can scan a vast panorama (page 96).

The masters of blending buildings with refined landscapes are, of course, the Japanese, whose historic temple and garden complexes continue to inspire designers around the world. In Portland, Oregon, Tokyo-based Kengo Kuma and Associates has created a serene, elegantly detailed trio of cultural buildings to enrich the visitor experience of the city’s 20th-century Japanese Garden (page 72). And in Japan itself, Hiroshi Nakamura designed an exquisitely simple pavilion for a restaurant overlooking a lake: it frames the landscape while seeming barely to touch it.

Henry David Thoreau was born 200 years ago last month, and the anniversary is being marked with a new visitor center at Walden Pond in Concord, Massachusetts, designed by Maryann Thompson Architects with Michael Van Valkenburgh Associates (page 90). The structure embodies Thoreau’s values in its modest scale, siting, and thoughtful use of



locally sourced materials. Thoreau, who escaped his hectic life in town to live in the woods by Walden Pond (in a cabin now gone but replicated), was not really a hermit, as widely assumed, but a man who wanted simplicity and peace to explore his ideas—and from those we can extract powerful notions about sustainability and connections to nature.

Connecting to land and place is a celebrated hallmark of regional modernists today, but similar values were reflected in the work of an earlier, lesser-known generation of modern architects. With the death in June of the gifted Texas architect Frank Welch, at age 90, I kept thinking about his masterwork—a sublime merging of building and landscape. A simple hunting shelter called the Birthday, it was sited on an escarpment overlooking the vast, flat West Texas landscape and built of stone quarried on the site and timbers recycled from old oilrigs. So beloved was the Birthday that when the Texas Society of Architects was voting for the 25-Year Award in 1997, it tied with Louis Kahn’s Kimbell Museum. For the first and only time, the state’s honors were bestowed on two projects.

Thoreau believed “we can never have enough of nature”—and he would despair at the state of the earth since he walked on it. As we struggle to slow the impact of climate change and environmental degradation, we still desire that elemental connection to nature and to land. And thoughtful design can enhance the experience.

Cathleen McGuigan

Cathleen McGuigan, Editor in Chief



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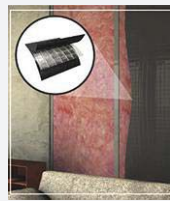
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perspective

More and more, we realize that large-scale approaches to pressing challenges such as our city's jail systems aren't the best solution. —Van Alen Institute executive director

David van der Leer on a new report outlining design-based, community-focused jail reform for New York City.

Grenfell Tower Fire Tragedy Sparks Safety Dispute

BY PETER REINA AND ANDY WRIGHT



The Grenfell Tower fire in London occurred June 14 and killed about 80 people, according to police. The building's aluminum composite material cladding is blamed for the inferno's rapid spread.

dents had been advised to stay put inside, awaiting rescue. Those who did so perished.

Almost immediately after the fire, government ministers were challenged for seemingly ignoring the All Party Parliamentary Fire Safety & Rescue Group's advice to retrofit sprinklers in the U.K.'s estimated 4,000 older residential high-rise buildings.

While the Grenfell Tower's lack of sprinklers allowed the fire to gain purchase, the rapid spread of flames revealed serious flaws in the recently fitted external cladding. Built in 1974, the concrete-framed building with 120 apartments is owned by the Royal Borough of Kensington and Chelsea and managed by the not-for-profit Kensington and Chelsea Tenant Management Organization.

For the refurbishment, including cladding, the management company awarded a design-build contract in early 2014 to Rydon Maintenance, which completed the \$12.6 million job last July. The London-based firm Studio E Architects was the designer of the Grenfell work; it declines to comment.

To design and install the cladding, Rydon awarded a \$3.3 million subcontract to Harley Facades. Celotex, a subsidiary of France's Saint Gobain Group, supplied RS5000 polyisocyanurate insulation, which was installed between the building and the ACM rainscreen. Further, CEP Architectural Facades fabricated the rainscreen using the Reynobond composite system.

In the PE version, Arconic's Reynobond is a thin composite of two coated aluminum sheets that sandwich the layer of polyethylene. There is also a costlier variant with a fire-retardant (FR) thermoplastic core. Arconic's product literature advises that Reynobond PE should be used only up to 10 meters (33 feet) above grade.

According to Robert Solomon, a building fire-protection division manager in this country with the National Fire Protection Association (NFPA), U.S. codes generally prohibit ACM systems that have combustible polyethylene material above 40 feet but do allow fire-retardant systems or those containing noncombustible materials.

"We sold our products with the expectation

This story is adapted from an article that originally appeared in Engineering News-Record.

FOLLOWING the deadly June 14 London Grenfell Tower fire that has killed at least 80 people, a nationwide investigation determined that dozens of U.K. high-rise buildings are potentially unsafe.

On their exteriors, all use an aluminum composite material (ACM) similar to the 24-story Grenfell Tower's rainscreen cladding system. London's metropolitan police department has signaled that it may file manslaughter charges in connection with the disaster (in the U.K., a corporation can be prosecuted for manslaughter).

New York-based Arconic, the maker of Reynobond, a type of aluminum and polyethylene (PE) cladding used on the tower, has halted global sales of the product for high-rise buildings. "The loss of lives, injuries, and destruction following the Grenfell Tower fire are devastating, and our deepest condolences are with everyone in this tragedy," said an Arconic statement, released on June 26. "We have offered our full support to the authorities as they conduct their investigation."

The Grenfell inferno has increased doubts about U.K. building regulations on ACM cladding. Around 600 U.K. high-rises are estimated to have been retrofitted with ACM to improve their appearance and energy efficiency. Cladding samples are being rushed for combustibility tests, conducted by the building research organization BRE Group in Watford, England.

At press time, all 95 samples from 32 U.K. regions failed BRE's tests, according to the Department for Communities and Local Government. A spokesman for the department says that high failure rate is because the riskiest buildings were tested first. But David Metcalf, director of the Centre for Window and Cladding Technology in Bath, England, also believes regulatory confusion over ACM combustibility is being revealed.

The U.K.'s worst peacetime fire in centuries was sparked by a faulty refrigerator in a fourth-floor apartment, according to the Metropolitan Police. Nearby flammable cladding ignited, spreading flames rapidly up and down the residential tower, investigators believe. The flames spread so quickly that the firefighters had no time to reach many residents. In line with common high-rise safety practice, resi-

that they would be used in compliance with the various and different local building codes and regulations,” said Arconic in a statement. European, U.K., and U.S. regulations permit ACM in high-rise buildings “depending on the cladding system and overall building design,” it added.

Facade manufacturer CEP managing director John Cowley insists that the ACM product is allowed “in both low-rise and high-rise structures” by current U.K. building regulations. For conventional designs, U.K. building regulations set out minimum performance requirements. Details of how to comply are published in the so-called Approved Documents, which reference British standards and other technical guidance. In England, “any insulation product” on buildings taller than 18 meters (60 feet) must be of “limited combustibility,” a term the documents define. But the wording is ambiguous, according to Metcalf, the director of the Centre for Window and Cladding Technology. Official guidance “doesn’t explicitly say that the cladding should be of limited combustibility,” explains Metcalf. “Most people have interpreted it to mean it doesn’t need to be.”

Both the Celotex insulation from the Grenfell Tower and aluminum composite panels failed preliminary fire tests, according to police.



The Grenfell Tower disaster has led to combustibility testing in high-rise-building cladding across the United Kingdom.

In recent years, manufacturers have supplied cladding systems and exterior insulation that feature materials that are lightweight, easily installed, and less expensive than conventional systems. But there are several drawbacks, says Marc Weissbach, an expert on building enclosures and CEO of building-systems consultant Vidaris. The notion that any high-rise building featuring an ACM system should be fully sprinklered is good for protecting the interior, “but the sprinklers are inside the building, and the fire is spreading—

quickly—up the exterior,” he says.

The NFPA 285 standard specifies 15 minutes of protection from fire, “but is that enough time in a high-rise?” Weissbach asks. He favors the two-hour standard that was in place until 1968.

For CEP’s John Cowley, “the key question now is whether the overall design of the building’s complete exterior was properly tested and subsequently approved by the relevant authorities, including the fire officer, the building-compliance officer, and architect before commencement of the project.”

Rydon claims to have met all required building and fire regulations. It signed off on the work “when the completion notice was issued by Royal Borough of Kensington and Chelsea building control,” it adds.

The NFPA is developing a risk-assessment tool for high-rise buildings with combustible facades. The Grenfell Tower fire prompted the association to reach out to stakeholders in insurance firms and global engineering teams to identify key variables such as wall materials and building fire-protection systems, characterize them in terms of risk or mitigation potential, and formulate an engineering-based risk model.

NFPA is fast-tracking the project, hoping to have the tool available by year-end. ■

PHOTOGRAPHY: © CHIRALJON/FLICKR



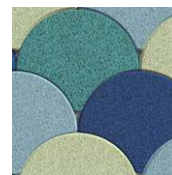
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Top 300 Firms: Gensler Maintains Leading Revenue for Six Years Straight

BY MIRIAM SITZ

THE TOP four firms in ARCHITECTURAL RECORD's yearly ranking held tight to their places from 2016. AECOM, Perkins+Will, and Jacobs followed San Francisco-based Gensler, which clinched the No. 1 spot for the sixth year in a row, seeing more than \$1.19 billion in revenue—an increase of more than \$100 million since 2015.

The annual list, compiled by RECORD's sister publication *Engineering News-Record*, ranks companies by their architectural revenue from the prior year, as reported to ENR by firms that choose to participate.

Gensler co-CEOs Andy Cohen and Diane Hoskins noted the growing importance of

virtual-, augmented-, and mixed-reality platforms, which they say “are having a real impact on the design process, helping our designers innovate for our clients, and our clients more effectively visualize and experience their designs in real time.”

AECOM maintained second place, though the firm's architectural revenue has decreased slightly in recent years, from a five-year high of \$801 million in 2014 to \$605 million in 2015, and just under \$596 million last year.

Despite remaining in third place, Perkins+Will saw an increase in revenue of almost \$80

million. “We are trying to be as agile as possible,” says CEO Phil Harrison, “including establishing methods of predicting our future business workflow.”

Corgan experienced the largest jump of the Top 25 firms on this year's list, moving from 22nd place in 2016 to 14th. “We understand taking care of our clients,” says Steve Hulsey, executive managing principal and education sector leader. “Responding to their unique needs and implementing their vision on time and on budget is job one, and we do that every day.”

See the chart below for a list of the Top 25 firms with their most recent annual architectural revenue listed in millions, along with pictures of some notable new projects. The complete Top 300 list can be viewed online at architecturalrecord.com. ■

2017 ARCHITECTURAL RECORD TOP 300

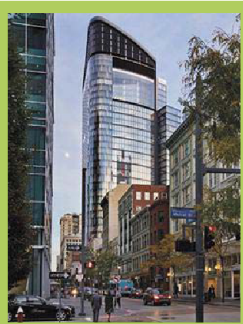
TOP 25 U.S. ARCHITECTURE FIRMS OF 2017

Companies are ranked by revenue (in **millions of dollars**) for architectural services performed in 2016. These data also appear in *Engineering News-Record's* Top 500 Design Firms list, which, unlike our ranking, also includes firms that do engineering exclusively.

RANK		FIRM, U.S. HEADQUARTERS	TYPE OF FIRM	TOTAL ARCHITECTURAL REVENUE
2017	2016			
1	1	Gensler , San Francisco	A	\$1,192.37
2	2	AECOM , Los Angeles	EAC	\$595.50
3	3	Perkins+Will , Chicago	A	\$562.33
4	4	Jacobs , Dallas	EAC	\$426.07
5	6	HOK , St. Louis	AE	\$384.74
6	7	HKS , Dallas	A	\$376.68
7	8	CH2M , Englewood, Colo.	E	\$357.63
8	9	HDR , Omaha	EA	\$354.30
9	13	IBI Group , Westerville, Ohio	AE	\$318.89
10	12	Stantec , Irvine, Calif.	EAL	\$258.53
11	5	Arcadis North America/Callison RTKL , Highlands Ranch, Colo.	EA	\$249.00
12	11	Skidmore, Owings & Merrill , New York	AE	\$247.17
13	15	Perkins Eastman , New York	A	\$215.00
14	20	Corgan , Dallas	A	\$198.25
15	26	CannonDesign , Grand Island, N.Y.	AE	\$185.50
16	**	Populous , Kansas City, Mo.	A	\$184.65
17	17	NBBJ , Seattle	A	\$162.50
18	14	Kohn Pedersen Fox Associates , New York	A	\$158.90
19	**	Leo A Daly , Omaha	AE	\$156.51
20	16	Woods Bagot Architects , San Francisco	A	\$155.00
21	19	SmithGroupJJR , Detroit	AE	\$151.58
22	18	ZGF Architects , Portland, Ore.	A	\$147.54
23	21	DLR Group , Minneapolis	AE	\$126.80
24	10	Bechtel , San Francisco	EC	\$124.00
25	23	Hammel, Green and Abrahamson , Minneapolis	AE	\$122.43

Key to firm types

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



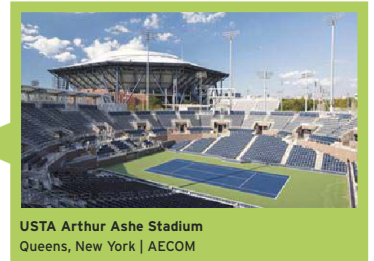
The Tower at PNC Plaza
Pittsburgh | Gensler



Bay Area Metro Center
San Francisco | Perkins+Will



UCSD Jacobs Medical Center
La Jolla, California | CannonDesign



USTA Arthur Ashe Stadium
Queens, New York | AECOM



Poly International Plaza
Beijing | Skidmore, Owings & Merrill



Amazon Spheres
Seattle | NBBJ

Architectural Record Traveling Fellowships Awarded to Lea Oxenhandler and Benjamin Halpern

BY DANIELLE COHEN

RECORD HAS ANNOUNCED the winners of its inaugural ARCHITECTURAL RECORD Traveling Fellowship competition, Lea Oxenhandler and Benjamin Halpern. In honor of the magazine's 125th anniversary, RECORD is funding the travel expenses of these two young designers while they conduct research overseas, each pursuing a creative project that addresses architecture's interdisciplinary applications.

Oxenhandler, 30, plans to combine her academic interest in the Japanese Metabolist movement that emerged in the aftermath of World War II with her interest in the housing market as she travels to Tokyo, Osaka, and Kyoto. After noting the drastic difference in the number of homeless in New York and Tokyo, Oxenhandler traced Japan's lower rate to an abundance of temporary housing produced by the Metabolists, a movement she studied while pursuing her M.Arch. at the University of Pennsylvania's School of Design.

"I'm often asked to think about ways of



Record traveling fellows Lea Oxenhandler (left) and Benjamin Halpern (right).

building really low-cost affordable housing in the neighborhoods where I've worked," said Oxenhandler, currently an architectural fellow at the People's Emergency Center, a community development nonprofit in West Philadelphia. "It will be interesting to see how these more disposable houses are designed and built, and to think about ways that we can borrow these ideas in the U.S."

Meanwhile, Halpern, 29 and a designer at Para-Project, a New York-based collaborative



architecture firm, will apply the fellowship's resources to challenge the way cities market themselves with predetermined urban panoramas. Using the panorama as a theoretical framework—an idea he first explored in his master's thesis at Harvard's Graduate School of Design—he will travel through nine cities in Western Europe to develop alternative tourist literature.

"The way cities represent themselves claims you can learn the entire history of a city by following its official tourist itinerary," Halpern says. "But you're not going to learn anything that they don't offer you." In order to counter this reductive depiction of cities, Halpern will produce his own travel brochures, based on interactions with people and specific structures in each city.

Both Oxenhandler and Halpern will complete their trips before September 2018. They will have the opportunity to publish reports of their studies in RECORD. ■

PHOTOGRAPHY: COURTESY LEA OXENHANDLER AND BENJAMIN HALPERN



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Longwood Gardens has embarked on a restoration and renovation of its fabled landscape with the redo of its centerpiece fountain.

A Natural Collaboration

BY SUZANNE STEPHENS

IN LATE MAY, a splashy fanfare heralded the first stage of a major renovation of the historic Longwood Gardens in Kennett Square, Pennsylvania. Even a rainy night couldn't dampen the effect of the Main Fountain Garden's jet spray (1,340 new jets, 379 "legacy" ones) that shot up into the sky as high as 175 feet—the height of a 15-story building. The shimmering spectacle was dramatized by a multicolor array of LED lighting, and enhanced by an eye-popping display of fireworks. It all may sound ephemeral, but the event represented an impressive collaboration between New York architects Beyer Blinder Belle (BBB); the Dutch urban planning and landscape design firm West 8; a Los Angeles–based water feature consultant, Fluidity Design; and New York lighting specialists L'Observatoire and the interdisciplinary group Pentagram.

The event marked ongoing major plans for Longwood. "This is only the beginning," says Paul Redman, president and CEO of the horticultural-display gardens, created from 1906 to 1954 by Pierre S. du Pont, an inventor, engineer, and scion of the chemical company. Today, du Pont's accomplishment totals 1,077 acres, organized around three connected Beaux-Arts-style conservatories, and attracts an estimated 1.35 million visitors a year to this verdant territory near Wilmington, Delaware.

Just to touch on the significant components of Longwood: there are 20 indoor gardens, 20 outdoor ones, and three with fountains. The Main Fountain Garden, five acres in size in front of the conservatories, is the centerpiece—its loggias, arcades, basins, and plantings evoke the grandeur of Versailles's landscaping. (du Pont himself designed the hydraulic wonder

with R.P. Brewer in 1931.)

The reopening of this largest fountain after a 2½-year reconstruction is tied to a 40-year master plan that Redman initiated in 2009, with an invited competition won by West 8. The firm's plan, completed in 2011, doesn't, according to principal Claire Agre, "just deal with horticulture and upgrading infrastructure and facilities, but

addresses the guest experience and strategies for arrival, as well as how the entire acreage can be opened up for the public."

For the renovation of the Main Fountain Garden, BBB, responsible for the restoration of Grand Central Terminal and the Enid A. Haupt Conservatory at the New York Botanical Garden, led the team. For starters, the fountains needed major work, which, with improved technology, would cost \$90 million, paid privately through the Longwood Foundation and its younger offshoot, Longwood Gardens, Inc.

Spearheaded by partners Jack Beyer and Richard Southwick, BBB installed new precast concrete tunnels and piping, and replaced crumbling limestone and marble. Since four new underground pump houses would replace the original single one, BBB, with Pentagram, converted the original Pump Room into a handsome exhibition space where visitors can examine the early 20th-century engineering equipment, along with related memorabilia. The small gallery now opens onto a new Pumphouse Plaza. In this phase, BBB and West 8 also built a small grotto with fountains behind the center loggia, put in pathways and ramps for accessibility, and oversaw the replanting of the Japanese boxwood, linden and European hornbeam trees, and other such species.

With regard to the next phase, Redman explains that Longwood is exploring various options to enhance guest arrival, which will include the contributions of Weiss/Manfredi, architects for the Brooklyn Botanic Garden Visitor Center (2012), and the continued involvement of West 8 as "the keepers of the physical manifestation of our bold vision for Longwood Gardens." The multifaceted collaboration, so critical to preserving the legacy of the old gardens, seems to be a very promising direction for their future. ■

Shortlist for London's Centre for Music Released

London's Centre for Music has revealed the shortlisted architectural teams for a competition to design a new state-of-the-art concert hall in that city. The teams are AL_A with Diamond Schmitt Architects; Diller Scofidio + Renfro and Sheppard Robson; Foster + Partners; Gehry Partners with Arup; Renzo Piano Building Workshop; and Snøhetta.

Jan Boelen to Curate Istanbul Design Biennial 2018

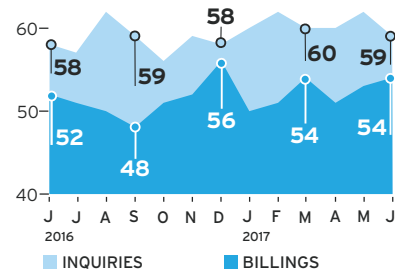
The Istanbul Design Biennial has appointed Jan Boelen, Belgian design critic and founder of Z33 House for Contemporary Art, as the fourth artistic director of the six-week Istanbul Design Biennial. Boelen is currently the artistic director for Z33 and Atelier LUMA in France, and head of the Design Academy Eindhoven's Social Design master's program.

Facebook Taps OMA for Master Plan of New Campus

Facebook has engaged OMA's New York office to design a new mixed-use neighborhood called Willow Campus. Planned for a site adjacent to Facebook's existing Menlo Park headquarters, which includes a sprawling office building designed by Frank Gehry, the new development's programming will include housing, retail, transit, and offices.

ThyssenKrupp's Sideways Elevator Tested, Sold in Germany

A residential building under construction in Berlin is the first to have purchased ThyssenKrupp's new "Multi" elevator system, which is now in the final phases of testing. Using magnetic levitation rather than cables, the system can move cars left, right, and diagonally, in addition to up and down.



Q2 Wraps Up on Steady Ground

Demand for architectural services increased for the fifth consecutive month, according to the AIA's June Architectural Billings Index (ABI). The month scored 54.2, up 1.2 from May. (Any score above 50 shows an increase in billings.) Though the new projects inquiry index slumped slightly to 58.6 from 62.4, the outlook is positive, says AIA economist Kermit Baker.



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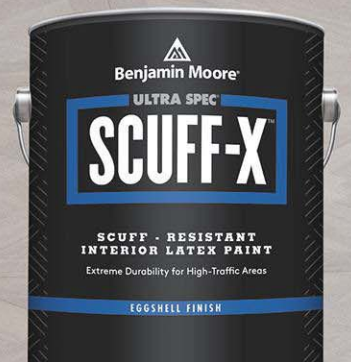
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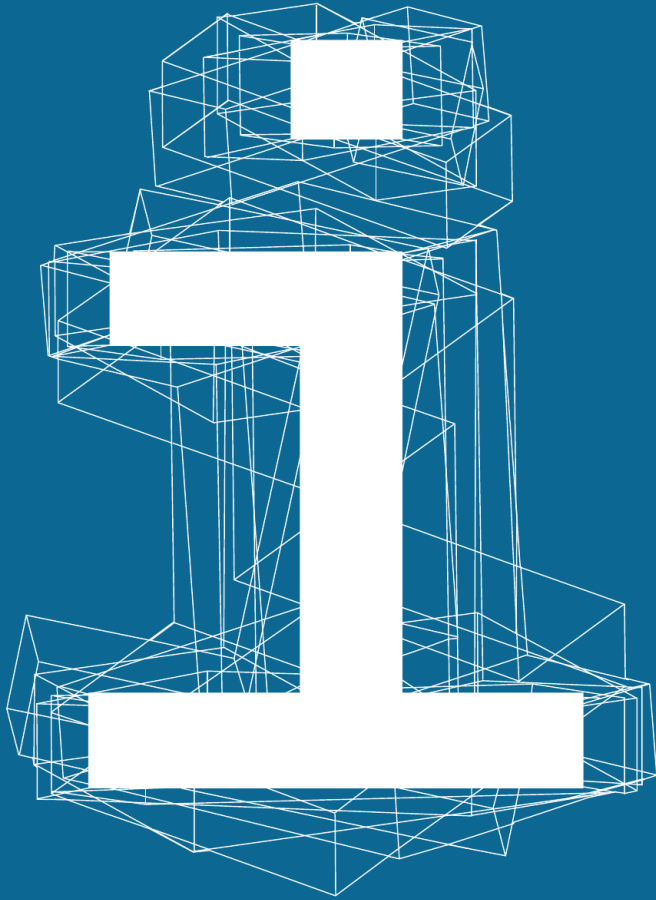


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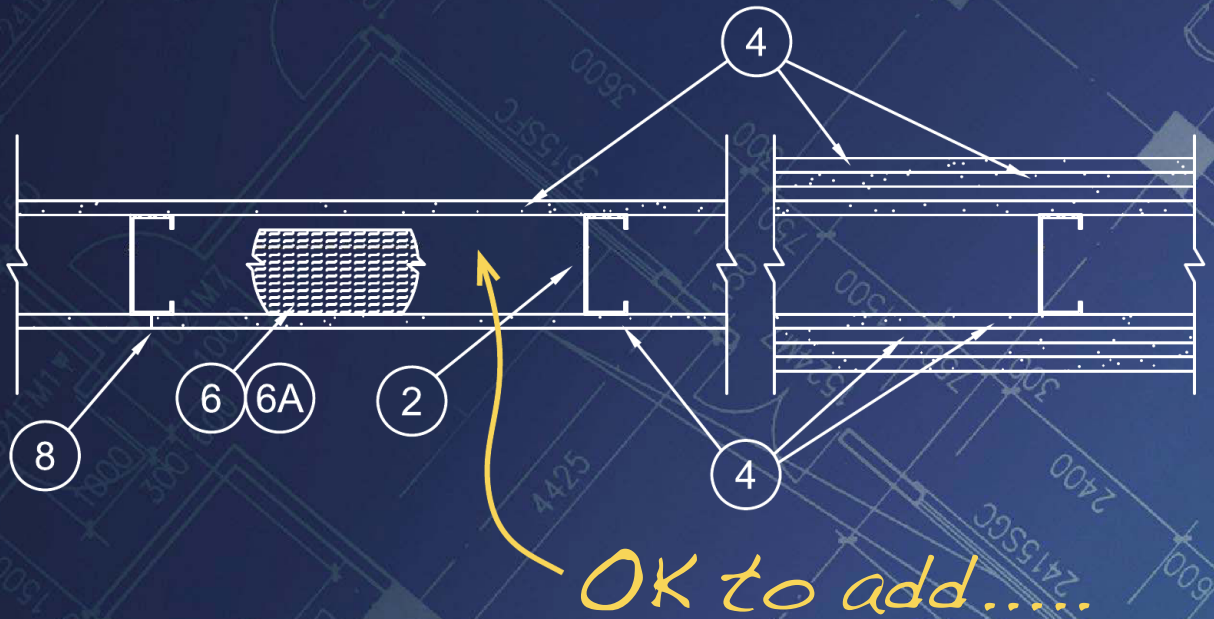


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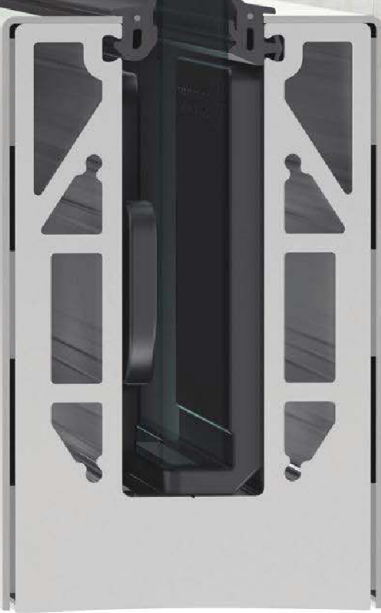
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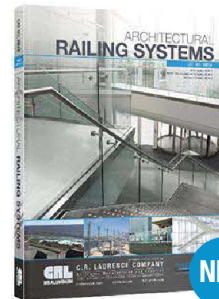
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A VACATION HOUSE IN THE TURKS AND CAICOS ISLANDS TAKES CUES FROM ITS WATERFRONT SITE AND THE TROPICAL CLIMATE. BY ALEX KLIMOSKI



TUCSON-BASED ARCHITECT RICK JOY may be known best for the expressive, dignified forms of his houses, but when asked how he might describe his style, he denies having one. “It would be really boring to have a style and impose it on everyone,” he says. Nevertheless, when a friend and first-time client—a representative for an Italian lighting company—commissioned him to design a vacation house on one of the Turks and Caicos islands, there was only one aesthetic requirement: that it be a “Rick Joy piece.”

Joy’s designs are rooted in the terrain and traditions of each locale and informed by the particular needs and interests of the client. This results in a body of work that embraces a wide range of shapes and materials, from a tradition-inspired shingle-and-stone residence with a gable roof in Vermont (RECORD, April 2010, page 76) to a sleek glass-and-steel-clad villa in the Arizona foothills.

For the house in Turks and Caicos, Joy was given a site nestled between a roadway and the rocky edge of a shallow inlet, overlooking the Atlantic Ocean’s turquoise waters.

He first looked to the local building culture for inspiration, but decided to go in a different direction. “Here it’s all about block and stucco, and I don’t like to put frosting on my buildings,” he says. Still, the architect used as much from the island as he could. For the structural frame, he opted for a concrete mixture of locally sourced sand and aggregate, which resulted in a “Caribbean white” hue. Throughout the interiors, the concrete is left exposed for floors and walls, complemented by sapele mahogany ceilings, doors, window frames, and built-ins.

Because the primary intention of the client, who makes frequent trips to the island from Toronto, was to have a place to lounge and take in the scenery with his extended family, Joy placed the kitchen, dining, and living area in a standalone pavilion at the back of the site, near the water. Surrounded on three sides by operable, full-height glazing, this 720-square-foot structure provides the house’s primary views. The

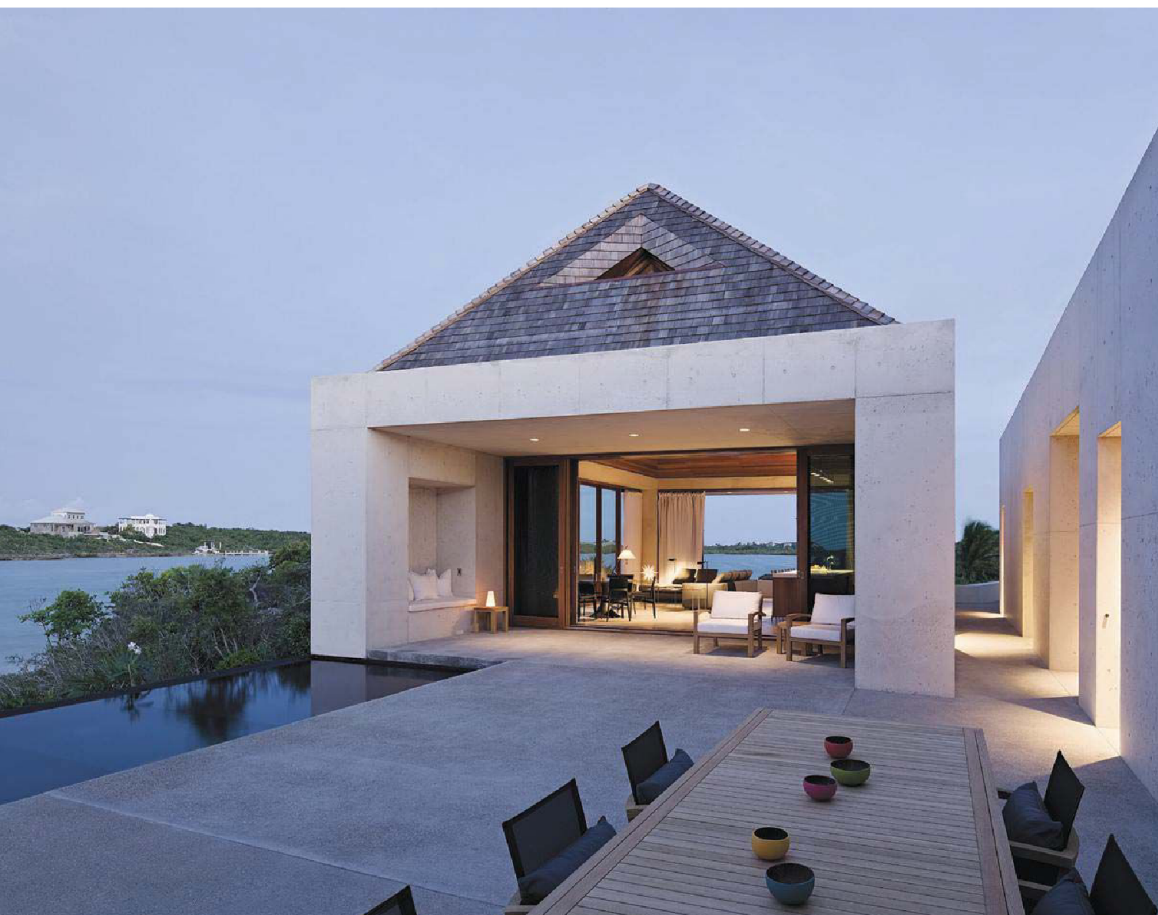
sliding doors at the southeastern and northwestern walls open up to sheltered, open-air porches. An adjacent terrace offers an additional place to gather.

An asymmetrical cedar-clad pitched roof functions to help naturally ventilate the pavilion, capturing the prevailing north wind and pulling hot air out from the top of the room through a small window that can be opened and closed; it also adds a playful contrast of shape and texture.

Three bedrooms and support spaces, including a media room, pantry, two interior courtyards, and storage, are situated in a separate one-story volume, a low-slung rectilinear form that runs alongside the road, acting as a protective shield to the shared spaces behind it. “I wanted it to look like more of a landscaped wall than a house,” says Joy.



The main entryway is accessed through an elongated concrete volume that houses the private wing. Beyond this structure, a detached pavilion accommodates the shared living spaces.



Small bedroom units (below), exterior circulation, and generous open gathering areas encourage inhabitants to spend their time outside.



The 2,500-square-foot building's function as a barrier is further underscored by its limited glazing, which helps to keep the inside cool. Skylights and small, sporadically placed window openings limit visual access to the outside but provide ample natural light.

In a layout akin to that of a standard motel, the private rooms are organized along the building's length, with each room opening out to the pavilion, terrace, and pool area. The decision to keep circulation entirely outdoors was driven by a need to be economical ("It saved a lot of square footage," says Joy), but it is

a practical feature as well: "Heating and cooling the pathway between rooms didn't make sense in this environment." Although the Turks and Caicos climate is for the most part dry, deeply recessed entryways afford respite from occasional inclement weather.

A small dock at the tip of the site provides direct access to the water; it is also a landing spot for fishermen selling their latest catch, which can be prepared, cooked, and enjoyed just feet away, in a truly relaxed fashion. Says Joy of the house, "It really is the perfect place to lounge." ■



- 1 ENTRANCE
- 2 PANTRY
- 3 MEDIA ROOM
- 4 COURTYARD
- 5 BEDROOM
- 6 KITCHEN
- 7 DINING
- 8 LIVING
- 9 PATIO
- 10 TERRACE

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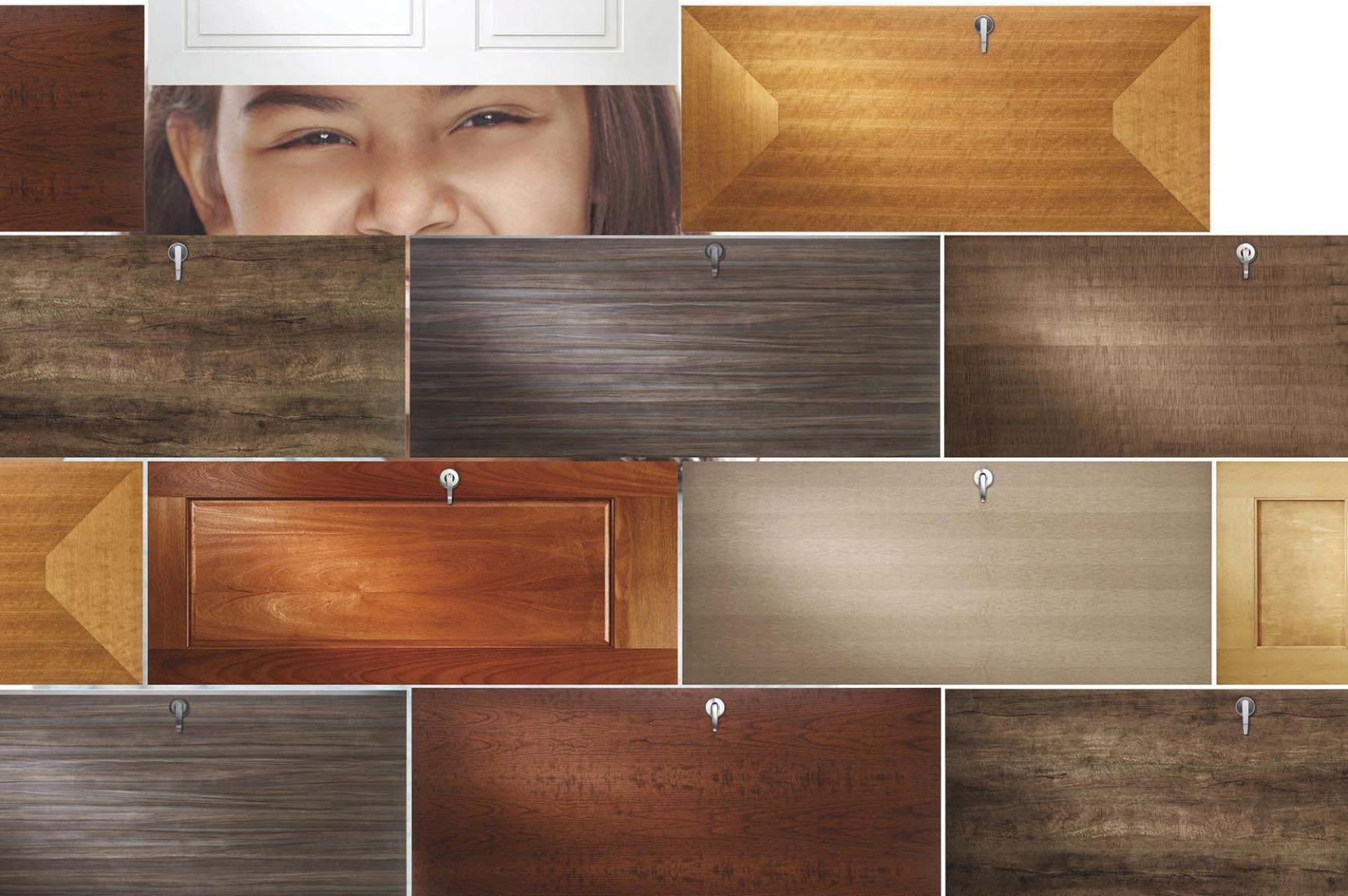
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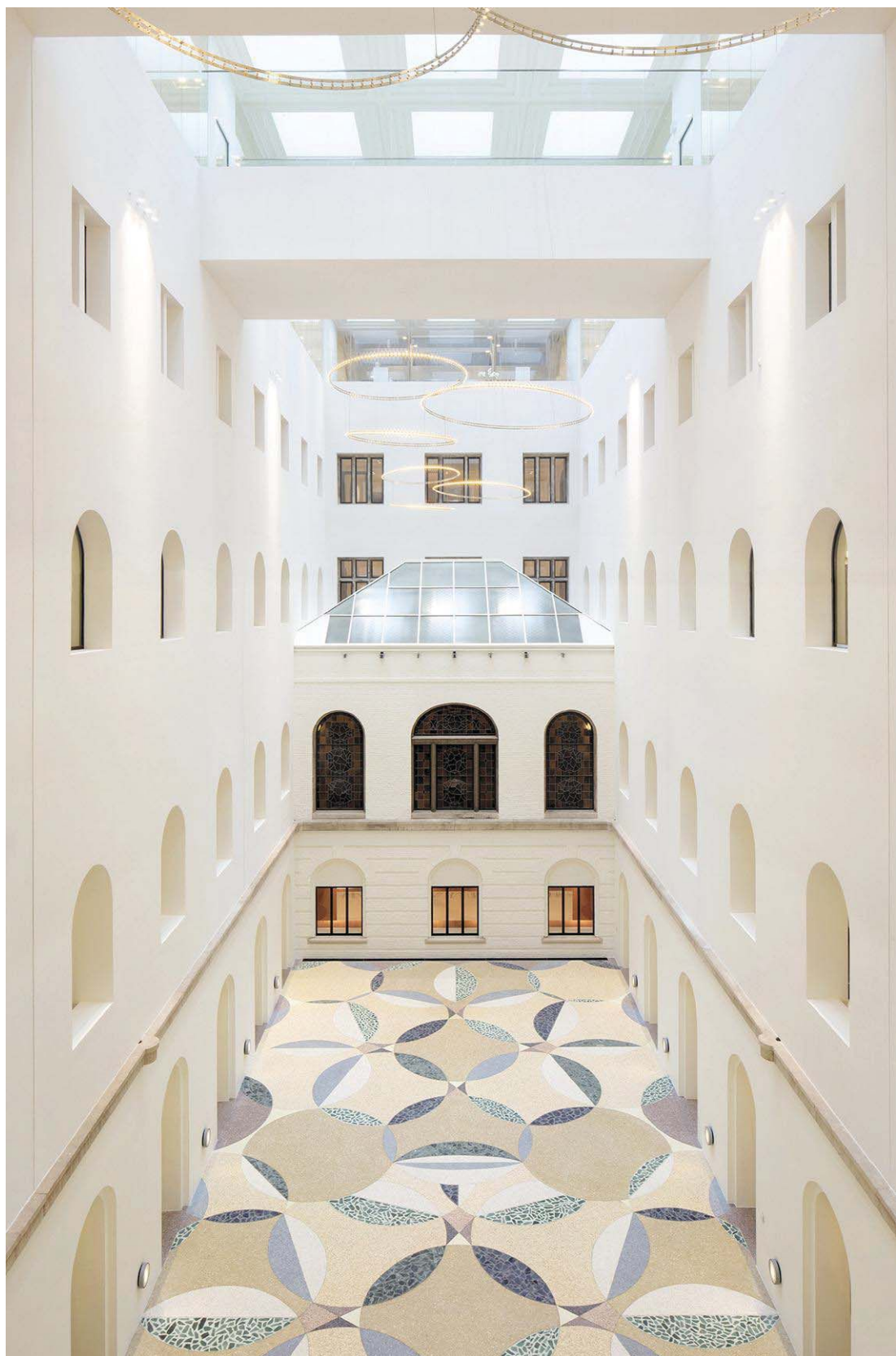
BUILT IN 1917 by the chief government architect Daniel E.C. Knuttel for the Dutch Ministry of Agriculture, Industry and Trade in The Hague, the brick and stone building at Bezuidenhoutseweg 30 has been transformed by the Rotterdam-based Kaan Architecten into a home for five government-related planning and advisory agencies. The once dark and heavy interiors of this national landmark are now light and transparent, and, in keeping with the changing times, B30, named after its address, is ready to facilitate an exchange of knowledge rather than the exercise of power.

An open light well enclosed by brick walls once connected the two wings of the original H-shaped structure. In 1994, during an expansion, the light well was turned into a 98-foot-high atrium lined by three additional floors of offices. Since the current tenants need less space, Kaan removed these floors—which were in bad condition and had low ceilings—reducing by 33 feet the height of the atrium. At the same time, the architects refurbished it, surfacing the walls with white plaster and decorating the floor with an expansive terrazzo-mosaic motif designed by Dutch artist Rob Birza. The pattern, says project architect Dikkie Scipio, is like a petrified garden with patterns of flowers in intersecting arcs and circles.

The resulting volume is warm and welcoming, an effect reinforced by two single-story additions on the building's northeast and southwest elevations. One is sunken and comprises two seminar rooms; the other offers work areas plus an informal lounge furnished with sofas, armchairs, a piano, and coffee bar. Both open to gardens via enormous pivoting glass doors. The ceiling of each, as well as that of the atrium, is punctuated by triangular skylights whose deep, geometric coffers—inspired by the building's original ceilings—provide daylight minus the glare and heat. And in the building's rear wing, a new restaurant faces the greenery of the Haagse Bos (the Hague Forest).

Maximizing the spaces flanking the atrium at the upper level, the architects created a pair of open-plan work areas with glazed team rooms and two-person offices, connecting them with bridges across the void. Then they tucked quiet, though transparent, glass-walled offices behind the street-facing facade to the northwest.

Kaan Architecten was part of a consortium, responsible not only for the design and construction, but also for the finance, maintenance, and operation of the building. Design choices were based on the existing decorations.



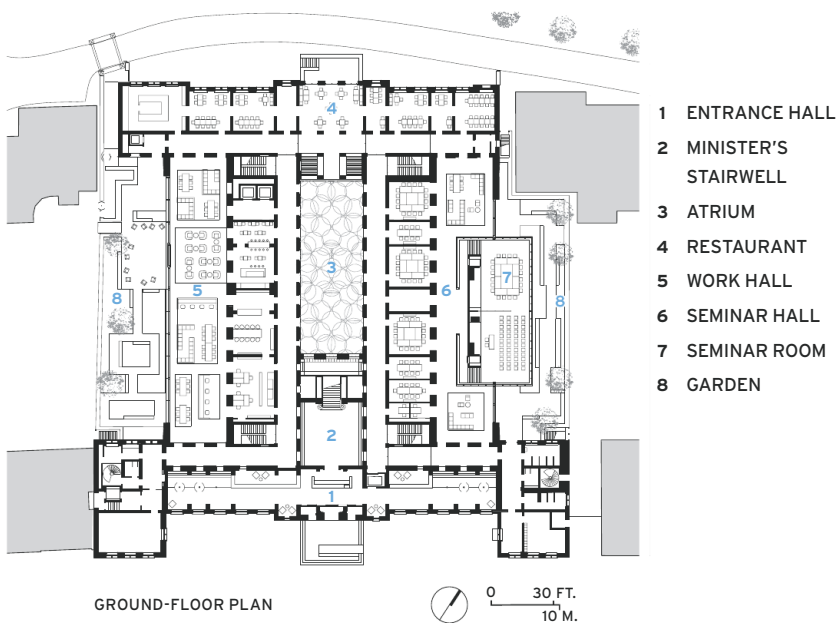
A vivid terrazzo-mosaic floor with an abstract garden motif by Dutch artist Rob Birza lays the groundwork for B30's 67-foot-high atrium. Punctuated by skylights, this daylight-filled space is open to the offices of the various tenant institutions on the upper floors. At the top, bridges over the void allow workers to easily cross from side to side.



The landmark building (below) features an existing monumental stair (left), restored by the architects, that leads to a historic former Minister's Room on the second floor. A transparent work-hall addition (above) is outfitted with comfortable seats, work areas, and a coffee bar.

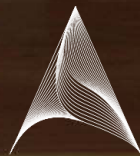
According to Scipio, "The interior has to last for 30 years. So we used durable and handsome materials, such as oak and a natural stone that resembles the original limestone." Scipio emphasizes that the approach was "a soft transition" from old to new. For example, replacement lamps were fitted into existing fixtures to light a monumental staircase with stained glass windows featuring scenes from farming and industry.

Getting permission from the Landmarks Commission to put larger windows in the front facade was a major achievement. This was critical to creating a visual connection to the street and to open it up to the public, says Scipio. "The windows are essential to B30's new mission now that the ground floor is an inviting public space," says Scipio. "We were asked to make a place that is both stimulating and comfortable and that will attract a younger generation to work here." Once an expression of hierarchy, B30, the building at Bezuidenhoutseweg 30, now represents a new era of communication for its second hundred years. ■



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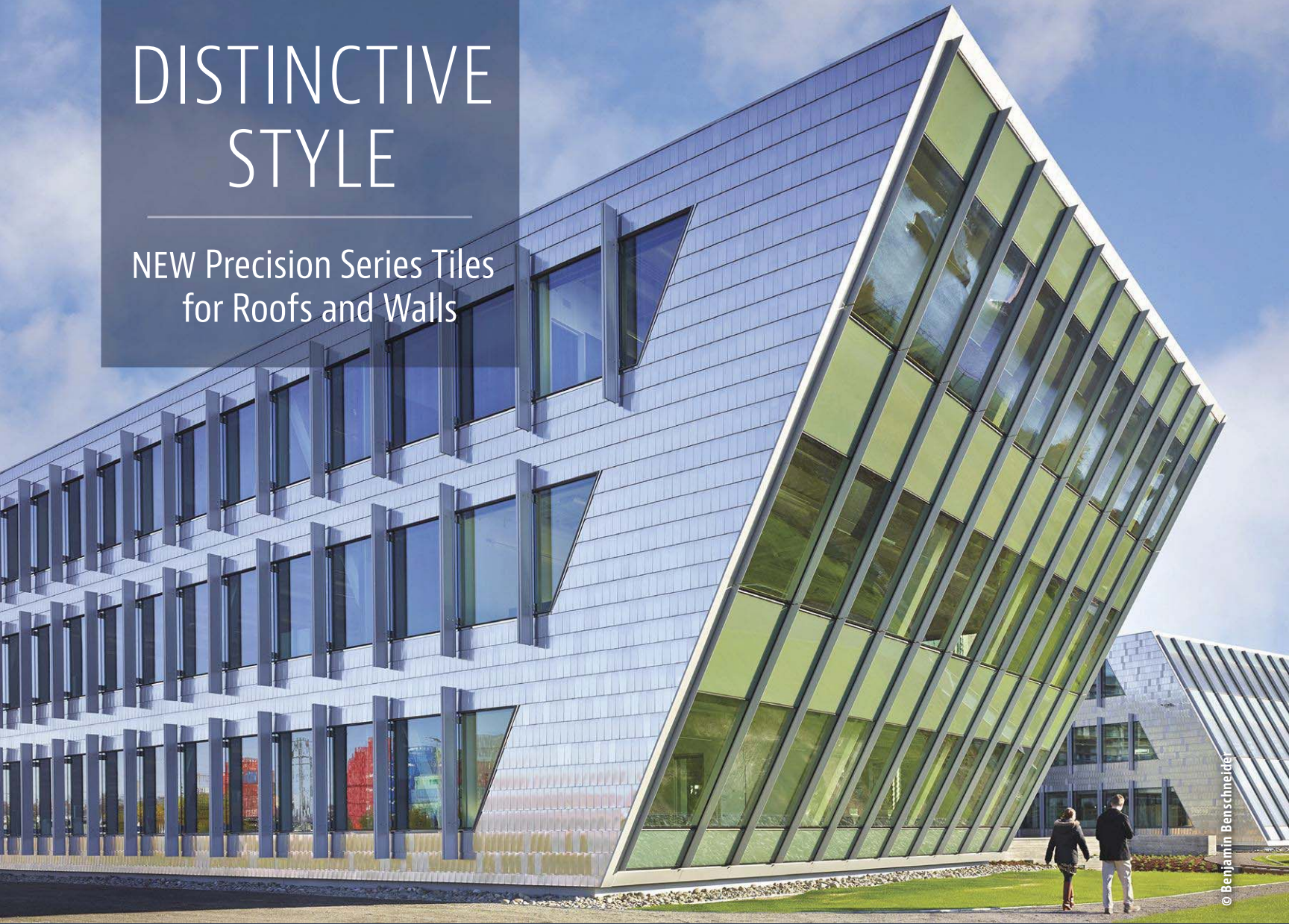
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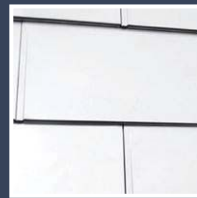
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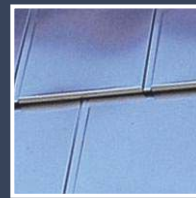
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The Palau Sant Jordi arena in Barcelona was designed by Arata Isozaki and used for the 1992 Olympics.

Spain: Looking Back 25 Years

Bold new architecture symbolized the country's emergence as a democracy with a growing economy.

BY DAVID COHN

THIS YEAR marks the 25th anniversary of the Barcelona Olympics and the Seville Expo of 1992, two events that symbolized the debut into global society of the young Spanish democracy, established in 1978 after the death of dictator Francisco Franco.

Through these events, contemporary architecture became the medium that most vividly expressed this reemergence, linking significant design with development. The Olympics and Expo established a pattern that was repeated many times afterward, most notably with Frank Gehry's Guggenheim Museum in Bilbao, which opened in 1997. But with the economic crisis of recent years, the role of public architecture as a catalyst for growth has lost credibility, underscoring weaknesses present in the model from the start.

Spain used the Games and the Expo to carry out badly needed infrastructure improvements; the international spotlight and fixed deadlines helped mobilize resources. They gave rise to public involvement in planning and development on a scale new to modern Spain, in which architecture played a key role.

Serious planning for the events began in the mid-1980s and sparked a burst of transformative development, designed to help push the country out of its economic doldrums.

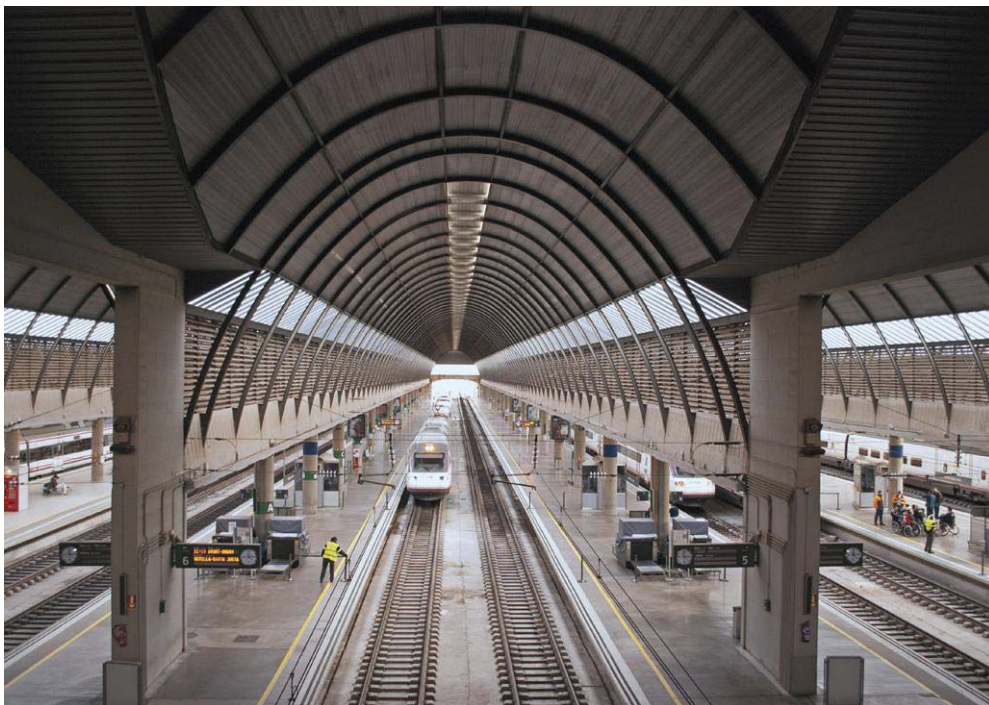
One of the most important parts of the strategy was the construction of the first high-speed rail line between Madrid and Seville, which broke the geographic isolation of Andalucía in the south. Monumental stations were built, designed by Rafael Moneo for Madrid and by Antonio Cruz and Antonio Ortiz in Seville. Both had an international impact, marking a way out of Postmodernism toward a more contextual and tectonically sophisticated modernism.

In Barcelona, under the leadership of the visionary architect and planner Oriol Bohigas, the strategy was more thoroughly employed. The obsolete industrial waterfront on the Mediterranean was transformed for the Olympic Village, along with restored beaches and new parks that reoriented the city's direction of growth for decades. The Village remains a solidly middle-class district, though some buildings have aged poorly due to the haste

with which they were built. The transformation was, if anything, too successful, giving rise to crowded beachfront bars and clubs that are a major tourist draw, to the despair of residents.

Under Bohigas, quality commercial and public architecture and project-based planning became the essential tools for revitalizing both historic and newer districts. Bohigas's motto for urban design was, "Substitute the project for the plan," replacing the technical guidelines of zoning, building envelopes, and other abstract measures with architectural projects designed for specific urban problems. Beginning in the early 1980s, he implemented the award-winning "parks and plazas" program, making use of scant funds to bring innovative urban design and public sculpture to neglected neighborhoods. Most of these public spaces remain in remarkably good condition today, including interventions with art by Richard Serra and Eduardo Chillida, the "hard plaza" at Sants by Albert Viaplana and Helio Piñón, or smaller plazas with little more than elegant paving, street furniture, and trees, by architects such as Jaume Bach and Gabriel de la Mora.

Barcelona hired respected local architects to design the Olympic Village and many of the sports facilities. Looking back, we can admire the understated elegance of Esteve Bonell and



Santa Justa train station in Seville, designed by Antonio Cruz and Antonio Ortiz, completed in 1991.

Francesc Rius's Badalona Basketball Stadium, and lament the partial demolition of Enric Miralles and Carme Pinós's Olympic Archery Range, an early and remarkable work. But the projects that attracted the most attention were by international figures. These included two communications towers by Norman Foster and Santiago Calatrava (then starting his career), an elegant covered stadium by Arata Isozaki (still very much in use), and a "fish" pavilion by Frank Gehry for the shopping concourse of a commercial tower, designed by Bruce Graham of SOM. Non-Olympics projects commissioned in those years also drew on the appeal of well-known architects, notably the Museum of Contemporary Art by Richard Meier, which opened in 1995 in the Medieval quarter of the Raval.

Bilbao perfected this model: regional authorities used a spectacular work by a noted international architect as the centerpiece for urban renewal. The Guggenheim was accompanied by a subway designed by Norman Foster, a Calatrava pedestrian bridge, a major river cleanup, a new commercial port, and the redevelopment of the once-industrial riverfront. But the Bohigas-style planning method began to be undermined: the architecture became an attraction in its own right more than the solution to an urban problem.

While the Guggenheim Bilbao helped open public and private clients to more experimental architecture, it also encouraged a new generation of Spanish architects to look beyond

the narrow, "laconic" modernism (as Kenneth Frampton once called it) of their teachers. A rich variety of practice flourished, from the expressive cast concrete works of AMP in the Canary Islands to the colorful plastic structures of SelgasCano, the material-based minimalism of recent Pritzker winners RCR Arquitectes, or the cellular, Neo-Organicist plans of Luis Mansilla and Emilio Tuñón, to name just a few.

But after Bilbao, Olympic-style strategies ceased to be effective, as Barcelona found when it organized a 2004 "Forum." The site for this hyperpromoted international conference included a congress center by Herzog & de Meuron (now a science museum); a peculiar waterfront plaza over a sewage-treatment plant by Elias Torres and J.A. Martínez Lapeña (inspired by designs by Miralles before his premature death); and commercial developments by Jean Nouvel, Dominique Perrault, and others. The event passed without notice, and the Forum site remains desolate, though the commercial development surrounding it is a success.

In other Spanish cities, local politicians also commissioned spectacular architectural projects, often unconnected to larger planning initiatives, or to real needs. Calatrava's City of Arts and Sciences in Valencia (1989–2005) is an oft-cited example, as is Peter Eisenman's incomplete City of Culture in Santiago de Compostela (1999–2013). In Madrid, the city even hired star architects such as MVRDV or

Thom Mayne to design public housing in otherwise nondescript new districts. By the time the market began to overheat in the mid-2000s, speculative developments all over Spain routinely featured anchor designs by Nouvel or Foster or the like.

In retrospect, the events of 1992 gave too much emphasis to design and construction as a motor of economic growth. While Spain in the 1980s had limited public facilities, the country is now burdened by thousands of vacant commercial housing units and a glut of underused congress centers, concert halls, and museums located in every provincial capital. Politicians from the start initiated projects without market studies, serious supervision, or cost controls. Álvaro Siza has recalled designing his contemporary art museum in Santiago de Compostela, which opened in 1994, for an institution that had yet to be constituted—there was no client representative, no director, no budget, no collection, and no program.

Another problematic factor has been the competition system, which is now legally required in public work, in an effort to assure fairness and quality. While open competitions have given countless opportunities to Spain's younger architects, the system also tends to favor visual spectacle over thoughtful design development.

But the most damaging result of overbuilding has been the proliferation of corruption scandals. While few, if any, architects have been convicted in the hundreds of under-the-table deals uncovered among politicians, builders, and other public contractors, the exposure of profligate spending and fees linked to officials accused of corruption has seriously damaged the public's perception of the profession. For many Spaniards, iconic architecture has become a symbol of waste, graft, and the egocentric ambitions of politicians and architects alike.

As Spain emerges from the economic crisis, Madrid's politicians still look to big deals for a quick fix, from American casino magnate Sheldon Adelson's proposal to build a \$7 billion "Eurovegas," shelved in 2013, to the current "Castellano North" district, launched with hopes of attracting bits of London's juicy financial industry, post-Brexit. In the meantime, young architects are recasting themselves as sustainability experts or grassroots community planners in an effort to recover the profession's public credibility. Looking back, 1992 was a time of innocence, a moment of collective idealism that combined a sense of accomplishment and future promise. Though only 25 years have passed, it feels more like a century or two. ■

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Serpentine Pavilion 2017

Sheltered by a curved canopy that spreads up and outward from a trunk of delicate steel columns, the 2017 Serpentine Gallery Pavilion is modeled on the area beneath trees—spaces, according to its architect, Diébédo Francis Kéré, “where people can choose to gather, or enter, in different ways.” This year’s summer pavilion, the latest in the annual program, responds to the gallery’s sylvan setting in London’s Kensington Gardens but was inspired by the shaded gathering places of Gando, the desert village in Burkina Faso where Kéré grew up, and where his Berlin-based studio continues to work extensively.

With its heavy, rugged blue walls detached from an oversailing, skeletally framed roof, the structure recalls the African community buildings for which Kéré first attracted attention while a student of architecture. And though realized in a very different context, it successfully translates his concerns for “a sense of openness”—both social and spatial—and for experimental construction techniques.

All of the pavilion’s components have a narrative function, most notably the roof, which exuberantly reflects changes in light and weather. Formed as a shallow inverted cone, it is supported by 28 slender steel trusses that spring from 14 steel lattice columns grouped in a tight ring to define a central oculus. Rainwater is funneled through this aperture to create a cascade in the heart of the pavilion, where it lands on porous gravel and drains to subterranean storage tanks to irrigate the park.

Lining the translucent polycarbonate roof covering, thin wooden slats are arranged in rings of leaflike triangular panels, angled to cast shadows across the concrete floor and dapple animated patches of sunlight across the four freestanding walls. These walls, deep blue snaking screens, are formed from



520 triangular wood blocks. Angled cuts create facets on the outer faces, lending a pronounced texture and varied sheen, like the indigo-dyed clothes worn for courting calls in Gando, says Kéré. Gaps between the blocks allow light and breezes to pass through. At night, the glow of electric light seeping through beckons to passersby as “a beacon,” the architect says, “a symbol of storytelling and togetherness.” *Chris Foges*



Young Architects Program 2017

Composed of more than 1 million yards of robotically woven synthetic mesh, architect Jenny Sabin's design for MoMA PS1's annual summertime pavilion, *Lumen*, changes color and emits a warm glow with the waxing and waning of the sun. The pavilion—which opened June 29 after winning this year's Young Architects competition—takes an intricately systematic approach to the usual brief to provide shade, seating, and water for visitors at the museum's Warm Up summer party series at its outpost in Queens, New York. The shading system's core component is a synthetic fabric developed by Sabin—a 2016 recipient of RECORD's Women in Architecture Innovator Award—at her experimental design lab at Cornell University. Originally prototyped for Nike, the material incorporates photoluminescent and solar-activated yarns that allow it to absorb, store,

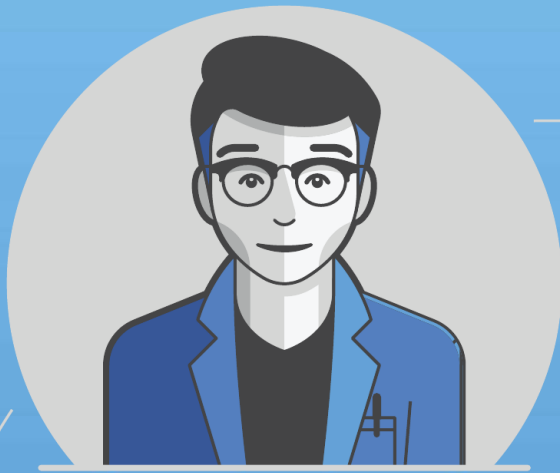
and produce light. More than 1,500 individual fiber discs were digitally knit and sewn together to form two canopies, one in the main courtyard and another in an adjacent one. The larger one, in the primary space, features 250 hanging fabric sleeves; some nearly reach the ground, while others are left dangling, inviting visitors to feel the gauzy fabric. Held up by two 43-foot-tall steel-and-rope towers in the main space, and one 28-foot-high tower in the secondary space, the canopies are stretched from wall to wall. Built into the tubular sleeves is a sensor-based cooling system that releases mist when bodies are in close proximity. One might wonder how something so gossamer can survive the 10 beer-fueled Warm Up dance parties to be held over the summer. Sabin seems only slightly worried: "It's been engineered for people to potentially hang on," she says, "but I really hope that doesn't happen." *Alex Klimoski*



Dulwich Picture Gallery Pavilion

Set in the grounds of the Dulwich Picture Gallery in South London, a mirrored pavilion designed by emerging architecture studio IF_DO for the London Festival of Architecture has an evanescent, ghostly aspect that reflects the Festival's theme of memory. Its cantilevering, trussed timber roof, edged in a diaphanous skirt of metal mesh, rests atop slender polished-aluminum panels that produce fragmentary reflections of the surrounding gardens and brick walls of the adjacent gallery. These abstractions and multiplications appear to extend the building into the landscape, while drawing the gardens into the heart of the structure like the jumbled, combinatory workings of the mind. "We wanted to create reflections that are like snapshots of the building

and the landscape together," says IF_DO director AI Scott. The architects named the project *After Image*, and, like retinal impressions that linger, the illusionary images created by the pavilion are at once vivid and vague. The 2,690-square-foot demountable structure, which will remain in place for four months, was built to mark the gallery's 200th anniversary. It refers to its venerable neighbor, completed by Sir John Soane in 1817, by borrowing proportions from the building's arches for its mirroring panels. Paying homage to Soane, Scott says, "He was a master of moving panels, mirrors, drama, and playfulness." Certainly, visitors seem entranced: children play hide-and-seek among the kaleidoscopic reflections, while their parents stand staring at the walls, lost in the landscape. *CF*



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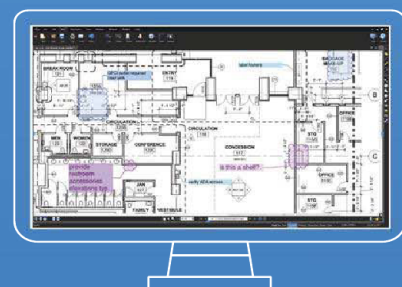


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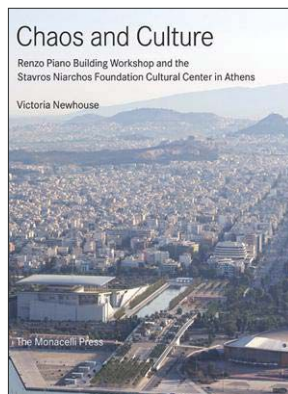
Chaos and Culture: Renzo Piano Building Workshop and the Stavros Niarchos Foundation Cultural Center in Athens, by Victoria Newhouse. Monacelli Press, 272 pages, \$50.

Reviewed by Paul Goldberger

IT IS A TRUISM that every building tells the story of a client as well as an architect, and that the quality of the relationship between an architect and a client often determines the success of a building project. But remarkably little architectural history actually takes this premise as its starting point. Victoria Newhouse's book on the Stavros Niarchos Foundation Cultural Center in Athens opens with the author's telling us that it is "the story of a great philanthropist, an extraordinary architect, and a small country that in 2009 began to shake the foundations of the European Union." That blunt declarative sentence lays out her ambitious agenda, which is to write architectural history in the most wide-ranging way possible. Newhouse, who has written authoritative books on museums and contemporary concert halls and opera houses, this time has produced what is both the biography of a building and the story of its era.

Like every good biographer, she has investigated the ancestry of her subject, the forces that have brought it into being, and the nature of its surroundings. In the case of Piano's Stavros Niarchos Foundation Cultural Center, which was completed last year, that means relating the role of Piano and his architecture, examining opera houses and libraries today, and discussing the political and economic crises that were playing out in Greece as this project moved forward.

It is rare that the entire process of conceiving, designing, and constructing a single building is documented as thoroughly and coherently as Newhouse has done in *Chaos and Culture*. It is rarer still that this process is worth a book-length telling. But it is absolutely so here—and not only because Athens ends up with a beautiful opera house and library by Piano and a handsome park by landscape designer Deborah Nevins, the two joining together to make a place that has the potential to become a symbol of renewal for a troubled nation. Newhouse's narrative contains several striking characters, most notably



(beyond Piano himself) Andreas Dracopoulos, the great-nephew of the shipping magnate Stavros Niarchos and the president of his namesake foundation. Dracopoulos seems the perfect client: a sophisticated lover of architecture who was called upon to do far more than admire his architect and fund the nearly \$1 billion project; he protected it valiantly as the Greek economy and government were collapsing, navigating the political environment so skillfully that the project's opponents were largely neutralized. He held video conferences with government officials every few weeks, positioning the project as something Greece could point to with pride amid its economic and political crises; he also set up a temporary observation bridge and information pavilion to increase public engagement.

As a result, Newhouse says, the public was generally accepting of sums spent on the arts. (In the end, however, the Niarchos Foundation has had to bear most of the maintenance costs of the center, originally to have been paid by the government.)

This is a book that explains cogently how architecture actually happens. If Piano is the central creative figure here, Newhouse also makes clear how important his associates were to the design and

building of the project, as well as the engineers, construction managers, and consultants, all of whom she weaves skillfully into the larger narrative. She respects, even loves, pure architectural form, but she never makes the mistake of thinking it is the entire story. You cannot read this book without learning something meaningful about how architectural ideas develop, and how concepts evolve into buildings—and how challenging circumstances sometimes force compromise, and sometimes make projects better.

It is far too soon to know if the Niarchos cultural center will take its place among the great buildings of our time. But it is clear that *Chaos and Culture* deserves to take its place among the significant chronicles of architecture—for here is the story of high architectural aims, written by a knowing and sympathetic historian who pays her subject the tribute of situating it in the real world. ■

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

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Nature Versus Nurture

Wild By Design: Strategies For Creating Life-Enhancing Landscapes, by Margie Ruddick. Island Press, 243 pages, \$45.

Gardens of the High Line: Elevating the Nature of Modern Landscapes, by Piet Oudolf and Rick Darke. Timber Press, 320 pages, \$25.

Bawa: The Sri Lanka Gardens, by David Robsen; photography by Dominic Sanoni. Thames & Hudson, 176 pages, \$29.95.

The Garden of Peter Marino, by Peter Marino; foreword by Claude Lalanne. Rizzoli, 262 pages, \$85.

AS ANYONE who's done it can tell you, to garden is to hate nature—to war against what wants to spring from the soil in favor of the cultivated. Three of the four books here take the environmentally friendlier approach of colluding with nature.

The master of this is Margie Ruddick, the landscape architect responsible for a pollution-cleansing river park in China, and any number of beautiful, impressive, and ecologically beneficial projects. Her reinvention of Queens Plaza in New York, once a “tangle of elevated trains and bridges . . . spread out in a chaotic sea of roadbeds,” has yielded a place that invites walking, bike-riding, and seated contemplation.

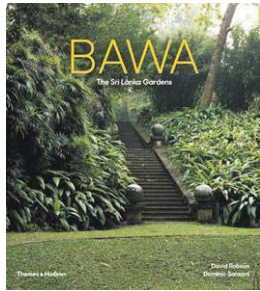
But her most revelatory project may be the suburban yard of her own “butt ugly” house outside Philadelphia, which presented her with a blank slate, a problem antithetical to her customary approach. So she let the rectangle of grass go wild, eventually framing the burgeoning shrubs and trees in a mowed walkway and adding native ornamental shrubs, so that the whole looks intentional.

Piet Oudolf, the Dutch garden designer (working with James Corner Field Operations) of the High Line, New York's park on a disused raised rail structure, took an approach nearly the inverse of Ruddick's. As Oudolf and coauthor Rick Darke (a horticulturalist and writer) relate in their book, the goal was to design a garden with artificially introduced species that echoed, without replicating, the surreal wonderland neglect had created. The authors say, “There's a word for such intervention: it's called gardening.” Their book provides what has been missing from this crowd-generating park, a species-by-species detailing of the plants.

Another way of grappling with nature is shown in David Robsen's book about the two wealthy Bawa brothers, Bevis and Geoffrey. In the mid-20th century, they created separate garden estates in Sri Lanka using native species and working with dramatic topography to engineer luxurious, sculpture-packed, sybaritic paradises. Bevis Bawa extended his garden in the 1940s and also started a plant nursery; Geoffrey, the younger brother, educated in England, became an architect as well. This dual biography cum history of culture's effects on Sri Lanka's landscape functions also as a guide to the properties, including their availability for paid tours or vacation rentals.

The architect Peter Marino has no visible qualms about imposing his will upon nature. On the grounds of his Southampton, New York, house, he goes all out for flowers, geometry, and sheer lavishness in a series of traditional garden “rooms,” each on a theme of color (the Pink Garden: a phalanx of astilbe, armies of a repeating pink rosebush, a thousand pink hydrangea), all seeded with the figurative metal sculptures of Claude and François-Xavier Lalanne, replete with a flock of sheep in bronze. ■

Anna Shapiro has reviewed books for The New Yorker, The New York Times, The Guardian, and others. She gardens in Vermont.



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BY BARRY BERGDOLL





THE 1998 OPENING of Dominique Perrault's Bibliothèque Nationale, with its four glazed towers anchoring Paris's new eastward expansion, also generated a new episode in the life of the library's former quarters on the Right Bank. That dense city block included 17th-century *hôtels* along with purpose-built 19th- and early 20th-century structures that had housed the library's varied collections.

The crown jewel of this complex, bounded by the rue de Richelieu on one long side and rue Vivienne on the other, was the insertion into one of the site's three open courtyards of a majestic reading room and adjacent iron book stacks (1860–68), all skylit, a masterpiece of Henri Labrouste. With the transfer of millions of books and periodicals to Perrault's library, these storied spaces were up for grabs.

Several government agencies came up with a solution that would retain the Bibliothèque Nationale's unbound collections, such as coins, photographs, and maps, on the old Richelieu site and create a home for the newly formed National Art History Institute, an art library to be housed in Labrouste's main reading room and stacks. In addition, the Ecole de Chartes, a school to train archivists and librarians, was given space in the renovated wings that Labrouste had turned into the site's impressive perimeter wall.

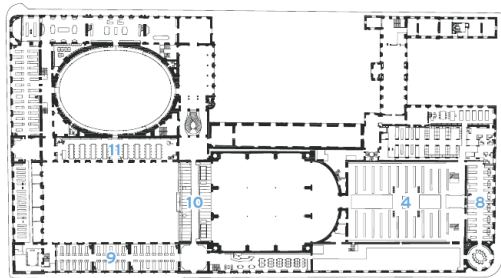
The first phase of this complex op-

GRAND MOVE The first phase of a 377,000-square-foot renovation of the Bibliothèque Nationale Richelieu includes the legendary reading room that Henri Labrouste completed in 1868 (left). Jean-François Lagneau restored the space, now occupied by the National Art History Institute's library. The entire block (above), embedded in the Right Bank, houses reading rooms, galleries, and facilities for two other institutions as well. The second phase is expected to be completed in 2020.

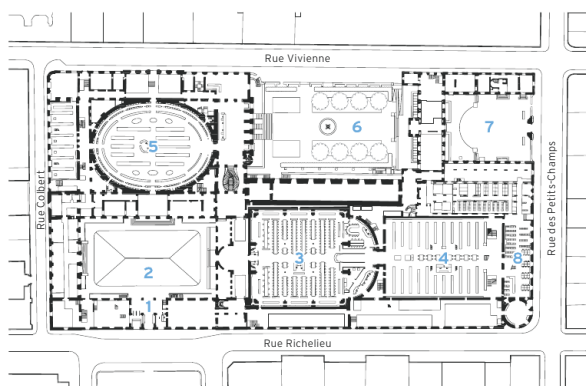
eration was completed in January by architects Bruno Gaudin and Virginie Brégal (renovation) alongside Jean-François Lagneau (restoration). The effort will transform a site previously open only to advanced researchers and those with library cards into a permeable city quarter. Its projected completion in 2020 (with minimal visible alterations) will have more connections than the current single door on the rue de Richelieu, and allow views to the interior.

Most prominently, a second-floor glazed passageway, Gaudin and Brégal's only completely new architectural piece in the assemblage—executed to meet stringent accessibility and fire codes—links the parts of this institutional puzzle with enormous clarity. It affords plunging views into Lagneau's spectacular restoration of Labrouste's lofty reading room.

Labrouste's library combined two spaces—the serene reading room, with its nine ceramic light-reflecting domes held aloft on attenuated cast iron col-



SECOND-FLOOR PLAN

0 100 FT.
30 M.

GROUND-FLOOR PLAN

0 100 FT.
30 M.

- 1 ENTRANCE
- 2 COUR D'HONNEUR
- 3 SALLE LABROUSTE
- 4 CENTRAL STACKS
- 5 SALLE OVALE
- 6 JARDIN VIVIENNE
- 7 COUR TUBEUF
- 8 READING ROOM
- 9 GALERIE AUGUSTE RONDEL
- 10 BRIDGE
- 11 MANUSCRIPT READING ROOM

umns, and the cathedral-like stack room, with its central nave flanked by six stories of book stacks. The two are connected by a monumental glazed, arched portal flanked by giant caryatids, forming a great theatrical proscenium arrangement. Originally it was even outfitted with an enormous velvet curtain that blocked views of the stacks, where the pages retrieved books for readers at their desks in the main room.

Today, that backstage has been thrown open to readers, who enjoy unfettered access to the very stacks that Sigfried Giedion made famous in *Space, Time and Architecture* (1940), where he cast the open cage of iron-gridded floors as a forerunner of modernist space and skyscraper technology.

In the restoration of the reading room, Lagneau negotiated with the fire department to hide the modern infrastructure in order to maintain Labrouste's "shadowless light"—ideal for reading, and filtered through polished glass oculi in the nine domes. Originally the room had no artificial illumination, so every aspect of the design was conceived to maximize available daylight, especially in the gray Parisian winter. Electric lamps were added at the readers' desks when evening hours were instituted in the 1920s. These have been painstakingly restored, or replaced with replicas.

In addition, Lagneau paid close attention to the role played by the white and cream palette for the ceramic-tiled cupolas and to the gilded accents on the curved iron trusses. The uniform milk chocolate-brown paint of the lofty iron



DISCREET INTERVENTIONS In the \$89 million renovation/restoration project, architects Bruno Gaudin and Virginie Brégal designed a glass and steel bridge (above). It connects the side of the complex that contains the Salle des Manuscrits (opposite)—fitted out in the 1880s by Jean Louis Pascal—with the newly restored Galerie Auguste Rondel (right), designed by Labrouste (1870–72) with rows of lectern-vitrines and metal-grid walkways.

columns was removed, and the brown wall-to-wall carpet tiles replaced with light-reflective parquet. Lagneau’s recreation of the original pale color scheme in this great mosque for reading creates the effect of an aerie, notably in the subtle difference between the lighter gray shafts of the four attenuated columns at the center and the darker gray of the periphery columns.

Column capitals now are richly differentiated to suggest the variety of metals Labrouste brought together, and the canopies reveal themselves—as he intended—as assemblages of iron and aluminum, each legible by color. In his time, aluminum was a precious material just making a transition from luxury jewelry to lightweight construction. Like industrially manufactured thin ceramic tiles, it proved to be a greater novelty than the use of iron, which was already common for fireproofing in theater roofs and train sheds.

The farther Gaudin and Brégal worked away from the watchful eye of Lagneau—and particularly in spaces where Labrouste had been lost or seriously compromised—the more they developed their own vocabulary in wallcoverings, furniture, and lighting features. Some of the results will quickly be dated, like the curved screens of pale wood that give the long space of the new theater arts reading room an Aaltoesque rhythm, or the exuberant chandelier in the main entrance vestibule. In the second phase, the glazed link will connect the rue de Richelieu and rue Vivienne; the Salle Ovale, the monumental reading room designed in the late 19th century by Jean Louis Pascal, will be included in the restoration, along with other historic spaces. Controversy from preservationists has dogged the project over the years, notably in the proposed new sweeping stair to replace one by Pascal in the rue Vivienne vestibule. But despite these quibbles, the experience is glorious: to visit Labrouste’s library is now an invitation not only to read, but to reread Labrouste. ■

Barry Bergdoll is the Meyer Schapiro professor of art history and archeology at Columbia University. In 2013, he curated Henri Labrouste: Structure Brought to Light at New York’s Museum of Modern Art.





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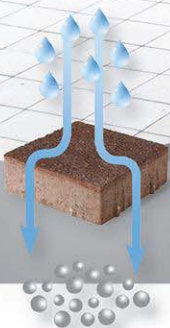
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Back to the Land

Thomas Phifer talks about Glenstone, the museum he has designed on a stunning rural site—and how art, architecture, and nature are all essential elements of the visitor experience.

BY CATHLEEN MCGUIGAN



GLENSTONE, a museum for post-World War II art outside Washington, D.C., in rural Maryland, is a striking cultural facility, featuring eminent works of outdoor sculpture on a bucolic 200-acre site and exhibitions in a 2006 building designed by Gwathmey Siegel. Now a 170,000-square-foot expansion is under construction, designed by Thomas Phifer and Partners. The scheme, called the Pavilions, is a series of discrete one-room galleries, set around a central water courtyard, with eight of its rooms devoted to—and specifically designed for—the work of a single artist. Among the artists whose work will be on view in perpetuity are Brice Marden, Cy

Twombly, Charles Ray, and Michael Heizer (including an earthwork, *Compression Line*). The setting of gently rolling hills, with the landscape planned by PWP Landscape Architects, is an essential part of the visitor experience. Commissioned by collectors Emily Wei Rales and Mitchell Rales, the museum will be completed in 2018. Thomas Phifer spoke about the project with RECORD editor in chief Cathleen McGuigan.

Following are excerpts from their conversation.

What were the guiding principles behind your design for this museum?

We had a very specific brief. There were 11 gallery rooms, some with changing exhibitions, though the exhibitions will change pretty infrequently.

Eight rooms are for permanent display, with each dedicated to the work of one artist. In the case of Charles Ray, it will be curated over time by him.

From the beginning, the clients talked about slowing down the experience so that you wouldn't see the works of art in a crowded place. Instead you would see them in a space with natural light and in a room proportioned particularly for the artist. You would get lost in the work.

And there is the remarkable pastoral site. For the arrival, we wanted to create an atmosphere where you kind of leave the world behind. You park, you arrive at a wood building [the visitor center], and then you walk through the landscape. With every step, you try to remove as many distractions as you can.

And each room is a pavilion embedded in the landscape.

Why did you create a cluster of separate structures, one for each gallery? You could have made an enfilade of rooms, where they were joined together.

By pulling the pavilions apart and making them a village of buildings, each could express its own special qualities. Because these rooms were so particular, each was for one artist, and, in most cases, one work, we worked with the artist when we could, to develop a particular proportion: the height, width, length of the room, and a certain quality of light. They began to become their own distinct places.

We also wanted these rooms to be almost of the land. There's an inseparable quality between, first, what happens in the land; second, what happens with the works themselves; and, third, what happens with the architecture. Those three things were fundamental to the way we thought about the project.

The other fundamental thing we did was separate the bookstore and the café from the art experience. As you arrive, there's a little bookstore; then in a separate building is the café with a beautiful view of the landscape and woods. The parking is kept away from all this.

What you describe sounds very Zen, the idea of clearing away everyday life, to get to something more pure. The architecture you describe sounds conceived as an architecture of experience, not as an object in the landscape.

That's right. When we first started, we looked at Ryōan-ji Temple in Kyoto, with its rock garden.

Here, you will encounter the artworks, and then move to a water garden in the middle of the complex—a quiet interlude—before you move back into one of the rooms.

By pulling the pavilions apart and making them a village of buildings, each could express its own special qualities.

And at Ryōan-ji, the surrounding landscape is walled off. In our project, you take a stair down one level to the galleries and the courtyard. By going down into the earth—and by encircling the water garden with the rooms—we created this kind of special place of silence and calm.

You mention Ryōan-ji Temple's walling off of the immediate surroundings. Glenstone has a strong feeling of enclosure by virtue of walls that appear thick—because they are beautiful board-formed poured-concrete blocks, 6 feet long and a foot



thick and stacked like bricks. They have real substance.

We tried to find material that is not precious, something we felt was an honest expression of itself. The concrete blocks are a crafted material—they're kind of handmade. They were poured over two years, and there are 25,000 of them. And they're poured in different weather conditions. When it's cold, they get a little darker, because the water is held in the concrete. In the summertime, when it's really hot, they dehydrate and they get whiter. If it rains right after the block has been stripped, then they streak. The building surface looks like a tapestry.

One of the things so critical to your museum work is the issue of light. It's a key architectural element at Glenstone. Can you talk about how you bring natural light into each room?

In conceiving this project, we talked a lot about nature and architecture. Nature is not just plants and trees—it's daylight. It's the movement of the sun. It's ever-changing. It sounds so obvious, but we envision this place without any light bulbs on during the day, and galleries that will change according to the movements of the sun and clouds.

How did you manage that?

We put the building on the cardinal points—every one of the rooms is oriented north, south, east, west.

Obviously, we don't let direct rays hit the works, but we won't filter it much, so that if you're in the room in the morning, you're going to feel a particular side is a little bit brighter. If you go into that room throughout the day, that room acts as a kind of sundial in the way that light moves around.

The whole experience is fundamentally grounded in light, but it's also grounded in shadow—that sense of shadow in the



corner, that sense of moving into a room that's slightly darkened. At Glenstone, it will be a feeling as if you're moving through a passageway and encountering bright light and a little shade and a lot of shadow. That amazing book *In Praise of Shadows* [by Japanese writer Junichiro Tanizaki] speaks about this experience with light.

Going from shade and shadow into these rooms that will open up to the sky at the top—the whole experience tumbles around daylight.

MODEL BEHAVIOR
A rendering of the arrival experience (above) and the model of the site showing the structures embedded in the land.



SHADOW PLAY
Models of two rooms at Glenstone, where natural light and darkness will both contribute to the ambience.

The light is really important, but the shadow provides the poetry of the building. It makes a rich experience. In Ryōan-ji, as you move back into the building from the garden, the porch, and finally indoors, the light gets dimmer and dimmer. It's all about shade and shadow and framing the image of the garden. We've tried to learn the lessons of those buildings that were made long ago.

A lot of museums have so many louvers or scrims on top that the light gets so filtered, filtered, filtered: you have one big wash of the same kind of light. But our daylight gets filtered just one time, through a translucent skylight, so you feel the sun's movement.

Besides the careful siting, the proportions, and light, your buildings have such beautiful attention to detail—not that you want to be noticed but, here, because you wanted *not* to be noticed.

Yes, you want the architecture to dissolve and, the fewer distractions you can have with the way the building is detailed, the richer the experience is.

In developing the design, you worked extensively with real models, of both the site and the individual rooms.

Yes, we really used them as a tool. We did these models of the land and the buildings, and then we made models of all the rooms. And we constantly worked at these two scales, to make these rooms as simple and as elemental as possible.

Nature is not just plants and trees—it's daylight, it's the movement of the sun, it's ever-changing.

We sculpted this one site model over years, getting the right assemblage and placing the structures with the rise in the landform—just embedding them in the land.

Is that right? You placed the buildings within the existing curves of the topography?

That's absolutely what it was. And so we kind of sculpted all these buildings and placed them in the land very carefully. We worked on the proportioning of all the buildings, and that changed over time. We're in construction, but we're putting the landscape back exactly the way that it was.

There is an aspect of this collection of forms—the pavilions—that feels ancient and timeless, burrowed into the land; and now this is how they sit in the land, as if they might be future ruins.

That's right. We wanted to give the sense that these artworks were living in a place that had permanence. ■

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Extraterrestrial Encounter

Spanish firm SelgasCano pays respect to nature by jolting it with the surreal.

BY DAVID COHN
PHOTOGRAPHY BY IWAN BAAN

IT SOUNDS LIKE a question for “Dear Abby”: how can the Spanish architects José Selgas and Lucía Cano reconcile their passion for nature with these crazy retro-’60s sci-fi plastic spaceships they love to build? In their auditorium and congress center for the ancient city of Plasencia in western Spain, their design took off from the premise of refusing to fill or urbanize the site—a steep hillside—opting instead to preserve its arid, rocky landscape dotted with wild mountain shrubs. Their building occupies the parcel as lightly as possible, with the sloping volume that holds the auditorium seating cantile-

vered off the ground. Originating with a 2005 competition, but completed only this year due to financing problems, the congress center is perched just beyond the city’s edge, standing out in its harsh habitat as an exotic, multifaceted boulder sheathed in pale, translucent panels of ETFE. Like a moated castle, it has a gangway entry, which is announced by its brilliant orange hue, and leads to a monumental, color-saturated entry porch. This space passes right through the building to a lookout on the other side that offers views toward the Sierra de Gata mountains.



The natural terrain lies 57 feet below the artificial grade of the roadway, Cano points out, so the challenge was “how to raise the building to street level,” a trick the team accomplished by locating the entry portal on top of the auditorium. From there, stairs and ramps feed down the building’s sides, between the ETFE and the concrete structure, to access the building. A smaller hall, meeting rooms, and an exhibition space pile up over the main hall, enabling the fly tower to be fully incorporated in the volume. The ETFE functions “like a raincoat” in Plasencia’s relatively mild

climate, Cano explains, and the perimeter ramps are open to views and weather at several points.

The plastic congress center is alien to both its natural setting and to the scruffy city outskirts behind it, a condition underscored at night, when the skin becomes a glowing lantern. Inside, this sense of estrangement is all-encompassing. The ETFE, luminous in daylight, transforms the perimeter circulation areas and upper stories—with their planes of soft yellow and pale aquamarine floors and ceilings—into numinous, otherworldly spaces. Into this ethereal

GHOSTLY GLOW
Circulation routes, which occupy spaces between the building’s ETFE skin and glass walls (top), are visible through the translucent facades (opposite). The auditorium’s seating (above) occupies the congress center’s sloped cantilever.



FUN HOUSE A variety of multipurpose halls (above, above right, and right) play with light and color and reveal surprising views within and through the building. A glass floor in one (above) reveals the large portal that cuts through the building. The main entry vestibule (opposite, bottom) occupies the first level of the portal. Round skylights and open sides admit daylight.





realm, the slash-cut of the entry portal pops with its vivid oranges, yellows, and pinks, while the auditorium's red seating, floor, and the lower portions of its walls make this space "the warm heart" of the building, according to Cano.

The design further develops strategies Selgas and Cano first explored in their Congress Center for nearby Badajoz (RECORD, November 2006, page 154), including the use of contrasting colors, translucent plastic surfaces, and a variety of playful circular elements, here ranging from rounded glass doors to thick portholes and HVAC nozzles. The overall scheme, with its faceted geometry and mazelike circulation, echoes that of Rem Koolhaas's Casa da Música in Porto, Portugal (RECORD, July 2005, page 100), though it is soft and womblike in contrast to Koolhaas's hard geode. And while the Porto project is urban, the Plasencia building addresses its expansive natural setting as a whole. Says Cano, "It's like a rock that is poised over the landscape but could fly away at any moment." ■

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The Art Of Noise

The latest acoustic products adopt unexpected profiles—from artwork to pendants.

By Kelly L. Beamon



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Echo

One of the latest offerings from 3form company LightArt, Echo is both an acoustical baffle and an LED pendant fixture. Specified in a grid pattern, the fixture's NRC value can range from 0.85 up to 1, depending on how its 14" felt baffles are arranged. Like all of LightArt's products, it's made in Seattle. Available in 35" and 47" diameters.

lightart.com

Diade

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IN THE LANDSCAPE

Architecture doesn't exist in a vacuum. As part of a larger context, it is both shaped by its surroundings and, in turn, helps define the experience of a particular setting. The projects on the following pages have a built component designed in concert with a landscape—some cultivated and others untamed—and they all manifest a sympathetic relationship between the manmade and the natural. They also demonstrate a sensitivity to local conditions while addressing the needs of the people who come to these places. From a visitor center at Walden Pond in Massachusetts, which reflects the informality of the site and evokes the ideals of Thoreau, to a park outside of Paris that transforms a suburban wasteland into a naturalistic destination, these projects illustrate the strength of such collaborative endeavors.

Portland Japanese Garden Cultural Village | Oregon | Kengo Kuma and Associates

Common Ground

A master recreates his homeland's aura in a verdant American setting.

BY NAOMI R. POLLOCK, AIA

PHOTOGRAPHY BY JEREMY BITTERMANN

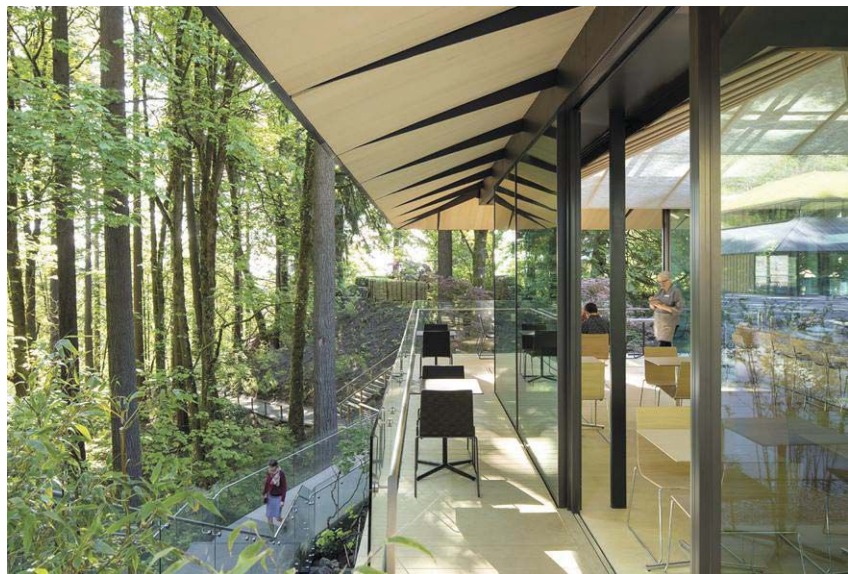




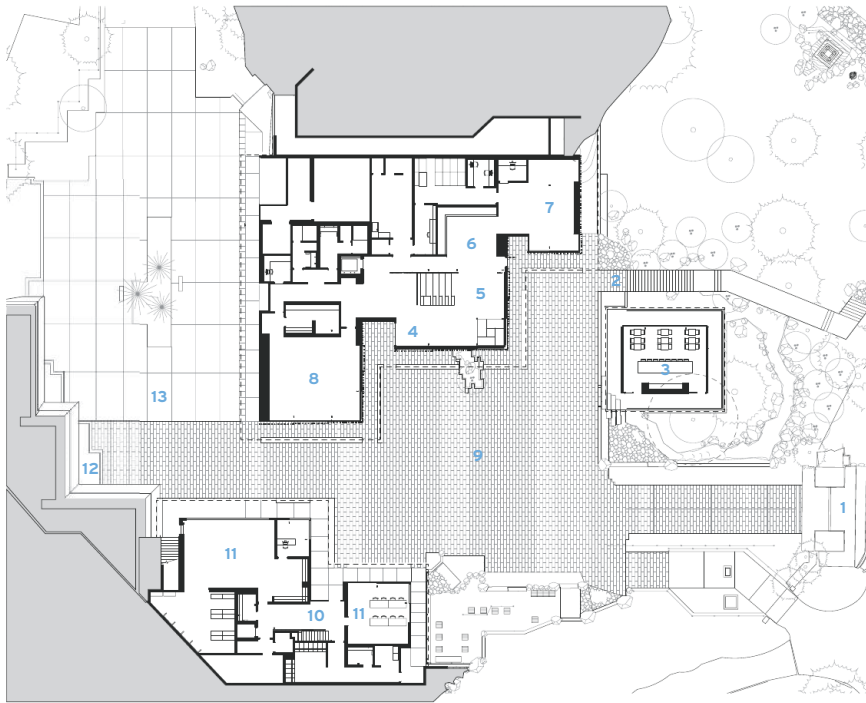
Surrounded by majestic Douglas firs, Oregon's Portland Japanese Garden (PJG) is a piece of Japan transplanted to the Pacific Northwest. As one would expect, the park's five exquisite landscapes echo the gardens of Kyoto or Kanazawa. The real surprise is its new Cultural Village, created by the Tokyo-based architect Kengo Kuma, that opened in April. Though separated by a vast ocean and wide gaps in construction culture, Kuma's complex—a trio of buildings clustered around a courtyard—extracts essential elements of Japan's traditional architecture while steering clear of trite quotation. Importing a keen sensitivity to nature and a meticulous treatment of materials, Kuma's addition to the PJG is his first major work in the United States. It is a stunning debut.

Situated on city-owned land occupied by the Oregon Zoo in the 1950s, the nonprofit PJG organization was founded in the 1960s, when municipalities were building Japanese gardens coast to coast as part of the post-World War II fence-mending and a growing interest in Japanese culture. Some 50 years later, the PJG was ready for expansion, hoping to become a full-fledged teaching center for the art of Japanese gardening and a place to explore Japanese culture. It designated an adjacent lot for a new center and hosted an invited competition in 2011. "We needed someone to show us contemporary design that nods to the past," says PJG chief executive officer Stephen Bloom. Kuma's proposal for a "quiet" architecture that would blend with its setting was the answer.

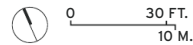
Leaving the city behind, the PJG welcomes visitors with a new ticket pavilion and cascading pond—a hint of what awaits above. Ascending a hillside via shuttle bus or winding footpath, one finds a soothing hush gradually replacing the sounds of daily life, and a contemplative mood takes over. The Cultural Village begins where the land levels out. Reclaiming the 3.4-acre site was no small undertaking; a chunk of the mountain had to be removed to enlarge the buildable area for the desired program, and the ground had to be lowered by 6 feet to meet ADA accessibility standards. Envisioned as a *monzenmachi*, a traditional Japanese townscape preceding a sacred precinct, the new compound leads to the existing park. "Instead of one heroic shape, we wanted to



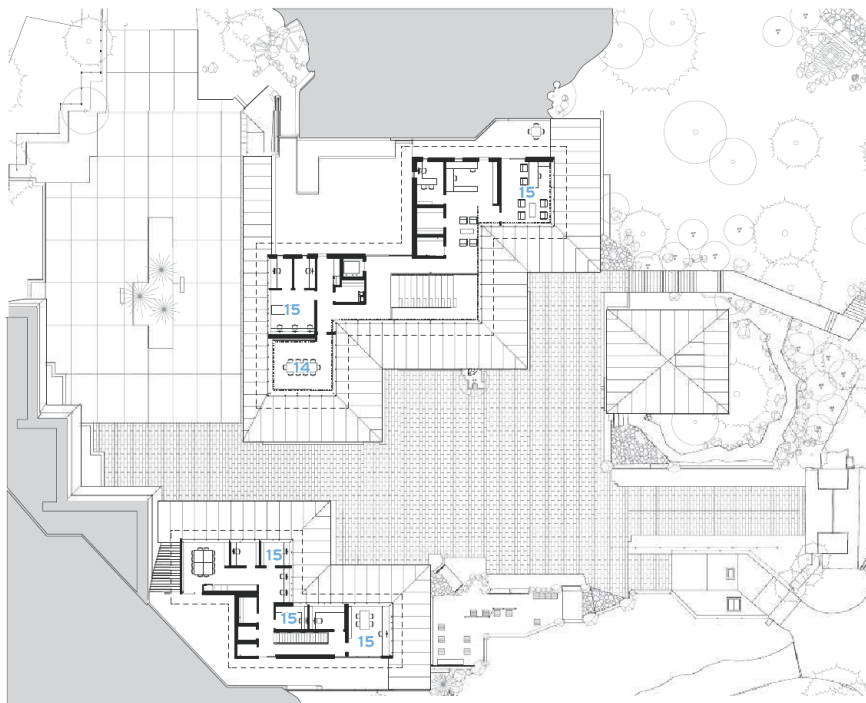
UP THROUGH THE WOODS Approaching the Cultural Village from the ticket office and parking on lower ground, visitors encounter the Umami Café on the left and the Jordan Schnitzer Japanese Arts Learning Center beyond (left). Like a traditional *engawa*, the café's covered veranda (above) is ideal for a cup of green tea.



GROUND-FLOOR PLAN



- | | | |
|-------------------|-----------------|-------------------------|
| 1 MAIN GATE | 6 GALLERY | 11 WORKSHOP |
| 2 PATH ENTRANCE | 7 SHOP | 12 JAPANESE CASTLE WALL |
| 3 CAFÉ | 8 CLASSROOM | 13 SHUTTLE DROP-OFF |
| 4 LEARNING CENTER | 9 COURTYARD | 14 LIBRARY |
| 5 LIVING ROOM | 10 GARDEN HOUSE | 15 OFFICE |



UPPER-FLOOR PLAN



achieve harmony with the garden,” explains Kuma. This meant dividing the program among three low-scale buildings and integrating them with lush greenery, including three new gardens created by Sadafumi Uchiyama, the project’s landscape architect and the PJG’s garden curator. “Both the landscape and the architecture are about polishing what is already there,” says Uchiyama.

Overlooking the slope in front, the Umami Café is the building closest to the entrance. From there, the courtyard connects to the Garden House and the Jordan Schnitzer Japanese Arts Learning Center. The Garden House contains a horticultural teaching studio that doubles as a garage at grade, plus offices and a staff room for the resident gardeners upstairs. The Learning Center opens with the “Living Room,” a gathering place leading to a classroom in one direction and a gallery and gift shop in the other. Grand stairs ascend to the administrative offices and library. The zigzag geometry of these two structures was inspired by Japan’s historic *ganko* plan, named for its resemblance to flying geese in formation. Like traditional shoji paper screens, sliding glass panels completely open the corners of Kuma’s buildings to the landscape. “Perceptually, the garden space passes through the buildings,” says project architect Balazs Bogнар.

Another traditional element born anew is the use of hipped roofs. Reminiscent of Kuma’s café at Tokyo’s Nezu Museum (RECORD, July 2010, page 70), angled panels cap the café. The Garden House and Learning Center are both topped by double-tiered roofs, the upper layer of each covered with local sedums that blend with the landscape. These plantings help gather rainwater and funnel it into a cleverly disguised drainage system, which is a legal requirement in this landslide zone. The roofs’ lower layers form deep eaves, providing shelter from Portland’s frequent wet weather. Though razor-thin eave lines are partly what make Kuma’s architecture so elegant, achieving this effect was one of the project’s greatest construction challenges. “They are thin compared to most American buildings but different from what we were expecting,” says Kuma. Though thicker than hoped for, the roofs’ still taper gracefully and seem to hang effortlessly over the covered slot of space at the base of each building.

Made of aluminum panels with a digitally printed finish that resembles hand burnishing, the eaves exemplify Kuma’s richly textured material palette. Blending local timber and stone with Japanese construction techniques, he chose Oregon-grown Port Orford cedar for the refined interior surfaces, such as the screens in the Living Room.



ROOM WITH A VIEW Inspired by a classic *tsuboniwa* (courtyard) garden, a careful composition of rocks with a Japanese maple tree (top) is just outside the Jordan Schnitzer Japanese Arts Learning Center's Living Room. Inside, a tatami tea platform floats above the floor (left). The café's dramatic roof (above), supported by two columns and a massive concrete pier, opens the room to a 270-degree view.



CULTURE TIES Delicate wood slats separate the Living Room from a vitrine-lined gallery in the Jordan Schnitzer Japanese Arts Learning Center (opposite), where steps leading to the second-floor library and offices double as seating. Rough-hewn stone mimicking a Japanese castle rampart conceals a concrete retaining wall (above).

Because this high-quality wood is frequently exported for use in Japan's temples and shrines and is in short supply, Alaskan yellow cedar forms the soffits, louvers, and the *yamatobari* lapped exterior walls. Made of Baker blue granite quarried nearby, a chunky stone wall modeled after traditional castle ramparts—by the 15th-generation master stonemason Suminori Awata—helps secure the mountain in back. Ironically, the first new Japanese castle wall built in hundreds of years stands in Portland.

No doubt their own exacting construction standards are one reason why some Japanese architects struggle to enter the U.S. market. But another is access to it. “In our experience, Europe tends to sponsor more state and national competitions,” comments Bogner. It is also a matter of finding the right work. “We prefer to be selective about potential projects, since we would like to contribute to American society in the best ways possible; this approach takes time,” he continues. If the Cultural Village is any indication, Kuma's contribution to the Portland Japanese Garden was well worth the wait. ■

credits

ARCHITECT: Kengo Kuma and Associates
– Kengo Kuma, principal; Balazs Bogner, project architect

ASSOCIATE ARCHITECTS: Hacker Architects – Jonah Cohen, principal in charge; Jake Freauff, project architect

LANDSCAPE: Sadafumi Uchiyama; Walker Macy (landscape architect of record)

ENGINEERS: KPFF (structural and civil); GRI (geotechnical); PAE (m/e/p)

CONSULTANTS: Green Building Services (sustainability); Luma Lighting Design; Listen Acoustics

GENERAL CONTRACTOR: Hoffman Construction Company

CLIENT: Portland Japanese Garden

SIZE: 15,300 square feet

COST: \$33.5 million

COMPLETION DATE: May 2017

SOURCES

STONE WALLS: Suminori Awata; O'Driscoll Stone; Green Man Builders; Stone Sculptures; Alpine Boulder Company

CURTAIN WALL: Arcadia

ROOFING: Pure+Freeform with DNP (metal); Kimatsu Seiren (vegetated ceramic panels)

DOORS: Nakamura Komuten (entrances); Vitrocsa (sliding glass)

CUSTOM WOOD: Takumi Company (screens and café ceiling); Straight Up Carpentry (step seating)

FURNISHINGS: Time & Style; George Nakashima Woodworker





Tanderrum Bridge | Melbourne | John Wardle Architects and NADAAA

Walk a Thin Line

A pedestrian bridge gracefully navigates the landscape to connect a popular sporting precinct to the city center.

BY TANIA DAVIDGE

Designed by John Wardle Architects (JWA) and NADAAA, the Tanderrum pedestrian bridge is a significant contribution to the city of Melbourne's public infrastructure. The *tanderrum* is an indigenous Australian ceremony that welcomes visitors onto traditional aboriginal lands and affords them safe passage—and the Tanderrum Bridge is welcoming indeed. Linking the terraced recreational spaces of Birrarung Marr to Melbourne Park, the home of the Australian Open Grand Slam tennis tournament, the bridge forms a new public entrance to one of the key arenas of Melbourne's sporting precinct.

The bridge is important because Melbourne's public spaces, however picturesque, are dispersed: Melbourne's rational city grid was laid out

in 1837, by the surveyor Robert Hoddle with little regard for topography, existing structures, or the inclusion of open space. As a consequence of this heavy-handed planning, Melbourne's public realm—its leisure spaces, arts institutions, and sporting grounds—were pushed to the fringes of the city, not contained but loosely bounded by the thresholds of the city's built edge, the Yarra riverbank, and a mosaic of peripheral parklands.

As a result, the connections between these spaces are fundamental to the sustainability of a vibrant public realm, and walkability is paramount. The Melbourne and Olympic Parks sporting precinct forms an urban island cut off from the city by train lines to the north and from the river by one of the primary roads into the city. The 1,280-foot-long bridge has opened this island up to pedestrian traffic from both the



ONE WITH NATURE
The bridge rises gently over a fern-covered berm (this page). Poured-in-place concrete pylons support the walkway, which splits in places (opposite).

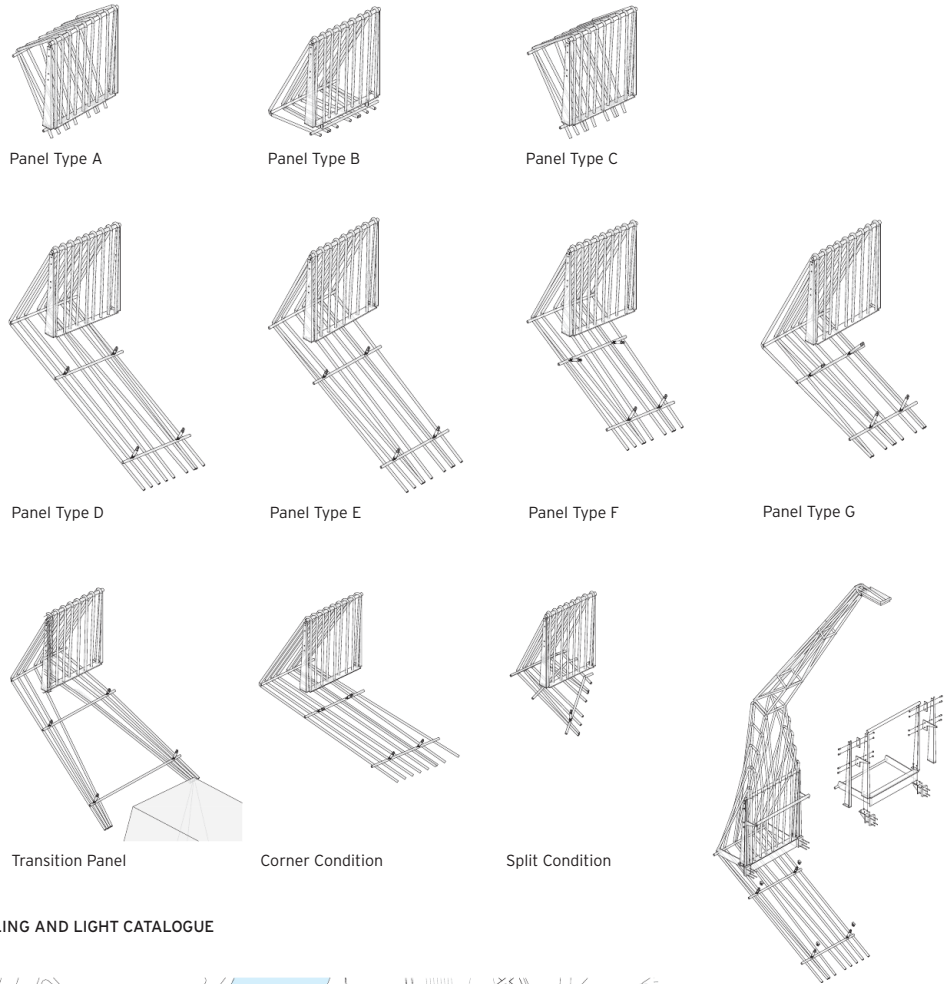
city and the river. It is the centerpiece in a strategic state-government master plan for the precinct that will enable better pedestrian permeability for sports-obsessed locals and visitors.

To get to the bridge from the city, you walk east along the banks of the Yarra River toward Melbourne Park. The Tanderrum is one of three pedestrian bridges that form an intricate net connecting Birrarung Marr—"a place beside the river of the mists"—to the city and sporting precincts. The bridge's complex and rich relationship to the surrounding landscape is due to a close working relationship between the architects and the landscape architecture and urban design firm Oculus. Articulated rather than axial, the bridge does not reveal itself all at once. Instead, the journey along it is a process of unfolding discovery.

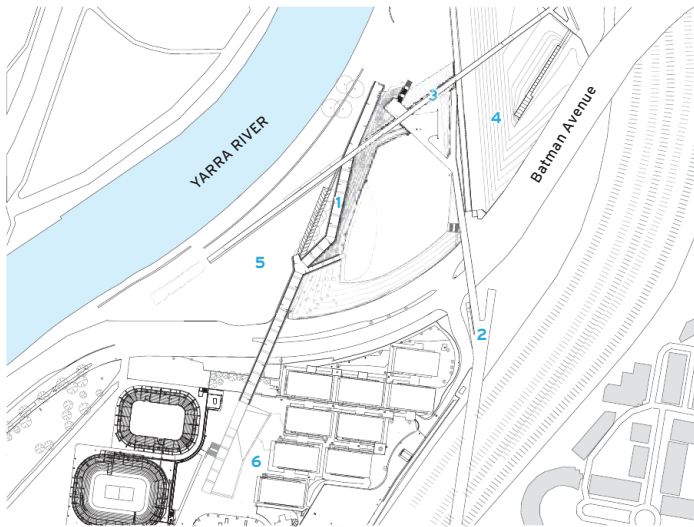
The bridge rises gently, held by the fern-covered berm defining the edge of Birrarung Marr's middle terrace, hovering above a swale filled with pale gravel and eucalyptus like a serpent in a dry riverbed. As it reaches the top of the berm, the bridge divides into two serpentine branches. The northern one leads to a large open terrace, which is periodically occupied by temporary structures such as circus tents and shelters for outdoor music events. The southern branch is a moment of respite, forming a balcony that looks out across a park that was once Melbourne's Speakers Corner, and through a canopy of elms to the river and across it to the arts district. John Wardle describes this contemplative spot as "borrowing from the landscape and the history of the site."

The bridge itself is an elegant thing: separating its skin from its structure—steel box girders and concrete pylons—enabled the architects to create a slender profile. The rhythmic filigree of painted tubular steel balustrading that wraps the underside of the bridge enhances this, extending upward periodically to create points of illumination. This filigree exemplifies the richness of the collaboration between Melbourne-based JWA and New York- and Boston-based NADAAA. This is the second collaboration for the firms—the first was the Melbourne School of Design, which, like the bridge, was awarded through an international competition.

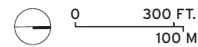
The filigree draws on NADAAA's research into the structural complexities of materiality



RAILING AND LIGHT CATALOGUE

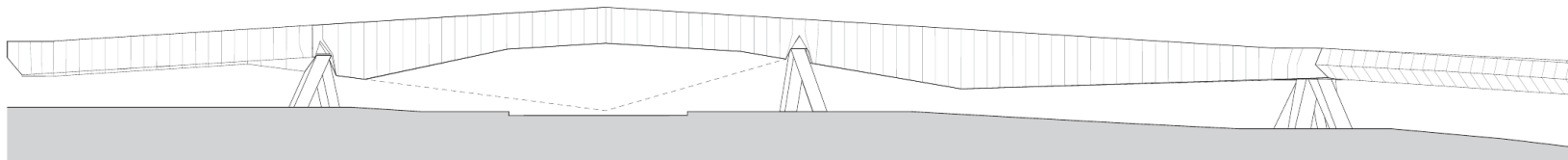


SITE PLAN

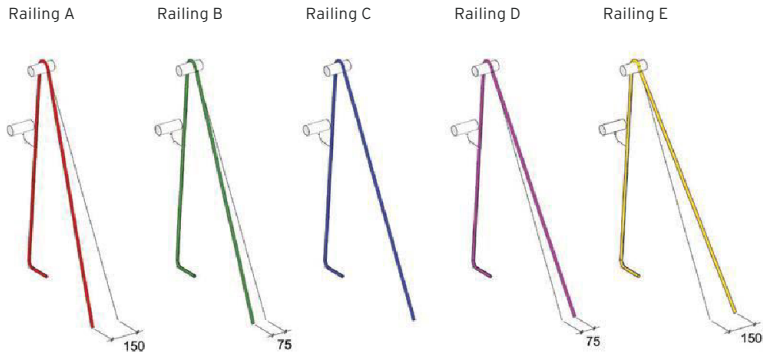


Light Panel

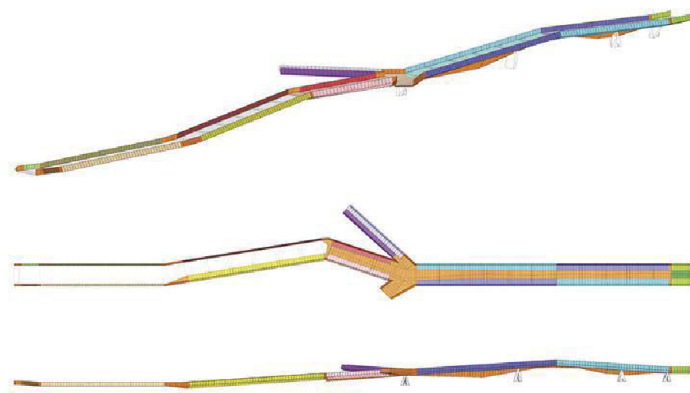
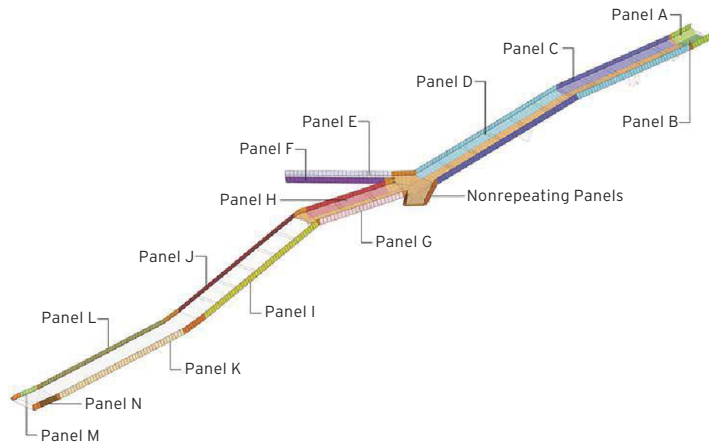
- 1 TANDERRUM BRIDGE
- 2 BARAK BRIDGE
- 3 BIRRARUNG MARR FOOTBRIDGE
- 4 BIRRARUNG MARR
- 5 SPEAKER'S CORNER
- 6 MELBOURNE PARK



BRIDGE DIAGRAM



RAILING BLOCKS



PANEL DIAGRAMS



BREAK POINT The Tanderrum is one of three bridges forming a network that connects the once cutoff tennis center to the city center.

credits

ARCHITECTS: John Wardle Architects; NADAAA

LANDSCAPE: Oculus

ENGINEERS: GHD (structural and civil); GHD and Golders (geotechnical)

CONSULTANTS: Electrolight (lighting); Buro North (signage and wayfinding); GHD (acoustics); Cundall (sustainability)

GENERAL CONTRACTORS: Fitzgerald Constructions Australia; Harris HMC

CLIENT: Major Projects Victoria

SIZE: 7,500 square feet

COST: withheld

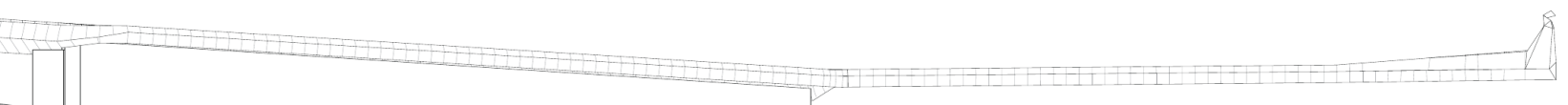
COMPLETION DATE: November 2016

SOURCES

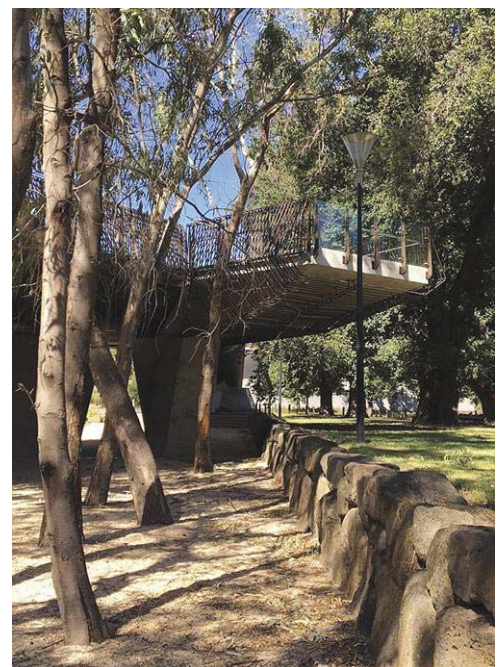
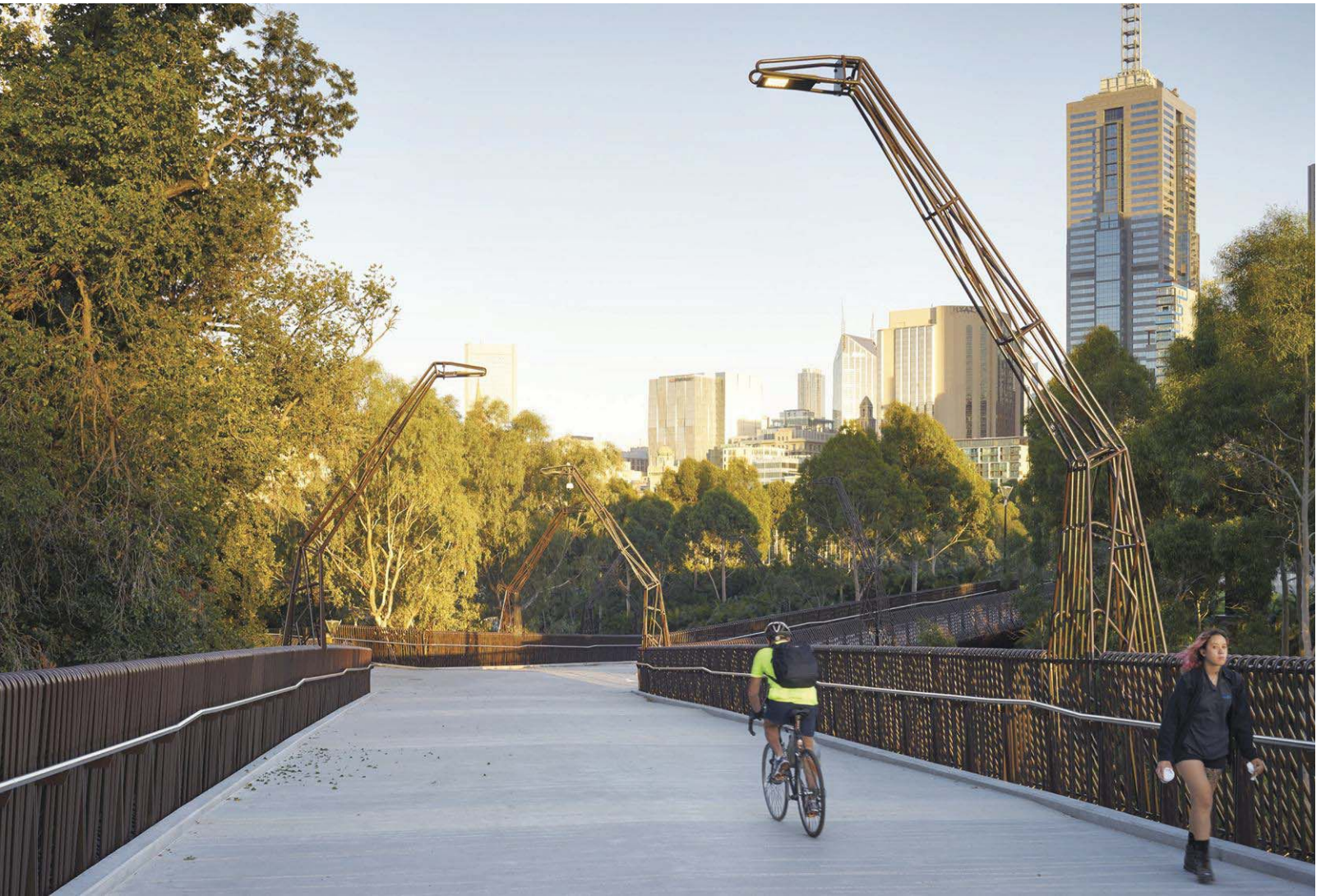
CONCOURSE PAVING: Nu Tech Tiling

STEEL GIRDERS AND FILIGREE: Shearform

PHOTOGRAPHY: © PETER BENNETTS



0 50 FT.
15 M.



PHOTOGRAPHY: © NILS KOENNING (TOP); PETER BENNETTS (BOTTOM, LEFT); NADER TEHRANI (BOTTOM, RIGHT); KRISTOFFER PAULSEN (OPPOSITE)

UP IN THE AIR The main path is 32 feet at its widest (opposite, top). The filigree produces a moiré effect in the trees (opposite, bottom left). A lookout hovers toward Speaker's Corner (opposite, bottom right). Parts of the balustrade extend overhead as points of light (right).

enabled by digital modeling and new technologies. It also reflects JWA's obsession with the idea that a detail should articulate its making—that it should speak of the human element in the crafting of architectural form. The intricacy of the filigree was digitally modeled, and constructed in sections of cold-rolled steel tubes, folded like three-dimensional paperclips in a multiaxial bending machine. The fabricators used a fine welding technique that required no pre-finish prior to painting. This attention to detail shows. For Wardle, the human characteristics embodied in the act of making are “pronounced and amplified in the expression of the bridge.”

The Tanderrum plays between presence and absence, striking a balance between form and landscape. It is experienced from above and below, from road and parkland. It is sometimes present, as a gateway to the city from the road, and sometimes it recedes into the background, camouflaged by its transparency and the moiré effect the filigree creates in the surrounding trees. The bridge rises to a high point over Batman Avenue and falls again, emptying people into the heart of Melbourne Park, adjacent to the vivid blue of the tennis courts. In full event mode during the Australian Open, it is truly a wonderful way to enter into the spirit of the tournament, allowing the crowd to spill out across the road that divides the tennis center from the parkland, and using the formal landscape of Birrarung Marr as additional event space, drawing all the action of “a day at the tennis” closer to the city.

The Tanderrum Bridge is a formal manifestation of cultural significance and of social connection through the development of a vibrant walkable public realm, drawing history together with context, landscape with structure. Nader Tehrani, one of NADAAA's founding partners, reflects on its relation to his research into materials and Melbourne's complex civic geometry. “It's no longer something you make in an artistic void. All of a sudden, it has a much more profound connection to the community it serves, the infrastructure of the city, the landscape it sits within—it is part of the culture of the city and it is also something that produces the culture of the city.” ■

Melbourne-based Tania Davidge is an architect, writer, and codirector of the research practice OpenHAUS.



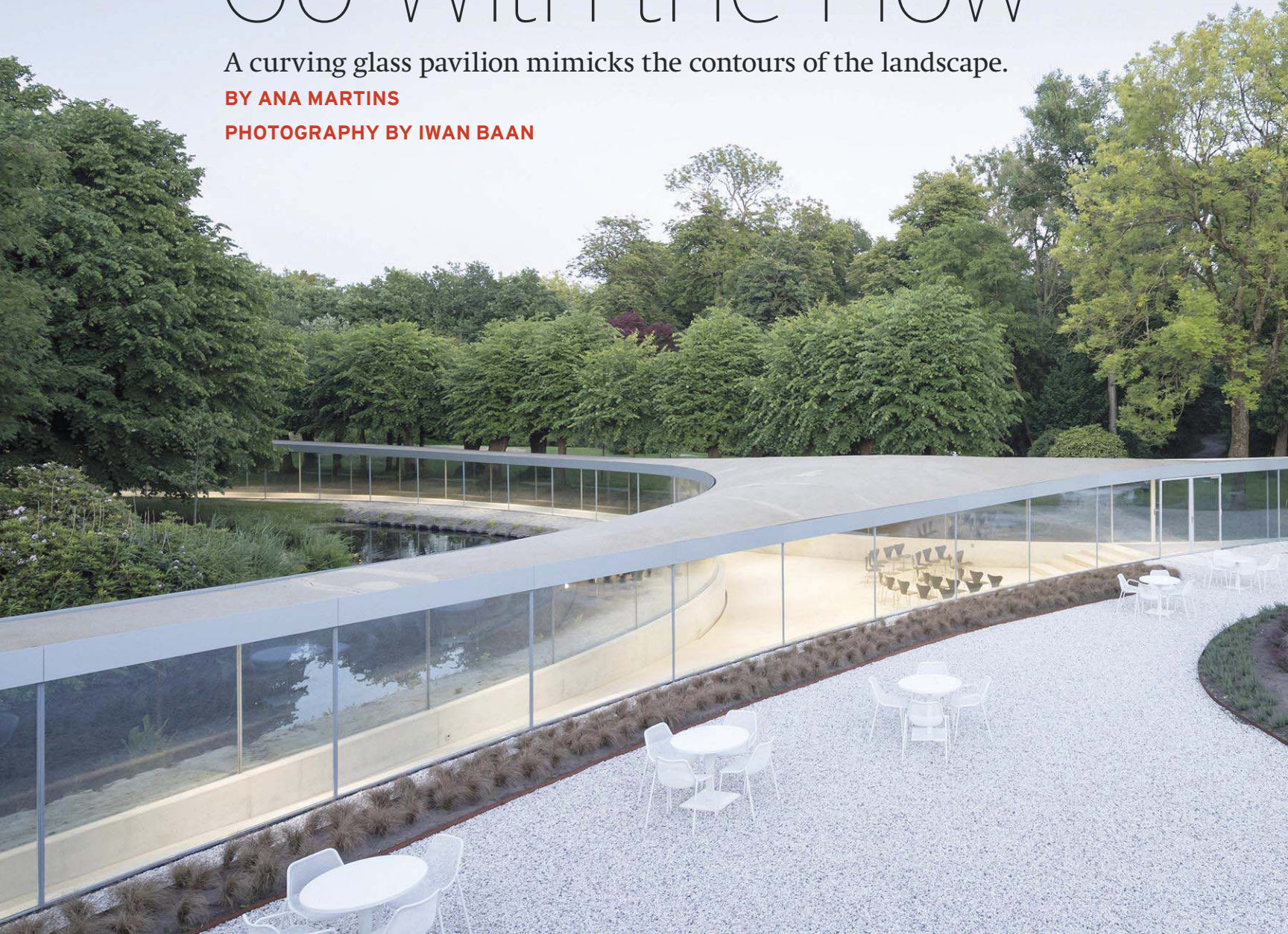
Vijversburg Visitor Center | Tytsjerk, The Netherlands
 Junya Ishigami & Associates and Studio Maks

Go With the Flow

A curving glass pavilion mimicks the contours of the landscape.

BY ANA MARTINS

PHOTOGRAPHY BY IWAN BAAN



What happens when nature, science, and architecture come together? If done well, a work of art is created. A recent example of this sits hidden in the grounds of Park Groot Vijversburg in Tytsjerk, a small town in the Dutch province of Friesland, 93 miles northeast of Amsterdam. It is a slender glass pavilion designed by Studio Maks and Junya Ishigami & Associates as an extension to the park's 19th-century villa. The Rotterdam- and Tokyo-based architects, respectively, were not looking to create a structure with a distinct shape but a building that would "melt into the environment," as Ishigami puts it.

Indeed, by not only blending nature and architecture, but using the latter to emphasize the first, they achieved something much more meaningful than an eye-catching form.

Both the villa and the landscape of the park, known to locals as Bos van Ypey (after the estate's first owners), are considered national treasures, so the design had to respect all existing elements. According to Studio Maks founder Marieke Kums, "The pavilion exists more as a new landscape than as a new building." It presents itself as a naked, triangular shape streaming forth from the villa, whose three vertices extend into long wings that adapt to its surroundings. While its northern facade accompanies the curve of the preexisting pond, its eastern side



TAKING SHAPE The new glass pavilion streams forth from the 19th-century villa, its southern wing becoming merely a glass wall (above). The curving triangular form follows the shape of the nearby pond and an allée of trees. The roofline sits just beneath the foliage of the trees (left).

straightens up to follow an allée of trees, itself considered a monumental element of the park. Taking further cues from the site, the pavilion's floor sinks about 3 feet below grade, so that its roof does not clash with the treeline; its wings—the southern one merely a glass wall—stretch up to 115 feet in length, to accompany each path.

If nature shapes the building, then its key material—glass—gives meaning to that shape, and, in turn, transforms the building's relationship to nature by allowing the landscape to be constantly seen, mirrored, and multiplied. The structural engineering team, formed by Japanese engineer Jun Sato and Dutch firm ABT, understood from the start that this transparency was the project's central feature. So, while

the architects had studied the use of brick and wood structural elements, as well as steel columns, the engineers soon concluded that “the ultimate solution would be to use the glass facade itself as the load-bearing structure,” says Han Krijgsman, the main engineer at ABT.

The glass walls are attached like balustrades—the panels are clamped to the floor structure without visible supports. The roof structure is made of a carefully calculated web of steel and wood beams that help distribute the load equally across all glass panels, and its triangular middle section functions as a diaphragm connecting the three wings. “Innovation, in our opinion, means advancing with technical solutions in a controlled way,” Krijgsman says. “Here we com-

bined years of knowledge of glass-bearing structures and balustrades to expand its use in size and purpose. Similarly, existing techniques were used to make custom-size connections.”

From this technical feat emerged another challenge: the climate control of a glass-enveloped building without windows or mechanical ventilation systems. ABT designed a natural ventilation system that consists of hidden floor and roof ducts and hatches that can be controlled remotely.

Both Kums and Ishigami worked at SANAA before establishing their own practices, and, though their time there never overlapped (they did previously collaborate on a master plan for Dubai), it is clear how it pointed their architecture in a similar direction—“a fluent and very much Japanese way of designing with space, of blending architecture and the environment, letting nature shape the building, and reducing the contrast between the exterior and interior,” Kums says. So, though the glass pavilion certainly calls to mind such designs by SANAA as the Toledo Glass Pavilion (2006), Grace Farms (RECORD, November 2015, page 83), or previous work of Ishigami’s like the Kanagawa Institute of Technology Workshop (RECORD, November 2008, page 124), the similarities have less to do with the choice of glass as a

prominent material, or the fluid strokes of the design, and more with a common goal of achieving an architecture that gives people a different experience of nature.

For all its care in keeping the landscape and villa intact, the pavilion fails to fully answer the initial brief, which specified a visitor center complete with a tearoom, shop, information desk, and toilets. “We asked for a functional building, and the pavilion is not functional,” admits park manager Audrey Stielstra in a matter-of-fact way. “If you look at it in practical terms, the building is problematic. Yet a practical building requires walls for each separate program, and that would clash with the landscape. What Kums and Ishigami designed is an artwork. In order to use this artwork as a building, people need to be creative, and that, I think, is very beautiful.”

The architects joined the historic villa and the new pavilion so that they complement each other’s functions while still being able to offer the experience of two independent structures. The pavilion is only accessible for events, serving as a venue for lectures, seminars, exhibitions, small concerts, and weddings.

Open to the public since 1906, the estate became too small in the late 1990s for the crowds who flooded its art-filled 37 acres. Kums and

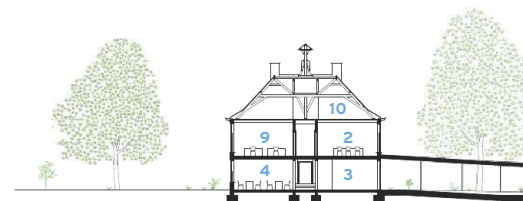


SITE PLAN

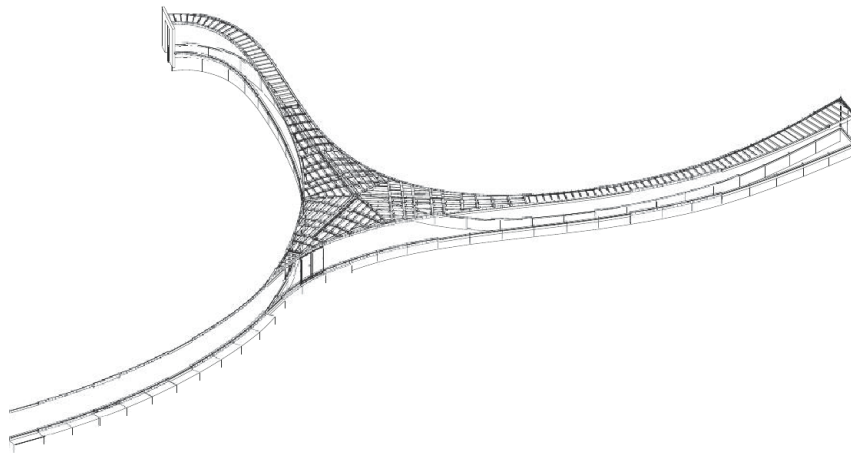


IN THE CLEAR The curving pavilion is made up of approximately 75 laminated-glass panels that are 1½ inches thick and as large as 9 feet by 8½ feet.

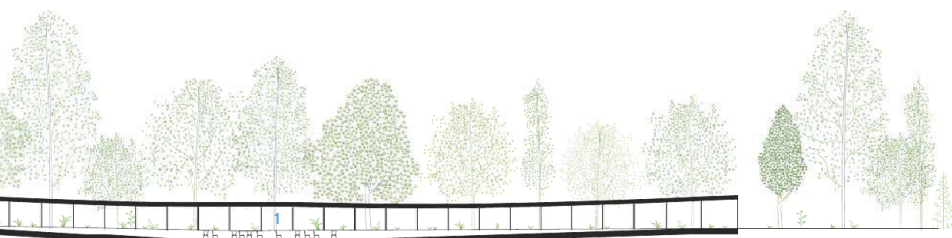
- 1 AUDITORIUM
- 2 MEETING ROOM
- 3 BAR/RECEPTION
- 4 CAFÉ
- 5 SERVICE AREA
- 6 STORAGE
- 7 RESTROOM
- 8 EXISTING AVIARY
- 9 ADMINISTRATION
- 10 ARCHIVE



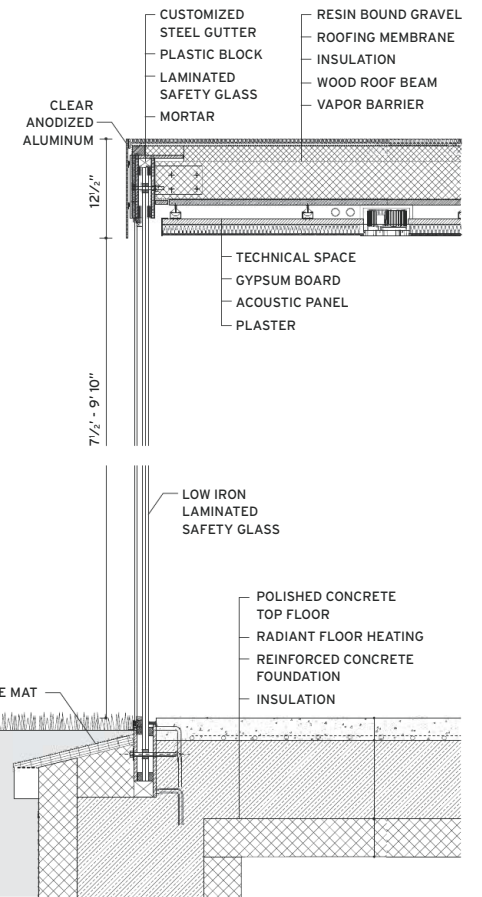
SECTION A - A



ROOF AXONOMETRIC



0 30 FT.
10 M.



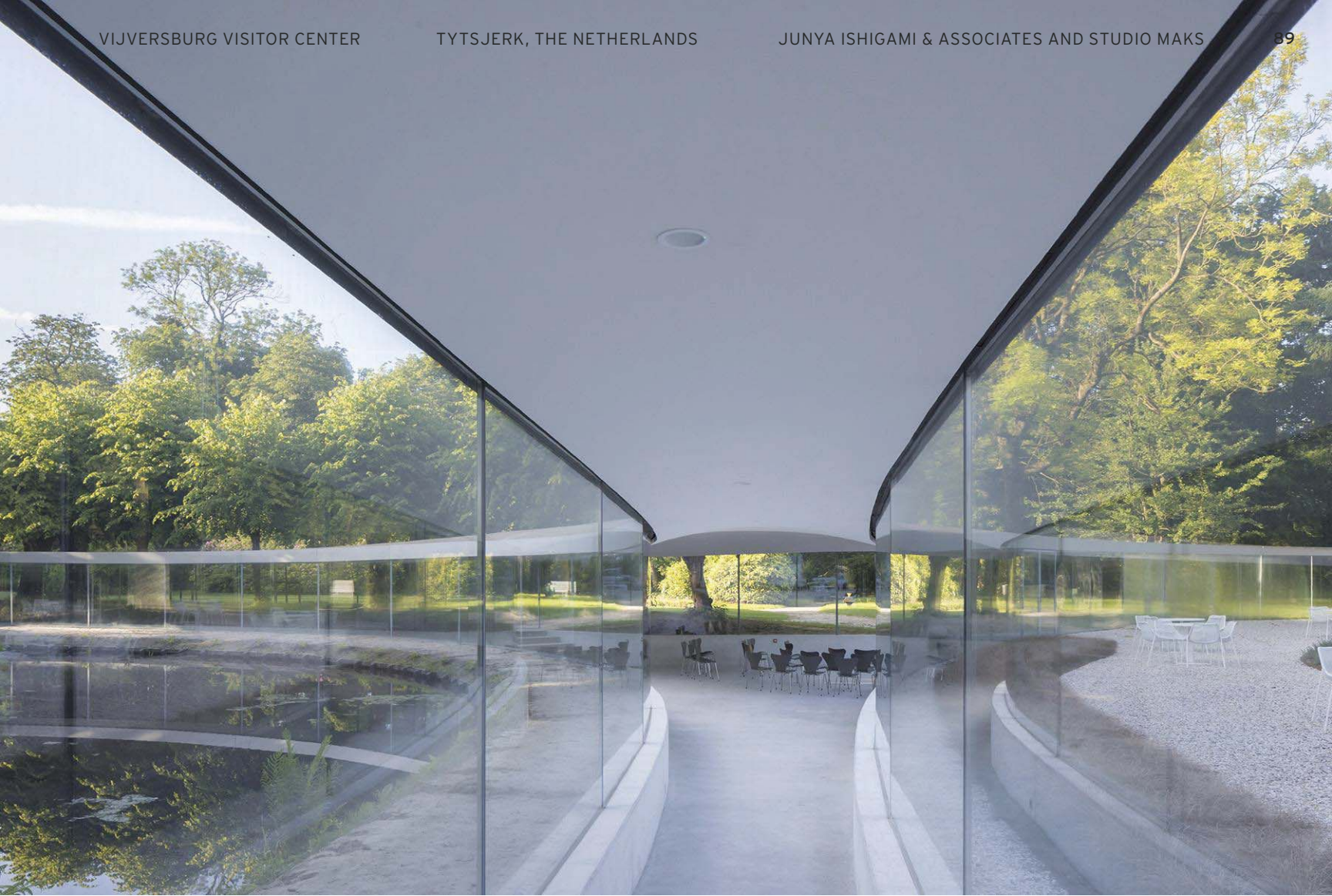
FACADE DETAIL



WALK IN THE PARK Tobias Rehberger's design includes a colorful treehouse (top, left). Piet Oudolf created a water labyrinth (above). A star-shaped hedge leads explorers down six different paths, each with a different surprise (left). The center of the new pavilion serves as a venue for events (opposite, top and bottom).

Ishigami's project is part of a large-scale renovation and expansion initiated by Op Tutenburg Foundation (owners of the estate since 1892) to improve the visitor experience. Taking note of the appeal of art in nature, they launched four competitions for artists and designers to submit their ideas for different parts of the now enlarged 49.4-acre park.

The first three of those designs—a science park by German artist Tobias Rehberger, a giant star-shaped hedge by Rotterdam-based Lola Landscape Architects, and a playground and water labyrinth by Dutch garden designer Piet Oudolf—were realized in September 2015. As nearby Leeuwarden, the capital of Friesland, prepares to be a European Capital of Culture in 2018, Park Groot Vijversburg, with its sinuous new pavilion and art-filled grounds lively with visitors, will play an important role as one of the area's most active cultural centers. ■



credits

ARCHITECTS: Junya Ishigami & Associates; Studio Maks

ENGINEERS: ABT, Jun Sato (structural); ABT (civil and mechanical)

GENERAL CONTRACTOR: Jurriens Noord Friso Bouwgroep

CLIENT: Op Toutenburg Foundation

SIZE: 6,500 square feet

COST: withheld

COMPLETION DATE: May 2017

SOURCES

GLASS: IFS-SGT

DOORS AND FRAMING: Matel Metaal

ACOUSTICAL CEILING: STO Isoned

LIGHTING: Zumtobel

LIGHTING CONTROLS: Hiemstra

CHAIRS: Fritz Hansen

HARDWARE: Dorma



Walden Pond Visitor Center | Concord, Massachusetts |
Maryann Thompson Architects

The Power of Persuasion

Henry David Thoreau hoped to teach by example. So does the new visitor center near his famous retreat.

BY ROBERT CAMPBELL

PHOTOGRAPHY BY IWAN BAAN

Every year, about half a million people visit Walden Pond in the historic town of Concord, just west of Boston. Most come to hike, swim, or picnic in a rural setting. Some also pay homage to the life and work of the writer and naturalist who made the place famous. That was Henry David Thoreau, who built a tiny house here in 1845 and described his simple life in a book called *Walden* that became an American classic.

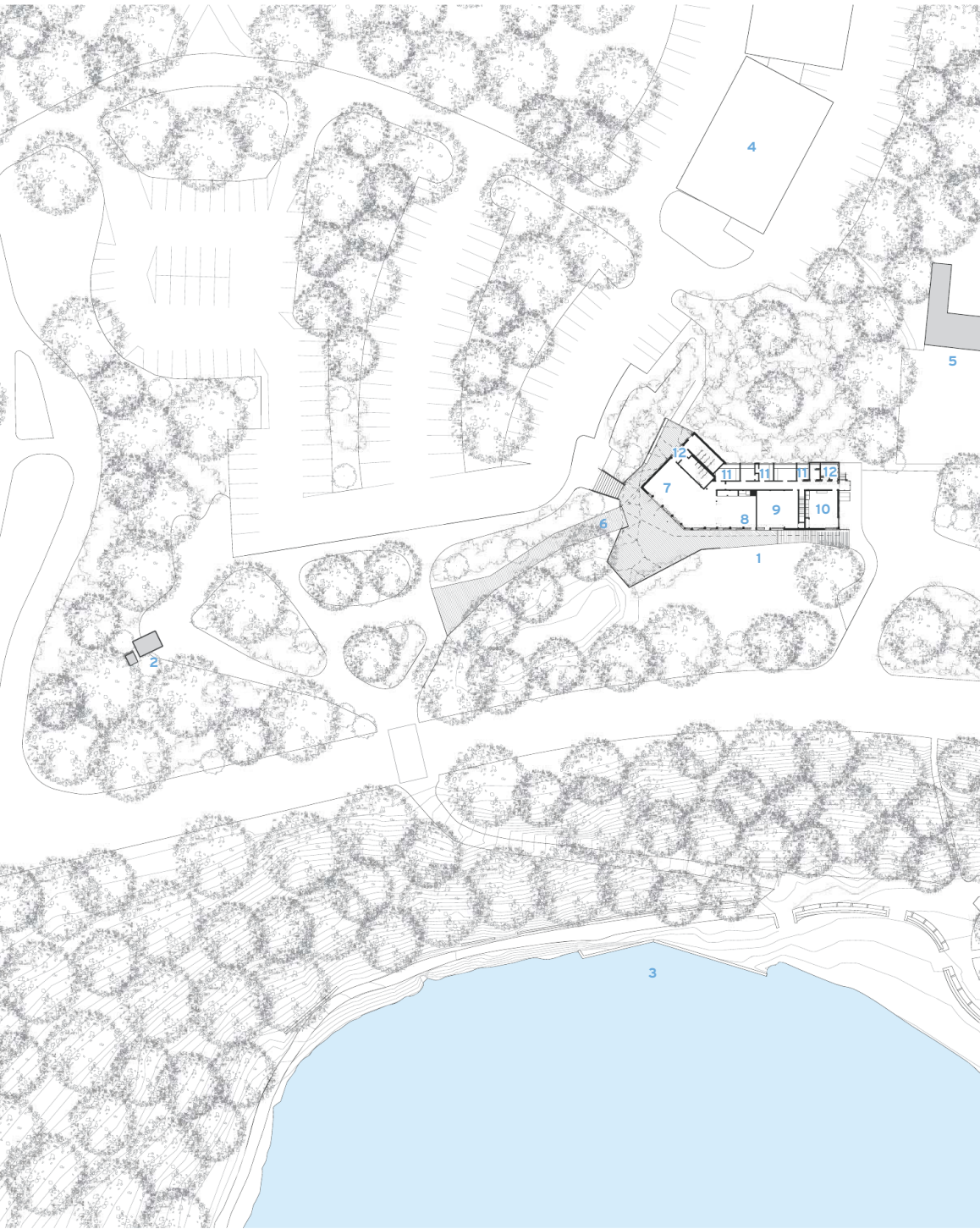
This year is the 200th anniversary of Thoreau's birth. It's being marked at Walden by the arrival of a fascinating new work of architecture. Known as the Walden Pond Visitor Center, it was designed by Boston architect Maryann Thompson and landscape architect Chris Matthews of Michael Van Valkenburgh Associates.



REAL SIMPLE The new center (above and right) embodies, in a contemporary language of wood and glass, many of the principles that Henry David Thoreau advocated in his writing. Meandering footpaths lend a sense of discovery to the building and its grounds.







SITE PLAN



- | | | |
|----------------------------------|------------------------------------|-------------|
| 1 VISITOR CENTER | 6 ENTRY RAMP | 11 OFFICE |
| 2 REPLICA OF THOREAU'S CABIN | 7 LOBBY/EXHIBIT | 12 RESTROOM |
| 3 WALDEN POND | 8 TEMPORARY EXHIBIT/
CONFERENCE | |
| 4 SOLAR PANEL ARRAY | 9 BOOKSTORE/GIFT SHOP | |
| 5 MOUNTED-PARK-RANGER
STABLES | 10 CONFERENCE | |

Thoreau's one-room house vanished long ago (there is now a replica at the pond). The new visitor center, though, shares two of the house's qualities: it's not very big and it's very ambitious. It seeks to embody, in a contemporary architecture of wood and glass, a lot of the principles that Thoreau advocated in his writing.

The 6,000-square-foot center sits within a state park and replaces a one-time residence, used as a ranger station, that offered little in the way of information or services. The designers pick up Thoreau's notion that architecture should look as if it has grown as organically as landscape. You approach the building on foot on a path that isn't quite straight. The center in the distance is half hidden among masses of new planting, and, as the route bends, the building seems to play hide-and-seek with you. There are similar glimpses—but only glimpses—of Walden Pond. You feel you're exploring on your own, discovering places that aren't presented as destinations but, rather, as casual events along a rural path. To use one of Thoreau's favorite words, you're "sojourning" in the landscape.

Sustainability is another Thoreauvian virtue. It's manifested here in a group of outdoor benches that were formed from the trunks of live oaks. For more than a century, the trunks were deliberately submerged in the muck of Boston Harbor, in order to preserve them (I'm not kidding) for possible use in reconstructing the historic naval frigate *USS Constitution*. Retrieved for a new use here at Walden, they become emblems of a conservation ethic while also linking with American history.

All the wood in the center is locally sourced. Instead of importing weather-resistant timber from tropical rainforests, the designers used heat-treated ash and maple for outdoor decking and siding. Indoors, an information desk and other furnishings are crafted from the wood of trees that were cut down to expand the building site. Part of the parking lot is roofed with solar panels that shade the cars while soaking up the sun. Windows are tall and bring in abundant daylight. Triple glazing and super-thick insulation keep net energy consumption near zero (this summer, the center has been



LOW PROFILE

A front porch, just outside the center's entrance (above) will be shaded with canopies spanning the framework of steel posts and black locust logs. All of the wood—including the heat-treated ash and maple for decking and siding (above and right)—was locally sourced.





selling energy to the grid).

Up close, the center has something of the look of a building still under construction. Framing members of unpainted wood surround much of the building like a layer of scaffolding, shading windows and terraces and enlivening the facades. Says Maryann Thompson, “I admire the experience of landscape seen through architecture.”

The center’s plan is organized like that of a human body. You enter at the head, an informally shaped space where walls and floors of red oak are flooded with daylight from high windows, and ceiling beams sometimes collide overhead like trees. This is the center’s major volume, the intended future home of an exhibition on Thoreau being

developed by ObjectIDEA of Salem, Massachusetts.

A double-loaded corridor spine orders the rest of the building. There’s a multipurpose event hall for meetings, lectures, and the like. This summer, it’s been showing the teaser for a film on Thoreau being made by Ken Burns. Then come a bookstore and a strip of offices for the rangers. Out of sight from the center is a grim older building that offers changing rooms for swimmers.

Would Thoreau be happy with a visitor center? For a cranky, independent-minded guy, might it feel a little hokey? My guess is, he’d love it. He was a very American propagandist who wrote and published books and essays because he wanted to persuade people of better ways



INSIDE TRACK The team designed flexible interiors—with floors and walls of red oak and ceilings of maple—that can accommodate a range of activities. Doors pivot (above and opposite) to open up an exhibition/meeting space to the entry area. Triple-glazed windows admit ample daylight.

to live. His life at Walden was an attempt to educate by example. So is the new visitor center.

Thoreau is sometimes mythologized as a loner hermit. But recent scholars depict an active man with many friends who, even while living at Walden, continued to help his father run the family pencil business. He went to jail rather than pay his taxes when he felt the government was supporting racism and slavery. His actions encouraged such 20th-century figures as Gandhi and Martin Luther King to engage in the kind of nonviolent political protest for which Thoreau coined the term “civil disobedience.”

Walden Pond, though, is mostly about a different side of Thoreau. He was one of the first Americans to study the environment as a science. He measured and catalogued plants and animals, and his notes on such subjects as the thickness of ice at Walden Pond are helpful today in assessing the history of global warming. He wasn’t an architect, of course, but he was a surveyor and part-time homebuilder who was fascinated by structural systems such as the skeletons of birds. He’s honored here by a piece of architecture that remembers and reflects his ideals. ■

credits

ARCHITECT: Maryann Thompson Architects

LANDSCAPE: Michael Van Valkenburgh Associates

ENGINEERS: RSE Associates (structural); Garcia, Galuska & DeSousa (m/e/p/fp); Nitsch Engineering (civil)

GENERAL CONTRACTOR: Stutman Contracting

CONSULTANTS: Crosby | Schlessinger | Smallridge (master planning)

CLIENTS: Massachusetts Department of Conservation and Recreation; Massachusetts Division of Capital Asset Management and Maintenance

SIZE: 6,000 square feet

PROJECT COST: \$7.1 million

CONSTRUCTION COST: \$6.5 million

COMPLETION DATE: September 2016

SOURCES

SIPS (ROOF): Foard Panel

HEAVY TIMBER FRAME, MAPLE SIDING, RED OAK INTERIOR WALL SIDING AND FLOORING: Ponders Hollow
METAL STANDING SEAM ROOF: Firestone

WOOD FRAME ENTRANCES AND WINDOWS: Bildau and Bussmann
ACOUSTICAL CEILINGS: Armstrong

PAINTS AND STAINS: PPG

SOLID SURFACING: Caesarstone

RESILIENT FLOORING: Forbo

LIGHTING: Tech Lighting, Haiku, Beta Calco, LaMar, Juno, Nora, Bega

PLUMBING: Sloan



Parc du Peuple de l'Herbe | Carrières-Sous-Poissy, France | AWP + HHF

Take Me to the River

On the banks of the Seine, a park transforms a suburban wasteland into a tranquil retreat.

BY CHRIS FOGES

PHOTOGRAPHY BY IWAN BAAN

Standing atop a skeletal steel observatory tower in a new 280-acre park at Carrières-Sous-Poissy, in the western suburbs of Paris, one gets a panoramic view of the wider environment that shaped both the design of the landscape, by Agence TER, and of the two prominent structures on it—a museum and the viewing platform itself—by architects AWP and HHF. Created from overgrown wasteland, the park, named Parc du Peuple de l'Herbe (Park of the People of the Grass), lies within a tight loop of the River Seine, bordered on one side by water and on the other by a fast-growing residential area. Competition design briefs for both the landscape and buildings asked for economical interventions that could transform the former industrial site into an inviting destination offering diverse scenery and activities.

Agence TER concentrated its most intensive landscape interventions at the margins. An “active strip” of pedestrian routes, cycle paths, and sports pitches blurs the boundary between the city and the park. At the river's edge, new boardwalks and seating areas increase access to the water, and remodeled banks encourage the growth of riverine vegeta-

tion. In between, a lightly remediated “natural area” has been enhanced by the planting of additional trees, shrubs, and small plants, and is crisscrossed by gravel paths that run between patches of arid prairie and flower meadows, small copses, and two large tree-fringed ponds.

Sited on the active strip and resembling a cluster of interlocking barns, the museum defines the principal entrance to the park. The 42-foot-high observatory sits near the center of the site, providing an orientation point and an incentive to venture deeper into the landscape. The two buildings are the largest of more than a dozen follies that were originally proposed by the architects, including a café, a climbing wall, and a skate ramp. All would be made by using a limited set of low-cost components to create houselike forms, alluding to nearby nondescript suburban dwellings and to the cabins of barges moored on the river. Though the smaller elements were eliminated from the plan because of changing economic and political circumstances, the fundamental ideas survive in the two realized buildings, which use structure both to generate architectural character and to frame views of the landscape beyond.



NATURAL FIT Five barnlike structures that form the Insect Museum are oriented to frame landscape views and to shelter the public entrance, which is accessed via a ramp (top). A courtyard inset into one of the volumes, surrounded by labs and offices, is disguised externally by a slatted timber screen (this photo, at right).



**FULL VIEW**

Meandering paths carry visitors between the museum and the observatory (opposite two). The tower (left) is partially timber-clad to direct views to the river and the grand villas on the opposite bank, but also toward housing projects and industrial sites in the other direction, so that the wider context of the park can be understood.

This approach comes from the diverse preoccupations of Basel-based HHF (RECORD Design Vanguard, December 2010, page 72) and Paris-based AWP, which have collaborated regularly since meeting as the designers of their respective national pavilions at the 2007 São Paulo Biennale. The project is “the child of two very different parents,” says HHF partner Simon Frommenwiler. “We start with a structural logic; AWP has a freer, more cinematic way of designing and activating public space. We establish rules and they break them until we reach equilibrium.”

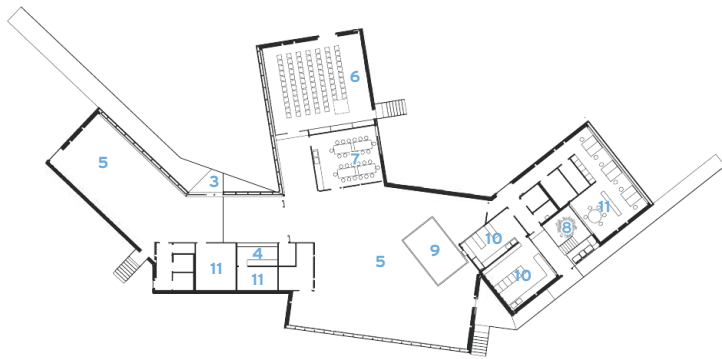
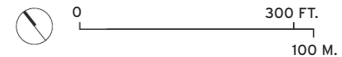
Like the nearby follies, the entry building was originally conceived as a domestically scaled structure, but it tripled in size with the decision to incorporate a museum of insects, and now comprises five pitched-roof sheds, overlapping at irregular angles. The agglomeration

of conventional forms is at once strange and familiar. “I’ve always played with the idea of the uncanny,” says AWP partner Alessandra Cianchetta. “Doing something uncommon with the common is a way of getting people to accept something that is unusual.” Further ambiguity is lent by enigmatic, scaleless facades, whose wood cladding extends over the roofs, walls, and windows as a slatted brise-soleil. Though safely out of the flood plain, the building cantilevers off a concrete base and seems to float like the river barges.

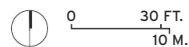
Inside, there are working labs and offices for the entomological institute, alongside a flowing sequence of lofty exhibition halls that join together where the building modules intersect. It is here that the spatial effects of the structural concept is most apparent, as the cor-



SITE PLAN



FLOOR PLAN



- | | |
|-----------------|---------------------|
| 1 INSECT MUSEUM | 7 MEETING/WORKSHOPS |
| 2 OBSERVATORY | 8 COURTYARD |
| 3 MAIN ENTRANCE | 9 BUTTERFLY HOUSE |
| 4 WELCOME DESK | 10 INSECT BREEDING |
| 5 EXHIBITION | 11 OFFICE |
| 6 AUDITORIUM | |

ners of each portal frame protrude into adjacent rooms like stands of sturdy trees or giant wooden spiders' legs. Daylight filters softly through translucent polycarbonate siding and the slatted timber shades over the giant windows, which by night emit an otherworldly orange glow.

Whereas the museum conjoins archetypal pitched-roof house forms horizontally, the observatory stacks four of them vertically, outlined with diagrammatic clarity in white-painted steel. Maintaining their legibility proved challenging, but engineer Schnetzer Puskas developed an elegant solution in which the staircase stiffens the frame so that cross bracing is not required. And, since the structure is classified as a work of art, it could be constructed without an elevator. Again, structural rigor is yoked to a subversive search for the "uncanny": one house form, resting on the inclined roof below, is pitched at an alarming angle, "as though the structure couldn't work" and the stack is collapsing, says Cianchetta. (The impression of instability is not merely perceptual: at the top of the tower there is a pronounced wobble, triggered by footsteps or a light breeze.)

The hybrid character of both structures—which fuse the pragmatic and the playful, the strange and the familiar—makes sensitive connections to a landscape that is itself hybrid, responding to the city and the

river, and blending controlled cultivation and wild nature. Shaped by the environment, the buildings and the landscape design add interpretive layers to the once-inhospitable terrain, forging a strong sense of place amid so much space. ■

credits

ARCHITECTS: Armengaud Armengaud Cianchetta (AWP) – Miguel La Parra Knapman, Gemma Guinovart, Helena Frigola, Juan Garrido, Ruth Grande, David Perez, team; Herlach Hartmann Frommenwiler (HHF) – David Gregori y Ribes, Aleris Rogers, Philippe Guillod, Camille Aïssaoui, team

LANDSCAPE: Agence TER

ENGINEERS: Grontmij, EVP, Schnetzer Puskas Ingenieure

CLIENT: Communauté d'Agglomération Deux Rives de Seine

SIZE: 280 acres

COST: \$5.9 million (for Insect Museum and Observatory)

COMPLETION DATE: June 2017

SOURCES

TIMBER WALLS AND ROOFS: Nature Bois

INTERIOR GLASS CLADDING: Saint-Gobain

INTERIOR GREENHOUSE, WINDOWS, AND SKYLIGHTS: Wicona

RESIN FLOOR: Him Floor

POLYCARBONATE: Akyver



BUG'S LIFE

Within the museum, the smaller of two exhibition spaces (right) is devoted to the local ecology. The larger one displays insects (above), with live specimens presented in a glass house. A window to a laboratory (not visible) allows visitors a view of the institute's breeding program.



Erretegia | Hiroshima, Japan | Hiroshi Nakamura & NAP

On a Clear Day

A restaurant is designed with few impediments to the water view.

BY NAOMI R. POLLOCK, AIA

PHOTOGRAPHY BY KOJI FUJII/NACÁSA AND PARTNERS

Some buildings merely coexist with the landscape, but others enhance it. Erretegia, a restaurant specializing in Basque cuisine and designed by the Tokyo architect Hiroshi Nakamura, does both. Overlooking Japan's Inland Sea near Hiroshima, some 450 miles southwest of Tokyo, the bar-shaped building hugs the ground, while a transparent wrapping barely separates inside from out. The linear structure, topped with an oversize pitched roof, deftly underscores the beauty of its surroundings, enhanced by Landscape Niwatan Design + Artisan Office.

Erretegia (Basque for "grill house") belongs to the Bellavista Spa & Marina Onomichi, a resort hotel that opened in the 1970s in this scenic

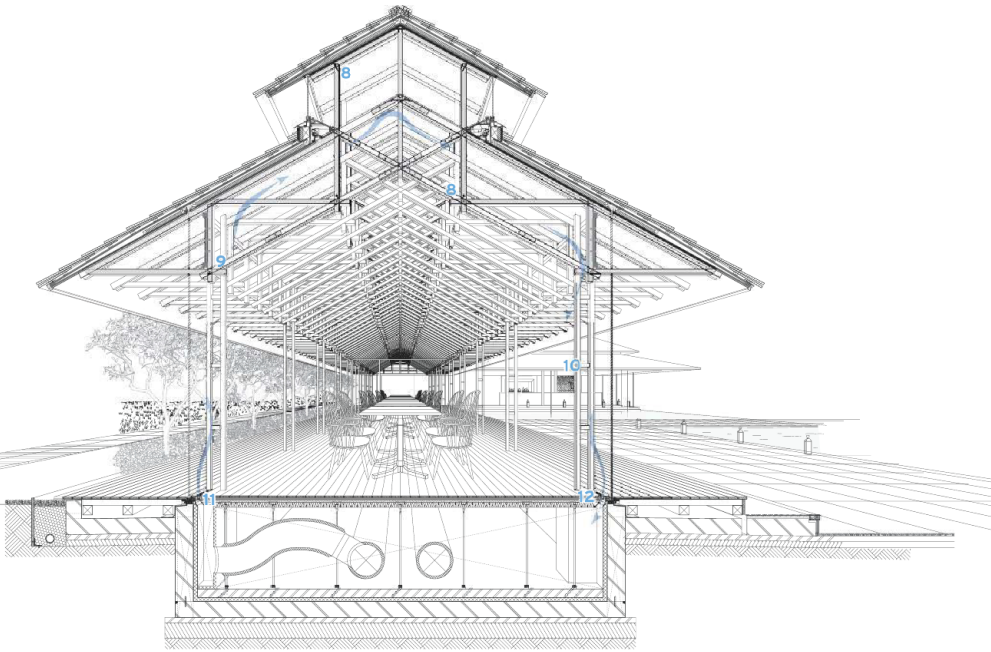
coastal area. In addition to designing the 40-seat glassed-in dining room, Nakamura renovated the hotel's original restaurant as the Chef's Table, a 24-seat eat-in kitchen that also serves Erretegia. The hotel, which belongs to the nearby Tsuneishi Shipbuilding Company, started as a place to put up company visitors and local tourists. When the facility began showing its age, the owner decided to convert the property into a destination wedding venue and hired Nakamura to design the white, spiraling Ribbon Chapel in 2013, followed by the remodeling of the hotel lobby and terrace, the reconfiguring of a luxury guest suite, and the design of Erretegia, whose cuisine takes advantage of the local fish and produce.

The dining room abuts the resort's swimming pool, making the most



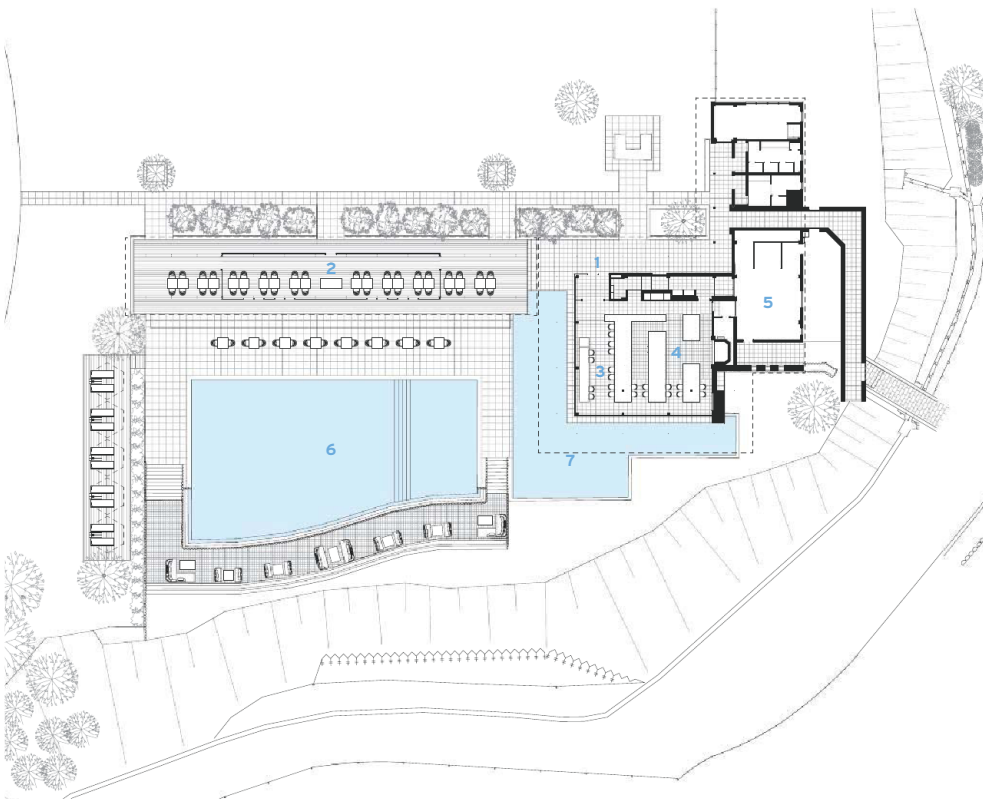


FRAMED VISTA The new Erretegia restaurant at the Bellavista Spa & Marina Onomichi, a resort in Japan, makes the most of the scenic Inland Sea location. The architect Hiroshi Nakamura & NAP kept the ground floor free of obstructions by using slender steel columns to support a cedar roof, and expanses of glass.



SECTION DETAIL

- | | | |
|----------------|----------------|------------------|
| 1 ENTRANCE | 5 BACK KITCHEN | 9 STEEL STRINGER |
| 2 DINING ROOM | 6 POOL | 10 STEEL COLUMN |
| 3 CHEF'S TABLE | 7 BASIN | 11 SUPPLY AIR |
| 4 KITCHEN | 8 RAFTER | 12 RETURN AIR |



GROUND-FLOOR PLAN



of the coastline view and minimizing the encroachment on the lawn in back where the hotel may expand. Potential growth also influenced Erretega's massing and transparency, since the see-through structure would not block the view for new construction behind it. The hotel also wanted to preserve as many of the existing trees as possible, although inevitably some had to be removed. (Most of those could be relocated near the Ribbon Chapel.) In addition, the design team salvaged lemon trees from a nearby farm and planted them along Erretega's east side, buffering the glass walls from the walkway, while providing fruit to the kitchen. Covered paths and terraces connect the dining room to the Chef's Table just a stone's throw away.

Envisioned as a garden gazebo, the 62-by-12-foot dining room is just wide enough for a single row of tables with chairs on either side. Overhead, a deep, large—188 feet by 22 feet—red cedar-shingled roof hovers protectively. "The glass is very modern, but the gabled roof is very traditional," comments Nakamura. The roof's angled ends recall the area's historic *irimoya* farmhouses, and cover outdoor seating. Triangular glass inserts in the gable ends help brighten the interior, while more daylight enters clerestory windows running the length of the building. Four-foot-deep eaves of cedar prevent the sun from hitting the glass walls



SAVOR THE CRAFT The existing resort kitchen has been renovated as the Chef's Table (above), where diners watch the preparation of the cuisine. In the adjoining new 62-foot-long, 12-foot-wide dining pavilion (right), the guests are sheltered under the exposed cedar rafters of the steeply gabled roof.

directly; a signature of Nakamura's architecture, these overhangs passively control internal heat gain without compromising the sunset views.

Contrasting with the glass, the roof is supported by 72 exposed trusses. Each one consists of three layers made of tiny wood bars—1,600 components in total. Measuring from less than an inch to just over 2 inches, these delicate elements visually offset the roof's immensity. They were fashioned at a local furniture factory with a numerical cutting machine normally used to craft tables and chairs, a method that provided the precision needed for the trusses' intricate joinery, characteristic of traditional Japanese carpentry. In lieu of nails, friction and tiny screws alone hold the trusses together.

Assembled on-site, the trusses attach to Vierendeel girders and columns made of galvanized steel. Beyond the steel elements stand the glass walls. These 3/4-inch-thick tempered panels are secured by metal sash embedded in the wood deck floor and concealed by the finished wood ceiling. Invisibly joined with





sealant, the panes read as a single surface, except where sliding or swing doors take their place. After installation, holes had to be cut in the glass for the eaves' rafters, which are anchored to the steel girders inside. With a tolerance for error of only about $\frac{5}{64}$ of an inch, this maneuver was one of the job's greatest construction challenges.

By comparison, the remodeling of the Chef's Kitchen was a cakewalk. Entered through a pair of conventional kitchen kick doors, the room is spare and utilitarian. To accommodate both kitchen staff and restaurant patrons, Nakamura enlarged the existing building on two sides and opened both to views of the water with broad windows. Its newly added canopies cut the sun's rays but allow them to be reflected on the white ceiling. The other interior walls are filled with industrial-grade cooking equipment, including a large built-in roasting spit. Stainless-steel dining tables that are extensions of the kitchen counters enable patrons to chat with the chef while watching their meals take shape.

Like the Bellavista, many vintage Japanese hotels are in need of a reboot. With hospitality commissions in the works in Kyoto as well as Taiwan, Nakamura is becoming the go-to guy for these renovations. "Houses may be appreciated by a few people," he reasons, "but hotels can be enjoyed by many." With the influx of tourists increasing and the 2020 Olympics in Tokyo fast approaching, Nakamura seems to be in the right place at the right time. ■

SOAKING UP SERENITY Restaurant-goers look out onto an infinity pool and a basin, and beyond to the Inland Sea. The elegant linearity of the rafters, steel columns, and wood floor planks help instill a sense of calm.

credits

ARCHITECT: Hiroshi Nakamura & NAP
– Hiroshi Nakamura, principal; Yasuhiro Otani, Hiroyuki Moriyasu, Yoshikazu Namiki, team

LANDSCAPE: Landscape Niwatan Design + Artisan Office

CONSULTANTS: Yamada Noriaki Structural Design Office (structural); ZO Consulting Engineers (facilities); Toshiko Ferrier (coordinator); Setouchi Holdings (construction manager)

CONTRACTOR: Daiwa Construction

CLIENT: Tsuneishi LR

SIZE: 4,000 square feet

COST: withheld

COMPLETION DATE: July 2015

SOURCES

WOOD ROOF FRAME: Japan Kenzai

STEEL COLUMNS: Fukuei Tekko

GLASS: ADF Ayabe

FLOOR: Kousei

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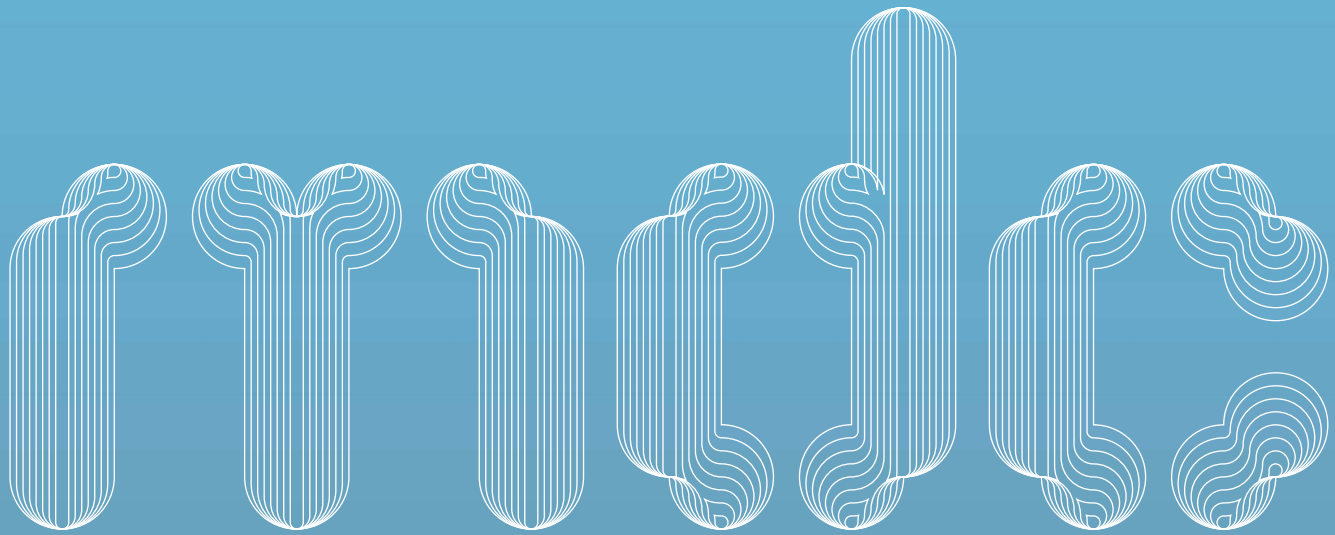
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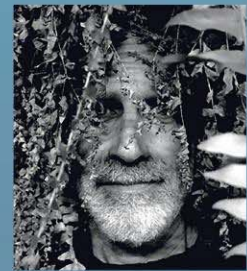
Sou Fujimoto
Sou Fujimoto Architects,
Tokyo



Dominique Jakob
Jakob + MacFarlane, Paris



Dorte Mandrup
Dorte Mandrup,
Copenhagen



Alberto Kalach
Kalach & Taller de
Arquitectura X, Mexico City



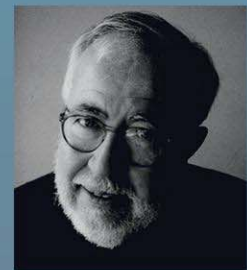
Shohei Shigematsu
OMA, New York



Julie Eizenberg, FAIA
Koning Eizenberg
Architecture, Los Angeles



**Marion Weiss, FAIA, &
Michael Manfredi, FAIA**
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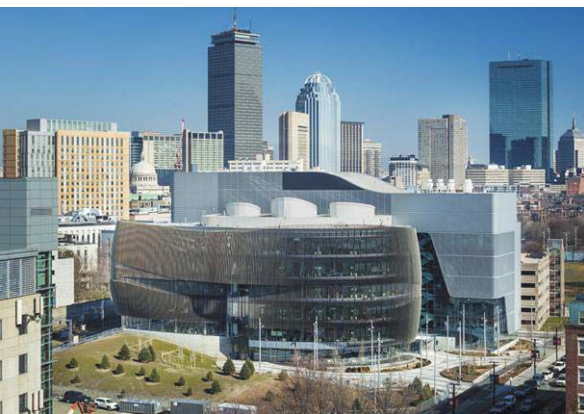
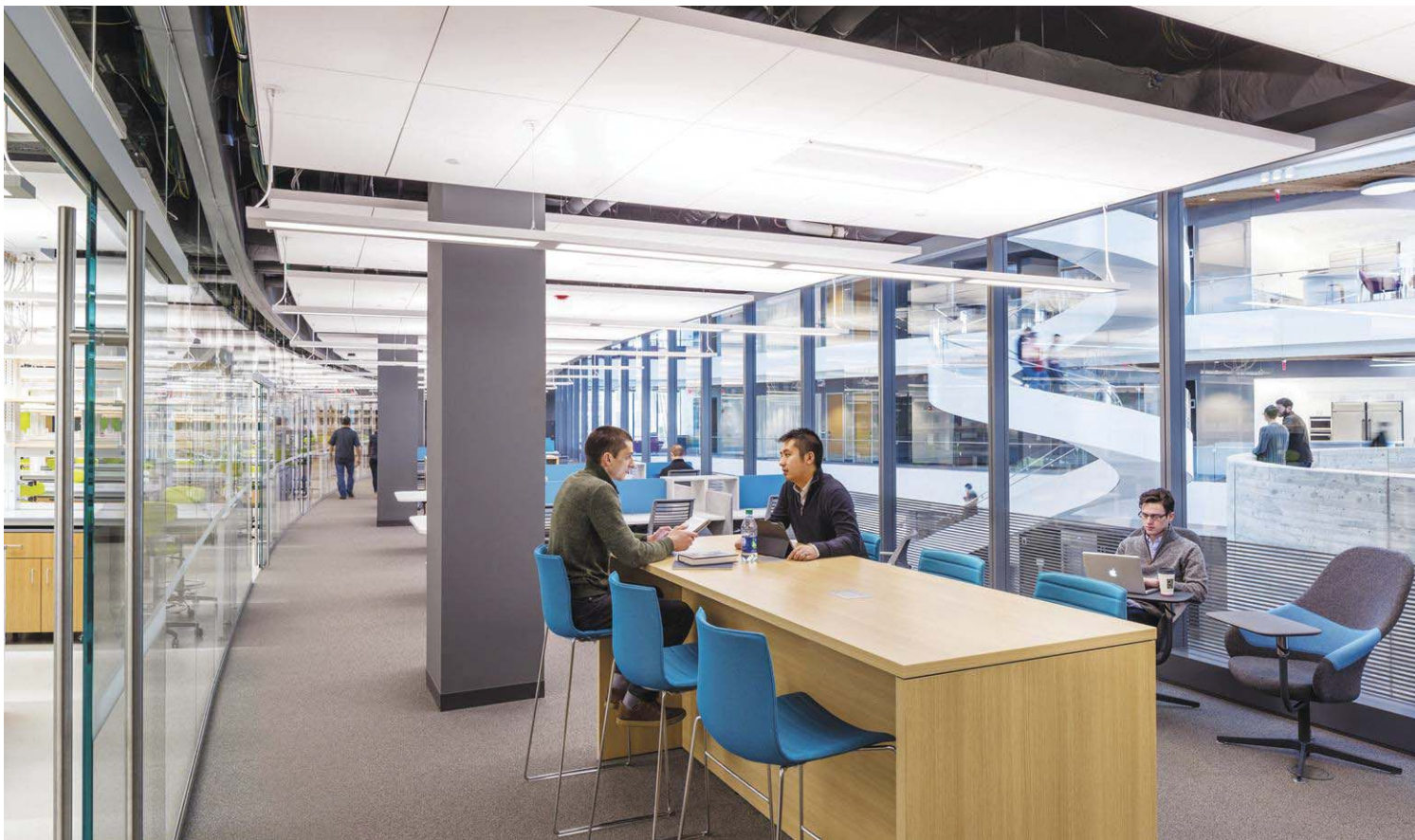
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Command Performance

The latest LEDs, coupled with sophisticated sensors and wireless technologies, are changing the role of lighting in the built environment.

By Linda C. Lentz and Joann Gonchar, AIA



THE ABILITY to control electric light in a user-friendly and visually seamless manner became a viable design option for public, commercial, and residential spaces more than 50 years ago with Joel Spira's invention of the solid-state electronic dimmer in the early 1960s. Initially developed to enhance homes and other interior environments, architectural lighting controls have since developed into systems that are used to create various scenes for retail and hospitality venues, provide security, and conserve energy usage and costs. Today, largely enabled by the capabilities of advanced, high-quality LEDs and digital technologies, lighting controls are being trans-

Northeastern University Interdisciplinary Science and Engineering Complex Boston Payette | Arup

When architects from Payette developed the concept for the Interdisciplinary Science and Engineering Complex (ISEC) at Northeastern University, they conceived its six-story-tall central atrium (previous page) as the building's centerpiece, as well as being a student hub for the expanding campus. They envisioned a dramatic and lively space topped by a generous skylight. But as they developed and refined the scheme, the initial mostly glass roof was transformed into one with three discrete cone-shaped apertures. The aim of this "right-sizing" process, according to Arup lighting designer Jake Wayne, was to eliminate glare in the atrium and ensure quality daylight in adjacent spaces—namely laboratory write-up areas (above). These look onto the atrium from multiple levels through a glass wall. For those times when daylight is not sufficient, the write-up spaces are illuminated with Peerless linear pendants that bounce light off the ceiling. The atrium also has supplemental LED lighting, including Selux spotlights tucked into balconies at its perimeter and Lumenpulse RGBW linear projectors concealed in coves at the base of the skylights. The latter fixture provides a soft glow so that the skylights are always legible, says Kevin Sullivan, Payette president. Although the building's fixtures are wired, its Lutron Quantum control system's components, such as occupancy sensors, photo sensors, and switches, are for the most part wireless, a characteristic that streamlined their installation, says Wayne.

formed into critical networks that not only effectively illuminate the spaces within and around buildings, they enhance the way these environments are used and inhabited.

In the half century that followed the introduction of a dimmer small enough to fit into a standard electrical wall box by Spira, the late founder of Lutron, the industry has evolved to keep up with myriad innovations and user preferences. Basic technologies such as 0–10 volt dimming—a protocol as straightforward

as its name, developed first for stage lighting, then fluorescent lamps, and now LEDs—have been supplemented with more robust wired protocols such as DALI (Digital Addressable Lighting Interface) and DMX (Digital Multiplex), both encompassing products from different manufacturers that work together within each distinct convention. According to Arup lighting designer Jake Wayne, DALI is the workhorse that controls most of the typical white architectural lighting in buildings.

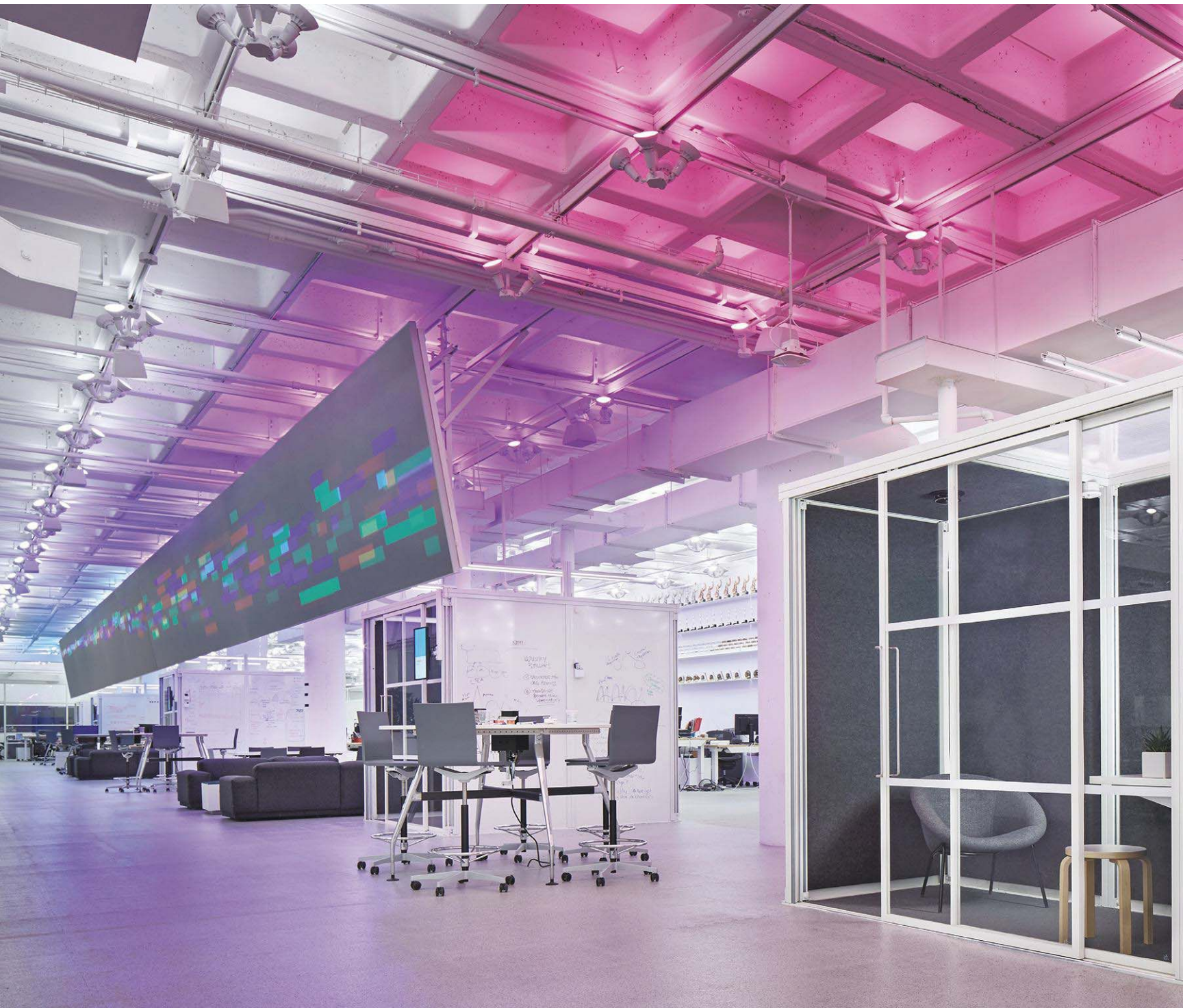


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It's a standard protocol whereby components such as LED drivers can be controlled individually, allowing for the fine-tuning of a particular fixture or small group of fixtures instead of a vast zone. DMX (a digital-communication network created for theatrical lighting) facilitates dynamic color-changing schemes. DMX is also great for new tunable-white LEDs, which are growing in popularity. "So we might start to see more commingling

of these two protocols in the architectural environment," says Wayne.

"Typically on jobs, we end up with two or three control typologies just to address all of the requirements of a space," Wayne explains. This scenario requires a central network system that has the built-in intelligence and programming capabilities to manage them. For example, Arup's recently completed Boston office, where Wayne is based, is a "working

lab" installed with several different control typologies. To manage them, the lighting design team is using a central system that controls all the protocols. "Think of it as a server that detects a group of DALI fixtures and knows how to talk to those through the DALI protocol, then recognizes the 0-10 volt fixtures and talks to those through the correct language," he adds. But once it is implemented and commissioned, all that a facility manager



PHOTOGRAPHY: © JOHN MUGGENBORG

sees a clean floor-plan graphic through which one can view and modify the scheme. The actual process happens behind the scenes.

These open protocols, and the gateway solutions that integrate methodologies without a hitch, are essential for the adoption of new and existing products and technologies, says Joseph Bokelman, chairman of the Controls Protocols Committee for the Illuminating Engineering Society (IES). Many clients are risk-averse, so

R/GA Office New York

Foster + Partners | Tillotson Design Associates

Responding to the client's request for a flexible space, lighting designer Suzan Tillotson and her team devised a dynamic scheme meant to engage the New York employees of the advertising agency R/GA, as well as to foster their creativity and well-being. The design revolves around an indirect lighting strategy using 10,000 RGBW, PAR38 LED lamps bundled into groups of four sockets. Affixed to a unistrut grid below the existing waffle-slab ceiling—painted white for reflectivity—these custom industrial-style fixtures are distributed at regular intervals throughout the two levels of the 134,000-square-foot space (in both open and enclosed areas), then configured to uplight each ceiling coffer. The lamps, by Ketra, have a high color-rendering index (CRI), and wireless connectivity through which they can be programmed to change color, or color temperature in the white spectrum. Taking advantage of these capabilities, the lighting designers created a circadian-rhythm program, which begins at 2700K in the morning, subtly shifts to 4000K at midday, and gradually returns to a warmer color temperature in the evening. Staff can override this system easily with a tablet to incorporate color or alternate scenes for events. A Zigbee-compliant device from Ketra enables the system to communicate wirelessly with a Crestron DMX master control that also ties into the window shades and a/v equipment—simplifying the operation of all three for the office manager.



“the goal is to remove the complexity.” In this regard, connected wireless systems, which eliminate the need for extensive electrical work, are gaining ground with lighting designers and architects for retrofit installations and multi-tenant buildings, as well as for open office and retail applications where the lighting must adapt to variable spatial configurations.

Like the wired versions, open wireless protocols provide a common language to connect the devices of different manufacturers adopting a particular convention. One such standard, developed by Zigbee, has an alliance of 400 members, including manufacturers of luminaires, switches, and gateways, whose products communicate through low-frequency radio technology. Using a MESH network, the Zigbee system has self-healing properties, so if a route between any two devices is interrupted, it is reconfigured, making this a suitable technology for large and complex programs. “There is really no limit,” says Musa Unmehopa, a Philips Lighting senior director and Zigbee vice-chairman of the board. “You can build sub-networks and, in this modular fashion, grow or shrink a network to fit a particular building.” The Aria Las Vegas hotel is outfitted with 100,000 Zigbee

Swedish Medical Center Behavioral Health Unit Seattle ZGF Architects

For a new 22-bed behavioral-health unit on two floors of an existing hospital, designers from ZGF wanted to imbue the two central gathering areas—which have no access to daylight—with a natural sense of the passage of time. In order to accomplish this, they developed an illumination scheme based on circadian-rhythm research conducted by the Lighting Research Center at Rensselaer Polytechnic Institute. The lighting subtly changes, with a bright, cool light in the morning that gradually becomes warmer over the course of the day. The aim was not only to provide a comfortable environment, but also physiological benefits for patients who are sometimes admitted for weeks at a time and spend most of their waking hours in these spaces, explains Ed Clark, a ZGF sustainable strategist. To create an installation that would reinforce patients’ natural wake-sleep cycles, they specified high-CRI tunable-white LED downlights from USAI. And to facilitate the desired modifications in color temperature and intensity, they paired the downlights with a 0-10 volt dimming system. For a cove surrounding the main raised area of the ceiling, they chose double-diode linear LEDs (one orange and the other blue) and a separate DMX control system. When first installed, the fades between colors of the downlights were too abrupt, making the environment “like a disco,” jokes Clark. But after reprogramming, the transitions are now gradual and nearly imperceptible, he says.

nodes, Unmehopa says. Each guest room is its own network and connects to a central system. “This is how you gradually build up the infrastructure.”

At the same time that the lighting industry is moving toward increasingly integrated and interoperable systems, a new layer of luminaire connectivity is poised to have an effect

on the built environment. As part of the growing phenomenon commonly referred to as the Internet of Things (IoT), manufacturers are beginning to embed light fixtures and even LED modules with smart sensors that measure conditions such as light levels, occupancy, temperature, and energy use. These communicate wirelessly and respond to distant and

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local commands, delivering data directly to facility managers as well as individuals at workstations, visitors to museums, even consumers at supermarkets and big-box stores.

These IoT capabilities present new possibilities for outdoor lighting systems at the urban scale. Manufacturers such as Philips and Current by GE offer connected lighting that goes well beyond turning streetlamps on or off. For instance, Philips is working with the city of Los Angeles and has outfitted its light poles with sensors that allow municipal managers to track energy use, determine if a particular lamp needs maintenance, and monitor grid health by detecting power fluctuations or surges. Some of the functionality has little to do with illumination: in September, the company completed a pilot installation of acoustic-sensing modules on 30 of LA's streetlights. Susanne Seitinger, leader of Philips's Global Smart Cities division, explains that the sensors process, map, and analyze peaks and averages rather than record sound. Some of the potential benefits are faster emergency response times after a car crash, or the ability to monitor noise pollution.

Many major LED manufacturers have already developed or are working on similarly "intelligent" lighting for building interiors, where a network of lighting fixtures can serve as the backbone for an indoor positioning system (IPS). Such networks, which pick up where global positioning systems (GPS) leave off, are being used in a number of different building types, including chain retailers like Walgreens, Toys"R"Us, and Target. IPS takes

Wimbledon Centre Court London Populous | ME Engineers

When the U.K.'s premier tennis venue recently replaced the High-Intensity Discharge (HID) lamps at Centre Court with advanced LED sports lighting, the owner, All England Lawn Tennis Club (AELTC), tasked ME Engineers to revise the controls, which had been installed in 2009 along with the HID's and the stadium's retractable roof. This was to assure compatibility between the new fixtures and controls and to take advantage of the latest LED and control technologies. To do this, the lighting designers upgraded the software for the existing Quantum system by Lutron, which had been providing complete management for all of the lighting elements and such energy-management components as motorized shades. The updated system, which includes a DMX controller that communicates with every fixture individually, can be accessed via PC or remote keypads with an improved graphical interface. It is now possible to more finely tune the lighting during a game, eliminating potential glare (distracting to both players and spectators) and providing the appropriate illumination for television cameras. Custom programs consist of a championship scene as well as additional adjustable settings for the remainder of the year in areas of the building shown in tours of the facility. This system also integrates with the operable roof controls and is programmed to automatically turn sports and seating lights on and off depending on whether the roof is open or closed, although a manual override is available. Outside of the championship, a time clock and remote keypads control the house lighting for the tours and for staff. The manufacturer maintains that this lighting retrofit has been so successful that AELTC is currently considering a similar solution for its Court No. 1.

advantage of the ubiquity of lighting within stores, and can work in a number of ways. But often it communicates with shoppers' smartphones via Bluetooth beacons integrated into the LED lamps or with visible light communication (VLC), which capitalizes on LEDs' inherent flicker. These positioning technologies can help customers navigate the aisles and locate specific products and allow retailers to track inventory, notify customers of special promotions, and understand which areas of a store are most popular. The ultimate goal is, of course, to increase sales.

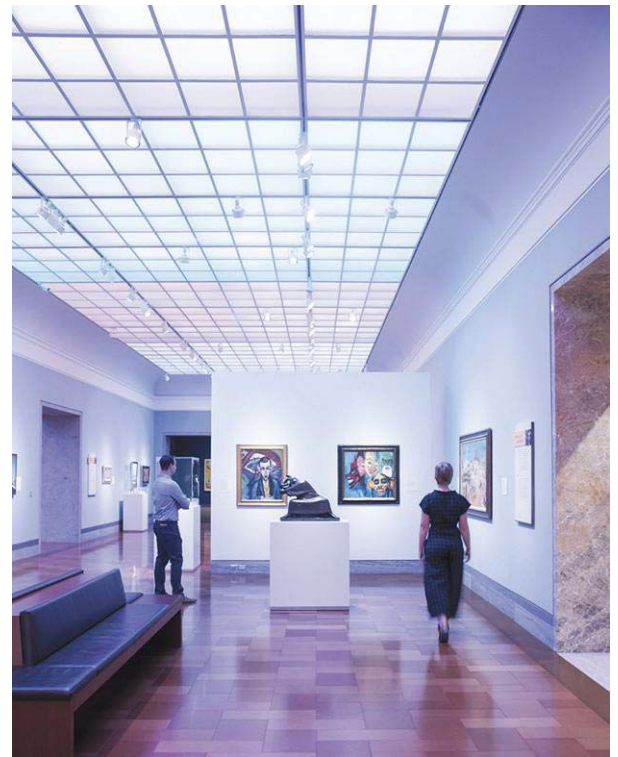
While sophisticated controls can certainly

help an owner's bottom line, architects and lighting professionals increasingly see such systems as a means of enhancing the quality of a space and the occupants' experience of it. One example is the use of tunable-white LEDs. These lamps, which have color temperatures that range from warm to cool, can help regulate the body's circadian rhythm (its internal clock), making people feel more alert during the day and sleep more soundly at night. The success of such lighting schemes depends on the amount and duration of exposure, color, and especially timing, points out Mariana Figueiro, the program director of the Lighting



Nelson-Atkins Museum of Art Bloch Galleries Renovation Kansas City, Missouri BNIM | Renfro Design Group

To create new galleries at the Nelson-Atkins Museum of Art to showcase 29 Impressionist and Post-Impressionist works from the Marion and Henry Bloch collection, BNIM reconfigured 9,000-square-feet within the institution's historic Beau-Arts building, opening up sight lines and adding more than 200 linear feet of wall space. The architects also took advantage of an important element of the 1930s structure: its laylights, above which the original architects created a 5-foot-tall attic space for installation of the lighting. "The building was thoughtfully configured for the lighting and its maintenance," says lighting designer Richard Renfro. He and his team replaced the existing lighting above the laylights, which were modified to correspond to the new floor plan with Ketra G2 linear fixtures. These provide ambient illumination throughout the galleries. The interior of the attic space is painted white, enhancing reflectivity as well as the ceiling's new slumped glass, so that it appears to emit a soft glow. Tracks installed below the laylight hold Ketra PAR38 lamps, to project the desired light onto the individual pieces of art. All the lamps are RGBW LED, wireless, color- and white-tunable, and individually addressable with the manufacturer's own MESH control system. This enables the museum staff to change color temperature and intensity according to a curator's objectives. Lighting for the whole suite of galleries can be managed. Alternatively, each lamp can be "adjusted and adapted on the fly" from a handheld device, for special events and educational programs, says Jake Ludemann, the museum's lighting designer. For instance, during a recent presentation for a group of children, he was able to approximate how the collection's *Water Lilies* painting by Monet would appear over the course of a day in natural light, from sunrise to sunset, within a span of 15 minutes. Says Renfro, "The technology is allowing museum visitors to see art in a new way."





Research Center (LRC) at Rensselaer Polytechnic Institute in Troy, New York. “For the circadian system, the same light given at the wrong time will have negative effects, while at the right time it will be beneficial,” she explains. “That’s where advanced controls can play a major role.”

Figueiro sees the greatest potential for circadian applications in facilities that operate around the clock such as hospitals, nursing homes, and prisons. But these applications are also finding their way into the workplace (see page 113). Even the General Services Administration (GSA), which owns and leases more than 376.9 million square feet in 9,600 buildings, could adopt circadian lighting. With the help of the LRC, the agency has been studying the effects of both daylight and electric illumination on circadian rhythms in a variety of its buildings. The investigations, which combined photometric measurements with occupant questionnaires, attempt to quantify the relation-



Willem II Passage

Tilburg, The Netherlands

Civic Architects with Bright | Lustlab

Dynamic lighting responding to environmental conditions can enliven an urban space that might otherwise feel deserted or inhospitable. This was one of the goals behind the design for the Willem II Passage—an underpass for pedestrians and cyclists, linking the center of the Dutch city of Tilburg with a redeveloping area, on the other side of a set of railroad tracks, that had been a train-maintenance yard. The pathway, designed by Amsterdam-based firms Civic Architects and Bright, has walls clad with handcrafted glass bricks intended as a contemporary reinterpretation of Tilburg's historic masonry architecture. The new bricks, which come in both folded and flat shapes, are backlit with 30,000 LEDs that change color and intensity depending on the movement of people, the time of day, the seasons, and climatic conditions including wind, temperature, and rain. The illumination sequences, determined with the help of Philips, are based on an algorithm and data collected by sensors, cameras, and a weather station mounted nearby. But since the environmental "inputs" are never the same, the resulting light show never repeats itself, says Ingrid van der Heijden, a Civic partner. The patterns are constantly moving, although only slowly, with low lighting levels and subtle colors during daylight hours. But people traveling through the tunnel at any hour are able to see the lighting respond to their movement, says van der Heijden. "If people understand their influence on their environment they feel safer," she says.





Apartmentum Hamburg

Kleffel Papay Warncke Architects |
Notholt Lighting Design

“Smart” homes are typically customized for private individuals, but improved wireless technology, the Internet of Things (IoT), and the pervasiveness of digital tablets is facilitating such intelligence for multifamily dwellings. German tech entrepreneur and investor Lars Hinrichs developed the Apartmentum, an innovative 20-unit building with wireless connectivity throughout. Notholt Lighting Design worked with Osram, whose Lightify Pro Gateway was installed in each apartment, to implement 21st-century LED lighting in the renovated 1908 building. Each tenant has a wall-mountable iPad mini that connects to a MESH network via Wi-Fi. A pre-installed mobile app manages and programs tunable-white PAR16 and linear cove lights capable of circadian sequences that adapt to actual daylight conditions. Based on this principle, large fixtures in the stairwells mimic skylights for comfortable passage into and out of the building.

ship between certain kinds of light and alertness, mood, and sleep quality. The project could shape the way the agency designs and renovates buildings. “The goal is to make evidence-based changes to our [construction] guidance documents,” says Bryan Steverson, a GSA high-performance-building program advisor.

If owners with holdings as extensive as the GSA’s were to embrace the capabilities of the latest lamp technologies and harness the po-



tential of intelligent systems, the use of connected controls and their integration into the still nascent Internet of Things could soon become mainstream, say industry sources. “As long as we get the level of technology right, drive down the price, and get people to accept its security and reliability,” says Bokelman of IES, “we will create a platform that will carry us into the future—one that won’t be made irrelevant because it’s ‘just a light.’” ■

Continuing Education



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review the supplemental material found at architecturalrecord.com, and complete the quiz at continuingeducation.bnpmmedia.com or by using the Architectural Record CE Center app available in the iTunes Store. Upon passing the test, you will receive a certificate of completion, and your credit will be automatically reported to the AIA. Additional information regarding credit-reporting and continuing-education requirements can be found at continuingeducation.bnpmmedia.com.

Learning Objectives

- 1 Identify commonly used lighting protocols, discuss their origins and their appropriate applications.
- 2 Explain how lighting and lighting controls can be designed to enhance building occupants’ circadian rhythms.
- 3 Describe some of the capabilities and potential uses of so-called “smart” connected lighting systems.
- 4 Discuss efforts to make the latest generation of lighting-system components interoperable.

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Satellight Suspension

Whimsy meets high function in this 36" x 41" blown-glass fixture. Spanish designer Eugeni Quitllet imagined harnessing the moon to create Satellight's delicate profile. Introducing a UL-listed suspension version made it sturdy enough for contract use. Designers can now specify the fixture as a conventional 220V or 240V lamp or retrofit with a 2700K LED for hospitality and retail settings. foscarini.com



AJ 50 Wall Lamp

Modern features such as a 3000K LED, bold colors, and a sturdy outdoor application define this lamp's familiar Arne Jacobsen design nearly 60 years after its debut. In 1960, Jacobsen designed the profile for the SAS Royal Hotel in Copenhagen. The latest version belongs to a family of lighting that includes table, floor, and indoor wall lights. louispuolsen.com

Light Work

Tech innovations fuel the sleek looks, ease of use, and flexibility of these luminaires.

By Kelly L. Beamon

Thin Primaries Pendants

Made in Brooklyn, NY, these slender lights by Juniper Design Studio combine LED capability with an adaptable design. Specify the linear segments in configurations that work with any design scheme. Thin Primaries fixtures come in 24" and 36" lengths that can be extended using a magnetic connector system. Finishes include aged brass, black oxide, and satin nickel.

juniper-design.com



CATA Track Light

Based on research for museum applications, this small-scale, indoor track light offers a defined and concentrated beam. Transparent polycarbonate casings by designer Paola di Arianello further enhance its strength. The 3000K fixture has a rotation of 360° and tilts at a 90° angle. The optical unit shown here (a wall washer) is easily swapped out for others in the line, thanks to twist-and-lock assembly. artemide.net

Adorne Furniture Power Centers

Designers can use this wall plate to build individual lighting control into a variety of furniture. Any surface that can accommodate an opening for mounting hardware placed 4" from its edges with 2½" of open depth on the back side can be retrofitted. Power Center wall plates, which are available in 10 finishes and three sizes—compact, standard, and extra capacity—can support switching, dimming, and charging for both residential and commercial settings.

legrand.us





Pétale Pendant

A choice of lighting colors is now a feature of Luceplan's Pétale pendant. Hotel, bar, and restaurant clients can change the hue of lighting with one touch of a low-profile wall panel that controls a color-changing, white-tunable LED around the perimeter of the fixture. The new Pétale also offers a dimmable 3000K LED at its center, and sound absorption, thanks to the elastic, white textile diffuser covering its 47 $\frac{5}{16}$ " diameter frame.

luceplan.com



C by GE Sol

Besides lighting a room, this luminaire from GE serves as a user interface for Amazon's Alexa. That means clients can command it to order dinner, play music, and follow a host of other voice commands. Programmable features include a sleep-enabling light and tunable color temperatures, all activated by voice command or the C by GE app.

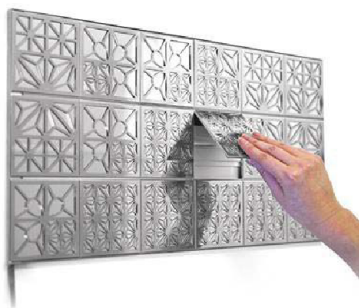
ge.com



Kumiko Illuminated Tiles

These thin, backlit tiles make inspired use of surface-mounted OLEDs. Informed by the look of Japanese shoji screens, the magnetic tiles attach to wired 21 $\frac{13}{16}$ " x 11 $\frac{3}{16}$ " panels. Simply lift and replace the tiles to mix up the pattern. Lighting designer Michiru Tanaka created the combination to cast a dimmable 3000K glow when panels are lit and to revert to a mirror when they're switched off.

kaneke.com



N4 Hub

The streamlined N4 Hub lets designers configure and control Ketra's high-tech LED lighting systems. In addition to communicating with the LEDs, the N4 relays designers' configurations to devices across the system, including light fixtures and other controllers such as keypads and the company's own mobile app. Since the Hub keeps tabs on the system via close-range radio communication, whole-building applications use multiple N4s for best quality control. Plug it directly into a modem or router.

ketra.com



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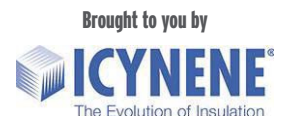
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Photo courtesy of NanaWall Systems



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A Look at What's New in Retail and Hospitality Design

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EM IN PM

CREDIT: 1 AIA LU/HSW

Photo courtesy of CertainTeed Ceilings/Photo: © Jeffrey Totaro, 2015



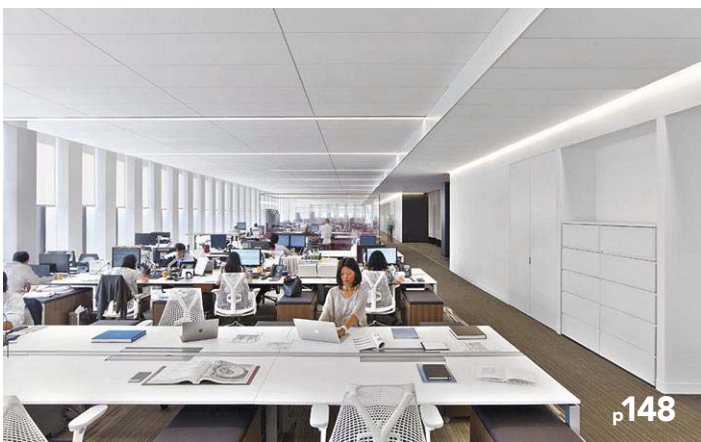
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The Evolving Workplace Environment

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Linear Lighting Frenzy

Sponsored by Prudential Lighting

IN LS PM

CREDIT: 1 AIA LU

Photo courtesy of Schindler Elevator Corporation



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Cutting-Edge Elevator Technology

Sponsored by Schindler Elevator Corporation

ACC EM PM

CREDIT: 1 AIA LU/HSW

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EM ELECTRICAL AND MECHANICAL

IN INTERIORS

LS LIFE SAFETY AND CODES

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RR RENOVATION AND RESTORATION

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



Retail and hospitality spaces often need to change due to a variety of reasons, whether they are new or existing restaurants, hotels, or retail stores.

A Look at What's New in Retail and Hospitality Design

Today's products help create better results

Sponsored by Construction Specialties, Inpro, Mitsubishi Electric Cooling & Heating, and NanaWall Systems

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

It has been said “The only constant is change,” and that is notably true in the world of retail and hospitality design. Changing markets, changing ways of engaging with customers, changing local conditions, and changing building technology all require the designers of this vibrant building type to not only keep up with the changes but to also try to anticipate and stay ahead so that designs don't quickly become outdated or obsolete. Staying abreast of current research and market reports is certainly one way to keep a pulse on the factors influencing retail and hospitality companies, but keeping up with building technology and products is also important for designers to develop relevant, successful solutions. This is

true for new buildings as well as the frequent renovation and refurbishing of retail and hospitality spaces. In this course, we will focus on some of the latest building systems, products, and developments that can be used for a variety of store, restaurant, hotel, and similar buildings to create designs that perform just as well as they look.

CREATIVE WALL SURFACES

Retail and hospitality spaces, like most spaces, are defined by walls that can be finished in a variety of ways to elicit an emotional response, create a design statement, provide a sense of branding, or simply create a desired color and texture for the space enclosure. At the same

CONTINUING EDUCATION

1 AIA LU/HSW

Learning Objectives

After reading this article, you should be able to:

1. Identify selected trends and factors that influence the design and construction of resilient, comfortable, flexible, and attractive retail and hospitality buildings.
2. Assess innovative product and system offerings that can be used to enhance retail and hospitality interior design, durability, human comfort, hygiene, and adaptability.
3. Determine ways to economically address material usage, space enhancements, and occupant comfort while producing designs that meet owner and user needs for energy efficiency, longevity, and performance.
4. Investigate ways to incorporate specific building technologies into retail and hospitality designs by reviewing project case studies.

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time, they are exposed to high levels of people and activity. Therefore, they need to be durable and long lasting enough to withstand the rigors of their setting. Two innovative options to achieve this are discussed below.

Wall Panel Systems

The construction of retail and hospitality spaces is often very time sensitive, meaning the use of prefinished materials is often desirable to meet opening deadlines. Prefinished wall panel systems can meet that need while still providing diverse aesthetic options and high durability. Some can even be installed directly to a substrate with adhesive or hung on a Z-clip or similar to expedite installation and allow for changes or substitutions whenever needed. Either way, they can be used to create a positive first impression on those who enter the space and impact how they may remember it when they depart.

Wall panel systems that are engineered for superior impact resistance and carry a Class A fire rating are readily available and most suitable for retail and hospitality designs. They are available in a full range of colors and textures, including some that simulate metal or wood grain to create the desired look and feel for a space. Commonly, they can be specified and installed in any one of three ways.



Flexible wall coverings are an option that provide the character and protection of traditional wall coverings and the durability and wear resistance of rigid protection materials.

Photo courtesy of Inpro



Interior wall panels with wrapped edges can provide a variety of aesthetic design options as well as superior durability and protection in retail and hospitality settings.

- **Square edge wall panels** provide durability with a flush look and tight panel seams. This style allows for the panels to be cut and assembled in the field to ensure easy installation for difficult areas or challenging wall conditions.
- **Full-wrap panels** extend the protective, finished face around the edges of the panels, allowing them to be spaced apart to create innovative designs. They are available in both a beveled and square profile panel edge and can be affixed to the wall with either a premium adhesive or demountable Z-clips.
- **Wall trim** that matches or complements the panels that is made from the same durable materials is also available. Such trim can combine woodgrain rigid sheet with a variety of molding options to allow designers to achieve a number of looks.

Overall, wall panel systems can create imaginative designs, improve construction processes, and provide the owner with an attractive, rigid, and durable wall finish solution.

Flexible Wall Protection

While rigid protective wall panels offer pattern and color choices, there is also an alternative that provides the aesthetic of rolled wallcovering with the function of traditional wall protection. Flexible wall protection materials are available that are so resilient, they fend off stains and vandalism simply by wiping away with standard or high-strength cleaning agents as needed. They offer the same durability and protective performance as traditional rigid wall protection, but they are indistinguishable from wallcoverings. They are durable enough to handle the conditions of the harshest environments, yet literally flexible enough to become the showpiece or backdrop of any interior. With seamless installation, they also become an uninterrupted finish in a variety of patterns and colors. These materials are offered as three-dimensional design alternatives, with wall panels wrapped in the wall covering for another way to bring

visual interest to interiors. With these inviting textures, rich colors, alluring patterns, and a seamless appearance, a wall is no longer just a surface—it can be a canvas for expressive design possibilities.

RESILIENT INTERIOR DOORS

Swinging doors are common, necessary elements of any retail or hospitality space and are appropriately selected to meet specific functional needs. Additionally, as significant visual components, they can contribute to, or even be the center of, an overall interior design. Essentially, doors and frames are both workhorse elements of a space and a feature that can enhance a design concept. Although doors are not the focus of design in many cases, certain retail and hospitality buildings such as hotels are starting to use more creative door designs to enhance their interiors.

The key to successful door selection in high-use areas is to specify a system that not only looks great but also performs well, holding up to daily use and potential abuse. In that regard, there are several qualities to look for:

- Doors that are specifically manufactured for high-impact areas and are clad with ultra-durable coverings for demonstrated protection.
- Attention to door edges, since that is where most door damage occurs. Some are specifically manufactured to feature rounded, replaceable stiles and edges for extra protection. Better yet, some carry a warranty against damage for the lifetime of the door.
- The covering on doors can be specified to be bacterial and fungal resistant.
- Some doors are made of PVC-free material, can be Cradle to Cradle Certified, and can help to contribute toward LEED v4 credits.

While all of these attributes help with the performance of the door, designers no longer have to sacrifice aesthetics for durability. They are available in a broad range of colors and patterns, and they can fit seamlessly into any design concept. In addition to extensive standard design choices, some products also allow architects to display any image, pattern, photograph, etc. on a door without compromising durability.

Using protectively coated doors helps keep entire openings looking like new over time. A life-cycle cost analysis comparing wood doors to protected doors showed that a facility can benefit from substantially less cost over time by using the protected doors. This tested durability means that the intended aesthetic of any space will hold up, even in high-traffic areas like utility rooms and housekeeping areas.

Mike Delin, senior manager of product marketing with Construction Specialties, says, “We know hospitality architects and designers are looking for long-lasting products with enough style options to meet their complex design



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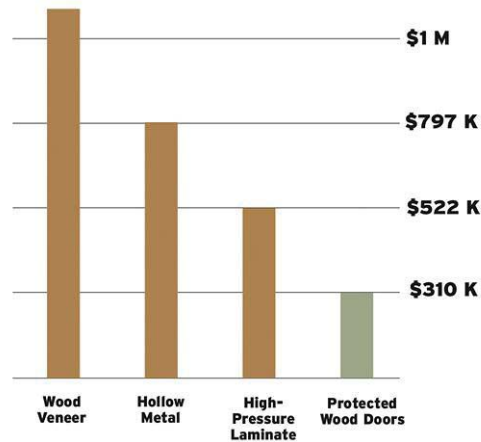
 **Acrovyn® Doors**



Image courtesy of Construction Specialties

Cheap doors aren't cheap.

Here is the real cost to buy and maintain 500 doors over a 10-year period.



A life-cycle comparison of different types of doors shows that over a 10 year period, 500 wood doors in a facility would cost \$800,000 more to buy and maintain than protected doors and frames.

needs.” That is why the industry is so robust with durable product offerings to fit seamlessly into the vision for any space.

OPERABLE GLASS WALLS

There is a growing trend and interest in designing spaces that seamlessly connect to the outdoors, thus “bringing the outdoors in,” or that allow adjacent interior spaces to open up to each other. Of course, there is also a need for the ability to close off and separate those spaces for weather, security, or other reasons. As a result, operable glass walls that fold or slide to achieve these fully open or, conversely, fully closed conditions are readily available. In retail and hospitality settings, it’s important to use a product that enables the architect to fulfill a design vision but also to incorporate a product that lasts.

Among the things to consider in selecting an operable glass wall, first is to be sure that the product is tested and proven for commercial use. Opening glass walls need to stand up to the daily commercial grind as well as the challenges of wind, water, extreme temperatures, forced entry, impact, and structural load. Independent testing results should be requested and provided for all of these conditions. Further, the specific details of the system should be reviewed. In some, moving structural posts provide exceptional strength in folding systems that meet Miami-Dade County and American Architectural Manufacturers Association (AAMA) hurricane ratings. Such a system can also serve as a secure and vandal-resistant storefront for retail applications. Multipoint locking entry doors as well as extra-long, tamper-resistant, dual-point

locking rods between panels can be specified to ensure that each system meets or exceeds most forced-entry testing for commercial-grade door panels. STC ratings for sound attenuation are available for select systems and can also be requested if that is a design consideration. During its service life, built-in adjustment and compensation points help with continued ease of operation if building settling occurs.

When considering operable glass walls as part of a design, there are some considerations that can impact different types of retail and hospitality buildings as follows:

- **Hotels:** An opening glass wall enables the designer to create large, inviting entrances in the lobby area, ensuring a memorable first impression. When open, it eliminates the barrier between the entrance and the lobby to allow a free flow of customer traffic and a direct connection with the hotel’s ambience and entertainment. They can be used in registration, dining, and guestroom areas to allow beautiful views, hotel landscaping, natural daylight, and fresh air inside. Opening glass walls can also be used as interior dividers in hotels and restaurants to allow personnel to quickly and easily incorporate or close retail space, dining areas, bars, and meeting rooms. For example, a breakfast area can be readily separated from the hotel public space after service has concluded. Or private banquet rooms can be created that transmit light and significantly reduce sound transmission. Ultimately, that means the hotel can create more bookable event space by dividing or opening up large areas as needed. Swinging entrance and egress door panels facilitate access and service when the rest of the operable wall is closed.



Images courtesy of Construction Specialties



Protected solid-core wood doors can be specified with reinforced surfaces and easy to replace door edges, all of which fit into overall design schemes.

An aerial photograph of a city with a large, silver wrench in the foreground, positioned as if it's about to tighten a bolt on the city. The wrench is the central focus, with its head and handle clearly visible. The city below is a dense urban landscape with various buildings, streets, and green spaces. The lighting is bright, suggesting a sunny day.

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Photos courtesy of NanaWall Systems



Operable glass walls can be used to fully open up and connect to spaces directly, or close fully or partially to provide needed separations for weather, security, or other needs.



- **Retail:** For retail stores, a wide-open entrance eliminates barriers by creating a seamless transition between street (or mall) and store and attracts customers inside, which can lead to an increase in sales. They can also allow retailers to expand display areas by utilizing street fronts, sidewalks, and mall walkways to display movable racks and bins that roll easily through the spacious opening. With expanded display areas, shoppers are enticed and are readily drawn deeper into the store. When it is time to close, the operable glass storefront continues to showcase the interior and provides a secure,

energy-efficient, transparent facade that seals tight and serves as a dust-control measure after-hours.

- **Restaurants:** Restaurants can benefit directly from operable glass walls by boosting revenue from increased seating capacity in outdoor spaces, such as a sidewalk, patios, or balconies. The open walls can also enhance diners' experiences by connecting a restaurant's interior to the surrounding outdoor spaces. In cases where a roofed patio or similar condition exists, enclosing the area with an operable glass wall can offer outdoor seating in all four seasons. Where

appropriate, operable glass walls can be used across the front of a restaurant as an entrance to make the entire street front a welcoming door. Incorporated properly, they can create unique and memorable indoor/outdoor dining atmospheres for customers to enhance and extend their dining experiences.

Overall, operable glass walls facilitate free-flowing connections between spaces by removing the physical barrier between them when the wall is open. When closed, a visual connection remains through the glass, but it creates an appropriate weather and security barrier otherwise.

HOTEL CASE STUDY

Project: Hotel Nikko San Francisco
Location: San Francisco

The Project: Hotel Nikko is an impressive 28-story structure offering more than 500 guestrooms, along with myriad meeting rooms, ballrooms, and other typical gathering spaces.

The hotel, in the heart of San Francisco's Union Square, is known for its welcoming, upscale atmosphere. With its Asian-inspired décor, stunning city views, private lounges, and luxury amenities, Hotel Nikko is understandably a popular spot. A steady stream of guests and staff, carrying and rolling luggage, catering carts, and equipment, leads to continual abuse of the hotel interior, which includes damage to the doors.

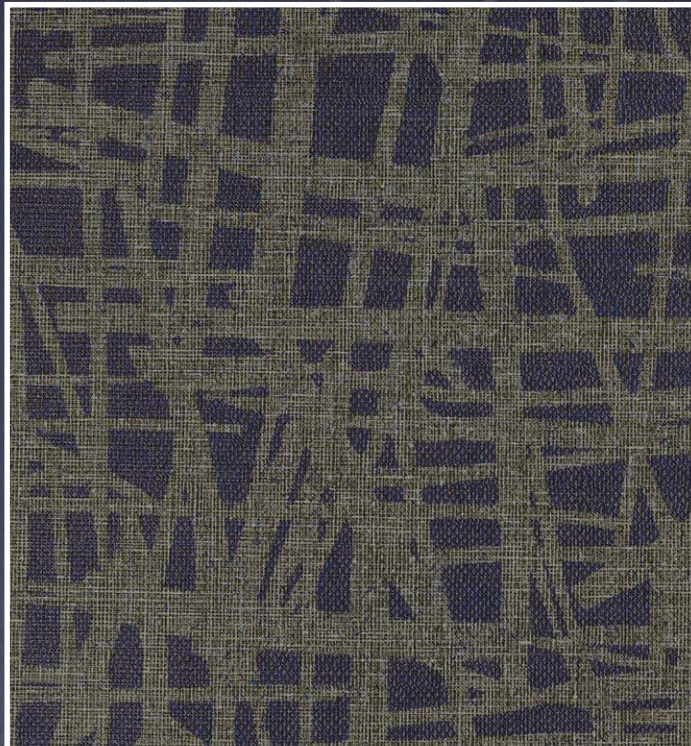
Design Goals: The existing doors quickly showed wear and tear, so a simple, cost-effective solution was crucial. Russell Palacio, director of engineering at Hotel Nikko, wanted the doors to be sleek and stylish. He collaborated with

Vic Scafani, owner of San Francisco Window & Door Co., to resolve the issue. "We're located in the heart of a dynamic and beautiful city, so our hotel needs to look its best at all times in this highly competitive market," Palacio says. "We needed doors that were created for durability, and we needed to make sure our doors lasted. Plus, they needed to look great doing their job."

Results: Following sample approvals by the board of directors and the CEO, 21 pairs of interior doors were replaced with 90-minute, fire-rated swinging doors with built-in damage-resistant features. These doors provide extra protection against frequent impacts, yielding stunning endurance for years to come. With Hotel Nikko's focus on maintaining its high-end appeal, these doors are proving to be the solution that delivers uncompromising durability without compromising style. This door replacement project allowed Hotel Nikko San Francisco to revitalize its meeting room and ballroom openings with durable doors. The endurance and polished look of the doors help to solidify the hotel's high-end aesthetics and atmosphere.



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IMPROVING OCCUPANT COMFORT

The experience of being in a retail or hospitality setting involves all of our human senses, including how warm or cool we feel in a space. If the space is too hot or too cold, people feel uncomfortable and want to leave. Providing a comfortable environment keeps occupants happy and can lead to increased time spent in the facility, which is what business owners want. Of course, they also want that comfort to come with low energy costs and flexibility in the way the system is designed and installed. Fortunately, there is a proven technology to meet all of these needs in the form of variable refrigerant flow (VRF) systems. When applied properly, VRF systems give retail and hospitality facilities highly efficient HVAC performance and provide occupants with exceptional comfort without impacting the bottom line. In fact, such systems can even save owners money through high energy efficiency, better control, and low maintenance.

VRF has been in use globally for more than 35 years and is continuing to gain popularity

Photos courtesy of Mitsubishi Electric Cooling & Heating



Variable Refrigerant Flow (VRF) systems are more efficient in their use of energy and their ability to blend in with retail and hospitality spaces.

in the United States because of its efficiency advantages and ability to provide personalized comfort to occupants of many different building types. The flexibility of VRF systems allows building owners and architects to design spaces without having to compromise around the layout of a mechanical system. Somewhat surprisingly, many building owners have no experience with these systems, so it often becomes incumbent on the architects and engineers to help educate them on the reasons to consider VRF systems, particularly in retail and hospitality applications.

One of the common misconceptions about VRF systems is that they are more costly than other HVAC systems, which has proven repeatedly not to be the case when all costs are taken into account. Owners are encouraged to consider the life-cycle costs of VRF, not just initial equipment cost. In so doing, they will likely discover the following:

- VRF is easier to design and can be less costly to install since it can be ductless, thus avoiding long runs of ductwork and eliminating the need for large mechanical rooms.
- Zoning capabilities give building owners and facility managers the ability to turn off or setback systems in areas that are not occupied, further increasing savings.
- VRF systems require minimal maintenance.
- Superior energy efficiency significantly reduces utility costs.
- VRF systems typically last up to 20 years, providing longevity in operation.
- Compact outdoor units are easily transported in freight elevators, potentially eliminating the cost of cranes.

These savings and advantages are achieved through the basic engineering technology of the system. Rather than inefficiently moving air to the spaces that require conditioning, VRF delivers refrigerant directly to those spaces and conditions the air within the space, providing better temperature control and the ability to treat zones independently. VRF can also provide simultaneous cooling and heating from a single two-pipe system. Performance is further improved with inverter-compressor technology that uses the absolute minimum energy necessary to maintain comfort levels while adjusting to partial-load conditions, which are often the predominant state. Rather than cycling on and off, VRF systems vary their speed to meet each zone's conditioning requirements. Additional features like occupancy sensors and the ability to turn off areas that are not in use help further improve energy efficiency.

In addition to efficiently maintaining comfort, VRF systems provide some other notable design and performance benefits, including:

- **Quiet operation:** VRF technology uses compressors that quietly ramp up or down depending on the conditioning needs of each zone, thus eliminating the noisy on-and-off cycle of traditional HVAC systems. Indoor units minimize noise disruption by operating at low sound levels. Check manufacturer's information, however, since noise levels can vary. Some of the best operate as low as 22 dBA indoors with outdoor units operating as quietly as 56 dBA.
- **Visually discreet:** VRF systems are space efficient and come in a variety of styles to blend into indoor and outdoor environments.
- **Space saving:** Compact system footprints provide more usable space for amenities, such as rooftop pools or social areas. No bulky runs of ductwork are needed, providing the option to increase ceiling height, add larger windows, or even fit additional floors within the same building envelope. Further, no large mechanical rooms are required, providing more usable square footage for potential income generation.
- **Design and system flexibility:** Eliminating the need for bulky runs of ductwork makes VRF systems easier to design and modify as needed. Refrigerant piping runs are much more easily incorporated into designs for new or existing buildings. And if changes in the building are needed over time, it is similarly easy to modify or reconfigure systems.

Overall, VRF systems are energy efficient and flexible, helping retail and hospitality facilities meet their varied cooling and heating needs. Kevin Miskewicz, director of commercial marketing at Mitsubishi Electric Cooling & Heating, has experienced this first hand and points out, "VRF systems provide unbeatable personalized comfort for building occupants, design flexibility for architects, and superior energy efficiency that saves building owners significantly over the life of the system."

Continues at ce.architecturalrecord.com

Peter J. Arsenault, FAIA, NCARB, LEED AP, is a practicing architect, green building consultant, continuing education presenter, and prolific author engaged nationwide in advancing building performance through better design.
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PRODUCT REVIEW

A Look at What's New in Retail and Hospitality Design

Construction Specialties

Photo courtesy of Construction Specialties/
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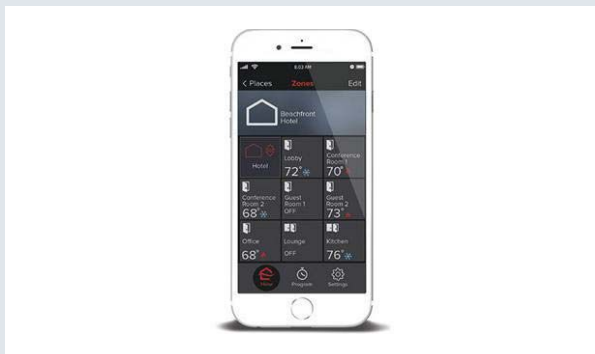


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Workplace environments have changed notably from the hierarchical, isolated layouts of the 20th century to more diverse settings that contain spaces for collaboration, individual work, socialization, and learning.

Photo courtesy of CertainTeed Ceilings/Photo: © Jeffrey Totaro, 2015

The Evolving Workplace Environment

Creating spaces that respond to changing needs

Sponsored by ASI Group, CertainTeed Ceilings, Construction Specialties, and Doug Mockett & Company | *By Peter J. Arsenault, FAIA, NCARB, LEED AP*

The places where people work have always needed to accommodate not only the type of work being done but also the organizational or management systems surrounding that work. Agrarian workplaces were necessarily tied to the land being farmed and often caused people to be spread out across a broad area to operate independently. Industrialization brought centralization of the workforce around manufacturing facilities but also required work time synchronization in order for the facility to function. The rise of the “knowledge worker” as first coined by business writer Peter Drucker in 1959 identified the predominance of information- and service-based work shifting work products from “things” to information and services. Our current, interconnected, 24/7 world breaks through these previous restrictions of location,

time, and products, offering new opportunities but also bringing challenges of productively managing a diversely structured workforce. In order for architects to design effective workplace environments then, we must be aware of and responsive to the changing needs of workers and management in the context of the evolving workplace. In this course, we will look at some of the drivers of change and some examples of interior building design strategies that can foster exemplary workplace environments.

MATCHING WORKSPACES TO WORK

Most workplace organizations identify their two largest expenses first as labor costs, and second as real estate. In order to be economically sustainable and/or profitable then, any given organization needs to balance and optimize both of these.

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Learning Objectives

After reading this article, you should be able to:

1. Identify and recognize the significance of acoustics as part of the beneficial indoor environmental design criteria for both collaborative and individual workspaces.
2. Assess the performance and aesthetic aspects of wall and floor surfaces as they relate to durability, safety, and interior design flexibility.
3. Explain the various means to accommodate a mobile workforce that looks for readily accessible, available, convenient power and data sources wherever they may work.
4. Determine ways to incorporate better design principles into restroom design for sanitation, health, and overall better workplace design.

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The design question usually becomes how best to create an appropriately sized and properly balanced workspace that allows individual workers to be fully engaged (i.e., productive) and helps the organization to thrive.

One of the first steps in designing a relevant workplace for a contemporary workforce is to realize that some of the 20th century design approaches were based on modes of working that have become outdated. Manufacturing and industrial facilities often relied on hierarchical organizations with work groups set up in individual “silos” that were quite immobile. Commonly, separate business units occupied separate buildings, where management had closed offices around the perimeter and the remaining staff had cubicles with little or no access to daylight. Typically, everyone was tethered to a desk focused on individual work tasks, and interaction across divisions was minimal. While that model worked well for its time and for certain large organizations such as the military, it should no longer be viewed as the starting point today. Such organizational and physical models can now actually work against contemporary goals of employee engagement and knowledge development, which are universally accepted as the current engines of economic success.

Individual Work versus Collaboration

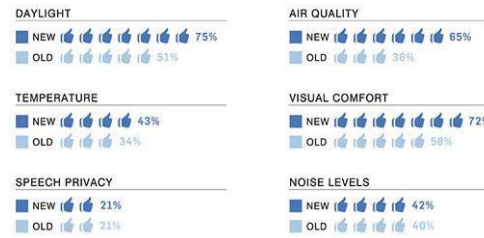
One of the biggest changes in recent times is the shift from individual work to teamwork or collaboration. The knowledge-based nature and complexity of the work of many organizations has required more input from different people to be effective and successful. In fact, data from a survey of 600 corporate executives conducted by the Gartner Group found that the percentage of workers’ product being dependent on group input increased from about 25 percent in the year 2000 to 60 percent in the year 2010. Further, while the traditional mode was for employees to work on a single project or initiative for a long period of time, today it is much more common that everyone is working on multiple projects simultaneously, requiring multiple collaborations.

Given this rather swift change in the nature of work, it is not surprising that a Steelcase/CoreNet Global survey found that workspaces and work activities are out of alignment in many cases. In this survey, more than 40 percent of respondents stated that their workplace “was split 80/20, with 80 percent of space supporting individual work and 20 percent supporting collaborative work. Yet the number of employees whose actual work process followed that same 80/20 individual/collaborative split was only 8 percent.” Clearly, the work processes have changed faster than their environments.

With the trends on the changing workplace cited above in mind, the question becomes: What are some of the appropriate design responses? We will take a look at several answers in the following sections.

Image courtesy of CertainTeed Ceilings

PERCENT OF USERS WHO ARE SATISFIED WITH ENVIRONMENTAL CONDITIONS IN NEW AND OLD WORKSPACES¹



Source: The New Federal Workplace: A Report on the Performance of Six Workplace 20•20 Projects

The U.S. General Services Administration (GSA) found that workers who moved from old workspaces to new ones designed to accommodate their work style were generally more satisfied by most measures except for acoustic quality.

ACOUSTICS

Some organizations and design professionals have been aware of these issues and pushed forward rapidly to create collaboration-friendly, open-plan office environments. Unfortunately, some workers have made dramatic and sometimes counter-productive moves from isolated workspaces to environments that create nonstop distraction. In response to these dramatic changes in the work environment, the U.S. General Services Administration (GSA) launched an initiative called WorkPlace 20•20. Its goal was to develop tools and methodologies to help federal agencies realign their work settings to support new organizational structures, work styles, and technologies. Seven years later, it conducted an evaluation of 40 projects in 11 agencies that had been delivered in that time. Among its findings, one factor stood out as a challenge: namely, acoustic conditions. More than half of occupants surveyed remained dissatisfied with noise levels and speech privacy in their new environments.

Based on this and other findings, it is becoming clear that a successful workplace environment design needs to address several conditions, including:

- **Spaces to accommodate different work modes:** Modern workplaces need to be



designed to include both appropriately sized collaborative work paces and quiet workspaces for individuals to engage in focused work. In terms of collaborative spaces, homogeneity in the sense of several large conference rooms is not helpful. Rather, spaces that can accommodate five to eight people are seen as ideal for productive collaboration. There is also a common need for one-on-one meetings and any number of other configurations in addition to one or two full-scale conference-style rooms. Private, individual spaces can include a quiet setting for phone calls, virtual meetings, or intense, focused work. All of these need to be considered based on the nature of the work processes of the people there.

- **Spaces for socialization and learning:** Beyond pure workspaces, there is a need for other types of spaces in a workplace environment that help support some of the human needs of the people there. Places to socialize, for instance, allow for interactions that build trust and solidify relationships, including talking, laughing, celebrating, and networking. Similarly, places for individual or group-oriented learning help with career advancement and commonality of a knowledge base.
- **Locating spaces:** Properly locating the various spaces in relation to each other helps the overall workplace environment just as well urban planning helps an overall town or city. Muffy Byrne, project director from Jacobs, maintains that when it comes to ensuring productivity, the planning concept is a key driver. She finds success comes from following sound principles of space allocation, positioning, the ratio of open to closed space, and the location of different spaces in relation to fixed elements in a facility, such as stairwells or restrooms. It can also facilitate a variety of open, collaborative areas along circulation areas for impromptu meetings and conversations. Further, socialization hubs such as break rooms or eating areas can double as a town hall or learning center with the characteristic of providing friendly gathering spaces.



Ceiling systems can play a dramatic role in controlling acoustic conditions in modern workplace environments that contain both collaborative and individual workspaces.

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With these conditions in mind, it is critical to address the acoustics of each of these spaces. In collaborative or other group spaces, there is a need to ensure that the sound quality is appropriate but also contained within those spaces. That can be achieved in part by location but also by the way the spaces are treated acoustically. In private or individual spaces, there is a need to prevent unwanted sound (i.e., noise) from entering the space so as to avoid distractions that reduce productivity and engagement. In most office environments, the number-one way to manage sound is through good acoustic ceilings design. Not only is the ceiling the largest surface area available and located in close proximity to users, but if left untreated, it can become a vast reflector of sounds.

While there may be a design tendency to use a single ceiling solution across all of the different spaces, the fact is that different ceiling products are likely called for to provide the acoustic needs of different spaces. Open office spaces might use ceiling products that look identical but may have very different properties. Fiberglass tiles with a very high noise reduction coefficient (NRC) of 0.95 can maximize absorption of background noise. However, in areas below mechanical equipment in a plenum, composite ceiling systems can perform a dual acoustic function, with a fiberglass face absorbing sound while a mineral fiber backer blocks the mechanical noise. The matching surfaces might also support daylighting and energy-use goals with high percentages of light reflectance. This strategy is essentially a “targeted acoustics” approach that can be employed to create an acoustically comfortable space without compromising visual impact or budget. Manufacturers tend to focus on providing architects with choices so they can select the right ceiling solution for each space. This includes all aspects of the ceiling products: acoustic performance, aesthetics appeal, and affordability.

WALL SURFACES

With workplaces becoming more diverse and in many cases more open and fluid in their layout, walls become significant definers of spaces. The ways those walls are finished speak to the nature of the work environment not only in terms of the functional durability and suitability for a work setting, but also in terms of the impact that they have on the design and the perceptions of those who work in the indoor environment.

How indoor environments are perceived may have as much to do with generational differences than anything else. For the first time in history, it has been noted that our workforce comprises four generations, and each one has a different approach to work and the workplace environment. For example, the Bureau of Labor Statistics reports that workers who have

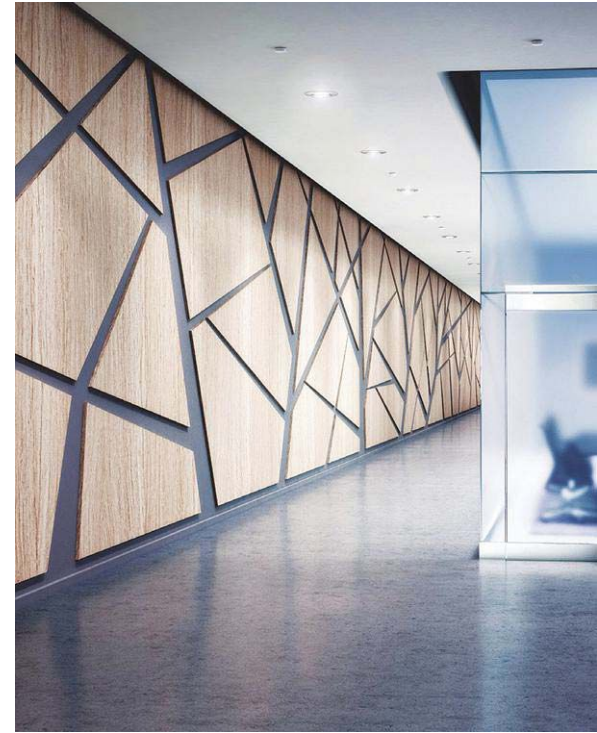


Wall panel systems are available in solid and simulated woodgrain finishes that can enhance workspace environments in traditional or creative ways to create bold designs embraced by the people in the building.

been in the workforce for 10 to 20 years have changed jobs an average of 10.5 times compared to workers who have been in the workforce for more than 30 years averaging fewer than six job changes. Other surveys indicate the significance of health-care coverage in keeping or leaving a job. Overall, the old workplace models based on large, private, windowed offices reserved for people solely on the basis of rank and seniority, or the concept of working in the same place every day, have little appeal to modern workers who embrace technology to control the possibilities for when, why, how, and with whom they work. In light of these findings, it is not unreasonable to assume that new and different approaches to the interior design of a space are the norm for younger workers too.

One of the ways to take a creative approach to durable interior wall surfaces is to consider the use of wall panels that can be configured in standard or custom sizes, shapes, and finishes. Such panels can be applied to partitions and walls in creative ways. Commonly constructed of a 3/8-inch substrate laminated with PVC-free rigid sheet, panels of this type can be specified in standard sizes and a variety of thicknesses with reveal options. They can create bold and elegant interiors featuring wrapped square-edge panels, beveled-edge panels, and, for unfinished-edge panels, picture frame and thin trims. Such wall panels also offer dimensional flexibility for custom shapes and unique configurations. Finish options include a selection of solid colors and simulated woodgrain patterns. Photography, branding, and other graphics also can be incorporated across a series of panels.

Photos courtesy of Construction Specialties



In terms of installation, flexibility and ease are typical. Historically, the installation of demountable wall panel systems, used mostly in health care, education, and office buildings, was challenged by cumbersome clips and brackets. New offerings that use specifically designed hardware and accessories reduce installation time by at least 50 percent and allow for easy panel removal for routine maintenance and interior updates. Further, panels with wrapped edges can also be spliced in the field, avoiding the necessity for trims and exact panel dimensions.

How do such panels hold up over time? Manufacturers of such panels pride themselves on their history of interior wall protection with projects in place and performing well for decades. Some provide a wide range of wall protection products, including rigid sheet, handrails, crash rails, corner guards, and door and frame protection in a variety of materials based on the stress a wall needs to sustain. They bring that history and expertise to the wall panel design with options for both surface-mounted and recess-mounted applications. Overall, it is safe to say that these panels are more durable than laminate or stained wood applied to a wall and are produced to keep walls in workplaces beautiful and damage free years after installation.

Some manufacturers seek to share their extensive product knowledge by working closely with architects and designers on complex design issues, including making the best product choice for each application. Because the nature of the wall panel system is to provide protection of the wall beneath while offering a variety of aesthetic options, it is easy to work



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with such a manufacturer to create a space that complements a building's design while remaining functional. Manufacturers can provide assistance from conceptual design to post-installation services for field-verified dimensions, technical support, product mockups, and sample coordination. They often work with architects and designers to help them select the product best suited for their building type considering factors that affect their building.

Amy DeVore, business development manager for Construction Specialties, comments on this role that manufacturers can play in providing new design options. "We redesigned the wall panel system because we recognized a need to provide solutions that weren't available in the market. With rapidly changing trends, it is important to create products that solve frequent problems related to design and installation. As a result, we have a simplified wall panel system that we can confidently offer to design professionals knowing it will significantly add value by reducing installation time and expand the aesthetic options."



Images courtesy of Doug Mockett & Company

A variety of power grommet types and wire management systems are accommodating and helping to facilitate the growth in mobile work areas outside of the office.

TECHNOLOGY AND MOBILITY

One of the more dramatic changes in the way knowledge workers spend their time comes from the advancements in computer technology. Before the 1990s, virtually all organizations relied on paper documentation and filing systems coupled with physical communication systems, such as U.S. mail and telephone calls. Today, virtually all organizations rely on computerized work processes that link people instantly to electronic documentation and communications. One of the results of this improved technology is the ability for workers to be more mobile, meaning they can be quite engaged and productive outside of the office. Connecting electronically from remote locations allows those jobs that require face-to-face contact with people outside of the organization to be highly productive wherever they are. It also means that employees can be flexible about allowing employees to work from home or other locations.


With people spending less time in the office, though, it begs the question of why dedicate so much real estate space for them? The GSA has developed a white paper titled "Leveraging Mobility, Managing Place," which summarizes some research on finding the right balance between mobile, electronically connected workers and a centralized work building.¹ It indicates that creating a mobile workforce has benefits for the organization and the people but also has implications for the design of workspaces. Specifically, it finds that since people don't require formal, full-time workspaces, mobility can actually support higher space utilization through shared arrangements or other means. It also finds that it is good for the natural environment by reducing the carbon footprint of the workforce in many cases. Looking toward the emerging design trend, the GSA sees it creating denser workstation areas, more varied space types, and reduced real estate as the percentage of mobile workers increases. A separate study by CoreNet Global reported that between 2010 and 2012, the average workplace dropped from 225 square feet per person to 176 square feet. It predicts that this may drop to as low as 100 square feet for many facilities in 2017.

Another aspect of computer technology is the ability to work asynchronously, meaning teams can communicate or work together not only in different places but also at different times. In a GSA publication titled *Workplace Matters*, data provided by the Gartner Group leads it to indicate that "working with others while in different times and different places will become the dominant work style of the future, replacing noninteractive work, which was the dominant workstyle of the past." Commonly, it used to be routinely assumed that physical meetings where everyone was in the same place at the same time was the only way to collabo-

rate. With the increasingly available computerized communication technology, meeting at the same time but in different places has become quite routine using video conferencing, audio teleconferences, or similar means. Further, since most types of electronic communication can be filed and accessed after the fact, asynchronous meetings and communications are also very common. Sending emails or creating online shared documents that are read and responded to later are simple versions of this. Recorded meetings are another version, where webcasts or podcasts can be retrieved to allow people to collaborate by gaining the knowledge of the meeting and then responding on their own schedule to interact with the rest of the group. Everyone showing up at the same place and same time is no longer required for full engagement and productivity.

What does this technological mobility and connectivity mean for design? As the workplace evolves, one constant remains: the need for power and data connections to supply our desktop and mobile devices in all of those different places and times. Even in a wireless world, mobile devices still need power and a data connection. Such power and data connections accommodate the flexibility of time and location of workers by enabling the connectivity that is required to function in the digital landscape. This could take the form of standard 120-V outlets or USB ports, or even a wired Internet connection. Most significantly, this convenience is no longer only true of offices but also at home, in hotels, retail locations, airports, and all of the other places that mobile workers can use to connect, be productive, and remain fully engaged. Designers are being asked to include such ports not only in walls at these locations but also into built-in and even movable furniture.

Recognizing this trend, clever and convenient power grommet solutions have been developed by manufacturers that are specifically intended to be integrated into furniture to help create new working environments. An extensive array of such power grommets for the modern workspace has become available and can be readily selected and specified. Because they are typically complete and UL listed, just like electrical outlets, they can be easily incorporated in a code-compliant and durable manner. Such power grommets have been used in diverse locations ranging from community workstations and shared workspaces to nontraditional workspaces like hotel lobbies and bedside nightstands. Power grommets can be hardwired by an electrician or they can be made with a standard plug that can be inserted into a wall outlet. They also come in a variety of forms, including flip-ups, pop-ups, recessed, and edge mount versions, lending their mixed use versatility to any application.



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A complementary but often necessary component to creating this connectivity is wire management. Wires and cables are best handled in channels or hardware that keep them safely run along the back edge of a work surface or some similar out-of-the-way place. This keeps things working smoothly and helps eliminate the potential of unsightly conditions. It also helps avoid accidental snags or pullouts of the wire or plugs in receptacles. Wire managers are available that include products for floors, under desks, behind desks, and a variety of clips, straps, and loops to help channel cables neatly and out of sight.

Manufacturers of power grommets and wire management systems have seen and responded to the changes in the working environment, even helping to move them forward in some cases. Incorporating power, data, and wiring in mobile work locations ultimately has the capability to turn any space into a potential workspace and takes emphasis away from the traditional work desk. Since power can sometimes be in short supply in nontraditional workspaces, the addition of such features helps more people work remotely and be mobile. Billy Peele, marketing manager at Doug Mockett & Company, says, “With the evolving workplace in mind, convenient power solutions to accommodate workflow are now more important than ever.” Anna Orfanides, founder and CEO of Anna O Design, Boston, agrees. She used flip-up power grommets in an office complex common area on a waterfall table design with lime plaster surface finish, and the multiple power points helped turn this shared space into not only a beautiful accent piece but also a highly functional, usable work surface. “I’ve used similar flip-up power grommets repeatedly, and I look for quality on the part of the manufacturer,” she says. “We are definitely going to be using these again many times, I’m sure.”

Places for Human Needs

Building owners want to attract and retain the best companies as tenants. The best companies want to attract and keep the best talent, and then to have them work at the highest levels of productivity. All of that comes down to employee engagement and satisfaction. Amy Manley is national director of workplace strategies for the international design firm Jacobs. She points out that many people advocate this approach for employee engagement as the best measure of workplace success. “Happy employees are engaged employees, and engaged employees are productive employees,” she explains. She goes on to identify some measurable traits that can indicate satisfaction with the physical workplace: “Do employees have pride of place? Is the



Photos courtesy of ASI Global Partitions

European-style restroom partitions, such as the different types shown here, can provide a more elegant design solution while fostering more positive perceptions among employees about the overall appeal of their workspace.

office considered a tool for recruiting and retaining talent? Does the environment enable you to deliver your process efficiently?” There are certainly other traits too, but clearly the human factors of people interacting with their environment are significant in terms of successful workplaces.

Some modern workplace environments inspire creativity and employee engagement very well, and it becomes readily apparent. Occupants of such buildings seem to derive a sense of professional worth because arguably, they believe that their employers paid great attention to build a world-class space for them. Of course, while employees can walk past beautiful facades and through dramatic entrances, they are really most affected by the spaces they use throughout the day. Designers can touch the higher emotions and needs of professional workers, but we sometimes take for granted some of the more basic human needs of privacy, hygiene, and feelings of safety and well-being. And while we are prone to focus on larger public areas, the reality is that no other area of a building can impact basic human needs, either positively or negatively, more than a public bathroom. Given the primal nature of these needs, the design of the bathroom can have a magnified impact on how people feel about their workplace.

Typically, office personnel use a bathroom between five to six times every day, meaning that each visit is an opportunity to build on how they feel about their workplace. Cyrus Boatwalla, director of marketing with ASI Group, has observed that “A disconnect exists, at times, between how well a bathroom is designed when juxtaposed against the amazing structural designs, building envelopes, and curated appointments that are synonymous with modern office buildings. The more

beautifully a building is designed, if there is a lack of connection between the quality of materials and design elements in the bathroom, that disconnect stands out even more. This can and will take away from the impact that the designers of the building intended to create. With a little more thought and assistance from manufacturers of bathroom products, building owners can have access to a variety of choices that can connect those spaces and help them complete the intended impact.” While we justifiably spend a great deal of time and money to improve how people work, ignoring the impact that this very important part of the building plays is simply shortchanging everyone involved and may nullify the positives that we seek to attain.

Leon Shakeshaft is a partner with the architectural firm of Arthur Gibney & Partners in Dublin, Ireland. He says, “I had the pleasure of having a private tour of one of New York’s landmark office buildings. As I appreciated the architecture and the thought that went into the details of the building, I found a lack of harmony between the design choices in the bathrooms when compared to the rest of the building. At our firm, we recognize that all things being equal, the quality of bathrooms can be the differentiating factor when our clients seek to attract tenants. Good bathroom design does not have to cost more, but it pays great dividends.”

Continues at ce.architecturalrecord.com

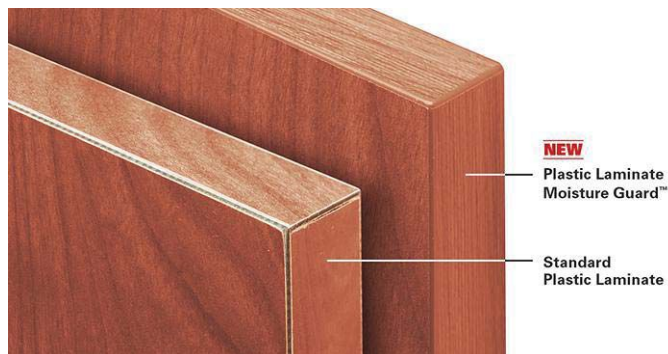
Peter J. Arsenault, FAIA, NCARB, LEED AP, is a practicing architect, green building consultant, continuing education presenter, and prolific author engaged nationwide in advancing building performance through better design.
www.linkedin.com/in/pjaarch

PRODUCT REVIEW

The Evolving Workplace Environment

ASI Group

Image courtesy of ASI Global Partitions



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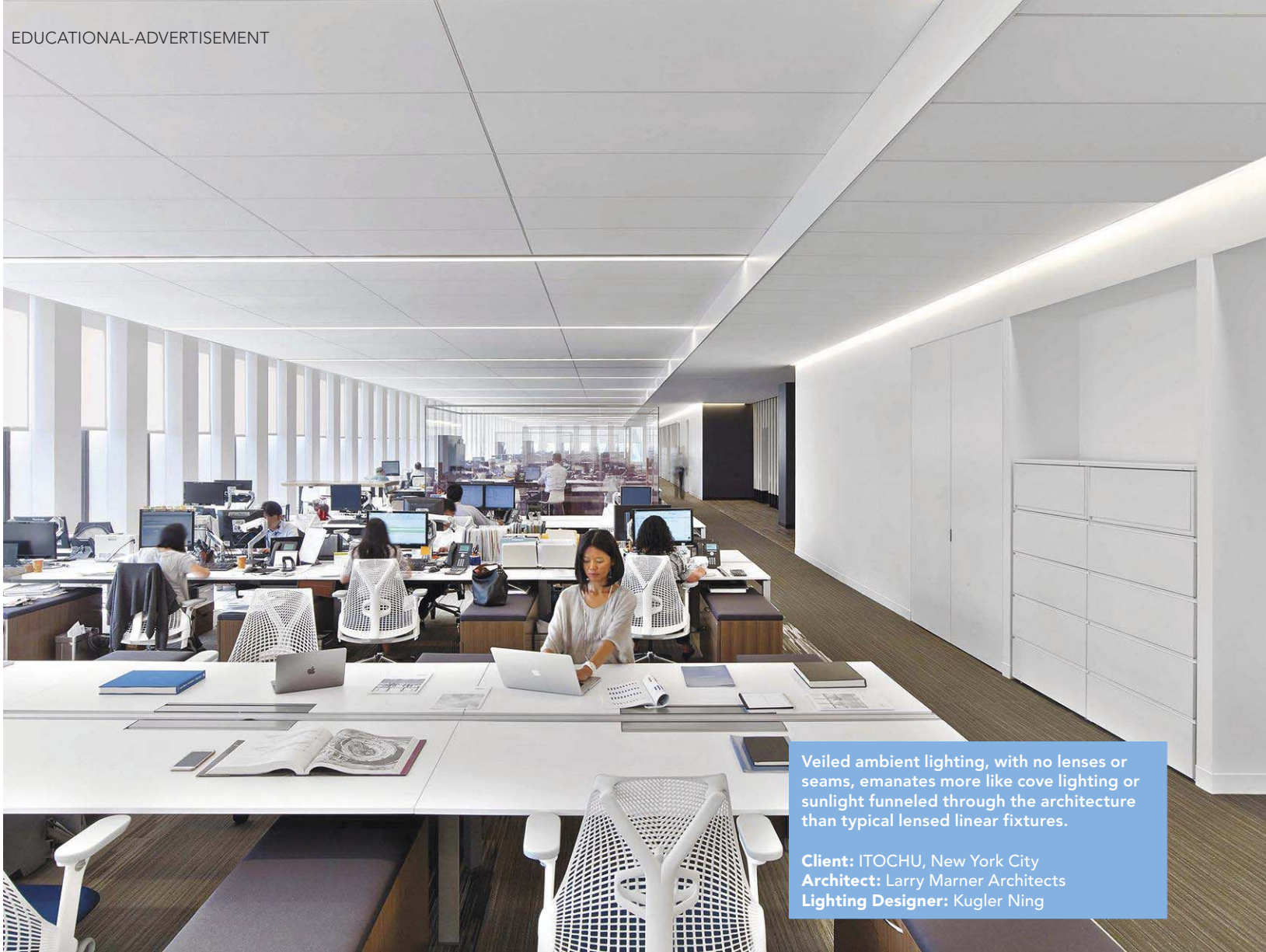
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www.mockett.com/pcs61



Veiled ambient lighting, with no lenses or seams, emanates more like cove lighting or sunlight funneled through the architecture than typical lensed linear fixtures.

Client: ITOCHU, New York City
Architect: Larry Marner Architects
Lighting Designer: Kugler Ning

Linear Lighting Frenzy

The lighting industry continues to seek inventive ways to make light more efficient and ultimately more appealing to vastly improve the user experience

Sponsored by Prudential Lighting | *By Rob Empfield*

Inspiration can come from many places, and for lighting, it only makes sense that those seeking new revelation would turn to the sky. Consider the work of American artist James Turrell, globally renowned for his interpretation of light, space, and playfulness in terms of perceived reality. He fancies the sky his studio, material, and canvas—creating a trompe l’oeil effect where he figuratively “drops the bass” on depth perception. As Calvin Tomkins of the *New Yorker* once said, “His work is not about light or a record of light; it is light—the physical presence of light made manifest in sensory form.”

Captivated by this concept, fixture designers found a way to reinterpret what Turrell was doing in the art world in a way that was commercially applicable. Dubbed “veiled ambient” lighting, it’s a brilliantly minimalist breakthrough that enables light channels to visually recede into the ceiling, virtually disappearing. The illumination is present, but the source is barely perceptible. Jon Steele, GM of Prudential Lighting, pioneer of this emerging design, commented on the inspiration behind the concept. “We wondered if there was a way to pump light through channels that felt like daylight

CONTINUING EDUCATION



1 AIA LU

Learning Objectives

After reading this article, you should be able to:

1. Explain how the drivers in the lighting specification process vary by the role of each key decision maker.
2. Elaborate upon key trends in LED linear that are flourishing right now and their impact on the user experience.
3. Describe the artistic inspiration behind veiled ambient lighting, its widespread aesthetic appeal, and how it’s enhancing the user experience.
4. List two of the next wave of technological advances in LED linear lighting.

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on a cloudy day, with no shadows or sense of source. We accomplished this through incredibly uniform indirect lighting with a ‘forever’ look that appears seamlessly integrated into the architecture.”

To fully appreciate the magnitude of this breakthrough, it’s important to understand how long it has taken for the lighting industry to truly flourish in the innovation arena.

LINEAR LIGHTING: FROM FOSSIL TO FAST TRACK

Over the past several decades, while nearly every other building material continued to evolve, becoming stronger, smarter, longer lasting, and more cost efficient, lighting didn’t have much in the way of newsworthiness—until now. These days, lighting is making up for lost time at an incredibly accelerated pace—particularly linear lighting (those long, narrow fixtures you see in nearly every commercial environment).

Thanks to the emergence, explosive growth, and continual fine-tuning of LED, lighting has seen more momentum in the past decade than the previous five decades. Given all those years of lackluster history, this momentum has the industry understandably abuzz. Granted, many of the first few breakthroughs were primarily designed to improve energy efficiency and extend life, but significant strides in form factors for aesthetics, light optics, adaptability, and control are making headlines as well. The term “form factor” encompasses the variety of fixture shapes and sizes available for specification.

The History of Linear Illumination

Linear lighting appeared on the scene as early as the 1950s as an alternative to recessed rectangular troffers in modular dropped ceilings, and it was immediately embraced. Originally introduced by Samuel Herst of Peerless Lighting, linear direct and indirect lighting struck a chord within the design community. It created intrigue with its long lines of light, and over the years, it has established itself as the “Class A” luminaire—catapulting in popularity to become the go-to for architectural lighting.

A myriad of linear form factors evolved from the 70s through the 90s, and linear gradually replaced millions of boxy square troffers in offices and classrooms. With the rise of desktop computers in the 90s, screen glare became a concern, screen glare became a concern so louvers were implemented to minimize the way the light bounced off the shiny screens. Indirect and direct/indirect lighting also became far more popular in an effort to reduce glare on computer screens and offset the cave effect of louvered troffers. Then in 1995, the introduction of the T5/HO lamp allowed for smaller form factor, higher lumen packages, and increased optical control.

The early 2000s brought the introduction of recessed linear lighting as a companion to direct/indirect pendants to create complete systems. The response was phenomenal, and linear lighting became the norm for commercial lighting, increasing demand for innovation. The industry quickly responded with different form factors and apertures, patterns, and improved optics. One noteworthy breakthrough in the mid-2000s was the development of “batwing” film, which enhanced linear distribution, allowing for wider spacing of fixtures (12-foot spacing instead of the typical 8-foot or 10-foot), ultimately reducing materials and labor costs while also saving energy. But the technology itself hadn’t improved. They were essentially the same fluorescent lamps people were using back in the 1950s even though we were well into the 2000s. They had mediocre optics, dimming was expensive, and form factors were large. Thankfully, change was imminent.

The LED Revolution

As LED light sources became more affordable around 2010–2012, a retrofit situation emerged for the sake of speed to market. Manufacturers were simply giving their old fluorescent fixtures new LED arrays, instead of reimagining how fixtures could play to LED’s unique strengths. The result? Longer life, improved energy efficiency, and less maintenance—but little or no improvement in form factor freedom or optical control. Bothersome striations, dark spots, and screen glare continued to plague office workers.

A 2014 Professional Lighting Designers Association (PLDA) survey reported that a shocking 47 percent of lighting designers citing a need for glare reduction—their top concern.¹ Specifically, participants in the study cited frustrations due to dim areas, overly bright work stations, and glare on computer screens. Similar studies going back to the 1990s and early 2000s conducted by global interiors giant Steelcase and *Interior Design Magazine* point to lighting as the primary source of frustration with work environments.²

What’s to Blame?

Common problems included too little or too much light, glare on shiny computer screens, and dark walls and ceilings creating cave-like effects and causing employee eye strain for extended periods of time. With the recent LED revolution, manufacturers scrambled to respond to demand, jamming the compact, precise, directional LEDs into linear fixtures designed for fluorescent lamps. Glare issues often worsened with exposed LEDs or light spilling out in harsh direct light.

Additionally, fixtures were not delivering on the manufacturers’ claims in terms of lumen

output—the dimming systems were not smooth or subtle, and the light was often far too bright for the environment. There were also some challenges with maintenance and field replacement. All in all, the transition from fluorescent lighting to LED was a bit of a “two steps forward, one step back” process as lighting evolved into a viable technology industry.

The Ideal Luminaire Look

The conversion to LED was so fast and furious in the industry, few stopped to ask the critical questions: What would the ideal luminaire look like? What do the end users desire in their workplaces, schools, etc.? Part of the complexity of these questions is that the answers vary by audience.

The architect or interior designer is often looking for the fixtures to disappear, recede into the architecture, and not interrupt the lines and flow of the space. They want to see light, not light fixtures. Their dream would be to eliminate those seams and clunky lenses that trap dirt and bugs, crack and leak light, and generally distract from the architecture. The ideal lighting would be sunlight pouring through the architecture into every interior space, with no light fixture clutter, just soft glowing light—think cove lighting.

The lighting designer/engineer focuses on the quality of light, enhancing the experience with vertical illumination (lighting walls and ceilings), creating soft, even light across the working plane, limiting glare, and of course, managing energy code and safety requirements.

On the flip side, the contractor simply wants fixtures that install easily. Fast, cheap, and “good enough” might well be their unofficial motto. There’s typically pushback on fixtures that take longer to install, costing more than they originally estimated. They sometimes create problems by substituting less-expensive, lower-performing fixtures in place of those that have been specified by interior or lighting teams—so simple installation should be a key consideration in the new product development process.

The building owner is looking for a bit of everything: stunning aesthetics, smooth installation, easy maintenance, energy efficiency (lower watts per square foot), and lower overall cost.

Maintenance teams have a similar mindset, and prefer low-maintenance fixtures and easy field replacement.

And finally, end users want a better experience: beautiful, soft light, simple, intuitive controls, and no glare. They want to enjoy the spaces where they work and play.

Where’s the Common Ground?

The quintessential illumination effect is subtle, with a soft, uniform, highly efficient glow

of light—like sunlight filtered through the structure into the architectural space. It has no seams or glare so the focus is on light, not light sources. It's energy efficient, simple to install, and easy to maintain. As humans, we are vertical creatures, so illuminating walls and ceilings is essential for avoiding depressing cave effects. Improved work environment has an impact on employee productivity, and research has shown even a 1-percent improvement in employee productivity has significant financial benefits.

These are exciting times. Here's what's currently trending in linear lighting:

- Optics (controlling light distribution)
- Miniaturization
- Organic form factors (curvilinear)
- Hidden light sources, which we will call "veiled ambient"
- Technology leaps from IoT to controls integration
- Tunable white or circadian lighting and tunable color

DRAMATICALLY IMPROVED OPTICS

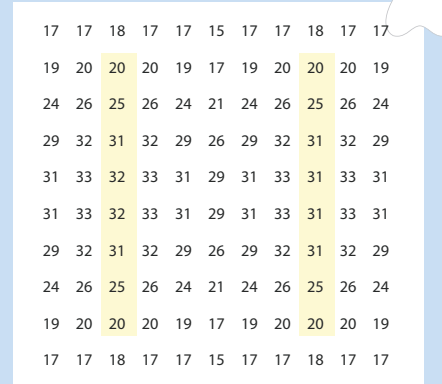
Statistics indicate that lighting is the biggest power drain in an office building, accounting for a mind-blowing 29 percent of the energy consumed.³ There's lots of talk about LED efficacy with organizations like Design Lights Consortium (DLC) driving energy rebates with their fixture listings, but efficacy is only part of the equation. The most efficient fixtures do not necessarily make the best or even good lighting, nor do they even lead to the most energy-efficient spaces. The end goal is using less energy in our workplaces and schools, and that can be partly achieved by controlling the light, directing it where it's needed, thereby lowering energy demands by using fewer fixtures.

We also need to consider the human part of the equation. Lighting is ultimately for our benefit, and when we enjoy our workplaces, we tend to be more productive. The Illuminating Engineering Society (IES) offers lighting criteria for making lighting safe, pleasant, and efficient, but if we only follow the letter of the law in meeting foot candle requirements and don't consider the light's actual effectiveness in its environment, we are missing the intention driving the IES requirements. When efficacy is the primary or sole consideration for evaluating the performance of LED luminaires, it undermines the power of control, and ultimately, the light distribution suffers, negatively impacting the quality of the user experience.

For example, consider open office and classroom lighting needs. Two main issues lie in problems caused by static light distribution that's either too high or too tight. If the distribution is too high, wasted light spills where it's not needed, essentially becoming "light pollution," causing glare and requiring more lumens to reach optimum light

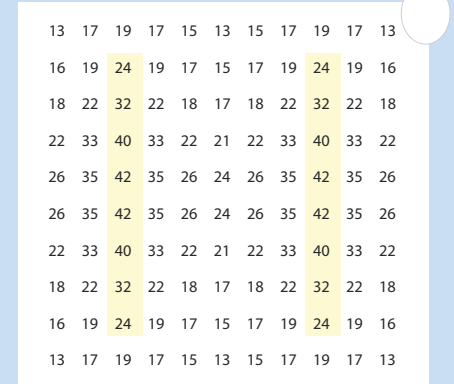
FIGURE 1
COMPARISON:
Batwing vs. Satin Lens Glow

Batwing: 1.65 Spacing Criteria



1.9 Max/Min 0.36 Watts/Foot 23 FC Avg. Work Plane

Batwing: 1.65 Spacing Criteria



3.3 Max/Min 0.36 Watts/Foot 24 FC Avg. Work Plane

Room application batwing vs. typical satin-lens linear fixture comparison

levels. However, if the distribution is too tight or contained, it results in hotspots beneath the uncontrolled sources, requiring more fixtures to even it out—ultimately resulting in escalated material and installation costs and higher site wattage.⁴

Think About Irrigating a Garden

To better understand the power of optics, consider a meticulously maintained botanical garden. Each variety of plant differs in the amount of water it requires, so a somewhat haphazard blasting from wide-open, full-circle sprinklers isn't going to cut it. There's an excessive amount of waste, and the plants aren't getting what they need. Instead, each sprinkler needs to be placed with precision (with appropriate nozzles chosen to control where the water is directed—quarters, halves, and fulls for lawns, thin side strips for planters, and bubblers or drip for trees, with the output calibrated for the particular plant it's watering, conserving water and giving each plant or tree the optimal amount of water, not too little or too much.

The same is true with light, both to lessen the amount of light wasted and to improve the human experience, whether that be even distribution over workspaces or selectively focused to enhance the drama of the space's architectural features (walls and ceilings) with asymmetric and cove lighting.

Historically, optic design was achieved for fluorescent lights with the use of clunky mechanical kickers or a one-size-fits-all optic film with mixed results, often resulting in big efficiency drops and poor control. Now, with tiny LED light sources, light can be more controlled. Lens refractor technology shapes light in new and powerful ways while maintaining high

levels of efficacy. Developed by lighting physics gurus and engineering wizards, this design coup has transformed the lighting experience. Lenses are no longer simply frosted acrylic. They can be engineered to map each ray of light to create more precise illumination patterns in the desired shape: batwings for open office, and asymmetric wall washes and grazes for vertical surfaces.

BATWING FOR OPEN OFFICE AND CLASSROOM LIGHTING

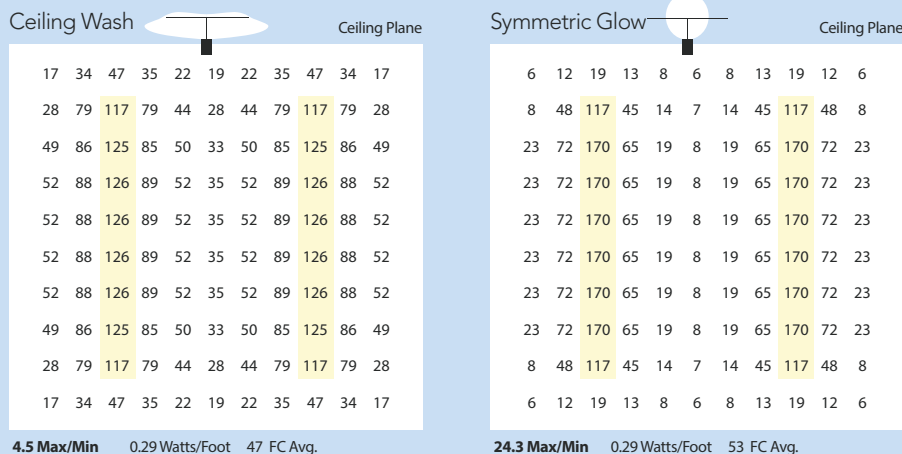
Often, office lighting is poorly designed with uneven distribution of light. There's too much light directly below fixtures and not enough in between them. This is because most linear and troffer fixtures distribute light in a narrow ellipse shape, where the batwing shape is far more ideal, distributing light more evenly across the working plane. Batwings also allow for wider spacing of fixtures. Eight-foot or 10-foot spacing between linear fixtures has been the norm for decades, but batwing distributions allow for 14 feet or even 16 feet between fixtures.

That extra 4 inches in the spacing results in about a 30 percent savings in fixture and installation costs in large open office or classroom spaces, with similar energy savings as well. First-generation LED batwing lenses had unattractive technical looks, but new laser-engraved batwing lenses are far more aesthetically pleasing, with the soft, smooth frosted look of typical open office lighting. Batwing distributions also reduce eye strain since minimal light is thrown up into the glare zone (above 65 degrees where light reflects off shiny computer screens).

Figure 1 shows a foot candle comparison. A foot candle is a measurement of light intensity and

Image courtesy of Prudential Lighting

FIGURE 2
COMPARISON
Ceiling Wash vs. Symmetric Glow



Ceiling wash room application vs. typical indirect glow comparison

is defined as the illuminance on a 1-square-foot surface from a uniform source of light. The wide, even distribution of light from batwing optics allows for wider spacing between fixtures than typical LED satin lens linear fixtures, while still producing a more uniform glow across the work plane (indicated by the space inside the gray bars). These fixtures are spaced 12 feet apart. The batwing has much more even light distribution than typical linear fixtures with satin lenses, as can be seen by the foot candle distributions and Max/Min in the lower left (a lower Max/Min is better).

Notes:

- 3,500 K at 4.5 watts/foot direct only
- 12-foot spacing between fixtures
- 9-foot ceiling
- Foot candles at working plane
- 0.9 LLF

Note: while batwing distributions are ideal for open offices or classrooms, or individual offices, they lose effectiveness with high cubicle walls that block the light.

Uniform Ceilings: Indirect Extreme Batwings or Ceiling Washes

The 1990s computer revolution brought about the evolution of indirect illumination. Bouncing light off ceilings and walls creates less glare on shiny screens and veiling reflections on paper tasks. However, LED lighting took a small step backward with tiny LED arrays pointing too much light directly above the light fixtures and not enough across the ceiling plane, leading

to stripes along ceilings. What’s the solution? Wide, even, indirect light, extreme batwings, or ceiling washes with broad, low-angle beams casting wide, indirect uplight and creating beautifully uniform ceilings with minimal glare. Ceiling wash optics also allow for linear fixtures to be installed closer to the ceiling. Eighteen to 24 inches is typically recommended, and a good ceiling wash will illuminate ceilings far more evenly compared with generic indirect LED lighting. Ceiling washes not only reduce glare, but they also reduce the cave effect and provide a more comfortable vertical illumination (mimicking the outdoors).

Figure 2 shows a comparison of a linear indirect ceiling wash optic vs a typical LED indirect fixture with a glow of light that often creates zebra-like stripes on the ceiling—way too bright above the fixture and too dark in between fixtures. Ceiling wash optics offer a significantly more even glow across the ceiling (indicated by the space between the gray bars indicating linear fixtures). Ceiling washes provide far lower variation in light levels than typical symmetric glow fixtures. For comparison, see the dramatically different Max/Min range at the lower left of each chart.

Notes:

- 3,500 K at 4.5 watts/foot indirect only
- 14-foot spacing between fixtures
- Fixtures hung 18 inches below ceiling
- Foot candles on ceiling plane
- 0.9 LLF

More Control: Adjusting Direct and Indirect Independently

Some direct/indirect fixtures have LED arrays installed horizontally to achieve a ceiling wash effect but do not allow users to control direct and indirect light separately. When occupants dim the direct lighting, the indirect dims as well. For AV projection and other applications, separate control is preferred, where direct lighting can be dimmed or turned off while the uplight is left on to illuminate the space enough for note-taking. Separate dimming is also desirable to adjust for daylight changes, saving energy and vastly improving the user experience.

Vertical Illumination Creates a More Robust Palette

As vertically oriented creatures who are accustomed to our primary light source (the sun) creating bright skies, we desire vertical illumination indoors as well. Unfortunately, budgets seldom allow for the involvement of lighting designers trained to create meticulously lighted spaces where wall/ceiling illumination is a key component. These new optics-driven, energy-efficient options from wall washers to grazers provide far more visual continuity, particularly in open office environments. Depending on the need, lenses are crafted to spread the light in a wider distribution or concentrate it to highlight a focal point, all achieving uniform illumination without the striations and hot spots of the previous iterations.

Wall Wash Bathes Walls with Light, Highlighting Artwork

Our workplaces need vertical illumination to bring our eyes up, but asymmetric lighting has typically been highly inefficient, difficult to control and expensive. The wall wash is an application that enhances artwork or simply the wall itself with a dimensional effect, drawing the eye to the focal point with just the right amount of highlight, while flattening the appearance of the wall.

Wall washes are typically placed 18 inches to 4 feet away from a wall surface; in some cases with taller ceilings, they are a bit further away from the wall. It’s a subtle effect that piques visual interest without disrupting the balance of the vertical plane.

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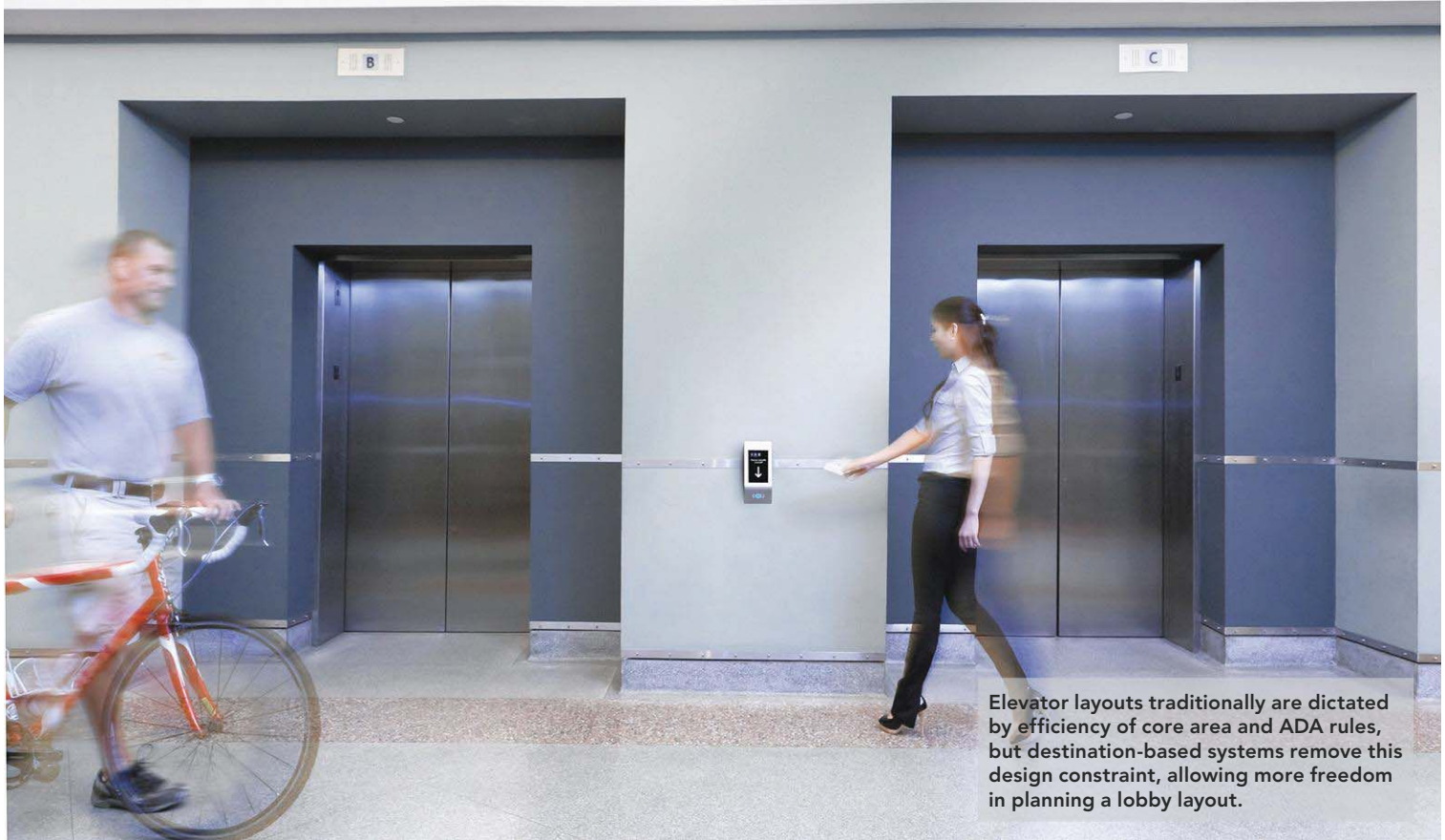
Rob Empfield is a marketing professional and continuing education presenter at Prudential Lighting engaged in advancing the specification process for the lighting industry.



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Photo courtesy of Schindler Elevator Corporation



Elevator layouts traditionally are dictated by efficiency of core area and ADA rules, but destination-based systems remove this design constraint, allowing more freedom in planning a lobby layout.

Cutting-Edge Elevator Technology

Elevating architecture with destination dispatch controls

Sponsored by Schindler Elevator Corporation | By C.C. Sullivan

Over the past decade, new techniques in controlling elevators have radically changed thinking about how building mobility is organized and operated. For architects, these advances are essential knowledge for designing and renovating any buildings that rely on elevators for moving their occupants and visitors. The most important advancement in recent years is destination control. About 20 years ago, destination control systems were commercialized based on this approach. Not only did the controls reduce wait times and traveling times by up to 30 percent, but they also allowed for new techniques in core layouts, elevator stacking, and overall building designs.

From the 1940s to today, elevator call systems have operated on a single, uniform principle: the up-and-down hall push button. These systems are known today as conventional technology. Used to guide elevators and tell them which floor to visit next, this approach is familiar to anyone who regularly rides an elevator. The essential logic is:

- A car will continue traveling in the current direction as long as there are remaining requests in that direction.

Continues at ce.architecturalrecord.com

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

CONTINUING EDUCATION



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Learning Objectives

After reading this article, you should be able to:

1. Discuss the context for developments in elevator technology, with particular emphasis on controls.
2. Describe new destination-based dispatching technology, and how it is installed and implemented in both new construction and modernization projects.
3. List the energy-efficiency implications and other operation and efficiency benefits of destination-dispatch elevator controls and similar optimization techniques.
4. Explain how destination dispatch benefits specific building typologies, citing case studies.

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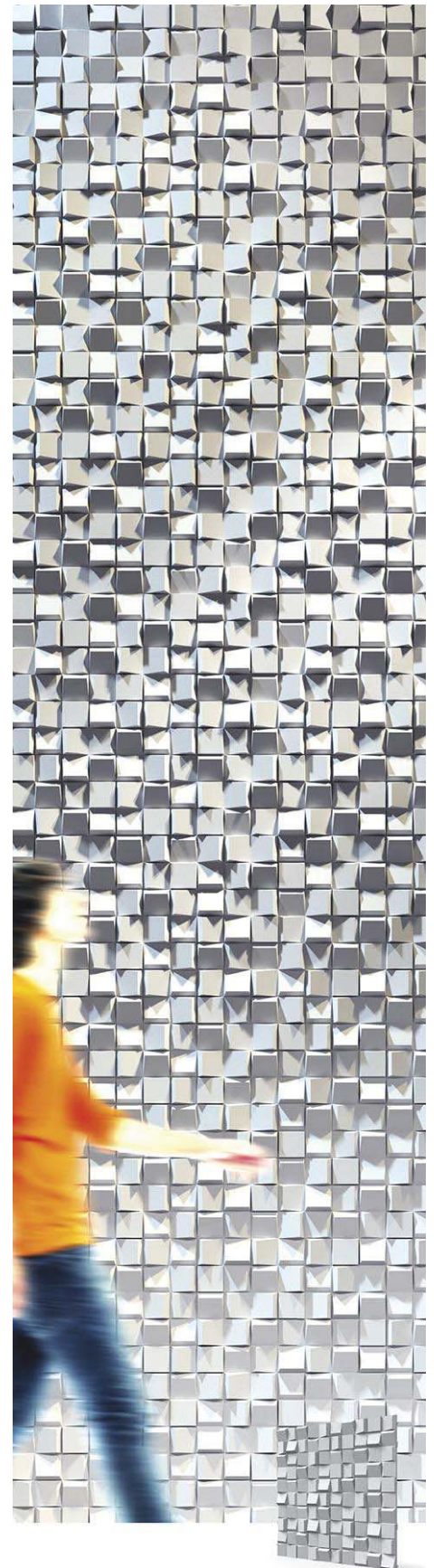
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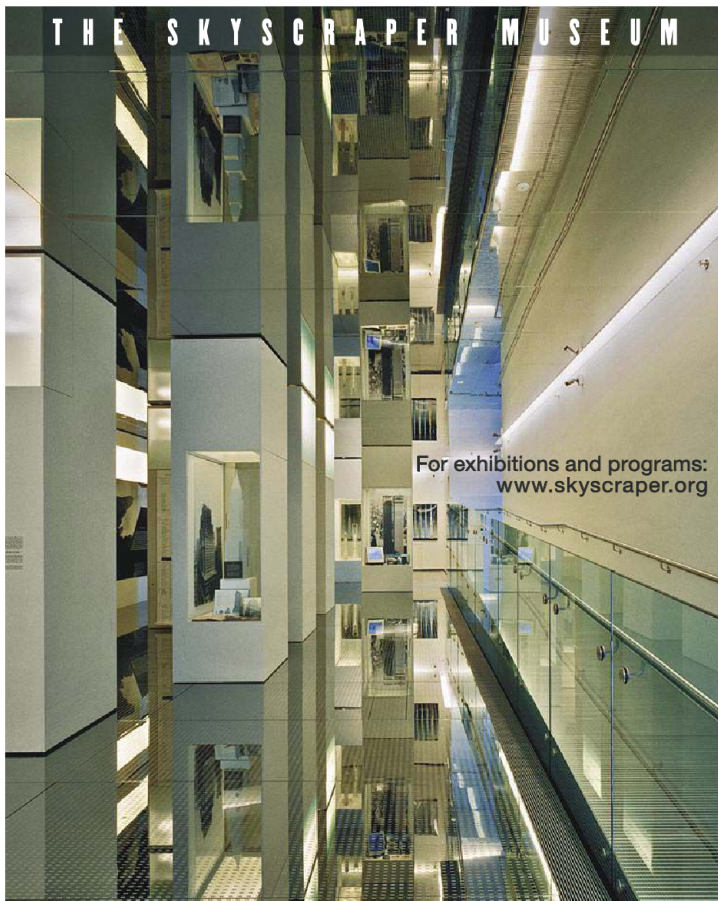
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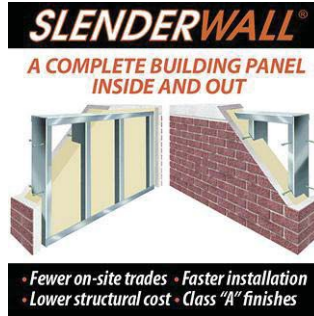
- BioInnovation Center, New Orleans, LA
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Performance Data

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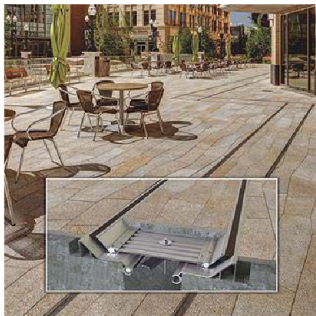
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New and Upcoming Exhibitions

Sonic Arcade: Shaping Space with Sound

New York City

August 22, 2017–February 11, 2018

This multicomponent exhibition showcases immersive environments, interactive installations, and performing objects that explore the translation of sound into substance. Featuring Audiowear, a jewelry line designed by Arjen Noordeman and Christie Wright, the exhibition studies how abstract auditory information can be transformed into sensory experiences. At the Museum of Arts and Design. Visit madmuseum.org.

Chicago Architecture Biennial

Chicago

September 16, 2017–January 7, 2018

The second edition of the Chicago Architecture Biennial features works by over 141 architects and designers that fall under the theme of “Make New History.” Consisting of six community anchor exhibitions, two special project sites, installations, performances, talks, and films, the Biennial is a citywide event that encourages visitors to explore Chicago with an architectural eye. Visit chicagoarchitecturebiennial.org.

Found in Translation: Design in California and Mexico, 1915–1985

Los Angeles

September 17, 2017–April 1, 2018

This exhibition accompanies a book about design dialogues between California and Mexico. The show will focus on four main themes—Spanish colonial inspiration, pre-Hispanic revivals, folk art and craft traditions, and modernism—and explore how modern and anti-modern design movements defined both locales throughout the 20th century. At the Los Angeles County Museum of Art. For more information, visit lacma.org.

Scaffolding: A Social Framework

New York City

September 28, 2017–January 18, 2018

This exhibition examines the history and potential of a commonly overlooked type of structure: scaffolding. Shohei Shigematsu of OMA will fill the Center for Architecture with scaffolding, demonstrating its ability to transform a space and allowing visitors to explore its flexible qualities. For more information, visit cfa.aiany.org.

Ongoing Exhibitions

Zaha Hadid Architects: Unbuilt

London

Through August 18, 2017

This exhibition features unrealized designs by Zaha Hadid Architects that demonstrate the firm’s drive for innovation and experimentation. Developed collaboratively with engineers and special consultants, these designs showcase the holistic approach the practice employs to bring their nature-inspired designs to life. At the Zaha Hadid Gallery. Visit londonfestivalofarchitecture.org.

Wright on the Walls

Washington, D.C.

Through September 4, 2017

In honor of Frank Lloyd Wright’s 150th birthday, the National Building Museum is transforming a gallery into an interactive, large-scale “coloring book” that invites visitors to add their own contributions to interpretations of Wright designs by local artists Scott Clowney and Vlad Zabavskiy. The gallery will be filled with ambient music inspired by what was played in Wright’s Taliesin studios. Visit nbm.org.

5x5: Participatory Provocations

New York City

Through September 9, 2017

This exhibition showcases 25 architectural models by 25 young American architects, curated by Original Copy’s Kyle May and Kevin Erickson. The projects take various approaches to popular issues, often adopting a stance on topics like our growing income gap, immigration, globalization, technology, surveillance, and power. At the Center for Architecture. For more information, visit originalcopy-nyc.com.

Timber City

Washington, D.C.

Through September 10, 2017

This exhibition explores the latest methods of timber construction, which have led to strong, fire-resistant, and sustainable interpretations of the allegedly antiquated material. Curated and designed by the founding partners of Boston-based architectural-design firm ikd, the exhibition highlights several U.S.-based projects that showcase innovative timber technology like cross laminated timber. This progressive material plays an essential role in moving toward reducing carbon emissions and building more sustainable cities. At the National Building Museum. For more information, visit nbm.org.

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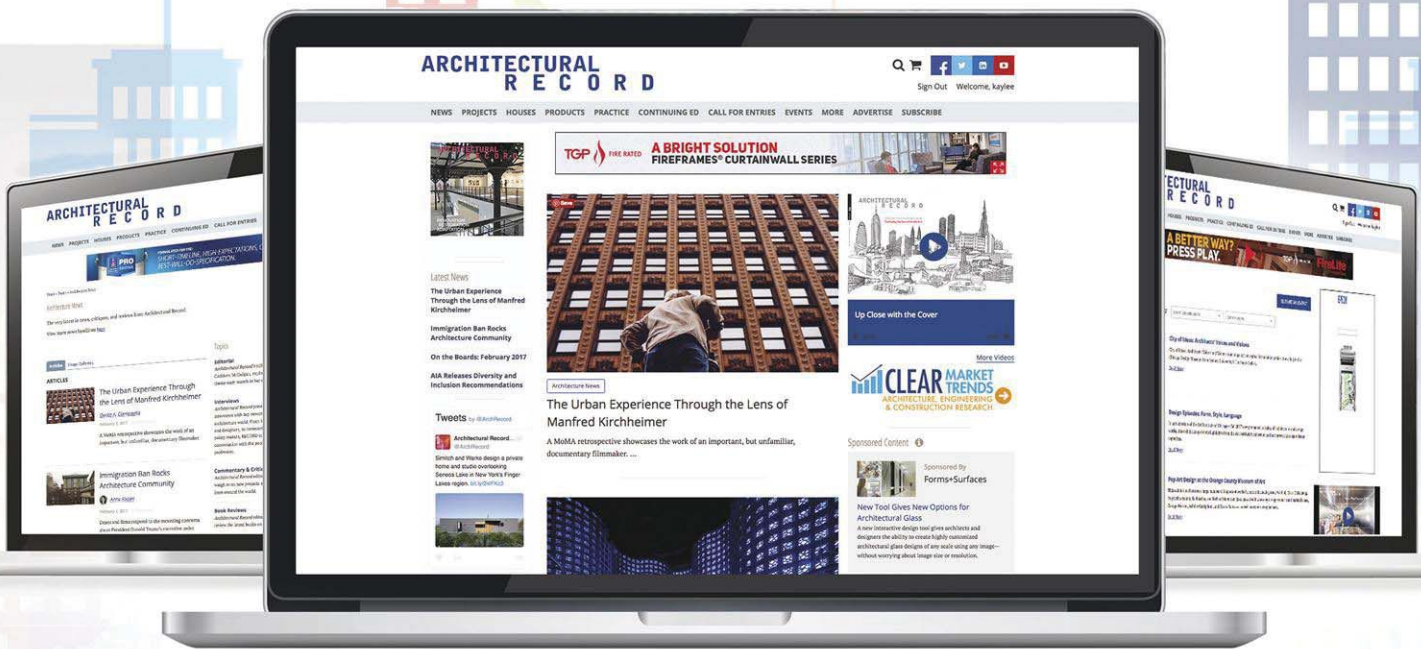
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Frank Lloyd Wright at 150: Unpacking the Archive

New York City

Through October 1, 2017

Marking the 150th anniversary of the American architect's birth, this exhibition at the Museum of Modern Art comprises approximately 450 works made from the 1890s through the 1950s, including architectural drawings, models, building fragments, films, television broadcasts, prints, furniture, tableware, textiles, paintings, photographs, and scrapbooks, a number of which have rarely or never been publicly exhibited. Visit moma.org.

Ettore Sottsass: Design Radical

New York City

Through October 8, 2017

This exhibition brings together a diverse collection of works by Italian architect and designer Ettore Sottsass, including architectural drawings, interiors, furniture, machines, ceramics, glass, jewelry, textiles, painting, and photography. Works that inspired Sottsass's prolific career are also on view. At the Met Breuer. For more information, visit metmuseum.org.

Noguchi's Playscapes

San Francisco

Through November 26, 2017

This exhibition, organized by the Museo Tamayo for the San Francisco Museum of Modern Art, will revisit artist Isamu Noguchi's designs for several playgrounds and stand-alone play structures. Observing that playgrounds offer a physical and social interaction not typically seen in a museum, Noguchi designed public spaces where visitors could physically and actively engage with art. Through models, sketches, set designs, and archival images, the exhibition will show Noguchi's visions for new experiences of art, education, and humanity through play. For more information, visit sfmoma.org.

Lectures, Conferences, and Symposia**METROCON17**

Dallas

August 10–11, 2017

METROCON is a regional trade show, exposition, and conference that connects interior designers, architects, real-estate professionals, students, and other members of the design industry. The two-day event includes keynote speaker presentations, networking

events, and student programming. At the Dallas Market Hall. For more information, visit metrocon.info.

IDSIA International Design Conference 2017: Design IS Business

Atlanta

August 16–19, 2017

Industrial design strives to improve mass-manufactured products through design. Whether the topic be digitization, electrification, autonomy, or connectivity, industrial designers attempt to surmount barriers, leveraging them as elements. This conference formally brings the strategic advantage of ID into the business world and will feature speakers who sit at the intersection of design and business. At the Atlanta Marriott Marquis. Visit idsa.org.

Advancing Computational Building Design 2017

San Francisco

August 28–30, 2017

This conference will teach attendees how to set up a computation team, train a nontechnical staff, and integrate computation into the traditional workflow. Visitors will gain guidance on how to apply computational design in the most advanced and efficient ways possible. At the Sheraton Fisherman's Wharf Hotel. Visit advancing-computational-design.com.

Healthcare Facilities Symposium and Expo Austin*September 18–20, 2017*

This multidisciplinary event brings together competitors, clients, and colleagues to improve the physical spaces of health care. The expo will feature keynote speakers, health-care provider panels, and a brand-new series of sessions hosted by the National Organization for Arts and Health (NOAH). At the Austin Convention Center. For more information, visit hcarefacilities.com.

Mundaneum XI 2017: re_THINKING Architecture and Cities in the Americas

El Salvador

September 25–27, 2017

A continuation of last July's X Mundaneum in Costa Rica, this event will serve as a platform to discuss the current state of architecture and cities in the Western hemisphere and explore new visions of the built environment. Speakers will include Mónica Bertolino, Michael Sorkin, and CUAC Arquitectura. At the National Theatre of San Salvador. Visit Mundaneum Architecture Movement's Facebook page.



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UPCOMING DATES & LOCATIONS

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World Design Summit

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

Competitions**Planetarium: The Experience of Space***Submission deadline: August 11, 2017*

Eleven magazine's latest challenge invites those working in creative fields, in any country, to imagine a new typology of planetariums, one that reflects today's renewed interest in space as well as an emerging understanding of our world. Visit eleven-magazine.com.

Future House: Micro House*Submission deadline: August 15, 2017*

Organized by Future House, this competition seeks a design for a microhouse with a floor plan no larger than 500 square feet. The house need not have a specific site location; participants may customize landscape design and site planning to their house. For more information, visit future-house.org.

SHOWING—Alternative Designs for Museums*Submission deadline: August 28, 2017*

This competition aims to develop a design proposal for new ways to experience the museum. Participants are urged to combine design tools and considerable programmatic innovation to conceptualize a device, piece of furniture, interior design project, pavilion, building, or urban plan that is unconventional. For more information, visit nonarchitecture.eu.

2017 Record Products*Submission deadline: September 1, 2017*

For RECORD's 2017 Products Awards Program, manufacturers and designers may submit products introduced in the U.S. between September 2016 and September 2017. A panel of architects and specifiers will judge the entries on criteria such as innovation, functionality, and aesthetics. Winners will be featured in the December 2017 issue. Visit architecturalrecord.com.

Tiny House Design Competition*Submission deadline: September 1, 2017*

The online magazine *Volume Zero*, which celebrates the concept of simple yet resourceful

living, is inviting contestants to design innovative houses with an area smaller than 250 square feet. Spaces should include a living area, sleeping area for two, cooking and dining area, toilet, and workspace, and should consider the relation between exterior and interior spaces. Visit competition.volzero.com.

Duravit Designer Dream Bath Competition*Submission deadline: September 8, 2017*

For its fifth year, this competition invites designers and architects to reimagine their own bathrooms to feature a range of Duravit's top collections and design solutions, Luv and DuraSquare. The competition also features a Built category, in which designers and architects may submit their completed residential, commercial, small-space, or hospitality projects featuring any Duravit products. For more information, visit duravit.us.

AIANY COTE Awards*Submission deadline: September 15, 2017*

The AIA New York Committee on the Environment established the AIANY COTE Awards in 2014 with the goal of redefining how design excellence is evaluated, sharing new thinking and techniques, and inspiring creative thinking about design. This year's awards will recognize achievement in designing results-oriented buildings in the urban context. Visit aianycoteawards.org.

Beyond the Wall: A Manifesto for the Upcoming World*Submission deadline: September 15, 2017*

This competition asks candidates to select an existing border, wall, or boundary, and design a solution to reactivate the intensity of the space. A total of five scholarships will be awarded, each covering a different percentage of the total tuition fee of the master's program in Urban Vision & Architectural Design of Domus Academy. For more information, visit competition.domusacademy.com.

Amber Road Trekking Cabins*Registration deadline: September 27, 2017*

The Amber Road Trekking Cabins architecture competition, in partnership with the Latvia Nature Conservation Agency, is calling for designs for a series of cabins to be situated along a new hiking path that will span the full length of Latvia. The Amber Road path will run along the Baltic Sea beaches, allowing hikers to traverse the entire country. Visit amberroadtrekkingcabins.beebreeders.com.

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



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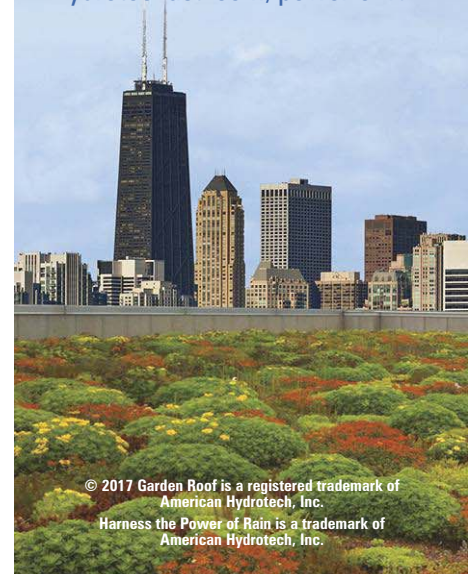
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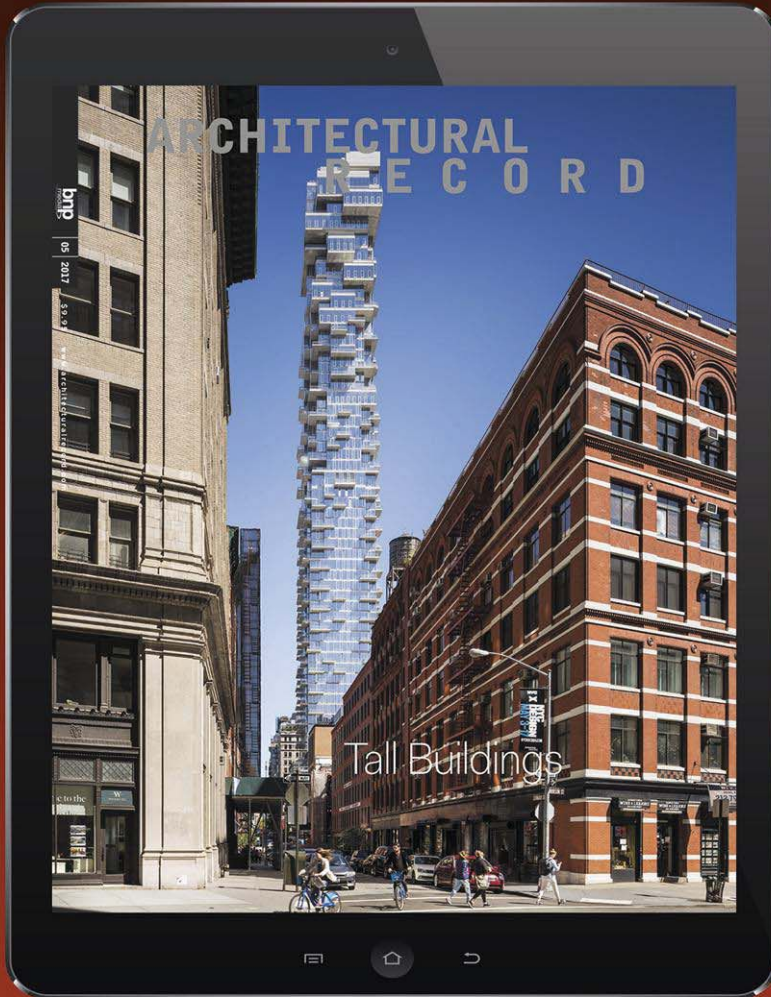
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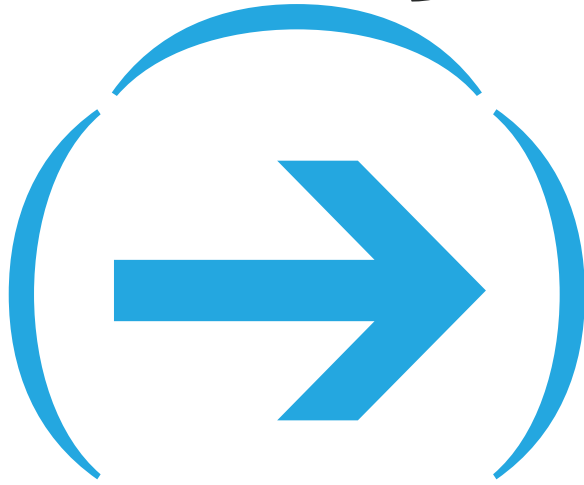
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2017 CALL FOR ENTRIES Design Vanguard



The editors of ARCHITECTURAL RECORD are looking for the best emerging architecture firms from around the world to feature in our **2017 Design Vanguard** issue. Although we do not have an age limit, we try to select architects and designers who have had their own practices for less than 10 years. Winners will be featured in the December 2017 issue.

There is no fee to enter. For full details and to submit your entry, visit: architecturalrecord.com/call4entries.

Submissions are due September 2, 2017.

2017 CALL FOR ENTRIES Record Products



The editors of ARCHITECTURAL RECORD are currently accepting submissions for the **2017 Record Products** competition.

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

between September 2016 and September 2017. A panel of architects and specifiers will judge the entries on criteria including innovation, functionality, and aesthetics. Winning products will be featured in the December 2017 issue.

The fee is US\$25 per entry. For full details and to submit your entry, visit: architecturalrecord.com/call4entries.

Submissions are due September 1, 2017.


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EACH YEAR, the Tate Britain, in London's Westminster neighborhood, commissions a British artist to create a site-specific installation in its 1937 Duveen Galleries—a 300-foot-long Neoclassical hall designed by American architect John Russell Pope and English architects Gilbert H. Jenkins and W.H. Romaine-Walker. The latest piece, by conceptual artist and sculptor Cerith Wyn Evans, is composed of over a mile of white neon tubing—Wyn Evans's signature medium—arranged in straight, curved, and spiraling forms, and suspended from the ceiling at over 1,500 points. Titled *Forms in Space . . . by Light (in Time)*, the work echoes the repetitions and variations of musical notations as it unfolds across three sections of the hall. "It encourages visitors to orient themselves within an environment full of potential meanings and connections," says assistant curator Elsa Coustou. "It could even be viewed as a celestial map." The exhibition, which opened in March, will be on display until August 20. *Alex Klimoski*

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