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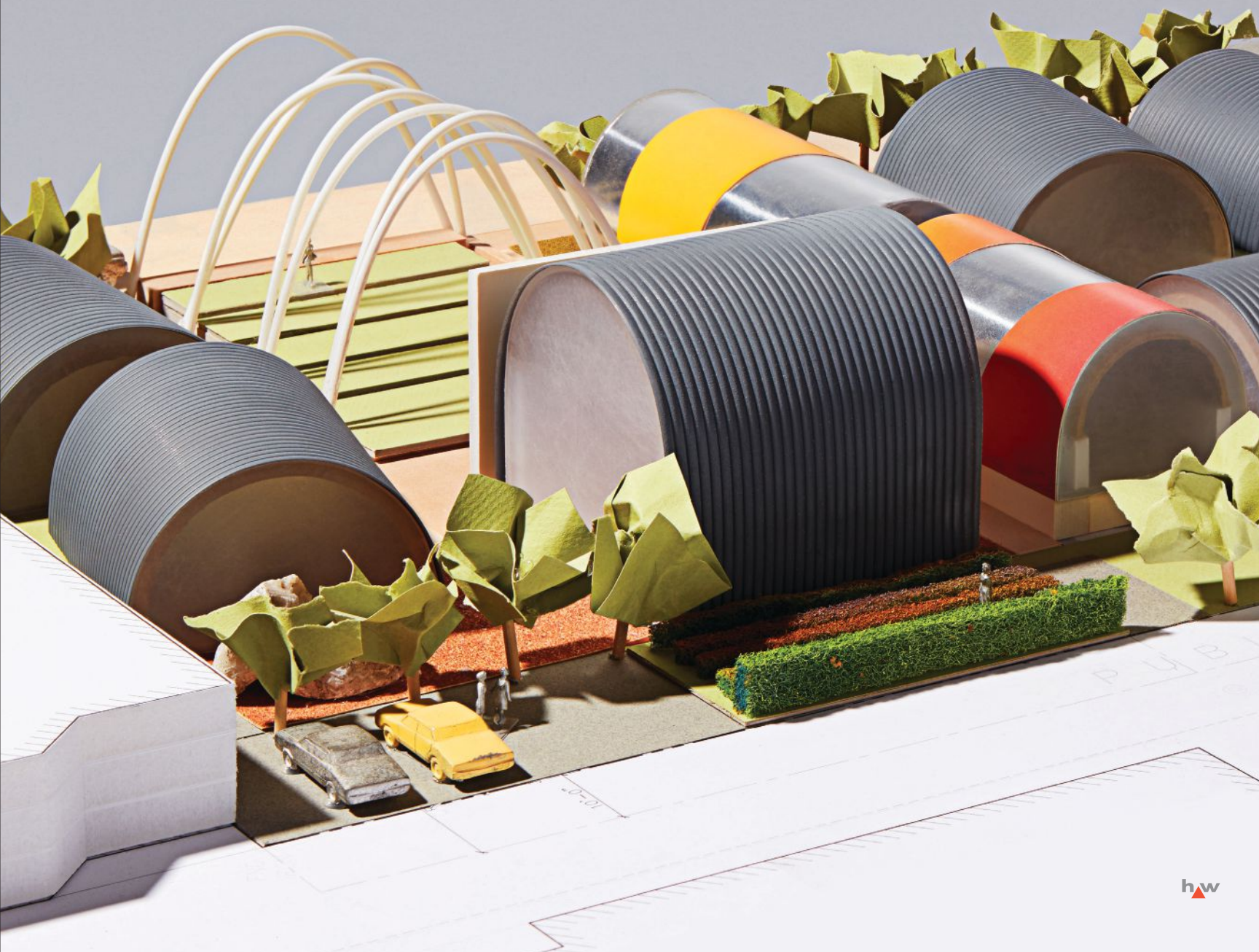

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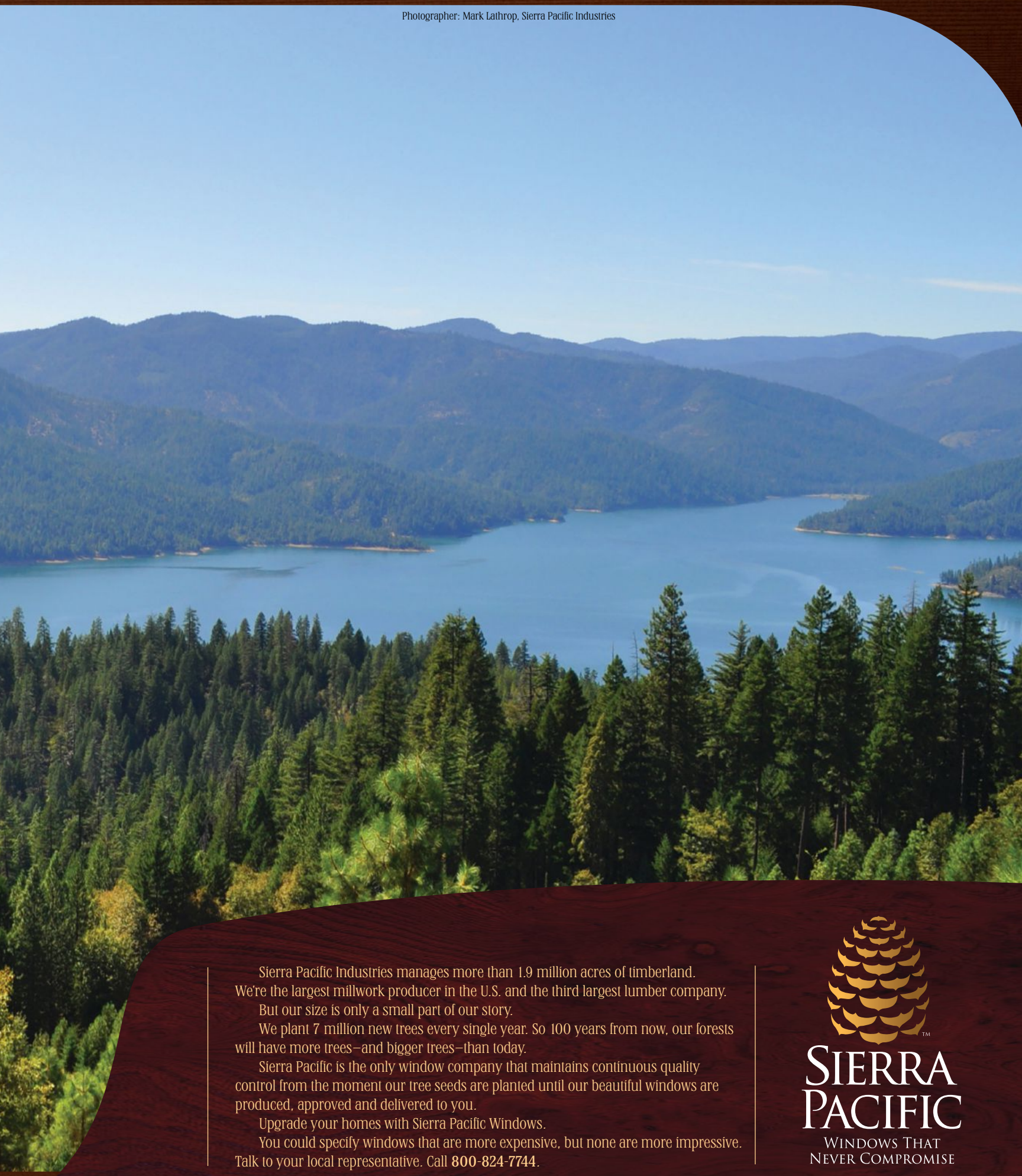

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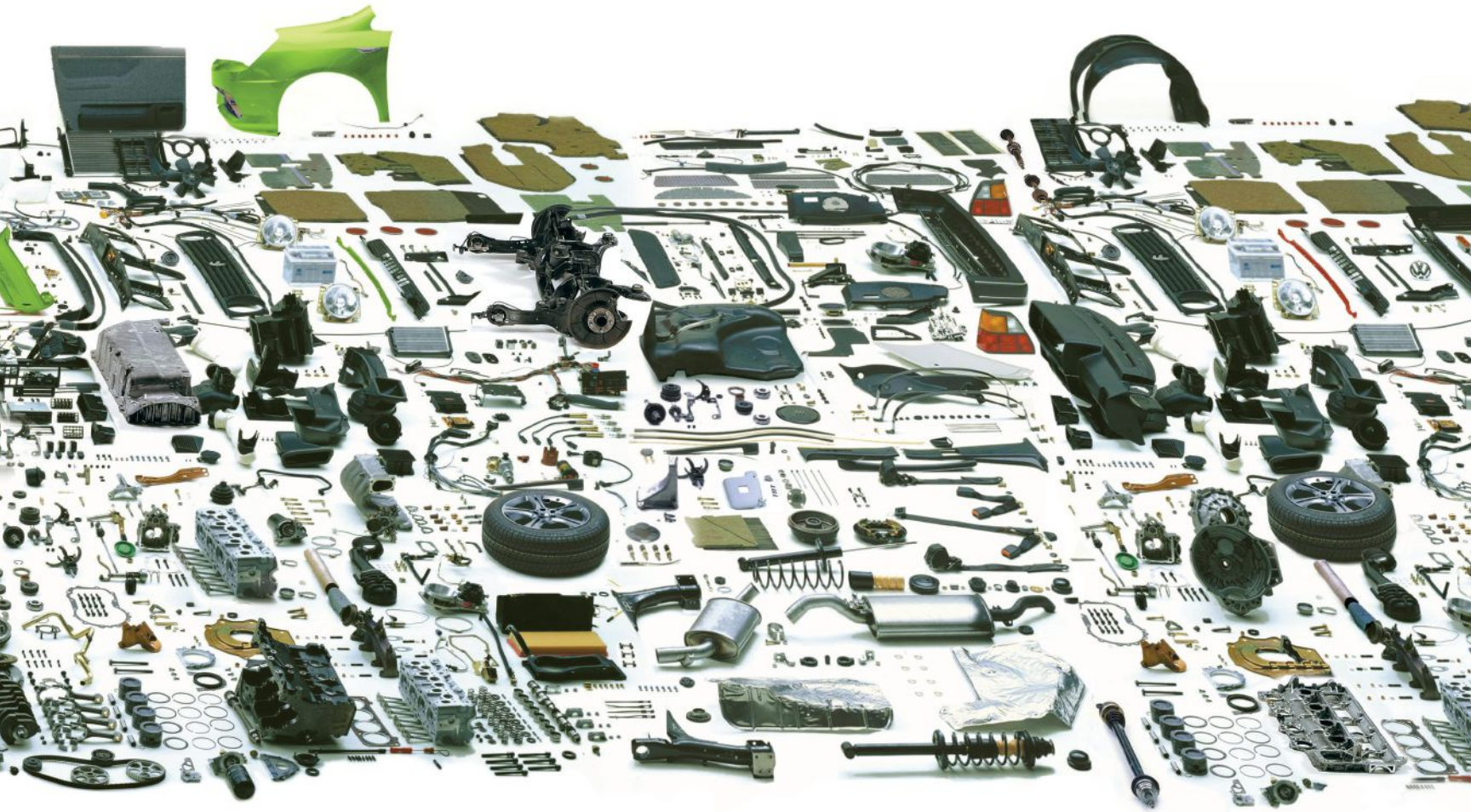

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Volume 106, number 2. February 2017.
On the cover: True North in Detroit by EC3, which received an honorable mention in this year's Progressive Architecture Awards. Photo by Dimitri Newman.

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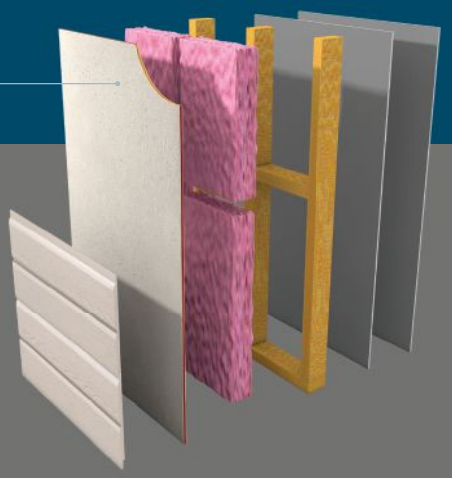

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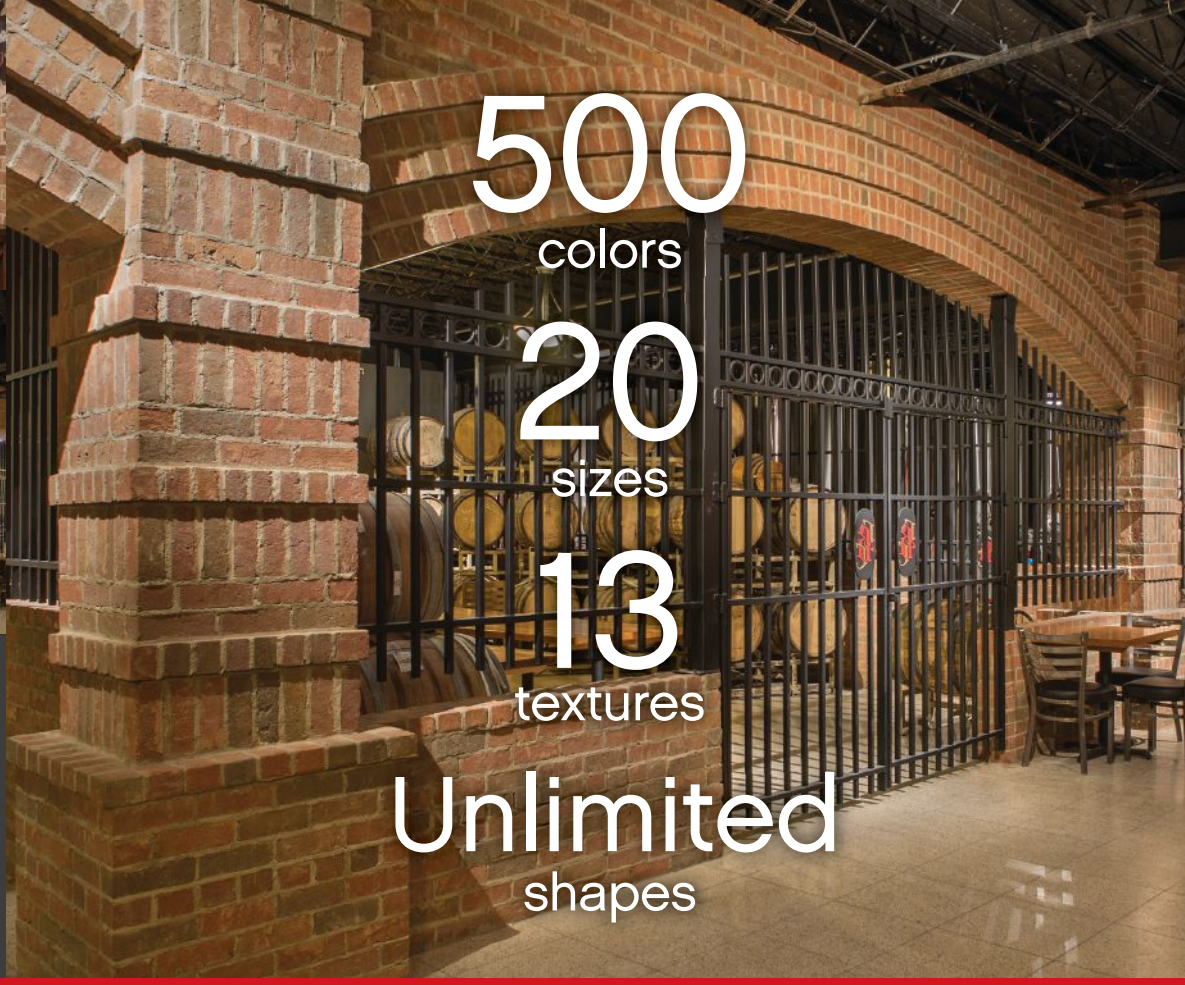

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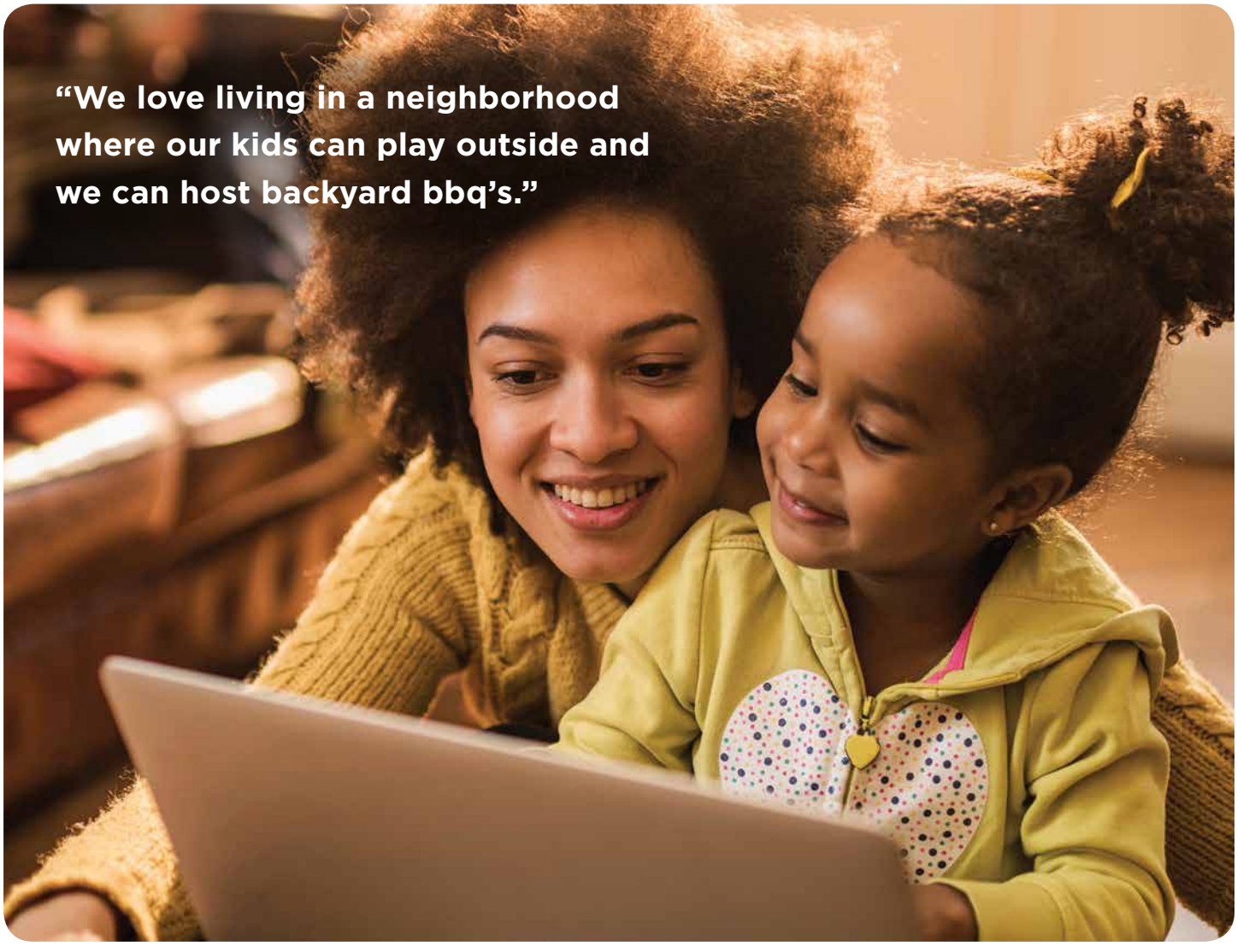

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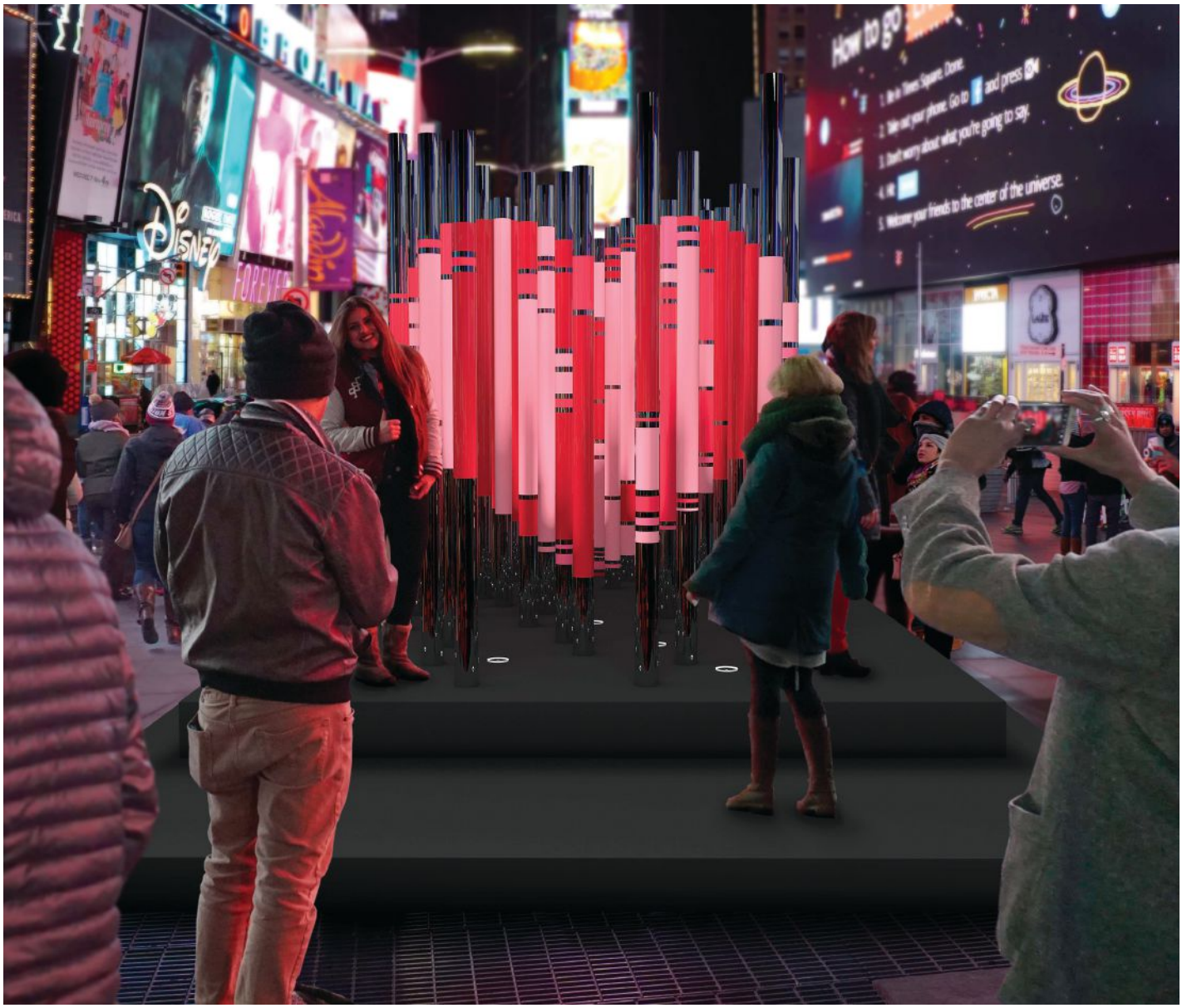

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Love Thy Neighbor

The annual Times Square Valentine Heart installation is back, with the Office for Creative Research's "We Were Strangers Once Too." The romance symbol is also a data graphic: Pink and red hues on 33 layered metal poles correspond to immigrant populations in New York. According to the firm's website, the project "uses local open data to make our city's immigrant populations visible and centered (figuratively, and literally, in Times Square) in the conversation, asserting that these populations are to be protected, championed, and loved." The installation runs Feb. 7 through March 5. —SARA JOHNSON

> *Read more about "We Were Strangers Once Too" at bit.ly/TimesSquareHeart2017.*

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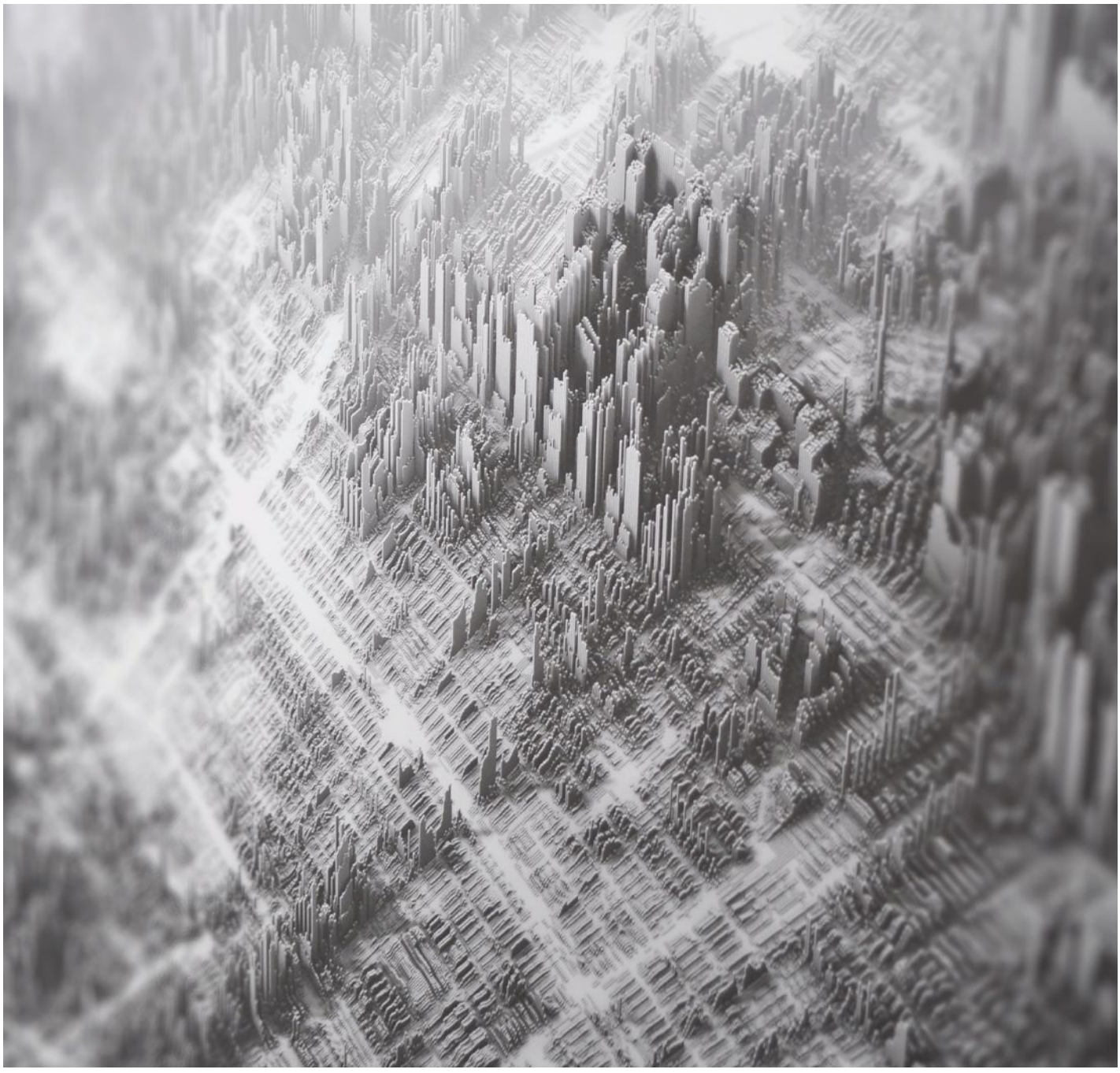

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Not-So-Abstract Art

In his self-published book *The Atlas of Gentrification* (2016), Austrian graphic designer Herwig Scherabon highlights urban issues tied to gentrification—such as income disparity, evictions, and racial inequality—with seemingly abstract infographics. His goal with these data visualizations/illustrations is to contextualize and combine complex information, as seen in his prints of Chicago, Los Angeles (above), and New York City, which show income inequality represented by the height of blocks set on the city grids. The grayscale 3D blocks paint a devastating picture of the imbalance in districts within the same city. —SELIN ASHABOGLU

> *To read more about Scherabon's book, visit bit.ly/ScherabonTechRoundup.*


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Introducing Hamburg's New Concert Hall

Fifteen years after Herzog & de Meuron designed the initial concept for the Elbphilharmonie, the 1.3 million-square-foot concert hall in Hamburg, Germany, opened last month with performances by the orchestra and ensemble in residence. In November, ARCHITECT contributor Joseph Giovannini noted: "The architects have a long history of liking the 'box,' of keeping it closed, and they kept this one intact, choosing to add on top and basically extend it by extruding the corners and planes of the façades to the box above. Working within the upper shell, they carved interior urban spaces out of what was basically a solid." —SARA JOHNSON

> *Read more of Giovannini's review of the Elbphilharmonie at bit.ly/ElbphilharmonieGiovannini.*

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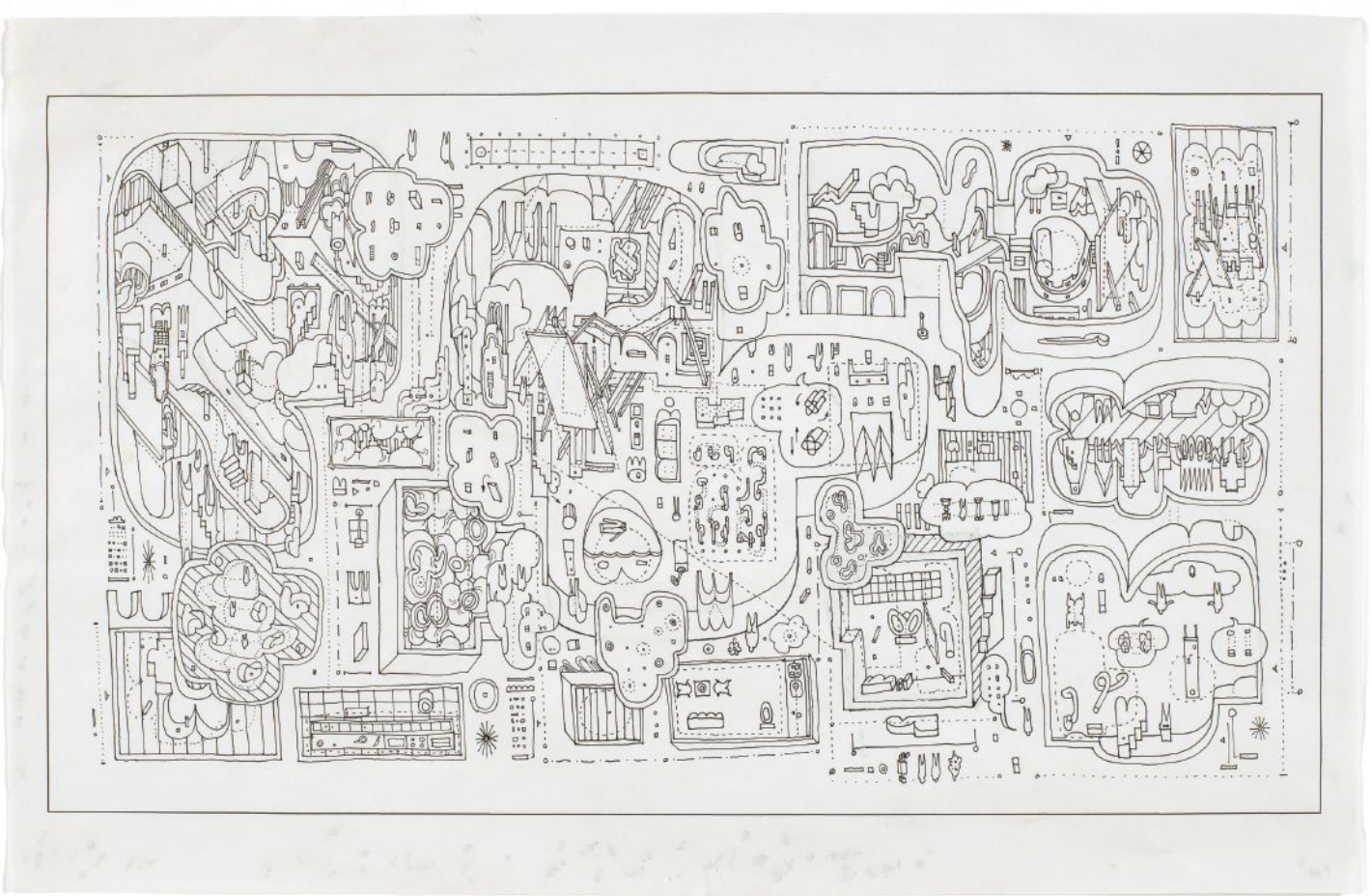

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A New Model of Architecture

"Bureau Spectacular imagines other worlds and engages the design of architecture through telling stories," the Los Angeles studio says about its work. From Feb. 11 through Aug. 13, the San Francisco Museum of Modern Art will host an installation based on one of these imaginings, a drawing titled "insideoutsidebetweenbeyond" (2014) by the studio's founder Jimenez Lai, which the museum acquired about two years ago. "This installation at SFMOMA will continue a series of tower proposals that explore certain organizational diagrams in architectural section," Lai says. —SARA JOHNSON

> *Read more about "Bureau Spectacular: insideoutsidebetweenbeyond" at bit.ly/SFMOMABureauSpectacular.*

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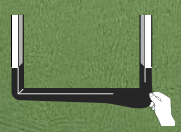

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Winter Lifeguard Stations, Eight Ways

Now in its third year, Toronto's Winter Stations Design Competition, established with the city by local firms RAW Design, Ferris + Associates, and Curio, encourages visits to Lake Ontario's East End beach in a season not known for beach-going: The waterfront installations run from Feb. 20 through March 27. Five winning proposals will transform lifeguard stands, as in "Collective Memory" by Mario García and Andrea Govi (above), and will be joined by three pieces from local college students. This year's theme, "Catalyst," asked participants to meditate on the idea of their designs as incentives for change. —VICTORIA CARODINE

> *Learn more about the winning entries in the Winter Stations Design Competition at bit.ly/WinterStations2017.*

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Best Practices: Applying Crowdsourcing to Architecture

TEXT BY BRIAN LIBBY

Architects have always been researchers, interviewing clients as well as seeking new materials and design methods. But as architecture has become more sophisticated and technology-driven, so too has the investigative process. In an effort to gather client and community feedback, designers are increasingly turning to social media, engaging with consultants, and relying on surveys. Below, several architects share their different approaches to crowdsourcing data to ensure the satisfaction of their ultimate client: the occupants.

Pre-Design Consulting

When Oregon Health & Science University (OHSU) received a historic $1 billion donation in 2015 to build a new cancer research center, leaders of the Portland medical school knew they wanted an innovative building. But before design could begin, Seattle's B+H Architects and Advance Strategy—an in-house pre-design workplace consultancy—was brought in to crowdsource specifics on the researchers' needs.

> "Designers are not especially good at going back to our clients and understanding the impact [of their work]."
>
> —Chris Lambert, vice president for workplace strategy, CannonDesign

B+H Advance Strategy began by studying healthcare architectural trends and shadowing OHSU's scientists to determine workplace habits and patterns of use in existing buildings. Their conclusions confirmed what the Advance Strategy team had suspected: Younger researchers were gravitating toward positions that were more tied to a desk. Because OHSU would be competing with tech companies to attract top talent, it would need to prioritize more dynamic seating spaces. "There was initially some pushback, but I think [our recommendation] impacted their thinking," says Advance Strategy director Bryan Croeni, AIA.

Employee Research

Crowdsourcing can also apply to collecting data for design activities. In 2013, Washington, D.C.–based Hickok Cole Architects introduced iLab, an in-house initiative that awards research grants to employees to foster company-wide engagement and innovation. "We wanted to allow people to pitch something they're inherently passionate about," says associate principal Elba Morales, ASSOC. AIA. "The most interesting thing is all these ideas are bottom-up."

Creating a Feedback Loop

Marc Kushner, AIA, a partner at New York–based firm Hollwich Kushner and a co-founder of the website Architizer believes crowdsourcing can help architects make smarter product and design choices.

"There's no feedback loop," Kushner says. "I just bought a whistle for my kettle and there were like 500 reviews online. But when I'm specifying windows and flooring and finishes—and putting my reputation on the line—I don't know if people like them or if they work well."

To combat this problem, Architizer is creating a new database where architects can rate materials, just as one would for movies or consumer goods.

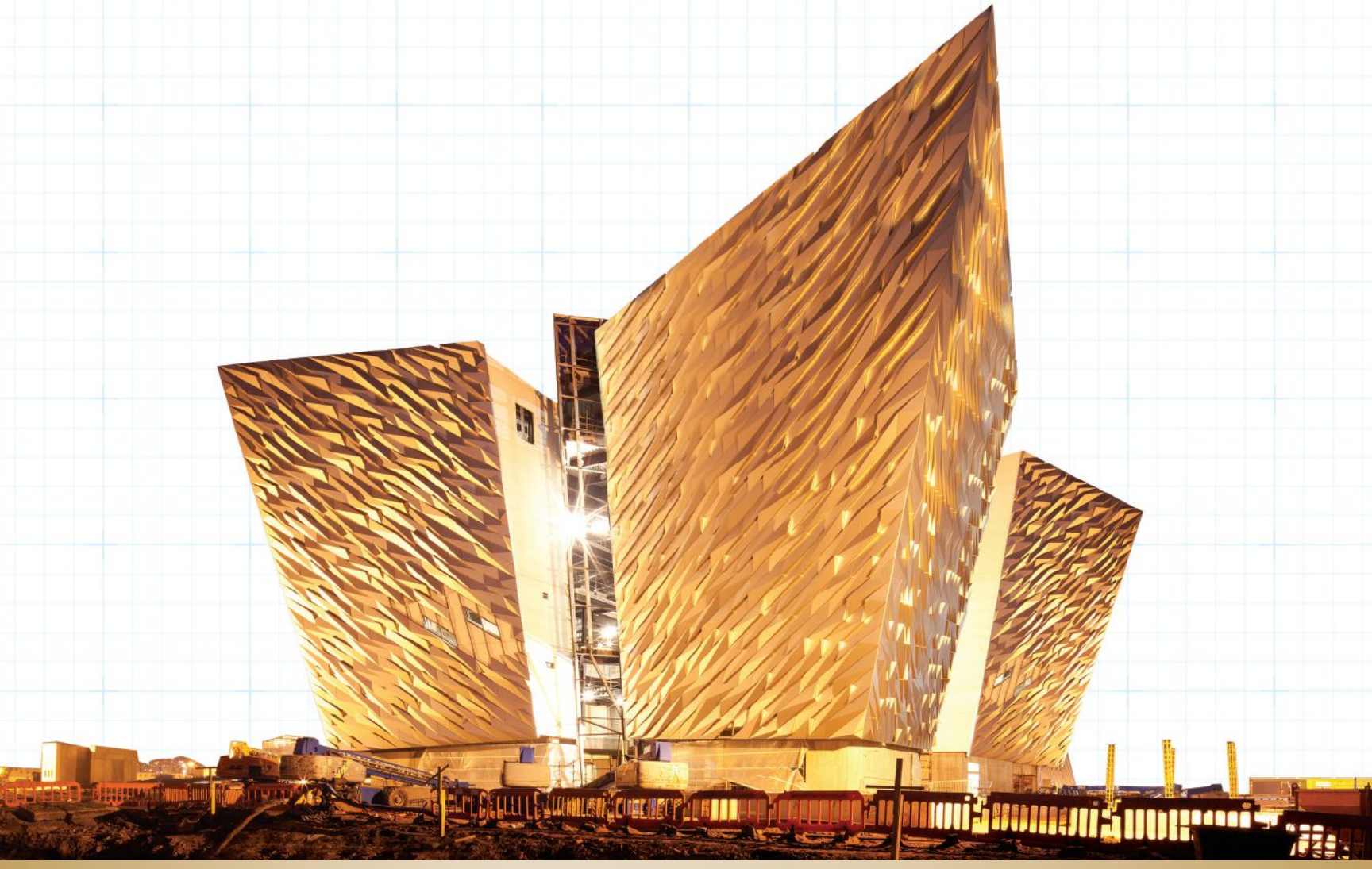
Post-Occupancy Evaluation

Chris Lambert, a Chicago-based vice president for workplace strategy at CannonDesign, suggests the biggest opportunity to influence the profession through crowdsourcing and data-gathering may lie in post-occupancy evaluations. Lambert routinely asks clients how and where they spend time in their new workplace and to identify potential design barriers to their jobs. Specifically, he wants to know "what percentage of time do you spend at your desk, at a colleague's desk, in a meeting room, in a social hub, elsewhere in the building?"

By maintaining a detailed database of the responses, Lambert and his team have gained broad insights into client needs. "Designers are not especially good at going back to our clients and understanding the impact [of their work]," Lambert says. "The value we're proposing is not just collecting a lot of [data], but collecting the right data and using it in an impactful way."

> *Read more about crowdsourcing at bit.ly/ARCrowdsourcing and see the results of a crowdsourced residential design on page 119.*

THINisIN



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Robert Ruggiero, AIA
Street-Works Studio

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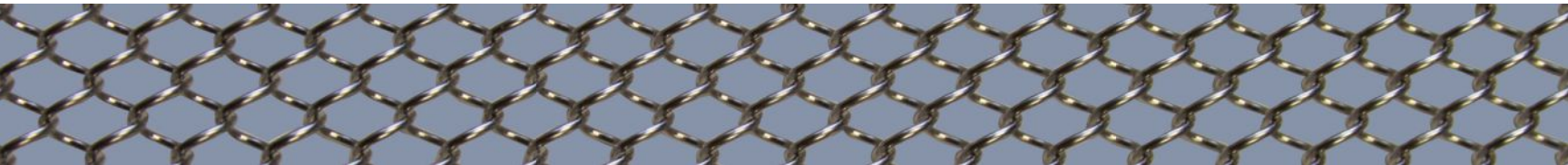

ARCHITECT

The Journal of the American Institute of Architects

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Detail: Parkhotel Jordanbad Sauna Village Wall

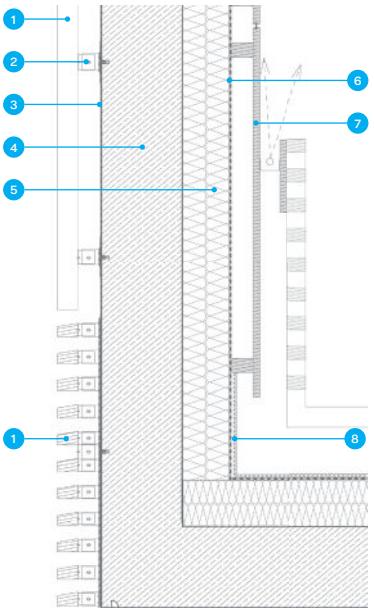
TEXT BY TIMOTHY A. SCHULER

In 2012, Jordanbad, Germany's sauna village, a collection of rustic log cottages, reached the tail end of a rather rapid decline. Just a decade old, the buildings had rotted beyond repair due to the perpetually damp environment. Plus, "they were pretty cheap," says Christina Jeschke, principal of Jeschke Architecture and Planning, the Munich-based firm hired to renovate the village.

Jeschke knew that specifying the right type of wood was crucial. For interior finishes, she chose SaunaPly, a plywood manufactured by Austria-based RoHol whose adhesive is unaffected by hot, humid air, thereby reducing formaldehyde emissions. For the saunas' benches, she selected lightweight obeche wood, a poor conductor of heat. "You cannot use just any wood for a sauna bench because you will burn [yourself]," she says.

The intersecting form of the largest building, the infusion sauna, required her team to 3D model in ArchiCAD everything from the angles of the intersecting rooflines to the placement of the hemlock planks that finish its walls and ceiling. The work on the front end paid off. Given just five months to complete the sauna village, the contractors were able to prefabricate a majority of the buildings' components, including the wood lamella skins, hung in 7.5-foot-tall panels ranging in width from 5 feet to 9 feet. Interior and exterior wood finishes are held at least 1 inch off the wall substrates to allow for continuous ventilation.

Jeschke says her biggest accomplishment may have been convincing her client that wood was not a liability: "It was quite some process to get the client on the [same page]."



CHRISTINA JESCHKE

1. Black locust slats, tapered 60mm/40mm, in panels
2. T-shaped steel anchors (58mm o.c.)
3. Liquid waterproofing, three layers
4. 25cm concrete wall
5. 7cm Foamglas insulation, two layers
6. Joint adhesive with waterproofing ability
7. Rohol SaunaPly wood
8. Tile

> *For the full story on the design of Parkhotel Jordanbad sauna village, visit bit.ly/ARJordanbad.*

ARCHITECT

THE 11TH ANNUAL

R+D AWARDS

CALL FOR ENTRIES

Are you revolutionizing the process or practice of architecture? ARCHITECT wants to honor the research, materials, and technologies that are advancing the industry at every scale—from design strategies and building systems to groundbreaking products, software, and fabrication.

2016 R+D Citation: Pulled Plaster Panels by Young Projects

CATEGORIES

Awards will be judged in three categories, reflecting the different stages in the research and development process:

- **Prototype:** For entries that are in the experimental and testing phase.
- **Production:** For entries that are currently available for use.
- **Application:** For entries that demonstrate a novel use of a technology or product.

Entries will be judged for their documented advancements in fabrication, installation, user engagement, and performance as well as for their potential to advance the aesthetic, environmental, and social value of architecture.

ELIGIBILITY

The awards are open to architects, designers in all disciplines, engineers, manufacturers, researchers, and students. Full-time academics (professors and students) at educational institutions will receive a discounted registration rate.

PUBLICATION

The winning entries will appear in the July 2017 issue of ARCHITECT, both in print and online.

DEADLINES

Early Bird—April 14, 2017
(discounted registration fee)

Regular—April 19, 2017

FEES

First Entry
Early Bird: **$175**
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Early Bird / Academic: **$95**
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Emerging professionals are fueling today's design conversation with high-energy ideation that challenges stated norms.

Hanley Wood congratulates and thanks Valspar for its ongoing commitment to design innovation driven by architecture's next generation.

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Next Progressives: CityDeskStudio

EDITED BY KATHARINE KEANE

Location:
St. Paul, Minn.

Year founded:
2004

Leadership:
Ben Awes, AIA (principal and co-founder)

Education:
B.A. and M.Arch., University of Minnesota

Firm size:
4

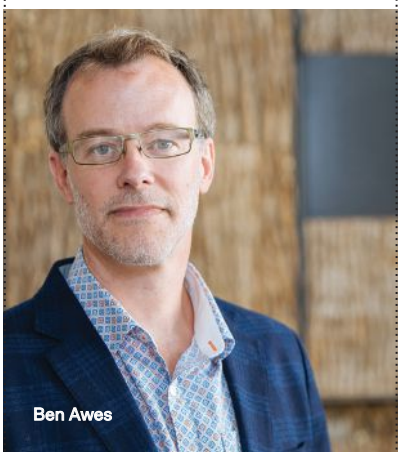
Experience:
Loom Studio, Ralph Rapson Architects, Julie Snow Architects (now Snow Kreilich Architects)

Mission:
We are contextual modernists—modernists because we believe architecture tackles issues and ideas of today while pointing toward the future; contextual because architecture gains richness and meaning when it is grounded and when it emerges from where, when, and who it's for. That's what we say, but ultimately, I just want the work to be about something.

First commission:
I designed a desk for myself that was inspired by the cool massage table in the original *Karate Kid* (1984) movie and that landed me my first client. A woman (I don't remember her name!) saw it while on a residential architecture tour of my house and asked me to design one for her.

Favorite project:
At the moment, a small project called the Gathering Kitchen in Mendota Heights, Minn., is my favorite. We were wrestling with the physical position and the relationship of eating and cooking in this remodel until we took a cleaver and split the kitchen open in the middle. We dropped the dining table into the center of the island, and something new was created that we hadn't seen before.

Second favorite project:
Another favorite remains a paper project at this point. There is nothing more inspiring to me than working with questions of form and meaning that emerge from our common rituals. Though our design proposal for a 10th-anniversary processional cross for a local church was shortlisted, it was ultimately not chosen, maybe because we pushed beyond their comfort zone—but it pushed me right into mine.


Ben Awes

Any design heroes?
I've always been inspired by Gustav Stickley, Eileen Gray, Pierre Chareau, Charles and Ray Eames—of course—and currently Patricia Urquiola.

Special item in your studio space:
Right now we have a topographically accurate, 3D digital model of the moon spinning around on a 55-inch computer screen mounted on the wall. It is part of an ongoing collaboration with a diverse group of artists for a joint exhibition in anticipation of the 50th anniversary of the Apollo 11 moon landing [in 2019].

Design tool of choice:
I wish I could say a sketchpad and pen, but it's the computer.

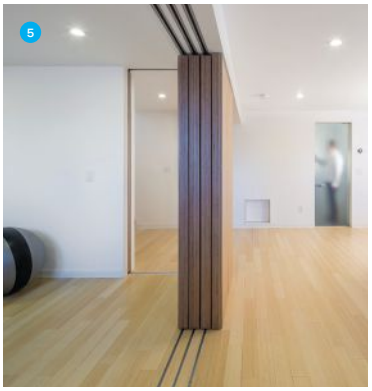
Skills to master:
We just switched over to Autodesk Revit, and I'm the last one to give it a go. That needs to change!

Design aggravation:
Stairs without railings—no one has them, or could actually live with them, but they always show up in design magazines.

When I'm not working in design, I ...
Launch rockets, raise giant tortoises, and make jewelry.

Next Progressives:
CityDeskStudio

1: JAMES SCHWARTZ; 2: DON WONG; 3: KAREN MELVIN



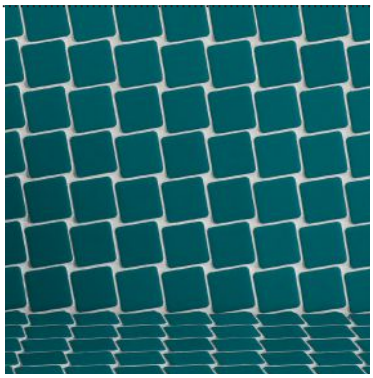
1. Led by former CityDeskStudio principal Bob Ganser, AIA, the Opposite Natures modern addition to a 1938 Minneapolis bungalow creates a sense of openness with a light-filled interior, translucent-glass stair encasement, skylights, and clerestory windows. 2. A glass walkway links two distinct structures of this Lake Superior cabin. 3. Designed for a graphic designer and gardener, the Graphic Nature House in Roseville, Minn., uses an exterior palette of concrete, steel, glass, and wood to highlight the surrounding landscape. 4. Designed by architect Ed Baker and built in 1978, the Skyway once connected two department stores in downtown Minneapolis. CityDeskStudio envisions adapting the 280,000-pound steel-and-glass bridge into a space for living and working. 5. CityDeskStudio, with project-lead Ganser, remodeled this midcentury modern multipurpose room with sliding panel doors that create private exercise space. 6, 7. CityDeskStudio celebrates the Mediterranean style of this 1960s home. Copper light fixtures give the remodeled kitchen a contemporary look. 8. Made popular in the 1950s, Nixie tubes are electronic displays that predate LED technology. Awes programmed this one to function as a clock and added a simple steel-case stand. 9. The design of the Gathering Kitchen resulted from the owner's desire to update their kitchen and integrate underutilized dining room space. Highlights include a six-legged Marinace granite table, cherry red cabinets, and manganese ironspot brick flooring.

4, 8: COURTESY CITYDESKSTUDIO; 5: BRANDON STENGEL; 6, 7, 9: ALYSSA LEE

Products: Kitchen and Bath

TEXT BY SELIN ASHABOGLU

Real Rain, Kohler
This 19"-square ceiling-mounted panel simulates natural rainfall through 775 concave nozzles. Available in seven finishes, including polished chrome and vibrant brushed bronze. *us.kohler.com*



Nuc, Mut Design
These 0.4"-thick square glass tiles, inspired by Gestalt psychology, create a slanted mosaic intended to warp the viewer's perception. Offered in gray, white, and green. *mutdesign.com*

Trinsic Pro, Delta
This kitchen faucet can be activated through Delta's Touch2O Technology by tapping its spout or handle. Available in an Arctic stainless or chrome (shown) finish. *deltafaucet.com*

M•Power Sensor-Operated Flush Valves, Moen
Powered by AA alkaline batteries, these flush valves feature a self-cleaning internal filter and flow rates that can be adjusted without a dip switch. *moen.com*

Designer Series Gradient Sink, Sloan
Offered in Corian or natural stone, this sloped bathroom basin comes in single-, double-, triple-, and quadruple-user configurations. Compatible with Sloan's sensor-activated faucets. *sloan.com*

> *To find more kitchen and bath products, visit bit.ly/KitchenBathProducts.*

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Photo features Woodbridge™ Spruce 4 x 28 on the floor and Opulence™ Amber 3/8 random linear mosaic on the pillars.

SPECIFYING THE RIGHT PTAC/PTHP SYSTEM MAY LEAD TO HIGHER GUEST SATISFACTION SCORES

Presented by:

GE APPLIANCES

LEARNING OBJECTIVES

Upon completion of this course the student will be able to:

1. Define the benefits and uses of PTAC/PTHPs.
2. List the features that contribute to an efficient and quiet PTHP/PTAC product.
3. Recognize the environmental factors and accessories that are beneficial to making the PTAC/PTHP system more reliable.
4. Understand the code changes and related impacts on PTACs and makeup air.

CONTINUING EDUCATION

AIA CREDIT: 1 LU/HSW
AIA COURSE NUMBER: ARFEB2017.2

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By Shane Meyer

INTRODUCTION TO STANDARD AIR CONDITIONERS AND HEAT PUMPS

When people travel on business or pleasure and rent a room at a hotel, they expect comfort, quality, and especially the air conditioning in their room to be reliable, easy to control, and quiet. In order to maximize guest satisfaction, hotel owners and managers must keep these customer needs in mind when choosing the most reliable and affordable air conditioning options.

Understandably, the demand for an appropriate level of comfort for guests to enjoy a restful environment while traveling is ever increasing. The quality of the guest room's air conditioner plays a vital role in overall guest comfort and subsequent satisfaction through an array of benefits. Consider the advent of the 100 percent hotel satisfaction guarantee programs offered by some national hotel brands and the ability guests have to voice their feedback through online hotel reviews and social media. This ability to rate a hotel for quality and comfort leads to an ever-increasing sensitivity on the part of hotel owners to pay special attention to the guest experience.

INTRODUCTION TO PTACs AND PTHPs

Currently, most hotel rooms throughout the United States likely include a Packaged Terminal Air Conditioner (PTAC) or a Packaged Terminal Heat Pump (PTHP). Patented in Louisville, Kentucky in 1961 by General Electric, both PTACs and PTHPs were designed to provide air conditioning, heat, and dehumidification for the specific environment of a hotel room. Moreover, PTACs and PTHPs were designed to meet the changing needs of hotel owners and hotel clientele alike because these air conditioning units were engineered to be more reliable, efficient and quieter. In addition, PTACs and PTHPs are incredibly easy to install and maintain.

Since their inception, PTACs and PTHPs have conveniently retained the same dimensions, with a width of approximately 42 inches, a height of 16 inches, and a total depth of about 21 inches. These dimensions include the through-the-wall sleeve and the unit projecting out from the sleeve. However, these dimensions do not include the outdoor grill. Due to the PTAC and PTHP's success, approximately 450,000 PTAC units are sold in the United States annually, which includes electric-resistance-only and heat pump models.

PTAC models are offered with electric resistance heat, while PTHPs offer heat pump heating along with back-up electric resistance heat. Both models provide air conditioning, but only PTHP models offer the efficiency of heating in heat pump mode. For cooling, a typical PTAC utilizes the R410A coolant and pulls air from the hotel room into the PTAC unit. The room air is drawn across a cold evaporator coil on the room side, where the heat is withdrawn and absorbed by the R410A refrigerant; the cooler air is then distributed back into the hotel room. In contrast, when a PTHP is heating in heat pump mode, the coolant reverses with the use of a reversing valve. When the refrigerant flow is reversed, heat is drawn from the outside air and deposited into the room.

Standard air conditioners do not have a reversing valve so they can only move the heat from inside the room to outdoors (cooling mode only). This marks the primary distinction between a standard air conditioner and a unit that features a heat pump, which is important for the hotel room environment. A heat pump has a reversing valve that moves the heat from inside a room to outdoors (cooling mode) or reverses the cycle and moves the heat from outdoors to inside the room (heating mode).

PTAC and PTHPs also offer versatility because they can be used in other markets. Although PTACs and PTHPs are primarily sold in the hospitality market for comfort in guest rooms, they also have applications for the property management, education, multi-family, health care and business industries, and are also often used in home additions and sunrooms.

Air Conditioning, Heating, and Dehumidification in One Package

Hotel guests are more comfortable when the humidity level is relatively low, so moisture removal is an important function of an air conditioner. Excessive humidity conditions may be a contributing factor to indoor air quality problems, especially in warmer climates with high precipitation. However, PTACs and PTHPs have the ability to deliver complete comfort for guests in the most humid regions.

For proper dehumidification, sizing of the air conditioning system is extremely important. For instance, while using an oversized air conditioner may cool the room quickly, the oversized unit would not run long enough

When people travel on business or pleasure and rent a room at a hotel, they expect comfort, quality, and especially the air conditioning in their room to be reliable, easy to control, and quiet.

to dehumidify the air properly. A heat load analysis should be performed by a professional engineer to determine the air conditioning and heating requirements.

Some PTAC models offer technology that reduces the amount of moisture in a room by 20 to 35 percent over standard models. This is called a Dry Air Model. By using a Dry Air Model, guests are more comfortable in rooms with lower humidity. A room with a lower humidity level will feel more comfortable than the same room set a fewer degrees cooler that has higher humidity levels.

IMPORTANT FEATURES FOR CUSTOMERS AND HOTEL OWNERS

The overall benefits of PTACs and PTHPs is that they provide individual comfort control for hotel guests, all the while, providing ease of maintenance and low costs for hotel owners. PTACs and PTHPs offer reliability, efficiency, quiet operations, and an appealing appearance.

Reliability

The reliability of PTACs and PTHPs starts with a simplified structure, which provides ease for day-to-day maintenance as well as a reasonable investment in regular servicing from an air conditioning technician. For instance, the premium guard corrosion protection keeps each part performing at peak condition, for long-lasting results. In addition, PTACs and PTHPs have integrated structural components for additional ease of maintenance and support. PTACs and PTHPs also offer a durable design. For example, a rustproof SMC base pan is available on some models that is as durable as metal and will not chip. Technicians can also diagnose problems quickly by accessing the

The reliability of PTACs and PTHPs starts with a simplified structure, which provides ease for day-to-day maintenance as well as a reasonable investment in regular servicing from an air conditioning technician.

service diagnostics port available with some manufacturers. With some manufacturers the thermostat, central desk control, and external fan can be connected quickly, offering multiple options for room control and comfort.

Also, some PTAC/PTHP units are equipped with universal heaters allowing installation flexibility and fewer on site spare chassis. These units are connected to the building power supply by a unique power connection kit. By utilizing a separate universal power connection kit, each unit is capable of providing various outputs of electric resistance heat to more closely meet the heating requirements of the particular room, thereby increasing the installation flexibility of the particular chassis. The appropriate kit is determined by the voltage, the means of electrical connection (cord and plug or permanently connected) and the desired resistance heat output required for the space and supported by the branch circuit.

Efficiency

Hotel owners are also concerned with efficiency in their air conditioning units, and for good reason. Some heat pump brands offer models that are 300 percent more efficient than electric resistance models. In addition, some models can operate in heat pump mode for heating a typical sized hotel room down to 25 degrees Fahrenheit. The lower the temperature that a heat pump model can operate, the higher the savings for the hotel owner.

The Coefficient of Performance (COP) of a heat pump is the ratio of the heating provided over the electrical energy consumed. The COP provides the measure of performance for PTHP heat pumps. The relative efficiency of a heat pump compares the efficiency of the

heat pump unit to electric resistance models. Consider an average electric-resistant model, which produces approximately 1 unit of heat for every 1.0 unit of electricity that it utilizes. For a PTHP with a COP of 3.0, the PTHP will produce three times as much heat for the same electric input wattage used for an electric resistance heat model. This means that for every dollar of electrical cost going into a heat pump, an equivalent of 3.0 units of heat is produced. This comparison between average electric-resistant models and heat pump models shows significantly clear distinction where energy efficiency is concerned.

Over the lifetime of a standard heat pump model, a hotel owner could potentially save thousands of dollars per unit, depending on the market. This is because the lower the temperature that a PTAC operates in heat pump mode, the longer the heat pump will operate, providing more savings.

FEATURES THAT CONTRIBUTE TO AN EFFICIENT AND QUIET PTAC/PTHP PRODUCT

Energy Measurement

In the United States the PTAC and PTHP industry measures cooling efficiency in EER (Energy Efficiency Ratio). EER is the ratio of cooling provided in British Thermal Units (BTU's) to the energy consumed in watt hours (measure of electrical energy equivalent to a power consumption of one watt for one hour). A higher EER rating translates to better efficiency. Some PTACs even have EER ratings as high as 13.4 and COP ratings as high as 4.0, offering excellent efficiency and savings opportunities to hotel owners.

When considering power consumption efficiency as it relates to guest comfort, there is a substantial difference between heat pump models and the temperature they can operate at when utilizing the heat pump mode. While some PTHP models can effectively operate at 25 degrees Fahrenheit, others can only operate in heat pump mode down to 42 degrees Fahrenheit. Because some markets have outdoor temperatures ranging between 25 and 42 degrees Fahrenheit for several weeks at a time, the potential savings between PTACs can be substantial when comparing the COP differences.

Switchover Point

As the outside temperatures fall, the heat pump cannot extract as much heat from the outside air. Therefore, at some point the PTHP is unable to provide sufficient heat to adequately warm the room. For this reason, Packaged Terminal Heat Pumps also provide electric resistance heaters as backup to heat pump operations. The PTHP units cease the heat pump operation and change to a more expensive electric resistance heat at a predetermined outdoor temperature to compensate for the inability of the heat pump to get enough heat from the outdoors to maintain room temperature. This operation is called the switchover point.

Balance Point

An important consideration in the features of a PTHP unit is the balance point of the installation. The balance point refers to the threshold at which the heat pump is unable to produce enough heat to compensate for the heat loss of the room or area being heated. Every room environment is unique with different insulation, floorplans, dimensions, types of windows, etc. In addition, each space features different kinds of construction materials and directional exposures. All of these variables, in addition to geographical location, must be considered in order to determine the heat loss of the room. For these reasons a consulting engineer should be engaged to calculate the heat loss and specify which heat pump unit is required.

Heat Pump Defrost

When the temperature/moisture content of the outdoor air reaches a specific level frost can accumulate on the outdoor coil during heat pump operation. Some heat pumps use microprocessors to determine the need for defrosting, based on a continuous compressor running time, outdoor coil temperature, and the rate of temperature change of the outdoor coil. When defrosting is required, some heat pump models reverse the flow of refrigerant to direct the hot gas into the outdoor coil to melt the frost buildup. This active defrost feature is advantageous in comparison to passive defrost models because passive defrost models must wait until the frost melts due to rising outdoor temperatures in order to reengage the heat pump operation. Based on weather conditions, it could take weeks for the outdoor temperature to reach temperature levels high enough to defrost the coils of a passive defrost unit.

Before and after the reverse-cycle defrosting, some models disengage the compressor to allow the refrigerant pressures to equalize throughout the system. This eliminates the possibility of a loud reversing noise. During these periods of pressure equalization, the full resistance heat capacity of the unit is activated to help assure room comfort conditions during the defrost cycle. The unit remains in the defrost cycle for a minimum of 3 minutes and up to a maximum of 9 minutes. The defrost cycle terminates when the outdoor coil reaches a temperature of 68 degrees Fahrenheit, or once the maximum time has been reached. Upon completion of the defrost cycle the unit automatically shifts back to normal heating operations.

Quiet Operations

Reliability and efficiency are of utmost importance to hotel owners, but guest comfort is also a top priority. The need for hotel guests to experience a quiet environment is paramount in the hospitality industry, so the ability to limit sound that transmits through or is produced from a PTAC unit is becoming increasingly important to hotel franchisees. Many hotel brands evaluate their guest satisfaction levels and take those satisfaction results very seriously, so if a guest sleeps poorly due to noise from the PTAC unit or from the outside, they complain and give the hotel low online ratings. These poor ratings will negatively influence potential guests and may lead them to choose a different hotel. Also, many hotels compensate guests if they have a complaint about the room or their stay. So a noisy PTAC could be causing a loss in revenue to the hotel property. Newer and well-designed PTACs can offer the necessary quiet that guests require, generating positive online ratings.

Where sound level is concerned, PTAC acoustics can be divided into three categories: sound transmission loss, operational sound, and sound quality. Sound transmission loss is a measure of the ability of a barrier to stop sound from passing through. Since the PTAC is a component of the building exterior (envelope), the ability of the PTAC to block sound from outdoors is often specified by architects designing the building.

Operational sound is a measure of the sound generated by the PTAC. The PTAC has three main sources that generate sound: the indoor fan, the outdoor fan, and the compressor. Operational sound level is recorded when all three sources are active, during high cool mode operation. The level is measured using AHRI 350 Standard for Sound Performance Rating of non-ducted, indoor air conditioning and heat pump equipment.

The PTAC and PTHP design has three sources that generate sound: the indoor fan, the outdoor fan, and the compressor. The large cross-flow blower, two DC fan motors, and smart fan cooling and heating keep the unit quiet while providing efficient heating and cooling performance.

Features such as a DC fan that gradually ramp up in speed in order to reduce quick start-up sounds are important to minimize sound.

Operational sound levels can be expressed in either sound pressure level or sound power. Sound pressure level is dependent on many factors, including the distance in which the measurement is taken from the PTAC unit and the specific environment in which the measurement is taken (room construction materials, carpets, furniture and so forth). On the contrary, sound power level does not depend on the location of the microphone or acoustic treatments in the room. Instead, it is dependent on the unit itself, which therefore makes sound power the preferred method of comparing PTAC sound levels.

This article continues on http://go.hw.net/AR217Course2. Go online to read the rest of the article and complete the corresponding quiz for credit.

QUIZ

1. PTACs and PTHPs have the ability to deliver complete comfort for guests in even the most _____ areas.
   a. arid
   b. arctic
   c. humid
   d. dry

2. Some PTAC models called Dry Air models offer technology that reduces the amount of moisture in a room by as much as ___ percent over standard models
   a. 5
   b. 25
   c. 50
   d. 75

3. True or False: PTACs and PTHPs can only be used in the hospitality market for comfort in guest rooms.

4. A _____ COP measurement, means _____ efficiency from the PTAC while it is in heating mode.
   a. higher, more
   b. higher, less
   c. lower, less
   d. lower, more

5. Some PTACs have EER ratings as high as _____, which results in offering excellent efficiency and savings opportunities to hotel owners.
   a. 5.0
   b. 13.4
   c. 20.0
   d. 44.0

6. Much of the operational sound level is determined by measuring the sound that comes from _____, during high cool mode operation.
   a. the indoor fan and outdoor fan
   b. both fans and outside environmental noises
   c. the indoor/outdoor transmission
   d. the indoor fan, outdoor fan, and compressor

7. Sound _____ does not depend on the location of the microphone or acoustic treatment in the room. Instead it is dependent on the unit itself which therefore makes sound _____ the preferred method of comparing PTAC sound levels.
   a. power
   b. pressure
   c. transmission
   d. level

8. A bulkhead located in the chassis of a PTAC/PTHP covered completely in _____ can dramatically increase a PTAC/ PTHP STC score
   a. aluminum
   b. metal
   c. mastic
   d. porcelain

9. A PTAC and PTHP unit with makeup air utilizes a trusted and reliable packaged terminal air conditioner with an additional _____ system to provide and deliver makeup air directly to each individual room.
   a. back-up
   b. dehumidification
   c. comfort
   d. operating

10. According to _____, rooftop make-up air systems must utilize individual ducts and fire dampers that lead to each individual room.
    a. OITC ratings
    b. the agency listing
    c. government regulated safety
    d. current codes and standards

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INSULATING CONCRETE FORMS FOR MULTIFAMILY RESIDENTIAL CONSTRUCTION

Presented by:

BUILD WITH STRENGTH
A COALITION OF THE NATIONAL READY MIXED CONCRETE ASSOCIATION

Apartment building built using Insulating Concrete Forms (ICFs). Photo courtesy of Nudura®

LEARNING OBJECTIVES

Upon completion of this course the student will be able to:

1. Understand the basic design criteria and construction elements of concrete buildings built with Insulating Concrete Forms (ICFs) for multifamily residential projects.
2. Demonstrate the economic benefits of building multifamily projects with ICFs.
3. Recognize the energy efficiency characteristics of ICF for multifamily construction.
4. Understand the contribution concrete makes to a building's resilience to fire, flood, wind and earthquakes.
5. Identify ways that ICF concrete construction can contribute efficiencies to the on-site construction phase of the project and to long-term efficiencies during the operational phase.

CONTINUING EDUCATION

AIA CREDIT: 1 LU/HSW
AIA COURSE NUMBER: ARFEB2017.1

Use the learning objectives above to focus your study as you read this article. To earn credit and obtain a certificate of completion, visit http://go.hw.net/AR217Course1 and complete the quiz for free as you read this article. If you are new to Hanley Wood University, create a free learner account; returning users log in as usual.

By Lionel Lemay, *PE, SE, LEED AP. Senior Vice President of Structures and Sustainability, National Ready Mixed Concrete Association*
Tien Peng, *Assoc AIA, LEED AP+, PMP. Vice President, Sustainability, Codes and Standards, National Ready Mixed Concrete Association*

INTRODUCTION TO INSULATING CONCRETE FORMS

Insulating Concrete Forms, or ICFs for short, combine two well-established building products, reinforced concrete for strength and durability, and expanded polystyrene (EPS) insulation for energy efficiency. ICF walls are made up of two layers of rigid insulation held together with ties to form ICF form units with a cavity in the center. The ICF form units are stacked in the shape of the wall, reinforcing steel is added into the form cavity and then concrete is placed into the form. The result is a reinforced concrete wall with a layer of insulation on each side. What makes ICFs different than traditional concrete construction is that the forms remain in place after the concrete is cured to provide thermal insulation. The combination of reinforced concrete and insulation provides an ideal load bearing wall, thermal envelope, fire barrier and sound barrier.

In addition to ICF walls there are also ICF floor and roof systems. The concept is similar in that the ICF form is made with rigid insulation to function as a one-sided form at the bottom surface. The forms are installed to span between concrete walls, reinforcing steel is placed and then concrete is placed over the forms. The result is a reinforced concrete floor or roof with rigid insulation on the bottom.

ICF wall systems have been used for building applications ranging from single story buildings to 20+ story high-rise buildings and everything in between. There are examples of ICF buildings all over the U.S. and Canada including single-family residential, multifamily residential, hotels, dormitories, assisted living facilities, offices, healthcare facilities, manufacturing and warehouse buildings. Schools built with ICFs

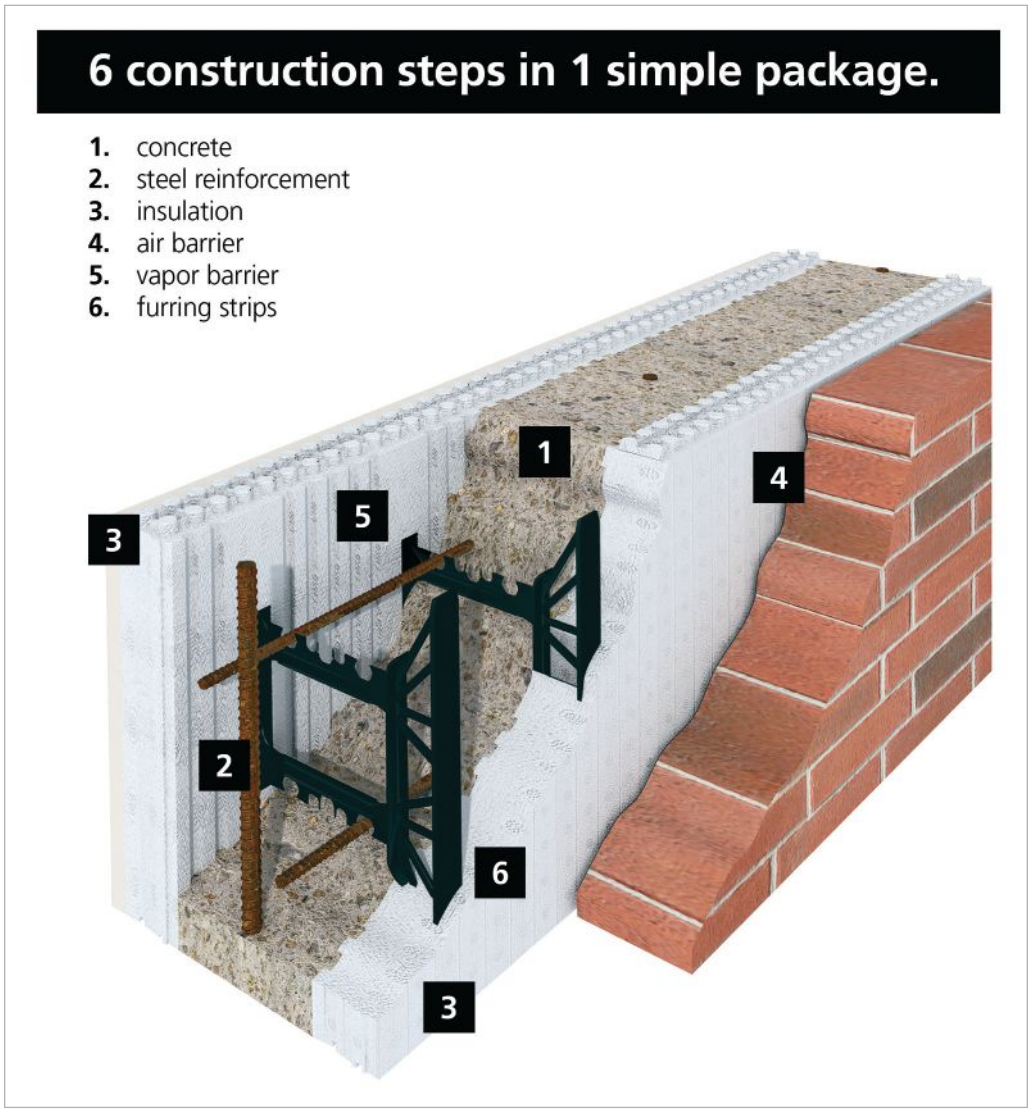
Concrete being pumped into an ICF wall. Photo courtesy of Quad-Lock®.

are popular due to low- or net-zero energy use. Theaters are also trending towards ICF construction for superior sound attenuation. For this article we'll focus on multifamily occupancies including apartments, condos, hotels, dormitories and assisted living facilities.

What makes ICFs so attractive for multifamily construction is that they are cost competitive with wood frame, steel frame and masonry construction. A building owner gets a building that is more disaster resilient and energy efficient at or nearly the same cost. Fire safety is a key element of multifamily construction since occupants sleep in these buildings and are often challenged to evacuate during a fire. Concrete walls and floors provide the fire resistance needed to not only allow occupants to evacuate, but contain the fire within a single unit, imposing less risk on fire fighters and property.

ICF Concrete Wall Systems

Typically, ICF wall units are comprised of large molded EPS blocks, similar to Lego® blocks. Each individual block is manufactured in an EPS manufacturing facility. The blocks range in size from 48 to 96 inches long and 12 to 24 inches high depending on the manufacturer. The most common configuration of an ICF unit is made up of two layers of 2-1/2 to 2-5/8 inch thick EPS



Typical ICF concrete wall components. Image courtesy of Logix®

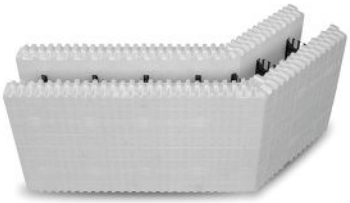
spaced 4, 6, 8, 10 or 12 inches apart depending on design requirements. The most common spacing is 6 inches or 8 inches for most low to mid-rise buildings, but for taller buildings, taller walls, or exceptionally large loadings, thicker walls are necessary. For simplicity, ICFs are generally called out by the width of cavity, hence an ICF with a 6-inch cavity is called a 6-inch ICF and an ICF with an 8-inch cavity is called an 8-inch ICF and so forth.

The blocks are designed to have interlocking teeth that hold the forms together much like Legos®. Most manufacturers not only supply straight blocks but have corner blocks, angled blocks, t-blocks and some even have curved blocks. Most even provide special blocks with brick ledges. Most companies supply blocks that are fully assembled and ready for installation, but some ship blocks that are folded into a flat configuration and then unfolded for installation. One manufacturer ships blocks and ties separately that are assembled on site. Many have special window and door bucks along with other accessories such as bracing, clamps and scaffolding to make the construction process more efficient.

There are some ICF forming systems that are made of other insulating materials and with slightly different configurations and shapes, but flat-wall ICF systems dominate the marketplace. This can be attributed to the fact that flat-wall ICF form units are designed to create standard reinforced concrete structural elements, using well-documented design criteria, such as ACI-318.

Straight Block

Corner Block



45 Degree Corner

ICF Brick Ledge

ICF Radius Blocks

Examples of ICF wall block configurations. Images courtesy of Buildblock®

There are at least a dozen companies that manufacture flat-wall ICF systems that can deliver their product throughout the U.S. and Canada and many are members of the Insulating Concrete Form Manufacturers Association (ICFMA). For more information visit www.icf-ma.org.

EPS insulation used for ICFs is governed by ASTM C 578, Type II closed cell foam with an R-value of 4 per inch. Polystyrene beads are first expanded with steam forming high density beads, which are injected into a mold to form the desired shape. Once removed from the molds and cured, EPS is a stable and durable material ideal for construction. No chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs) or formaldehydes are used in the manufacturing process and there is no off-gassing. EPS is moisture resistant, non-absorbent and resistant to mold and rot. EPS contains a flame retardant and the smoke from burning is non-toxic. In addition, EPS is recyclable at its end of life.

The plastic ties that hold the two wythes of the block together are generally made with polypropylene plastic, but it does depend on the manufacturer. They are designed to withstand the liquid concrete pressure during construction. Most manufacturers design their ties to secure horizontal and vertical reinforcing bars into notches in the ties to minimize the need to use tie wire. Although different manufacturers provide a wide range of spacing for ties, the most common spacing is 6 or 8 inches. The ties have no thermal bridging, they do not degrade or rot over time, and all ties have furring strips embedded in the EPS for screw-on attachment of exterior or interior finishes.

Reinforcing steel used in ICF walls is the same used for any other type of concrete structure. Typically smaller diameter bars are used such as #4, #5 or # 6, but thicker bars can be used for higher loading, concentrated loads and pilasters. In some cases, steel fibers have been used in place of horizontal steel in ICF walls, but most common applications use both horizontal and vertical steel reinforcement.

Concrete is typically placed in ICF walls using a boom-type concrete pump, though line-pumps or even conveyor belt equipment can be used. Specified compressive strength used in ICF walls can be whatever is required to resist structural loading, but most common are a 3000 psi or 4000 psi concrete pump mix. The recommended maximum aggregate size should be 1/2-inch aggregate for 4- and 6-inch cavity forms and 3/4-inch aggregate for 8-inch and larger cavity forms. The required concrete slump is 6 inches but could be up to 8 inches or more to accommodate pumping using high-range plasticizers and mid-range water reducing admixtures to achieve necessary flowability.

As construction continues, electrical and plumbing lines can be embedded into the interior layer of foam by cutting channels with a hot-knife or other tool. Interior or exterior finishes can be applied directly to the surface by screwing into the plastic furring strips. Gypsum wall board on the interior, and stucco, brick or siding on the exterior are common finishes ideally suited to ICF construction but nearly any finish can be applied.

Floor and Roof Systems

There are many options for floor systems that integrate well with ICF wall systems. ICF walls are simply concrete bearing walls so any floor system that is used for other types of bearing wall construction can be used in combination with ICF wall systems. These include traditionally formed reinforced concrete slabs, ICF slabs, precast hollow-core plank, concrete on metal deck combined with steel joists or cold formed joists. Wood framing systems for

floor construction can also be adapted for connection to ICF walls using embedded ledger bolts.

ICF Floor and Roof Systems

There are several manufacturers of ICF floor and roof systems that have similar configurations. Just like ICF wall systems, ICF decks combine EPS insulation with reinforced concrete to form a strong and energy efficient floor or roof system. Ideal for use in both commercial and residential construction, ICF floors combine the strength, security, and reliability of reinforced concrete with energy efficiency, fast construction and comfort. Many of the ICF wall system manufacturers carry a version of ICF floor and roof system that interfaces well with their wall system.

Each of the EPS panels (up to about 30 feet long), are supported and reinforced with integral cold formed steel beams or channels molded into the EPS along the length of each panel. The result is a joist and deck forming system that provides the maximum strength of a reinforced concrete deck with minimal materials and labor. The bottom side of each panel is typically flat but the top side has channels along the length of the panel that provide a void for reinforcement and concrete to be placed into. The resultant concrete s ystem is similar to a typical concrete joist system with joists spaced at about 24 inches on center and a slab in between the joists from 2 to 6 inches thick.

The ICF floors and roofs can span up to about 30 feet, depending on the depth of each joist. The joist system is designed like any other concrete joist system with bending reinforcement placed in the bottom of the joists, shear reinforcement placed in the webs and top steel placed for shrinkage and crack control. Although ICF floors are usually designed as simply supported one-way slab systems spanning between ICF walls, they could be designed as multi-span floors with intermediate supports by adding top bending steel.

The EPS material, reinforcing steel and concrete are the same as those used for ICF walls. The bottom surface of the ICF floor or roof is finished with gypsum board by screwing into the embedded metal channels. The top surface is a smooth concrete surface ready for any finish material such as carpet, wood or tile. When used for a roof structure any appropriate roofing system can be used, including membranes, inverted roof insulation, or even vegetated roof assemblies.

Precast Hollow-Core Plank

Another popular floor system, especially for multifamily construction, is precast hollow-core plank. Typically, ICF walls are installed one story at a time (including concrete) and then precast planks are placed on top of the walls, bearing directly on the concrete. Sometimes a concrete topping is placed on the plank or a thin leveling layer is used to even out the floor to accommodate any finish. For some buildings, the ceiling is simply painted or parged with plaster and painted to conceal the joints between planks. There are dozens of hollow-core plank manufacturers around the U.S. and Canada that can supply product for ICF projects and several have developed special details specifically for ICF construction.

QUIZ

1. What materials make up an insulating concrete form wall?
   a. Structural insulated panels
   b. Expanded polystyrene
   c. Reinforced concrete
   d. Fiberglass insulation
   e. Both B and C

2. A typical 6-inch insulating concrete form wall easily achieves an STC rating of _____.
   a. 55
   b. 75
   c. 150
   d. 300

3. True or False: For multifamily construction, ICFs are cost competitive with wood frame, steel frame and masonry construction.

4. True or False: EPS used for ICFs is typically ASTM C 578, Type II closed cell foam with an R-value of 4 per inch.

5. True or False: Any floor system that is used for other types of bearing wall construction can be used in combination with ICF wall systems.

6. ICF floors and roofs can span up to about _____, depending on the depth of each joist.
   a. 10 feet
   b. 16 feet
   c. 20 feet
   d. 30 feet

7. Which systems offer the advantage of having space for mechanical and electrical within the ceiling cavity?
   a. Precast hollow-core plank
   b. Concrete on metal deck combined with steel joists or cold formed joists

8. True or False: ICFs are best suited for floor-to-ceiling curtain wall type construction.

9. Which of the following performance benefits do ICFs have?
   a. Noise attenuation
   b. Fire resistance
   c. Energy efficiency
   d. Strength
   e. Durability
   f. All of the above

10. ICFs are considered by the IECC and ASHRAE 90.1 as mass walls with continuous insulation and typical whole wall ICF assemblies have an R-value between _____ depending on the exterior and interior finish materials.
    a. R-11 and R-19
    b. R-20 and R-23
    c. R-24 and R-26

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This article continues on http://go.hw.net/AR217Course1. Go online to read the rest of the article and complete the corresponding quiz for credit.

ICF? OMG.

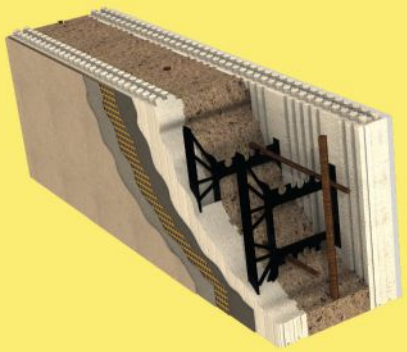
Insulated Concrete Forms (ICFs) are so innovative and efficient, they might just blow your mind.

ICF SPOTLIGHT:

Roy Street Commons
Seattle, WA

- **ICF block design** uses less concrete, resulting in long-term efficiency and sustainability.
- Through an **incredibly airtight design,** the rated infiltration level measures 1.6 air changes per hour at 50 Pascals.
- 2.5-inch thick foam walls on either side of a 6-inch concrete center creates **continuous insulation** and decreases energy consumption.
- Strong, durable ICF walls significantly **reduce sound between units,** which is particularly important for a multi-family residential building.

Cross-Section of ICF



Strong. ICF walls are reinforced with rebar, creating a structure that has 10X more thermal insulating ability than cross-laminated timber (CLT).

Simple. The technology is light and easy to use. If you can stack Lego blocks, you can build with ICF.

Safe. ICFs are fire-safe, durable, mold and rot resistant—and the lower humidity levels in each wall provide improved air quality.

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PHOTOGRAPHY: VINCENT RICARDEL

Serving the Profession

Making a real impact means embracing your skill set.

Corey Clayborne, AIA, has made the most of his decade-plus in architecture. Along with serving as president of AIA Richmond for 2016, he was appointed by Virginia Governor Terry McAuliffe to serve a four-year term on the commonwealth's Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers and Landscape Architects. Factor in his nine-to-five as a Wiley|Wilson project manager and participation on numerous NCARB committees and you have an architect who has found a home in the behind-the-scenes efforts that keep the profession fully operational.

As told to Steve Cimino

When you're in school, you think of architecture as this awesome thing that produces amazing designs and could land you on the cover of a magazine. But at some point you realize where your strengths lie and where you can make the biggest impact.

That happened early for me. I found my architecture skills were in building consensus, emphasizing teamwork, and being proactive in planning. I could use those to make a big impact in my firm and within my community. Then I came to find that, "Wow, a lot of people respect architects." I would hear from local leaders, state leaders, even national leaders that they really respect our skill set. By and large, as an architect, people listen to you.

When you say day job, the key word is "day." You have a block of time put aside for work, and I have a fantastic team that allows me to do what I do within my firm. But there are more hours in the day that you can use to invest in other things. One of my weaknesses at the start of my career was that I didn't know how to say no. Now that I have an infant daughter and am working on my MBA, I have had to sharpen my time-management skills.

Being an African-American leader in the profession is also a substantial part of what I do. I mentor for an organization called 100 Black Men of Central Virginia, and I serve on their board of directors in Charlottesville. The organization's mission is to eliminate the achievement gap in African-American males in grades K–12. When you talk to these young men, they want to be professional athletes or hip-hop stars. They sometimes don't consider being a dentist, architect, or school administrator. My role is to set an example and share that there are other opportunities out there. Many of them have never heard of, and certainly never met, an architect. There may not be millions of dollars in it, but it's a rewarding life.

Architecture is so much bigger than buildings. I'm an award-winning architect, but not for design. They're all service awards for being an architect who uses his skill set to improve his community. There's room in architecture for much more than just the great designers. We need all hands on deck. AIA

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AIANow

By Damon Leverett, AIA
Art Direction by Jelena Schulz

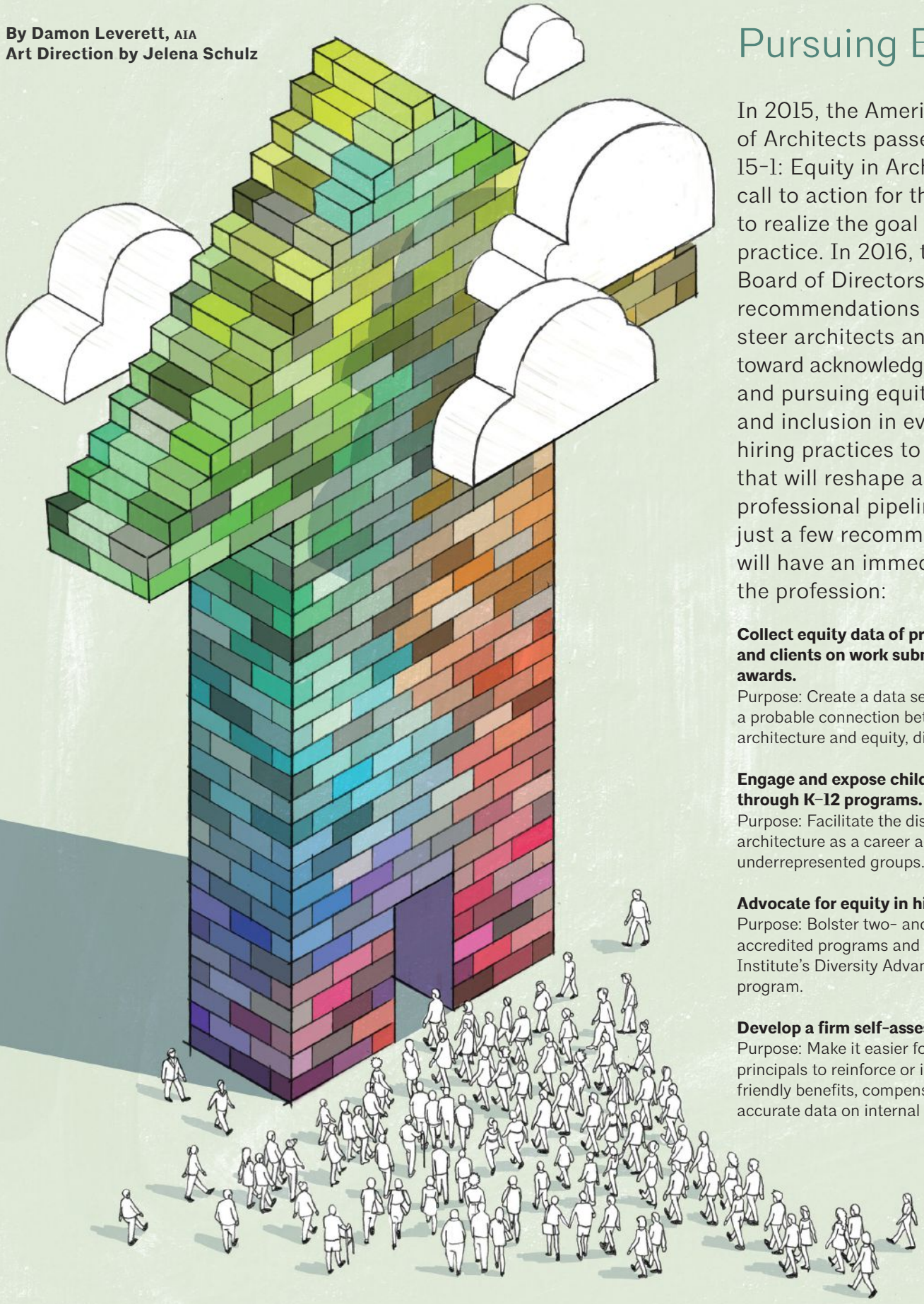

ILLUSTRATION: LAUREN NASSEF

Pursuing Equity

In 2015, the American Institute of Architects passed Resolution 15-1: Equity in Architecture, a call to action for the profession to realize the goal of equitable practice. In 2016, the AIA Board of Directors approved 11 recommendations to aggressively steer architects and their firms toward acknowledging, supporting, and pursuing equity, diversity, and inclusion in everything from hiring practices to pedagogies that will reshape architecture's professional pipeline. Here are just a few recommendations that will have an immediate impact on the profession:

Collect equity data of project teams, firms, and clients on work submitted for AIA awards.
Purpose: Create a data set that illustrates a probable connection between better architecture and equity, diversity, and inclusion.

Engage and expose children to architecture through K–12 programs.
Purpose: Facilitate the discovery of architecture as a career among members of underrepresented groups.

Advocate for equity in higher education.
Purpose: Bolster two- and four-year NAAB-accredited programs and raise funds for the Institute's Diversity Advancement Scholarship program.

Develop a firm self-assessment tool.
Purpose: Make it easier for architecture-firm principals to reinforce or institute family-friendly benefits, compensation fairness, and accurate data on internal diversity progress

AIAFeature

Access for All

The ADA has forever changed how architects practice. Now architects are changing the ADA's application.

By Kim O'Connell

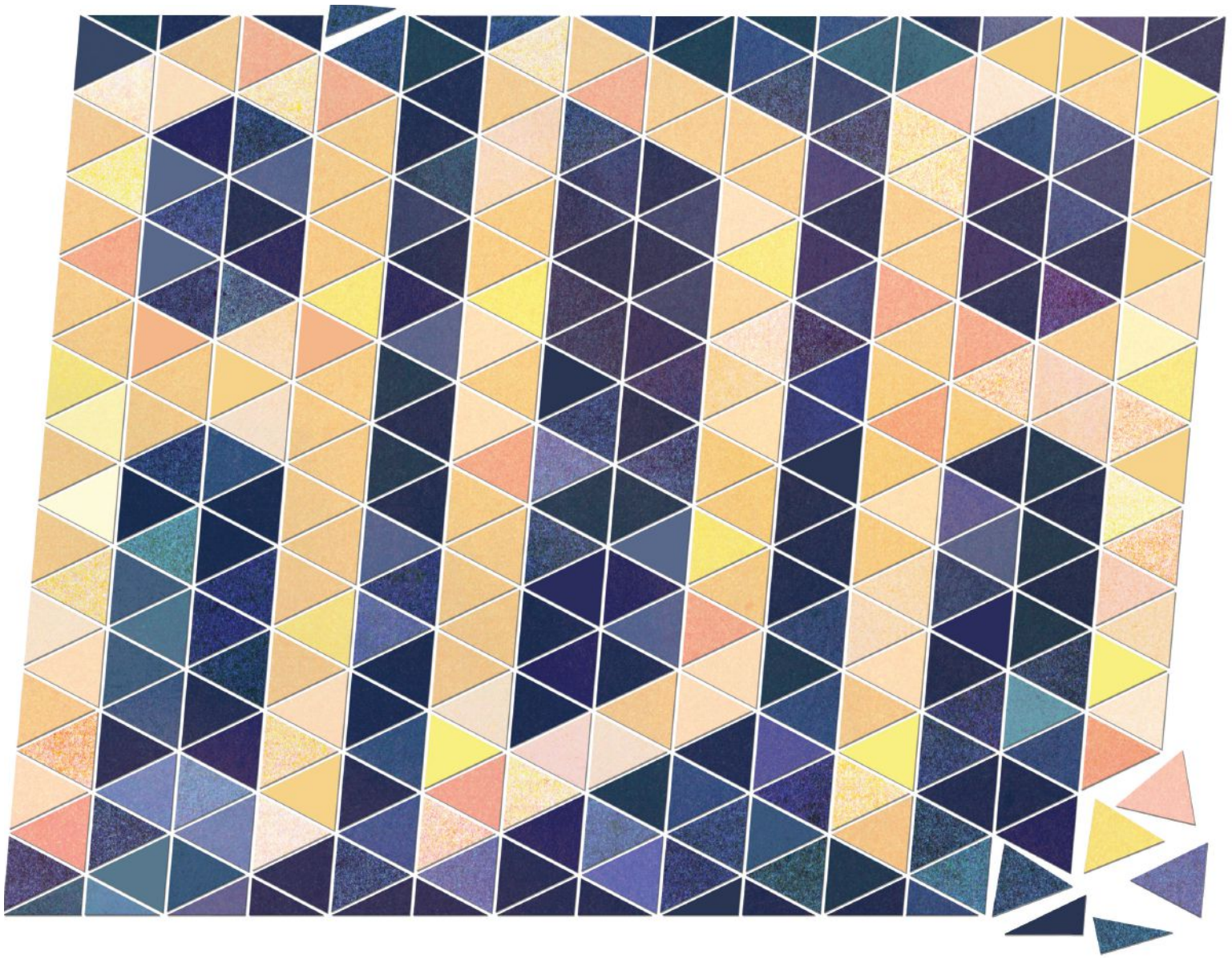

ILLUSTRATION: MICHAEL KIRKHAM

Grab-bars in restroom stalls are one of the most ubiquitous and visible improvements that have come about since the 1990 passage of the Americans with Disabilities Act (ADA). Yet a design team from MKM Architecture + Design, working on a rehabilitation facility in Grand Rapids, Mich., found that the standard grab-bars weren't working for patients on the mend from automobile accidents, closed head wounds, and strokes. Achieving ADA compliance, in other words, was in step with the law, but out of step with reality.

In consultation with therapists and staff, the architects conducted a study and found that the standard grab-bars were too high. They instead designed a facility with grab-bars that were lower, closer together, and on both sides of the commode. Michigan's Barrier Free Design Board agreed, and the design was approved.

When President George H.W. Bush signed the ADA into law in July 1990, after years of advocacy from disability rights organizations and others, it immediately galvanized the architecture profession. In particular, interpreting and implementing Title III of the ADA, which deals with public accommodations for federal and commercial buildings, frequently fell under the purview of architects, who had to get up to speed quickly.

"When the ADA came out, it really changed how people designed and constructed buildings," says Dodd Kattman, AIA, a partner with MKM and a co-chair of the AIA's Design for Aging Knowledge Community. "Everyone had to understand this act right away. There were seminars to attend, and as more architects came to understand what was involved, architects themselves became a leading voice in sharing this information. Clients and building owners would hire architects to craft action plans and design modifications. It changed everything for the better."

Yet, over the past quarter century—even as accessible design has become standard practice—architects have faced numerous situations like the Michigan rehab facility, where standards of accessibility alone failed to adequately provide for a certain population. It is not uncommon for clients to push back on ADA accommodations they feel are unnecessary or too expensive. How much leeway do architects have? And when it comes to the next 25 years of ADA-compliant design, where do they go from here?

A generation of architects has come of age since the passage of the ADA and some architects practicing today have never known a time without it. During that same period, however, the United States has experienced a surge in the elderly population, a trend that is expected to continue as Boomers continue to retire. With more people living longer—and with disabilities—there is broader awareness of the varying needs of disabled populations.

When the ADA was passed, many of the resulting accommodations were designed for wheelchair users—such as disabled veterans—who had a certain amount of upper-body strength which would allow them to transfer up and out of their chair when needed. But for frail older people, or those with other impairments, that type of movement might not be possible. The original ADA also failed to recognize the widespread dependence on caregivers. Restrooms that technically comply with the 1990 regulations might not allow enough space for a caregiver to provide assistance, and multistall bathrooms do not allow in a caregiver of a different gender.

Seven years ago, the Department of Justice issued an update to ADA regulations, the

AIA Feature

CONTINUED

2010 ADA Standards for Accessible Design, which provide more wide-ranging accessibility standards for a greater diversity of people. Among the more significant changes related to the design of restrooms were provisions for the side transfer on and off a commode from a wheelchair (the original regulations required users to make a turn from chair to commode and back again), more space for caregivers, and accessible stalls for both ambulatory disabled persons and wheelchair users.

The AIA, for its part, is working to increase the knowledge base around the ADA by offering guidance on how the ADA can be interpreted and adapted for different situations, including ranges and tolerances for grab-bars and counters. AIA Knowledge Communities like the Academy of Architecture for Health, the Design for Aging group, and the Committee on Design all deal with the ADA in different ways. Members of the Design for Aging group, for instance, participated in a 2012 white paper by the Rothschild Foundation suggesting new standards around toileting and bathing for nursing facilities and assisted living communities. Among other things, the study found that up to 98 percent of nursing home residents require some level of assistance with bathroom activities, something that should be reflected in a facility's design. According to Kattman, the foundation's paper has already been successfully employed as an alternative to the ADA standards.

Since its launch two years ago, AIAU, the Institute's continuing education platform, has offered several courses on ADA compliance that are regularly among the site's most popular: "Applying the ADA on Existing and Altered Buildings," "ADA Tolerances and Acceptable Measurements," and "Why are ADA-Compliant Toilet, Bathing, Dressing, and Locker Rooms so Tricky?" This last course, taught by Karen L. Braitmayer, FAIA, included 10 mistakes architects make most often when designing these areas, including the wrong placement of side grab-bars and overcrowded areas around rear grab-bars.

What is particularly exciting for architects working in this sphere is how the ADA has changed the landscape of accessibility and allowed architects to go beyond technicalities into more innovative and holistic design. One change that was not required by the ADA, but is the direct result of the culture it created, according to Kattman, is the "family restroom." Frequently found alongside typical multistall restrooms in airports, museums, and other large public spaces, the family restroom has a door that locks and ample room for a caregiver (regardless of gender) to assist, as well as space for a wheelchair user to turn, a mother to change or nurse a baby, a double-stroller, and so on.

Universal design is increasingly being rewarded, too. The Design for Aging Review, jointly sponsored by the AIA and LeadingAge (a nonprofit devoted to aging populations), is a biannual design competition that rewards innovation in design for aging and disabled people. And manufacturers are finally producing stylish-yet-ADA-compliant grab-bars, sinks, and bathing equipment, further reducing the clinical feel of these accommodations and increasing their appeal.

Going forward, Mark J. Mazz, AIA, who has spent more than 30 years working on accessibility issues and now frequently consults on plan reviews, would like to see even more design competitions require that projects comply with accessibility standards.

"Projects should have that 'wow factor,' and they should be accessible," Mazz says. "The best accessibility is when you make it invisible to people. The whole concept of universal design is to make it good for everybody." AIA

A Timeline of the Americans with Disabilities Act

1968	Congress passes the Architectural Barriers Act, requiring accessibility provisions in buildings designed, built, altered, or leased with federal funds. This is an important precursor to the ADA.
1973	Congress passes the Rehabilitation Act, or Rehab Act, prohibiting discrimination on the basis of disability in programs run or funded by federal agencies and in federal employment, among other things, which is considered a significant piece of civil rights legislation and another important foundation for the ADA.
1988	First version of the ADA is introduced in Congress.
1989	Revised version of the ADA is introduced in Congress with the support of a broad spectrum of disability advocates and public and private organizations. The Senate approves the bill.
1990	Following passage by the House of Representatives, President George H.W. Bush signs the ADA into law on July 26. Modeled partly after the 1973 Rehab Act, the ADA prohibits discrimination against the disabled and requires accessibility accommodations in government and commercial buildings.
1991	Regulations are issued for each of the five sections of the law, including Title III, which deals with public accommodations.
2008	Congress passes the ADA Amendments Act, which broadens the definition of disability after a series of Supreme Court cases had narrowed who could be considered disabled.
2010	Department of Justice issues revised regulations regarding accessibility, resulting in the 2010 ADA Standards for Accessible Design. The standards take into account a greater diversity of people who benefit from universal design.
2015	The 25th anniversary of the ADA occasions new initiatives and acknowledgments, including several by AIA chapters and members.

AIACollaboration

Redesigning a School District

How the largest urban school district in Minnesota reinvented its facilities plan and embraced its diverse populace.

ILLUSTRATION: U+B ARCHITECTURE & DESIGN INC.

ABOVE: Linwood Monroe Art Plus, upper campus

Saint Paul Public Schools is the State of Minnesota's largest urban school district, made up of 68 schools and serving just under 38,000 students. Thanks to an award-winning Facilities Master Plan that tapped into the needs of the St. Paul community, it's also among the most diverse and inclusive in the country.

Previous long-term plans for Saint Paul Public Schools were largely technical in nature, put into place by administrators and not accounting for the district's growing diversity: 78 percent students of color, 72 percent in poverty, and more than 100 languages and dialects spoken. Those demographics, and an urgent need to address a critical opportunity gap for students of color, reinforced a need for new thinking.

Once that need was established, Saint Paul Public Schools reinforced a mandate for equity that facilities director Tom Parent, AIA, was tasked with implementing. Over the last several years, St. Paul has embraced the idea that the places where we teach and learn actively contribute to the learning process and should be designed for everyone involved.

"As we started working on this five years ago," Parent says, "it was important to identify that if we have different aims than our previous plans, we needed to have a very different process."

The goal was to not just increase the number of seats at the design table, but to be intentional about who was present. Thoughts on appropriate spaces for education, and the best way for children of all upbringings to learn, were requested from a wide set of participants: students, parents, faculty, principals, and architects from seven firms in St. Paul.

"This is the design process taken to a district level, as opposed to a school level," Parent says. "It's making sure we have the opportunity for an empathy-based process. It was important not to have disparate voices speaking in a vacuum."

These voices came together in a series of charrettes focused on broad strategies for improvement, not specific changes to certain buildings. The idea was to create a 10-year planning process that would bring the district's facilities into the 21st century, with emphasis on the curricular arc of each grade and how students could feel consistent benefits year after year.

"We design with, not for," says Margaret Parsons, AIA, a principal at Cuningham Group Architecture and a participant in the master planning process. "Students, parents, administrators, community members: They were all part of our design team."

But what does it mean when members of the team aren't certain of their role? For design professionals, it's commonplace to participate in a charrette and share their expertise; for ordinary citizens of St. Paul, this was unfamiliar terrain.

"My initial thoughts were, 'Throw the doors open, anyone can come in,'" Parent says. "It didn't occur to me that people would not understand why this was important, how they could contribute, or that not being intentional about who was at the table might inadvertently dissuade people from participating."

For some, the request seemed like a waste of their Saturday morning, or an attempt to check off "community engagement" on a to-do list. Parent and his team realized that they had to educate and persuade as best they could, reinforcing the equal value of hearing from both educators with dozens of years' experience and parents with vested interests.

"We didn't just want PTA parents or honor roll students," Parent says. "We wanted a little of everybody, because we wanted to hear something different."

And despite the involvement of so many firms with potentially differing perspectives, the community in St. Paul proved to be as collaborative as Parsons hoped.

"In St. Paul, we just have a way of working together," she says. "And for us at Cuningham, this offered a real chance to be proactive with educators, helping them determine the best course for their facilities and ensuring that resources are spent in an efficient manner."

It also spoke volumes that, before the planning process even started, Parent strongly encouraged all district employees and external architects involved in the master plan to undergo a 16-hour training course on racial equity. "It provided a powerful perspective," he says, "and helped connect folks with the mission and the way we were approaching it."

With the plan approved in December 2015, improvement projects are underway with Cuningham Group and other firms that represent almost $500 million in investments.

"What we had in St. Paul schools was an intersection of belief and values and a district-level commitment to equity," says Anne Carroll, a former member of St. Paul's Board of Education. In fact, Saint Paul Public Schools recently received the 2016 Core Values Award for Respect for Diversity, Inclusion & Culture from the International Association for Public Participation (IAP2) for its master plan, reinforcing its status as a model for other districts.

"You can't do work in a district like St. Paul without addressing equity," says Carroll, who recently completed her term of service on the IAP2 board. "Tom and his team created opportunities for lots of voices to be heard."

Those opportunities would not have been possible, however, without Parent's unique brand of design thinking.

"The work we've done here," Parent says, "is grounded in architecture and design, and in the ways we've been trained to understand situations like these and involve people in a process that respects them individually." AIA

By Steve Cimino

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PHOTOGRAPHY: JENNY E. SABIN

Sabin and Jones' cast model showing how final structures (left) could, in effect, be the products of their own unfolding logic (right).

Biology by Design

Researchers are using the AIA's Upjohn grants to probe the natural sciences.

Since it was conceived in 2006, the AIA Upjohn Research Initiative—named after the Institute's co-founder and 1857 inaugural president Richard Upjohn—has provided material support of up to $30,000 for "applied research projects that enhance the value of design and professional practice knowledge." This defining statement broadly frames a pointed purpose: to push forward work that couples concepts of design with a multidisciplinary outlook as well as a toolkit that translates theory into action.

It was in this spirit that in 2007 the AIA awarded one of the first Upjohn grants to the team of Jenny E. Sabin and Peter Lloyd Jones for a project called "Nonlinear Systems Biology and Design: Surface Design." Born out of the duo's collaborative LabStudio, started in 2006 when both were based at the University of Pennsylvania, the research project is focused on analyzing biological patterns using enhanced technological capacities—in this case, 3D printing—with the purpose of generating new scientific hypotheses and new technological applications for biomedicine and architecture. The resulting process is one in which biology, in all of its complex yet inherently resilient and adaptable forms, can influence the practice of biomedicine into a more adaptive paradigm and to test out how self-assembling, malleable biological properties can be incorporated into architectural forms and materials.

"This was an effort to bring a science-based approach to architecture and generative design thinking to natural sciences and medicine," says Sabin, who is now an assistant professor at Cornell University and the head of Sabin Design Lab, a Cornell research and design unit that further questions of how architecture and science converge.

Whereas Sabin brought an architectural focus to the "Nonlinear Systems" project, Jones, a biologist by training, looked for how one could use tissue context or architecture to control the development of a disease, including cancer. When the two researchers met, both were at the forefront of digital explorations in their own fields. Jones—now the first associate dean of emergent design for a U.S. medical academy and founder and executive director of the Thomas Jefferson University MEDstudio—applied his scientific training and expertise in matrix biology to the matter at hand.

"We both took a risk with this project. It changed our individual trajectories," Jones says. "At the time, it didn't fit the stereotype of either profession to be working this way. The Upjohn grant allowed us to do this by legitimizing the idea of our model, a hybrid research lab and studio at the intersection of science, architecture, and technology, generating a new field."

LabStudio began its work by studying the behavior of human breast tissue in response to its surroundings. "Cells are like small looms weaving their architectural niche," Jones says. The premise of the project held that the structure of a dynamic and reciprocal dialogue exists between the "language of form" at the molecular level, and the "reading of code" at the genetic level.

"Structure is a message in biology. Architecture is one means for how cells communicate; it controls the expression of genes," Jones says. Using this guiding principle, Jones explains that, experimentally, if you engineer breast cancer cells to perceive a normal environment, they will behave like normal cells, reversing the disease.

"So the question then becomes, 'Can we create environments in the tissue that model different environments to create different outcomes?'" Or, to interpret Jones, can producing those responsive environments provide a foundation to create a responsive architecture? Thus, the 3D prototyping began.

For Sabin and Jones, the study posed a challenge to quantify how different

AIAKnowledge AIAPerspective

structures and forms behave in space through the use of a nascent technology. "We were the first to use 3D printers to look at basic part-to-whole relationships, including the use of metamaterials to introduce a fourth dimension," Sabin says.

The project amounted to a process of what Sabin calls "reconceptualizing our approach to design beyond technology to synthesize biological processes and behavior and their potential application in architecture." Sabin and Jones further studied the three-dimensional prototypes and proposed design-oriented building applications, particularly to conceive of adaptive building skins and their material structure.

The Upjohn grant for "Nonlinear Systems" laid the foundation for work that continues to this day. A 2010 National Science Foundation (NSF) grant was awarded to Sabin and Jones (along with researchers Nader Engheta, Kaori Ihida-Stansbury, Jan Van der Spiegel, and Shu Yang), to investigate sustainable and adaptable building skins that use biological principles in their designs. That work—as well as work parallel by other research teams—led to a second NSF grant to "explore materiality and kirigami [a variation of origami that includes cutting the paper] processes" that explore how buildings can respond to ecological and sustainability issues to behave more like organisms.

One legacy of LabStudio's work is already being felt at universities such as Princeton, Penn, Stanford, Jefferson, and Cornell. Jones speaks of an emerging convergence between the medical and design fields.

"If you train doctors to look at the world through the eyes of a visual artist or designer, their clinical skills and empathy improve," he says. "The third-leading cause of death in America is medical error, and part of this may be due to an inability to simply see, listen, touch, and hear the patient in-depth and in intuitive ways."

"An architect has a trained way and intuition of looking with empathy, pondering on form, expression, and intuition in a systems-based way," Jones says. "This award helped set the stage for changes to come in medical schools to produce doctors that have broader points of view and, hopefully, higher levels of creativity, empathy, and critical thinking, all of which are essential for the best patient care." AIA

Ben Schulman

PHOTOGRAPHY: CARL BOWER

Take Charge. Please.

A challenge to all architect members.

The American Institute of Architects belongs to its members. It is here to advance all of our values and defend our interests.

The organization exists to stimulate the demand for architecture in society. It is here to improve practice—by developing useful tools and systems, by promoting fair and honest business dealings, by defending responsible policies, by enhancing equity, by championing inclusion, by strengthening knowledge, and by encouraging research. The power of association is genuine. It is also necessary, perhaps today as rarely ever before. The idea is both simple and powerful: Together, we can do more than any one of us can do alone. Our international network of members and components is very strong, but we can be stronger. We can wield greater influence.

Let's recognize that the AIA is our only association. Yes, there are groups for green buildings, for historic properties, for planning, for schools, and for urban development, but the AIA is the only one for architects, about architects, and by architects.

But if we are to remain on course—if the Institute is to serve the interests of architecture and architects—then its members must be engaged. We must direct the Institute. We must step up, and we must take charge. So it was extremely gratifying last month to see the American Institute of Architecture Students (AIAS) field nearly 20 enthusiastic candidates for national office!

AIA members with an appetite for office tend to begin in a local chapter—that's natural enough. But too often they also finish there. My challenge to all of you is simple: Run for AIA National office. Such involvement is essential to the well-being of the Institute. It is also very rewarding. As elected officials, we learn what motivates our profession. We take on thorny issues and challenging problems. We identify opportunities. We stake out meaningful positions and sharpen our views. We seek to win the confidence of our peers and interlocutors. We work to stimulate global demand for our work and to improve the basis for our practices.

So why not you? Run for national office! So many people have spoken out in the past few months. Now it's time to take action, and to do that you need to be in position to affect that action. You need to take charge. You need to do it. AIA

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“All three projects share a progressive approach to urbanism, embracing the idea that residents are keen for a stronger relationship between art, city life, and pedestrianism.”

Houston’s Museum Boom by Mimi Zeiger

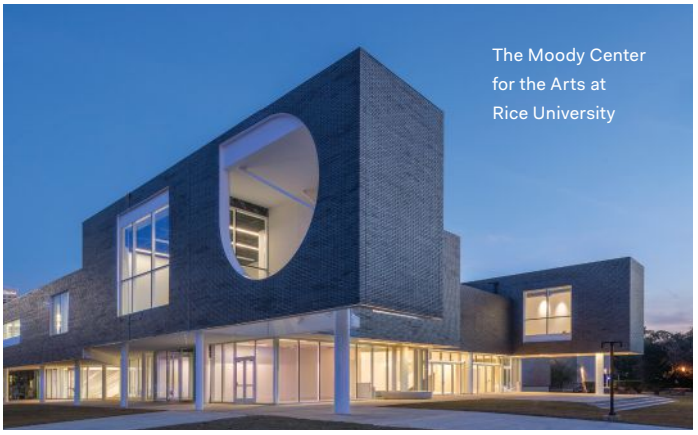
In early January, I visited the Moody Center for the Arts at Rice University in Houston, designed by Michael Maltzan Architecture (MMA), on the first day the new building opened for classes. Students searched for their assigned rooms as the final stages of construction unfolded around them. An orange traffic cone in front of a pair of glass doors signaled the entry to the 52,000-square-foot building.

It was a quiet afternoon for this self-proclaimed "transdisciplinary lab for creativity," which will be far less subdued when it opens to the public on Feb. 24. The Moody Center is a hybrid, both in its mission and its architecture. An education space (with 4,000 square feet of classrooms) and maker spaces (including wood and rapid prototyping shops), the building will also be a cultural arts hub, with a theater and galleries. "Academia has gotten quite siloed," Alison Weaver, the center's executive director, told me. "How can we cross-pollinate again? Our goal is to be less a cabinet of curiosities and more a conversation."

Consider these selections from the spring lineup: an academic course that brings together musical composition and neuroscience, and a workshop with Danish-Icelandic artist Olafur Eliasson that focuses on the refugee crisis and economic migration. Houston residents will be invited to take part in the program along with asylum seekers, students, and artists.

Located on College Way, a southern entry point to the Rice campus, the center was sited to help build ties between town and gown. The design reflects Weaver's desire for the building to be an "open source platform": a large terrace on the west façade flanks the road into campus, and three expressive "lanterns"—large circular openings cut into the metallic brick façade—serve as beacons for the center. There's a long arcade across the north side of the building and a central studio that, although an enclosed volume, evokes the courtyards that are characteristic of the university's academic buildings.

The Moody is one of three arts projects now under construction in Houston. Steven Holl Architects (SHA) is attempting to foster a relationship between visitors and the landscape with its expansion project at the Museum of Fine Arts, Houston (MFAH), and Johnston Marklee (see page 92) is bringing a refined atmosphere to its design of the Menil Drawing Institute (MDI). All three projects share a progressive approach to urbanism, embracing the idea that residents are keen for a stronger relationship between art, city life, and pedestrianism. But can that approach work in Houston, long known for its laissez-faire approach to zoning and reliance on the automobile?



The Moody Center for the Arts at Rice University

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Designing a Coherent Campus

The MFAH is just over a mile from the Moody, at the intersection of Main Street and Montrose Boulevard, where cars zip around Mecom Fountain, a classical roundabout at the north edge of Hermann Park. The 14-acre campus is located in the center of the Museum District, where some 20 museums—art, science, and Texas history—are scattered within a 1.5-mile radius of the fountain. "We are the 800-pound gorilla in the Museum District. We see ourselves as part of the district, but by virtue of our scale … " says Willard Holmes, chief operating officer of the MFAH, as he trails off with a chuckle. "The approach to this expansion is to make it a coherent campus in itself."

Construction has started on the foundations and parking garages for the first of two buildings that SHA is designing: the new Glassell School of Art, which opens in 2018. Food trucks are parked on the site of the second building, the 164,000-square-foot Nancy and Rich Kinder Building, which will be completed in 2019. When I visited, there were large crowds inside the museum's existing buildings—both the original 1924 Neoclassical structure and the Ludwig Mies van der Rohe additions (the 1958 Cullinan Hall and 1974 Brown Pavilion), as well as across the street at Rafael Moneo's 2000 Audrey Jones Beck Building. Tunnels shuttle visitors between the buildings and the parking garage, with James Turrell's installation "The Light Inside" serving as a mid-walk destination for visitors, who usually pose for selfies.

During my visit, a few people emerged from the Mies additions and darted through traffic to the food trucks. And some people made their way to the museum's Lillie and Hugh Roy Cullen Sculpture Garden (completed by Isamu Noguchi in 1986) for lunch. But aside from that, I saw little foot traffic.

Can SHA create a more pedestrian-friendly campus? The Glassell School's three-story design features a sloped planted roof that will serve as a stepped amphitheater and garden. And the design for the Kinder Building, which will house 20th-century collections, is tied to a series of seven gardens, the

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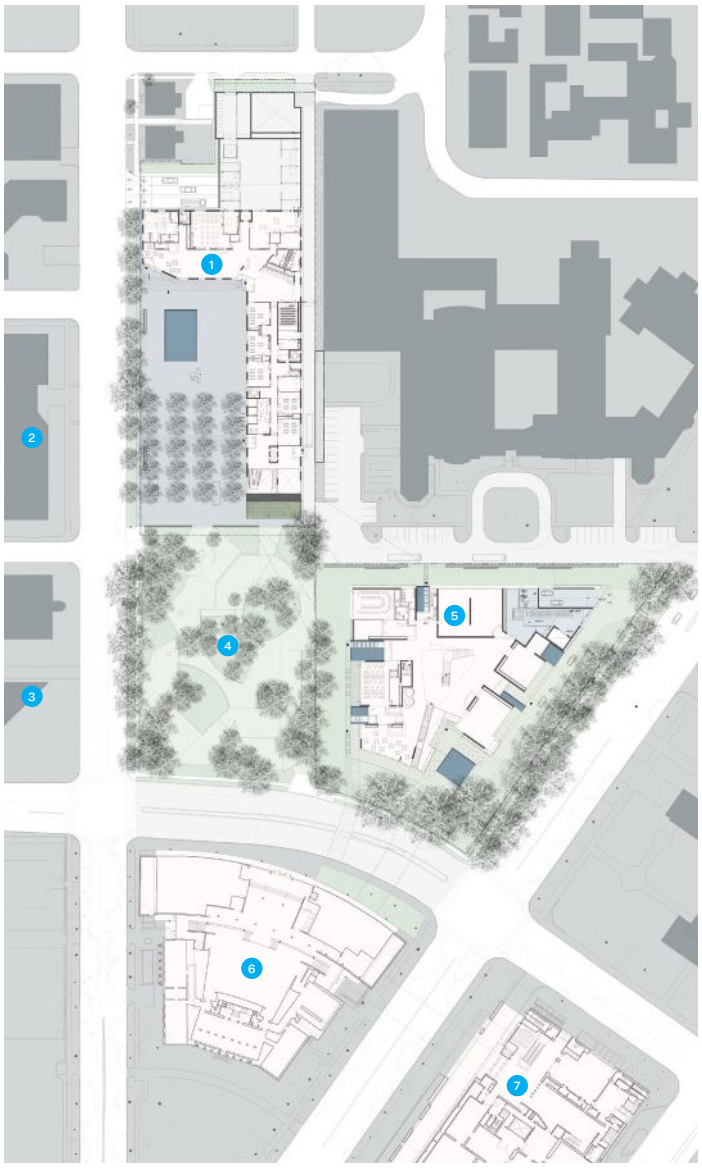

Museum of Fine Arts, Houston: campus and nearby landmarks

1. Glassell School of Art, Steven Holl Architects, 2018
2. Central Administration and Junior School Building, Carlos Jiménez, 1994
3. Contemporary Arts Museum, Gunnar Birkerts, 1972
4. Cullen Sculpture Garden, Isamu Noguchi, 1986
5. Nancy and Rich Kinder Building, Steven Holl Architects, 2019
6. Caroline Wiess Law Building, William Ward Watkin, 1924 / Cullinan Hall and Brown Pavilion, Ludwig Mies van Der Rohe, 1958 and 1974
7. Audrey Jones Beck Building, Rafael Moneo, 2000

largest of which is the entry garden court at the corner of Bissonnet and Main Street. All the green space around the perimeter enhances SHA's intent to create a "porous" museum, one in which the art and the urban experience interweave. "Our aim was to have a building that was open—an inspirational experience of the art spills out into all sides," says SHA senior partner Chris McVoy, AIA.

The plan features seven entrances into the main lobby, with no single ticket desk (a trend in museum design also seen at The Broad in Los Angeles). Flexible galleries will ring the central, three-story space, which will be topped with a meringue-like roof—an array of convex curves meant to resemble clouds in the big Texas sky. "The museum as a work of architecture is in complementary contrast to the Moneo building, which is opaque and stone, and the Mies building, which is steel and glass. Ours is thick translucency," he says, explaining that the façade of the expansion will be clad in large vertical glass tubes that will glow at night.

According to Holmes, SHA won the competition for the project in 2012 by defying the brief, which called for a new museum building and an above-ground parking garage. Instead, the firm boldy proposed demolishing the existing 1979 Glassell School building, designed by S.I. Morris and Associates, and putting all parking underground. "Holl said it was wrong to put a parking garage here," says Holmes.

Instead, SHA sketched an L-shaped design for the school, which wraps around a new public plaza along Montrose Boulevard. At ground level, Noguchi's sculpture garden will act as a hinge between the school and the Kinder Building, while new tunnels underground will link two robust parking areas (some 190,000 square feet) to each other and to the galleries above. The MFAH is counting on the new buildings to get people out of the air conditioning and into the open air. "You're going to have an urban experience: films, gardens, cuisine," says Holmes. "We are broadening the definition of what going to the museum means."

Expanding the Menil Collection

Located less than two miles away, in the Montrose neighborhood, the Menil Collection has always been an open-air campus. Visitors and neighbors alike can stroll under the live oak trees on grounds dotted with bungalows, the Renzo Piano, HON. FAIA–designed galleries, and the Rothko Chapel. I met Sheryl Kolasinski, the Menil's deputy director and chief operating officer, for a hard hat tour of the MDI. She led me down a new street, built during the current project, which will provide a new connection across the site and better link the Menil to the neighborhood.

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When it opens in October, the 30,000-square-foot building will be devoted to modern and contemporary drawings, with ground-floor spaces dedicated to exhibitions and study and below-grade rooms for storage and conservation. The MDI displays Johnston Marklee's attention to refined proportion through a sequence of courtyards and galleries modulated to accommodate works of all sizes and exposures. "All rooms are calibrated—from natural light to no natural light," says firm principal Sharon Johnston, FAIA. "Light from above wasn't something we could introduce given the fragility of the drawings. And light from the sides—well, that's more of a traditional domestic approach."

The relationship to light governed the overall massing, resulting in a building, lined by porch-like canopies, that seems to reference the forms and scale of the surrounding residential architecture. "Our building has a more in-between relationship with the existing context; it's not *so* much bigger than the nearby bungalows," Johnston says.

A large green space that will be shaded by oak trees on the building's west side, new landscaping by Michael Van Valkenburgh Associates, and a large wooden deck will make the MDI more of an outdoor destination. And, as with the MFAH but to a lesser degree, the museum will host gatherings and performances. Take, for instance, the utilitarian Energy House that Johnston Marklee has designed across from the MDI, which will contain the Menil's power equipment. The whole structure is made of rough concrete block, but the side facing the MDI is smooth—a makeshift screen for playing films.

The MDI sits at the heart of a larger vision for the 30-acre campus, based on a 2009 master plan by British architect David Chipperfield. His scheme suggests new galleries and the development of housing and even mixed-use structures on museum-owned land. To the south, for instance, demolition is underway on an ugly housing complex—the 1970s-era Richmond Apartments—that will eventually be redeveloped.

As with the MFAH, the Menil walks a fine line between expansion and coherence, between a desire to engage its urban context while ensuring a contemplative space for art. And, as with the Moody, an emphasis on an expanded public program will help bridge the campus and the city. Johnston is confident they've struck a balance. "One of magical things about the legacy of the Menil is that they are non-didactic," she says. "Our goal is to create an atmosphere of discovery so you can have your own experience."

Will this renewed attention to public space and walkability in Houston actually entice visitors? That remains to be seen.

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“He is looking for the right architect to work on the project, one willing to fully subsume their vision to Frank Lloyd Wright’s. Banff will set the standard.”

Re-Creating Wright’s Lost Projects by Reed Karaim

Every architect leaves behind a portfolio of dreams: buildings designed or sketched that were never built. The more ambitious the architect, the bigger the size of those dreams. There are also the buildings that once took solid form, that were built and then torn down—not dreams so much as ghosts. Few architects in the 20th century were more ambitious than Frank Lloyd Wright, and perhaps none had a career that encompassed more unfulfilled dreams and persistent ghosts. About 530 Wright buildings were constructed during the architect's lifetime, and he left behind drawings for another 500 or so, including 100 in which the designs reached a fairly advanced stage.

A recent Banff National Park Pavilion rendering

What if you could give life to the unbuilt projects? And what if you could rebuild the projects that were torn down?

That simple idea, equal parts audacious and quixotic, is behind the Frank Lloyd Wright Revival Initiative, which was founded by Michael Miner, 54, an independent filmmaker who has produced four documentaries that examine the architect's legacy. For the initiative's first project, Miner is hoping to rebuild a park pavilion in Banff, Canada, that Wright designed in 1911 in association with his student Francis C. Sullivan, and which was demolished in 1939. The pavilion was 200 feet long with a low-hipped roof and the strong horizontal lines characteristic of Wright's prairie style. Constructed of local stone, cedar, and spruce, it had a central space with art-glass windows running along one side and a pair of stone fireplaces. Men's and women's "retiring" rooms were located on each end of the building, which was unheated and usable about four months a year.

It's not one of Wright's better known buildings, but Jennifer LaForest, development planner for Banff, says the pavilion influenced the city's design guidelines both through its use of local materials and the way it fit into the context of the landscape. "There's no question that this is an amazing masterpiece and an important building—one of only two buildings that he designed and built in Canada," she says. "It has not just a lot of architectural significance, but also national significance."

The Frank Lloyd Wright Revival Initiative has an impressive name, but it's a small operation, with a volunteer staff that consists of Miner, his wife Carol, and director Lane Manis, the former executive director of the Jacksonville, Fla., AIA chapter. The initiative's fundraising is focused on small donations, a Bernie Sanders–inspired crowdsourcing model that seems unlikely to attract the many millions needed for significant reconstructions. It would be tempting to dismiss the effort as a romantic pursuit or even a Hollywood-type vanity project, except that it has already made notable progress.

The city of Banff has given Miner preliminary approval (the city council still has to OK the final design), and he is confident that he can get the pavilion rebuilt, at a cost of about $2 million or less. He has reached out to construction and materials companies to solicit material donations, and he has the support of Eric Lloyd Wright, Frank Lloyd Wright's grandson, who studied at Taliesin West under his grandfather and has been involved in the restoration of several Frank Lloyd Wright structures, including the Storer and Ennis houses in Los Angeles. If Miner's plans are successful, he hopes that as a second project he can complete Wright's original design for the 1963 Pilgrim Congregational Church in Redding, Calif. Because of cost, the church built only one wing—or roughly 20 percent–of Wright's original design, which depicted a sprawling, much more dramatic structure.

But the initiative has been greeted warily in some Frank Lloyd Wright circles, the mini-industry that is devoted to protecting and promoting his legacy. None of the major Frank Lloyd Wright organizations—the foundation, the trust, or the conservancy—are

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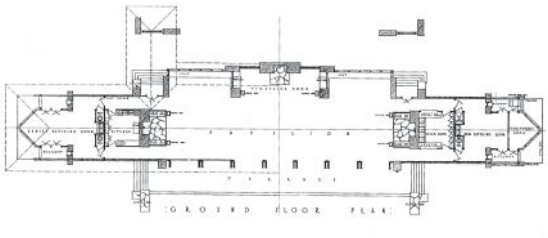


A plan for the Banff pavilion

actively supporting Miner. A pair of Wright experts I interviewed also questioned the logic of building decades-old designs, especially when many existing Wright buildings are in need of financial support for upkeep. "I'm skeptical. I think it's wonderful that someone is so enthusiastic about Frank Lloyd Wright," says Anthony Alofsin, AIA, an architect and professor at the University of Texas in Austin. "I just think there has to be a really strong rationale for doing such things. ... The other end of the spectrum would be the city of Banff saying, *Let's build a new pavilion that's got as much class and creativity as something that Frank Lloyd Wright would have built*."

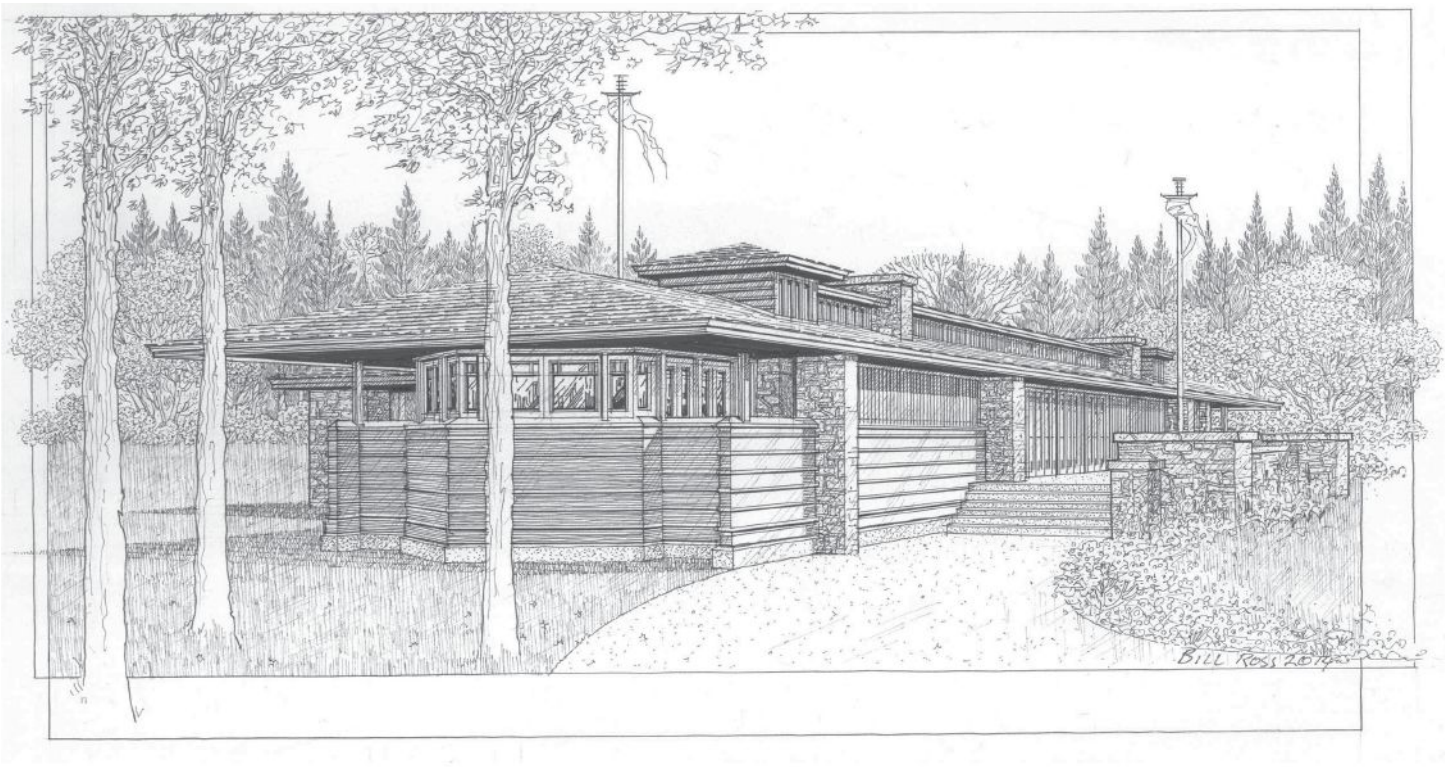
Still, a new design, even if brilliant, is unlikely to inspire the response of a rebuilt Wright structure. For Miner, the justification is simple. "He was a great artist," he says of Wright, and if you have a chance to bring more great works of art by a great artist to the world, you should do it.

How Miner came to be the person trying to do that begins with another kind of love story.

A Question of Purity

On a beautiful morning last fall I rode with Miner up the winding back canyon roads of Malibu, Calif., to visit Eric Lloyd Wright. The drive was, in a metaphorical sense, the continuation of a journey for Miner that began back in the 1990s when he took what he describes as a "three-year road trip" across America.

He was recovering at the time from a breakup with a girlfriend who had shared her love of Wright, and as he traveled across the country he became, without really planning it, one of the many Wright pilgrims, visiting one famous Wright structure after another. As



BILL ROSS

A recent sketch of the project

he did, Miner says, his appreciation for Wright grew. "Every building you go to you see some amazing new thing," he says, "and to recognize that this came from one person's mind—when you recognize genius at its highest level, it seizes you."

Miner had owned a chain of video stores in California in the 1980s that left him financially comfortable. He'd migrated to the production side of the film industry in the 1990s, debuting a short film at Sundance and then working in commercial video for a time. "I never got off the ground on the kind of independent films I really wanted to do," he says. But with Wright he found inspiration as a documentarian. He began with *Sacred Spaces*, in 2005, which focused on Wright's churches, followed in 2008 by *A Child of the Sun*, which looked at the

> "When someone builds based on the drawings, there is a gap, and that gap can be serious—or not."
>
> —Sidney Robinson, emeritus professor of architecture, University of Illinois in Chicago

Florida Southern College campus that contains 10 different Wright buildings, and then *Romanza*, which examines Wright's California architecture.

The morning we drove up to see Eric Wright, Miner was in deep into the last stage of production on his fourth Wright documentary, *Masterpieces*, a tour of Wright's most celebrated work, and has spent the night before in a recording studio in downtown Los Angeles working with his narrator. He was dressed casually in shorts and a polo shirt and had the slightly disheveled air of a distracted college professor.

The visit to Eric was to update him on the progress of the effort in Banff and to get his input on how to meet some of the design challenges going forward. "We chose this project because on paper it was the simplest, least expensive, and most feasible," Miner says. "We thought it was a wonderful project to get our feet wet and show what can be done."

The pavilion was originally built as an indoor gathering and changing space in a community recreational area (a kind of city park), but ballfields constructed sometime after the building's demolition mean that it will need to be reoriented

at least 30 degrees from the original location. The site is also prone to flooding—flood damage is believed to be one of the reasons the original structure was torn down—and the new building will either have to be flood proof or be sited at a higher elevation.

These concerns and others were on Miner's mind as he arrived at the Wright compound, which offered breathtaking views of Malibu and the ocean from high above the city. Eric Wright, a small man with a mildly unruly white beard and heavily lidded, thoughtful eyes, was waiting for us in the main house, wearing a black t-shirt featuring the words, "I intend to live forever. So far, so good."

Even though Eric Wright studied under his grandfather, he said that when working on a restoration, "the main challenge I always find is getting myself into the mind of Frank Lloyd Wright when we start, and thinking, 'Would Frank Lloyd Wright have done it this way?'"

Yet Wright seemed less worried about practical alterations than Miner, whose devotion to maintaining the purity of the original designs seems absolute. He repeatedly emphasized he wasn't interested in buildings "inspired" by Frank Lloyd Wright or that might emerge from a collaborative effort with a contemporary architect. He is looking for the right architect to work on the project, one willing to fully subsume their vision to Wright's. Banff will set the standard."The first one is the most important one," he says. "That's why it's essential to maintain the integrity."

Compromised Magic

Photographs, final drawings, and other materials related to the pavilion make that fidelity at least theoretically possible. But if the initiative succeeds and tackles other never-built structures, the challenge grows, notes Sidney Robinson, an emeritus professor of architecture at the University of Illinois in Chicago, and the author of numerous books on Wright. "As any architect knows, the completed building

incorporates information that is never drawn, so when the architect is involved in the construction, his or her pattern of choices or selections is incorporated in the building," Robinson says. "And when someone builds based on the drawings, there is a gap, and that gap can be serious—or not."

As an example, Robinson cites Monona Terrace in Madison, Wis. The convention center was designed by Frank Lloyd Wright in the 1930s, but the advent of World War II and political resistance to the size and scale of the design along the city's waterfront delayed the project until 1997, when it was finally built. To meet today's requirements, however, changes were made both in the building's height and elevation along the lake that resulted in "a building whose magic has been compromised," Robinson says.

Whether more substantial unbuilt Frank Lloyd Wright designs can be constructed without facing similar challenges is an open question. Larger projects also seem likely to test the financial and organizational capabilities of the initiative. Yet my time with Miner left me convinced of his sincerity and dedication to the cause, and if the Banff pavilion is rebuilt, it could open the doors to other projects.

Nearly everyone I spoke to for this story rattled off a list of lost or unbuilt Wright buildings that, as Alofsin says, "would have been extraordinary." He pointed to the San Marcos in the Desert resort near Chandler, Ariz., a victim of the Great Depression, and Wright's plans for the Doheny Ranch residential development near Beverly Hills. Robinson mentioned the Oak Park kindergarten buildings in Chicago, which Wright called Kindersymphonies, that he sketched out in 1926. Other notable projects: The Larkin Building in Buffalo, torn down in 1950, and the Midway Gardens in Chicago, demolished in 1929.

Will Miner's initiative succeed in bringing more of them back? And how would Wright have felt about the initiative? Eric notes that his grandfather took a pragmatic view of his finished buildings. "He would say, 'I've already done that. It's up to them now. I've moved on.'"

Yet it's hard to believe Wright, never known to be self-effacing, wouldn't be pleased to see new buildings pay tribute to the enduring power of his dreams.

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The factors that make architecture progressive can be hard to pin down, but that was the challenge facing the 2017 P/A Awards jury—just as it has been for the 63 juries that have come before. This year's 12 winners represent design that pushes the envelope, novel methods of representation, and an exploration of humble building types that can make peoples' lives better. If that isn't progressive, then what is?

"The building is a muted urban sculpture, and the Brutalist approach to such a significant cultural building—in the total blankness of the façade—is intriguing."

—Barbara Bestor, AIA

Award

The Ronald O. Perelman Performing Arts Center
New York
REX

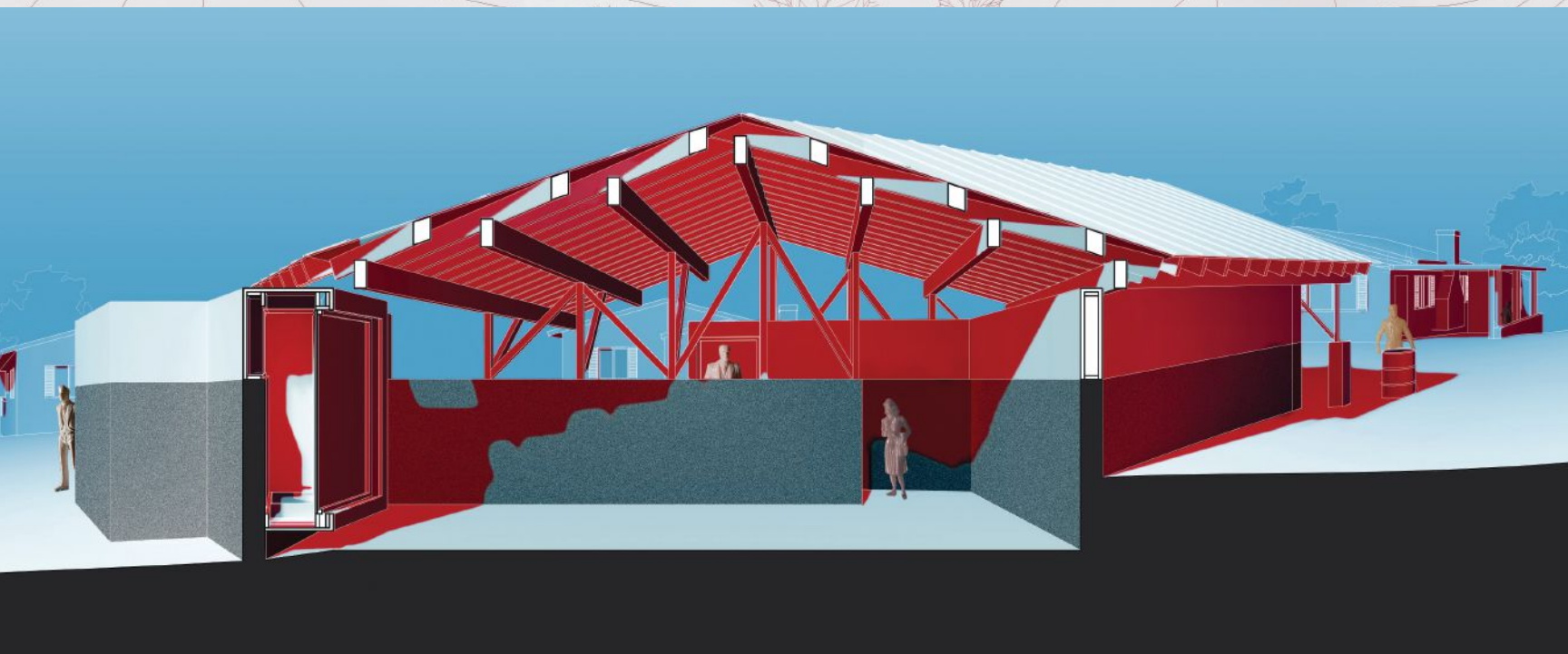
Since the earliest days of post-9/11 planning for the World Trade Center site, developers have hoped to include a cultural component. Finally in 2015, after more than a decade of delays and false starts, it was announced that Brooklyn-based REX would design the Ronald O. Perelman Performing Arts Center as the last major piece of the redevelopment. Located on the site's northern edge, just east of 1 World Trade Center, the 90,000-square-foot, $243 million translucent marble cube will enclose a series of flexible performance spaces that can be arranged in 11 different configurations to hold between 99 and 1,200 people.

While the center, which will be completed in 2020, will be minuscule compared with the neighboring tower and the soaring wings of Santiago Calatrava, FAIA's transit hub to its east, it will hold its own on the campus with its stark cubic form. The building's skin is composed of ultrathin slabs of veined marble sandwiched between two panes of glass; during the day, the marble will diffuse a gentle light into the otherwise windowless interior, and at night it will let the building glow, softly illuminating its surroundings.

The interior is split into three levels—the first has a public lobby and concessions, a middle level contains practice and dressing rooms, and the top level houses the performance spaces themselves (along with a rehearsal room that can be converted to extra performance space). A broad exterior staircase is cut into the southwest corner of the cube, wide enough to allow patrons to sit before or after a show or to gather and quietly contemplate the 9/11 memorial to its south.

Honorable Mention

House in Los Angeles
Los Angeles
The LADG



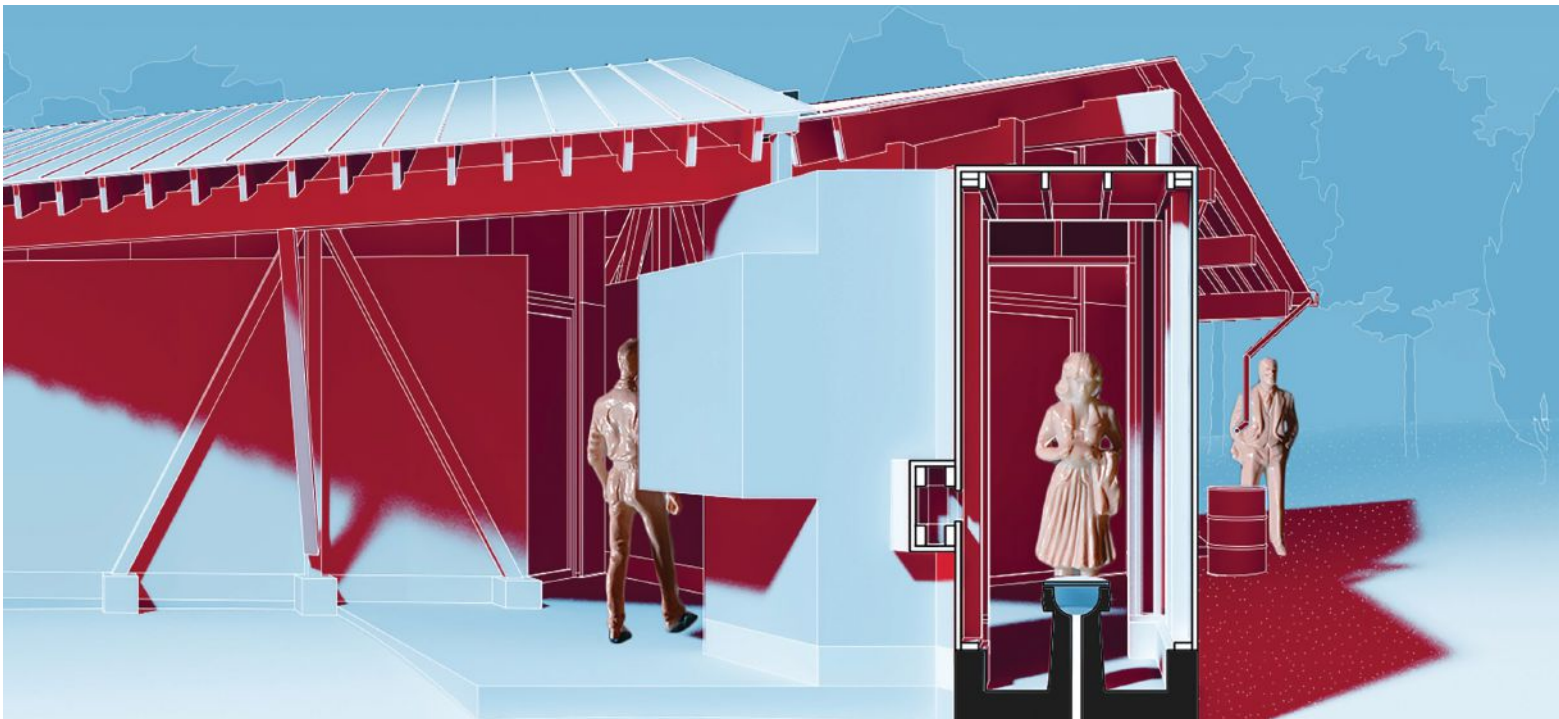
"To have a ranch house where the roof isn't obeying the plan of the house is a big deal. And with the use of color and the style of drawings, there's some progressiveness in the representation of the idea as well."

—Jennifer Bonner

The LADG took a client's straightforward brief for a house addition—specifically, a freestanding carport that could double as an events space and a separate artists' studio connected by an outdoor living room—as a green light to explore the relationship between walls and roofs in American domestic architecture, and particularly in the American ranch house. Instead of thinking of the walls and roof as two parts of the same whole, the LADG drew inspiration from Cliff May, the father of the California ranch house who worked extensively around Los Angeles and whose work often played with the intersection between vertical and horizontal lines.

First, the Los Angeles–based team laid out a series of freestanding walls, drawing on a significant study of the site and existing ranch house, the history of the design typology, and the potential arrangements of the walls. On each volume, the concrete-slab floors and the wood-frame walls went up first; then the roof, which rests on its own supports and not on the walls themselves, went on top. This allowed the firm to place the roofs of each structure off-kilter to the lines of the walls.

The two buildings share a similar brief, but they are quite different on the ground: The carport (opposite bottom) is a simple L-shape, arranged to allow casual performances to unfold outside, with itself as the backdrop. The studio (below), which includes space for canvas storage and a darkroom, has four walls but none at a 90-degree angle with its neighbor—forcing the roof to sit at odds with what's below it, and radicalizing the approach to those seemingly floating walls that May popularized in the region.



Citation

Village
Calgary, Alberta
Modern Office of Design + Architecture

Situated in Calgary's Bankview neighborhood, southwest of downtown, Village is in some ways a typical urban housing development, with 78 units ranging in size from 475-square-foot studios to 1,100-square-foot townhomes. The difference, though, is that where most designers would put the townhomes on the first few floors, local firm Modern Office of Design + Architecture (MoDA) inverted that order, placing the studios and smaller units on the lower floors, and the two- and three-bedroom townhomes on top.

The result of what MoDA calls "modulating density," an arrangement that puts more people closer to the ground and the surrounding neighborhood, at more affordable prices, while providing additional privacy and oversized patios for the townhome residents above. This is a particularly attractive feature in a city where many suburban residents are still not used to the idea of multistory, multifamily living. The patios are arranged to flow from one to the next, replicating, on a smaller scale, the suburban backyard.

At the same time, the smaller units at street level reduce the scale of the building, which sits at a busy intersection; the exteriors of the studios are black and the townhomes white, so that passersby can "read" the order of the units. Village also has just 58 parking spots, lowering the unit price-point and encouraging many residents to go without a car, either by walking or using public transportation.

The 62,000-square-foot project, which is still in its conceptual stages, will include about 30 different residential layouts.

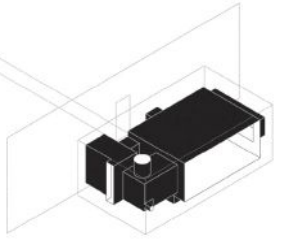
"I like the idea of having an urban form, and I'm interested in housing and how we can get cities to accept their densification laterally. This is a solution that creates a lot more density in a very interesting way."

—Barbara Bestor, AIA

"It's a bit academic, but it stands out in its purity of concept and image. It's intriguing."

—Barbara Bestor, AIA

Honorable Mention



Mask House
Ithaca, N.Y.
WOJR

The architects behind Mask House, Cambridge, Mass.–based WOJR, designed the project as a refuge for an entrepreneur and filmmaker who lost his brother in the very lake that the house overlooks. It announces its role as a place apart in two ways: Not only does it perch on piers on a gently sloping, wooded hillside, reachable only by a narrow footbridge, it also is concealed behind a tall scrim of charred wooden planks—the "mask" that gives the house its name. Between the mask and the front door to the house itself is a narrow void that on one side has a stair up to a netting-lined roof deck, and on the other, an elevated walkway to the woods. But more than just a circulation zone, this space also acts as a point of respite between the disorienting approach to the house and the cozy, if austere, 587-square-foot interior beyond.

The largely wood-paneled interior is comprised of three rooms: an open kitchen and living area with a metal fireplace suspended from the ceiling and a sliding picture window that leads to a balcony; a bathroom; and a sleeping alcove, located off the living area, which is just—and only just—large enough for a double bed. The alcove is a retreat within a retreat: lined with dark textured and patterned walls, the space features a large, circular skylight above the bed, and a single square window overlooking the lake, allowing the occupant to have access to the view. Niches in the alcove walls provide space for personal items.

Despite its intentionally precarious-looking approach, the resulting house is sparse but cozy, open but private, and provides an ideal place for quiet and secluded contemplation.

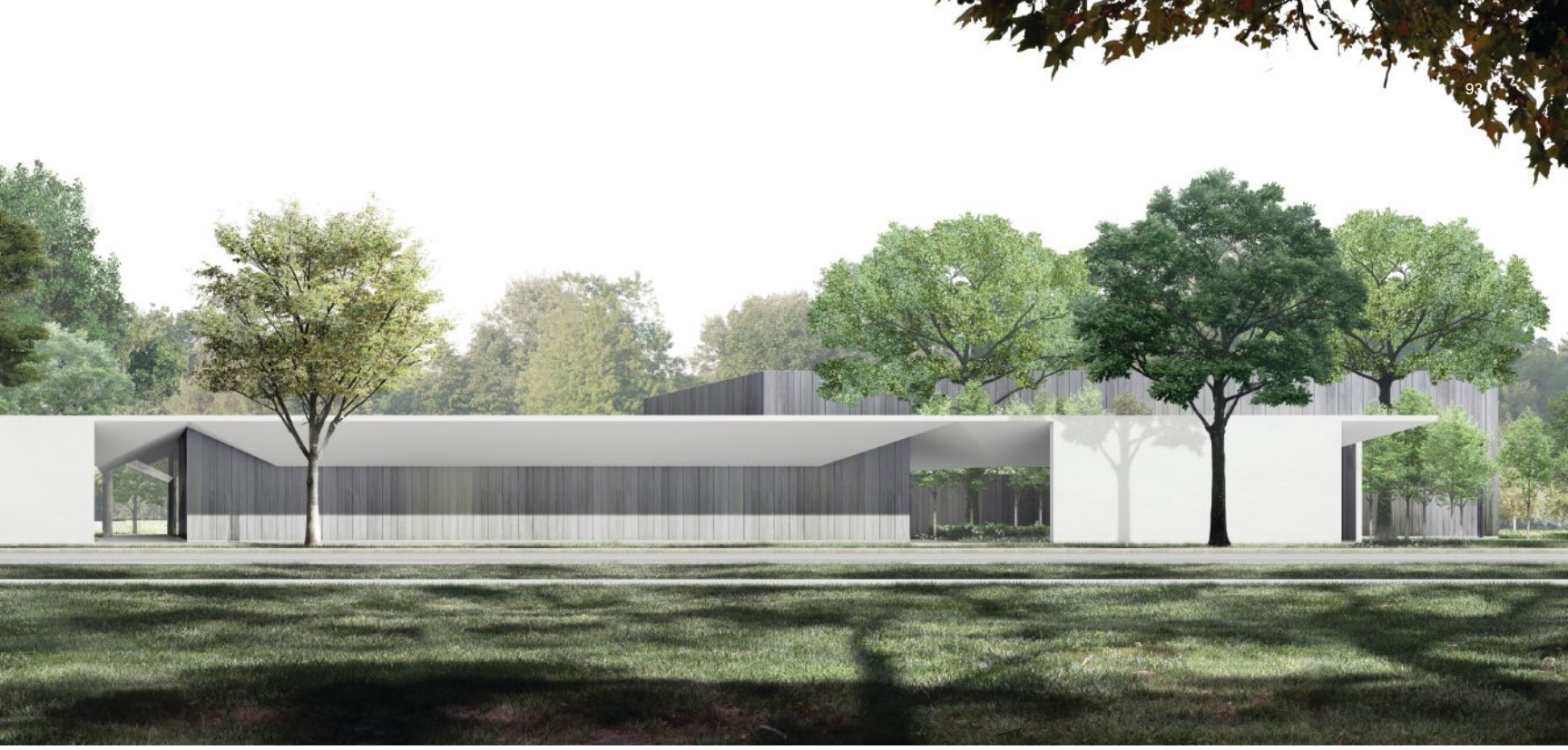
Award

Menil Drawing Institute
Houston
Johnston Marklee

The first freestanding museum dedicated to modern drawing in the United States, the Menil Drawing Institute sits on the tree-shaded campus of the Menil Collection, in the Montrose neighborhood just west of downtown Houston. The institute was founded in 2008, but it wasn't until 2012 that Los Angeles–based firm Johnston Marklee was chosen to design a $40 million home for it, as part of a master plan by David Chipperfield Architects for the 30-acre campus.

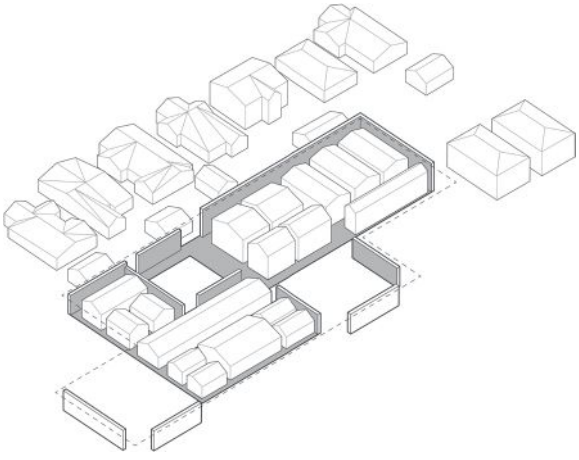
Johnston Marklee is perhaps best known for designing private houses, and the firm brings a sense of contemplative domesticity to the 30,000-square-foot institute. Like other buildings in the Menil "neighborhood," especially the original Menil Collection immediately to the northwest by Renzo Piano, HON. FAIA—itself the recipient of the AIA Twenty-five Year Award in 2013—the institute has a binary relationship with the harsh Texas sun under which it sits: The wide overhangs of the roof and the leafy canopies of the trees help keep out 90 percent of natural light, while still allowing some spaces to use daylight as their primary source of illumination.

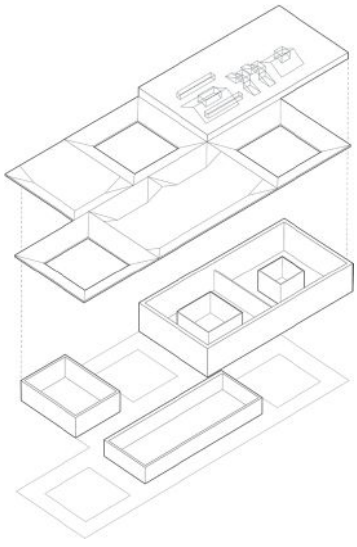
The building is composed of three enclosed volumes clad in gray cedar—one each for study (called the "scholars' cloister"), exhibitions, and administration—arranged under a common, white steel-plate roof. The roof also covers a multifunction, open-air space called the "living room," which connects the three enclosed volumes and provides a venue for lectures, study, and social functions. Tree-filled courtyards dot the plan—two of which act as entry points for the building.

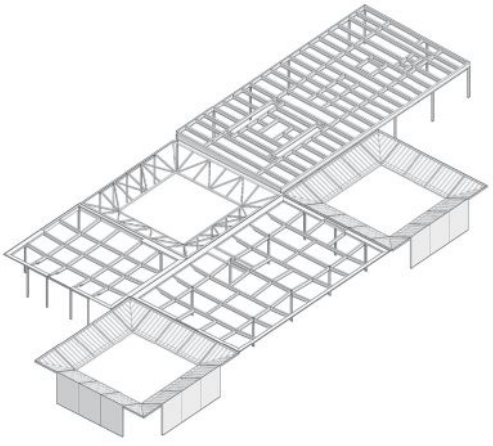


"They've done a good job at not replicating the vernacular, but worked with the 'ordinary'—these straightforward gabled roofs—to do something exciting with the thinness of the construction."

—Jennifer Bonner

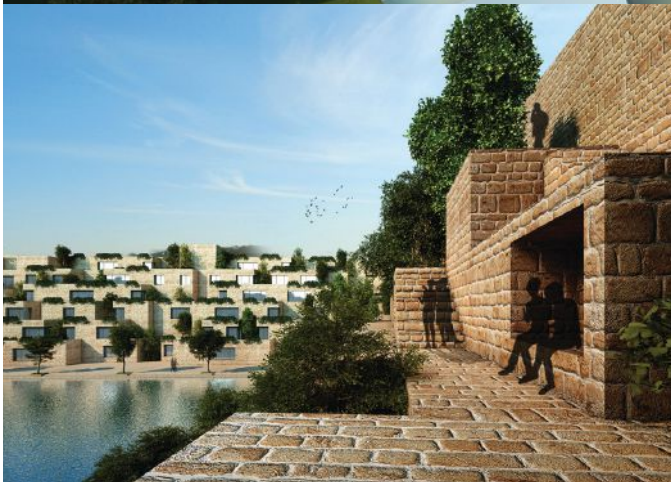






Citation

Reservoir
Rajasthan, India
Sanjay Puri Architects



Drawing inspiration from the famous stepped wells that for centuries have provided water for India's hot, parched Rajasthan state, the Reservoir office development is built around a naturally recessed pool, with office space arranged in a terraced formation on its northeast- and northwest-facing sides. Part of a 95-acre planned-community development, the Reservoir is located between a residential and commercial area.

The designer, Mumbai-based Sanjay Puri Architects, didn't start from scratch, but rather worked with a pre-existing indentation in the landscape—indeed, the squared-off pool naturally fills with water for most of the year. Terraced offices that step down in line with the natural contours of the site surround the pool; the back side of the offices are nestled into earthen berms that form the perimeter of the complex. The berms support photovoltaic panels and hide parking facilities; breaks in the berms form entrances. The south side of the complex, which is accessible from a busy main road, is programmed as open patios and platforms that serve as community space.

The six levels of office space have relatively shallow floor plates—about 18 to 25 feet deep—and floor-to-ceiling windows minimize the need for artificial light during the day. The terraced design allows each office to have an open-air social space with trees and bushes fronting the reservoir. The pool, which expands an existing catchment area, lowers the temperature of the immediate microclimate—important in a region where temperatures exceed 100 F for eight months of the year—and the runoff collected there contributes to the water supply for the entire surrounding development.

"In India, you will find many of these cisterns, but often only with the stairs and the water. This project takes that unique typology, and gives it energy and activation with different uses."

—Enrique Norten, HON. FAIA

"It's a complex structure that is really rich in space and light. The sustainable aspects are quite good, and the public and private spaces flow nicely."

—Enrique Norten, HON. FAIA

Citation

Bloomberg Center
New York
Morphosis Architects

Slated to open later this year, the Bloomberg Center is the first of three main buildings in the $2 billion Cornell Tech campus on New York's Roosevelt Island. Part of former New York Mayor Michael Bloomberg's 2011 initiative to make the city a global hub for technology development, the campus is a joint venture between Cornell University in Ithaca, N.Y., and Israel's Technion University. The Bloomberg Center proper will house research, teaching, and meeting space for graduate-level STEM students and faculty; the other two buildings will, respectively, offer university housing and offices for companies working with Cornell's various science departments.

Designed by Culver City, Calif.– and New York–based Morphosis Architects, the 150,000-square-foot Bloomberg Center sits along a north-south axis on a narrow plot at the western side of the 12-acre campus, and is organized around an entry lobby that aligns with 57th Street in Manhattan, visually tying the campus back to the city. A monumental staircase oriented toward Queens, to the east, rises from the first floor—which features an auditorium and two large lecture halls—up through the center's four additional levels, which are populated by open-plan classrooms along the building's western edge and smaller private meeting rooms and faculty offices to the east.

As part of the campus' overall sustainability mandate, the Bloomberg Center aims to be a net-zero energy consumer: Its roof features an overhanging "energy canopy" with a solar array that also shades a roof terrace; the building also sports a geothermal well system and a rainwater collection tank.

Honorable Mention

True North
Detroit
EC3

When it comes to rebuilding Detroit, there's no lack of energy and ideas, both from locals and from designers around the country. The difficulty is making big-ticket redevelopment projects work in a city where grassroots creativity doesn't often come hand-in-hand with deep pockets. And while the focus on creative solutions is certainly a plus, there's also no guarantee that the outsiders coming to town to help lead the push today will still be around tomorrow.

Los Angeles–based EC3 understands those complexities, which is why its design for True North—a 7,000-square-foot mixed-use project 2.5 miles away

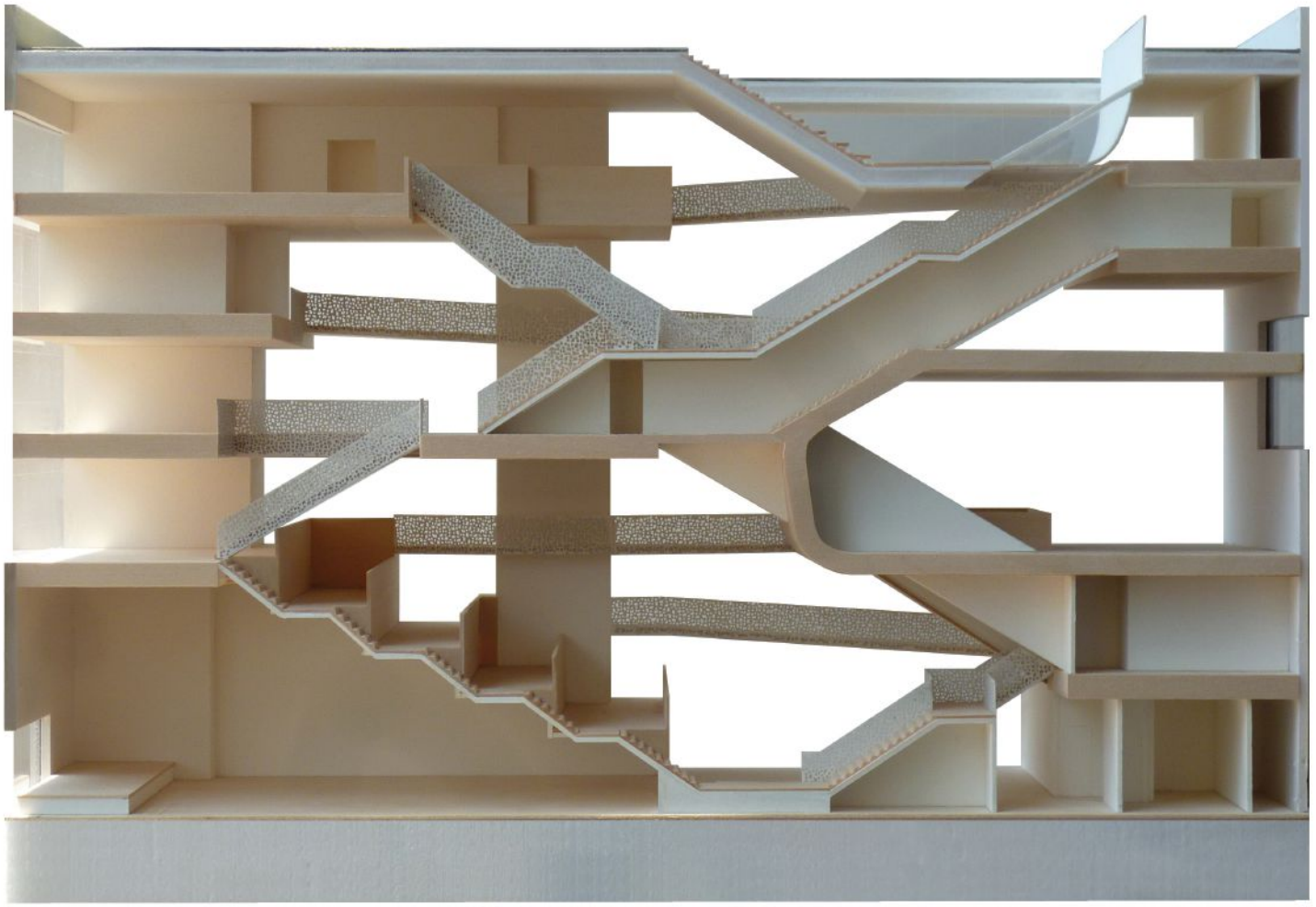
"I appreciate its lightfootedness in thinking about how to rebuild Detroit. By taking some of empty land and filling it rather inexpensively with a community program, it creates a beacon that would be great to visit."

—Barbara Bestor, AIA

from downtown—is centered around an easily constructable and decidedly cost-friendly vernacular: the Quonset hut. Churned out by the hundreds of thousands during World War II, the prefabricated Quonset hut is a half-tube in cross-section, made from a steel frame and steel or wood siding. In True North, these old-school structures get a bit of a modern update: Radiant heating in the concrete floors warm the huts, which provide nine live-work spaces for artists, entrepreneurs, and community activists. The ends of huts are made from custom-steel framing around polycarbonate panels to improve thermal values. Along with the huts, the site includes gardens, a community pavilion, and parking for eight cars. Three pathways connect the site to the neighborhood, inviting the broader community to engage with the space. And most importantly, by relying on low-cost prefabrication, the project will actually be realized: EC3 hopes to have the project completed by spring 2017 at a cost of just $850,000.

Citation

Hunters Point Community Library
New York
Steven Holl Architects

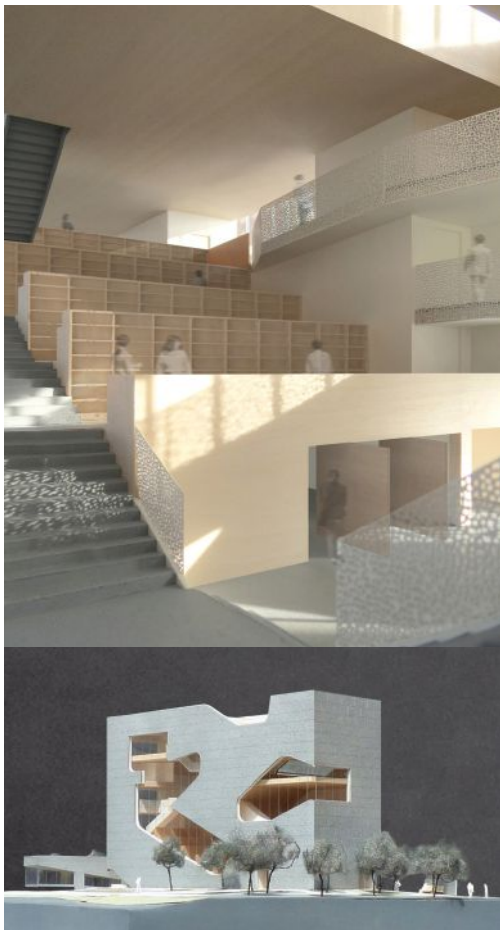


"Amidst the nothingness of the Long Island City riverfront, this project is really special. It's a refreshing new way of looking at a library."

—Enrique Norten, HON. FAIA

Located on the banks of the East River in Queens, Steven Holl Architects' Hunters Point Community Library is a testament to the area's rapid transformation: Once an underutilized industrial zone, Hunters Point has bloomed over the last decade with residential and commercial high-rises, converting brownfield sites into live, work, and play spaces for young families looking for outer-borough affordability and Manhattan convenience. The library's site was once the location for a factory that processed asphalt and other bituminous products, requiring significant remediation. The 22,000-square-foot, $37 million project complements the area's rapid change by trying to breathe new life into the traditional library model, from places of quiet study to active centers of community.

The exterior is formed of cast-in-place concrete coated with aluminum paint, giving the building an alluring sparkle. To the east of the slender structure sits a "reading garden" surrounded by Ginkgo trees, which mediates movement between the literary sanctuary of the library and the hubbub of Queens. Inside, the stacks flow continuously upward via a series of stairs that switch back from mezzanine to mezzanine. The stairs are interspersed with small reading areas lined in acoustic bamboo—and lead to a rooftop café and reading space. The flow is articulated on the façade by a series of glazed cuts in the concrete—one each for the children's, teens', and adult's book sections. The cuts allow passersby to watch people moving within the library, but they also offer stunning views back to the city, across the East River.



Honorable Mention

New Hampshire Retreat
Bethlehem, N.H.
NADAAA

Modeled after the MacDowell Colony for artists, this northern New Hampshire retreat is designed to take full advantage of its hilltop site in the Presidential Range of the White Mountains. Designed by Boston-based NADAAA, its rooms—three guestrooms, dining and living spaces, a photo lab, and support facilities—are arranged in an ellipse, and angled to optimize views out over a broad valley. The rooms sit under a single roof and open onto a central, slate-floored courtyard, making each a semi-autonomous structure within the whole; the different orientations create spaces in between the rooms which the architects have set aside for semi-private patios.

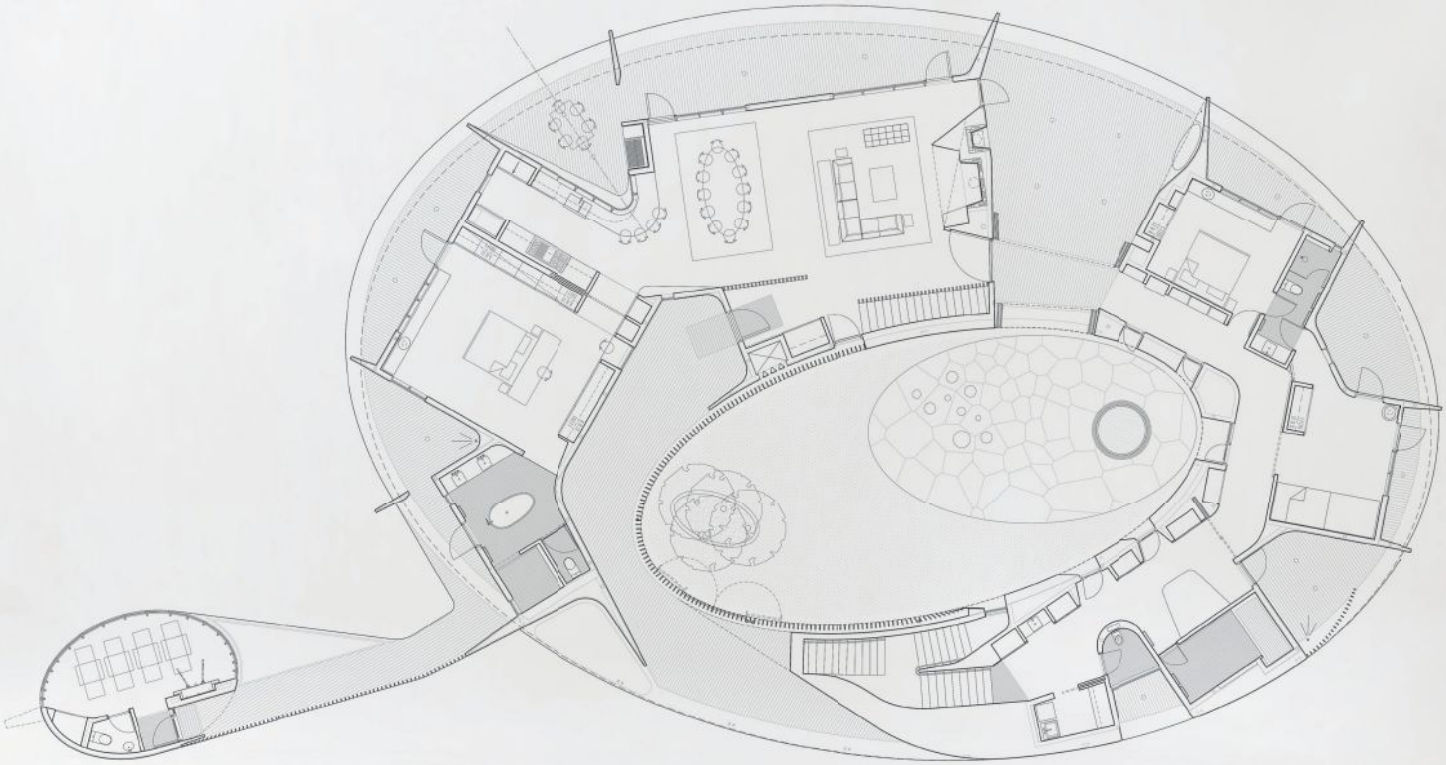
While the 6,354-square-foot facility is intended as a space for visiting artists, its program also encourages a significant commitment to rest and relaxation. A semi-detached spa can be reached via a covered walkway, and voluminous storage space in the basement is meant for skis, snowshoes, and other cold-weather sporting equipment.

The structure is clad in vertical, tongue-and-groove white cedar slats, reflecting the local forests. White cedar is also used in the ceilings, fencing, and louvers between passageways and the interior courtyard, creating an instant, common visual element. The structure is protected from the elements by triple-glazed windows and a stout thermal mass.

The retreat's bold main entry is an open-air passage formed by the sinuous underside of a stairway to the roof deck. It leads to the central courtyard, which centers on a fire pit, providing a visual and material refuge from the wild and often harsh nature outside.

"It's a simple parti, but the plan and the interstitial areas between the rooms that serve as indoor–outdoor spaces are really quite beautiful."

—Jennifer Bonner



"I think it's very beautiful—I love this translucent solution, and the color coming through. I thought it was very poetic."

—Enrique Norten, HON. FAIA

Award

Maggie's Centre Barts
London
Steven Holl Architects

Buildings for Maggie's Centre—a British organization co-founded by architecture critic Charles Jencks and named for his late wife—are designed to be warm, quiet spaces for people fighting cancer and their families. Not surprisingly, many are low-slung structures in park-like settings, but the latest, Maggie's Center Barts, didn't have that luxury. Located on a postage stamp of a site adjacent to the historic St. Bartholomew's Hospital in central London, it had to pull double duty: Its exterior had to engage with the hospital's other buildings, some dating to the 17th century, and it had to provide a sanctuary-like interior to give patients respite from the stress of the hospital experience.

Steven Holl Architects designed the building to resemble a nest—or, as the Maggie's Centre website calls it, an "urban townhouse." The facility, the second of its kind in London, has a branching concrete frame, the interior of which is lined in perforated bamboo panels. The exterior skin is comprised of matte white glass, interspersed with pieces of colored glass—a triple skin that Holl calls "a vessel within a vessel within a vessel." The glass creates a muted but playful façade, while filling the three-story center with diffuse, multicolored light.

The center's interior is organized around a three-story curving staircase, which leads to a tree-filled garden terrace and a multifunction community room. Along the way up, the staircase passes open and semi-enclosed spaces for counseling, group discussions, and light exercise. The result is a deceptively simple structure that both complements and contrasts with its hospital surroundings, visually and programmatically.

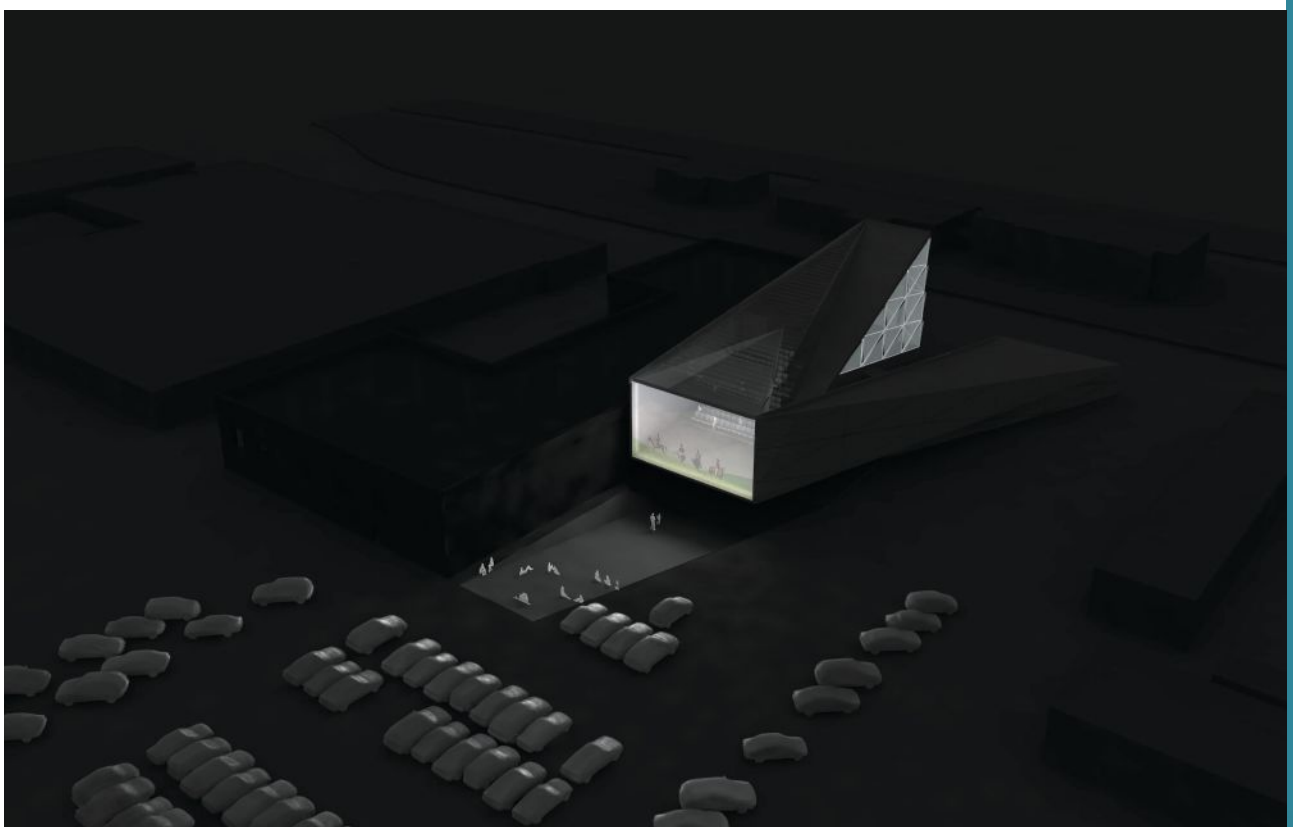
Citation

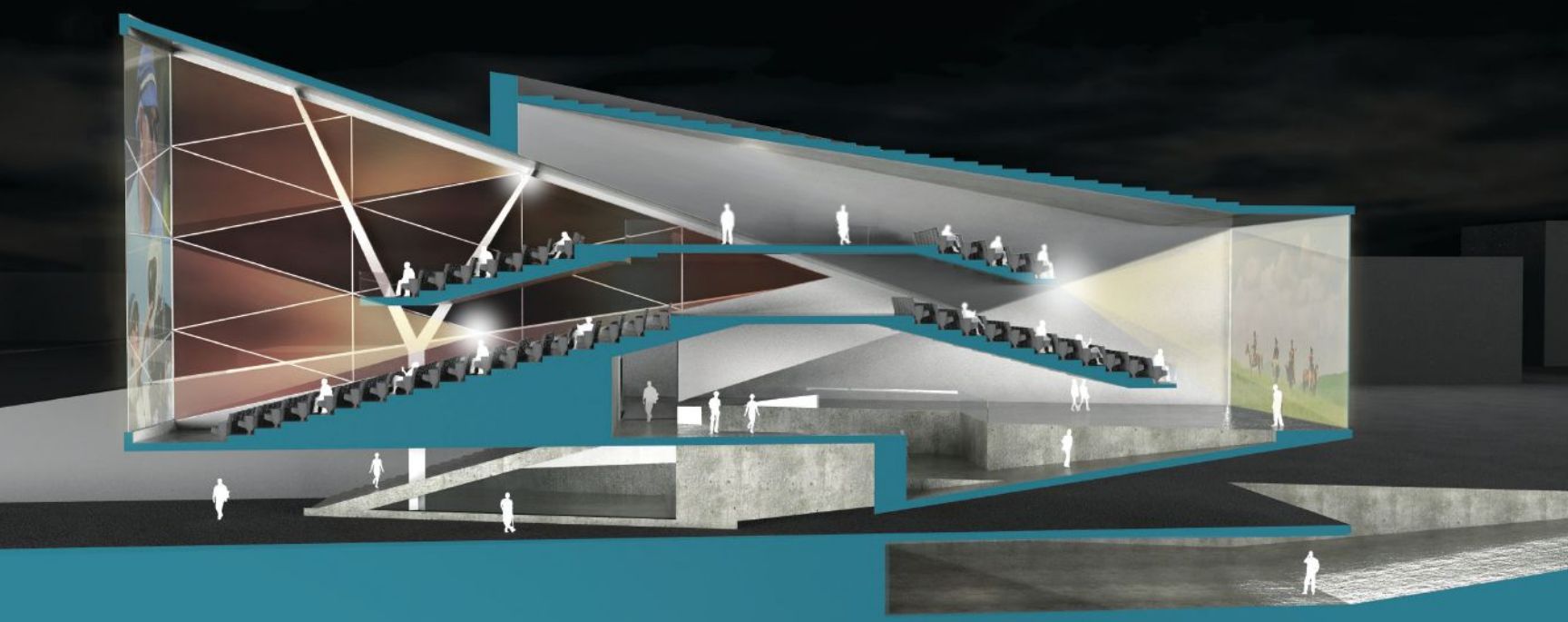
Media Center at Columbia College Hollywood
Los Angeles
Deegan Day Design

Columbia College Hollywood is a small film school nestled in Los Angeles' Tarzana neighborhood, in south central San Fernando Valley. Many of the school's facilities are located in the former headquarters of Panavision Cameras, which the school has been steadily outgrowing. So in a bid to make room and raise its profile in the film industry, it hired local firm Deegan Day Design to develop plans for a 15,000-square-foot building—connected to the existing facilities—that features a new Center for Contemporary Cinema.

Appropriate for a school whose courses of study focus on getting a foothold in the film industry, Deegan Day drew its inspiration for the design from French psychoanalyst Jacques Lacan's distinction between "looking" and "seeing." The building is a steel-framed structure formed from two adjacent, semi-overlapping wedges that nod in form to both the cone of light that a film projector emits, and the resulting cone of light that reflects from the movie screen. The cones are connected, and form a single volume that holds all of the new programming.

The center incorporates exhibition space, production facilities, classrooms, faculty offices, and a student café, and features six new spaces, with capacities ranging from 16 to 105, for film viewing and presentation. The college's location near the city's new Orange Line makes it easily accessible to visitors as well as students, opening the center to a broad audience. And it will be ready to welcome them soon—the project is expected to be completed in the second half of 2017.





"I like institutional buildings that do not feel like they've been designed by committee. Taking the projection path of an image as a diagram for the building is interesting. It's different. I think we should encourage more of these types of projects in America."

—Barbara Bestor, AIA

Project Credits

The Ronald O. Perelman Performing Arts Center, page 84
Project: Ronald O. Perelman Performing Arts Center at the World Trade Center, New York
Client: Ronald O. Perelman Performing Arts Center at the World Trade Center
Architect: REX, New York
Executive Architect: Davis Brody Bond
Pedestrian Circulation: Arup
Life/Safety/Code: CCI
Theater: Charcoalblue
Cost Estimating: Cost Plus; Sciame
Security: Ducibella Venter & Santore
Façade: Front
M/E/P/FP: Jaros Baum & Bolles
Vertical Transport: Jenkins & Huntington
Structural Engineering: Magnusson Klemencic; Silman
Wind Analysis: RWDI
Blast Design: Thornton Tomasetti/ Weidlinger Associates
Acoustics: Threshold
Acoustics and Vibration: Wilson Ihrig
Renderings: Luxigon; DBOX
Model Photographer: Chris Janjic
Size: 90,000 square feet
Cost: $243 million

House in Los Angeles, page 86
Project: House in Los Angeles, Los Angeles
Client: Julianne Backmann and Eloy Torres
Designer: The LADG, Los Angeles
General Contractor: Gustavo Diloretto
Structural Engineer: Kwesi Asamoah
Civil Engineer: KES Technologies
Size: 2,000 square feet
Cost: Withheld

Village, page 88
Project: Village, Calgary, Alberta
Client: Renata Development
Architect: Modern Office of Design + Architecture, Calgary, Alberta
Developer: RNDSQR
Construction Manager: BMP Construction Management
Renderings: Turbulentarch
Size: 62,650 square feet
Cost: Withheld

Mask House, page 90
Project: Mask House, Ithaca, N.Y.
Client: Withheld
Architect: WOJR, Cambridge, Mass.
Visualization: Alexis Nicolas Basso
Size: 587 square feet
Cost: Withheld

Menil Drawing Institute, page 92
Project: Menil Drawing Institute, Houston
Client: The Menil Foundation
Architect: Johnston Marklee, Los Angeles
Structural Engineer: Guy Nordenson and Associates; Cardno Haynes Whaley
Landscape Architect: Michael Van Valkenburgh Associates
Lighting Design: George Sexton Associates
M/E/P Engineer: Stantec
Building Envelope Engineer: Simpson Gumpertz & Heger
Civil Engineer: Lockwood, Andrews & Newnam
Landscape Lighting: Tillett Lighting Design Associates
Cost Consulting: AECOM
Acoustical/Audiovisual/IT: Arup
Security: Architect's Security Group
Specifications: AWC West
Irrigation: WC3 Design
Soils: Olsson
Size: 30,000 square feet
Cost: $26 million

Reservoir, page 94
Project: Reservoir, Rajasthan, India
Client: Shree Cement
Architect: Sanjay Puri Architects, Mumbai
Structural Consultant: Dr. Kelkar Designs
M/E/P: Epsilon Design Consultancy
Size: 100,000 square feet
Cost: Withheld

Bloomberg Center, page 96
Project: Bloomberg Center, New York
Client: Cornell University
Architect: Morphosis Architects, Culver City, Calif.
Structural/M/E/P/Sustainability/Façade/ Lighting/Acoustics/Audiovisual/IT/ Security/Smart Building: Arup
Cost Estimator: Dharam Consulting
Geotechnical: Mueser Rutledge Consulting Engineers
Code: CCI, Code Consultants
Specifications: Construction Specifications
Waterproofing: Henshell & Buccellato
Kitchen Consultant: Jacobs Doland Beer
General Contractor: Barr & Barr
Façade Construction: A. Zahner Company
Preconstruction CM: Tishman Construction
Owner's Representative: Forest City Ratner Cos.
Size: 150,000 gross square feet
Cost: Withheld

True North, page 98
Project: True North, Detroit
Client: Prince Concepts
Design Architect: EC3, Los Angeles
Architect of Record: Studio Detroit
Construction Administration: Reyna Construction
Project Representative: Above the Fold
Civil Engineer: Nowak and Fraus
Quonset Hut Provider: SteelMaster
Underground Work: Brown Derby Boys
Plumbing: Expert Master Plumbers
Electric: Willie Marshall and Sons
Model Photographer: Dimitri Newman
Size: 7,530 square feet
Cost: $850,000

Hunters Point Community Library, page 100
Project: Hunters Point Community Library, New York
Client: New York City Department of Design and Construction Queens Library
Architect: Steven Holl Architects, New York
Landscape Architect: Michael Van Valkenburgh Associates
Structural Engineer: Robert Silman Associates
M/E/P Engineer: ICOR Associates
Lighting Design: L'Observatoire International
LEED Consultant: ADS Engineers
Expeditor: Code
Civil Engineer: Langan Engineering & Environmental Services
Fire Technical Consultant: Rolf Jensen & Associates
Cost Estimator: Davis Langdon
Specifications: Construction Specifications
Climate Engineers: Transsolar
Size: 22,000 square feet
Cost: Withheld

New Hampshire Retreat, page 102
Project: New Hampshire Retreat, Bethlehem, N.H.
Client: Withheld
Architect: NADAAA, Boston
Size: 6,354 square feet
Cost: Withheld

Maggie's Centre Barts, page 104
Project: Maggie's Centre Barts, London
Client: Maggie Keswick Jencks Cancer Caring Centres Trust
Architect: Steven Holl Architects, New York
Landscape Architect: Darren Hawkes Landscapes
Associate Architect: JM Architects
Civil/Climate/Mechanical Engineer/Façade Consultant: Arup
Historic Building Adviser: Donald Insall Associates
Lighting Consultant: L'Observatoire International
CDM Coordinator: CDM Scotland
Code Consultant: Butler & Young Group
Planning Adviser: DP9
Cost Estimator: Gardiner & Theobald
Construction Manager: Sir Robert McAlpine
Archaeology: Museum of London Archaeology
Size: 6,534 square feet
Cost: Withheld

Media Center at Columbia College Hollywood, page 106
Project: Media Center at Columbia College Hollywood, Los Angeles
Client: Columbia College Hollywood
Architect: Deegan Day Design, Los Angeles
Executive Architect: Yu2e
Landscape Design Consultant: Groundswell Landscape Architecture
Photography: Taiyo Watanabe Architecture Photography; Bradley Wheeler
Size: 15,000 square feet
Cost: Withheld

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Residential:

Pierre Koenig's Case Study House #21 Hits the Market

TEXT BY LEAH DEMIRJIAN

Los Angeles landmark and modernist icon Case Study House #21, also known as the Bailey House, is for sale. Tucked into the Hollywood Hills, the steel-framed, midcentury modern house was designed in 1958 by Pierre Koenig as part of *Arts & Architecture* magazine's Case Study House Program, which commissioned modern, reproducible housing that postwar middle-class Americans could afford. Koenig revisited the 1,280-square-foot project in the late 1990s to reverse a series of modifications and restore the house's clean and functional open-plan layout. At press time, the house was listed by Sotheby's International Realty for $4.5 million.

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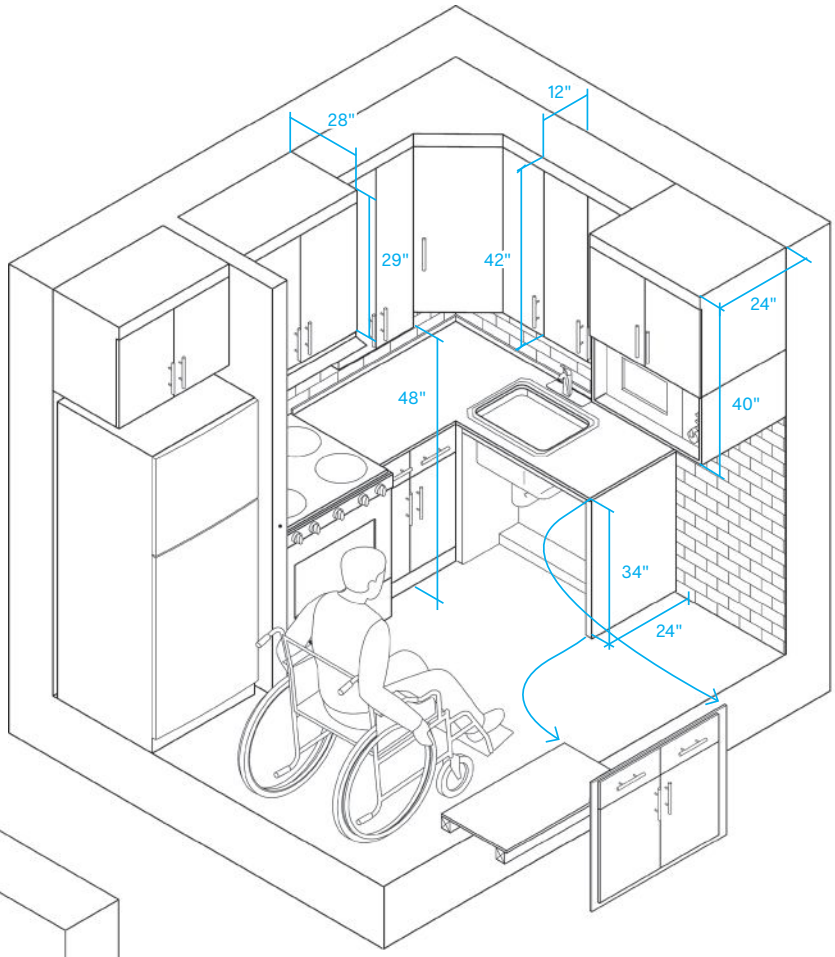
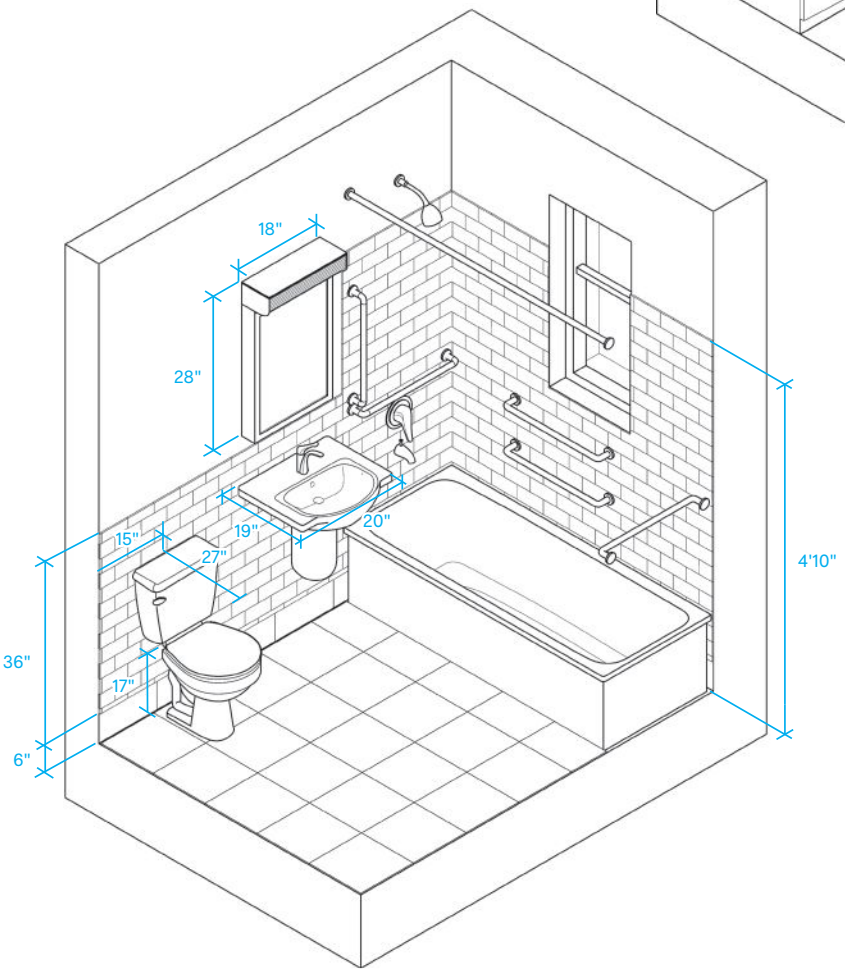
> *See more images of Case Study House #21 at bit.ly/CaseStudyHouse21.*

How to Renovate Affordable Housing in New York City





TEXT BY SARA JOHNSON

Mayor Bill de Blasio's proposed New York budget includes funding for public housing roof repairs, but overall, New York City Housing Authority's 2,550 buildings have $17 billion in unmet capital needs. The authority recently released renovation guidelines for its aging buildings, updating a decade-old set of criteria as part of its 10-year strategic plan, released in 2015. The 42-page report, intended to be more visually instructive than its predecessor, provides direction about design, construction, and specifications for all areas of a housing complex. Bruce Eisenberg, AIA, a deputy director in the authority's Office of Design, says the guidelines "set a standard that we hope the whole industry can move toward."

> *Read more about the "Design Guidelines: Rehabilitation of NYCHA Residential Buildings" report at visit bit.ly/NYCHARenovations.*

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TEXT BY SELIN ASHABOGLU

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Amstelloft
Amsterdam
WE Architecten

TEXT BY KATIE GERFEN
PHOTOS BY FILIP DUJARDIN

In the United States, half of all home buyers are looking for a new house, and of them, 27 percent would prefer a custom one. But that's not necessarily the case everywhere. "The Dutch don't have a rich tradition of building their own houses," says Wouter van Alebeek, a partner at Amsterdam-based WE Architecten. "The Belgians build their own houses, and the Germans, but in Holland we have big companies building loads of houses at once and filling them all."

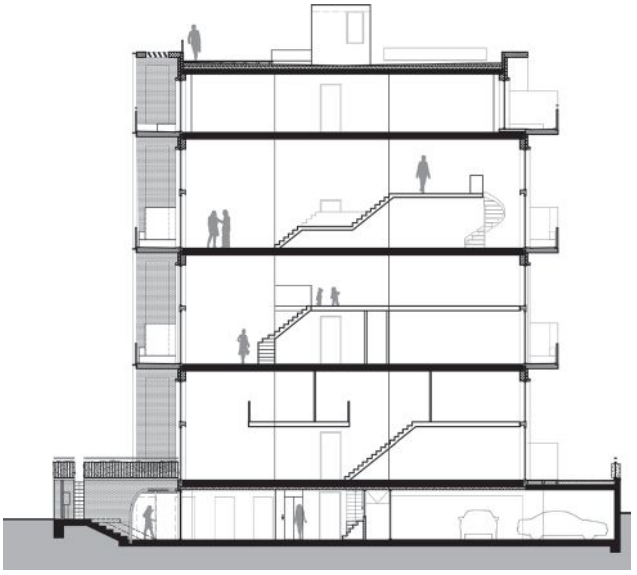
So from the get-go, WE Architecten's Amstelloft, a multifamily housing project that overlooks the Amstel River in central Amsterdam, stood apart from its neighbors by allowing clients to design their own space. In 2012, the city offered four prime riverbank sites for multifamily projects that emulated the German *baugruppen* model: co-funded, co-designed co-housing, without the backing of a developer, which is successful in Berlin, but radical in Amsterdam. To bid for one of the sites, WE Architecten first had to find clients. "We put an advertisement in the local newspaper saying: 'We want you to build your own house. Who is enthusiastic?'" van Alebeek says. More than 30 people came to their first meeting, at a local café. Of the final group of clients, half attended that meeting and the other half knew someone who did.

After what van Alebeek calls "training [our] clients to be clients," the architects developed a scheme with them that won one of the city's four sites. The parti is organized as a series of blank-box units behind an arched brick façade. (Brick is "one of the few materials that still looks good after about 10 years in the Dutch climate," he says.) Six units—20 feet wide and 55 feet deep, with a ceiling height of nearly 18 feet—are stacked side-by-side on the first three levels, and the single-height penthouse extends the full width of the building. The units are designed to be flexible: A young couple's loft can be subdivided on two levels as the family grows. Rather than move to the suburbs for more space, "our idea was that here you can order timber and make an extra room," van Alebeek says.

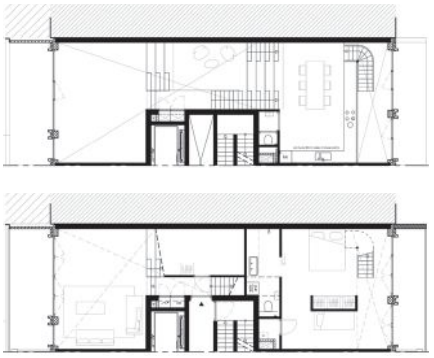
WE Architecten offered space planning for all of the clients—and did construction documents for two units—but each client builds out their own space on their own schedule. One owner moved in a week after Amstelloft was completed; other units are still under construction months later.

The city remains enthusiastic about *baugruppen*, but other prime sites are slow to come on market, now that the real estate market is hot again. When one does, WE Architecten would be happy to join in—not just for the design, but also for the larger impact. "It's a big step to have people build their own homes in the city," van Alebeek says.

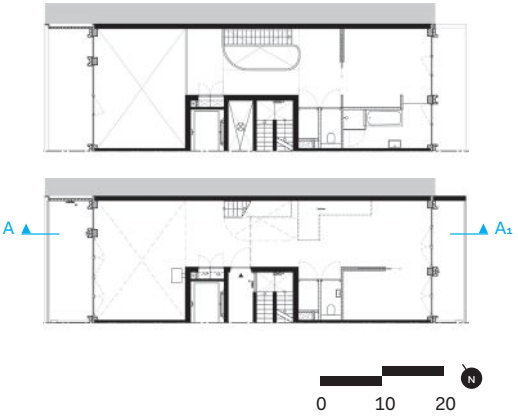
Section A-A₁



Unit Configured with Two Bedrooms



Unit Configured with Library Loft



Opening Page: The three neighboring buildings were part of the same city-run program, but the brick-faced Amstelloft ended up most closely following the *baugruppe* model.

This Image: Each unit is customizable; this one features a monumental stair with built-in storage.

Above: The owners were urged to leave voids near the front and back windows to draw light deep into the space.

Opposite: In addition to a communal roof terrace, each unit has a small balcony.

Project Credits
Project: Amstelloft, Amsterdam
Client: Bouwgroep Amstelloft
Architecture: WE Architecten, Amsterdam · Wouter van Alebeek, Erik de Vries (principal architects)
Construction: CAE Nederland
Acoustic/Physics Consultant: Earth Energie Advies
Cost Consultant: Kolom Bouw Advies
Building Surveyor: SSW Groep
Size: 1,135 square meters (12,217 square feet), base building
Cost: Withheld

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Editorial: Defunding Priorities

The White House and Congress are prepping for unprecedentedly large reductions in federal spending. According to *The Hill*, the new administration has embraced a proposal from the Washington, D.C.–based Heritage Foundation. The foundation's "Blueprint for Balance," also known as the "skinny budget," calls for $10.5 trillion in cost savings over the next decade. While the plan purports to target redundant and underperforming programs, which would be admirable if true, it unfortunately also targets programs that are vital for the built and natural environments.

In the "Blueprint," federal transportation funds will be "restricted to issues strictly of national importance," meaning zero dollars for local and state projects. The Federal Transit Administration, which supports local transit systems, safety, and research, will be phased out over a five-year period (savings: $4.013 billion). Amtrak will be defunded entirely ($519 million), as will D.C.'s Metro system ($153 million), the National Infrastructure Investment Program ($510 million), and the New Starts Transit Program, which supports building new transit projects ($2.221 billion). In justifying that last cut, the "Blueprint" states that "the Obama Administration has used New Starts to advance its 'smart growth' (read: anti-driver) agenda."

The "Blueprint" targets climate programs that regulate greenhouse gas emissions and promote resilience and green infrastructure ($3.682 billion), as well as the Environmental Protection Agency's Sustainable and Healthy Communities research program ($12.4 million). It also has the U.S. withdraw support from international collaborations in areas such as biodiversity, climate change, and desertification ($172 million); the U.N. Intergovernmental Panel on Climate Change ($10 million); and the Paris Climate Change Agreement ($235 million).

The Department of Energy will be particularly hard hit. Among the programs on the chopping block are the four Energy Innovation Hubs ($25 million) and the Office of Energy Efficiency and Renewable Energy, which manages the Solar Decathlon and funds research in wind, solar, and geothermal energy, and in building and weatherization technologies ($1.990 billion).

The "Blueprint" would eliminate the National Endowment for the Humanities and the National Endowment for the Arts ($302 million combined). The latter supports organizations such as the Chicago Architecture Biennial, the Frank Lloyd Wright Conservancy, the Society of Architectural Historians, and the Storefront for Art and Architecture, along with numerous museums, local architecture foundations, and design schools around the country.

While weighing the necessity for these and other cuts, consider that last year the Defense Department buried an internal study that identified $125 billion in purely administrative savings. According to *The Washington Post*, "The plan would not have required layoffs of civil servants or reductions in military personnel. Instead, it would have streamlined the bureaucracy through attrition and early retirements, curtailed high-priced contractors and made better use of information technology." Even a skinny government can afford to support design thinking, climate stabilization, building science, and energy conservation. It's simply a question of priorities.

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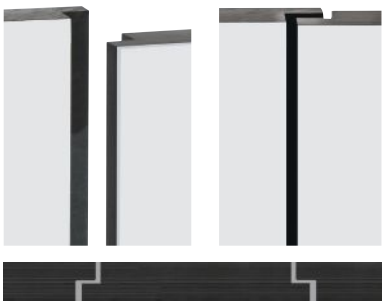

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