

For this 1.45 million ft² (135,000 m²) shopping mall, designers used a variety of colors and finishes on more than 2500 architectural precast concrete panels. The design created a series of independent-looking buildings while maintaining the high quality and uniformity of a single construction system.

The precaster used a variety of forming techniques and aggregate mixtures, as well as several finishes (acid etched, chiseled hammered, polished, and stained).

The slate finish was achieved with rubber molds cast from concrete flooring pieces discarded from the precaster's plant. The resulting shapes were manually tinted with penetrating acid-based stains of various colors in every slate block.

"We selected this project because of the quality and craftsmanship in replicating the stone finish, which is unbelievable," says Wanda Lau, a member of the buildings awards jury. "The innovation behind the precast is quite amazing. We've seen textures done before but never to this level of quality and craftsmanship. It shows that precast can be a very viable alternative to much more expensive, much more energy-intensive finish materials."

The smooth casting procedure and rapid erection process allowed the project to be completed ahead of schedule.

"We were really drawn to the use of precast to portray a variety of natural building materials," says Bob Powers, a member of the buildings awards jury. "The use of color and special formliners allowed the precast to create a very realistic look of natural slate and granite. They allowed the architect to achieve the aesthetic look of natural stone."

"We've seen textures done before but never to this level of quality and craftsmanship."
Wanda Lau

Owner:	Grupo FAME, Morelia, Mexico
Architect:	Taller Único de Arquitectos, Mexico City, Mexico
Engineer:	Postensados y Diseños Estructurales, Mexico City, Mexico
Contractor:	Grupo Altozano, Morelia, Mexico
Precaster:	Preteca, Atizapán de Zaragoza, Mexico
Project size:	1.45 million ft ² (135,000 m ²)
Project cost:	\$150 million
Photos:	Fotos En Concreto





Best Retail Facility
Paseo Altozano
Morelia, Mexico



Designers needed to project a high-quality image for a new mixed-use project in Salt Lake City, Utah. The 1 million ft² (93,000 m²) complex features a blend of residences and upscale retailers. To achieve this, 5726 architectural precast concrete panels were used to clad the exterior, featuring detailed geometrics and ranging in size from 0.42 to 179 ft² (0.039 to 16.6 m²).

"The precast concrete on this project was amazing," says Dave Craddock, a member of the buildings awards jury. "It offered a lot of attention to detail with stone projections and recesses. It allowed the designers to have a very enriched palette of materials and textures."

Considerable manual work was required to form each multisectional mold, which combined several smaller pieces to create the proper shape. Several forms combined curved and straight portions.

Despite the long distance from the plant in Atizapán de Zaragoza, Mexico, to the site in Salt Lake City, the operation ran smoothly. Dynamic crating and a bar-code tagging system permitted rapid loading, unloading, and permanent location identification at the site.

The precast concrete panels also contributed to the LEED silver certification through energy savings, waste management, recyclability, and other factors, but it was the detailed aesthetics that put this project over the top.

"We were really attracted to the complexity of the facade," says Bob Powers, a member of the buildings awards jury. "There is a lot of depth and shadow, a lot of interaction of light and shadow. All of the precast components have a lot of three-dimensional characters."

Best Mixed-Use Building

City Creek Center

Salt Lake City, Utah

Owner: City Creek Reserve Inc.,
Salt Lake City, Utah

Architect: Hobbs + Black Architects,
Ann Arbor, Mich.

Engineer: Magnussen Klemencic
Associates, Seattle, Wash.,
and Jacobsen Construction,
Salt Lake City, Utah

Contractor: Jacobsen Construction,
Salt Lake City, Utah

Precaster: Preteca, Atizapán de
Zaragoza, Mexico


Precast
coordinator: HHI Corp., Farmington, Utah

Project size: 1,001,880 ft² (93,080 m²)

Project cost: \$1.5 billion

Photos: Karen Weber, Fotos En Concreto

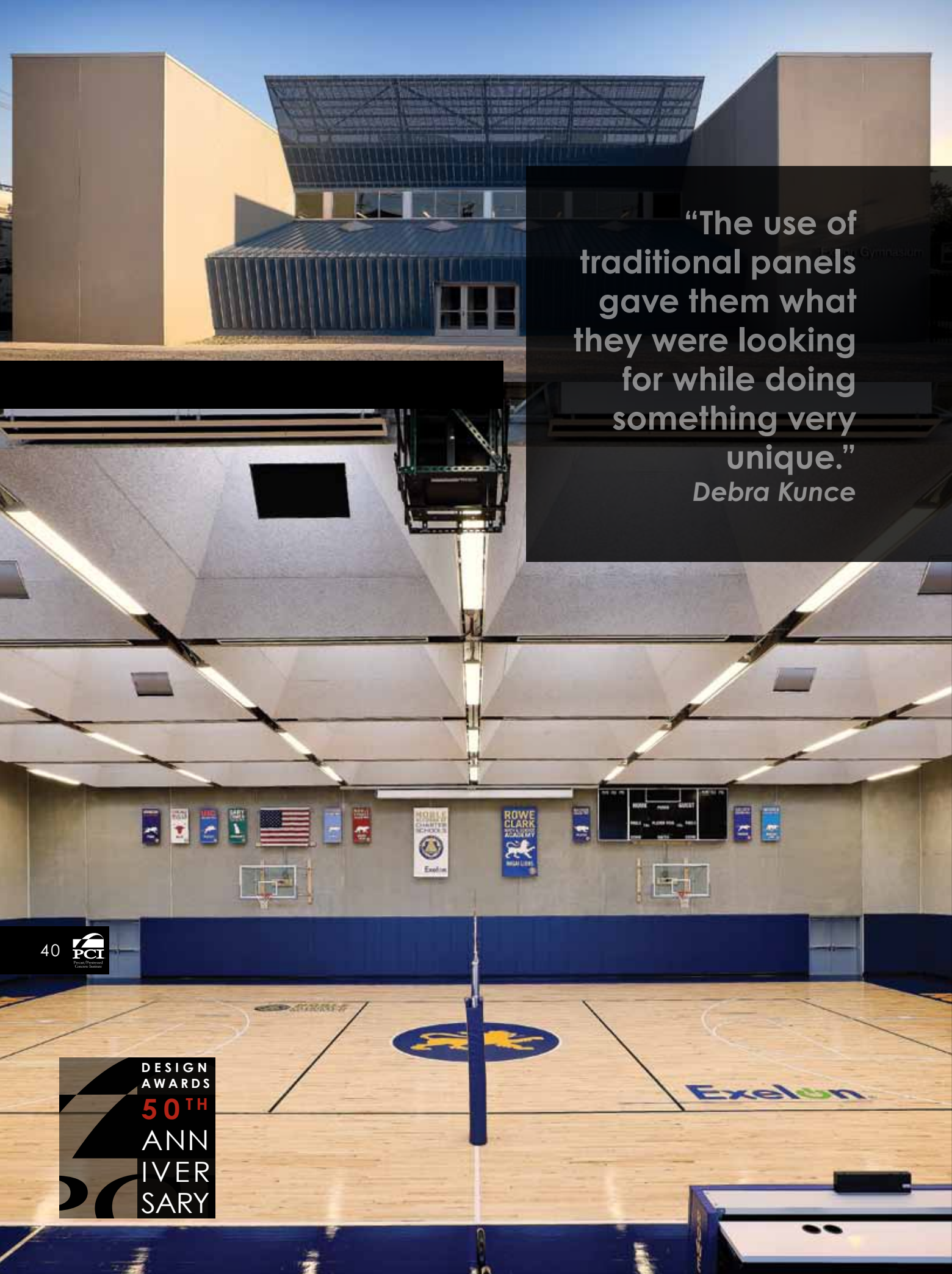




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PRIVATE PROPERTY
CITY CREEK
EST. 2012



“The use of traditional panels gave them what they were looking for while doing something very unique.”

Debra Kunce



Best K–12 School

Exelon

Gymnasium

Chicago, Ill.

Owner: Noble Network of Charter Schools, Chicago, Ill.

Architect: Wheeler Kearns Architects, Chicago, Ill.

Engineer: Thornton Tomasetti, Chicago, Ill.

Contractor: Bulley and Andrews LLC, Chicago, Ill.

Precaster: Advance Cast Stone, Random Lake, Wis.

Project size: 1,500 ft² (1070 m²)

Project cost: \$3.5 million

Photos: Mark Ballogg, Ballogg Photography

Built on a vacant lot in Chicago, Ill., the Exelon Gymnasium has changed the daily lives of the 590 students at the Rowe Clark Math and Science Academy.

The use of precast concrete panels helped meet the tight \$300/ft² (\$3200/m²) budget and the compressed schedule. "This project used very traditional precast panels in a way that supported the unique design," says Debra Kunce, a member of the buildings awards jury. "Schools are constantly challenged with budget and schedule, so the use of traditional panels gave them what they were looking for while doing something very unique. Schools can have good, strong design with glass and precast."

The wall panels feature a 2 in. (50 mm) outer architectural wythe and an 8 in. (200 mm) interior structural wythe sandwiching 3 in. (75 mm) of polyisocyanurate insulation. The combination of insulation and thermal mass provided high energy efficiency for the building envelope, as well as a durable finish for both interior and exterior walls. The energy efficiency allowed designers to downsize the HVAC system.

Casting the building's load-bearing walls, insulation system, and interior finished walls at the plant simultaneously with site preparation helped to speed construction. The building was ready for occupancy less than 10 months after the start date. The City of Chicago was so pleased with the results that it has encouraged using this technique on campuses in other neighborhoods.

The project, which nearly achieved LEED platinum certification, will save more than 40% of the energy consumed by a comparable, traditional structure. in all professional sports in the United States.

Nineteen federal agencies share the new 413,000 ft² (38,400 m²) U.S. courthouse in Jackson, Miss. With a need to meet a variety of federal security standards while providing an impressive aesthetic design, designers clad the exterior with two-story precast concrete architectural panels.

The efficiencies created by using architectural precast concrete panels in nontraditional ways helped limit the cost to just over \$350/ft² (\$3700/m²). The two-story, posttensioned, E-shaped panels were erected vertically. The sawtoothed patterned surfaces and projecting sills, along with deep recesses for the windows, were built into the wall panels at the plant, facilitating erection.

"The articulation of the exterior surface was a key reason we selected this project," says Tom Brock, a member of the buildings awards jury.

Designers also used precast concrete to achieve a variety of curving, rounded shapes. The building has no 90-degree corners, with obtuse and acute corners creating 10 angles at which the panels had to connect. Casting these pieces monolithically allowed precast concrete to do the job that otherwise would have required several materials.

The large, all-in-one panels also minimized the number of joints, reducing maintenance costs. Casting the components in a controlled environment enhanced the pieces' quality and allowed tighter tolerances. This was especially important in providing uniformity for the integral color.

"This project had a lot of requirements for blast resistance, but it also had to be a public space," says Wanda Lau, a member of the buildings awards jury.



Owner:	United States General Services Administration, Atlanta, Ga.
Architect:	H3 Hardy Collaboration Architecture, New York, N.Y.
Engineer:	Walter P. Moore, Houston, Tex.
Contractor:	W.G. Yates Construction, Jackson, Miss.
Precaster:	Gate Precast Co., Monroeville, Ala.
Precast concrete specialty engineer:	DC Engineering PC, Ashland, Va.
Project size:	413,000 ft ² (38,400 m ²)
Project cost:	\$136.1 million
Photos:	Chris Cooper

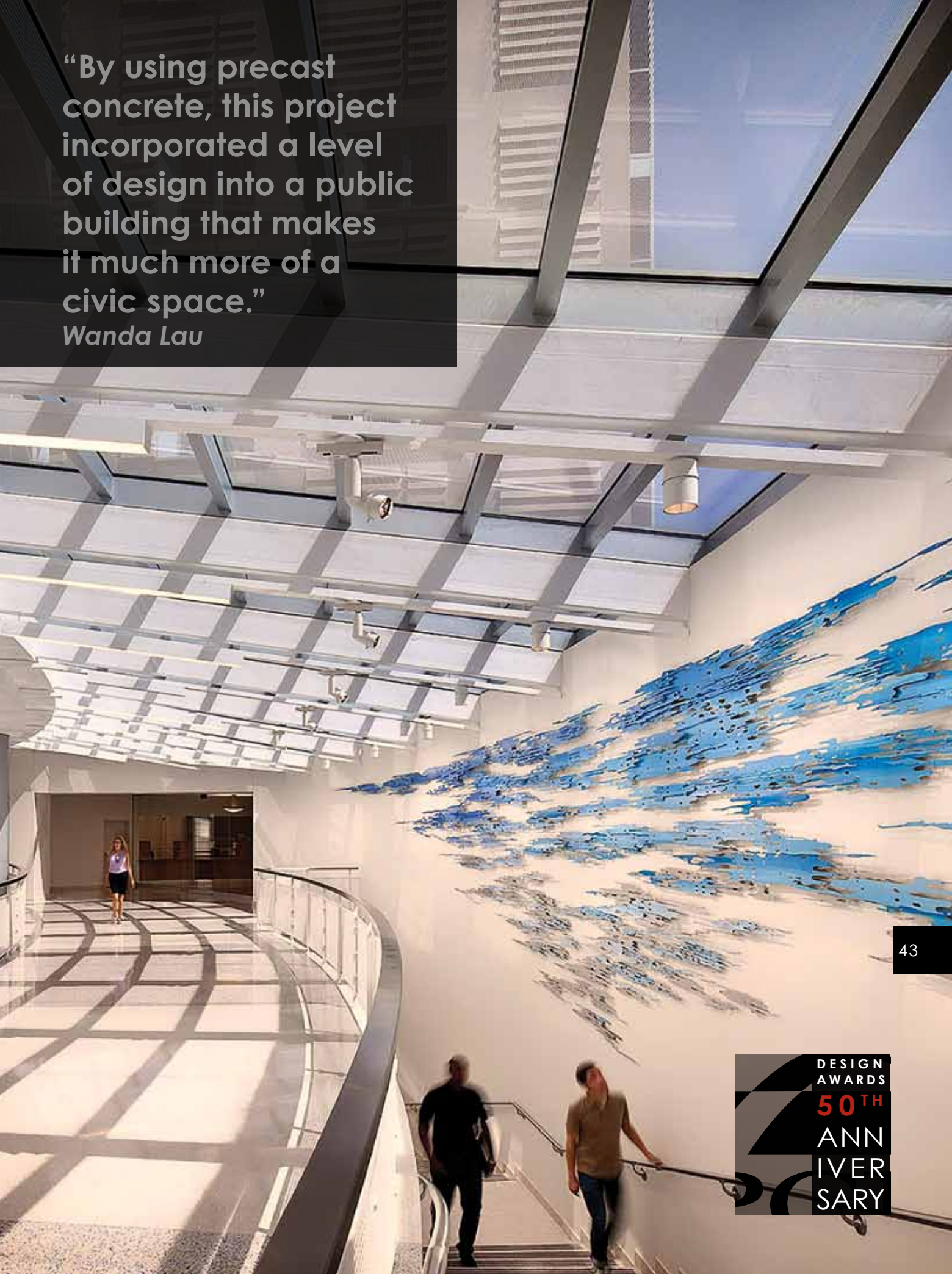
Best Justice and Correctional Structure

U.S. Federal Courthouse

Jackson, Miss.

“By using precast concrete, this project incorporated a level of design into a public building that makes it much more of a civic space.”

Wanda Lau



The architectural precast concrete wall panels used to clad the new Perot Museum of Nature and Science used a system of casting that maximized modularity, interchangeability, and strong aesthetics for the facade.

Panel prototypes were organized into categories of projections and shapes from which rubber molds were created. These categories then were pulled apart and rearranged after each concrete placement. Each mold was reused up to 50 times.

"What makes it strong is that they allowed precast to be used in a new way, with a nice undulation and softness that you don't see every day. It was wonderful," says Debra Kunce, a member of the buildings awards jury.

On the plinth and atrium, 9 out of every 10 panels have some type of curve, either concave or convex, in either their face or top. A number of panels were straight for some distance before they curved, and some started plumb in the direction they were being erected only to cant away from the structure by 12 degrees. Some panels both canted and curved.

The panels were designed with a nominal 6.5 in. (170 mm) thickness, allowing for 2 in. (50 mm) and 3 in. (75 mm) projections. Additional projections, extending 8 in. (200 mm), were created separately and were hand applied to the panels before shipping.

"The dynamic nature of the massing made this project a clear winner," says Bob Powers, a member of the buildings awards jury. "It's almost like frozen liquid in space. This project really highlights the versatility of precast."

Best Government or Public Building

Perot Museum of Nature and Science

Dallas, Tex.

Owner: Museum of Nature and Science, Dallas, Tex.

Architect: Morphosis, Culver City, Calif.

Engineer: Datum Engineers Inc., Dallas, Tex.

Contractor: Balfour Beatty Construction, Dallas, Tex.

Precaster: Gate Precast Co., Hillsboro, Tex.

Project size: 180,000 ft² (17,000 m²)

Project cost: \$92 million

Photos: Gate Precast Co.



“It’s almost like frozen liquid in space. This project really highlights the versatility of precast.”
Bob Powers

“Erasing 89 days
off the construction
schedule is a really
admirable thing.”

Tom Brock



Best Military Project

711th Human Performance Wing Complex

Wright-Patterson Air Force Base, Ohio

Owner: U.S. Army Corps of Engineers, Louisville District, Louisville, Ky.

Architect: Cannon Design, Arlington, Va.

Engineer: THP Limited Inc., Cincinnati, Ohio

Contractor: Archer Western/Butt Construction Joint Venture, Chicago, Ill.

Precaster: High Concrete Group LLC, Denver, Pa.

Project size: 680,000 ft² (63,000 m²)

Project cost: \$194.5 million

Photos: Brad Feinknopf

The new testing and training complex at Wright-Patterson Air Force Base comprises two major buildings and ancillary facilities that house laboratories, medical facilities, offices, and a range of equipment. To meet the 24-month construction schedule, designers chose architectural precast concrete panels to enclose the buildings.

Designers persuaded the Corps of Engineers that precast concrete panels embedded with thin brick would meet requirements better than laid-up brick veneer. Precast concrete also proved to be more economical.

"Erasing 89 days off the construction schedule is a really admirable thing," says Tom Brock, a member of the buildings awards jury. "For a huge facility, three months off of a project is nothing to scoff at."

The designers wanted to match the brick color of adjacent buildings and provide the look of hand-laid brick. They worked with the pre-caster to find the appropriate color in a 5/8 in. (16 mm) thick brick. Some areas also used exposed architectural panels in a buff color with a light sandblast finish.

The precast concrete panels provided a level of quality control and uniformity above expectations for a huge project that would have been a challenge for local masons, the designer said.

"The designers presented this project as being about the schedule savings that they got, but I think it goes beyond that," says Debra Kunce, a member of the buildings awards jury. "They took a big box, broke it down, and used precast concrete with color and form to create an aesthetically pleasing building."



Owner: The Church of Jesus Christ of Latter-day Saints, Salt Lake City, Utah

Architect: FFKR Architects, Salt Lake City, Utah

Structural engineer: ARW Engineers, Ogden, Utah

Contractor: JE Dunn Construction Co., Kansas City, Mo.

Precaster: Gate Precast Co., Ashland City, Tenn.

Project size: 32,000 ft² (3,000 m²)

Photo: Scot Pacer Proctor

Best Religious Structure

Kansas City Temple

Kansas City, Mo.

“The level of craftsmanship that could be achieved using precast versus stone saved this project a tremendous amount of money, time, and energy.”
Wanda Lau

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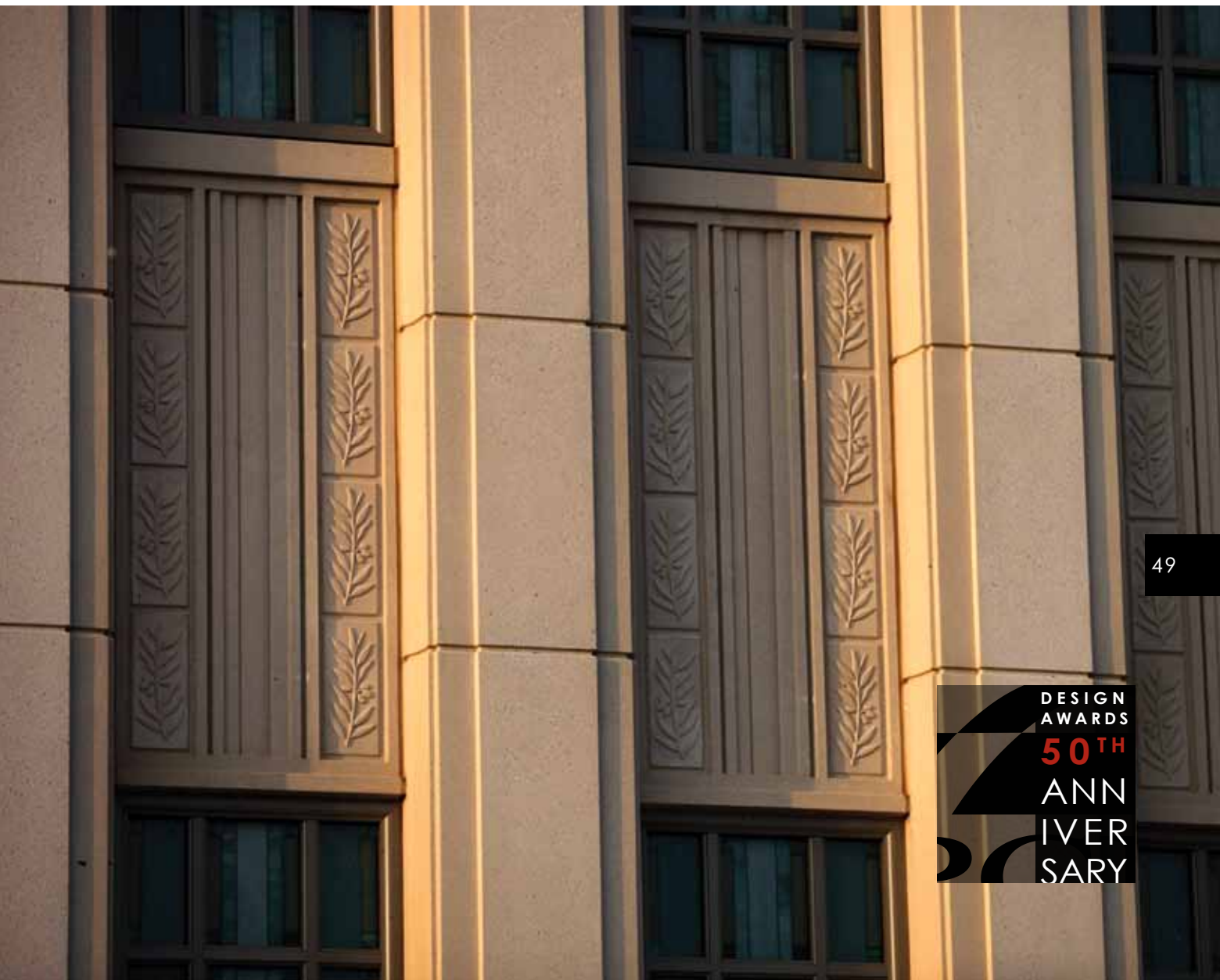
The temple of the Church of Jesus Christ of Latter-day Saints in Kansas City, Mo., offers unique design and detailing. These qualities were especially noticeable in the architectural precast concrete panels used to clad the exterior.

"The level of craftsmanship that could be achieved using precast versus stone saved this project a tremendous amount of money, time, and energy," says Wanda Lau, a member of the buildings awards jury, "but the quality of the project is still amazing. From the articulation of details to the placement of joints and the use of the olive branch motif that occurs throughout the building, we were impressed."

The olive-branch detail was carved by hand, and then pliable rubber molds were made from it. Multiple negatives were created and placed in molds at desired angles.

Two finishes were used for the 406 panels, which included glitter sand in their concrete mixture. A medium sandblast was used as the predominant finish, but acid etching was applied as a secondary finish for contrast.

"This project is an excellent example of precast concrete's versatility," says Tom Brock, a member of the buildings awards jury. "This church has a very distinctive character to it. The precast panels allowed the architects to create large sections of the building and minimize the number of joints, so from a distance it reads as a stone building, but the closer you get, the more abstract that surface gets. I wish we would see more of this type of use of the material."





“Precast concrete allowed the designers to use the same materials as neighboring buildings and apply them in their own unique way.”
David Craddock

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Owner: The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Architect: ZGF Architects LLP, Portland, Ore.

Engineer: Rutherford and Chekene, San Francisco, Calif.

Contractor: Whiting-Turner Contracting Co., Pleasanton, Calif.

Precaster: Walters and Wolf Precast, Fremont, Calif.

Project size: 204,640 ft² (19,000 m²)

Project cost: \$133.8 million

Photos: Bernard Andre Photography

Best High-Tech
or Laboratory Facility

Lorry I. Lokey

Stem Cell

Research

Building

at Stanford

University

Palo Alto, Calif.

The new stem-cell research building at Stanford University reflects the administration's goal of creating a modern medical-research environment. Flexibility, cost effectiveness, and collaboration were enhanced by the use of limestone-veneered architectural precast concrete and glass-fiber-reinforced concrete (GFRC) wall panels to clad the building's exterior.

To maintain consistency among the buildings on the campus, limestone veneer was attached to the panels in some locations. Using this precast concrete panel system dramatically shortened the schedule and reduced costs. GFRC covers were used on minor columns to complement the limestone-veneered architectural precast concrete wall panels and curtain-wall system.

The large atrium features precast concrete along its facade, fronted by a glazed curtain-wall system. The atrium promoted privacy for research labs while maximizing transparency and integration of indoor and outdoor community spaces. Special attention was paid to minimizing panel joints to create visual continuity from exterior to interior faces.

The building was designed to exceed requirements for LEED silver certification. This included sun shades on east, west, and south facades, which were attached to the precast concrete panels. The precast concrete components also helped achieve certification through their energy-efficient thermal mass, local manufacture, control of construction waste, and recyclability.

"This project showed the interesting way that precast concrete can relate with other materials," says Tom Brock, a member of the buildings awards jury. "The designers used precast as the general structural material and repeated that over and over, and then juxtaposed that against metal panels. The proportioning, detailing, and overall articulation was universally appreciated by the jury."

Best Hotel

The Crash Pad: An Uncommon Hostel

Chattanooga, Tenn.

Providing an uncommon twist on the traditional hostel required an innovative approach to its architecture. Designers did this by using precast concrete load-bearing wall panels and hollow-core slabs for the ceiling/second floor. The structural envelope played a key role in the facility's ability to target LEED platinum certification.

"The precast concrete helped make this a very fun and engaging place where I would love to stay," says Wanda Lau, a member of the buildings awards jury. "This project is a great example of how precast can be integrated with other materials."

The 12 in. (300 mm) thick panels included 4 in. (100 mm) of expanded polystyrene insulation between two wythes of concrete tied together with carbon-fiber shear grid. This provided an R-value of 20. The panels' thermal mass and insulation helped create a design that was more than 50% more energy efficient than a standard building. They also helped create sound-isolating interior spaces.

Offsite fabrication of the panels allowed the building to be erected quickly and prepared the interior for work by other trades. Construction took only six months, with the precast concrete structure erected only two months after groundbreaking.



"The precast concrete helped make this a very fun and engaging place where I would love to stay."

Wanda Lau

Owner: The Crash Pad LLC,
Chattanooga, Tenn.

Architect: River Street Architecture,
Chattanooga, Tenn.

Engineer: Kinnaman Consulting,
Chattanooga, Tenn.

Contractor: Collier Construction,
Chattanooga, Tenn.

Precaster: Metromont Precast Building
Solutions, Hiram, Ga.

Precast
concrete
specialty
engineer: PTAC Consulting
Engineers Inc., Pensacola, Fla.

Project size: 4320 ft² (401 m²)

Project cost: \$1.1 million

Photos: Mandy Rhoden

"What the judges liked most about this hostel was that it used the structure to help educate and inform its guests," says Debra Kunce, a member of the buildings awards jury. "So many of the things in our buildings are hidden. By using precast, they were able to showcase it and highlight it. It's a nice design."



Best Data Center

SV5 Data Center

San Jose, Calif.

Given one year from notice to proceed to occupancy of this data center, architects used precast concrete wall panels to clad the building and provide a distinctive, random-looking exterior.

The building was designed around modules consisting of a one-story computer room, two-story electrical-equipment bar, and a series of offices. The precast concrete panels provide durability and the required hardened shell.

Two types of panels were used to achieve the distinctive contrasting pattern. Panels 8 × 52 ft (2.4 × 16 m) tall featured formliner finishes, while 10 × 35 ft (3 × 11 m) panels had a solid black integrally colored finish. Panels were either 7 or 8.5 in. (180 or 220 mm) thick.

The panels required close attention to quality control to ensure uniformity. Metakaolin was used to reduce efflorescence and improve appearance and performance.

Reinforcing bar dowels protruding about 10 in. (250 mm) from the bottom of the panels were used to slide the panels into cast-in-place concrete embeds consisting of a corrugated duct mounted to a thin plate. The precaster used a PVC sleeve on the reinforcing bar to connect to rock even after the duct was grouted.

"This is an example of the designers going the extra mile," says Tom Brock, a member of the buildings awards jury. "Nine times out of ten, it is a box, but they very cleverly broke the mass up and then differentiated between the materials of the resultant masses. It's quite beautiful the way the whole project comes off. It speaks to the aesthetic versatility of precast."

Owner: Equinix, Redwood City, Calif.

Architect: Sheehan Partners Ltd., Chicago, Ill.

Engineer: Paradigm Structural Engineers, San Francisco, Calif.

Contractor: Turner Construction, San Jose, Calif.

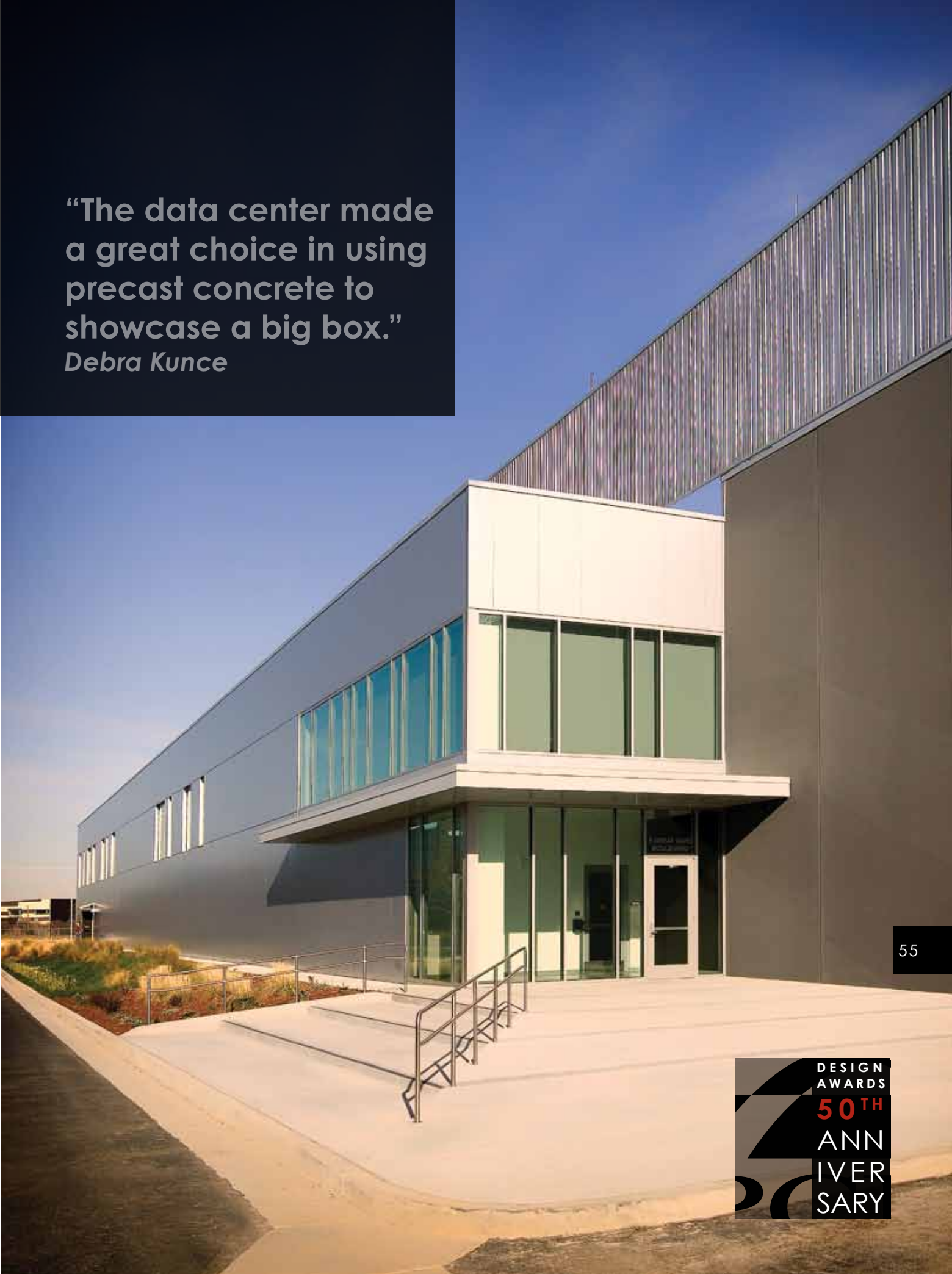
Precaster: Clark Pacific, West Sacramento, Calif.

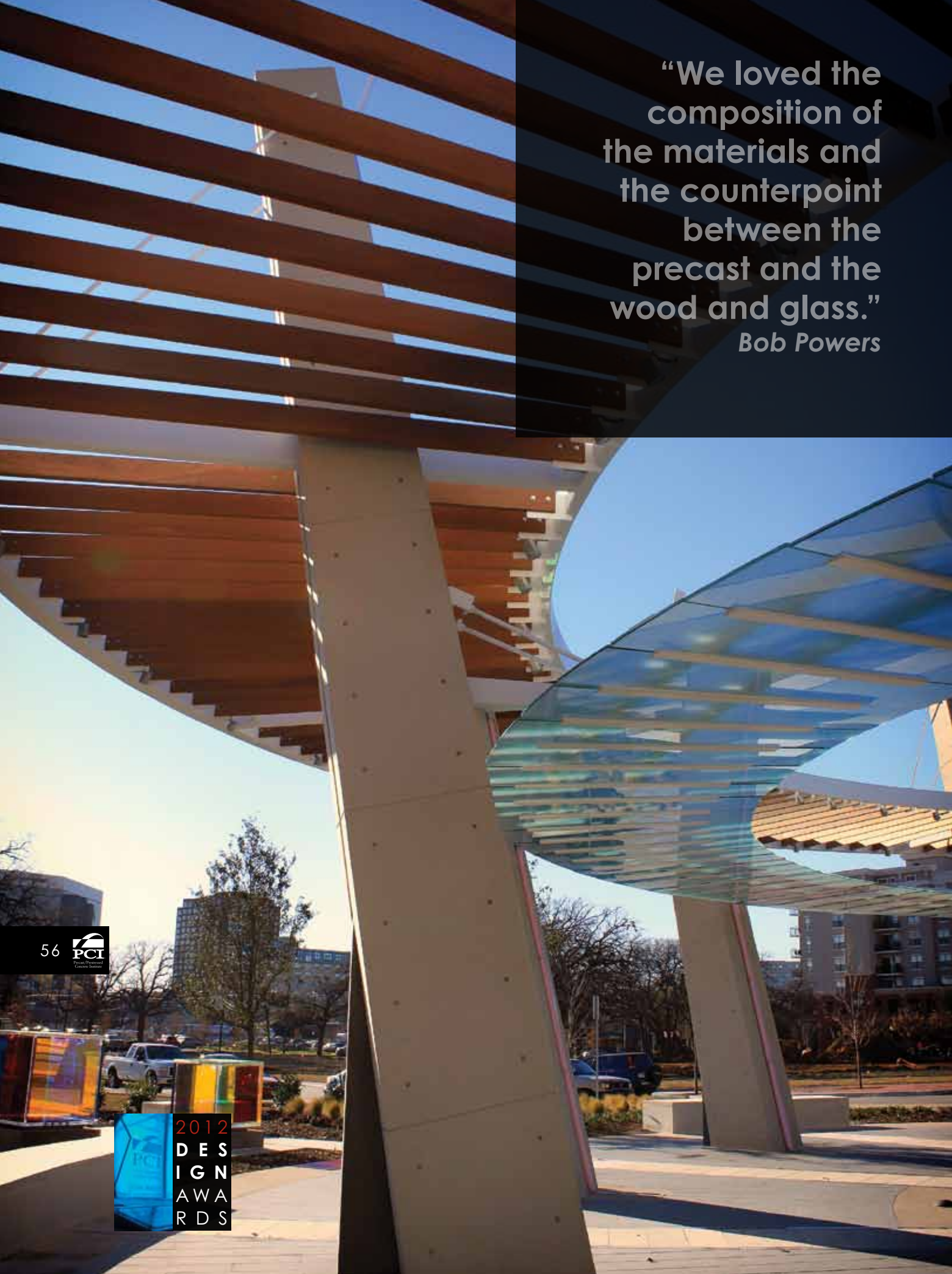
Project size: 126,569 ft² (11,759 m²)

Photos: www.jonnu.com



“The data center made a great choice in using precast concrete to showcase a big box.”
Debra Kunce





“We loved the composition of the materials and the counterpoint between the precast and the wood and glass.”
Bob Powers

Best Custom Solution

Cityplace

Uptown Station

Dallas, Tex.

To improve the speed of turnaround, designers created a unique trolley turn at the intersection of two streets in Dallas, Tex.

"This was one of the favorite projects of the jury," says Bob Powers, a member of the buildings awards jury. "We loved the composition of the materials and the counterpoint between the precast and the wood and glass. This project is a great example of how you can integrate precast with other materials."

Producing the high quality needed for the columns, which can be approached on all four sides by the public, required a special casting process. The panels were cast on their sides in forms 30 ft (9 m) long, 4 ft (1.2 m) deep and 2 ½ ft (760 mm) wide. They were given a medium to heavy acid-etched finish.

Each column was designed to lean away from the center by 14 degrees. A hollow steel bracket was bolted to each footing to keep the columns from pulling away from their positions at the base while maintaining their angle.

The columns were lowered into the bracket and welded in alternating sequences to avoid excessive heat on the concrete. Erection of the pieces took just under one month.

"The judges were excited to see this nice urban solution," says Debra Kunce, a member of the buildings awards jury. "The trolley station is very light and airy. ... The precast columns just soar through other materials. This offers a new way for designers to think about precast and for those on the street to see precast."



Owner: Cityplace, Dallas, Tex.
Architect: Good Fulton and Farrell, Dallas, Tex.
Engineer: Brockett Davis Drake Inc., Dallas, Tex.
Contractor: EMJ Corp., Irving, Tex.

Precaster: Gate Precast Co., Hillsboro, Tex.
Project size: 30,000 ft² (2800 m²)
Project cost: \$3 million
Photos: Gate Precast Co.