WWW.PCI.ORG

ASCENT®

DESIGNING WITH PRECAST

Spring 2017

the 2016 PCI Design Awards

Precast Design Excellence

Parking Structure Award
Harry H. Edwards Industry Award
Honorable Mention
Faena Park
Miami Beach, FL
OMA*AMO Architecture, PC

A unique precast facade featuring hundreds of angled perforations allowing for ventilation and controlled views for the cars within.

Custom Solutions Award
55 Pearl Street "DUMBO" Townhouses - Brooklyn, NY
Alloy Design LLP

K-12 Award
Summit Country Day School Addition - Cincinnati, OH
SHP Leading Design

Government and Public Buildings Award
Maritime & Seafood Industry Museum, Biloxi, MS
H3 Hardy Collaboration Architecture, LLC

Schools (K-12)
King Abdullah Academy - Herndon, VA
Bowie Gridley Architects

GATE PRECAST COMPANY
precast concrete systems

Monroeville, AL
Jacksonville, FL
Kissimmee, FL
Winchester, KY
Oxford, NC
Ashland City, TN
Pearland, TX
Hillsboro, TX

WWW.GATEPRECAST.COM
(888) 470-3450

2017 IPI Conference & Expo

May 21-24 | Ernest N. Morial Convention Center
New Orleans, La.

Join the largest gathering of parking professionals

Tailored learning for the parking industry with more than 40 education topics, TECH Talks on the expo floor, and peer-to-peer learning Shoptalks.

DAILY GENERAL SESSIONS

Experts and thought leaders shaping the industry with exciting and actionalble solutions.

IN DEPTH PRE-CONFERENCE PROGRAMS

- APO Site Reviewer Training
- Media Interview Coaching
- Parksmart Advisor Training

Join us for the opening General Session: The Future of Parking, Transportation, and Mobility – An Expert Panel

TECHTalks – WHERE TECHNOLOGY AND PARKING INTERSECT!

Join a TECHtalk on the Expo floor.

Transportation Security Administration

Included in this year's education program – TSA presents the First Observer Plus training program

New Orleans 2017 IPI International Parking Institute CONFERENCE & EXPO

Save $200 – Register by April 30th

Bring your team and save $100 off every 3rd – 10th registrant!

IPIconference.parking.org

the search for

EXCELLENCE.

2018 marks the 55th Annual PCI Design Awards and the submission site will open for entries on May 8, 2017. Join us in our search for excellence and submit your projects electronically by September 18, 2017.

Visit the PCI website and click on “2018 Design Awards” for more information and submission details.

PCI™ Precast/Prestressed Concrete Institute

WWW.PCI.ORG

1200 Intrepid
Philadelphia, Pennsylvania
Photo courtesy of BIG–Bjarke, Ingels Group.

WANTED

THE SHOOTER

A telescopic, invisible gravity support solution for double tees.

During Casting the inner tube is contained within the outer tube, requiring no additional form work.

During Erection the inner tube is extracted once the double tee is in the final position into an oversized pocket by using a dependable system of pull-out and pull-in wires. A detent pin is installed through the inner tube to prevent retraction.

Benefits:

- Detailed Design Guide
- Eliminates Corbels and Ledges
- Hot Dipped Galvanized Finish
- Safe and Simple Installation on site
- Eliminates Dap Forming, Reinforcing and Bearing Plate

Your Connection Connection

7131 North Ridgeway Avenue • Lincolnwood, IL 60712 USA
847-675-1560 • 1-800-742-8127 • **www.jvi-inc.com**

Building our communities to expand minds.

For 70 years, business owners, engineers, contractors and architects have turned to us to build structures that invigorate life in our communities – from education and government buildings to commercial and entertainment complexes. It's why we've become leaders in precast. Our experience and partnerships have pushed us to create systems that are more efficient; safer; quicker to build; and allow for greater collaboration and a variety of finishes.

SPANCRETE®

spancrete.com | 855-900-SPAN

ASCENT® IS A PUBLICATION OF PCI

Executive Editor: Dawn Parker, MBA
Editor: Jim Lewis, RA
Managing Editor: Craig Shutt
Editorial Administration: Becky King
Ascent Layout Concept:
MB Piland Advertising + Marketing
Graphic Design: Leader Graphic Design Inc.
Graphic Designers: Mark Leader, Jim Henson
Ad Sales:
Jean Furlan
Manager, Sales/Development
(312) 360-3206
jfurlan@pci.org
Reprint Sales and Subscriptions:
Becky King
(312) 360-3201
bking@pci.org
Precast/Prestressed Concrete Institute:
Robert Risser, PE, President and CEO
Industry Technical Review Team: Alicia Allamena, Peter Finsen, Sidney Freedman, Corey Greika, Thomas Ketron, Ed Knowles, Jane Martin, Mark McKeny, Brian Miller, and Kim Wacker

POSTMASTER: Send address changes to Ascent, 200 W. Adams St., Suite 2100, Chicago, IL 60606.

Periodical postage paid at Chicago, IL and additional mailing offices.

Ascent (Vol. 27, No. 2, ISSN 10796983) is published quarterly by the Precast/Prestressed Concrete Institute, 200 W. Adams St., Suite 2100, Chicago, IL 60606.

If you have a project to be considered, send information to Becky King.
(312) 360-3201
bking@pci.org

On the cover: 2016 PCI Design Awards
Photo: Precast/Prestressed Concrete Institute.

FEATURES

DEPARTMENTS

DAWN PARKER, MBA
EXECUTIVE EDITOR
DPARKER@PCI.ORG

The 54th Annual PCI Design Awards—A Showcase of Design Excellence

This issue highlights winners from the 2016 PCI Design Awards and features a wide range of building types that were judged worthy of special recognition for the use of precast concrete in their structural and façade design.

The multitude of benefits that precast concrete provides to the successful design of these winning projects is illustrated in the following pages. Attributes such as durability, site efficiency, speed of construction, resiliency, aesthetic versatility, and many other inherent characteristics of precast concrete are demonstrated in each project.

Precast concrete was the obvious choice for the design team for the first free-standing, Net Zero Energy police station in the nation, the District 3 Police Headquarters, which was the winner of this year's Sustainable Design award. Designers along with developers and owners are recognizing the value of resiliency and fire-resistance attributes when turning to all-precast concrete as the solution of choice for multi-family housing and senior living facilities, as evidenced by the winners of the All-Precast Concrete Solution awards, both located in dense urban areas of downtown Chicago, Ill. And, the winner of the Harry H. Edwards Industry Advancement award, 1200 Intrepid, inspires the precast concrete industry to continue advancing the possibilities of what precast can do!

All of these winners along with videos for each winner and more information can be viewed on the PCI website at www.pci.org.

I know the projects within this issue will inspire each of you to envision what you can design with your next project using precast concrete, and we hope to see your outstanding designs entered into the 55th Annual PCI Design Awards!

"High Concrete saw our design as a wonderful opportunity to really show off their skills, talents and products. It has been a sincere joy to work with a group of precasters who are as engaged as they have been, willing to roll up their sleeves to work on solutions rather than seeing obstacles, and I am sure that they are proud of their efforts as much as we are."
Kai-Uwe Bergmann, *AIA, RIBA, partner, BIG—Bjarke Ingels Group*

THE NEW SHAPE OF PRECAST

1200 Intrepid at the Philadelphia Navy Yard is the newly completed precast concrete work of art designed by world-renowned starchitect Bjarke Ingels Group (BIG). The front entrance façade gently curves inward while stretching outward creating a startling and gravity-defying visual that mimics the curved bows of the nearby battleships. The unique engineering requirements of the project meant that the gravity loads flowed directly to the ground and were not tied to the steel frame. Almost every piece of the front entrance façade is unique. This very complicated project presented a challenge that required an innovative solution using technical, engineering and creative expertise, and would not have been possible without the use of BIM and 3D modeling. For more information on this project and others visit us at www.highconcrete.com/news.

HIGH CONCRETE GROUP LLC
An Affiliate of High Industries Inc.

HIGH CONCRETE GROUP LLC ■ CONCRETE INNOVATIONS AND ANSWERS© ■ CALL US AT 800-PRECAST ■ WWW.HIGHCONCRETE.COM

Precast Concrete Seat Walls Gain Popularity

ANN ARBOR, MICHIGAN

A series of sleek, artistic seat walls made of precast concrete helped create a lively quad at the University of Michigan. The seating, designed by landscape architects Stoss Landscape Urbanism, can accommodate performances, events, and everyday activities. The concept is becoming popular for public spaces nationwide.

The space, Gerstacker Grove on the university's North Campus, features a central plaza surrounded by a green quad. The new components provide continuous seating that frames the walkways used by students and faculty. It breathes new life into an underutilized area, replacing well-worn footpaths through the grass.

Wausau Tile cast the pieces with its Tectura Designs precast concrete. The molds were created in foam with supporting skeletons, then coated with epoxy to cast the pieces. Although there was some repetition, many of the pieces were unique designs. Some were mirror images, allowing the same design concept to be used but requiring that it be reversed and a new mold created.

The project produced 2300 linear feet of seating, consisting of 97 custom units. Custom curbs, 186 in all, also were cast and erected. In total, the pieces weighed 700,000 pounds and required 15 truckloads to deliver to the site.

Wausau Tile has completed several other projects using this concept, most notably Cleveland Public Square in Cleveland, Ohio, where 1195 precast concrete pieces were cast and erected to help dress up the area prior to the Republican National Convention in mid-2016. The firm also has done several smaller seating projects, including one with Stoss in Harvard Square in Cambridge, Mass.

NEXT Beams Featured in New York Wheel Parking

STATEN ISLAND, NEW YORK

To accommodate the influx of visitors expected after completion of the dramatic New York Wheel project on Staten Island, N.Y., designers created a four-story, 337,800-square-foot precast concrete parking garage. The structure adds to the signature look of the complex, spanning the adjacent roadway and MTA tracks and featuring a green roof designed to provide a park-like setting for various events.

To support the various landscaping elements, including a number of trees required in the community agreement, the roof needed to support 430 pounds of dead load plus 100 pounds of live load per square foot. To achieve those goals, designers specified New England Extreme Tee (NEXT) beams, which were supplied to parking-structure precaster Unistress Corp. by JP Carrara & Sons Inc.

NEXT beams are double-tees with stouter stems that offer greater strength and shallower depths. They can offer an effective alternative to concrete box beams, providing better durability, faster construction, lower costs, and easier inspection capability. Those attributes often are needed by building projects, leading engineers and precasters to suggest them for a wider range of uses.

Broadwell Consulting Services is serving as the owner's representative on the project, with a joint venture of S9 Architecture and Perkins Eastman designing the project. WSP Parsons Brinckerhoff is the structural engineer, while Gilbane Building Co. is the general contractor. Unistress Corp. worked on a design-assist basis on the project.

The 630-foot-tall observation wheel, the world's largest, will contain 36 passenger capsules with 40 passengers apiece (or 1440 people per rotation). The adjoining 950-car parking structure will accommodate visitors to the Wheel along with fans of an existing minor-league baseball team and the Staten Island Ferry.

The NEXT beams provided long spans and the high loading required to support an average of 18 inches of soil and a variety of trees, paving stones, and other landscaping features. A separate ramp curving up the side of the building was added to provide exterior access to the roof.

Most double tees were cast between 57 and 59 feet long, with shorter spans of 36 feet used at the exterior ramp. In all, Unistress cast 375 tees. Precast spandrels were kept a traditional gray tone and received a sandblast finish. Many were cast with insets to accommodate a screening system that fits in front of them to provide a more finished appearance.

The building was erected in phases to accommodate shifting existing parking from surface lots to available space in the new structure. In all, the erection took about 100 erection days. Full occupancy is expected by June, ahead of the Wheel's scheduled opening in April 2018.

Gate Adds Sales Person

MONROEVILLE, ALABAMA

Gate Precast Co. named industry veteran Chris Ard to its Monroeville sales team, covering Alabama, the Florida Panhandle, Louisiana, and Mississippi. He has worked at Gate for 14 years, starting in estimating and serving as a project manager for the past 8 years.

Submit your headline news for consideration in a future issue of Ascent to Becky King at bking@pci.org.

PCI's Freedman Retires After 43 Years

CHICAGO, ILLINOIS

Sidney Freedman, PCI director of architectural systems, industrial operations, and safety, retired from fulltime duties in December after 43 years of service. His responsibilities included implementing marketing, technical, and educational programs for architectural precast and glass-fiber-reinforced concrete. He will continue to consult with PCI.

Beginning his tenure in 1973, Freedman was the principal author of the fourth edition of the *Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products* and the third edition of *Architectural Precast Concrete*. He was also the coeditor and chair of the committee that prepared the second edition of Architectural Precast Concrete.

He is a former contributing editor of *Modern Concrete* magazine and has written *PCI Journal* articles on clay-faced precast concrete, total–precast concrete, aesthetics, and stone-faced precast concrete, for which he won the Charles C. Zollman Award. He has also written thirty Designer's Notebook technical articles, published in *Ascent* magazine on a variety of subjects. In 1994, ACI named Freedman a Fellow for outstanding contributions to the industry. *Concrete Producer* magazine named Freedman one of five 2007 Influencers of the Year for championing initiatives that have "fundamentally transformed" the concrete industry. In 2012, the Sidney Freedman Craftsmanship Award was created to recognize PCI-Certified Plants for excellence in manufacturing and craftsmanship of architectural precast concrete and glass-fiber-reinforced concrete structures and individual components.

North Carolina State Adds Precast Concrete Program

RALEIGH, NORTH CAROLINA

The North Carolina State University School of Architecture and Department of Civil, Construction & Environmental Engineering have jointly received multiyear funding from the PCI Foundation to introduce architecture and civil engineering students to precast concrete systems and solutions. Creations in Concrete: An Integrated Architecture and Civil Engineering Instruction Project in Precast Concrete will begin with the spring 2017 semester.

The program includes three core courses supported by earlier courses with varying levels of precast/prestressed concrete instruction. The core program will be taught by Dana K. Gulling, assistant professor, and David B. Hill, associate professor in the School of Architecture and research assistant professor in the engineering department.

The three main courses are Advanced Architecture Design, Civil Engineering Projects, and Digital Materials Translations. Local partners for the program are members of the Georgia/Carolinas PCI. The university's program is the 15th to be sponsored by the PCI Foundation.

Becky King Joins PCI

CHICAGO, ILLINOIS

Becky King has been named marketing assistant as the former marketing assistant, Brenda Banks, shifts to communications manager. King will manage PCI's compliance with regional marketing contracts and help coordinate advertising, publication of *Ascent*, and the PCI Design Awards program. She also will coordinate PCI's monthly webinars for the design community. She previously worked for Zones Inc. as a federal-account manager.

Gate Names Marketing Director

MONROEVILLE, ALABAMA

Gate Precast Co. has named Mo Wright to the newly created position of marketing director, where he will work to educate architects, owners, and contractors about the uses of architectural and structural precast and to collaborate on design-assist projects. He will also help explain Gate's capabilities with precast molding techniques and other specialized skills.

Wright has worked in the precast industry for 15 years in a variety of positions, including sales and marketing, estimating, and project management.

Clark Pacific Joins U.S. Resiliency Council

WEST SACRAMENTO, CALIFORNIA

Clark Pacific has partnered with the U.S. Resiliency Council (USRC) as a Sustaining Silver Member. "Designing for resilience and survivability is one of the first and most important considerations for sustainable building," says Don Clark, Clark Pacific's co-owner and president. "We support the USRC in its collective effort to quantify and communicate the value of resilience to designers, builders, and owners, and ultimately create more resilient communities for us all."

Clark Pacific's first collaboration with USRC focused on a webinar series, The Case for Resilient Design, aimed at educating engineers, architects, and owners about the value of resilient-based design. The firm's self-righting precast concrete hybrid moment frame system has been deemed by California structural engineers to be one of the best-performing lateral-resistance systems available.

Submit your headline news for consideration in a future issue of Ascent to Becky King at bking@pci.org.

Spancrete Partners with Shanghai Builder

WAUKESHA, WISCONSIN

Spancrete has partnered with Shanghai CITI_RAISE Construction Group in Shanghai, China, to produce precast concrete buildings. The company is using Spancrete's precast concrete system, including a Spancrete GT-120 slip-former system that produces hollow-core slabs, to build multilevel, multi-family homes.

The partnership allows the firm to produce its own precast concrete building components. Spancrete's technical team custom-designed a hollow-core residential building in the area and helped the contractor gain approval for the system. As a result, hollow-core slabs have been added to the city's building code. Spancrete has been a longtime provider of precast concrete solutions to the China market, with nine machines currently producing, but this is its first Shanghai precasting facility.

Lisa Scacco Joins PCI

CHICAGO, ILLINOIS

PCI has added new personnel in its publications and marketing areas that will aid in disseminating educational materials and messages to the industry. Lisa Scacco has been named publications manager, a newly created position. She will support production of PCI's periodicals, assist committee members with publishing manuals, and help produce materials and promotional collateral for events and programs. Previously, Scacco was an account executive for Engineered Efficiency Inc.

Coreslab, Unistress Join for Vocational High School

PITTSFIELD, MASSACHUSETTS

Coreslab Structures (CONN) Inc. has been selected to participate on a design-assist basis for the construction of the new $120.8-million Taconic High School. The company has subcontracted fellow PCI member Unistress Corp. to manufacture some components for specific areas of the building, which is now under construction.

A one-story structural precast concrete podium floor plate will support a two-story steel structure that will be clad with insulated architectural panels on half of the building's footprint. A series of four mixture design and various textures have been chosen, including some with custom formliners.

The 246,520-square-foot vocational high school replaces a 1969 structure and will serve the district's 920 students. Once the new school is completed, the existing building will be demolished. The project was designed by the architectural firm DRA, with Gilbane Construction Co. serving as general contractor. Engineer Design Group is the structural engineer, while TRC Worldwide provided precast specialty engineering services.

Coreslab is providing a variety of precast concrete components, including structural walls and columns, hollow-core, and insulated architectural walls and spandrels. Unistress will provide precast concrete beams and double tees for the ceilings of the school's new technical shop.

Construction is expected to be completed by June 2018, with students beginning classes in the new building that fall.

Submit your headline news for consideration in a future issue of Ascent to Becky King at bking@pci.org.

PCI HEADQUARTERS
phone: (312) 786-0300
email: info@pci.org
www.pci.org

Central Atlantic Bridge Associates—Tom Holmes
phone: (302) 222-1385
email: info@caba-bridges.org
www.caba-bridges.org

Florida Prestressed Concrete Association—Diep Tu, P.E.
phone: (407) 758-9966
www.floridaprestressedconcrete.org

Georgia/Carolinas PCI (GCPCI)—Peter Finsen
phone: (678) 638-6220
email: peter.finsen@gcpci.org
www.gcpci.org

Mid-Atlantic Precast Association (MAPA) Tom Holmes
phone: (302) 222-1385
email: info@mapaprecast.org
www.mapaprecast.org

PCI Central Region—Phil Wiedemann
phone: (937) 833-3900
email: phil@pci-central.org
www.pci-central.org

PCI Gulf South—Dan Eckenrode
phone: (228) 239-3409
email: pcigulfsouth1@att.net
www.pcigulfsouth.org

PCI of Illinois & Wisconsin (PCI-IW)—Amy Holliday
phone: (312) 505-1858
email: info@pci-iw.org
www.pci-iw.org

PCI Midwest—Mike Johnsrud
phone: (952) 806-9997
email: mike@pcimidwest.org
www.pcimidwest.org

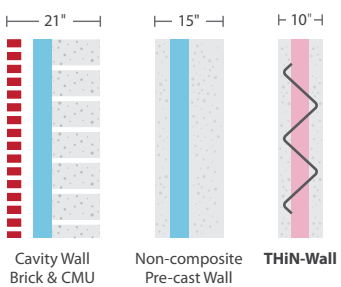
PCI Mountain States—John Dobbs, P.E.
phone: (303) 562-8685
email: jdobbs@pcims.org

PCI Northeast—Rita L. Seraderian, P.E., LEED AP
phone: (888) 700-5670
email: contact@pcine.org
www.pcine.org

PCI West—Ruth A. Lehmann, PE, PMP
phone: (949) 420-3638
email: ruth@pciwest.org
www.precastconcrete.org

Precast Concrete Manufacturers Assn. of Texas (PCMA of Texas)—Chris Lechner
phone: (210) 633-6743
email: lechner@pcmatexas.org
www.pcmatexas.org

THERE'S A THiN WALL BETWEEN SUSTAINABILITY AND STRENGTH.



THiN-Wall —Redefining what eco-friendly buildings can be.

With two 3" layers of concrete, THiN-Wall delivers the same insulating and load-bearing performance of thicker walls while using less cement, which minimizes carbon dioxide emissions. THiN-Wall has architects rethinking their approach to sustainable buildings.

To learn more, visit **thin-wall.com** or email **doug@hughesbros.com** to request a USB drive full of additional information.

THiN-Wall
It's all in one.

the 2016 PCI Design Awards

Norman Lach

Assistant professor of architecture and architectural studies program leader, Southern Illinois University

Norman Lach is an assistant professor of architecture and head of the architectural studies program at Southern Illinois University in Carbondale, Ill. He teaches building technology with a focus on masonry and concrete, and design integration.

Lach is a licensed architect in the state of Illinois and a certified construction specifier. Over his career he has won several awards and honors, including the Illinois Cooperative Work Study Program Grant for 2015 and 2016, and the Association of Licensed Architects Fellowship Award in 2010. He is a member of the American Institute of Architects, the Construction Specifications Institute, the Association of Licensed Architects, and is a fellow of PCI.

Lucien Lagrange

Founder, Lucien Lagrange Studio

Lucien Lagrange founded Lucien Lagrange Studio, an architecture firm representative of New Urbanism and New Classical Architecture. Over the last two decades, Lagrange has redefined luxury housing with buildings such as Park Tower, 65 East Goethe, the Waldorf Astoria, and the Ritz Carlton Residences. Based in Chicago, Ill., he has also completed projects in Italy, Russia, Saudi Arabia, and China.

Born in Paris, France, his design aesthetic combines a European respect for tradition and fine materials with the functionality and enhanced services one expects in a modern luxury building. "Architecture," he says, "is about people and lifestyles before it's about anything else."

Lagrange is also known for the sensitive way in which he handles the renovation and restoration of historic buildings. In Chicago, his projects include the renovation and restoration of the Insurance Exchange Building and the Blackstone Hotel, as well as the repurposing of the Carbide and Carbon Building and the Continental Bank Building into award-winning hotels.

He obtained his bachelor of architecture degree from McGill University.

Samuel Óghale Oboh

Principal architect, Kasian

Samuel Óghale Oboh is a Canadian architect and the principal at the Edmonton office of Kasian.

With an expansive career spanning more than 24 years in both the private and public sectors, Oboh inspires passion for responsible architecture and is motivated by an enduring commitment to design excellence, innovation, and stewardship.

A strong advocate for integrating architectural practice with research and academia, he has served as an adjunct lecturer and design studio critic at various universities in South Africa and Canada. He has also worked on a number of significant projects, including the Alberta Legislature Centre Redevelopment Master Plan where he led and contributed to capturing the spirit of Alberta's most significant heritage site.

In 2015, he was named president of the Royal Architectural Institute of Canada (RAIC)—the first Canadian of African descent to lead the 109-year old professional organization—and he was named one of Alberta's 50 Most Influential People by *Alberta Venture* magazine.

Oboh holds a bachelor of science degree in architecture from Bendel State University (now Ambrose Alli University) in Nigeria, and a master of science in architecture degree from Ahmadu Bello University in Nigeria. He is an alumnus of the University of Alberta, where he graduated with a master of arts degree, focusing on architectural communications.

District 3 Police Headquarters Cincinnati, Ohio

When Cincinnati set out to replace its police headquarters, city leaders wanted a structure that celebrated durable, sustainable design. So they created a competition, inviting a short list of design-build teams to submit innovative, environmentally sustainable plans that still met the city's budget. "We knew we needed to pull out all stops to find the most cost-effective solutions to achieve the city's requirements, create a beautiful, long-lasting iconic structure, and allow us the flexibility to build enhancements to be more competitive," says Chad Wayne Edwards, RA, NCARB, LEED AP BD+C, principal at emersion DESIGN, the architect on the project. "So precast was a natural fit."

Edwards' team designed the first free-standing, Net Zero Energy police station in the nation, which means the total amount of energy used by the building on an annual basis is roughly equal to the amount of renewable energy created on the site.

The design features a precast concrete façade around the perimeter of the building, which naturally allows for a highly secure perimeter, yet when used in conjunction with bulletproof glazing for secure areas, also conveys a sense of openness, transparency, and welcome. "This is where precast was the obvious choice, hands down," Edwards says. "It just so happened that cost, ease and speed of construction, finish selection, and maintenance were added values gained by the project."

"The durability, high strength, and high quality of precast enabled a state-of-the-art enduring facility that is both secure and welcoming—and we were able to deliver it on schedule and within budget." Chad Wayne Edwards, emersion DESIGN

Photos: Dish Design LLC.

OWNER:
City of Cincinnati, Cincinnati, Ohio

ARCHITECT:
emersion DESIGN LLC, Cincinnati, Ohio

PRECAST PRODUCER & PRECAST CONCRETE SPECIALTY ENGINEER:
High Concrete Group LLC, Springboro, Ohio

ENGINEER OF RECORD:
CMTA Consulting Engineers Prospect, Ky.

CONTRACTOR:
Messer Construction Co., Dayton, Ohio

PROJECT COST:
$11.7 million

PROJECT SIZE:
40,000 ft²

FASTER, STRONGER, CHEAPER

The majority of the exterior features ironspot thin brick embedded in the precast concrete panels over an exposed precast concrete base with a limestone-like finish, which reflects the architectural design of the neighborhood. Each of the 14 precast concrete columns in the plaza integrates an internally lit graphic celebrating the 14 neighborhoods served by the station.

One of the side benefits of the precast concrete envelope was a $4000 weekly savings in temporary heating. Edwards notes that on a record-cold February evening, even though the heat was turned off at 11 p.m., when contractors arrived the next morning, the building temperature had dropped only 5°F. "The envelope was so tight that it exceeded our already aggressive pressure targets, making the building super energy efficient."

To meet the tight schedule, design of the precast concrete occurred simultaneously with the design of the building, allowing the precast concrete elements to be reviewed and approved for construction as the drawings were completed. The precast concrete components were manufactured during the time the permit was being issued, so that as soon as the building permit was issued, the precast concrete components were ready to be installed. Once on site, the 156 façade panels could be erected in just 9 days.

"This speed resulted in intense time and money savings, which enabled our team to come in $1 million dollars lower than our two competitors," Edwards says. "In short, precast helped the team deliver a world-class, LEED Platinum, Net Zero Energy police station to the citizens of Cincinnati for roughly the same cost of our competitors' LEED Silver base design with no renewable energy source."

Key Project Attributes

- It is the first Zero Net Energy and LEED Platinum free-standing police station in the world.
- The enhanced thermal envelope resulted in the building using 35.8% less energy than an average warehouse or storage facility of the same size.
- Precast concrete façade panels were erected in just 9 days.

Project and Precast Concrete Scope

- Design and build a new 40,000-ft^2 District Police Station featuring a fully precast concrete façade.
- Precast concrete elements include 156 precast concrete façade panels, and 14 precast concrete columns.
- The precast concrete designers to come in $1 million lower than competitors with greater sustainable benefits.

1200 Intrepid Philadelphia, Pa.

Photo: Rasmus Hjortshoj.

Key Project Attributes

- Innovative curved design echoes the nearby park and maritime landscape.
- The precast concrete façade transfers gravity loads directly through the panels to the foundations.
- Interlocking structural system embedded within the panels eliminates the need for traditional precast concrete spandrel panels.

Project and Precast Concrete Scope

- Precast concrete façade for this four-story, 99,450-ft^2 building in the Navy Yards of Philadelphia, Pa.
- Precast concrete elements include 421 architectural precast concrete panels at an average nominal size of 5 ft by 18 ft.
- The façade is 30% more efficient than the baseline ASHRAE assembly, contributing to the LEED Gold certification.

This year's Harry H. Edwards Industry Advancement Award winner proves that precast concrete enables the most innovative architectural designs while providing a highly energy-efficient and durable envelope.

The four-story office building at 1200 Intrepid Avenue in the Navy Yard in Philadelphia, Pa., was designed by BIG–Bjarke Ingels Group, a Danish architectural firm that has long relied on precast to achieve form and function in their designs. "We came very quickly to the idea that precast concrete would be a great way to achieve our goals on this project," says Kai-Uwe Bergmann, principal at BIG, the architect on the project.

One of the most prominent features of the building is the white precast concrete façade, which dips dramatically away from the walkway along the eastern edge, then tips back out again.

"One of the key design challenges was to create that curved façade from precast panels," says David Bosch, design team leader for High Concrete Group, the precast producer on the project. The curved load-bearing design was achieved by assembling flat, traditional precast concrete panels to form a complex faceted geometry. An interlocking structural system was embedded within the panels to eliminate the need for traditional precast concrete spandrel panels. "The resulting façade creates an aesthetic versatility that is unique to the project," Bosch says.

The design breaks away from traditional architecture to better engage with the local surroundings, says Bergmann. "In many cases, architects design big, boxy buildings that could be placed anywhere and don't connect directly to the site." He argues that the curved white façade, and deeply reflective windows in this design were inspired by the city's rectangular city blocks and the adjacent circular park that sits just in front of the building. It also echoes the geometries of maritime architecture and nearby waterway. "You would really be hard-pressed to place this building anywhere else other than where it is, due to how it connects," Bergmann says. "We like to think about a building beyond its borders and look at how it interacts with its neighbors and the open spaces around."

"We are a Danish company, and in Denmark, precast concrete is the predominant building material. We use it for structural elements, decorations and fascia, and façade pieces of all kinds." Kai-Uwe Bergmann, BIG–Bjarke Ingels Group

GOOD AS GOLD

Along with being visually inviting, the owners wanted the building to achieve LEED Gold certification, which led to several sustainability measures enabled by the use of precast concrete. The thermal benefits of the precast façade lowered projected heating and cooling costs, contributing seven of the 60 total LEED points for overall energy performance. The panels were also created using local raw materials and recycled content less than 60 miles from the project site, minimizing the greenhouse gas emissions related to transport and adding more LEED points to the total. "While the concrete production requires a larger carbon footprint initially, it is a material that will have a long life span and can be recycled if needed," Bosch adds.

Finally, the precast concrete façade solved the issue that the building's steel structure was designed to carry only lateral loads, which meant the precast concrete façade had to transfer the gravity loads directly through the precast concrete panels to the foundations. To achieve this the engineers designed a structural steel system embedded into the precast concrete panels. Pockets were formed into alternating panels at the spandrel level to allow the interlocking of each panel during installation. "All the gravity loads are transferred from any given panel to the adjacent panel on either side until they reach the foundation," Bosch explains. "In order to prevent a progressive collapse in the event that one connection should happen to fail, each panel also has a safety backup connection."

Photo: Rasmus Hjortshoj.

Photo: Precast Services Inc.

OWNER:
Liberty Property Trust,
Philadelphia, Pa.

PRECAST PRODUCER & PRECAST CONCRETE SPECIALTY ENGINEER:
High Concrete Group, Denver, Pa.

PCI-CERTIFIED ERECTOR:
Precast Services Inc.
Twinsburg, Ohio

ARCHITECT:
BIG–Bjarke Ingels Group,
New York, N.Y.

ENGINEER OF RECORD:
Environetics, Philadelphia, Pa.

CONTRACTOR:
Turner Construction Company,
Philadelphia, Pa.

PROJECT COST:
$19 million

PROJECT SIZE:
99,450 ft^2

OWNER:
Holsten Development Corporation, Chicago, Ill.

PRECAST PRODUCER:
Spancrete, Waukesha, Wisc.

ARCHITECT:
Landon Bone Baker Architects, Chicago, Ill.

ENGINEER OF RECORD:
C.E. Anderson and Associates, Chicago, Ill.

CONTRACTOR:
Linn-Mathes Inc., Chicago, Ill.

PROJECT COST:
$27.4 million

PROJECT SIZE:
162,330 ft^2

Photo: David Schalliol.

Terrace 459 at Parkside of Old Town Chicago, Ill.

The Terrace 459 mixed-income development in Chicago, Ill., is a shining example of how precast, prestressed concrete can help architects solve multiple design, schedule, and budget challenges with a single material.

This new residential building replaces a portion of the infamous Cabrini-Green housing project with a lower-density development featuring a combination of subsidized housing, affordable apartments, and market-rate condos and townhomes. The nine-story, 160,000-ft^2 building is part of the Chicago Housing Authority's (CHA) Plan for Transformation to integrate public housing and its residents into the larger social, economic, and physical fabric of the city. The final design contains 36 units of replacement housing for former Cabrini residents, 27 affordable apartments, and 43 market-rate apartments, along with 66 off-street parking spaces, community spaces, and management offices.

"The overarching goal of the project was to create a more economically diverse community to attract residents across broad social and cultural demographics," says Morgan Martinson of Landon Bone Baker Architects. "But delivering such a structure within tight budget constraints and multiple funding requirements wasn't easy."

"The structural efficiency and affordability of this project are all derived from the precast modular system, which brings a human scale to the large building."
Morgan Martinson, Landon Bone Baker Architects

At the outset of the project, Martinson's team wasn't even considering precast concrete as a design option. However, the desire for an economical system that could bring scale and design options to the building quickly led them in that direction. "Precast concrete reduced the cost of construction," Martinson says. "The economy of scale and speed of construction freed the project to produce market-quality units on a tight budget."

The team achieved further structural benefits by designing a precast concrete floor and wall system that delivers an integral structure and skin, a tight envelope, and a cost-effective fabrication and assembly system.

BEAUTY FOLLOWS FUNCTION

"Precast concrete offered more than form and efficiency," Martinson says. The close collaboration between his team, the precast producer, and the contractor allowed them to push the design potential to achieve many benefits from the precast design.

The precast concrete design resulted in a modern and inviting structure with appealing details, including brightly colored balconies, sunny courtyards, and a varied façade that lightens the bulk of the building. "The pedestal base of early schemes eventually gives way to panels that come down to grade and connect the apartments to the street," Martinson explains. "This not only provides a better sense of scale and connectability, but offers light and visibility into the first floor shared spaces."

"The all-precast concrete design also enabled larger spans so the parking area could be sandwiched into the interior of the building, leaving room for welcoming external spaces along the building's edges," says Auggy Chung, regional business development manager for Spancrete, the precast producer on the project. He notes that designing the structure to handle the transition from the parking to the living space was a challenge. "We needed the design to incorporate significant transfer loads resulting in a unique precast design."

Though Chung says that his favorite part of the project was how the precast concrete design delivered an enticing look and feel while still utilizing the durability and function of precast. "The architectural features in the end resemble jigsaw puzzle pieces, making it a very interesting, durable, and unique addition to the local community."

Photo: Landon Bone Baker Architects.

Key Project Attributes

- Economy of scale and speed of construction gave designers the ability to build market-quality units on a tight budget.
- The checkered panels mimic the shared desire for a more equitable community.
- The choice of precast concrete reduced the cost of construction by $22 per square foot.

Project and Precast Concrete Scope

- Nine-story, 160,000-ft^2, all-precast concrete residential building, providing a combination of subsidized housing and affordable and market-rate apartments.
- The precast concrete floor and wall system deliver a tight envelope and cost-effective fabrication and assembly system.
- Precast concrete elements include 665 hollow-core planks, 132 interior wall panels, 311 exterior wall panels, 13 beams, and 12 columns.

The Burnham at Woodlawn Park Chicago, Ill.

One of this year's all-precast concrete design award winners does more than provide a new building for the community. The Burnham at Woodlawn Park in Chicago, Ill., led by the Preservation of Affordable Housing (POAH) project, replaces an obsolete and distressed public housing project, with a beautiful, vibrant, mixed-use, mixed-income senior living center, that is breathing new life into a struggling neighborhood.

Photos: Scott Shigley.

"The original site suffered from significant design flaws and concentrated poverty that had become a barrier to investment in the surrounding blocks, creating a spiral of disinvestment in the area," says Morgan Martinson of Landon Bone Baker Architects, the architect for the project.

When his team was brought onto the project, they wanted to design a building that could become a centerpiece for the community that would spur further interest and investment—and they had to do it within a relatively tight budget. Martinson's team chose a total precast concrete solution to achieve the necessary cost-saving and durability goals, with a sophisticated look and many amenities.

"The utilization of precast concrete construction is preserving affordability while providing high-quality architecture and amenities that is enhancing the entire community for current and future residents." Morgan Martinson, Landon Bone Baker Architects

The design features contrasting shades of white concrete, gray brick, and playful orange in a random pattern to minimize the scale and connect the building with the surrounding gardens. "Precast concrete gave us the opportunity to create different textures and materials to create a really nice layered composition on the façades," Martinson says. "Rather than impersonating brick, the exposed precast concrete panels express its construction method and materiality with a depth of color and texture."

BUILT TO LAST

The precast concrete design also delivered many structural benefits that were equally important to the owner. "Due to the ultimate use of the building as a senior housing project, the inherent fire-resistant qualities of the precast are ideal for buildings of this type," Martinson says.

OWNER:
Preservation of Affordable Housing, Chicago, Ill.

PRECAST PRODUCER:
ATMI Precast, Aurora, Ill.

PRECAST CONCRETE SPECIALTY ENGINEER:
Precast Engineering Company, Chicago, Ill.

ARCHITECT:
Landon Bone Baker Architects, Chicago, Ill.

ENGINEER OF RECORD:
C.E. Anderson and Associates, Chicago, Ill.

CONTRACTOR:
Linn-Mathes, Chicago, Ill.

PROJECT COST:
$16.65 million

PROJECT SIZE:
73,673 ft²

Site security, a chief issue while the previous public housing development occupied the site, is also addressed through the promotion of visibility from within the building via floor-to-ceiling glazing on the entire public first floor, shared outdoor porches dispersed throughout the residential floors, and an abundance of in-unit windows. “Precast concrete’s design flexibility allowed the construction to support these features in an integrated, cost-effective way,” he says.

In addition to providing senior housing, the building also houses POAH’s management and maintenance for their surrounding properties and a community resource center that is leased to a local nonprofit. “Precast allowed for open spans in these areas, so that the spaces could be flexible and reconfigured as needs and programs changed,” he says.

The five-story building now provides 65 seniors with a healthy home, headquarters for POAH’s management and operations, and a Resource Center to serve the once marginalized community. “The building has set a high design standard for the redevelopment of the neighborhood, showcasing developments that are safe, attractive, and cost-effective,” Martinson says. “The building carefully blends into and enriches the surrounding neighborhood and promotes a wider transformation.”

Key Project Attributes

- Employs an all-precast concrete design to provide a cost-effective, durable structure that breathes new life into the neighborhood.
- Contrasting shades of white, gray brick, and orange minimize scale while connecting the building to the surrounding gardens.
- Inherent fire-resistant qualities of precast concrete are critical for the structure’s senior residents.

Project and Precast Concrete Scope

- Design and build an all-precast, five-story residential community on Chicago’s South Side.
- Precast concrete elements included 228 architectural panels, 91 interior wall panels, 25 beams and columns, 491 hollow-core planks, and 20 stair risers and solid slab landings.
- Precast concrete elements were erected in less than 3 months.

SKAKO CONCRETE

MIXING

- ATLANTIS - CounterCurrent
- ROTOCONIX - CounterVortex

NO CONFINED WORKSPACES

ATLANTIS

- Outputs to 20,000 lbs
- Quicker-Cleaner-Safer

- DriCast-WetCast-SCC
- Mortar

ROTOCONIX

- Outputs to 8,000 lbs
- Color-Strength-Finish

UHPC/Steel Fiber

- Panels-Beams-Tunnels
- Pavers-Rooftiles

Turnkey Design • Supply • Mechanical & Electrical Installation • Service Contracts

SKAKO CONCRETE

SKAKO CONCRETE, INC.
PH: (858) 271-1630
SkakoConcrete.us@Skako.com
SKAKO.com

U.S. Sales, Parts & Service Since 1985

Building A Concrete Future™

dependability design/build innovation people performance
products relationships

Braman Auto Complex
Miami, Florida

CORESLAB® STRUCTURES

ARIZONA
Phoenix 602.237.3875

ARKANSAS
Conway 501.329.3763

CALIFORNIA
Los Angeles 951.943.9119

CONNECTICUT
Thomaston 860.283.8281

FLORIDA
Miami 305.823.8950
Orlando 407.855.3191
Tampa 813.626.1141

GEORGIA
Atlanta 770.471.1150

INDIANA
Indianapolis 317.353.2118

KANSAS
Kansas City 913.287.5725

MISSOURI
Marshall 660.886.3306

NEBRASKA
Omaha 402.291.0733

NEW MEXICO
Albuquerque 505.247.3725

OKLAHOMA
Oklahoma City 405.632.4944
Oklahoma City 405.672.2325
Tulsa 918.438.0230

TEXAS
Austin 512.250.0755

ONTARIO, CANADA
Dundas 905.689.3993
Stoney Creek 905.643.0220

Visit us online at:
www.coreslab.com

40 Building A Concrete Future. Since 1975 CORESLAB

the 2016 PCI Design Awards

Sara Johnson

Associate editor, *Architect* magazine

Sara Johnson is the associate editor of design news at *Architect* magazine. Previously, she was a fellow at CityLab. Her work has appeared in *San Francisco Magazine, San Francisco Brides, California Brides, DCist, Patchwork Nation,* and *The Christian Science Monitor.*

She received a bachelor's degree in English from the University of California, Berkeley.

Charles D. Jones

Principal, One to One Design

Charles D. Jones is a principal at One to One Design, a New Orleans, La.-based multidisciplinary design firm. He also currently serves as a faculty member and the director of digital fabrication at the Tulane School of Architecture.

Over the past 10 years, Jones has contributed to professional and educational institutions of architecture with a strong focus on technology's influence on fabrication techniques. His digital design seminars played a key role in establishing an ongoing academic relationship with Gehry Technologies of Abu Dhabi, United Arab Emirates, through the introduction of integral computer-aided, parametric design techniques.

Previously, Jones served as a three-dimensional model coordinator with Gehry Partners in Los Angeles, Calif., where he focused on the 3-D development and rationalization of complex exterior cladding assemblies for a variety of large-scale projects. These include the Louis Vuitton Foundation in Paris, France; Brooklyn Nets Basketball Arena in Brooklyn, N.Y.; and the Guggenheim Museum in Saadiyat Island, Abu Dhabi.

He received his bachelor of architecture degree from Louisiana State University.

Julia Louie

Senior project manager, HDR Architecture

Julia Louie is a senior project manager for HDR Architecture in Chicago, Ill., one of the top-ranked healthcare architecture, engineering, and consulting firms in the world. She is a healthcare architect and has been involved in the healthcare arena for over 18 years.

She's worked on several noteworthy projects in her career, including the Ann & Robert H. Lurie Children's Hospital of Chicago; the University of Wisconsin Hospital & Clinic, UW Health American Family Children's Hospital in Madison, Wis.; and the Loyola University Medical Center in Maywood, Ill.

Louie consistently exhibits exceptional qualities in leadership, dedication, expertise, and relationships. As a master organizer and communicator, she has extensive experience leading integrated project teams, bringing people together for one unified vision and project approach. Julia is recognized for her management skills and comprehensive approach to project delivery of complex facilities.

She received her bachelor of architecture degree from the Illinois Institute of Technology.

Michael Zensen

Associate vice president, CannonDesign

Michael Zensen is the associate vice president of CannonDesign in St. Louis, Mo., a global architecture and design firm. Zensen has over 25 years of experience and has been responsible for assisting clients from project conception to completion including initial programmatic issues, architectural design, documentation, coordinating city/code matters, and engineering. He has experience in a wide variety of project types acting as project architect.

He has been involved in dozens of innovative projects in his career, including the A.T. Still University, Interprofessional Education and School of Oral Health Building, in Kirksville, Mo.; the Banner MD Anderson Cancer Center in Gilbert, Ariz.; and the Kettering Medical Center, New Cancer Center, in Dayton, Ohio.

He is a member of the American Institute of Architects, cofounder of the St. Louis Building Enclosure Council, and was chairman of the St. Louis Building Enclosure Council from 2010-2012.

Zensen received a bachelor of architecture degree from the University of Kansas.

OWNER:
Judicial Council of California, San Francisco, Calif.

PRECAST PRODUCER:
Willis Construction Company Inc., San Juan Bautista, Calif.

PRECAST CONCRETE SPECIALTY ENGINEER:
BakerRisk, Los Angeles, Calif.

ARCHITECT:
ZGF Architects, Los Angeles, Calif.

ENGINEER OF RECORD:
Rutherford & Chekene, San Francisco, Calif.

CONTRACTOR:
Hensel Phelps Construction Company, San Jose, Calif.

PROJECT COST:
$188.5 million

PROJECT SIZE:
233,695 ft^2

Santa Clara Family Justice Center Santa Clara, Calif.

The new nine-story Santa Clara Family Justice Center, in Santa Clara, Calif., replaces a mismatched hodgepodge of leased buildings that housed a variety of court services with one beautiful community center. "Building this new modern center both improved service offerings and increased the operational efficiencies for county residents," says Mark Piaia, principal at ZGF Architects, the designer for this project.

The owners wanted the new building to provide a calming, stress-reducing environment for the families that the courthouse serves—but it also had to stay within a tight budget. "As with all projects, cost was a major early consideration and was the primary reason we decided to proceed with precast concrete for the exterior in lieu of travertine stone cladding," Piaia says. A key benefit of using precast concrete was that the mix design could mimic travertine in color and texture, giving the owners the classical Greek styling they sought with a modern-day price tag.

The design of the façade features alternating bands of solid and void that allude to the fluting of a classical Greek column as it is being unfurled, with narrow, curved solid forms between the windows. "The plastic nature of precast concrete, while still being inherently strong and durable, allowed us to create the image of handset radiused travertine stone, while still meeting strict blast requirements," Piaia says.

The most iconic aspect of the design is the 14-ft state seal of California cast into the west-facing building elevation, which catches the light at sunset, providing a distinctive and attractive icon for the building. "This type of art piece is very challenging, and is only as good as the craftsmanship and skill of your precast contractor," Piaia says. "The finished, installed state-seal panel looks flawless and the judges love it, especially since it can be seen from the neighboring buildings and the freeway."

"Precast concrete gave us unlimited design opportunities, because it is so flexible and adaptable." Mark Piaia, ZGF Architects

BEAUTIFUL AND BLAST PROOF

Though as a courthouse structure, the design had to be more than beautiful. The owners needed a building that is durable, easy to maintain, and able to protect occupants from any blast and sniper assault. "Precast concrete was able to successfully traverse all of these criteria," says Mark Hildebrand, chief engineer of Willis Construction Company, the precast producer on the project.

The design had to provide resistance to large overturning loads for the slender column covers, but the alternating A/B composition of the curtain wall and precast concrete panels made traditional connections insufficient. "The amount of weld required to resist overturning was so significant that, if applied all at once, it would have deformed the structural steel outriggers and pulled the panels out of alignment," Hildebrand says.

To mitigate these design constraints, his team developed custom connections, based on concepts tested on the shake table at the University of California, San Diego, in which portions of the connection assembly, called ductile fuses, were designed to yield and deform when highly loaded. "The ductile fuse has currently been successfully applied around the entire courthouse to not only allow joint-free, L-shaped corners and minimal panel-to-panel joint sizes, but also significantly improve the precast panel system's response to blast loading."

Photos: Nick Merrick / Hedrich Blessing Photographers.

Key Project Attributes

- Precast concrete façade achieves travertine look and feel within a tight budget.
- A 14-ft California state seal cast into the west side of the façade provides a distinctive icon that can be seen from miles away.
- Alternating bands of solid and void allude to the fluting of a classical Greek column.

Project and Precast Concrete Scope

- 233,695 ft^2 of precast concrete panels were used in the project.
- Precast concrete elements include 385 flat panels, 488 radius panels, 28 outside corner panels, 1 specialty panel, and 271 landscape panels.
- Ductile-fuse connections for the precast concrete panels were implemented on the project to achieve design and blast criteria.

Maritime & Seafood Industry Museum Biloxi, Miss.

When Hurricane Katrina made landfall in August 2005, a 30-ft tidal surge destroyed much of the Maritime & Seafood Industry Museum and its collection in Biloxi, Miss. Since then the museum has been working diligently to design and build a new complex on the museum's original site, with expanded gallery and exhibit spaces and new community facilities.

"A primary goal of this project was to build a structure that is stronger and more resilient to catastrophic events," says Daria Pizzetta, principal at H3 Hardy Collaboration Architecture. "We wanted to design a large mass that would protect the museum's artifacts, but also allow for a design with much visual interest," she says.

The biggest initial challenge was building a new facility that could withstand hurricane force winds. The team considered numerous exterior wall materials and systems, including concrete masonry units with finished face materials and panelized systems with structural post supports. But they ultimately found that precast concrete panels would provide the most economical and structurally appropriate material for the building. "We chose precast for its ability to sustain high velocity impacts associated with hurricanes, but also for its durability and insulating qualities," Pizzetta says.

"With a limited budget and the need to design a building with a strength factor enough to sustain 140-mph winds, precast concrete provided an economical solution." Daria Pizzetta, H3 Hardy Collaboration Architecture

The precast concrete panels also met Federal Emergency Management Agency (FEMA) durability requirements, which was vital as FEMA provided funds for the project. "The use of precast for the exterior wall system met the impact test criteria for wind-borne debris and provided a secure envelope for the museum's artifacts."

THE FISHERMAN'S COTTAGE

Precast concrete also played a major role in achieving the aesthetic goals of the museum that reflects the context of the surrounding neighborhood. The design features a white lap siding pattern that gives the building shadow lines to add visual interest to the façade while evoking memories of the fisherman's cottages that once proliferated in this historic neighborhood. The lap siding pattern also allowed for a large-format panel system, featuring customized 10 ft wide by 25 ft tall panels, which simplified casting and sped erection, saving time and money.

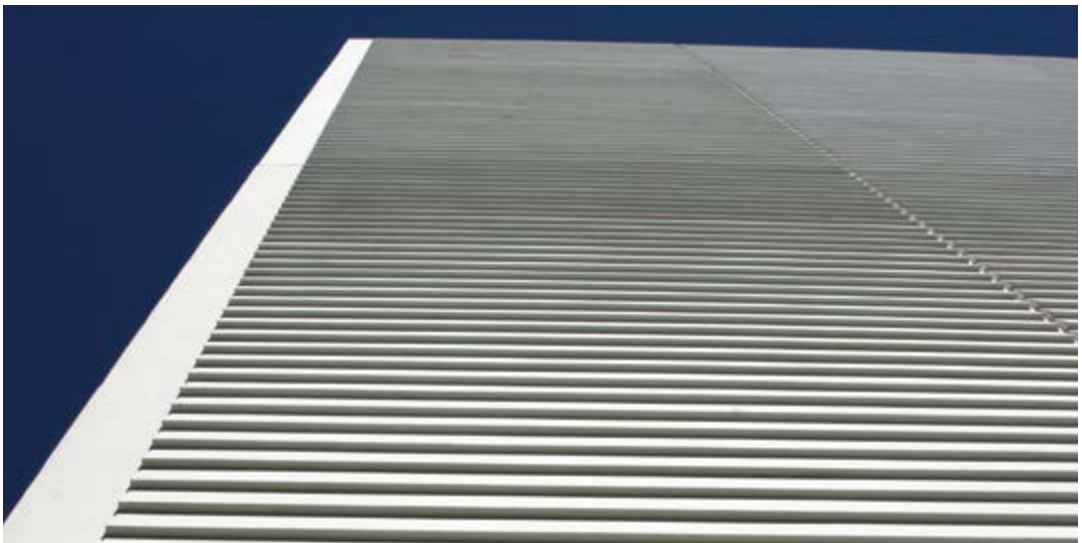
The resulting structure has become a welcoming centerpiece to the community that is more than just a museum, Pizzetta says. "It serves as a symbol of resilience as the city continues to rebuild after Hurricane Katrina and provides a new place for the community to come together and honor its heritage, year-round."

Key Project Attributes

- Precast concrete cladding meets FEMA requirements for flood-resistant materials.
- The large formal panel system simplified casting and cut erection time.
- The lap siding design in the precast concrete façade mimics the historic architecture of the neighborhood.

Project and Precast Concrete Scope

- 19,580 ft^2 of precast concrete was used in this project.
- The new museum opened in August of 2014, 8 years after Hurricane Katrina hit.



OWNER:
City of Biloxi, Biloxi, Miss.

ARCHITECT:
H3 Hardy Collaboration Architecture LLC, New York, N.Y.

PRECAST PRODUCER & PRECAST CONCRETE SPECIALTY ENGINEER:
Gate Precast Company, Monroeville, Ala.

ENGINEER OF RECORD:
Thompson Engineering, Biloxi, Miss.

CONTRACTOR:
GM&R Construction, Bay St. Louis, Miss.

PROJECT COST:
$8 million

PROJECT SIZE:
19,580 ft²

Photos: Francis Dzikowski Photography.

Mercy Health—West Hospital Cincinnati, Ohio

Photos: High Concrete Group LLC.

The new state-of-the-art Mercy Health–West Hospital in Cincinnati, Ohio, would become a centerpiece for the healthcare center, replacing another, aging facility within the network. The owners wanted a design that was both beautiful and high-performing, and designers turned to precast concrete to make that happen.

"The façade of the building was inspired by Ohio's tradition of pottery production," says Glenn Ebersole, market development manager at High Concrete Group, the precast producer on the project. It is clad with a thin-brick veneer in a series of radiused wall panels and spandrels that were then embellished with thousands of tiles in 12 shades of blue and green in 19 different shapes laid out in a pixel pattern.

Using thin brick in the precast concrete panels significantly reduced the overall project duration by enabling the tiles to be laid during manufacturing, rather than hand-setting them in the field. However, putting such a complex and decorative design together wasn't easy, Ebersole says. "The biggest challenge was casting-in and coordinating the design and layout of the more 160,000 pieces of glazed tiles into the architectural precast panels." The veneer was also glazed to blend with the design.

"The Mercy West Hospital building is an awesome example of the aesthetic versatility of precast concrete, as well as the innovative collaboration of Champlin Architecture and High Concrete Group." Glenn Ebersole, High Concrete Group

OWNER:
Mercy Health Partners, Cincinnati, Ohio

PRECAST PRODUCER & PRECAST CONCRETE SPECIALTY ENGINEER:
High Concrete Group LLC, Denver, Pa.

ARCHITECT:
Champlin Architecture, Cincinnati, Ohio

ENGINEER OF RECORD:
THP Ltd., Cincinnati, Ohio

CONTRACTOR:
Turner Construction Company, Cincinnati, Ohio

PROJECT COST:
$200 million

PROJECT SIZE:
645,000 ft²

MORE THAN A PRETTY FAÇADE

Along with offering a beautiful façade, the use of precast concrete brought several additional benefits to the building, including versatility of design, accelerated construction time, improved thermal performance, reduced long-term life-cycle costs, and increased fire and storm resistance to the structure.

To meet the client's energy efficiency goals, the designer chose a unique insulated sandwich panel design that contributes to the overall energy efficiency of the building, while the radiused wall systems allowed versatility of shape to the structure. The insulated sandwich panels feature two solid concrete wythes that are both prestressed and also have steel and wire-mesh reinforcement. "By nature, these steel-reinforced concrete wall panels cannot be matched for durability and structural integrity," Ebersole says.

"The result is a beautiful, durable structure that met all the goals of the owners," he adds. "This project showcases the high-performance attributes of precast concrete in a variety of ways."

Key Project Attributes

- Tiled façade pays homage to Ohio's tradition of pottery production.
- Thin-brick veneer allowed thousands of tiles to be laid during manufacturing, reducing the project time and disruption on the jobsite.
- Choosing a precast concrete design accelerated construction, improved thermal performance, and increased fire and storm resistance to the structure.

Project and Precast Concrete Scope

- Design and build a six-story, 645,000-ft^2 hospital clad in colorful glazed tiles on a thin-brick veneer.
- Architectural precast concrete panels were embellished with 160,000 pieces of glazed tiles in multiple shapes and colors.
- Insulated precast concrete sandwich wall panels feature two prestressed solid concrete wythes, with steel and wire-mesh reinforcement.

UCSF Mission Hall Global Health Sciences Building San Francisco, Calif.

The new 266,000-ft^2 Mission Hall Global Health Sciences Building at the University of California, San Francisco, is a defining project for the growing Mission Bay campus. In an effort to create stronger links between academic disciplines and campus sectors, the new building was envisioned as a "gateway" organized around a series of interior and exterior spaces that offer a flexible, changeable, and visible center for collaboration and campus access.

Photos: Bruce Damonte.

"Design guidelines established by the owner informed the massing and basic organization of the building, calling for simple volumes, consistent building heights and a base, body, and parapet tripartite organization," explains Moses Vaughan of WRNS Studio in San Francisco, the architect on the project. At first, his team wasn't sure that precast concrete could address these design requirements.

"While we knew that unitized precast construction would help us achieve budgetary goals, we were concerned that a typical glass-fiber-reinforced concrete (GFRC) architectural expression would not allow for the unique and animated sculptural solution we sought," he says. But by working closely with Walters & Wolf Precast, the precast producer on the project, the team was able to "optimize the architectural opportunities" while staying within the practical requirements of a unitized wall panel system.

"Typical GFRC solutions can be very gridlocked and mundane, but using integrated project delivery, we pushed the envelope of panelized GFRC expression to a new level of transparency, creating a much more open and animated woven-mesh expression." Moses Vaughan, WRNS Studio

"The project also faced tight deadlines, and the owner expected a high-performing building that would stay watertight under a mid-level seismic event," explains Scott Campbell of Walters & Wolf Precast. "This led to spirited debate between the teams on how best to solve this without compromising the building aesthetics," he says. In the end a variety of solutions were employed.

OWNER:
UCSF Capital Programs & Facilities Management, San Francisco, Calif.

PRECAST PRODUCER, PCI-CERTIFIED ERECTOR & PRECAST CONCRETE SPECIALTY ENGINEER:
Walters & Wolf Precast, Fremont, Calif.

ARCHITECT:
WRNS Studio, San Francisco, Calif.

ENGINEER OF RECORD:
Rutherford & Chekene, San Francisco, Calif.

CONTRACTOR:
Rudolph and Sletten, Redwood City, Calif.

PROJECT COST:
$99.2 million

PROJECT SIZE:
266,000 ft^2

GFRC THROUGHOUT

The building skin is comprised of GFRC units, vision glass, and metal spandrel panels on a panelized unit. “The GRFC appears as though it is a framework floating above the darker glass and metal elements underneath, creating the building’s outer mesh expression,” Vaughan says. The variability in the mesh is based on orientation and is realized by changing the amount of solid GFRC and vision glass within the panel. GFRC pilasters were presented in smooth and washboard-shadow, and the proportions of specific wall fragments and adjacent window-voids were adjusted for solar exposure, spatial and technical reasons, as well as façade-making. “The resulting panels vary between smooth and wash-board texture to provide shadow, scale, and variability,” he says. The color of the GFRC reflects the surrounding buildings on both the research and clinical side of the campus and offers a level of intricacy that allows the building to be enjoyed on multiple scales.

GRFC and precast concrete were also used throughout the building, including the base and upper floors, and in a uniquely designed “window box truss,” which allowed the glass to be contained entirely within the panel and thus installed at the precast producer's plant. “This made for a tremendous savings in the field schedule,” Campbell says.

“This project, and specifically the unitized GFRC building skin strategy, exemplifies the benefits of a successful lean construction approach,” Vaughan says. “All of the team members collaborated to bring added value to the project, balancing economy, aesthetics, performance, and sustainability.”

Key Project Attributes

- Innovative use of GFRC panel materials to achieve scale, texture, rhythm, and solar exposure goals.
- Panels were lightweight, cost-effective, and more sustainable than cast-in-place concrete construction.
- Window box truss design encased glass entirely within the panel, driving further time and cost savings.

Project and Precast Concrete Scope

- Panelization featured a 30-ft-long truss to accommodate all four curtain wall versions.
- Erection of precast concrete elements was completed in less than a month.
- Precast concrete elements cost $4,200,000.

OWNER:
Christian Dior Couture, Paris, France

PRECAST PRODUCER:
Styl-Comp, Bergamo, Italy

ARCHITECT:
Barbaritobancel Architects, Paris, France

ENGINEER OF RECORD:
Bromley-Cook Engineering, Ft. Lauderdale, Fla.

CONTRACTOR:
Twenty Two Group, Miami, Fla.

PROJECT COST:
$10 million (approx.)

PROJECT SIZE:
10,000 ft²

Photos: Barbaritobancel Architects/Allessandra Chemollo.

Dior Miami Façade Miami, Fla.

The sparkling white Dior building in Miami, Fla.'s high-end shopping district is more than just a store. The building was designed to reflect the couture brand's luxury image of refined elegance, innovation, and a sense of delight. "Dior is a fashion brand, and we needed to create a building that reflected that," says Abdurrahman Joomye of Barbaritobancel Architects.

"We chose high-performance precast concrete for this project because of its quality and durability, and the ability to achieve the large dimension of the panels." Benjamin Bancel, Barbaritobancel Architects

"The architects did begin with the idea of using precast concrete in the façade, but after coming up with the design, and testing multiple materials for color and durability, it was clear that precast was the right choice," says Benjamin Bancel of Barbaritobancel. "We needed a high-performance material that would allow us to create the large panels with no joints," he says. "Precast was the best choice."

Along with providing the flexibility to achieve the curved panel design, precast concrete also delivered hurricane-resistant performance, which is critical for the waterfront community that regularly faces strong winds, salt air, and heavy rains.

The designers met with several precast producers and ultimately chose Styl-Comp, an Italian precast producer, after tests of various materials showed their panels retained the crystal white color after 3 months of exposure to wind and rain. "They were clearly the best option," Bancel says.

STAIN-FREE DESIGN

The building features high-density large white precast panels of varying sizes and curvatures with a white pleated detail. The team used special molds and adjustable anchoring and support systems made by B.S. Italia S.p.A. to support the panels without joints.

The concrete was mixed with marble powder to add a sheen and sense of luxury to the façade. To add further contrast, the designers embedded hidden light fixtures in the panels that define the sharp corners with blue light where the panels meet.

One of the biggest challenges the designers faced on the project was maintaining the pure white exterior of the façade over time. To prevent water stains, the designers sloped the panels slightly inward, which causes water to drip back toward the ribbed interior of the panels. The ribs offer channels for the water to flow silently away from the building.

To assemble the project, the panels first had to be shipped in custom-built crates via boat to a nearby shipyard, then they were trucked in one at a time overnight. Because the panels were so large, the roads had to be completely closed for the 11:00 p.m. transfers.

The project was delivered seamlessly and the façade was erected over the course of 3 months. "The client was very happy with the result," says Bancel. "It is a timeless design that will stand the test of time."

Key Project Attributes

- Precast concrete façade delivers elegant, luxurious feel that reflects the Dior brand.
- Hidden illumination elements project shards of blue light that highlight the sharp corners and unique angles of the façade.
- Tilted panels and hidden ribs ensure water drains silently behind the façade, preventing stains on the white exterior.

Project and Precast Concrete Scope

- Design precast concrete façade with oversized panels and no joints.
- Precast elements include 82 panels of varying sizes.
- The building was designed and constructed in 2 years, with precast erection completed over 3 months.

Italy Pavilion for the Milan Expo Milan, Italy

Key Project Attributes

- Innovative branching design provides the look of an urban forest in a precast concrete façade.
- Special lifting machines were created to place the precast concrete panels in exactly the right positions.
- The structural layer that connects the external branches to the structure is masked by the branches, adding the appearance of movement to the building.

Project and Precast Concrete Scope

- Design and build award-winning pavilion in less than 2 years.
- Precast concrete elements include 700 unique architectural branched panels.
- 5800 adjustable steel systems, including 2600 wind bracing systems, were used to achieve the design.

The brand new Italy Pavilion built specifically for the Milan Expo 2015 is an architectural marvel, showcasing the incredible versatility that precast brings to innovative design solutions.

The building features a branching façade of white precast concrete that represents an urban forest, and was the winning design in an international competition held in May 2013. "We imagined an architecture that would represent the idea of being together and the ability to recognize themselves as a community through an innovative, contemporary building taking into account the great tradition of the Italian architecture," says Michele Molè, founder and director of Nemesi & Partners, the architecture firm. The premise of the design was to create overlapping layers that come together as an enormous natural sculpture.

The intricate detailing was only possible using precast concrete because of the complex geometry of the building and the richness of the skin-sculpture that embraced it, says architect Ivo Allas. "The precast also permitted us to contain the costs by creating a geometric base-panel from which were conceived all the different, numerous variations."

Once the design was awarded, the team had just 2 years before the Expo would be inaugurated, which added incredible pressure to the project. "We had very few months to develop the design and only 1 year to build," says Susanna Tradati, associate partner at Nemesi. "At the same time we wanted to show to the world Italy's ability to be innovative and personalize a unique design into a precast concrete skin."

"Engineering such a complex skin was strictly connected with the use of precast concrete because of the complex geometry of the building and the richness of the skin-sculpture that embraced it." Susanna Tradati, Nemesi & Partners

BRANCHES RISING TOWARD THE SKY

The geometric design on the outer envelope of the structure features a rich weave of branches reflecting the sculpted shapes of the Palazzo Italia. There is a repeated primary structural layer for each story, with three exterior architectural layers that are all different, creating the unique design and visible ribs of the façade. At the base, the design is slightly inlaid, then the shell rises in a seemingly random design with cut-out voids resulting from the intersection of "branches."

The structural layer that connects the external branches to the structure is masked by the branches themselves, allowing the panels to "freely fluctuate along the façade," Tradati says.

Because the precast concrete panels can be viewed from both inside and outside the building, finishes were applied on all sides. Scrap material from marble quarries in Carrara was added to the mortar to add luster to the surface.

To erect the precast concrete panels, the construction team created special lifting machines that enabled them to move and turn each of the 700 panels into the right position. The final project was constructed in 14 months, meeting the inauguration deadline.

"This incredible design was enabled by the passion and dialogue between the architects of Nemesi, the engineers of Styl-Comp S.p.A., and the team at Italcementi," Tradati says. "Our continuous dialogue resulted in a final product that was even better than the original plan."

Photos: Nemesi & Partners Srl.

OWNER:
Expo 2015 S.p.A., Milan, Italy

PRECAST PRODUCER & PRECAST CONCRETE SPECIALTY ENGINEER:
Styl-Comp S.p.A., Bergamo, Italy

ARCHITECT:
Nemesi & Partners Srl, Rome, Italy

ENGINEER OF RECORD:
BMS Progetti Srl, Milan, Italy

CONTRACTOR:
Italiana Costruzioni S.p.A, Milan, Italy

PROJECT COST:
$47 million

PROJECT SIZE:
42,650 ft^2

5th & Race Street Development Cincinnati, Ohio

Photos: High Concrete Group LLC.

The new mixed-use structure at 5th & Race Street in Cincinnati, Ohio, gives visitors the impression that they can see right through the building. Designers of the 280,000 ft² facility elegantly merged broad windows and precast concrete panels to create a light and elegant building that reflects the blue sky during the day and golden street lights at night, while giving residents a strong, open space for their offices and retail.

"Designers of the building, which includes a 1000-space, four-story parking garage at the base topped by four stories of commercial space, chose precast concrete to achieve the owners' durability, accelerated timeline, and aesthetic goals," says Glenn Ebersole, market development manager at High Concrete Group, the precast producer on the project. "By using architectural precast panels we were able to provide the dark color and avoid the repetitiveness of patterns, while limiting erection time."

"The use of architectural precast on this project showcased the aesthetic versatility of precast concrete to help achieve a unique exterior look, as well as the design versatility to build a mixed-use structure with four stories of parking and four stories of concrete office space on top."
Glenn Ebersole, High Concrete Group

EXPOSED PRECAST CONCRETE INTERIORS

While the precast concrete exterior of the building is among its most striking attributes, one of the biggest challenges that High Concrete Group's team faced was designing precast for the interior of the project. "The owner wanted the precast to be exposed inside the final office space to achieve an industrial look like, an old warehouse structure," he says. "So all precast connections had to be exposed to view." That meant special consideration had to be taken to ensure that connections within reach of personnel were both safe to be around and tamper-proof, as well as attractive.

Since the precast concrete was the only shell between the inside and outside air, all of the panels on the office tower were insulated to achieve thermal performance goals. "With no interior finishes there was no other way to provide insulation," Ebersole says.

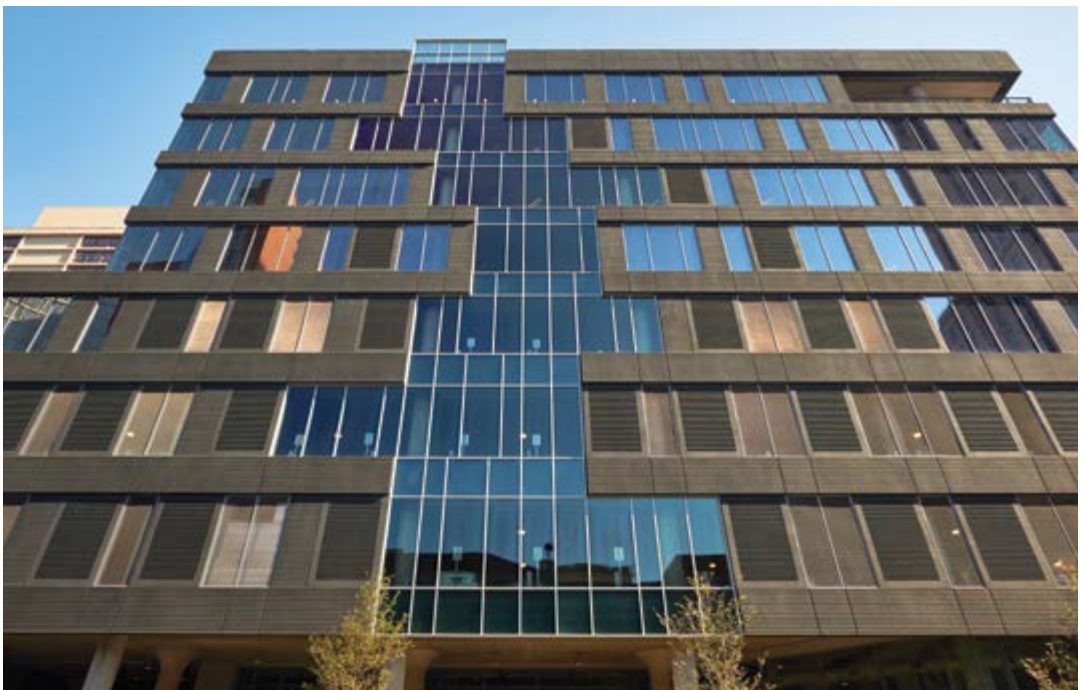
The result is a durable, attractive, high-performing structure that meets the needs of residents while creating an attractive addition to the urban landscape, he says. "The 5th & Race Street Development has been praised for the project's positive economic impact and the forecasted benefits it will have on the west side of the central business district in Cincinnati."

Key Project Attributes

- Exposed precast concrete interior gives office space an industrial feel.
- Insulated precast concrete sandwich panels provide thermal insulation with no additional interior finishes.
- Use of precast concrete enabled an accelerated construction timeline.

Project and Precast Concrete Scope

- 280,000 ft², mixed-use facility, including a four-story parking garage and four stories of office space.
- Precast concrete elements included 72,452 ft² of insulated cladding in 810 pieces.
- All panels were insulated to meet thermal goals.



OWNER:
Fifth & Race LLC and Dunnhumby USA, Cincinnati, Ohio

ARCHITECT:
Gensler, Chicago, Ill.

ENGINEER OF RECORD:
THP Limited Inc., Cincinnati, Ohio

PRECAST PRODUCER & PRECAST SPECIALTY ENGINEER:
High Concrete Group LLC, Denver, Pa.

CONTRACTOR:
Turner Construction Company, Cincinnati, Ohio

PROJECT COST:
$140 million

PROJECT SIZE:
280,000 ft^2

OWNER:
Domain Companies, New York, N.Y.

PRECAST PRODUCER:
Tindall Corporation,
Moss Point, Miss.

PCI-CERTIFIED ERECTOR:
Pre-Con Construction Inc.,
Lakeland, Fla.

ARCHITECT:
Eskew + Dumez + Ripple,
New Orleans, La.

ENGINEER OF RECORD:
Woodward Design+Build LLC,
New Orleans, La.

PROJECT COST:
$200 million

PROJECT SIZE:
168,835 ft²

Photo: Tindall Corporation & Domain Companies.

Park at South Market District New Orleans, La.

The new five-level, 435-space parking garage at South Market in the heart of New Orleans' Warehouse District isn't merely a place to park cars. The structure anchors a $200-million mixed-use, transit-oriented development that promises to be a hub for nightlife and urban activity and is considered one of the most ambitious projects in the city's history.

From the beginning, the architect wanted precast concrete for its durability as well as speed and ease of construction. Durability was crucial, as the structure is in a hurricane- prone area and thus needed to be storm-resistant, says Sam Briuglio, a consultant with Tindall Corporation, the precast producer on the project. But the design also had to infuse the architecture of the parking garage with character and style that reflect its historic surroundings.

"From day one the owner, contractor, architect, engineer, and precast producer were all involved in the development of the project. Aesthetics, functional construction, budget, and schedule could all be addressed early as a team resulting in a very successful project."
Sam Briuglio, Tindall Corporation

LIGHTWEIGHT SKIN AND AIRY DESIGN

The architect invited the precast producer to early planning meetings to help guide decision-making to ensure the client achieved all of the benefits that a precast design could bring to this project. "Since they had a strict budget and timeline plus a unique exterior design, having our expertise and input early reduced the cost and time needed to complete the project," Briuglio says.

Together they came up with a contemporary design featuring a white concrete sandblasted finish with a random spandrel pattern on the exterior façade to achieve aesthetic goals while providing an open-air structure that would improve its indoor environmental quality. Unlike traditional parking garages that take a stacked approach to precast concrete, this design integrated larger premanufactured modules to generate a light skin for the building's façade, creating an eye-catching style that met all building code requirements, including the 50% open-air ventilation for parking garages, Briuglio says.

The precast concrete spandrels allowed the separate architectural fins on the exterior spandrels to be installed as one unit, saving time and money, and allowed for fewer columns. "That increased open space, visibility and ease of navigation," says Vince Altese, sales representative for Tindall.

The precast concrete design also lent itself to the constraints of the tight jobsite by allowing the team to erect the structure from inside its own footprint, minimizing site disturbance, Briuglio says. "The precast panels made the assembly of the building incredibly easy and the unique style creates a distinct identity for the building's exterior façade."

Photo: Tindall Corporation.

Key Project Attributes

- Contemporary architecture that complements its historic surroundings while maximizing sustainable design.
- Architectural fins are installed as one unit, saving time and money.
- Tight site constraints required the structure to be erected from within its own footprint.

Project and Precast Concrete Scope

- Build an all-precast concrete, five-story, 168,835-ft^2, 435-space parking garage in New Orleans' warehouse district.
- Façade features sandblasted white precast concrete with a random spandrel pattern.
- Separate architectural fins are connected with framing, allowing the spandrel to be lifted as one unit.

Faena Park Miami, Fla.

Photos: Gate Precast Company.

The new six-story, 235-car Faena Park parking structure in Miami, Fla., looks more like a giant white beehive than a parking garage. The façade is covered in thousands of slightly oblong holes that provide ventilation within an innovative eye-catching design.

"Figuring out how to make those holes was the hardest part of this project," says Bryant Luke of Gate Precast, the precast producer for the project. The designer wanted all of the holes to look perfectly round, but they also had to cross through the panel at an angle to accommodate airflow and prevent glare from cars onto nearby buildings, making them elliptical as they pass through the panel, he explains. "We had to come up with a way to make those ellipses look like circles from the ground."

The holes on the leaning panels also had to look the same as those on perpendicular panels, which required a completely different size and angle based on the tilt of the panels.

PUT A PLUG IN IT

To solve the problem, Gate created the panels with holes cut at a 45-degree angle. To do that they began with a solid panel mold, then inserted custom-made rubber plugs to create the holes in the cast. "Arriving at a plug strong enough to hold its shape but slick enough to release from the mold was challenging," he says. "It was imperative that all embeds lined up just right because there couldn't be a remedial where there was a hole."

Each "odd" hole or recess required its own unique plug, which had to be detailed and then made out of rubber. Gate worked with a third-party company to machine a positive of the high-density, hard-coated foam to create negative rubber molds, then used those molds to create the final positive rubber plugs. In total, they created 77 unique plug variations.

The hollow plugs were filled with 1.5 lb of foam to lessen the cost of the plugs; then light adhesive and caulking secured them in the mold and prevented concrete spillage into the void. "Once we had the plugs figured out, we were able to create thousands of holes in a very short amount of time," Luke says.

Another innovative use of precast concrete on this project is seen at the roof. The design team wanted a cavity between the precast concrete and roofing system in order to make the roofing accessible, so the precast panels sit on top of specially designed pedestals that allow them to be easily removed to access mechanical systems and help with waterproofing.

"This project bridges a gap between design and fabrication. The mix of BIM [building information modeling] and machining created the repetitious level of precision and uniformity required throughout the project." Bryant Luke, Gate Precast

"The architect could not have achieved this design with any material other than precast," Luke says. "This uniformity would have been impossible to replicate through manual power tools."

Key Project Attributes

- Custom use of rubber plugs to "cut" thousands of holes into the precast concrete façade.
- Designers used CAD to angle elliptical holes that appear circular from the ground.
- Horizontal roof panels hide the mechanical system from view.

Project and Precast Concrete Scope

- Create unique precast concrete façade for a six-story, 235-car parking structure, featuring holes cut at an angle through the precast concrete panels to create airflow while blocking glare from cars.
- Precast concrete elements included 147 panels with an average size of 14 ft by 10 ft.
- Each panel features dozens of custom holes cut based on the angle and location of the panel.

OWNER:
Faena Group, Miami, Fla.

PRECAST PRODUCER & PRECAST CONCRETE SPECIALTY ENGINEER:
Gate Precast Company, Kissimmee, Fla.

ARCHITECT:
OMA*AMO Architecture PC, New York, N.Y.

ENGINEER OF RECORD:
DeSimone Consulting Engineers, Miami, Fla.

CONTRACTOR:
Layton Construction Co., Brentwood, Tenn.

PROJECT SIZE:
28,283 ft^2

LDS Temple Fort Collins, Colo.

Photo: ©The Church of Jesus Christ of Latter-day Saints.

Deep in the foothills of the Rocky Mountains sits the gleaming new Temple of the Church of Latter-day Saints. The structure has become a landmark for Fort Collins, Colo., and a testament to the incredible detail that can be achieved in a precast concrete design. The temple features a steel-braced frame clad in a precast concrete envelope featuring almost 1000 architectural precast concrete panels. Its warm white color, marble aggregates, and handmade finish give it the look and feel of natural stone in a durable cost-effective package.

"The owner wanted an exterior material that could achieve the intricate detailing desired and still maintain the longevity and durability for a 50-plus year building," explains Ethan F. Bedingfield, associate at Architectural Nexus, the architect for the project. "The design required a monolithic-looking material that could be carved away at openings. Precast concrete helped us to achieve all of these things in an economical way relative to carved stone."

"Precast concrete is the most economical building envelope solution in this region that meets the client's high standards for aesthetics and longevity." Ethan F. Bedingfield, Architectural Nexus

SUBTLE DETAIL IN A MONOLITHIC FORM

More than 34,000 ft^2 of precast concrete elements of complex geometries and finishes were manufactured by Pretecsa, the precast producer for the project in Mexico, then transported by road 1770 miles to Fort Collins and installed over the course of 10 months. "The main challenge was to coordinate engineering, manufacturing, and installation between all participants from 1800 miles away," says Alex Fastag, CEO of Pretecsa.

A tight schedule and weather limitations required quick installation, which the designers achieved by creating massive precast panels that covered up to 250 ft^2 each. The large dimension of the panels combined with the high complexity and precise detailing was a challenge, Fastag says. "The monumental dimensions provide a scale where fine details could be easily lost, but the demanding client required the precision expected from a precast panel."

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

PRECAST PRODUCER & PRECAST CONCRETE SPECIALTY ENGINEER:
Pretecsa, Atizapan de Zaragoza, Mexico

PCI-CERTIFIED ERECTOR:
IMS Masonry, Lindon, Utah

ARCHITECT:
Architectural Nexus, Salt Lake City, Utah

ENGINEER OF RECORD:
McNeil Engineering, Sandy, Utah

CONTRACTOR:
Okland Construction, Salt Lake City, Utah

PROJECT COST:
$30 million (estimated)

PROJECT SIZE:
67,415 ft^2

Photo: ©Joseph Malbica.

Photo: ©The Church of Jesus Christ of Latter-day Saints.

To accommodate the massive design, forming of each mold required joining several smaller pieces created with different materials. Plaster models of small sectioned parts were designed and subsequently articulated into molds to have larger and more complex pieces requiring a dedicated crew to cut and profile each section using different hand tools. A flexible three-dimensional molding system, specially created for this project, was used to achieve the rounded plaster forms. Combined molds of latex, wood, concrete, glass-fiber-reinforced concrete (GFRC), polyurethane, and polystyrene were obtained to accommodate the required finishes of each panel. Extensible molds of adjustable proportions and dimensions were manually articulated to create unique pieces with different surfaces, reducing the number of casting beds needed, while straight, curved, concave, and convex molds were produced to form highly complex parts. The result was large monolithic detailed panels with fewer joints, giving the project the monumentality required without losing the fine and complex architectural details conceptualized by the design firm, Fastag says.

The precast concrete design enabled the architect to achieve the intricate shape and formed details needed to generate the appearance of a carved material. "The monolithic, carved nature of the columns, pilasters, and details give the building the visual weight that it needs," Bedingfield adds. "The precast was able to achieve the fine detailing of leaves and patterns desired."

Key Project Attributes

- Warm white color, marble aggregates, and handmade finish provide the look and feel of natural stone.
- Massive precast concrete panels with intricate detailing generate the appearance of a carved material.
- A flexible three-dimensional molding system achieved the rounded plaster forms.

Project and Precast Concrete Scope

- Precast concrete elements included 924 architectural panels of a maximum area of 250 ft^2.
- Precast concrete panels had to be transported 1770 miles to the jobsite.
- More than 34,000 ft^2 of precast elements were manufactured and installed in 10 months.

Summit Country Day School Addition

Cincinnati, Ohio

Key Project Attributes

- By going with a total precast concrete solution, the team completed the project in just 13 weeks.
- Precast concrete panels were designed to exactly replicate the historic character of the building.
- Cost savings achieved through shortened construction time allowed the team to expand the scope to support a total mechanical system replacement.

Project and Precast Concrete Scope

- Rebuild five-story wing of a 126-year-old school using a total precast concrete design.
- Precast concrete elements include six columns, 10 beams, 57 insulated panels, and 93 hollow-core planks.
- Fast-track schedule ensured construction was completed during students' summer break.

In 2004, the historic Summit Country Day School in Cincinnati, Ohio, suffered a shocking partial collapse after excavation for an adjacent foundation wall undermined the structure. In 2014, a plan was put in place to rebuild the five damaged floors of the southeast wing.

The challenge the design team faced was how to complete the entire $10 million project during a single summer break. "The schedule challenges were self-imposed in response to concerns about mixing on-site construction activities while school was in session," explains Richard Thomas, vice president of SHP Leading Design, the architect on the project. The project teams also faced noise restrictions that limited work to an 8 a.m. to 5 p.m. window, and concerns about unknown design quirks and matching the architecture of the 126-year-old structure.

"In each of those challenges, precast solved the issue," Thomas says. The design team chose a total precast concrete solution for the structure and envelope that would support interior column-free flexibility.

The scope of the work was significant enough to span two summer sessions using traditional construction methods. But by choosing a precast concrete design, the elements could be designed, manufactured, shipped, and erected in just 13 weeks. The use of precast concrete also allowed designers to exactly replicate the detail and character of the existing historic structure, and because the panels were cast off-site, noise restrictions weren't an issue.

COLLABORATION IS KEY

The precast concrete design was executed under an integrated project delivery methodology, through which the architect contractor, owner, precast producer, erector, and engineers worked collaboratively, leveraging design assist and building information modeling technologies to streamline the process. "Design assist, prefabrication, 3D modeling and laser scan technologies contributed to the highly collaborative effort," Thomas says.

One benefit of this collaborative process was the ability to hone the design to minimize the number of precast elements from more than 100 to just 49 multistory, multilayered insulated panels. "The resulting design provides excellent weathertight and energy efficient performance, far surpassing the capabilities of alternative envelope systems, including traditional masonry wall systems," Thomas says.

Onsite, the delivery and staging process was carefully orchestrated to achieve a just-in-time delivery mentality. "No panel sat for more than 2 hours once arriving at the site," he says. This careful planning allowed for the full scope of precast, including the structure and envelope on the six-story, 11,000-ft^2 addition to be erected in just 21 days.

"I am now a true believer in the potential precast offers as a material. The success of the endeavor to place $10 million of construction work—$3.5 million of which was facilitated by the precast application—in 13 weeks is something of which the whole team should be extremely proud."
Richard Thomas, SHP Leading Design

Thomas notes that while the first cost of the design was higher than other methodologies, the speed of erection more than made up the difference. It resulted in a cost-effective solution that met the owner's durability, schedule, and performance criteria in the context of the original architecture.

"The intricate design of the existing facility could not have been re-created for the same dollars and certainly in the same time frame by any other construction approach," Thomas says. "Gate Precast's capabilities in design and fabrication far exceeded expectations in producing an extraordinary level of detail in the panel profile and panel performance."

OWNER:
Summit Country Day School, Cincinnati, Ohio

ARCHITECT:
SHP Leading Design, Cincinnati, Ohio

PRECAST PRODUCER:
Gate Precast, Winchester, Ky.

PRECAST CONCRETE SPECIALTY ENGINEER:
Ericksen Roed & Associates, St. Paul, Minn.

PCI-CERTIFIED ERECTOR:
E.E. Marr, Baltimore, Md.

ENGINEER OF RECORD:
THP Ltd., Cincinnati, Ohio

CONTRACTOR:
HGC Construction, Cincinnati, Ohio

PROJECT COST:
$10 million

PROJECT SIZE:
11,000 ft²

Photos: Gate Precast Company.

Photos: Cameron Blaylock.

OWNER:
Alloy Development Holdings, Brooklyn, N.Y.

PRECAST PRODUCER & PRECAST CONCRETE SPECIALTY ENGINEER:
Gate Precast Company, Ashland City, Tenn.

PCI-CERTIFIED ERECTOR:
E.E. Marr, Baltimore, Md.

ARCHITECT:
Alloy Design, LLP, New York, N.Y.

ENGINEER OF RECORD:
Robert Silman Associates, New York, N.Y.

CONTRACTOR:
Alloy Construction, New York, N.Y.

PROJECT SIZE:
18,000 ft²

DUMBO Townhouses Brooklyn, N.Y.

The DUMBO (Down Under the Manhattan Bridge Overpass) neighborhood in Brooklyn, N.Y., has become one of the hottest places to live in the area, thanks to the nearby waterfront, thriving art scene, and industrial appeal of the architecture. The new five-story townhouses at 55 Pearl Street only adds to the local charm.

Originally an industrial center, the neighborhood is known for its early use of reinforced structural concrete in building design, says Jared Della Valle, CEO of Alloy Design, the architect on the project. His team wanted to honor that architecture in their designs. "We created a contemporary structure for an industrial neighborhood, and the use of precast concrete was a nod to that history," he says.

The new townhouse complex consists of five five-story, single-family luxury townhouses situated across from a newly designated public park. The building envelope incorporates a unique louvered precast concrete panel system cast with ultra-high-performance concrete (UHPC), reinforced with polyvinyl alcohol fibers. "This project is the first of its kind in North America and demonstrates how UHPC, used in an innovative precast louvered-façade application, allowed the perfect blend of old and new architecture without compromising the integrity of the neighborhood," says Bill Henderson, vice president of operations for Gate Precast, the precast producer on the project.

A LITTLE RIBBING

The panel design consists of a head and sill cast with vertical ribs and a thin ¾-in. web between the shades on the majority of the pieces. Each vertical rib has a slight recess toward the front face to make the ribs appear thinner. Each unit also has a raised private entrance clad with wood and bronze-coated aluminum that soften the entry experience in contrast to the precast concrete panels above.

"The precast concrete design allowed us to achieve the look and the performance we wanted in this building. The public response to it has been overwhelming." Jared Della Valle, Alloy Design

The precast concrete panels are entirely reinforced by the UHPC and connect back to the structure via stainless steel connection hardware. "Connecting the panels was one of the biggest challenges on this project," Henderson says. The panels act as cladding for a masonry and steel structure and the designers wanted limited connection points to maintain the passive thermal features of the building.

"Gate was very successful at engineering a way to support the dead load of the panels without burdening the thermal energy performance of the building," Della Valle says.

Getting the panels to the site was another challenge in the historic neighborhood where many streets are still cobblestone and the only way in is via bridge. "The infrastructure didn't allow for heavy trucks to come down the streets," Della Valle says. So the team used the nearby Navy yard as a staging area and brought the panels in one by one.

The completed structure met all of the owner's requirements in a beautiful, high-performance design that will stand the test of time. "I'm incredibly proud of how it turned out," says Della Valle, who also lives in the neighborhood. "We achieved exactly what we set out to do."

Key Project Attributes

- Ultra-high-performance concrete (UHPC) applied in an innovative precast louvered façade application.
- The precast concrete façade reflects the industrial historic architecture of the neighborhood.
- Designers used nearby Navy yard as a staging area because cobblestone streets couldn't handle heavy truck traffic.

Project and Precast Concrete Scope

- Five-unit, five-story townhouse complex with precast concrete louvered façade.
- Project components include 44 precast concrete panels 12 ft by 18 ft.
- Stainless steel connections were used to connect the back of the panels to the structure with grouted concrete masonry unit block on the first floor and steel beams above.

Knight Plaza Miami, Fla.

Photos: STABIL Concrete Products.

On a typical day in sunny Miami, Fla., scores of people stroll from the waterfront park to the city's Museum Park on Biscayne Bay, which is home to the new Pérez Art Museum Miami and the Patricia and Phillip Frost Museum of Science. To compliment the two museums and provide visitors with a place to relax and revel in the ocean-side scenery, the owners recently built the Knight Plaza, a 40,000-ft^2 public square that links the campus to the waterfront.

The plaza has become a destination all its own, thanks to the 55 massive precast concrete sculptural planters cast in curved geometric patterns that mimic the local flora and constant roll of the nearby ocean waves. "The owners wanted the largest and most beautiful artistic hardscapes to be featured in the plaza to complement the art and science museums," says Del Hight, president of STABIL Concrete Products, the precast producer on the Knight Plaza project. "They wanted a place where guests could admire the hardscapes as well as rest, while visiting one museum and then the next."

WITHOUT A SCRATCH

In the planning stages, the architects envisioned a highly articulated wave-like pattern for the multiple planter sections, with rounded rims extending out for seating. "As they imagined these hardscapes, they also planned for a fluid flow to all of the elements, where no seams would show whatsoever," Hight says. Precast concrete was the only material they considered to accomplish the dramatic wave effect within the city's tight budget.

"Precast concrete was the only material that could have accomplished the combination of aesthetic beauty and extreme longevity, within the city's tight budgetary restraints." Del Hight, STABIL Concrete Products

OWNER:
City of Miami, Art & Science Museums, Miami, Fla.

PRECAST PRODUCER:
STABIL Concrete Products LLC, St. Petersburg, Fla.

PRECAST CONCRETE SPECIALTY ENGINEER:
American Constructioneers LLC, Tampa, Fla.

PCI-CERTIFIED ERECTOR:
Florida Builders Group, Miami, Fla.

ARCHITECT:
Rodriguez and Quiroga Architects, Coral Gables, Fla.

ENGINEER OF RECORD:
DDA Engineers P.A., Miami, Fla.

CONTRACTOR:
Suffolk Construction Company, Miami, Fla.

PROJECT COST:
$950,500

PROJECT SIZE:
40,000 ft^2

The challenge was that the giant concrete planters would have to be reinforced due to their extensive size and weight, but the designers knew that reinforcement and anchors would spoil the flowing design they had imagined.

Hight's team was tasked with figuring out how to fabricate these sculptural planters, reinforce them, and be able to move them without affecting the finish. They solved the problem by first fabricating a cardboard and wood version of the planters, then they made a model out of fiberglass, then created an inverted version of the model as a mold.

To reinforce the massive planters without piercing or penetrating the continuous fluid outside wave design, Hight's team crafted and installed galvanized steel reinforcement inside the mold along with steel braces that had connections for rigging so the pieces could be lifted and transported without damaging the outside visible area of the planters in any way. The surface of each planter was then hand-feathered and lightly sandblasted to deliver a flawless, flowing finish.

The planters now anchor the popular plaza. Because they are made with high-performance precast concrete, they require little maintenance and the owners are confident that they can easily withstand the high winds, severe downpours, punishing sun, and salt air that are all common to the region.

"We love that precast concrete was used to achieve all of the architect's and designer's vision for this project," Hight says. "Hundreds of thousands of museum patrons will walk through this plaza and use and enjoy these hardscape elements every day, all year long, year after year."

Key Project Attributes

- Building a full-size model prior to placing the concrete ensured the precast producer delivered the precise measurements of the complex geometry.
- Connections installed inside the planters allowed rigging to transport the planters without marring the surface.
- The high-performance precast concrete design will naturally withstand high winds, downpours, sun, and salt air.

Project and Precast Concrete Scope

- Manufacture and transport 56 concrete planters weighing 28,000 lb each.
- Develop forms to deliver complex geometrical sculptural design.
- Create a design that can be easily moved without marring the finish on the planters or the plaza.

A NEW DIMENSION OF THIN BRICK.

More sizes. More textures. Make your spaces move with Endicott thin brick. Experience uninterrupted design throughout your entire project.

ENDICOTT™

PCI Premier Partners

Endicott's keyback thin brick is manufactured to meet the requirements of ASTM C1088, Exterior Grade, Type TBX, and the more stringent size tolerances of +0" -1/16 required for precast applications.

Endicott Thin Brick & Tile, LLC
402-729-3323 | endicott.com

Photo: Enterprise Precast Concrete Inc. and Jacia Phillips Photography.

HIGHER EDUCATION/UNIVERSITY BUILDING

Capitol Federal Hall, University of Kansas

Precast Producer & Precast Concrete Specialty Engineer:
Enterprise Precast Concrete Inc., Omaha, Neb.

PCI-Certified Erector and Contractor:
J.E. Dunn Construction, Kansas City, Mo.

Architect:
GastingerWalker&, Chicago, Ill. and Gensler & Associates Inc., (Design Architect) Chicago, Ill

Engineer of Record:
Bob D. Campbell and Company, Kansas City, Mo.

Project Cost: $70 million

Project Size: 166,500 ft²

Photo: Image by CPG/Heatherwick Studio, photography by Hufton & Crow.

INTERNATIONAL BUILDING

Nanyang Technological University Learning Hub—The Hive

Precast Producer & Precast Concrete Specialty Engineer:
LWC Alliance Pte Ltd., Singapore

Owner:
Nanyang Technological University, Office of Development & Facilities Management, Singapore

Architect:
CPG Consultants Pte Ltd., Singapore

Engineer of Record:
TY Lin International, Singapore

Contractor:
Newcon Builders Pte Ltd., Singapore

Project Cost: $32 million

Project Size: 164,400 ft²

Photo: George Spence.

ALL-PRECAST CONCRETE PARKING STRUCTURE

Alpharetta City Center Parking Deck

Precast Producer:
Metromont Corporation, Hiram, Ga.

Architect:
Smallwood, Reynolds, Stewart, Stewart & Associates Inc., Atlanta, Ga.

Engineer of Record:
Uzun & Case Engineers LLC, Atlanta, Ga.

Contractor:
Choate Construction Company, Atlanta, Ga.

Project Cost: $5 million

Project Size: 140,500 ft²

Photo: © Pablo Mason Photography.

FAÇADE-ONLY PARKING STRUCTURE

San Diego International Airport Rental Car Center (ConRac)

Precast Producer:
Clark Pacific, West Sacramento, Calif.

Architect:
Damattei Wong Architecture, Burlingame, Calif.

Engineer of Record:
Parsons Brinkerhoff with Kleinfelder Inc., San Diego, Calif.

Contractor:
Austin Sundt Joint Venture, San Diego, Calif.

Project Cost: $316 million

Project Size: 2,063,714 ft²

Photo: Steinkamp Photography.

K-12 SCHOOL BUILDING

King Abdullah Academy

Precast Producer:
Gate Precast Company, Oxford, N.C.

Owner:
King Abdullah Academy, Herdon, Va.

PCI-Certified Erector:
E.E. Marr Erectors, Baltimore, Md.

Architect:
Bowie Gridley Architects, Washington, D.C.

Engineer of Record:
Cardno Haynes Whaley Inc., Houston, Tex.

Contractor:
Clark Construction, Bethesda, Md.

Project Cost: $96 million

Project Size: 320,000 ft²

Photo: Kessler Photography.

CUSTOM SOLUTION BUILDING

Girls Inc. Omaha

Precast Producer:
Enterprise Precast Concrete Inc., Omaha, Neb.

Owner:
Girls Inc. Omaha, Omaha, Neb.

PCI-Certified Erector:
Davis Erection, Gretna, Neb.

Architect:
AO, Omaha, Neb.

Engineer of record:
TD2, Omaha, Neb.

Contractor:
Lund Ross Constructors, Omaha, Neb.

Project Cost: $12 million

Project Size: 55,000 ft²

A PERFECT MARRIAGE

BIM BOOSTS CAPABILITIES, VALUE OF DESIGN-ASSIST

— Sam Barnes

For project teams of the past, "design-assist" usually meant hand sketches, a mountain of paper documents and a lot of back and forth as they struggled to iron out constructability issues during the design process before they materialized.

Technology has fostered a lot of changes since those early days especially with the advent of BIM (Building Information Modeling) as a primary design communication tool, design tweaks are now made more easily and efficiently – a necessity in today's fast-paced world of design and construction. BIM has exponentially improved the design-assist process by improving the flow and sharing of information across a consistent platform and enabling team members to perpetuate that model in the construction documents.

"With BIM, design-assist has been taken to a whole new level of effectiveness," says Nate Brooks, BIM managing director at Gate Precast, based in Jacksonville, Fla. "Now, we are developing the precast models alongside the architects, contractors and subcontractors, and combining everything into a central model reducing duplications in the design, process and conflicts on site."

Design-assist is about building an improved communications framework that will carry through to occupancy, and the benefits are becoming hard to ignore. By using the method, designers gain from an improved schedule, lower material costs, less guessing at bid time, secured production spaces, more time for precast suppliers to work out details, and more time to shop for subs and suppliers.

As a result, owners and designers are reaping the benefits of design-assist in greater numbers, particularly for complex projects that are prone to constructability issues.

MAKING THINGS BETTER

Design-assist involves the entire team of designers, architects, engineers, subcontractors and owner working together at the front end of a project, ultimately saving money in the long term by eliminating duplication in the design process with fewer conflicts with trades in the field. "The more complex or ornate the project, the more design-assist will be beneficial," Brooks says. "When you get into those complex jobs, it's key to have the design-assist team on early."

COOK CHILDREN'S MEDICAL CENTER SOUTH EXPANSION, FORT WORTH, TEX.
BIM technology was used to control the design-assist process, allowing for a more fluid design and enhanced detailing.

The level or depth of involvement is up to the team. "When used to its full extent, design-assist involves all our teams – engineers, production, shipping, trucking, erectors, etc. – with everyone looking at a project and deciding, 'OK, is it feasible to build this way? If it is, is it economical to build this way? And what are the alternatives to building or designing this way?' In the process, you give them some constraints and help them design around those. The end goal is always the same – to ensure that communication remains fluid and that the building is constructible."

For Gate, the design-assist process is a combination of both face-to-face and virtual meetings as the group communicates through the common BIM platform, examining various models and tweaking designs and processes to achieve the most cost- and time-efficient manner to design, produce, deliver and erect either structural or architectural precast components.

Some design-assist processes take less time and require only a single face-to-face meeting, with all other communication occurring virtually. "However, if you get a more intricate job with complex architecture, you'll need to sit down together more often."

ARCHITECTS ON BOARD

Design-assist also combines well with various Lean construction processes, such as Integrated Project Delivery, as demonstrated during the recent Cook Children's Medical Center project in Fort Worth, Texas. At Cook, 12 companies signed the initial contract as partners in the IPD project.

Ultimately, the project required 667 insulated architectural precast panels encompassing 76,000 square feet, with various finishes

including embedded glazed bricks and limestone- and cast-stone-like appearances. "We were all team members," says Dave Clark, project manager at Linbeck Group, the construction manager on the job. "We worked collectively to find the best solution for each challenge from the beginning."

For Gate, that meant becoming heavily involved in a design-assist capacity when design documents were 50 percent complete. Gate assisted the design team, owner and construction manager in completing the drawings. "The obvious advantage that precast concrete gave us was speed of construction. It saved a tremendous amount of time, probably about 6 months," Clark says. "The IPD method essentially allows us to prepay for the bulk of our materials from subcontractors with assurances that those budget items will be met, while also assuring them that they can derive a profit from the project."

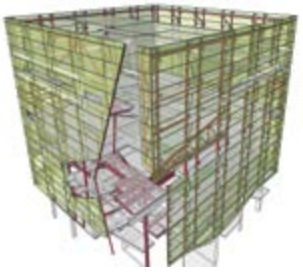
Sean Patrick Nohelty, managing director and principal at David M. Schwarz Architects (Cook's architect), says, "By working so closely with Gate, we were able to avoid a façade of repetitive, big pieces covering the building. We got an individualized look. I would like to see it (IPD) happen more with this client and these teammates. We worked very well together."

At a new Neiman Marcus department store, also in Fort Worth, design-assist proved invaluable when a fourth-quarter decision to include more precast in the design threatened to delay the project.

"We literally had three months to go from a tentatively approved schematic design to full construction documents," says Jason Hyatt, construction administrator with Alamo Architects in San Antonio. "Because of the design-assist process, we made it just fine. And at the end of the day, the bids came in closely stacked, and all very close to our preconstruction estimates." The store opened in early February.

In nearby Dallas, design-assist played no small role in the progressive use of precast at the Perot Museum of Nature and Science. Project architect Alexander Tamm-Seitz with Morphosis in Los Angeles, says the project team pushed precast "to an entirely new level" – made possible largely by Gate's early involvement. "We've always tried to be innovative with everything that we do, with the building skins being very prominent in our approach," Tamm-Seitz says. "When we started with concrete we knew we could probably do something interesting but we didn't know what that was. We needed a good team."

"When it's a monologue we don't usually go anywhere, but by having a dialogue the project becomes more rich and much more interesting. To me, that's when a lot of the fun started. The innovation with the skin and working with precast was new for us.



PEROT MUSEUM OF NATURE AND SCIENCE, DALLAS, TEX.
Perot Museum of Nature and Science pushed precast "to an entirely new level".

"Gate had a great team that was interested in finding out what our ideas were and helping us to explore."

NEIMAN MARCUS, FORT WORTH, TEX.
Design-assist proved invaluable for Neiman Marcus' new Fort Worth flagship department store.

Expand your understanding of how Gate Precast and the design teams used design-assist and BIM to create these iconic structures. Schedule a Lunch and Learn or visit one of our 8 Precast Design Centers to earn AIA HSW LUs.

Nate Brooks
BIM Managing Director
nbrooks@gateprecast.com

Mo Wright
Marketing Director
mwright@gateprecast.com

GATE PRECAST COMPANY
gateprecast.com | (888) 470-3450

Follow us on:
facebook.com/gateprecastco
twitter.com/gateprecast
instagram.com/gateprecastco
pinterest.com/gateprecast

Photo: William Towns/Colovisions.

PRECAST/PRESTRESSED CONCRETE

Design Resources

PCI develops, maintains, and disseminates the Body of Knowledge for designing, fabricating, and constructing precast concrete structures and systems. It is from this Body of Knowledge that building codes, design guides, education, and certification programs are derived. Please visit www.pci.org for all of these design resources and more.

Architectural Precast Concrete Color and Texture Selection Guide, 2nd Edition (CTG-10)

The "Architectural Precast Concrete—Color and Texture Selection Guide" has been reprinted with 12 new color and texture pages, plus identification pages with mixture designs. This includes nine new color pages with two new colors per page, two pages of new formliners, and one page of new clay brick-faced precast. The numbers in the guide have not been changed, so that there is no confusion between the old and the new versions. This is a visual guide to assist architects in the initial selection of color and texture for architectural precast concrete. Illustrating more than 500 colors and textures for enhancing the aesthetic quality of precast concrete panels, the guide is an extension of the information included in the architect-oriented Architectural Precast Concrete Manual (MNL-122). Cements, pigments, coarse and fine aggregates, and texture or surface finish with various depths of exposure were considered in creating the 287 6.75- by- 11-inch color plates, the majority of which display two finishes on the same sample. The materials used to produce the samples are identified in the back of the guide for handy reference. The three-ring binder has removable inserts.

Architectural Precast Concrete, 3rd Edition (MNL-122)

This fully revised edition includes new sections on sustainability, condensation control, and blast resistance. You'll get extensive updates in the areas of color, texture, finishes, weather, tolerances, connections, and windows, along with detailed specifications to meet today's construction needs. Includes full-color photographs and a bonus DVD.

Precast Prestressed Concrete Parking Structures: Recommended Practice for Design and Construction, 3rd Edition (MNL-129-15; e-pub)

Decades of research have proven that precast, prestressed concrete is a cost effective, durable solution for parking structures. Over 140 pages present the latest concepts in design and construction, including 16 pages of full color photography and many details and design examples. This is the most comprehensive publication of its kind.

Designer's Notebooks – Free

The PCI Designer's Notebooks provide detailed, in-depth information on precast concrete relevant to specific design topics such as acoustics, mold, and sustainability.

Congratulations to our PCI Award-Winning Customers!

UCSF Mission Hall Global Health Sciences Building

1200 Intrepid

San Diego International Airport Rental Car Center (ConRac)

Santa Clara Family Justice Center

Mercy Health – West Hospital

Visit www.AECDaily.com and www.HanleyWoodUniversity.com for our online AIA/CES courses

LEHIGH™ WHITE CEMENT

www.lehighwhitecement.com

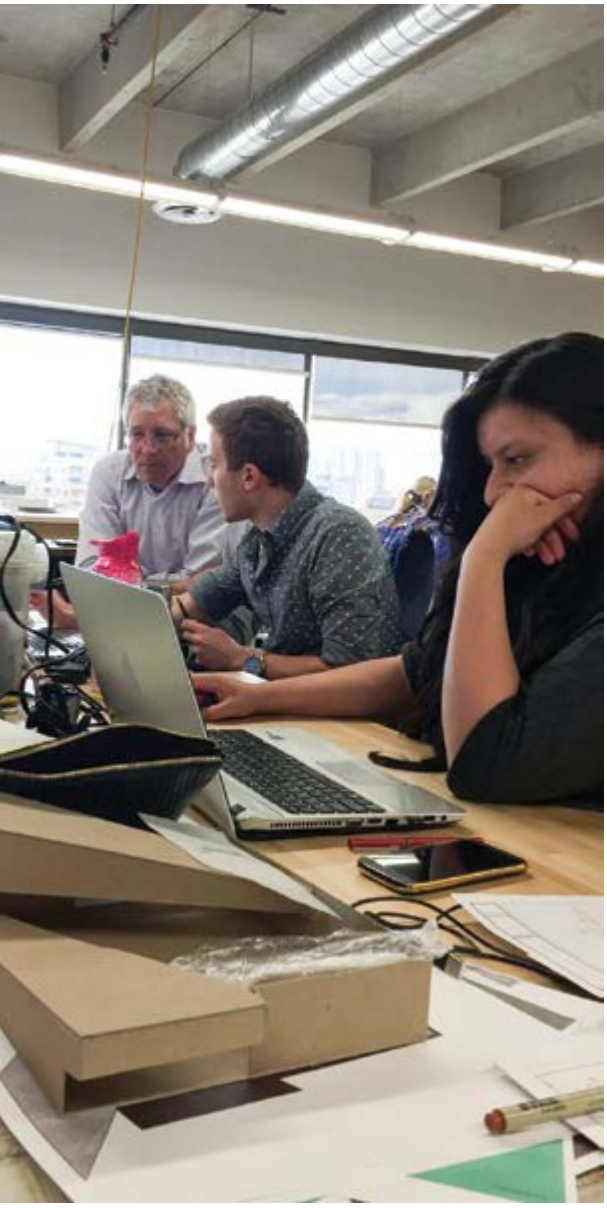
BUILDING POSSIBILITIES

TX® ACTIVE

From infrastructure to architectural and industrial applications, pre-cast concrete works stronger and smarter with the science and support of Lehigh Hanson construction materials — a leader in cements, slag and aggregates in North America. Let us help you build your possibilities.

www.lehighhanson.com

Lehigh Hanson
HEIDELBERGCEMENT Group



Jason Lien of Encon United assists students Dylan Davies and Aracely Hernandez as part of a desk critique.

PRECAST PRODUCERS TAKE HANDS-ON APPROACH TO

Help Students at CU Denver

— Marty McIntyre

It takes some savvy students to take on a challenging studio project that combines a high summit representing American heritage with the intricacies and challenges of the Rocky Mountains. Professor Matt Shea and the student in his PCI Foundation-sponsored studio took on these challenges at the University of Colorado Denver School of Architecture during their spring studio.

Like many studios, the students took on a project that had some very real-world implications, although on a hypothetical project. The Friends of America's Mountain—a group supporting Pikes Peak—interacted with the students and acted as the client for the project.

This project, more so than many others, had some unique challenges. For example, an elevation of 14115 feet provided a challenge in getting building materials to the visitor center. Another interesting challenge was that there are three ways to ascend to the peak, via the 19-mile Pikes Peak Highway, the Manitou Incline that consists of about 2744 steps, or the Cog Railway. These three routes come together at the summit.

INDUSTRY EXPERTS WORK WITH STUDENTS

The material of choice for the project was precast concrete. Students worked with local industry experts not only to learn the basics of precast concrete design and construction, but also to ensure that they addressed limitations in terms of transporting precast through two major switchbacks and how erectability and crane choices would affect the design.

Jason Lien, vice president of Encon United, was a regular visitor at the studio. "I loved working with the students and I think they got a lot out of me being there," says Lien. "I would meet each group every week and then come back the next week and do it again during a 3-week period. I also gave the class three presentations on precast: a general architectural program, then we got down to products and constraints, and one on connections."

"I was able to help the students who were struggling at first to do compartmentalizing of the building and breaking it down into pieces. With one student, we worked on a coffered piece of precast—like a double tee, but the stems weren't parallel. Together we thought about how the product would be made, and in the end he designed a new shape

that was almost like a softball, with pieces coming together to form one piece. He used it to make a great roof design out of that simple shape."

Architect Scott Maclay, who works as an account manager for Rocky Mountain Prestress, says that understanding the site was a key topic when he talked to students. "We really talked about how precast worked for this particular project—which had a challenging site and tight construction window," says Maclay. "Precast was the perfect construction material because it can be delivered just in time with very little staging and can erect quickly. I think the student really took away how to look critically about choosing the perfect building material."

The partnership with local industry experts turned out to be helpful. "Maclay's background as an architect really helped him translate precast concepts to the students," says Shea. "He gave them a lot of ideas about approaching their design."

Students started their work by casting small molds. "I gave them a project where they had to cast and receive light. We looked at how textures work, and we looked at how we can re-use molds," says Shea. "This helped them understand efficiency starting on a small scale."

The hands-on approach also helped the students look at how pieces can join together and how to make one piece of precast more versatile and efficient. This process, says Shea, really helped the design idea click because the students started to see how they could add versatility to the precast design.

Next, the students looked at the project itself. They visited Pikes Peak, as well as spending time at precasters' plants to see the fabrication process. Partners from nearby precasters, Encon United and Rocky Mountain Prestress, took a personal approach to working with the students.

"The desk critiques were the students' favorite part of the studio," says Shea. "Some students even started to take new approaches to old products, coming up with ideas such as a triangular double tee."

PLANT TOURS PROVIDE UNDERSTANDING

Students also toured two Rocky Mountain plants, something most students find very informative. "Plant tours give the students a lot of new ideas. They may not have thought of concrete so creatively before they see what we do. At the plant, they are able to see the colors and textures that are available, and better understand the technology that precast has available. They also get to understand the structural capacity of precast," says Maclay.

Eight individuals from the local industry came to the final critique for the students. Each provided feedback based on his expertise. "I thought it was very creative," says Maclay. "I primarily looked at their architectural creativity and understanding of the precast systems so that they were able to understand what their concepts meant and the capability of precast."

The Pikes Peak project was the first precast studio at CU Denver. This year, the students will take on a project at the Arapahoe Basin that includes parking and a new village.

BENEFITS TO THE INDUSTRY

For the industry, working with the students such as those at CU Denver provides benefits that may last for years. "Having this studio gives students a greater understanding of what precast can really do," says Maclay. "Often architects think of precast as just for parking structures. But designers can do total-precast structures that far outpace what was done before—with façades and structures. This course gives them a greater appreciation for the capabilities of precast concrete and when they work on a project that is similar to this, they will remember this experience."

The masters program at the University of Colorado Denver is a 3-year program for those without an architecture degree and a 2-year program for those with the degree.

Students from the University of Colorado Denver School of Architecture toured two Rocky Mountain Prestress plants to learn more about precast design and fabrication during their PCI Foundation Studio.

Colors, Finishes and Blends **to Fit any Design**

The Harbor Center in Buffalo, New York features a hotel, ice rinks, restaurants and retail shops. METROBRICK was used on much of the exterior of the building. Two distinctive colors where used in a blend. One of the colors was also used in accent areas.

METROBRICK®
ARCHITECTURAL THIN BRICK

metrothinbrick.com | 1.888.325.3945 | email:info@ironrock.com | P.O. Box 9240 Canton, OH 44711

BRINGING EDUCATION RIGHT TO YOU
PCI conducts lunch-and-learn presentations and seminars on an ongoing basis.

PCI Continuing Education

PCI is a registered continuing education provider with the American Institute of Architects (AIA) and the National Council of Examiners of Engineers and Surveyors (NCEES). PCI also has registered programs with the International Code Council (ICC). PCI's educational offerings include a variety of programs to fit your schedule and preferred learning environment, such as webinars, seminars, lunch-and-learns, and online education. To learn more, visit **www.pci.org/education**.

Distance Learning Opportunities

> WEBINARS

PCI webinars are presented live each month by industry experts on a variety of topics from design and construction to sustainability and more. All webinars are FREE, one hour long, and presented twice during the webinar week, at noon Pacific (3:00 p.m. Eastern) and noon Eastern. Webinars provide an inexpensive way to stay up-to-date on new materials, products, concepts, and more while earning continuing education credits. Visit **www.pci.org/webinars** for the full webinar schedule and registration information.

UPCOMING WEBINARS

May 23 and May 25, 2017, "Engineered Utility Precast Solutions"
June 27 and June 29, 2017, "Innovation in Precast Concrete Parking Structures"
July 25 and July 27, 2017, "Precast 101 – How Precast Builds"

> PCI ELEARNING CENTER

The PCI eLearning Center is the first education management system dedicated to the precast concrete structures industry. This free 24-hour online resource provides an opportunity for architects and engineers to earn continuing education credits on demand. Each course includes a webinar presentation recording, reference materials, and a quiz. Visit this resource at **www.pci.org/elearning**.

In-Person Learning Opportunities

> SEMINARS AND WORKSHOPS

PCI and its regional affiliates offer seminars and workshops all over the United States on a variety of topics. Visit **www.pci.org/education** for up-to-date seminar listings, additional information, and registration.

UPCOMING SEMINARS AND WORKSHOPS

Quality Control Schools

Level I/II

HARRISBURG, PA

Wednesday, May 10 – Friday, May 12, 2017

Visit www.pci.org/schools or www.pci.org/events for more information and to register.

> LUNCH-AND-LEARNS

PCI's lunch-and-learn/box-lunch programs are a convenient way for architects, engineers, and design professionals to receive continuing education credit without leaving the office. Industry experts visit your location, provide lunch, and present on topics such as sustainability, institutional construction, parking structures, aesthetics, blast resistance, the basics of precast, and many more. Visit **www.pci.org/education/box_lunches** for a list of lunch-and-learn offerings and to submit a program request.

AN INTEGRATED SOLUTION FOR

Insulated Precast

Photos courtesy of U.S. Department of Energy

About Thermomass

We manufacture a complete line of insulation systems for use in precast concrete projects. Throughout our 35-year history, we have worked hand-in-hand with clients on thousands of projects to create buildings noted for their energy-efficiency, durability, and performance. We are the industry leader in high-performance concrete sandwich wall technology because we believe in offering three key advantages:

Innovative Products
From the smallest office to the largest stadiums and everything in between, Thermomass offers a complete selection of concrete insulation and advanced fiber-composite connectors.

Dedicated Service
We're with you for every step: from preliminary design, to panel detailing, to installation, and final walk-through. That is dedication that no other company can deliver.

Concrete Results
Not only are we the global leaders in insulated concrete products, we helped found the industry. No company can match our track-record of success.

Learn more at **www.thermomass.com**

SPOTLIGHT

NREL Energy Systems Integration Facility

The Energy Systems Integration Facility (ESIF) at the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) is a state-of-the-art facility for the research, development, and demonstration of advanced strategies and components in modern, clean energy technologies.

The ESIF's LEED™ Platinum certified design includes energy saving features like natural ventilation, enhanced daylighting, radiant heating and cooling, and Thermomass-insulated precast concrete panels.

Using edge-to-edge System NC insulation, Thermomass helped the ESIF project meets its goal of a 40 percent greater performance efficiency than the baseline ASHRAE 90.1 building standard. The integral insulation also provides for a strong, durable building envelope, ideal for use in areas where new, unproven, or potentially hazardous equipment and processes are under evaluation.

thermomass®

Visit www.pci.org for the most up-to-date listing of PCI-Certified Plants.

When it comes to quality, why take chances?

When you need precast or precast, prestressed concrete products, choose a PCI-Certified Plant. You'll get confirmed capability—a proven plant with a quality assurance program you can count on.

Whatever your needs, working with a plant that is PCI-certified in the product groups it produces will benefit you and your project.

- You'll find easier identification of plants prepared to fulfill special needs.
- You'll deal with established producers—many certified for more than 30 years.
- Using quality products, construction crews can get the job done right the first time, keeping labor costs down.
- Quality products help construction proceed smoothly, expediting project completion.

Guide Specification

To be sure that you are getting the full benefit of the PCI Plant Certification Program, use the following guide specification for your next project:

"***Manufacturer Qualification:*** The precast concrete manufacturing plant shall be certified by the Precast/Prestressed Concrete Institute Plant Certification Program. Manufacturer shall be certified at time of bidding. Certification shall be in the following product group(s) and category(ies): [Select appropriate groups and categories (AT or A1), (B1,2,3, or 4), (C1,2,3, or 4), (G)]."

Product Groups and Categories

The PCI Plant Certification Program is focused around four groups of products, designated A, B, C, and G. Products in Group A are audited to the standards in MNL–117. Products in Groups B and C are audited to the standards in MNL–116. Products in Group G are audited according to the standards in MNL–130. The standards referenced above are found in the following manuals:

- MNL–116 *Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products*
- MNL–117 *Manual for Quality Control for Plants and Production of Architectural Precast Concrete*
- MNL–130 *Manual for Quality Control for Plants and Production of Glass-Fiber-Reinforced Concrete Products*

Within Groups A, B, and C are categories that identify product types and the product capability of the individual plant. The categories reflect similarities in the ways in which the products are produced. In addition, categories in Groups A, B, and C are listed in ascending order. In other words, a plant certified to produce products in Category C4 is automatically certified for products in the preceding Categories C1, C2, and C3. A plant certified to produce products in Category B2 is automatically qualified for Category B1 but not Categories B3 or B4.

GROUPS

> GROUP A – ARCHITECTURAL PRODUCTS

CATEGORY AT – ARCHITECTURAL TRIM UNITS

Wet-cast, nonprestressed products with a high standard of finish quality and of relatively small size that can be installed with equipment of limited capacity such as sills, lintels, coping, cornices, quoins, medallions, bollards, benches, planters, and pavers.

CATEGORY A1 – ARCHITECTURAL CLADDING AND LOAD-BEARING UNITS

Precast or precast, prestressed concrete building elements such as exterior cladding, load-bearing and nonload-bearing wall panels, spandrels, beams, mullions, columns, column covers, and miscellaneous shapes. This category includes Category AT.

> GROUP B – BRIDGES

Please note for Group B, Category B1: Some precast concrete products such as highway median barriers, box culverts, and three-sided arches are not automatically included in routine plant audits. They may be included at the request of the precaster or if required by the project specifications.

CATEGORY B1 – PRECAST CONCRETE BRIDGE PRODUCTS

Mild-steel-reinforced precast concrete elements that include some types of bridge beams or slabs, sheet piling, pile caps, retaining-wall elements, parapet walls, sound barriers, and box culverts.

CATEGORY B2 – PRESTRESSED MISCELLANEOUS BRIDGE PRODUCTS

Any precast, prestressed element excluding super-structure beams. Includes piling, sheet piling, retaining-wall elements, stay-in-place bridge deck panels, and products in Category B1.

CATEGORY B3 – PRESTRESSED STRAIGHT-STRAND BRIDGE MEMBERS

Includes all superstructure elements such as box beams, I-beams, bulb-tees, stemmed members, solid slabs, full-depth bridge deck slabs, and products in Categories B1 and B2.

CATEGORY B4 – PRESTRESSED DEFLECTED-STRAND BRIDGE MEMBERS

Includes all products covered in Categories B1, B2, and B3.

GROUP BA – BRIDGE PRODUCTS WITH AN ARCHITECTURAL FINISH

These products are the same as those in the categories within Group B, but they are produced with an architectural finish. They will have a form, machine, or special finish. Certification for Group BA production supersedes Group B in the same category. For instance, a plant certified to produce products in Category B2A is also certified to produce products in Categories B1, B1A, and B2 (while it is not certified to produce any products in B3A or B4A).

> GROUP C – COMMERCIAL (STRUCTURAL)

CATEGORY C1 – PRECAST CONCRETE PRODUCTS

Mild-steel-reinforced precast concrete elements including sheet piling, pile caps, piling, retaining-wall elements, floor and roof slabs, joists, stairs, seating members, columns, beams, walls, spandrels, etc.

CATEGORY C2 – PRESTRESSED HOLLOW-CORE AND REPETITIVE PRODUCTS

Standard shapes made in a repetitive process prestressed with straight strands. Included are hollow-core slabs, railroad ties, flat slabs, poles, wall panels, and products in Category C1.

CATEGORY C3 – PRESTRESSED STRAIGHT-STRAND STRUCTURAL MEMBERS

Includes stemmed members, beams, columns, joists, seating members, and products in Categories C1 and C2.

CATEGORY C4 – PRESTRESSED DEFLECTED-STRAND STRUCTURAL MEMBERS

Includes stemmed members, beams, joists, and products in Categories C1, C2, and C3.

GROUP CA – COMMERCIAL PRODUCTS WITH AN ARCHITECTURAL FINISH

These products are the same as those in the categories within Group C, but they are produced with an architectural finish. They will have a form, machine, or special finish. Certification for Group CA production supersedes Group C in the same category. For instance, a plant certified to produce products in Category C2A is also certified to produce products in C1, C1A, and C2 (while it is not certified to produce any products in Groups C3 or C4A).

> GROUP G – GLASS-FIBER-REINFORCED CONCRETE (GFRC)

These products are reinforced with glass fibers that are randomly dispersed throughout the product and are made by spraying a cement/sand slurry onto molds. This produces thin-walled, lightweight cladding panels.

Visit www.pci.org for the most up-to-date listing of PCI-Certified Plants.

> ALABAMA

Gate Precast Company A1, C4, C4A
Monroeville, (251) 575-2803

Forterra Building Products, (Pelham Prestress) B4, C4
Pelham, (205) 663-4681

> ARIZONA

Coreslab Structures, (ARIZ) Inc. A1, B4, C4, C4A
Phoenix, (602) 237-3875

Green Fuel Technologies LLC dba Royden Precast B4
Phoenix, (602) 269-9206

Stinger Bridge & Iron B4
Coolidge, (520) 723-5383

Tpac, An EnCon Company A1, B4, C4, C4A
Phoenix, (602) 262-1360

> ARKANSAS

Coreslab Structures, (ARK) Inc. C4, C4A
Conway, (501) 329-3763

> CALIFORNIA

Bethlehem Construction, Inc. C3, C3A
Wasco, (661) 391-9704

Clark Pacific A1, C3, C3A, G
Fontana, (909) 823-1433

Clark Pacific C4A
Irwindale, (626) 962-8751

Clark Pacific A1, C3, C3A
West Sacramento, (916) 371-0305

Clark Pacific A1, B3, C4, C4A, G
Woodland, (530) 207-4100

Con-Fab California Corporation B4, C4
Lathrop, (209) 249-4700

Con-Fab California Corporation B4, C4
Shafter, (661) 630-7162

Coreslab Structures, (L.A.) Inc. A1, B4, C4, C4A
Perris, (951) 943-9119

KIE-CON, Inc. B4, C3
Antioch, (925) 754-9494

Mid-State Precast, L.P. A1, C3, C3A
Corcoran, (559) 992-8180

Oldcastle Precast, Inc. B4, B4A, C2, C2A
Perris, (951) 657-6093

Oldcastle Precast Inc. C2
Stockton, (209) 466-4215

Precast Concrete Technology dba CTU Precast A1, C3, C3A
Olivehurst, (530) 749-6501

StructureCast A1, B3, C3, C3A
Bakersfield, (661) 833-4490

Universal Precast Concrete, Inc. A1, B1, C1
Redding, (530) 243-6477

Walters & Wolf Precast A1, G
Fremont, (510) 226-9800

Willis Construction Co., Inc. A1, C1
Hollister, (831) 623-2900

Willis Construction Co., Inc. A1, C1, G
San Juan Bautista, (831) 623-2900

> COLORADO

EnCon Colorado B4, C2
Denver, (303) 287-4312

Plum Creek Structures B4, C3, C3A
Littleton, (303) 471-1569

Rocky Mountain Prestress LLC, Architectural Plant A1, C3, C3A
Denver, (303) 480-1111

Rocky Mountain Prestress LLC, Structural Plant B4, C4
Denver, (303) 480-1111

Rocla Concrete Tie, Inc. C2
Pueblo, (303) 296-3500

Stresscon Corporation A1, B4, B4A, C4, C4A
Colorado Springs, (719) 390-5041

> CONNECTICUT

Blakeslee Prestress Inc. A1, B4, C4, C4A
Branford, (203) 481-5306

Coreslab Structures, (CONN) Inc. A1, B1, C1
Thomaston, (860) 283-8281

Oldcastle Precast B2, C2, C2A
Avon, (860) 673-3291

United Concrete Products, Inc. B3, C3
Yalesville, (203) 269-3119

> DELAWARE

Concrete Building Systems of Delaware, Inc. B3, C4
Delmar, (302) 846-3645

Rocla Concrete Tie, Inc. C2
Bear, (302) 836-5304

> FLORIDA

Cement Industries, Inc. B3, C3
Fort Myers, (800) 332-1440

Colonial Precast Concrete LLC C2
Placida, (941) 698-4180

Coreslab Structures, (MIAMI) Inc., A1, C4, C4A
Medley, (305) 823-8950

Coreslab Structures, (ORLANDO) Inc. C2
Orlando, (407) 855-3190

Coreslab Structures, (TAMPA) Inc., A1, B3, C3, C3A
Tampa, (813) 626-1141

Dura-Stress, Inc. A1, B4, B4A, C4, C4A
Leesburg, (352) 787-1422

Finfrock Industries, Inc. A1, C3
Apopka, (407) 293-4000

Gate Precast Company A1, B4, C3, C3A
Jacksonville, (904) 757-0860

Gate Precast Company A1, C3
Kissimmee, (407) 847-5285

International Casting Corporation C4
Miami Lakes, (305) 558-3515

Metromont Corporation A1, C3, C3A
Bartow, (863) 440-5400

Precast Specialties LLC C4
Pompano Beach, (954) 781-4040

Skanska USA Civil, SE B4, C3
Pensacola, FL (757) 578-4147

Spancrete C2
Sebring, (863) 655-1515

Stabil Concrete Products, LLC A1
St. Petersburg, (727) 321-6000

Standard Concrete Products, Inc. B4, C3
Tampa, (813) 831-9520

Structural Prestressed Industries C4
Medley, (305) 556-6699

> GEORGIA

Atlanta Structural Concrete Co. C4, C4A
Buchanan, (770) 646-1888

Coreslab Structures, (ATLANTA) Inc. C2
Jonesboro, (770) 471-1150

Metromont Corporation A1, C4, C4A
Hiram, (770) 943-8688

Spancrete C2
Newnan, (770) 252-8944

Standard Concrete Products, Inc. B4
Atlanta, (404) 792-1600

Standard Concrete Products, Inc. B4, C4
Savannah, (912) 233-8263

Tindall Corporation, Georgia Division C4, C4A
Conley, (404) 366-6270

> HAWAII

GPRM Prestress, LLC A1, B4, C4
Honolulu, (808) 682-6000

> IDAHO

Forterra Structural Precast A1, B4, C4
Caldwell, (208) 454-8116

Teton Prestress Concrete, LLC B4, C3
Idaho Falls, (208) 522-6606

> ILLINOIS

ATMI Precast A1, C3, C3A
Aurora, (630) 896-4679

AVAN Precast Concrete Products A1, C3
Lynwood, (708) 757-6200

County Materials Corporation B3, B3-IL
Champaign, (217) 352-4181

County Materials Corporation A1, B4, B4-IL, C4
Salem, (618) 548-1190

Dukane Precast, Inc. A1, B3, B3-IL, C3, C3A
Aurora, (630) 355-8118

Dukane Precast, Inc. A1, B3, B3-IL, C3, C3A
Naperville, (630) 355-8118

Dukane Precast, Inc. C3
Plainfield, (815) 230-4760

ICCI Illini Concrete, LLC B3, B3-IL
Tremont, (309) 925-2376

Illini Precast, LLC B4, B4-IL, C3
Marseilles, (815) 795-6161

Lombard Architectural Precast Products Co. A1, C2, C2A
Alsip, (708) 389-1060

Mid-States Concrete Industries A1, B3, B3-IL, C3, C3A
South Beloit, (815) 389-2277

St. Louis Prestress, Inc. B3, B3-IL, C3
Glen Carbon, (618) 656-8934

Utility Concrete Products, LLC B1, B1A, C1, C1A
Morris, (815) 416-1000

> INDIANA

ATMI Indy, LLC A1, C2, C2A
Greenfield, (317) 891-6280

Coreslab Structures, (INDIANAPOLIS) Inc. A1, C4, C4A
Indianapolis, (317) 353-2118

Hoosier Precast LLC B3, C1, C1A
Salem, (815) 459-4545

Precast Specialties A1, B1
Monroeville, (260) 623-6131

Prestress Services Industries LLC B4, B4-IL, C4, C4A
Decatur, (260) 724-7117

StresCore, Inc. C2
South Bend, (574) 233-1117

> IOWA

Advanced Precast Co. A1, C1, C1A
Farley, (563) 744-3909

Forterra Building Products A1, B4, B4-IL, C4, C4A
Iowa Falls, (641) 648-2579

MPC Enterprises, Inc. A1, C3, C3A
Mount Pleasant, (319) 986-2226

PDM Precast, Inc. A1, C3, C3A
Des Moines, (515) 243-5118

> KANSAS

Coreslab Structures, (KANSAS) Inc. B4, C4
Kansas City, (913) 287-5725

Crossland Prefab LLC C1
Columbus , (620) 249-1414

Fabcon Precast, LLC C3, C3A
Pleasanton, (913) 937-3021

Prestressed Concrete Construction, LLC A1, B4, C4, C4A
Newton, (316) 283-2277

Stress-Cast, Inc. C3, C3A
Assaria, (785) 667-3905

Visit www.pci.org for the most up-to-date listing of PCI-Certified Plants.

> KENTUCKY

Bristol Group, Inc. A1, B3, B3A, C3, C3A
Lexington, (859) 233-9050

de AM - RON Building Systems LLC B3, C3, C3A
Owensboro, (270) 684-6226

Gate Precast Company A1, C3, C3A
Winchester, (859) 744-9481

Prestress Services Industries LLC A1, B4, C4, C4A
Lexington, (601) 856-4135

Prestress Services Industries LLC B4, C3
Melbourne, (859) 441-0068

> LOUISIANA

Alfred Miller Contracting C3
Lake Charles, LA (337) 477-4681

Atlantic Metrocast, Inc. C2
New Orleans, (504) 941-3152

Boykin Brothers, Inc./
Louisiana Concrete A1, B4, C3, C3A
Baton Rouge, (225) 753-8722

dp Concrete Products, LLC B2, C2
Vinton, (337) 433-3900

F-S Prestress, LLC B4, C4
Princeton, (318) 949-2444

Fibrebond Corporation A1, C1, C1A
Minden, (318) 377-1030

> MAINE

Superior Concrete, LLC B2, C1
Auburn, (207) 784-1388

> MARYLAND

Atlantic Metrocast, Inc. B2, C2
La Plata, MD (301) 870-3289

Larry E. Knight, Inc. C2
Glyndon, (410) 833-7800

> MASSACHUSETTS

Oldcastle Precast, Inc. B4, C3
Rehoboth, (508) 336-7600

Precast Specialties Corp. A1
Abington, (781) 878-7220

Unistress Corporation A1, B4, C4, C4A
Pittsfield, (413) 629-2039

Vynorius Prestress, Inc. B3, C2
Salisbury, (978) 462-7765

> MICHIGAN

International Precast Solutions, LLC A1, B3, C3, C3A
River Rouge, (313) 843-0073

Kerkstra Precast Inc. A1, B3, C3, C3A
Grandville, (616) 224-6176

M.E.G.A. Precast, Inc. A1, C3, C3A
Shelby Township (586) 294-6430

Nucon–Stress-Con Industries, Inc. A1, B4, C3, C3A
Kalamazoo, (269) 381-1550

Peninsula Prestress Company B4, C1
Grand Rapids, (517) 206-4775

Stress-Con Industries, Inc. B3A, C3
Saginaw, (989) 755-4348

> MINNESOTA

Crest Precast, Inc. B3, B3A, C3, C3A
La Crescent, (800) 658-9045

Forterra Building Products B4, C2
Elk River, (763) 441-2124

Fabcon Precast, LLC A1, B1, C3, C3A
Savage, (952) 890-4444

Molin Concrete Products Co. C3, C3A
Lino Lakes, (651) 786-7722

Molin Concrete Products A1, C1, C1A
Ramsey, (651) 786-7722

Taracon Precast C3, C3A
Hawley, (218) 216-8260

Wells Concrete A1, C3, C3A
Albany, (320) 845-2299

Wells Concrete C3
Rosemount, MN (507) 380-6772

Wells Concrete A1, C4, C4A
Wells, (800) 658-7049

> MISSISSIPPI

F-S Prestress, LLC B4, C4
Hattiesburg, (601) 268-2006

Gulf Coast Pre-Stress, Inc. B4, C4
Pass Christian, (228) 452-9486

J.J. Ferguson Prestress-Precast, Inc. B4
Greenwood, (662) 453-5451

Jackson Precast, Inc. A1, C2, C2A
Jackson, (601) 321-8787

Tindall Corporation A1, C4, C4A
Moss Point, (228) 246-0800

> MISSOURI

Coreslab Structures, (MISSOURI) Inc. A1, B4, C4, C4A
Marshall, (660) 886-3306

County Materials Corporation B4
Bonne Terre, (573) 358-2773

Mid America Precast, Inc. A1, B1, C1
Fulton, (573) 642-6400

Prestressed Casting Co. C4
Ozark, (417) 581-7009

Prestressed Casting Co. A1, C3, C3A
Springfield, (417) 869-7350

> MONTANA

BC Concrete, Inc. dba Missoula
Concrete Construction A1, B3, C3, C3A
Missoula, (406) 549-9682

Forterra Pipe & Precast B4, C3
Billings, (406) 656-1601

Forterra Building Products B4
Montana City, (406) 442-6503

> NEBRASKA

American Concrete Products Co. B1, B1A, C1, C1A
Omaha, (402) 331-5775

Concrete Industries, Inc. B4, C4, C4A
Lincoln, (402) 434-1800

Coreslab Structures, (OMAHA) Inc. A1, B4, C4, C4A
Bellevue, (402) 291-0733

Enterprise Precast Concrete, Inc. A1, C2, C2A
Omaha, (402) 895-3848

> NEVADA

Western Pacific Precast B4, C2
Sloan, (702) 623-4484

> NEW HAMPSHIRE

Newstress Inc. B3, C3
Epsom, (603) 736-9000

> NEW JERSEY

Boccella Precast LLC C2
Berlin, (856) 767-3861

Jersey Precast B4, C4, C4A
Hamilton, (609) 689-3700

Northeast Precast A1, B3, C3, C3A
Millville, (856) 765-9088

Precast Systems, Inc. B4, C4
Allentown, (609) 208-1987

> NEW MEXICO

Castillo Prestress B4, C4
Belen, (505) 864-0238

Coreslab Structures,
(ALBUQUERQUE) Inc. A1, B4, C4, C4A
Albuquerque, (505) 247-3725

Ferreri Concrete Structures Inc. A1, C4, C4A
Albuquerque, (505) 344-8823

> NEW YORK

David Kucera Inc. A1, G
Gardiner, (845) 255-1044

Lakelands Concrete Products, Inc. A1, B3, B3A, C3, C3A
Lima, (585) 624-1990

Oldcastle Precast B3, C3, C3A
Selkirk, (518) 767-2116

The Fort Miller Company, Inc. B1, B1A, C1, C1A
Greenwich, (518) 695-5000

The L.C. Whitford Materials Co., Inc. B4, C3
Wellsville, (585) 593-2741

> NORTH CAROLINA

Coastal Precast Systems, LLC B2, C2
Wilmington, (910) 604-2249

Gate Precast Company A1, C2
Oxford, (919) 603-1633

Metromont Corporation A1, C3, C3A
Charlotte, (704) 372-1080

Prestress of the Carolinas B4, C4
Pineville, (704) 587-4273

Utility Precast, Inc. B3, B3A
Concord, (704) 721-0106

> NORTH DAKOTA

Wells Concrete C4, C4A
Grand Forks, (701) 772-6687

> OHIO

DBS Prestress of Ohio C3
Huber Heights, (937) 878-8232

Fabcon Precast, LLC A1, C3, C3A
Grove City, (952) 890-4444

High Concrete Group LLC A1, C3, C3A
Springboro, (937) 748-2412

Mack Industries, Inc. C3
Valley City, (330) 483-3111

Mack Industries, Inc. B3A,C3
Vienna, (330)638-7680

Prestress Services Industries of Ohio, LLC,
(I-Beam) A1, B4, C3
Mt. Vernon, (800) 366-8740

Prestress Services Industries of Ohio, LLC,
(Box Beam) B3, C3
Mt. Vernon, (740) 393-1121

Rocla Concrete Tie, Inc. C2
Sciotoville, (740) 776-3238

Sidley Precast A1, C4, C4A
Thompson, (440) 298-3232

> OKLAHOMA

Arrowhead Precast, LLC A1, C3, C3A
Broken Arrow, (918) 995-2227

Coreslab Structures, (OKLA) Inc.,
(Plant No.1) A1, C4, C4A
Oklahoma City, (405) 632-4944

Coreslab Structures, (OKLA) Inc.,
(Plant No.2) B4, C3
Oklahoma City, (405) 672-2325

Coreslab Structures, (TULSA) Inc. B4, C4
Tulsa, (918) 438-0230

> OREGON

Knife River Corporation A1, B4, C4, C4A
Harrisburg, (541) 995-6327

R.B. Johnson Co. B4, C3
McMinnville, (503) 472-2430

> PENNSYLVANIA

Architectural Precast Innovations, Inc. A1, C3, C3A
Middleburg, (570) 837-1774

Visit www.pci.org for the most up-to-date listing of PCI-Certified Plants.

Brayman Precast, LLC B1, C1
Saxonburg, (724) 352-5600
Concrete Safety Systems, LLC A1, B3, B3A, C3, C3A
Bethel, (717) 933-4107
Conewago Precast Building Systems A1, C3,C3A
Hanover, (717) 632-7722
Dutchland, Inc. C3
Gap, (717) 442-8282
Fabcon Precast, LLC A1, B1, B1A, C3, C3A
Mahanoy City, (952) 890-4444
High Concrete Group LLC A1, B3, C3, C3A
Denver, (717) 336-9300
J & R Slaw, Inc. A1, B4, C3, C3A
Lehighton, (610) 852-2020
Nitterhouse Concrete Products, Inc. A1, C4, C4A
Chambersburg, (717) 267-4505
Northeast Prestressed Products, LLC B4, C3
Cressona, (570) 385-2352
PENNSTRESS A1, B4, C4
Roaring Spring, (814) 224-2121
Say-Core, Inc. C2
Portage, (814) 736-8018
Sidley Precast C3
Youngwood, (724) 755-0205
Universal Concrete Products Corporation A1, C3, C3A
Stowe, (610) 323-0700

> SOUTH CAROLINA

Florence Concrete Products, Inc. B4, C3, C3A
Sumter, (803) 775-4372
Metromont Corporation A1, C4, C4A
Greenville, (864) 605-5000
Metromont Corporation C3
Spartanburg, (864)605-5063
Tekna Corporation B3, C3
Charleston, (843) 853-9118
Tindall Corporation A1, C4, C4A
Spartanburg, (864) 576-3230

> SOUTH DAKOTA

Forterra Pipe & Precast (Rapid City) B1
Rapid City, SD (605) 343-1450
Gage Brothers A1, B4, C4, C4A
Sioux Falls, (605) 336-1180

> TENNESSEE

Construction Products, Inc. of Tennessee B4, C4
Jackson, (731) 668-7305
Gate Precast Company A1, C3, C3A
Ashland City, (615) 792-7608
Mid South Prestress, LLC C3
Pleasant View, (615) 746-6606
Ross Prestressed Concrete, Inc. B4, C3
Bristol, (423) 323-1777
Ross Prestressed Concrete, Inc. B4, C4
Knoxville, (865) 524-1485

> TEXAS

Coreslab Structures, (TEXAS) Inc. A1, C4, C4A
Cedar Park, (512) 250-0755
CXT, Inc. B1, B1A, C1, C1A
Hillsboro, (254) 580-9100
East Texas Precast A1, C4, C4A
Hempstead, (281) 463-0654
Enterprise Concrete Products, LLC B3, C3
Dallas, (214) 631-7006
Enterprise Precast Concrete of Texas, LLC A1, C1
Corsicana, (903) 875-1077
Gate Precast Company A1, C1, C1A
Hillsboro, (254) 582-7200
Gate Precast Company C2
Pearland, (281) 485-3273
GFRC Cladding Systems, LLC G
Garland, (972) 494-9000
Heldenfels Enterprises, Inc. B4, C4
Corpus Christi, (361) 883-9334
Heldenfels Enterprises, Inc. B4, C4
San Marcos, (512) 396-2376
Legacy Precast, LLC C4, C4A
Brookshire, (281) 375-2050
Lowe Precast, Inc. A1, C3, C3A
Waco, (254) 776-9690
Manco Structures, Ltd. C4, C4A
Schertz, (210) 690-1705
NAPCO PRECAST, LLC A1, C4, C4A
San Antonio, (210) 509-9100
Rocla Concrete Tie, Inc. C2
Amarillo, (806) 383-7071
Texas Concrete Partners, LP B4, C4
Elm Mott, (254) 822-1351
Texas Concrete Partners, LP B4, C4
Victoria, (361) 573-9145
Tindall Corporation A1, C3, C3A
San Antonio, (210) 248-2345
Valley Prestressed Products, Inc. B2
Houston, (713) 455-6098
Valley Prestress Products Inc. B4
Eagle Lake, (979) 234-7899

> UTAH

Forterra Structural Precast A1, B4, C4, C4A, G
Salt Lake City, (801) 966-1060
Harper Precast B2, C1
Salt Lake City, (801) 326-1016
Olympus Precast A1, B3, B3A, C3, C3A
Sandy, (801) 571-5041

> VERMONT

Joseph P. Carrara & Sons, Inc. A1, B4, B4A, C4, C4A
Middlebury, (802) 775-2301
S.D. Ireland Concrete Construction Corp. B1, C1
Williston, (802) 863-6222
William E. Dailey Precast, LLC A1, B4, B4A, C3, C3A
Shaftsbury, (802) 442-4418

> VIRGINIA

Atlantic Metrocast, Inc. B4, C4
Portsmouth, (757) 397-2317
Bayshore Concrete Products Corporation B4, C4
Cape Charles, (757) 331-2300
Coastal Precast Systems, LLC A1, B4, C3
Chesapeake, (757) 331-2300
Faddis Concrete Products B2, C2
King George, (540) 775-4546
Metromont Corporation A1, C3, C3A
Richmond, (804) 665-1300
Rockingham Precast B4
Harrisonburg, (540) 433-8282
The Shockey Precast Group A1, C4, C4A
Winchester, (540) 667-7700
Tindall Corporation A1, C4, C4A
Petersburg, (804) 861-8447

> WASHINGTON

Bellingham Marine Industries, Inc. B3, C2
Ferndale, (360) 380-2142
Bethlehem Construction, Inc. B1, C3, C3A
Cashmere, (509) 782-1001
Concrete Technology Corporation B4, C4
Tacoma, (253) 383-3545
CXT, Inc., Precast Division B1, C1, C1A
Spokane, (509) 921-8766
CXT, Inc., Rail Division C2
Spokane, (509) 921-7878
EnCon Northwest, LLC B1, B1A
Camas, (360) 834-3459
EnCon Washington, LLC B1, B1A, C2, C2A
Puyallup, (253) 846-2774
Oldcastle Precast, Inc. A1, B4, C4
Spokane, Spokane Valley, (509) 536-3300
Wilbert Precast, Inc. B3, C3, C3A
Yakima, (509) 325-4573

> WEST VIRGINIA

Carr Concrete a division of CXT Inc. B4, C3
Waverly, (304) 464-4441
Eastern Vault Company, Inc. B3, C3
Princeton, (304) 425-8955

> WISCONSIN

County Materials Corporation B4, B4-IL
Janesville, (608) 373-0950
County Materials Corporation B4, C3
Roberts, (800) 426-1126
International Concrete Products, Inc. A1, C1
Germantown, (262) 242-7840
KW Precast LLC B4, B4-IL, C4
Westchester, (708) 562-7770
MidCon Products, Inc. A1, C1
Hortonville, (920) 779-4032
Spancrete A1, B4, C3, C3A
Valders, (920) 775-4121
Stonecast Products, Inc. A1, C1
Germantown, (262) 253-6600
Wausau Tile Inc. AT
Wausau, (715) 359-3121

> WYOMING

voestalpine Nortrak Inc. C2
Cheyenne, (509) 220-6837

> MEXICO

PRETECSA, S.A. DE C.V. A1, G
Estado de Mexico 52, (555) 077-0071
Willis De Mexico S.A. de C.V. A1, C1, G
Tecate 52, (665) 655-2222

> CANADA

BRITISH COLUMBIA

APS Architectural Precast Structures LTD A1, B4, C3, C3A
Langley, (604) 888-1968
Armtec Limited Partnership A1, B4, C3
Richmond, (604) 214-3243

NEW BRUNSWICK

Strescon Limited A1, B4, C4A
Saint John, (506) 633-8877

NOVA SCOTIA

Strescon Limited A1, B4, C4, C4A
Beford, (902) 494-7400

ONTARIO

Artex Systems Inc. A1
Concord, (905) 669-1425
Global Precast Inc. A1
Maple, (905) 832-4307
Prestressed Systems, Inc. B4, C4
Windsor, (519) 737-1216

QUEBEC

Betons Prefabriques Trans. Canada Inc. A1, B4, C3, C3A
St. Eugene De Grantham, (819) 396-2624
Bombadier, Alma A1, C2
Papeterie, Alma A1, C3, C3A, G
Prefab de Beauce Inc. A1, C3
Sainte-Marie-De-Beauce, (418) 387-7152

> UAE

Arabian Profile Company Limited G
Sharjah, 971(6) 5432624

Visit www.pci.org for the most up-to-date listing of PCI-Certified Erectors.

When it comes to quality, why take chances?

When you need precast or precast, prestressed concrete products, choose a PCI-Certified Erector. You'll get confirmed capability with a quality assurance program you can count on.

Whatever your needs, working with an erector who is PCI-certified in the structure categories listed will benefit you and your project.

- You'll find easier identification of erectors prepared to fulfill special needs.
- You'll deal with established erectors.
- Using a PCI-Certified Erector is the first step toward getting the job done right the first time, thus keeping labor costs down.
- PCI-Certified Erectors help construction proceed smoothly, expediting project completion.

Guide Specification

To be sure that you are getting an erector from the PCI Field Certification Program, use the following guide specification for your next project:

"***Erector Qualification:*** The precast concrete erector shall be fully certified by the Precast/Prestressed Concrete Institute (PCI) prior to the beginning of any work at the jobsite. The precast concrete erector shall be certified in Structure Category(ies): [Select appropriate groups and categories S1 or S2 and/or A1]."

Erector Classifications

The PCI Field Certification Program is focused around three erector classifications. The standards referenced are found in the following manuals:

- MNL–127 *Erector's Manual - Standards and Guidelines for the Erection of Precast Concrete Products*
- MNL–132 *Erection Safety Manual for Precast and Prestressed Concrete*

GROUPS

> CATEGORY S1– SIMPLE STRUCTURAL SYSTEMS

This category includes horizontal decking members (e.g., hollow-core slabs on masonry walls), bridge beams placed on cast-in-place abutments or piers, and single-lift wall panels.

> CATEGORY S2– COMPLEX STRUCTURAL SYSTEMS

This category includes everything outlined in Category S1 as well as total-precast, multi-product structures (vertical and horizontal members combined) and single- or multistory load-bearing members (including those with architectural finishes).

> CATEGORY A– ARCHITECTURAL SYSTEMS

This category includes non-load-bearing cladding and GFRC products, which may be attached to a supporting structure.

> ARIZONA

Coreslab Structures (ARIZ), Inc. S2
Phoenix,, (602) 237-3875

RJC Contracting, Inc. A, S2
Mesa,, (480) 357-0868

Steel Girder LLC dba Stinger Bridge & Iron S1
Coolidge, (502) 723-5383

Tpac, An EnCon Company A, S2
Phoenix,, (602) 262-1333

> CALIFORNIA

Walters & Wolf Precast A
Fremont,, (510) 226-5166

> COLORADO

EnCon Field Services, LLC A, S2
Denver,, (303) 287-4312

Gibbons Erectors Inc. A, S2
Englewood,, (303) 841-0457

Rocky Mountain Prestress,LLC A, S2
Denver, (303) 480-1111

> CONNECTICUT

Blakeslee Prestress, Inc. S2
Branford, (203) 481-5306

> FLORIDA

Concrete Erectors, Inc. A, S2
Altamonte Springs, (407) 862-7100

Coreslab Structures (MIAMI) Inc. A, S2
Medley, (305) 823-8950

Florida Builders Group, Inc. S2
Miami Gardens, (305) 278-0098

Jacob Erecting & Construction, LLC A, S2
Jupiter, (561) 741-1818

JTCC, Inc. S2
Fort Myers, (239) 479-5100

Pre-Con Construction, Inc. A, S2
Lakeland, (863) 688-4504

Prestressed Contractors Inc. S2
West Palm Beach, (561) 741-4369

Specialty Concrete Services, Inc. A, S2
Umatilla, (352) 669-8888

W.W. Gay Mechanical Contractor, Inc. S2
Jacksonville, (904) 388-2696

> GEORGIA

Bass Precast Erecting, Inc. S1
Cleveland, (706) 809-2718

Jack Stevens Welding LLP S2
Murrayville, (770) 534-3809

Precision Stone Setting Co., Inc. A, S2
Hiram, (770) 439-1068

Rutledge & Sons, Inc. S2
Canton, (770) 592-0380

Southeastern Precast Erectors Inc. (SPE Inc.) A
Roswell, (770) 722-9212

> IDAHO

Precision Precast Erectors LLC A, S2
Post Falls, (208) 981-0060

> ILLINOIS

Area Erectors, Inc. A, S2
Rochelle, (815) 562-4000

Creative Erectors, LLC A, S2
Rockford, (815) 229-8303

Mid-States Concrete Industries S2
South Beloit, (815) 389-2277

> IOWA

Cedar Valley Steel Inc. A, S2
Cedar Rapids, (319) 373-0291

Industrial Steel Erectors A, S1
Davenport, (563) 355-7202

Northwest Steel Erection, Inc. A, S2
Grimes, (515) 986-0380

US Erectors, Inc. S2
Des Moines, (515) 243-8450

> KANSAS

Carl Harris Co., Inc. A, S2
Wichita, (316) 267-8700

Crossland Construction Company, Inc. S2
Columbus, (620) 442-1414

> MARYLAND

DLM Contractors, LLC A, S2
Cheltenham, (301) 877-0000

E & B Erectors, Inc. A, S2
Elkridge, (410) 360-7800

E.E. Marr Erectors, Inc. A, S2
Baltimore, (410) 837-1641

L.R. Willson & Sons, Inc. A, S2
Gambrills, (410) 987-5414

> MASSACHUSETTS

Prime Steel Erecting, Inc. A, S2
North Billerica, (978) 671-0111

> MICHIGAN

Assemblers Precast & Steel Services, Inc. A, S2
Saline, (734) 368-6147

Devon Contracting, Inc. S2
Detroit, (313) 221-1550

G2 Inc. A, S2
Cedar Springs, (616) 696-9581

Midwest Steel, Inc. A, S2
Detroit, (313) 873-2220

Pioneer Construction Inc. A, S2
Grand Rapids, (616) 247-6966

> MINNESOTA

Amerect Inc. S2
Newport, (651) 459-9909

Fabcon Precast, LLC S2
Savage, (952) 890-4444

Molin Concrete Products Company A, S2
Lino Lakes, (651) 786-7722

Wells Concrete A, S2
Maple Grove, (800) 658-7049

> MISSISSIPPI

Bracken Construction Company A, S2
Ridgeland, (601) 922-8413

Visit www.pci.org for the most up-to-date listing of PCI-Certified Erectors.

> MISSOURI

JE Dunn Construction A, S2
Kansas City, (816) 292-8762

Prestressed Casting Co. A, S2
Springfield, (417) 869-7350

> NEBRASKA

Structural Enterprises Inc. S2
Lincoln, (402) 423-3469

Topping Out Inc. dba Davis Erection–Omaha A, S2
Omaha, (402)731-7484

> NEW HAMPSHIRE

American Steel & Precast Erectors S2
Greenfield, (603) 547-6311

Newstress, Inc. S2
Epsom, (603) 736-9000

> NEW JERSEY

CRV Precast Construction LLC S1
Eastampton, (609) 261-7325

J. L. Erectors, Inc. A, S2
Blackwood, (856) 232-9400

JEMCO-Erectors, Inc. S2
Shamong, (609) 268-0332

Jonasz Precast, Inc. A, S2
Westville, (856) 456-7788

> NEW YORK

Koehler Masonry Corp. S2
Farmingdale, (631) 694-4720

Oldcastle Building Systems Div./Project Services A, S2
Selkirk, (518) 767-2116

Tutor Perini Corporation Civil S1
New Rochelle, (914)739-1905

> NORTH DAKOTA

Magnum Contracting, Inc. S2
Fargo, (701) 235-5285

Midwest Precast Services A, S2
Fargo, ND (701) 893-0188

PKG Contracting, Inc. S2
Fargo, (701) 232-3878

> OHIO

Precast Services, Inc. A, S2
Twinsburg, (330) 425-2880

Sidley Precast Group, A Division of R.W. Sidley, Inc. S2
Thompson, (440) 298-3232

> OKLAHOMA

Allied Steel Construction Co., LLC S2
Oklahoma City, (405) 232-7531

> PENNSYLVANIA

Century Steel Erectors A, S2
Kittanning, (724) 545-3444

Conewago Precast Building Systems S2
Hanover, (717) 632-7722

High Structural Erectors, LLC A, S2
Lancaster, (717) 390-4203

Kinsley Construction Inc. t/a Kinsley Manufacturing S1
York, (717) 757-8761

Maccabee Industrial, Inc. A, S2
Belle Vernon, (724) 930-7557

Nitterhouse Concrete Products, Inc. A, S2
Chambersburg, (717) 267-4505

> SOUTH CAROLINA

Davis Erecting & Finishing, Inc. A, S2
Greenville, (864) 220-0490

Florence Concrete Products, Inc. S2
Florence, (843) 662-2549

Steel Clad Inc. A, S2
Greenville, (864) 246-8132

Tindall Corporation A, S2
Spartanburg, (864) 576-3230

> SOUTH DAKOTA

Henry Carlson Company A, S2
Sioux Falls, (605) 336-2410

> TENNESSEE

Mid South Prestress, LLC S1
Pleasant View, (615) 746-6606

> TEXAS

Coreslab Structures (TEXAS) Inc. A, S2
Cedar Park, (512) 250-0755

Derr and Isbell Construction, LLC A, S2
Euless, (817) 571-4044

Gulf Coast Precast Erectors LLC S2
Hempstead, (832) 451-4395

Precast Erectors, Inc. A, S2
Hurst, (817) 684-9080

> UTAH

Forterra Structural Precast A, S2
Salt Lake City, (801) 966-1060

IMS Masonry A
Lindon, (801) 796-8420

OutWest C & E Inc. A, S2
Bluffdale, (801) 446-5673

> VERMONT

CCS Constructors Inc. A, S2
Morrisville, (802) 888-7701

> VIRGINIA

The Shockey Precast Group S2
Winchester, (540) 667-7700

> WISCONSIN

J. P. Cullen & Sons, Inc. A
Janesville, (608) 754-6601

Miron Construction Co., Inc. A, S2
Neenah, (920) 969-7000

Spancrete A, S2
Valders, (920) 775-4121

The Boldt Company A, S2
Appleton, (920) 225-6212

SPECIFY PCI CERTIFICATION

THERE IS NO EQUIVALENT

Photo courtesy of USC/Gus Ruelas.

PCI
Precast/Prestressed Concrete Institute

The Precast/Prestressed Concrete Institute's (PCI) certification is the industry's most proven, comprehensive, trusted, and specified certification program. The PCI Plant Certification program is now accredited by the International Accreditation Service (IAS) which provides objective evidence that an organization operates at the highest level of ethical, legal, and technical standards. This accreditation demonstrates compliance to ISO/IEC 17021-1.

PCI certification offers a complete regimen covering personnel, plant, and field operations. This assures owners, specifiers, and designers that precast concrete products are manufactured and installed by companies who subscribe to nationally accepted standards and are audited to ensure compliance.

IAS ACCREDITED
Management Systems Certification Body

To learn more about PCI Certification, please visit

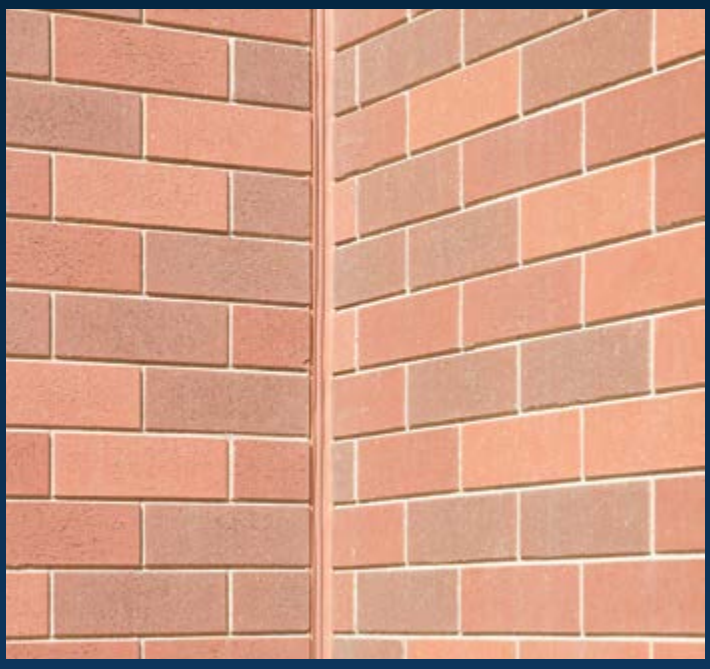
www.pci.org/certification

HIGH PERFORMANCE TOTAL PRECAST SYSTEMS AND ENCLOSURES

EnCon owns and operates nine entities dedicated to the construction industry, and serves customers in over 20 states through its manufacturing locations in Atlanta, Colorado Springs, Denver, Phoenix, Portland and Seattle. As a certified member of the Precast/Prestressed Concrete Institute, and a member of AltusGroup®, EnCon is recognized among the leading precast companies in the United States.

asc
ATLANTA STRUCTURAL CONCRETE
An *EnCon* Company

Phone: 770.646.1888
Email: sales@Atlanta-Structural.net
www.Atlanta-Structural.net

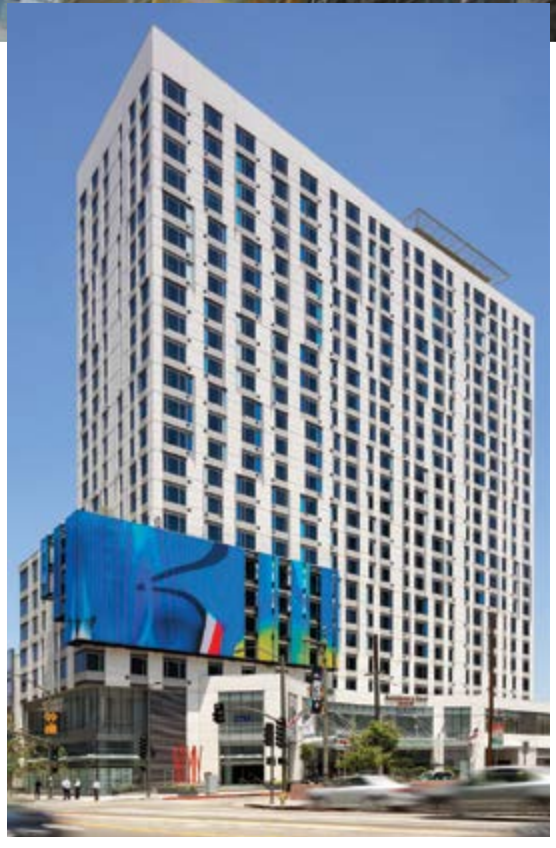


AWARD WINNING TOTAL PRECAST 13TH CAB BARRACKS

EnCon owns and operates nine entities dedicated to the construction industry, and serves customers in over 20 states through its manufacturing locations in Atlanta, Colorado Springs, Denver, Phoenix, Portland and Seattle. As a certified member of the Precast/Prestressed Concrete Institute, and a member of AltusGroup®, EnCon is recognized among the leading precast companies in the United States.

STRESSCON
Architectural and Structural Precast Concrete
An ***EnCon*** Company

Phone: 719.390-5041
Email: sales@Stresscon.com
www.Stresscon.com



L.A. Live Marriott | Los Angeles, CA

2015 PCI Design Award Honoree

INTEGRATED AND PRE-FABRICATED SYSTEMS
PROVIDING TRUE OWNER VALUE.

The developer of the Courtyard and Residence Inn Marriott prioritized prefabricated systems for its new property in the heart of L.A.'s booming L.A. Live District. Clark Pacific's innovative envelope platform called C-CAPP (Clark Composite Architectural Precast Panels) provided the design-build team a great solution for the building enclosure. Pre-assembled at Clark Pacific's Fontana plant (complete with glazing, insulation, return air vents, and electrical fixtures), they were shipped to the jobsite as single modular units. Pre-assembly allowed for a safer site and a significantly enhanced construction schedule, providing true owner value.

Contact Clark Pacific to explore how design-build prefabricated systems can help you and the whole project team on your next project.

clarkpacific.com

CLARK PACIFIC
Design + Manufacture + Build