PCI MIDWEST focus

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summer 14

Precast is Perfect for Parking

The Larson Building - Lincoln, NE
Photo Courtesy of Enterprise Precast Concrete, Inc.

Precast concrete is the premier building system for parking structures. Precast concrete is a high performance material that integrates easily with other systems and inherently provides the versatility, efficiency, and resiliency needed to meet the multi-hazard requirements and long-term demands of high performance structures.

Precast is Versatile – Precast provides an incredible array of aesthetics options, whether your parking structure needs to blend in with the surrounding environment, or stand out from the crowd. Precast systems also allow for a more open parking deck compared to cast-in-place structures and doesn't require intermediate columns within the parking area. This improves visibility and security of users.

Precast is Efficient – Precast concrete arrives at the site ready for installation and does not require protection from rain, sun, snow, wind, or extreme temperatures. This saves time and money and reduces the potential for change orders due to winter conditions. Precast concrete is one of the fastest building systems available, and is manufactured offsite minimizing project site disturbance, while maximizing quality. It is typically erected with a crane and a relatively small crew, which allows for construction within a small footprint and minimizes disruption to the surrounding area.

Precast is Resilient – Precast concrete inherently provides a high degree of quality and durability including better freeze-thaw durability, scaling, and cracking resistance. The high-quality concrete used and joint-system allow for predictable and controlled stress relief that can be addressed with simple maintenance. Whereas cast-in place structures have random, unpredictable, and typically more severe maintenance issues that can result in replacement of the structure. Precast also provides inherent fire resistance and does not require additional fireproofing.

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Lifetime Fitness Parking Structure

Owner & Architect: **Lifetime Fitness** • Engineer: **ERA, Ericksen Roed & Associates** • Contractor: **FCA Construction** • Location: **St. Louis Park, Minn.**

Executives at Lifetime Fitness in St. Louis Park, Minnesota needed to create a new parking structure close to their facility. Their on-site surface parking quickly filled up, requiring members to be shuttled from an offsite lot. To change this, a total-precast concrete parking structure was built on the parking lot in three months.

The design for the four-story building's total precast concrete structure comprised double tees, beams, columns, hollowcore plank, solid slabs, spandrels, precast stairs and walls. The precaster fabricated and erected all of the components. A burnt-orange thin brick was embedded in the architectural spandrels to complement the fitness center's brick facade.

The structure was erected in only three weeks to bring it on line as quickly as possible. Using one crane, crews worked two 8 ½-hour shifts each day. The components were delivered and picked from the truck to alleviate congestion and speed erection.

Lifetime Fitness executives have used precast concrete systems for a number of their recent facilities, so they were familiar with its capabilities for this parking structure. The 122,000-square-foot facility not only provided a key amenity for members but expanded parking capabilities from 619 cars to 842 cars.

Hanson
HEIDELBERGCEMENT Group

www.hansonstructuralprecast.com

Hastings, TH 61 Mississippi River Crossing

Owner: **Minnesota Department of Transportation** • General Contractor: **Ames/Lunda Joint Venture** • Engineer: **MnDOT/Parsons Transportation** • Location: **Hastings, MN**

Slated for replacement, the old Highway 61 Bridge spanning the Mississippi River in Hastings, Minnesota was built in 1950 to replace the historic spiral bridge. The two-lane bridge's average daily traffic exceeded 30,000 vehicles. While it was safe, it had become functionally obsolete. MnDOT was able to accelerate delivering the project by almost five years after the Minnesota Legislature passed the 2008 Transportation Funding Package.

MnDOT needed a pioneering solution for the north approach spans of the Mississippi River. The new north approach creates safer traffic flow on, off and around the bridge, safe access to trails for southbound pedestrians/bikers, and provides safe access to Hastings' marinas.

The precaster tackled the project in conjunction with Lunda/Ames Joint Venture by crafting a beam shape solution that had never been used in the United States that would work for this project and projects down the road. 45 pre-stressed beams were used and the typical span was 174 feet, with eight-foot-deep girders, weighing 108 tons. The precaster provided project-specific transportation to haul the enormous product, and to meet axel weight limits on Minnesota roads.

The new Hastings Bridge is a 21st century landmark built to be trusted and enjoyed by current and future generations. With a 100-year life span, the new bridge enhances mobility and safety for both the community and the region, and has become part of Hastings' identity.

Cretex
Concrete Products, Inc.

www.cretexconcreteproducts.com

Springfield Clinic Parking Structure

This four-level precast parking ramp has space for 616 cars and provides parking for the Springfield Clinic 1st North Medical Office Building. The parking ramp also connects to the north side of the new medical office building. Patients will have walk-in access to physicians' offices from each level of the garage.

800, 24" diameter aggregate piers were installed for ground improvement prior to starting construction to a depth of 15 ft. This was necessary because the existing site was largely residential with undocumented fill in the basements.

Todd Missel, Vice President of O'Shea Builders stated "The Springfield Clinic First North Garage Project was a great example of collaboration at its best.

Owner: **Memorial Health Systems- Springfield Clinic** • General Contractor: **Harold O'Shea Builders** • Architect: **Desman Associates** • Engineer: **PEC – Precast Engineer** • Location: **Springfield, Illinois**

Accurate cost estimating and early decisions by the stakeholders, coupled with unique solutions to foundation challenges on the existing site, were a key to our success. Based on this experience and the need to provide further parking expansion in an urban environment, the owner is currently considering future projects on campus."

MPC Midwest Precast Concrete

www.mpcent.com

Target North Campus Parking Ramp

Wells Concrete was selected as the precast provider on the parking structure portion of the Target Corporation Northern Campus expansion in Brooklyn Park, MN along with Ryan Companies (Minneapolis, MN), RSP Architects (Minneapolis, MN) and Ericksen Roed Associates Engineers (St. Paul, MN). The three-level, 1,250-stall parking structure features thin brick and acid etched finish spandrel panels. Installation began June 1, 2013 and finished the end of August 2013.

The parking structure is a supporting component on the 150-acre campus expansion. The expansion involved the addition of two eight-story office buildings with demolition and remodel to existing buildings with a master plan for 12 buildings over six years to support Target Corporation's growth nationwide. The use of precast was selected for the ramp to mirror an existing ramp on this campus. The owner was satisfied with the first ramp they constructed with precast and opted to continue that trend on the campus. The precaster worked closely with Ryan Construction through pre-construction along with RSP Architects in maintaining not only the basics of production schedule and delivery but maintaining the utmost in quality of the end product. In the production phase a thin-brick quality issue came to the forefront, requiring very quick recourse to keep the project on track. In the end the brick situation was rectified and the project turned out beautifully.

Following the project, Michael Beadle, Project Manager with Ryan Construction, offered this about his experience, "Wells managed owner/contractor expectations and actively participated in the design process to deliver durable and aesthetically pleasing products."

WELLS CONCRETE
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BRINGING CONCRETE TO LIFE

www.wellsconcrete.com

Owner: **Target Corporation** • Architect: **RSP Architects** • Engineer: **Ericksen Roed & Associates** • Contractor: **Ryan Companies** • Location: **Brooklyn Park, MN**

Gavilon Headquarters

This Class A office building is comprised of three office levels situated above two levels of cast-in-place concrete structured parking and features a signature entry, ground-level cafeteria and fitness center. From groundbreaking to delivery, construction of Gavilon's World Headquarters took just under 14 months.

The ability to be flexible to adjust design and pricing helped when working with the owner and developer. While finalizing schematic design, The OPUS Group worked to evaluate numerous combinations of office and parking levels as well as various floor plate modifications. Enterprise Precast provided quick turnaround on pricing and schematic design options during the development of the project. While Enterprise Engineering was designing and drafting the shop drawings for approval, final color and finish options were being selected by the owner. This parallel work flow resulted in design modifications while still moving ahead with the project.

Owner: **The Opus Group** • Tenant: **Gavilon Corporation** • Architect: **The Opus Group** • Engineer: **The Opus Group** • General Contractor: **The Opus Group** • Location: **Omaha, NE**

Architectural precast concrete was an excellent cladding option as it provided unlimited color and texture options for the owner to choose from. The owner selected two different precast colors for the project. A light gray color with an acid etch finish was selected for the spandrel panels. These spandrel panels utilized horizontal reveals to provide texture to the panels. Smooth dark gray concrete with an acid etch finish was selected for the column covers and the curtain wall surround. The precaster provided and installed 180 pieces and a total of 23,000 square feet of architectural precast cladding.

The owner was able to maintain flexibility as they were finalizing their vision for the future of the company, ultimately maximizing the value and function for their headquarters.

ENTERPRISE PRECAST CONCRETE INC.

www.enterpriseprecast.com

About PCI Midwest

PCI Midwest serves Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota and Western Wisconsin. Formerly the Midwest Precast Association, the organization was first incorporated in 2003. Its mission is to promote the use of precast/prestressed concrete, to further educate the construction industry about precast/prestressed concrete, and to expand and nurture relationships between industry-related individuals and companies.

PCI Midwest Officers

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Learn & Earn Box Lunches

Learn precast and earn continuing education credits! Here's a sampling of what's on the menu:

Total Precast Structures. What is a total Precast concrete structure? How can a total Precast structure benefit a project? What components are used to construct a total Precast structure?

Precast Stadium Design & Construction. Participants will learn the basics of designing athletic stadiums using precast/prestressed concrete.

Precast Concrete Design for Schools. Participants will learn the basics of designing school buildings using precast/prestressed concrete.

Architectural Precast Concrete. Participants will learn about the color, form and texture of architectural precast concrete as well as the design flexibility and economy of using precast concrete.

Insulated Concrete "Sandwich" Wall Panels. Learn the construction techniques and architectural applications for Insulated Concrete "Sandwich" Wall Panels.

Hollow-Core Design and Construction. Participants will learn the basics of hollow-core concrete floors and walls including: fire safety, acoustic properties, maintenance needs, speed of construction, and environmental properties (indoor and outdoor).

Environmental Advantages of Thin Brick in Construction. This program explores the many different brick wall systems available to architects today.

Precast/Prestressed Parking Garage Design. Participants will learn the basics of precast concrete parking structures including personal safety issues (lighting), fire safety properties, and the environmental benefits of precast concrete.

The Basics of Precast/Prestressed Concrete (Precast 101). Attendees will learn what precast, prestressed concrete products are, how they are manufactured (including the structural theory of prestressing), examples of architectural and structural precast solutions, quality assurance procedures and the industry certification program (PCI) of plants, people and performance.

HALF DAY SEMINARS

Lateral Loads and Precast Concrete Design. This half-day seminar is dedicated to the design of precast and prestressed concrete buildings for lateral loads generated by wind and earthquake ground motions. The seminar provides an overview of lateral load determination for precast concrete buildings, including both architectural and structural precast concrete. The seminar includes a brief history of wind and seismic lateral loads in building codes in the United States in conformance with IBC 2009, ASCE 7-05, and ACI 318-08. Numerical examples are presented for a typical five-story office building located in the Midwest.

Total Precast Concrete Design. Learn the advantages of a total precast building system during this half-day seminar. Strategies such as increased efficiency and shorter construction schedules of "dual use" structural and exterior cladding systems will be presented, as well as guidelines for the design and detailing of architecturally finished exterior walls, concrete tees, hollowcore plank, and precast concrete stairs. Integration of HVAC systems, building code requirements, and total precast's potential contribution toward LEED certification will also be discussed.

Designing Precast Concrete Parking Structures. Learn how to design and detail precast concrete parking structures during this half-day seminar. Advantages such as decreased construction time, efficiencies of combining a variety of exterior finishes with exposed structural members, and precast concrete's potential contribution toward LEED certification will be discussed. Integration of HVAC systems, building code requirements, long-term durability, ramp and vehicle circulation types, safety, and maintenance issues will also be presented.

Continuing education credits are available for these presentations. To schedule a Lunch & Learn Box Lunch presentation at your office, contact PCI Midwest at 952-806-9997 or e-mail mike@pcimidwest.org

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Key:

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