

Precast Concrete – The Best Choice for Aesthetically Pleasing Parking Structures



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 multihazard requirements and long-term demands of high performance structures. Precast concrete provides the versatility and efficiency needed to meet several project challenges including a small project site footprint, a tight construction schedule, and the combination of various finishes to achieve the aesthetic goals.

Never before have precast parking structures been more cost effective, low maintenance, durable or architecturally easy-on-the eye. Parking structures can now easily be integrated into nearby building architecture with a near endless possibility of finishes and colors to match—but at the cost and speed of precast. 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.

West Haymarket Parking Garages – Decks 2 and 3

With the announcement and subsequent building of the Pinnacle Bank Arena (PBA), private development of Phase I construction moved far more quickly than any of the planners envisioned. Because of the rapid pace of new construction, which included hotels, retail, restaurants, offices, multi-family housing and events at the PBA, the West Haymarket Joint Public Agency (JPA) had to confront an urgent need for more parking much sooner than anyone anticipated.

Phase I construction included an attached VIP parking garage to the PBA and Parking Deck 1, both of which were meant to serve the immediate needs for event parking. Both of those garages were designed and built using precast/prestressed concrete. For Phase II, the decision was easy for the owners to once again dictate that the two new parking garages (Decks 2 & 3) be constructed using high quality



Owner: West Haymarket Joint Public Agency (JPA) • Architect: Davis Design, Inc. • Engineer: Davis Design, Inc. • Contractor: Hausmann/Dunn, a Joint Venture • Location: Lincoln, NE

precast/prestressed concrete products. The owners appreciated the great value precast/prestressed concrete afforded them in terms of economics, aesthetics, maintenance and speed of construction. Extra value was realized as JPA decided to build both garages under one contract. Deck 3 also achieved further economy by using the same "core" design as Deck 1 while only changing the exterior look.

Deck 2 features 700 parking stalls and Deck 3 provides 950 stalls. The two garages were built incorporating over 1,700 pieces of precast/prestressed concrete. During construction, both decks faced the reality of a brutal Nebraska winter but because precast was used, the weather did not delay the erection of either deck. The aesthetics of the garages included integral thin-brick, multiple integral colors and varying relief changes on their facades. In a unique sign of the times, both decks also incorporated dedicated parking stalls with chargers for electric vehicles.



www.concreteindustries.com

Essentia Ramp

The new parking structure provides space for up to 480 cars and supports patient parking for the Essentia Clinics with easy skyway access to St. Mary's Medical Center.

The \$20 million, four-level parking structure was built by Knutson Construction in two-phases with a castin-place concrete construction method. The exterior façade is architectural precast concrete panels with a twotone color and a combination of sandblast and smooth acid etch finishes. Over 150 architectural precast panels were installed by the precaster in conjunction with Knutson's two-phase construction plan. Driving down 2nd Street in Duluth, it's hard not to notice this architecturally attractive parking structure.



www.wellsconcrete.com



General Contractor: Knutson Construction • Architect/Engineer: LHB • Owner: Essentia Health • Location: Duluth, MN

Full-Service Freightliner Facility

The nation's largest Freightliner dealer group, Truck Country, began constructing a new full-service Freightliner location north of Madison, in Deforest, Wisconsin. This facility, on a new site, is a replacement of an already existing location, built to offer Truck Country clients more services, a better environment, and a more convenient location. At 105,000 square feet, the massive project is an impressive 64,000 square feet larger than their previous building. The new structure provides them with a stateof-the-art facility to house a full service Freightliner dealership with a sales



Architect and Engineer: Korb + Associates Archetects • Contractor: Beaudry Services • Location: Deforest, Wisconsin

office, a corporate parts warehouse, and additional repair and maintenance bays. The facility also accommodates natural gas trucks, an option becoming popular as a clean energy alternative.

The new facility has open repair and maintenance bays with an overlooking mezzanine for office space. 21,582 square feet of hollowcore plank in 10 inch and 12 inch thicknesses was used to build the mezzanine. The use of hollowcore was an easy decision for the contractor because it accommodated the long spans of the office space, reducing the need of additional supports. This allowed the mezzanine to fit comfortably into the space and creates more room for the repair and maintenance bays.

Construction on the facility started on June 16th, 2016 with an anticipated completion date in February, 2017.



www.countymaterials.com

Metro Transit Highway 610 & Noble Parkway Park & Ride Facility

The design of the Metro Transit Highway 610 & Noble Parkway Park & Ride Facility in Brooklyn Park, MN fuses an abstraction of the surrounding landscape with a high performance, sustainable facility to create a striking statement along the Highway 610 corridor. Snow Kreilich Architects teamed with Stantec to provide the architectural design, documentation, specifications and construction management for this 1,000 stall park and ride facility.

20,000 square feet of precast spandrels, panels and seat walls were used for the \$10 million parking project. The vast prairie grass and snow swept landscape of this area was the genesis for the undulating precast façade panels. The subtle transformation of a standard precast panel typology was achieved by simply pulling two points along the panel's surface. This strategy allowed the design team to meet the

client's budgetary and maintenance requirements while providing a dynamic façade that is in constant transformation as the sun travels along its articulated surface.

The bold white precast panels emphasize the subtleties of light along the elevation and create a bold graphic statement against the flat black precast panels that enclose service areas and the speed ramp. Thus, users of the facility are greeted with an everchanging experience that varies with season, time of day, and weather.

www.gagebrothers.com



Architect: Snow Kreilich Architects • Engineer: Stantec • Contractor: Knutson Construction • Location: Brooklyn Park, Minn.

Aspen Heights Parking Garage

The Aspen Heights Parking Garage features eight levels and 600 spaces. The purpose of the garage is to provide parking for the Aspen Heights Housing Development which is in close proximity to the University of Nebraska Lincoln and mainly caters to students. The development includes three multistory housing complexes and seven townhomes which align with the north side of the garage as a liner building.

The parking structure was built using precast double-tees, inverted-tee beams, columns, lightwalls, spandrels, stair units, and wall panels. The exterior spandrels are lightly sandblasted to provide an economical solution while the thin brick wall panels and decorative metal screening help enhance the look of the exterior.



Architect: Humphreys & Partners Architects, Dallas, TX • Structural Engineer: Integrity Structural Corp., Houston, TX • Contractor: Hausmann Constuction, Lincoln, NE • Owner: Aspen Heights • Location: Lincoln, NE

The garage, while being eight stories tall, is only two bays wide which presented structural challenges. With the help of Structural Engineering Associates out of Kansas City, MO the project was designed quickly to allow the precast to be produced and erected within the fast paced construction schedule.



www.coreslab.com

Centrepoint Parkade Structure

Centrepoint Parkade is located in the heart of downtown Winnipeg. With just over 400 stalls in five levels of parking, it supports the new office/hotel tower, The Glass House Apartments, and Winnipeg Jets hockey. The total precast structure boasts over 500 pieces of precast prestressed concrete in 130,000 square feet of double tees with a unique gray acid etch spandrel on two elevations.

The primary architectural features are the load bearing spandrels on the North and West elevations. The architect wanted a black finish with a reveal pattern. This was accomplished using black sand and coarse aggregate, gray cement with a charcoal tint. The spandrels were acid etched when cast and washed when in place.



www.wellsconcrete.com



Owner: **310 Donald Inc** • Architect: **Stantec** • Engineer: **Crosier Kilgour & Partners LTD** • Contractor: **Nova-Con Projects Ltd. Hargrave Street, Winnipeg, Manitoba** • Location: **Winnepeg, Manitoba**

Learn & Earn Box Lunches

PCI Midwest provides continuing education programs on a variety of topics. These programs are easily tailored to conference room or classroom lunch programs. Architects and engineers can learn about precast concrete hollow-core floors and walls, architectural precast concrete, precast parking structures, glass fiber reinforced concrete, high performance precast concrete and much, much more. Contact mike@pcimidwest.org to request a program for you or your company.

The following programs are prepared and ready for presentation. Please allow a minimum of two- to three-weeks from the date of your submission to the date of your requested presentation.

Discover High Performance Precast (Credits: 1.0) Recent code changes, increasing sustainability requirements, and a challenging economy are just some of the factors increasing demand for high-performance structures. However, high performance is not business-as-usual. The concept of 'highperformance' encompasses sustainability; however, it goes beyond a 'this-or-that' approach by requiring optimization of all relevant attributes for a project on a life cycle basis. This presentation will explain what high performance structures are, and how precast concrete can help you achieve your high performance project goals. The presentation also covers the basics of precast concrete, its applications, finishes, etc.

Artist's Palette: The Aesthetic Versatility of Precast

Concrete (Credits: 1.0) The aesthetics of a structure are very important, as it is what most people identify with. High performance materials should provide aesthetic versatility in order to efficiently meet a structure's architectural requirements. Precast concrete provides incredible aesthetic versatility from providing multiple colors and textures, to developing shapes, forms and very ornate details. Precast can also simulate or be veneered with natural materials providing all of their beauty, but with the added speed, durability, many other benefits of precast. This presentation will provide an overview of the many finishes available with precast concrete, along with methodologies for achieving them. We will also discuss combining multiple finishes into single panels, veneers and embedded materials, selection of mix designs, approaches to achieving colors, proper specification, and procedures to ensure expectations are aligned.



High Performance Precast Concrete Envelope Systems

(Credits: 1.0) A structure's envelope has considerable impact on its overall performance, as highlighted by recent code changes. The envelope not only serves as a barrier between the outside environment and conditioned space, but also as a part of the aesthetic expression for the structure. It must also serve as a protective shield against environmental forces. High-performance building envelopes can help reduce the overall energy consumption of a structure throughout the structure's life, and maintain and protect its interior environment and occupants. This presentation addresses what high performance building envelopes are, as well as key elements to their performance. It will discuss how to use precast concrete wall systems to meet the latest code requirements such as continuous insulation and air barriers, and include topics such as moisture management, thermal mass effect and how to calculate effective R-values, integration with other building systems, and more. This session will also touch on the idea of resilience. A structure must be able to resist environmental forces, such as high winds and earthquakes in order to protect life and fulfill its intended purpose. Case studies are used to highlight information presented.

Designing Precast Concrete School Buildings (Credits: 1.0) After attending this presentation, participants will be able to: Discuss how different Precast/Prestressed components are used in school designs Use the aesthetic features of precast to create structures to meet the unique needs of schools Understand the Precast design process

Designing with Precast/Prestressed Hollow-Core Concrete

(Credits: 1.0) This course instructs participants about hollowcore products and how to design and build utilizing hollowcore floors and walls. Participants also learn about the inherent fire resistance of hollow-core, a major life-safety consideration. After this program, participants will be able to: Identify the different precast, prestressed hollow-core concrete systems Explain the benefits of using precast, prestressed hollow-core concrete Discuss the benefits of using hollow-core concrete with owners and other designers.

Parking Garage Design and Construction (Credits: 1.0) In this course, participants are instructed in improving security and lighting in parking structures and the inherent safety issues. They are also instructed in architectural treatment options for

facades which can make garages more aesthetically pleasing. Participants will also discuss ways to avoid parking structure leakage. From this course, they will be able to use a construction procedure to avoid this leakage.

Precast Housing Structures (Credits: 1.0) In this program, participants will discuss precast, prestressed concrete in the housing market. Precast, prestressed concrete provides long clear spans, shallow cross sections, high load capacities, high durability, compatibility with block, steel and cast-in-place concrete, and attractive appearance. Also learn how owners and residents benefit from low maintenance, two- or four-hour fire ratings, lower fire insurance rates, and strong acoustical control. After this program, participants will be able to: Identify the different precast concrete systems used in housing Explain the benefits of using precast concrete in housing structures Utilize precast concrete structures to benefit clients with fire suppression and environmental issues.

Precast Industrial Structures Design & Construction

(Credits: 1.0) Box lunch attendees will learn the key benefits of precast, prestressed components and see the advantages of an integrated design approach.

Precast Stadiums Design & Construction (Credits: 1.0) Box lunch attendees will learn how working with your precast, prestressed specialist at the earliest stages of design can mean a winning combination of advantages for your next stadium. These include flexibility of design, including long spans; high quality of manufactured products; versatility; high-performance, durable materials; and speed of construction because precast components can be erected quickly once they arrive at the site. After attending this program, participants will be able to: ldentify the different precast, prestressed concrete systems used in stadium designs Explain the benefits of using precast, prestressed concrete in stadiums Discuss the benefits of PCIcertified precast producers

Precast/Prestressed Concrete 101 (Credits: 1.50) Participants will explore building design solutions using precast and prestressed concrete products. They will learn what precast, prestressed concrete products are, how they are manufactured, including structural theory of prestressing, and quality assurance procedures. They will learn about the industry certification program (PCI) of plants, people and performance. Participants will explore numerous examples of architectural and structural concrete solutions for numerous building markets. They will explore a variety of architectural finishes and how each is created in terms of color, form and texture. They will explore common structural solutions using prestressed concrete products and explore integrated solutions; realizing the full potential of loadbearing architectural precast units. The session will end with an overview of industry support available to the design community, including published and electronic media and a question and answer session.

Precast/Prestressed Plant Tour (Credits: 2.0) Attendees will observe firsthand how designs and engineering



details are executed in the precast manufacturing process. They will also observe the entire precast and prestressed manufacturing process from engineering and connections, forms set-up, casting and finishing. Attendees will gain a better understanding of precast and prestressed capabilities and related quality issues. Attendees will learn how precast fits within the entire building system and how to specify precast concrete accurately and safely.

Sustainable Building Design Using Precast Concrete

(Credits: 1.0 After this presentation, participants will understand the following concepts: (1) The key to sustainable building lies in long-life, adaptable, low-energy design. (2) The earth's resources are best conserved if the service life of a building is prolonged. (3) Using precast concrete in buildings conserves energy and resources during and after construction because of the following characteristics of precast concrete: (a) The materials used in precast buildings are natural, renewable, and locally available. (b) Water and materials used in precast buildings are often recyclable and recycled. (c) Indoor and outdoor air quality are improved in precast buildings because less (or no) VOCbased preservatives and paints are required, and because of the thermal mass qualities of precast concrete.

Total Precast Structures (Credits: 1.0) After this program, participants will be more familiar with what a total precast concrete structure is, how a total percast structure can benefit a project, and what components are used to construct a total precast structure. Participants will also learn how to manage a successful project.

Architectural Precast Production & Application

(Credits: 1.0) In this program, students will learn about the practical application of a wide variety of architectural precast solutions. The discussion will include design choices and cost considerations.

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