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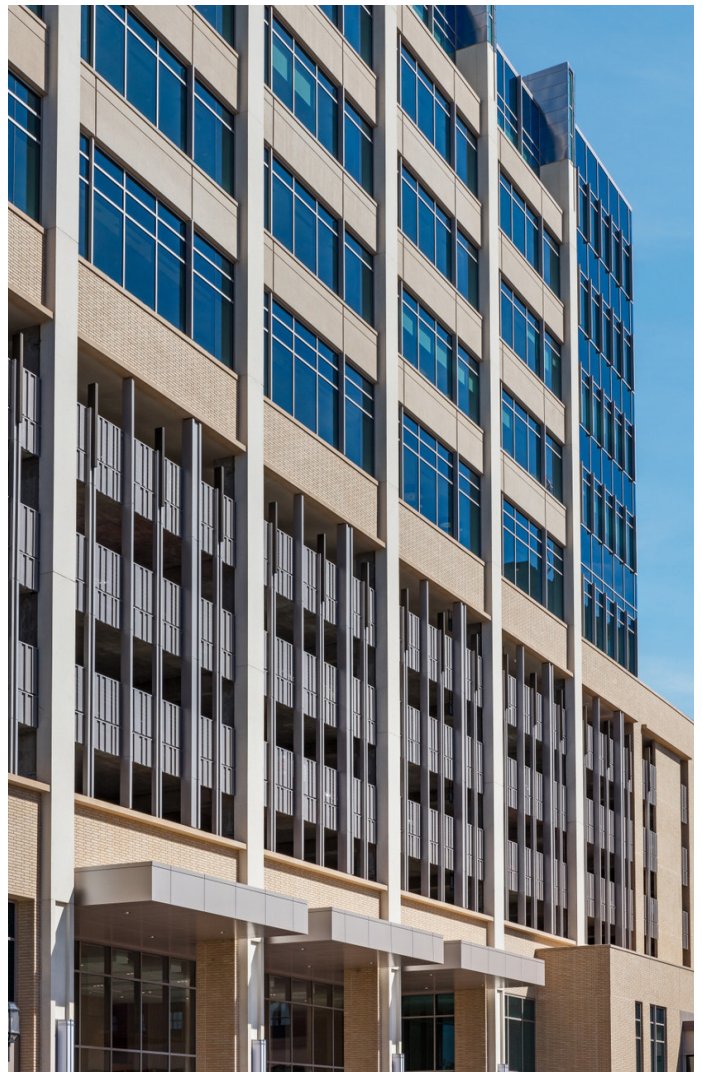
Precast Concrete – The Right Choice for Mixed-Use Projects

Mixed-use projects require integration of multiple-use spaces, which often have incompatible design requirements - like a parking facility (unconditioned space) paired with a residential facility (quiet space), or with retail. Mixed-use projects can be challenging to architects due to the specific constraints and diverse requirements that are unique to this type of project.

High performance precast concrete envelope and structural systems provide an effective and economical answer to meeting these constraints and requirements because they provide the aesthetic and structural versatility needed to make them successful. 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 requirements and long-term demands of high performance mixed-use structures.

Precast concrete is a structural system that enables designers to simultaneously integrate structural and architectural elements while reducing materials, detailing, costs, construction complexity and more. The architect of the Urban Village's Midtown Triangle (a mixed-use residential/commercial/parking project in Omaha, NE), Larry Smith of Avant Architects said that "the precast system was chosen because of its ease of construction, cost, versatility in providing efficient structural capability, required fire rating and sound separation between the residential units and the commercial or garage spaces below."

Precast concrete is the right choice for mixed-use projects.



Central Park Commons

In the spring of 2015, CSM Development began planning to redevelop the vacant 50-acre Lockheed-Martin corporate office site in Eagan, MN. The idea was to build an upscale, unique and pedestrian-friendly shopping designation that would include restaurants, grocery, medical offices and banking. The goal was to create a different shopping experience that would have an inward village



Project Name: **Central Park Commons** • General Contractor: **Weis Builders** • Architect: **RSP Architects** • Engineer: **Clark Engineers** • Location: **Eagan, MN**

atmosphere with streets, walkways and ponds. The architecture would fashion individual stores to communicate entrances with an emphasis on quality brick and stone materials.

Several months earlier, CSM's project manager, Dan Ullom noticed a local retail building under construction that utilized architectural precast insulated wall panels with a thin brick masonry veneer. He was impressed with the speed of construction and the undistinguishable appearance to a conventional brick masonry wall. Dan contacted the precaster's sales department and requested a Box-Lunch presentation on architectural precast insulated wall panels. From the Box-Lunch presentation, there were subsequent meetings with CSM's team discussing the benefits of an architectural precast insulated wall system for their large retail project. In the end, CSM chose to implement an

architectural precast insulated wall system into the multi-building design because of our high quality brick and architectural concrete finishes, competitive pricing, and our fast-track design build approach, which greatly improved the over-all project schedule.

Once the precaster was brought on board as a partner in the design and construction of the Central Park Commons retail project, their engineering and project management team began meeting weekly with CSM's architects and engineers to expedite the design and shop drawing process in order to meet the aggressive construction schedule.

Over the last six months, the precaster has manufactured, delivered and installed approximately 600 pieces, 150,000 square feet of architectural precast insulated wall panels at the Central Park Commons site. Stores are scheduled to begin opening in the Fall of 2016.



www.wellsconcrete.com

Franklin Avenue Bridge

The Franklin Avenue Bridge in downtown Minneapolis, MN is under-going a dramatic and fast rehabilitation. Utilizing Accelerated Bridge Construction (ABC) techniques, the owner is planning on the road being closed to the travelling public for less than 120 days.

Forterra recently finished shipment on 33 precast cap beams for the Franklin Avenue Bridge which is set to open September of 2016. The caps were manufactured in Elk River, MN and have architectural details that take the bridge back to its original design. Each cap is approximately 75' x 4' x 4' and weighs 51 tons. The precast pier caps

attach to the vertical columns that bear structurally on the arch. Both the arch and columns are being patched on site and are not being replaced. Deck slabs that the contractor constructed on site will be installed

on top of the pier caps and will be the driving surface of the bridge.



www.forterrabp.com



Project Name: **Franklin Avenue Bridge** • Owner: **Hennepin County** • Contractor: **Kraemer North America** • Engineer: **Hennepin County and HNTB Engineers**

Maurices Headquarters

The maurices story began in 1931 with E. Maurice Labovitz opening a small women's clothing store in Duluth, Minnesota. Now, the new headquarters of the maurices retail chain is the largest downtown development in Duluth's history and provides an iconic gateway to the seaport city. The new 11-story, 200,000



square feet building spans an entire block and includes many modern touches such as a fitness center, large glass windows and an outdoor plaza that overlooks Lake Superior.

Designed by RSP Architects, the \$70 million corporate office building provides an iconic image for those entering downtown Duluth from the West. The design goal for maurices was to provide a contemporary headquarters building that fits

into the fabric of downtown, extends the pedestrian vitality of Superior Street and adds an icon of economic growth to the city's skyline.

The building blends into the fabric of downtown Duluth by use of its materiality and form. Much of the base of the building is clad in Minnesota

sourced granite and thin-brick precast to ground the form into the site.

The tower portion of the project is visually lighter with precast and glass lending itself to a more contemporary architecture as a vision for the future of Duluth. Light-colored precast vertical bands tie the different architectural components together rising from the ground floor past the roof plane. Visitors are welcomed by a dramatic two-story lobby grand entrance, while large glass windows on the office levels provide employees with views of the harbor and city and allow natural light to enter the space.

A public parking ramp with about 500 spaces is on floors 3 to 6 of the building, a welcome addition in the western end of downtown. The ramp is owned and operated by the City of Duluth.

Gage
Brothers

www.gagebrothers.com

Urban Village Midtown Triangle

Urban Village's Midtown Triangle is a new mixed-use development currently being constructed in Omaha, Nebraska. The four story structure consists of roughly 180 one and two bedroom units that sit on a 1 ½ story concrete podium that also contains roughly 6,000 square feet of commercial space and 215 parking stalls. Midtown Triangle is one of the many mixed-use developments being constructed in the heart of Omaha in an effort to revitalize different parts of the city.

The architect of the project, Larry Smith of Avant Architects said that "the precast system was chosen because of its ease of construction, cost, versatility in providing efficient structural capability, required fire rating and sound separation

between the residential units and the commercial or garage spaces below."

Precast concrete was used extensively throughout the project, particularly in the lower level parking structure and commercial space. Due to the congested nature of the area and the somewhat small footprint of the structure, it was vital for the designers to maximize the space that they had. Hollowcore floors and precast columns/beams allowed the designers to utilize the space they were working in while at the same time minimizing sound transmission from the lower level.

The project is currently

being constructed with an anticipated opening date of spring 2017 and is being credited with bringing an old neighborhood "back to life."



www.concreteindustries.com



Project Name: **Urban Village Midtown Triangle** • Architect: **Larry Smith of Avant Architecture** • Engineer: **Performance Engineering** • Contractor: **Hawkins Construction** • Location: **Omaha, NE**

Oxbo

Oxbo is a six-story mixed-use luxury apartment and retail development in downtown St. Paul, MN. This project is a keystone in revitalizing St. Paul's historic downtown. Built on the site of the former Seven Corners Hardware Store, the project was designed as a U-shaped footprint and will feature 191 studio, one and two bedroom apartments; three bedroom townhomes; two levels of parking and 11,500 square feet of retail space on the street level. The luxury living area will include an outdoor courtyard featuring a pool, hot tub, bocce ball and grill areas as well as a patio and club room offering scenic river views.

"Projects like this one demonstrate the power of collaborative, community-focused development," said Mayor Chris Coleman. The precaster began consulting with the design team when the project was in the conceptual stage and assisted in determining the most efficient layout of the precast to allow for the many architectural features. The design team provided the total lateral load at the podium level and the precaster was responsible for the distribution of these forces

through the precast diaphragm to the precast shear walls that carried these loads to the footings. A great deal of coordination with the design team was required to locate the precast shear walls within the complex floor plans.

The precaster began delivering and installing the precast components in January 2016. The precast scope on this project included; 94-precast

columns, 126-prestressed beams, 124,000 square feet of Hollow Core and solid slabs, and 53,000 square feet of insulated and non-insulated wall panels, shear walls and spandrel panels. The project is scheduled for completion by Opus in January 2017.



www.molin.com



Project Name: **Oxbo / West 7th St.** • Developer: **Opus Development Group, LLC** • Architect of Record and Structural Engineer: **Opus AE Group, LLC** • Design Architects: **Elness Swenson Graham Architects** • General Contractor: **Opus Design Build, LLC** • Location: **St. Paul, MN**

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.

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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 'high-performance' 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 hollow-core products and how to design and build utilizing hollow-core 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: Identify the different precast, prestressed concrete systems used in stadium designs Explain the benefits of using precast, prestressed concrete in stadiums Discuss the benefits of PCI-certified 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) VOC-based 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 precast 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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Producer Members

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