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focus

fall 13

Half-Day Seminars

PCI Midwest is pleased to announce that three brand-new half-day seminars have been recently released. The seminars, Lateral Loads and Precast Concrete Design, Total Precast Concrete Design and Designing Precast Concrete Parking Structures, are each AIA HSW approved for 3.5 hours and also carry 3.5 PDH. The seminars are being presented in small-group settings throughout the Midwest.



Photo Credit: County Materials

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.

For additional information about how you can participate in one of these seminars, contact PCI Midwest’s Executive Director Mike Johnsrud via e-mail: mike@pcimidwest.org

Mike Johnsrud, Executive Director

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Henry W. Bloch Executive Hall for Entrepreneurship and Innovation

Designers of the Henry W. Bloch Executive Hall for Entrepreneurship and Innovation at the University of Missouri in Kansas City were determined to find a cost-effective way to create a masonry-style design that fit their budget. Precast concrete panels provided the perfect solution.

Initially, cladding was envisioned as a conventional rain screen system with a steel frame and air barrier; however, a cost analysis by the general contractor concluded that traditional rain screen would cost 25% more than a precast concrete design.

To achieve the desired masonry-style facade, the precast concrete producer



Owner: **the University of Missouri in Kansas City (UMKC)** • Architect: **BNIM / Moore Ruble Yudell Architects & Planners** • Contractor: **JE Dunn Construction** • Engineer of Record: **Structural Engineering Associates (SEA)** • Specialty Precast Engineer: **Enterprise Properties** • Location: **Kansas City, MO**

clad a five-color random blend of terra cotta tiles into 19,200 ft² of large, insulated composite precast concrete sandwich panels. The production team followed precise color-coded instructions, in the production facility, to carefully place each individual piece of tile, creating the unique colorful pattern. An overlapping ship lap joint in the terra cotta tile maintained shadowed transitions, similar to a conventional rain screen.

In addition to significant cost savings, the precast concrete panels offered thermal performance, a natural rain barrier, high-performance integrated design, and contributions toward LEED energy points, meeting the overall goals of sustainability and making it an ideal choice for this project.



www.enterprise.com

Lincoln Public Schools District Office

Late in the evening on Monday, May 30th 2011, a fire completely destroyed the 91,000 SF building that served as the Lincoln Public Schools District Office since 1990. Along with destroying mountains of irreplaceable paper records, the fire displaced around 250 employees.

Precast was selected almost immediately for the project as it naturally fire resistant and could also meet the demanding schedule the project required. The designers needed to go vertically to free up space for additional parking and also make room for the rest of the development. They decided upon roughly 94,000 SF to be spread out on three floors.

As an added bonus, the use of precast



Owner: **Lincoln Public Schools** • Architect: **Sinclair Hille Architects** • Engineer: **Structural Design Group** • Construction Manager: **Hampton Construction** • Location: **Lincoln, NE**

aided in the affordability of the project so the owners were actually able to add additional scope of work in the form of about 14,000 SF of basement to be used for mechanical operations and general storage. Precast was not only utilized for the building envelope but also for the structural members, flooring system, roof, penthouse, elevator and stair towers along with the stairs themselves. Overall, around 1,112 pieces of precast were integrated to create the total precast structure.

The schedule was so aggressive that the precaster teamed up with another precaster to insure the timelines were met. Just over a year after ground breaking, the building was handed over to the owners. The building came in under budget and on time allowing the school district personnel to have a happy and smooth homecoming.



www.concreteindustries.com

Airlite Plastics Addition

This 41,200 SF manufacturing facility addition features precast concrete insulated wall panels, columns, beams, and double tees. The total precast concrete system was chosen for the project based on the ability to meet the aggressive construction schedule and heavy loading requirements, and the requirement of a clean, durable interior.

The design of the superstructure was collaborated between Schemmer, Boyd Jones Construction, and Coreslab Structures. The group worked hand in hand to provide the owner with



an efficient design that ensured a fast track project that was within the project budget. The upfront collaboration was paramount and an example of excellent teamwork. By working so closely together, the team

was able to successfully meet the goal at hand.



www.coreslab.com

Precast Panels Save Time, Lower Budget for City of Oshkosh Stormwater Project

When the City of Oshkosh, WI, needed to correct flooding issues in its downtown area, conventional stormwater detention systems were deemed unacceptable because of space limitations. Instead, the City opted for an innovative underground solution using precast roof panels from County Materials that helped improve parking facilities as well.

“For a conventional aboveground basin we would have needed an entire city block,” explains city engineer James Rabe. “We looked at the area and realized that we had over two acres of parking lot (at City Hall) and we could do something underneath it.”

The plan offered the added bonus of parking facility improvement. The site consisted of two adjacent parking lots formerly under separate ownership. A complete renovation

would make the lot much more functional by allowing drivers to maneuver through the entire parking area without having to exit and reenter.

The site’s high water table precluded the use of pre-manufactured stormwater collection devices. Using them would have required redirecting groundwater, which would likely cause settling in surrounding structures. Instead, the City opted for a cast-in-place detention tank.

However, the roof of the 22,500 square foot structure was not cast in place. Instead, the design team chose to top the stormwater tank with 249 precast concrete panels from County Materials. “We estimate that using the precast

roof panels cut three to four weeks off the construction window,” says Rabe. The decision to use precast minimized the inconvenience of disrupted parking at City Hall, while also helping to lower project costs significantly.

The project commenced on March 4th and is expected to be completed ahead of schedule in the fall of 2013. It promises to be an elegant solution to a common urban problem. Says Rabe, “We’re utilizing land we already had without having to go out and acquire more real estate for it.”



www.countymaterials.com



Contractor: **Miron Construction** • Architect: **AECOM, Inc.** • Location: **Oshkosh, WI**

Total Precast Concrete Design Helps Project Get a Quick Start

Molin Concrete Products recently finished work on phase two of the Cedar Point Apartment Homes in St. Augusta, MN. Located between St. Cloud and Albertville, MN they are poised to attract high end clients to luxury apartments outside of the city. This is the second building Molin designed, manufactured and installed the total precast foundation to grade.

This project utilized a Total Precast Foundation (precast foundation walls, stair and elevator shear walls, hollow core plank, beams and columns) to save time in the schedule and minimize trades on site. Due to the total precast



design of the project wood framing was able to start framing 4 weeks earlier than a typical masonry or poured wall system. The exterior finish of the precast foundation walls was a formed lined stone façade, which requires little to no maintenance of the life of the structure, which was later stained to match the exterior. Using precast components together on this project created a structurally sound, attractive, and quick solution for the owner.

The Following Products Were Used to Complete this Project:

8" Hollow Core Plank: 11,725 Sq. Ft.
12" Hollow Core Plank: 6,700 Sq. Ft.
Prestressed Beams: 587 LF
Precast Columns: 187 LF
Foundation Wall Panels: 11,264 Sq. Ft



www.molin.com

SDN Communications Data Center

When vital services like hospitals, government facilities, public safety networks, and banks rely on connectivity, there is no room for down time. SDN Communications needed a secure bunker-like facility to ensure their ability to keep their clients up and running throughout the state. Located near both major South Dakota Interstates (I-29 and I-90), the SDN Communications Data Center sits on a 65-acre site. The local rolling hills of the plains provide additional natural protection from weather elements in addition to the multiple security measures integrated throughout the data center. With three layers of roofing materials, including 25,000 square feet of precast double tees, the data center needed to be as durable and secure as possible.

The building was designed to be

made with precast concrete in order to capitalize on the material's inherent resilient features. Featuring 17,020 square feet of 12" insulated wall panels, the building is designed for fire resistance and control, as well as to withstand whatever Mother Nature sends its way, including up to an F4 tornado.

Built by carpenters at the plant in Sioux Falls, the custom forms for the insulated wall panels created a distinct faceted pattern. The precast insulated wall panels showcase a two-tone acid-etch finish around the exterior. In addition to the insulated wall panels, the building also features 433 linear feet of beams

and columns, as well as 4,500 square feet of architectural screen walls. The 13 month construction schedule included the erection of precast during the winter months. This could have presented issues for other building materials, but created no concern for the versatile precast products.

The 25,000-square-foot facility was built with future expansion in mind, including tripling the building's current size.



www.gagebrothers.com



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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Producer Members

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- Structural**
- Bridge – Transportation**

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IN THIS ISSUE

- PCI Associates List
- PCI Member Contact Information
- PCI Box Lunch Presentations

• PROJECT PROFILES:

*Henry W. Block Executive
Hall for Entrepreneurship
and Innovation
Kansas City, MO*

*Public Schools District Office
Lincoln, NE*

*Airlite Plastics Addition
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