

PCI Midwest Presents Three Half-Day Seminars

PCI Midwest is pleased to announce that three brand-new half-day seminars have been released this month. 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 a small-group setting throughout the Midwest.



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 towards 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 towards 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.

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

Muscatine County Jail Addition

The Muscatine County Jail Addition was completed in Early 2011.

The \$8.8 million project is a 25,000 square foot addition that houses 136 additional inmates, and created eight jobs (three full-time lieutenants, three part-time corrections officers, a part-time cook and a part-time records clerk). While the jail addition looks and smells new, it's still a jail. The addition includes a new security area, where banks of television screens help guards keep track of what's going on via 41 security cameras. With so many eyes in the sky, virtually every inch of the jail addition can be monitored electronically and remotely. Project manager Stu Willits or Merit Construction Company said that "The addition is, if nothing else, a 'solid' addition to the community." "It's a very nice facility," said Dave Watkins, chair of the Board of Supervisors. "They've done an excellent job. It's a facility citizens can be proud of."

The building itself consists of CMU block walls, precast walls, and a hollow core mezzanine and roof. The precaster provided the 8" and 12" hollow core, which consisted of 3,000 square feet of 8" hollow core and 14,000 square feet of 12" hollow core, with spans up to 54' long.

www.andrewsprestressedconcrete.com





Architect/Engineer: **Durrant** • General Contractor: **Merit Construction Company** • Photo Credit: **Merit Construction Company** Location: **Muscatine**, **IA**

Mead Atlas Readiness Center

The site for the newly constructed Atlas Army Readiness Center was once an Atlas Missile Launch Site during the height of the Cold War. The architect wanted to pay tribute to the past by incorporating several defense concepts such as physical support, layers of defense, and camouflage into the design of the building itself. The client was very familiar with precast concrete as a design option and suggested its use to the architect. Precast provided the canvas to create these defense concepts.

The first defense concept identified in the project was the use of layers of defense. This was accomplished at the main entrance of the structure by creating a brick clad precast wall utilizing different colors of thin brick placed in strategic locations to create the illusion of depth. There was not only an illusion of depth, but an actual physical depth as sand blasted panels with bands of acid etch buff colored precast protruded 3" from the face of theses brick walls. This layer of depth can be easily identified in the photo to the right.

Strength is definitely a military concept not only in the cold war era, but also in today's era. Precast concrete was the only structural option the client considered due

to its strength and permanence. The precast wall panels supported the joist and deck roof system while many spaces exposed the precast wall panels on the interior by either painting or acid etching them. The insulated precast panels utilized 3" of continuous insulation providing the energy efficiency and sound quality the client was looking for as well as providing a vapor and air barrier system.

Another military concept is the use of camouflage. The opportunity for camouflage was provided by a long corridor with a clerestory space above allowing natural light to enter the space. By utilizing a varying depth pixelated form liner, the precast load bearing wall was now a camouflage wall. The varying depths of the pixels from the face of the panel produce shadows when the natural light hits the wall to complete the camouflage design.

The design architect (Cole Wycoff of RDG Design and Planning) was quoted as "We are anxious to use the product again, and to find new opportunities for how it might help create even more dynamic designs and spaces."

www.enterpriseprecast.com





Owner: Nebraska Army National Guard • Architect: RDG Planning and Design • Contractor: The Weitz Company • Location: Mead, NE

East Metro Crisis Center -One-Stop Shop for Behavioral Health Services

Precast concrete components, working in combination with other materials; help define the inviting style and multitasking purpose of this new community center in St. Paul, Minn. According to the project architect, the innovative structure is the first of its kind in the nation.

The two-story, 40,000 ft2 building consolidates mental health and chemical dependency services previously offered at multiple sites, including Urgent Care for Adult Mental Health, Chemical Health Assessment and Placement, a Detoxification Center, and the Second Judicial District Commitment Court. The facility allows the different service tenants to directly coordinate with one another, and also secures a physical separation of services to offer discrete dignity for program participants.

A combination of precast concrete components, structural steel framing, metal panels, and glass curtain wall, the building is a showcase of the ability of precast concrete systems to effectively integrate with a variety of building materials.

The first level of the structure is primarily glass curtain wall inset 2 ft from the upper level. The second level consists of insulated precast concrete wall panels with punched windows. The top portion of the panels features an exposed aggregate finish with fluted, horizontal banding between the windows. The bottom portion features an acid-etched finish. Adjacent to the entrance is a blue, metal-cladded stair tower that incorporates an open-air, rooftop section for mechanical equipment. Precast hollow-core planks serve as the floor on the second level and under the roof-top mechanicals.

Major advantages to the use of precast, according to architect Joel Dunning, were the material's extreme durability and the ability of precast to handle all-weather construction. The detox center needed to accommodate some extremely abusive individuals, says Dunning "The interior, finished surface of the precast wall panels was an economical way to achieve the durable, long-lasting surfaces that were needed." Additionally, construction took place in the dead of winter. "Precast construction made this possible," Dunning adds, "because it did not require temporary heating and all the trades that would be needed for masonry construction." The project was completed in just nine months.

www.hansonstructuralprecast.com





Owner: Ramsey County Community Human Services • Architect: Wold Architects and Engineers • Engineer: BKBM Engineers • Contractor: McGough Construction Company Inc. • Location: St. Paul, Minnesota

West Fargo Fire Department – South Fire Station

When the West Fargo Fire Department needed a new fire station they began the process considering the traditional brick and block system. However there were some other factors that weighed in on this decision, beating the brutal North Dakota winters and the necessary durability and austerity a fire station inherently expects.

While the design team understood the speed of construction with precast they may not have been fully aware of the impact of such a fast enclosure for winter construction. Having the structure enclosed to finish through the winter was extremely cost effective and helpful to the remaining logistics of construction. In the end the cost of the project and the cost of a precast system was much more cost effective than a cavity wall.

As the fire department board moved through the design process, a production tour further helped the owner team

understand the composition of a precast wall as well as how a 'brick wall' was achieved with precast.

Fire Chief Roy Schatschneider of the West Fargo Fire Department said the following of his newly constructed fire hall, "The precast solution provided by the precaster has been a complete success. The design process, and the guided tour of the manufacturing facility we received while our project was actually being produced, allowed for greater understanding and confidence in the quality and care that went into our building. The speed of installation was very impressive and remarked upon by both citizens and city officials of West Fargo...overall, the community is very pleased with the precast solution."

www.wellsconcrete.com





Owner: West Fargo Fire Department • Architect/Engineer: Lightowler Johnson Associates • General Contractor: Roers' Construction • Location: West Fargo, ND

Learn & Earn Box Lunches

Have lunch on us! Learn precast and earn continuing education credits!



Each comes with at least 1.0 PDH or Learning Units.

Precast/Prestressed Concrete 101.

Participants will explore building design solutions using precast and prestressed concrete products. Attendees will lean what precast, prestressed concrete products are, how they are manufactured, including structural theory of prestressing, and quality assurance procedures. Attendees 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. Attendees will explore a variety or architectural finishes and how each is created in terms of color, form and texture. Attendees will explore common structural solutions usig prestressed concrete products and explore integrated solutions; realizing the full potential of load-bearing 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.

Length - 1.5 Hours Credits - AIA 1.5 HSW LU PDH - 1.0

The Basics of Precast/Prestressed

Concrete. Participants will explore building design solutions using precast and prestressed concrete products. Topics covered are: What precast, prestressed concrete products are; How precast concrete is manufactured; The structural theory of prestressing; and Quality assurance procedures (the industry certification program (PCI) of plants, people and performance). At the end of this program, participants will be able to: Identify numerous examples of architectural and structural concrete solutions for numerous building materials; Explain how architectural finishes are created in terms of color, form and texture; Make design choices for a specific application based on a variety of architectural finishes; Understand common structural solutions using prestressed concrete products and explore integrated solutions; realizing the full potential of load-bearing architectural precast units; and Identify the resources necessary to design with precast/prestressed concrete and how to use them.

Length - 1.0 Hour Credits - AIA HSW 1.0 LU PDH - 1.0

Total Precast Structures. The

program will familiarize the participant 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. Keys to a successful project will also be covered.

Length - 1.0 Hour Credits - AIA 1.0 HSW LU PDH - 1.0

Sustainable Design Using Precast

(LEED). 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: The materials used in precast buildings are natural, renewable, and locally available. Water and materials used in precast buildings are often recyclable and recycled. 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.

Length - 1.0 Hour Credits - AIA 1.0 HSW LU PDH - 1.0

Architectural Precast Concrete. In

this program, participants will learn about color, form and texture of architectural precast concrete, as well as the design flexibility and economy of using precast concrete. After participating in this program, learners will be able to: Discuss architectural precast options with owners; Explain the advantages of using precast concrete to owners, and Choose the best design materials for upcoming projects based on the structural and budgetary considerations.

Length - 1.0 Hour Credits - AIA HSW 1.0 LU PDH - 1.0

Precast Stadium Design &

Construction. In this program, participants will learn the basics of designing athletic stadiums using precast/prestressed concrete. Topics discussed include: the flexibility of design using precast concrete, acoustic properties, fire safety, personal safety issues (ex: raker design standards to prevent trip and fall accidents), maintenance needs, life cycle costs, speed of construction, and outdoor environmental properties (LEED). After viewing this program, you will be able to: Identify the different precast, prestressed concrete systems used in stadium designs; Discuss how different Precast/Prestressed components are used in stadium designs; Explain the properties of precast concrete stadiums; Use the aesthetic features of precast concrete to create structures that meet the unique needs of public school, university and professional sports teams; and Understand the precast concrete design process.

Length - 1.0 Hour Credits - AIA 1.0 HSW LU PDH - 1.0

Precast Concrete Design for Schools.

In this program, participants will learn the basics of designing school buildings using precast/prestressed concrete. Topics discussed include: the flexibility of design using precast concrete, acoustic properties, fire safety, indoor environmental properties of concrete, maintenance needs, life cycle costs, speed of construction, and outdoor environmental properties (LEED). After viewing this program, you will be able to: Identify the different precast concrete systems used when designing school buildings; Discuss how different Precast/Prestressed components are used in school designs; Explain the properties of precast concrete school buildings; Use the aesthetic features of precast concrete to create structures that meet the unique needs of schools; and Understand the precast concrete design process.

Length - 1.0 Hour Credits - AIA 1.0 HSW LU PDH - 1.0

Hollow-Core Design and

Construction. In this program, 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). After viewing this program, you will be able to: Identify the different precast, prestressed hollow-core concrete systems; Explain the benefits of using precast, prestressed hollow-core concrete; and Discuss the benefits of using hollow-core concrete with owners and other designers.

Length - 1.0 Hour Credits - AIA HSW 1.0 LU PDH - 1.0

Precast Concrete Multi-Family

Housing. This program will provide designers an in depth overview of total precast systems so that they can better understand its potential for future projects. A total precast concrete system is about the benefits that apply to the entire structure. Integrating the precast frame and the architectural façade produce a system, as well as a methodology for delivering a property that is better, faster and more economical

Length - 1.0 Hour Credits - AIA HSW 1.0 LU PDH - 1.0

High Performance Architectural Precast Wall Systems. Architects

and others can learn about the numerous benefits of designing with a fully insulated, load-bearing exterior architectural precast wall system

Length - 1.5 Hours Credits - AIA 1.5 HSW LU PDH - 1.5

Insulated Concrete "Sandwich"

Wall Panels. Learn the construction techniques and architectural applications for Insulated Concrete "Sandwich" Wall Panels. The presentation will have a focus on the following topics: Types of wall panels and systems; Architectural applications and design trends; Wetcast manufacturing technique; Moisture migration and thermal bridging in typical wall systems and its affects on overall energy efficiency and resistance to mold/mildew; LEED" & Sustainability Aspects, and The THERMOMASS* Construction Process

Length - 1.0 Hour Credits - AIA 1.0 HSW LU PDH - 1.0

Environmental Advantages of Thin Brick in Construction. Using the

Brick Industry Handbook, Tile Council of America Installation Guide, PCI s Designers Notebook Series and The PCI Architectural Manual, this program explores the many different brick wall systems available to architects today. Our focus will be How is the environment affected when you choose a masonry appearance for your project? Topics we will cover include: Evaluating your wall s performance criteria; How to select the optimum wall system; Masonry material selection process; PCI s new standard for thin brick cast into precast panels; How to gain LEED Points using thin brick; and Environmental comparison between thin brick projects and full bed depth brick projects.

Length - 1.0 Hour Credits - AIA 1.0 HSW LU PDH - 1.0

Precast/Prestressed Parking Garage

Design. In this program, participants will learn the basics of precast concrete parking structures. Participants will also discuss: personal safety issues (lighting), fire safety properties, and the environmental benefits (LEED) of precast concrete. After this program, you will be able to: Identify precast, prestressed concrete systems using in parking structures; Explain the benefits of using precast, prestressed concrete in parking structures; and Make an informed material choice for your next parking structure design.

Length - 1.0 hour Credits - AIA HSW 1.0 LU PDH - 1.0



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