PCI MIDWEST focus

www.pcimidwest.org

spring 13

Precast Concrete is the Perfect Choice for Industrial and Warehouse Projects!

Precast concrete is being used more to help industrial and warehouse projects meet their high performance goals. Precast concrete structural and envelope systems successfully exceed the demands of warehouses, data centers, distribution centers, manufacturing facilities and food processing plants by providing cost-effective bay spacing, fire resistance, and durable, affordable building envelopes. 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.

Mike Johnsrud, Executive Director Phone: 952-806-9997 Fax: 952-806-9998

Baymont Inn & Suites

Developer and owner, AJ Spiegel, had always envisioned a scenic retreat on the beautiful Mississippi River. He started with a restaurant and a convention center, in which both structures were made of precast. And this last spring he completed that vision with the building of the Baymont Inn & Suites. The hotel was produced using 23,600 sq ft of 12" insulated precast panels and 18,900 sq ft of 8" hollow core. The concrete walls and floors provide the guests with a quiet and enjoyable stay. Guests can step out onto their precast, fully screened in patios to enjoy the amazing view.

The owner chose precast due to its naturally fire resistant nature and thermal efficiencies. Precast also offers quick construction and low maintenance.

Owner and Contractor: **Royal Oaks Development, AJ Spiegel** · Architect: **Design Build Structures, Peosta, IA** · Engineer: **DCL Consultants, Cedar Rapids, IA** · Location: **Bellevue, IA**

APC Advanced Precast Company

www.advancedprecastcompany.com

Rainwood Three

This 60,000 SF equipment manufacturing facility features precast concrete insulated and non-insulated wall panels. The precast exterior was chosen based on cost savings and accelerated schedule capabilities that would allow fast-track construction going through the unforgiving Midwest winter.

The exterior of the building consists of light and medium sandblasted grey wall panels. These panels also provide the durable surface required for the busy manufacturing facility. There are also ornamental structural precast panels adjacent to the main entrance on the facility.

Architect: **Slate Architecture, Omaha, NE** · Structural Engineer: **Schaffer and Stevens, Omaha, NE** · Contractor: **Divercon, Inc., Omaha, NE** · Owner: **Rainwood Three, LLC, Omaha, NE** · Location: **Omaha, NE**

CORESLAB® STRUCTURES (OMAHA) INC.

www.coreslab.com

Watts Electric Company Complex

For most building projects, initially there is a time consuming process during which the architect researches different building materials and then recommends a system to the owner that would best complement the needs of the project. The new Watts Electric Company Office/Warehouse/ Shop was not one of those projects. The owner has over thirty years of experience as a successful electrical contractor, during which he has seen and worked with every type of building material imaginable. So when he decided to build a new, state-of-the-art building to meet his businesses' growing needs for today and into the future, he knew exactly what he wanted to use – precast/prestressed concrete insulated load bearing walls.

His new building houses a diverse mix of specialty areas which include two stories of high-end offices for project managers, administrative personnel, and training. It also contains a large warehouse along with a shop area that incorporates a staging area, maintenance bays and a washout bay.

Owner: **Watermark Investments, LLC / Watts Electric Company** • Architect: **Dennis J. Lyon, Architects** • Engineer: **R.O. Youker, Inc.** • Construction Manager: **BD Construction - Columbus** • Location: **Waverly, NE**

While precast concrete's versatility easily met the different needs required by each area, it also proved to be beneficial with its innate characteristics, one of which being that it is a non-combustible material. A one-hour separation was required between the shop and warehouse and a two-hour separation was required between the office and shop. Not only did the precast walls provide the required fire ratings, they far surpassed them naturally, without having to do anything special to achieve the requirements.

The variable finishes of precast concrete also allowed for the different architectural looks that were desired – an industrial look for the shop area which then had to seamlessly transition into an upscale facade for the office area along the same exterior wall. The durability of precast concrete is extremely valuable in the shop/service/ washout areas and it delivers trouble-free maintenance. The shared precast wall between the office and shop not only serves as a firewall but also makes the bustling shop virtually silent to the office personnel. The same is true for the exterior walls as the structure is in close proximity to the noisy I-80 corridor but you would never know it once you step into the building.

Other benefits provided by the precast walls are thermo efficiency and a thermo-mass effect. This is most noticeable in the shop area where large overhead doors are regularly opened and closed but the thermo-mass effect of the interior wythe of concrete enables the shop area to quickly and efficiently get back to its set temperature.

In the end, a well-informed owner made the wise choice to use precast/ prestressed insulated wall panels that will benefit him, his employees, and his company for generations to come.

www.concreteindustries.com

The Waters on Mayowood

The Waters on Mayowood is a large, 175 unit senior living facility under construction in Rochester, MN. The project includes two separate wood frame buildings: a four story independent living apartment building, and an additional facility for assisted living and memory care units. The project also includes community amenities such as a club room, arts room and salon.

Contractor: **Engelsma Construction** • Architect: **BKBM** • Location: **Rochester, MN**

Two thirds of the above-ground structure of the project sits on top of underground heated garage space. A crucial aspect of design was the structure of the garage roof. It had to be strong enough to bear the load of four stories of apartments, while spanning the open space below. Precast planks were chosen over other materials options, including structural steel and poured-in-place concrete, for several reasons. Precast was the most cost-effective choice, and was available in shallower depths to maximize the height of the garage. It also met fire codes and aesthetic standards all by itself without requiring additional surface finishes or cladding. In addition, using precast planks would save days over waiting for cast-in-place slabs to set and cure before continuing with construction.

Finding a concrete supplier proved challenging for the contractor, Engelsma Construction of Minneapolis. "The hollowcore industry has been very busy, with a lot of this type of project going on. Finding someone who could deliver on schedule was a challenge," comments Brent Lindstrom, vice president of Engelsma and project manager for the project.

County Materials provided 49,119 sq. ft. of precast planks (including 330 pieces of 8" hollowcore, 217 pieces of 12" hollowcore, and 40 pieces of 8" and 12" solid planks), 367 linear feet of precast columns, and 1,524 linear feet of precast beams, in only 10 weeks from accepting the project to delivery. The Waters on Mayowood is scheduled for completion in January of 2015.

COUNTY MATERIALS CORPORATION

www.countymaterials.com

Linde Gas North America

La Crescent, Minnesota based Crest Precast has completed delivery of Phase I & II of a massive plant expansion at Linde Gas in Hillsboro, Oregon.

In 2013 Crest was contacted by Linde to supply precast trenches for a multi-million-dollar plant expansion. Three different size trenches were cast for Linde's piping to be routed through. Trenches were cast inverted with anti-floatation collars monolithically cast onto product. Precast and steel covers were also supplied to HS20 loading requirements. The precast trenches 1,875 mile trip to Hillsboro were shipped via fifteen semi loads without a hitch.

Engineer: **Gary Munkelt & Associates** · Project Manager: **Drew Nazimek: Linde Gas** · Location: **Hillsboro, Oregon**

The Linde Gas plant expansion will expand its supply of ultra-high purity oxygen and nitrogen. The gas products will be transported via pipeline to Linde customers in the semiconductor, electronics and solar manufacturing industries. Linde Group employs 50,500 worldwide and has been in Hillsboro since the early 1990s.

CPi
CREST PRECAST, INC.

www.crestprecastconcrete.com

Dakota Beverage Facility

Gage Brothers worked with Fiegen Construction throughout the design process to deliver an efficient insulated wall panel system for a new building for beverage distributor Dakota Beverage. Precast was selected as the building material due to its thermal efficiency, durability, and visually appealing exterior. Throughout the building, both 10" and 12" insulated wall panels were used in 34,300 square feet of precast. The 10" load bearing insulated wall panels were used in the warehouse, office, and dock bays. The building has a cooler for its beverages and 12" load bearing insulated wall panels were used with 100 linear feet of beams, 326 linear feet of columns, and a 10,000 square feet double tee roof.

The owner wanted an inviting building instead of a traditional warehouse but wanted to control the budget of the project. Utilizing a local aggregate, Gage Brothers added some coloring

Owner: **Dakota Beverage Company Inc.** · Architect: **Fiegen Construction** · Contractor: **Fiegen Construction** · Location: **Sioux Falls, SD**

in order to achieve a warm, tan color for the panels. In order to create visual depth, multiple textures were used to create a darker band around the entire exterior of the building. The exterior was designed to include accents in the panels highlighting hops, a traditional brewing grain. By recessing the design and using a different texture on the hops, the precaster accomplished the design goal without adding excessive expense to the project. Thin brick clad panels were used near the main office entry in order to enhance the inviting impression and design of the building.

Precast allowed the building to feature unique design features while being a cost effective option for both the design team and owner.

Gage Brothers

www.gagebrothers.com

Midtown Substation GIS/ EEE Building

Molin Concrete Products recently completed its portion of precast concrete on the Midtown Substation project with Adolfson and Peterson. Located in urban Minneapolis, this project is a shining example of some advantages of precast concrete: speed of installation as well as the ability to be erected during cold winter conditions. All of the structural precast components were installed in five days. Once the roof precast was installed, it offered the general contractor a heated, enclosed area to complete the interior of the project.

This project was an example of two precasters working together on the same project. One precaster supplied the structural hollow core plank for the roof, mezzanine and main floor area. Another precaster supplied the architectural wall panels on the exterior.

The project featured many mechanical openings that showcased precast concrete's design flexibility. This industrial building had significant live loads on the main floor that needed to be engineered. When coupled with the numerous mechanical openings, the precast (hollow core plank and solid slabs) had to be engineered to support more, with less. Many of the mechanical openings were cast in the factory, while others were cut in the field.

General Contractor: **Adolfson & Peterson** · Architect: **Architectural Alliance** · Engineer: **NSP Operating Area Engineers** · Location: **Minneapolis, MN** · Photo Credit: **Erik Molin, Molin Concrete Products Co.**

Hollow Core Plank: 5,400 SF
Solid Slabs: 1200 SF
Columns: 28 LF
Beams: 59 LF

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www.molin.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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Vice Chairman: John Saccoman, Molin Concrete Products Co.
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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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daniel.a.beskar@grace.com

If you are an PCI Associate Member and need to update your listing or if your company is interested in becoming an PCI Associate Member, please contact Mike Johnsrud at mike@pcimidwest.org.

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