

# PRECAST

**MAPA**  
Mid-Atlantic Precast Association

# Press

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## Recasting Precast

Sustainable qualities position precast concrete as a leader

Sustainability can be defined as “the ability to meet the needs of today without compromising the needs of tomorrow.” In no other industry has that sentiment been so top-of-mind as in the field of building and construction.

According to the U.S. Green Building Council, buildings consume 65% of the electricity generated in the United States and produce 30% of the national output of greenhouse gas emissions – realities that increasingly shape the choices made by developers, designers and architects.

As green building becomes more mainstream in the mid-Atlantic, the construction industry has moved aggressively to embrace sustainable materials and methods. In recent years, precast concrete has emerged as one of the strongest, most versatile tools available. Here are a few of the key sustainable attributes of precast that provide considerable value to builders and owners:

### Environmentally friendly manufacturing

The materials needed to make precast concrete – sand, stone, limestone, clay and water – are natural and readily available. In addition, the production process is highly efficient – in fact, the amount of solid waste produced at a precast concrete plant is just under 3% of the total quantity of concrete produced, and of that waste, 95% is recycled back into the production process.

### Durability

By definition, sustainable structures are strong and long lasting, making precast concrete the perfect fit. In the factory environment, precasters are able to achieve consistency in temperature and moisture that are not possible

in field-fabricated concrete. In fact, precast concrete can easily attain strengths of 5000 psi to 7000 psi or more. And, unlike other construction materials, precast will not rust, rot or otherwise degrade in the presence of moisture.

### Benefits during construction

A properly designed precast structure may use less material than other buildings and will include smaller components, longer spans, more open space and fewer on-site materials. In addition, because precast concrete is manufactured and formed away from the construction site, less dust and waste are created on-site and a smaller construction ‘footprint’ is required. Fewer trucks and less time are needed for transportation of building units.

### Energy conservation

About 90% of the energy used during the life of a building is attributed to heating and cooling. Here, precast concrete can offer significant savings. The thermal mass of precast concrete absorbs and releases heat slowly, shifting air conditioning and heating loads to allow smaller, more efficient heating, ventilating, and air conditioning (HVAC) systems. When insulation is used in architectural panels and sandwich wall panels, a building achieves even greater thermal efficiency – savings that can reach up to 25% on heating and cooling costs.

As builders, developers and architects continue to place a high priority on sustainability, there’s little doubt that we will continue to see precast concrete specified for a widening range of applications.

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# Sustainability Snapshots

Mid-Atlantic precast structures that highlight sustainable elements

## **Magic Theater, Largo, MD**

**Precaster: Oldcastle Building Systems**

**Key sustainable feature: Exceptional R-values, durability**

This 12-screen movie theater used 140 pieces of precast concrete comprising 51,800 SF of panel area. The selection of precast, instead of masonry or site-cast wall panels, resulted in the need for fewer on-site trades and a reduced overall construction time. In addition, the project enjoys outstanding energy efficiency, with an overall R-value of 23 through the use of 12" thick wall panels which had 6" of polystyrene insulation (3-6-3 sandwich panel). In addition to the wall panels, 10,850 SF of precast hollowcore plank was used with 2-hour and 3-hour fire ratings.



## **Brandywine Tower Condominiums, Wilmington, DE**

**Precaster: High Concrete Group LLC**

**Key sustainable features: High strength, fewer pieces required for construction**

This 22-story, upscale condominium tower overlooks a public park and the Brandywine River. A four-story parking structure surrounds the lower level. The project made use of bent column-beam sections which were used for seismic and wind loads, and which were key in supporting the cantilevered precast patio slabs. The unusual cruciform shape and height of the structure created a visual identity.

Involving precast engineers and estimators early in the process reduced the number of pieces required and reduced site time. When construction reached the tower area, a floor was erected every two days. To reduce the number of pieces, a high-strength structural "bent" was designed to support the structure. By using a micro-silica fume additive in the concrete mix, strengths of over 10,000 psi were achieved. This was one of the first uses of silica fume in a high rise in the United States.



## **Stone Ridge Commons, Shippensburg University**

**Residence Hall, Shippensburg, PA**

**Precaster: Nitterhouse Concrete Products**

**Key sustainable features: Long life-span, energy efficiency**

More than 230 Shippensburg University students are enjoying the advantages offered by a residence hall built with concrete and masonry. Designed by architects Noelker & Hull Associates, the features 8-inch precast concrete hollowcore plank flooring. The hollowcore acts as a thermal sink to smooth peak heating and cooling demands. It also offers built-in fire resistance and a longer lifespan than some competing systems.



"We were challenged by a very tight time table," says Dale Forney of the project development team at Brechbill & Helman. "They went up quickly, despite weather conditions, and allowed us to build bearing walls, set the concrete plank and begin working on the resulting enclosed floors below, saving a considerable amount of time."

## FAQ: Precast and LEED-NC



### Q? How does precast concrete contribute to LEED rating points in a newly built structure?

**A.** The USGBC developed the Leadership in Energy and Environmental Design (LEED) rating systems to move the market toward more stable, efficient, and environmentally sound approach to design and construction. The LEED-NC program, which focuses on new construction, assigns points to aspects of sustainable performance in six categories: sustainable sites; water efficiency; energy and atmosphere; materials and resources; indoor environmental quality; and innovation and design.

Precast can contribute significantly to a structure seeking to earn points toward a LEED-NC designation. Precast concrete:

- minimally disrupts the building site
- reduces damage to drainage paths and natural habitats
- reduces the heat-island effect because of concrete's light color
- improves energy efficiency and thermal comfort
- uses recyclable concrete and steel
- can use waste and recycled materials such as slag, fly ash, and silica fume
- is generally made from materials that are extracted and manufactured regionally
- does not off-gas, and does not need to be sealed or painted



This is only a partial list. For complete details, more information, and a downloadable LEED checklist, visit [www.mapaprecast.org](http://www.mapaprecast.org).

Have a question about precast concrete construction? Email MAPA at [info@mapaprecast.org](mailto:info@mapaprecast.org).

## Continuing Education



Presentations can be conducted at lunchtime and MAPA will provide a complementary lunch. A complete description of the available presentations can be found at [mapaprecast.org](http://mapaprecast.org). To schedule an office seminar e-mail: [info@mapaprecast.org](mailto:info@mapaprecast.org) or call 800.453.4447.

### • **Architectural Precast Concrete:**

Highlights include color and texture considerations, panelization techniques, proper detailing requirements, connection considerations and related topics.

### • **Hollowcore Plank:**

Fabrication and installation of hollowcore plank for multi-family housing and other applications. Detailing, fire resistance, acoustical benefits are also reviewed.

### • **Parking Structure Design and Construction:**

A comprehensive overview of precast/prestressed concrete parking structures including design, durability, drainage, detailing and other considerations.

### • **Total Precast Building Systems:**

A precast concrete building system integrates the precast structural frame and the architectural facade of a commer-

cial building. This program walks through the methodology as to how to deliver a project that is more economical and faster to construct.

### • **School Construction with Precast Concrete:**

New program focusing on how precast concrete construction can be utilized in K-12 and university projects.

### • **Sustainable Precast Concrete:**

Learn how precast concrete can help work toward earning LEED certification for your next project

• **Programs are accredited by AIA** or for equivalent PDHs for engineers or others continuing their education.



If you haven't visited lately, check out [www.mapaprecast.org](http://www.mapaprecast.org). MAPA has developed a content-rich website that includes recent additions devoted exclusively to the issues surrounding sustainability. This information has value to members and associate members, but also builders and developers, designers and architects, and students and the general public.

## Sustainability online: A wealth of Web-based tools available

With just a few mouse-clicks, you'll find new and notable resources, including:

- **LEED presentation**—This downloadable PowerPoint offers in-depth coverage of sustainable buildings with precast concrete, with an emphasis on LEED certification.
- **Sustainability FAQs**—This recent addition to the site provides details on a range of issues in an engaging Q & A format.
- **LEED checklist**—Download this PDF chart that provides an overview of how precast concrete fits into LEED categories, credits and points available.
- **Virtual tour**—This feature showcases dozens of projects, in many cases offering details on sustainable attributes and visual proof of the versatility of precast concrete.

In addition, you'll find links to external sites that provide additional information and sources like "Achieving Sustainability with Precast Concrete," an extensive article available for complimentary download.

## A.L. Patterson gains national recognition



A. L. Patterson Co., a MAPA associate member based in Fairless Hills, Pa., has been named the winner of the Associate Member of the Year award from the Precast/Prestressed Concrete Institute (PCI). This national award is presented each year to honor an Associate Member firm's commitment to PCI and its dedication to providing high-quality products and services to the precast concrete structures industry.

"PCI and its members have had a long and rewarding association with A. L. Patterson Co. and its devoted staff," says James G. Toscas, PCI president. "Its commitment to PCI has deep roots in the culture of the company, starting with its founder and continuing to this day as a new generation is moving the company forward."

Founded in 1972 as a sales organization by A. L. "Patt" Patterson, the company has grown into a

multifaceted operation by adding manufacturing and distribution services. The company prides itself on being the leading single-source supplier to the precast concrete structures industry. A.L. Patterson Co. was formed after CF&I Steel, where Patterson served as national sales manager, acquired the John A. Roebling Co. the first company to offer prestressed-strand technology in America.

"Patt spent 30 years promoting the use of prestressed strand to precast concrete companies and to general contractors across America, convincing them that this new technology had a future," Toscas explains.

A. L. Patterson Co. and Patterson himself were recognized for their achievements and received the Associate Member award during PCI's 54th annual convention and exhibition in early October.





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