



“The project consisted of two adjacent structures on a relatively small site. Utilizing precast concrete for the Ellis County Parking Garage allowed construction for the County Court House to begin without impacting the staging and lay-down area for the parking structure. This provided flexibility in the construction schedule, while reducing the overall cost for the project. The owner opened the project on schedule while incorporating enhanced signage and stair enclosures as a result of the precast concrete savings.”

–James E. Warner, P.E., Project Manager, Walker Parking Consultants



Precast Concrete Delivers

Aesthetics, Performance, and Value...*Sustainably*
For Parking Structures



Precast Concrete Delivers: Aesthetics, Performance, and



PARKING STRUCTURES

Precast concrete delivers advantages and benefits for everyone involved with parking structures, from the architect and engineer to the owner and the community. Today's parking structures must be designed, built, and operated sustainably, which has created some new challenges and goals. In many cases, parking structures are expanding their use from solely parking to mixed-use applications with retail, residential, or other uses. There is also an increased use of parking structure roofs for other applications, such as solar arrays and green roofs, which can become areas for employees, residents, and the community to enjoy the outdoors. Deciding to build with precast concrete can help you meet these challenges and goals more efficiently than most other building systems and materials, while contributing toward sustainable goals. Precast concrete delivers aesthetics, performance, and value . . . sustainably.

AESTHETICS

Aesthetics is part of how a structure fits in with its environment. Precast concrete offers the most aesthetic versatility and design flexibility of any building material or system today.

Versatility

Precast concrete offers maximum versatility in color, form, and texture to make your vision a reality. Since precast concrete is cast into molds, it can be shaped to any form, designed with a high-degree of detail, and essentially made to look like any material or incorporate other natural materials, such as stone and brick. For example, thin-brick veneer is actual clay brick that is cast into precast concrete components. It is available in all the colors, shapes, and sizes of traditional hand-laid brick and can be designed in any bond or coursing. However, with thin-brick veneer you receive additional benefits, such as reduced maintenance and site impact; increased speed of construction; and increased durability, as mortar joints are replaced with higher-quality concrete.

Design Flexibility

Since precast concrete components are essentially custom made, it offers incredible design flexibility such as long, open spans; custom shapes and forming; combination finishes on a single piece, such as brick, stone, and exposed concrete; and easy integration with other building systems and components. Precast concrete is also a structural material and can serve as both the cladding and the structural system, reducing time, materials, and costs.

Green Roofs

Parking structures today are often incorporating green roofs or other rooftop applications, such as solar arrays or wind farms. These help reduce heat-island effects and the structure's energy consumption. Precast concrete's inherent strength and design flexibility can easily support these loads and design conditions.

PERFORMANCE

Performance of parking structures goes beyond the design, and includes ease of use, life-cycle costs, and long-term durability.

Open Layout

Precast concrete parking structures provide for an open parking deck and do not require intermediate columns within the parking area. This allows for increased navigation by users and also provides for flexibility in resizing of parking spaces and layout as codes and needs change. Precast concrete's open layout also improves security by reducing hiding areas and increasing natural lighting.

Excellent Durability

Precast concrete is manufactured with high-quality concrete. This is inherent in the precasting



Value...Sustainably



process, which uses concrete mixtures with low water-to-cementitious ratios (0.32 – 0.40) and is easier to provide for appropriate curing procedures. This results in higher-quality concrete with compressive strengths of at least 5000 psi, lower permeability, and hence greater overall durability. This will contribute to increasing the service life of a parking structure, while reducing maintenance costs.

Low Life-Cycle Costs

Life-cycle costs include all costs related to a structure's construction, operation, and maintenance. The high-quality concrete used in precast provides better freeze-thaw durability, scaling resistance, and cracking resistance, and reduces chloride ingress and the potential for corrosion. All of these factors help reduce repairs.

Precast concrete does not require additional fireproofing and helps reduce maintenance costs associated with aesthetics. For example, precast concrete typically does not require painting. Other precast concrete finishes, such as thin brick, will not require tuckpointing.

VALUE

Parking structures must be built on time and on budget, while providing a great long-term value. Precast concrete helps you meet these requirements by offering great aesthetic and design flexibility, and rapid construction — all while helping to meet your sustainable goals and reducing risks.

Rapid Construction

Precast concrete is the fastest building system available. Components are manufactured offsite while other work is able to commence on the project site. It is delivered to the site in a just-in-time delivery process reducing the need for onsite storage and staging areas. This helps to reduce site impact by minimizing a project's footprint. Then it is erected quickly, with minimal impact from weather. Precast concrete can also combine multiple finishes into one panel, reducing the number of trades and detailing issues, as well as the risks associated with them.

High Quality

Precast concrete is manufactured offsite in a controlled environment, which provides optimal conditions for casting concrete. PCI-Certified precasters have extensive QA/QC procedures in-place and receive multiple, unannounced audits annually, conducted by independent engineers. This helps ensure that all procedures, equipment, and personnel are functioning appropriately to help ensure that they meet or exceed specifications. These quality systems also provide a chain of custody for each component, which is generally more difficult to achieve with cast-in-place concrete. Furthermore, precasters have dedicated and highly trained quality personnel who inspect every piece before, during, and after manufacturing. All of this results in a high degree of consistent quality. Often, using PCI-Certified plants helps waive requirements for special inspection, which can result in reduced project costs.

Helps Meet Sustainable Goals

Precast concrete can contribute to meeting sustainable goals for parking structures in several ways. Some of these include reducing site impact by not requiring storage or staging areas, as well as being able to be constructed quickly within a tight footprint. Precast concrete also uses recycled materials — both post- and preconsumer — such as supplementary cementitious materials, which can be used to reduce the amount of cement in concrete. Precast concrete is also regionally available, with PCI-Certified plants within 500 miles of any domestic project. Precast concrete, unlike cast-in-place, is recyclable, as well as reusable and can be designed to be deconstructed and used in other projects, providing the ultimate service life.

Overall, precast concrete delivers the aesthetic versatility needed, the performance required, and the value expected, all while helping you meet sustainable goals. Consult with a precaster today to learn more about how precast concrete can help you optimize the benefits of your project.



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