11 Ways Precast Concrete Structures Save Money

By: Laura Martin | Posted: November 10th, 2020 | Last Updated: September 26th, 2023
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Precast concrete benefits the bottom line of any project that involves construction with concrete. You can use it for **roofs**, **walls**, **floors**, **beams**, and **columns** and just about any other part of a building for less money than concrete cast on-site.

Concrete is involved in the majority of major projects and makes up **60 percent of the built environment**. At Nitterhouse Concrete Products, Inc. our customers often ask us questions about **precast concrete structures**, and we're happy to share information about the advantages they offer.

1. PRECAST SAVES MONEY

Most people's first question is how **precast concrete** can save money as compared to standard concrete construction. Many facets of precast concrete produce these cost savings, the most significant of which are the molds and forms used to make precast concrete.

Precast molds can be used hundreds of times before they are recycled and replaced. Steel forms used for casting precast concrete components typically last for multiple decades before they are removed from service! On-site concrete construction forms are not typically reused or recycled. Construction companies must build new molds for each project. Because of this, using precast concrete is less wasteful and more environmentally friendly than other options.

The Bureau of Labor Statistics keeps a "producer price index" that indicates the price differences between concrete that is precast and cast on site, sometimes known as in-situ concrete. The index shows on-site concrete as the most costly of three options, which included precast and prestressed-precast concrete.

A recent research project directly compared the costs of precast concrete to on-site pouring and found precast concrete slabs **save 23 percent** over cast-in-place concrete. Columns yielded a similar result, with **savings at 21 percent** less cost than on-site pouring. The study also established that contractors prefer to use precast concrete because of its favorable life-cycle cost.

Naturally, people wonder, "what is the cost of a precast building?" Price depends on many factors, including the size of the structure, what kind of finish the concrete has, the number of molds needed and whether the molds are standard or highly customized.

The Precast-prestressed Concrete Institute (PCI) advises that the bigger the panel, the lower the erection cost per square foot. For example, erection of a 100-square-foot panel could cost about $30 per square foot, whereas a 200-square-foot panel could cost around $20 per square foot.

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2. PRECAST CUTS TRANSPORT COSTS

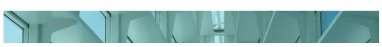
On-site concrete casting requires numerous workers, vehicles and equipment. The transportation of each person and piece of machinery to the construction site adds expenses to the project.

While **precast concrete panels** require transport when they're finished and ready, the operation is much cleaner and more efficient than the line of mixer trucks needed for **on-site casting**. Each company must conduct its own cost comparison to figure out exactly how much they would save, but fewer labor hours and reduced need to transport machinery always creates savings.

3. PRECAST IS VERSATILE

The construction of everything from small storage sheds to huge entertainment venues can involve precast concrete.
Commercial and residential parking garages, **office buildings**, **retail stores**, **hotels** and **schools** are just a few of the structures types built using precast concrete.

Slabs of different shapes and sizes serve a variety of industrial or architectural purposes.



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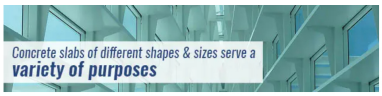

For example, the wide, tall panels needed to build the walls of a high-school gymnasium could be plain, gray, industrial-looking concrete that's covered by siding or another finish, or it could contain features such as architectural colored concrete in a multiple of finishes like sandblast or exposed aggregate, along with reveals (also known as rustication) to help to visually reduce the scale of the large panels. Architects might also make precast concrete a prominent feature of an elegant building such as a museum or hotel.

Precast architectural concrete can be the building façade, while its prestressed, precast cousin might serve a foundational role.

While concrete is typically gray or white, you can also choose from a variety of surface finishes, pigments, paints and aggregate sizes. The molds used in precast concrete, which can be customized, also enhance the surface and shape of the pieces. Precast concrete forms can create **columns**, round pipes, angles and other dimensional shapes such as concave and convex that may serve a specialty function or add style to the look of a building.

To produce different finishes, the molds are made of various materials such as wood, steel, rubber, plastic and fiberglass. The many possible material combinations mean that precast can more efficiently and cost effectively produce a variety of aesthetic and functional pieces.

4. PRECAST BENEFITS CROSS INDUSTRIES

Part of the beauty of precast concrete is that it isn't a secret exclusive to just one industry. It is useful for a variety of concrete building projects that span numerous industries, including:

- Multi-residential housing development
- Construction companies
- Office & Shopping Mall Development
- Government (public sector) entities
- Hospitality industry
- Manufacturing/production facilities
- Parking garages & parking decks
- Retail establishments

Regardless of the business or type of construction project, the savings from precast concrete come in many forms. They include increased safety, faster construction, a long-lasting building and an array of others that depend on the project.

5. PRECAST PREVENTS DELAYS

Precast concrete molds allow manufacturers to respond quickly to orders for projects whether they're large or small, elaborate or simple. Since precasters cast and cure the concrete within a controlled environment, the weather does not affect the production schedule as it does with on-site concrete.

Contractors and business owners alike know that time delays lead to lost dollars. The reliability of precast production and curing enables more secure profits as compared to on-site projects. The companies requesting the concrete for their project will also appreciate the reduced risk of delays.

Like cast-in-place concrete, there is quite a bit of planning and design that goes into a precast project. The project leaders must consider the architectural vision form a solid strategy before any molds are made or filled.

6. PRECAST OFFERS SUPERIOR QUALITY

Many variables contribute to the quality of concrete, but the production process for precast concrete enables control over more of them than on-site casting. In a precast plant, the mix is well-measured and exact, and the climate is controlled.

Experts monitor the concrete as it's made, cast and cured to ensure quality. Every concrete project is an investment, so it matters how long it lasts and how much maintenance it needs. The investment value decreases if the structure begins to crumble before expected, but investment value increases if the structure lasts longer than anticipated. Precast concrete typically requires less maintenance and has a longer life cycle.

Reputable precast manufacturers that commit to meeting high standards can earn certification through the Precast Concrete Institute (PCI) or the National Precast Concrete Association (NPCA). When seeking a potential partner for a precast project, PCI or NPCA certification can inspire additional confidence.

7. PRECAST IS IDEAL FOR VARIOUS STRUCTURE TYPES

The benefits of this type of concrete production apply to many **different kinds of precast structures**:

- **Beams**
- Box culverts
- Bridges
- Buffer walls
- **Floors**
- **Planks**
- Road pavement
- Roofs
- Settlement and treatment tanks
- **Stairs**
- Storm water treatment
- Sound-absorptive walls
- Walking surfaces
- **Walls**

Precast concrete is both versatile and reliable, which means that it is ideal for a variety of structure types.

8. SOME SITES REQUIRE PRIOR PRODUCTION

Concrete garages are constructed with precast concrete or cast-in-place concrete. The major difference between the two methods is that the precast concrete has pre-tensioned, prestressed strands within, and the on-site poured cast concrete requires post-tensioned, prestressed strands or rebar within.

For some projects, it may not be possible to do the post-tension stretching at the site safely. A garage that is positioned tightly between other structures or is located underground would require precast, pre-tensioned, prestressed concrete.

A lack of sufficient parking can cause congestion and unsafe conditions. Stakeholders of such projects are usually eager to resolve the situation. The affordability of precast concrete and the speed at which it can be produced allow these projects to be finished quickly.

9. PRECAST ENHANCES SAFETY

If an accident occurs during a construction project, employee and citizen safety can become endangered as can the finances of the companies responsible. The impressive safety record of precast projects helps to reduce these risks.

For example, a new rule from the Occupational Safety and Health Administration details how employers must protect their staff from exposure to the silica dust used to mix concrete. When you choose precast options, the dust-exposure issue is limited almost exclusively to within the precast plant. With on-site mixing and casting, some silica dust may escape and could be problematic for people with respiratory problems.

Workers cast precast concrete at ground level, which eliminates the need for them to work at heights and odd angles. While sometimes on-site casting is necessary, the risks associated with plant-cast concrete casting are significantly reduced. These aspects of precast casting produce fewer accidents than cast-in-place concrete.

Nothing beats the strength of concrete, and even more so when it's prepared consistently and cured in an ideal environment. This durability makes precast concrete an ideal material for structures that need to be secure and long-lasting.

10. PRECAST IMPROVES ENERGY EFFICIENCY

The materials and processes used in a building's construction play a significant role in energy efficiency. Precast concrete can be customized to allow for energy efficient elements such as recessed windows, vertical fins and shading.

Precast concrete enables manufacturers to include cast-in insulation, which they can also add post-construction. Concrete effectively retains heated or cooled air, which saves money on energy bills and reduces the overall energy load of the building.

11. PRECAST IS AESTHETICALLY PLEASING

Precast concrete can be produced to match the existing building when it's used in an addition project or made to blend with adjacent or neighboring structures.

The variety of processes that manufacturers can apply to the concrete makes it possible to replicate the look of many, if not most, surfaces. Precast concrete serves as an affordable alternative to expensive stone, masonry or tile since it can act as a backing for veneers of those finishes.

The molds can even incorporate elegant details while sticking to a budget with touches such as arches, cornices, decorative relief, quoins and more. Precast caters to diverse needs as it emulates many materials such as brick, limestone and various finishes.

OUR PRECAST CONCRETE

Nitterhouse Concrete Products, Inc. encourages questions about how precast concrete could benefit your business or projects. Our family business started making concrete in 1923. Over the years, we've added members to our team of professionals with expert-level knowledge in all things concrete from concept and design to usage and maintenance.

We serve mainly the Mid-Atlantic region from several locations and our 127,000-square-foot manufacturing facility. Quality is our focus every day and a cornerstone of our success.

Nitterhouse has completed **a wide range of projects** including **hotels**, **schools**, **dormitories**, **apartments**, and medical centers as well as **parking structures**, **retail centers** and **warehouses**. We enjoy helping clients realize the cost advantages of precast concrete and look forward to each project. Don't hesitate to **contact us about yours today**.

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