

# Solutions

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## MAKING CONCRETE DECISIONS -WHY GAMBLE?

Take a coin. Put "risk" on one side and "reward" on the other. Now, let's use that coin to determine the two key decisions that must be made in choosing how to build your concrete parking structure. Which material to choose – precast/prestressed concrete or cast-in-place concrete? Toss the coin. Will it come up risk or reward? Now choose the project delivery system. The coin is in the air. Does it land with risk or reward on the up side? Making decisions in such a manner means that the odds of a rewarding outcome are only 25%, with the element of risk coming in at 75%. Not a smart way to make business decisions.

There is a way to eliminate this type of gamble and make a truly informed decision. We start by understanding the facts behind each choice of concrete material and project delivery system.

Concrete construction is the method of choice on most parking structures for many solid reasons. But what type of concrete construction truly stands up to the tests of time, cost and durability? It has been our long-held belief that

precast/prestressed concrete offers dramatically greater benefits and superior construction over cast-in-place concrete.

The next choice is determining the project delivery system. In the traditional bid process, the owner warrants to the contractor that all drawings and specifications are complete and free from error. While this may be tempting with the promise of a low price, in many cases it can actually be a blueprint for disaster in terms of risk. Finrock, however, puts every aspect of the Design-Manufacture-Construct process under one roof to provide a single source of responsibility. Having one entity in charge of delivering the complete structure greatly tips the balance of risk and reward in favor of the owner.

To fully understand the benefits of concrete construction and project delivery systems, we will put the two most familiar choices of each to the test and show you how making two right choices can assure your project's success.

### IN THIS ISSUE

Discover why Finrock's proven Design-Manufacture-Construct process for precast/prestressed concrete offers dramatically greater benefits and superior construction over cast-in-place concrete.

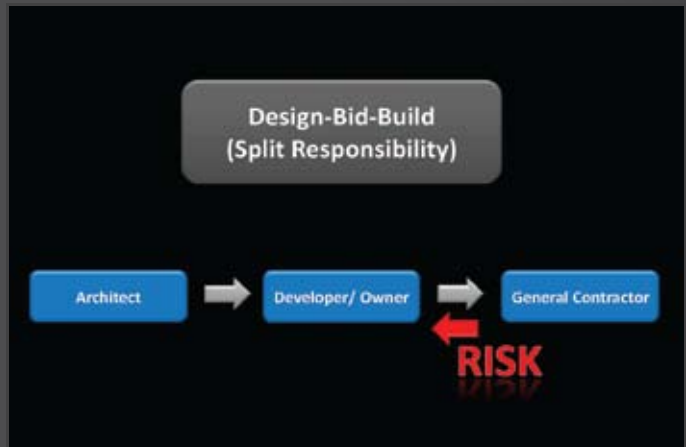
# The Project Delivery System Test



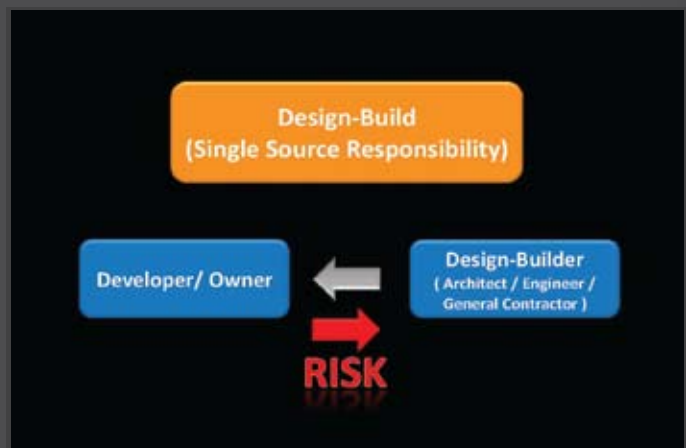
In the **Design-Bid-Build project delivery system**, an owner receives the construction documents from their architect, and in-turn issues them to the selected general contractor. In the process, the owner assumes the risk since they are warranting the accuracy and completeness of those documents. This single step **leads to over 90% of all construction change orders and litigation.**

Conversely, in the **Design-Build project delivery system** it is the Design-Builder who warrants to the owner not only the accuracy and completeness of the construction documents but also the finished building. This **eliminates the owner's risk of contractor initiated change orders and litigation.** Design-Build projects historically have shorter project durations and fewer legal claims.

Finfock takes the Design-Build delivery system a step further. Our unique Design-Manufacture-Construct project delivery system dramatically changes the delivery process. From initial design and early accurate lump-sum pricing to final delivery, one company does take full responsibility for delivering the complete building. Finfock optimizes all components and subsystems, which maximizes construction efficiency and eliminates the costly "fixes" in the field caused by miscommunication amongst multiple players.



In the Design-Bid-Build delivery system it is the owner who assumes the risk for the accuracy and completeness of the construction documents.



But, in the Design-Build delivery system it is the Design-Builder who assumes the risk for the accuracy and completeness of the plans, as well as the finished building.



# The Quality Test



Precast concrete components are produced with a high degree of quality and craftsmanship, which is not possible to replicate on a job site. Produced in a controlled and certified factory environment, precast concrete factories employ skilled workers and quality control personnel. The repetitive nature of this process allows precast plants to utilize a feedback loop to make constant quality and productivity improvements in their processes and products. Precast plants make significant investments in training and equipment, which results in superior architectural finishes on the exterior

of the building, straighter lines, and smoother, flatter, better draining floors. The precision-built steel forms produce an overall superior, aesthetically pleasing finish to the concrete product. Cast-in-place projects typically use wood forms made on site, often with unskilled labor for casting the structure. These wood forms produce a product that is often distorted, shows the wood grain and is dimensionally less accurate. The one-time nature of the cast-in-place process eliminates any of the efficiencies and improvements normally gained through a repetitive feedback loop.

# The Leak Test

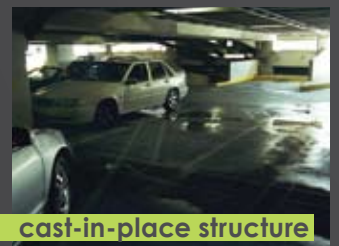


Any prestressed concrete is subject to volume changes caused by temperature, creep, elastic shortening and shrinkage. Therefore, buildings must have properly designed joints to allow for movement without damage to the structure. Precast concrete has significant advantages over cast-in-place in that the majority, if not all, of these forces have occurred prior to delivery of the concrete product to the job site. Therefore, **total movement in a precast structure is significantly less than in that of a cast-in-place structure.** Additionally, very small movements in structurally planned joints accommodate normal volume change. This provides a definite advantage over the large movements that occur at the widely-spaced expansion joints common in a cast-in-place structure. With the small, planned joints of a precast structure, leaks are prevented

through precise, high-quality sealing. Since Finfrock has engineered some of the smallest joints in the industry, it is economically feasible for us to use a more expensive silicone sealant with a longer warranty life. The industry standard sealant is a less expensive urethane product with a much shorter warranty period. If a leak does occur in the precast structure it can be readily identified and easily repaired. Because of the large movements in a cast-in-place structure, cracks at random locations frequently occur, which can be structurally damaging and require expensive, aesthetically displeasing repairs.



precast structure



cast-in-place structure

VS

# The Schedule Test



**It is easy to see why precast concrete has significantly shorter construction schedules than cast-in-place concrete construction.**

Precast employs a vertical construction method rather than the horizontal one used in cast-in-place. Since precast components are already cured before they reach the jobsite, they can be erected vertically - from the foundation to the roof - in zones. Thus, complete sections of the building are ready for subtrades to enter and begin their work, sometimes in just a few days. Also, since the manufacturing is completed off-site, many schedule items can be overlapped.

Cast-in-place concrete, on the other hand, is usually erected using a horizontal method. This means an entire floor must be poured and allowed to cure until the required design strength is achieved. This may take several weeks and requires the shoring to remain under the floors below. This keeps any subtrade work from beginning and severely limits the ability to overlap schedule items. Additionally, precast concrete construction requires less on-site labor, which reduces work-related safety concerns and parking problems. Usually precast concrete can be erected from within the building footprint, minimizing the need to close streets in busy urban areas.

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11-14-2004



12-8-2004



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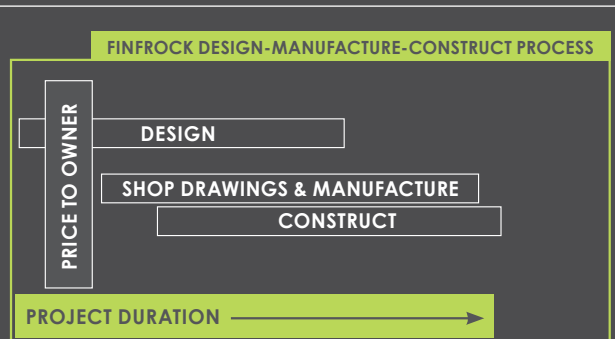
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**from parking lot to finished 500-bed student housing facility in 10½ months**

## Project Delivery Timeline

Finrock's D-M-C process compresses overall Design-Build duration as much as 25%



# The Durability Test



To achieve the long span requirements of a functionally and economically efficient parking garage, some form of prestressing is required. The two types are precast and cast-in-place. In cast-in-place, the tendons are typically unbonded and are susceptible to corrosion in exposed structures. Insurance company records have long verified that these unbonded tendons, when left exposed to the elements, are the source of the vast majority of prestressed concrete durability issues.

**Precast concrete attains a higher level of durability** because the prestressing tendons are directly bonded to high performance concrete. **This adds significantly to the long-term durability** of an exposed structure by providing improved protection against corrosion of the internal steel reinforcing tendons.



**cast-in-place structure with durability issues**



**UNIVERSITY OF SOUTH FLORIDA PARKING STRUCTURE**

# MAKING THE RIGHT FINAL CALL

The choice you make in structural material is a decision that will effect the life, quality and ultimate success of your structure. So why gamble? From minimizing owner risk to controlling leaks, we believe that precast/prestressed concrete is clearly superior to cast-in-place. Experience has shown that precast/prestressed concrete truly stands up to the tests of time, cost and durability.

The choice you make in the project delivery system is a decision that will also effect the overall success of your project. The traditional "bid" approach will serve to "compartmentalize" the process, leaving the owner ultimately responsible for what amounts to a collection of individual services. Do you really want what may amount to a "toss of the coin" determining the outcome of your project? Design-Build, on the other hand, makes the design-builder responsible for the delivery of a finished building to the owner, while placing responsibility and risk in the hands of the party best able to handle it.

By providing single source responsibility for the entire Design-Manufacture-Construct process, Finrock virtually eliminates your risk. Our precast/prestressed concrete experience enables us to deliver exactly the structure you need, when and where you need it. Finrock's project delivery system is unmatched in its quality and efficiency. Our process of continual improvement enables us to work faster and smarter on each and every job. This enables us to lower our prices while improving performance, resulting in more value for your construction dollar.

To **improve** your chances of success we believe combining precast concrete and Design-Build is the best choice, but to **guarantee** your chances of success, we believe choosing precast and Finrock's Design-Manufacture-Construct project delivery system is the only choice.

## Why leave the success of your project to chance?



**Let Finrock's experience with precast/prestressed concrete help your next project stand up to the test of time.**

**FINROCK**  
DESIGN-MANUFACTURE-CONSTRUCT®

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