



## Designer-Led Design-Build Advantages and Drawbacks

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An important part of the decision to construct a new facility is determining how to have it designed and built. Traditionally in the United States, an owner would hire an engineer to design the facility and then circulate the completed plans to several contractors for competitive bidding. Although there are many variations on this theme, there is a different and better method which is rapidly growing in popularity: design build construction, in which the same entity both designs and constructs the facility.

The design build team may be structured in many different ways. The design builder may be a single firm with both design and construction capacity in-house, or it may be a combination of two or more firms with complementary abilities. If there are multiple firms, they may be structured as a joint venture or with one of the firms prime and the other(s) as subcontractor. The critical aspect is that the owner contracts with one entity which has the responsibility for both designing and constructing the facility.

Design build is the fastest growing method of project delivery in the United States and is even more popular abroad. According to statistics compiled by the Design-Build Institute of America and F.W. Dodge DATALINE2, from April 1995 to April 1996 the number of design build contracts increased 103% over the previous year. Of a total \$212 billion construction market, approximately \$37.2 billion (roughly 18%) was design build. The strongest growth was in the category defined as "Industrial: plants, refineries, factories and warehouses," in which design build was up more than 300% from the previous year.

The growth of design build has been fueled by owners who perceive significant advantages resulting from design build compared to more traditional project delivery methods.

## Advantages

### Shortened project delivery time.

Owners perceive the shorter duration of design build projects as being the most important advantage design build has to offer. When the same entity is both designing and constructing the facility, procurement and initial construction can commence long prior to completion of the design. The last months of the design phase overlap the first months of the procurement/construction phase, resulting in time savings compared to the traditional end-to-end sequence. This both reduces construction cost and hastens the flow of revenue.

In a traditional project structure, in which the designer and contractor are different entities, it is also possible to begin

procurement and construction prior to completion of the design. This is called fast tracking. However, fast tracking has largely fallen into disrepute because of the potential for claims and change order abuses. Contractors often claimed that aspects of the design were completed in an unanticipated manner, resulting in sizeable extras.

### Single point responsibility.

Nearly as important to owners is the broad scope of the design builder's responsibility for the project. In traditional construction, problems with the project often result in finger-pointing, with the designer blaming the contractor and vice versa for problems in the plant's operation. Often warranties would not be honored and protracted litigation was necessary to obtain remedies because the designer and the contractor blamed each other for the problems.

In design build projects, the design builder has full responsibility for the outcome of the project, except for matters for which the owner is responsible. If a plant fails to develop the guaranteed number of kilowatt hours, the design builder is generally responsible, even if the parties do not know the reason for the failure. The designer and constructor are the same entity, so blaming each other does not excuse the design builder. Whereas in a traditional project, an engineer ordinarily does not guarantee the outcome of his work, in a design build project the engineer's work is subject to and subsumed within the design builder's warranty.

### Minimized claims and changes.

One of the laudable consequences of single point responsibility is the minimization of claims for extras in design build projects. In traditional construction projects, a contractor is ordinarily entitled to additional compensation arising out of errors, omissions or ambiguities in the plans and specifications. However, in design build projects, the designer and contractor are the same entity, and the design builder cannot request extra compensation on account of its own design mistakes or assumptions.

There may still be change orders on a design build project. If the owner changes its scope or program requirements or if the design builder encounters unanticipated concealed conditions, a change order is ordinarily appropriate. However, the single largest source of claims and change orders, problems with the design, is not available in design build projects.

### **Performance warranties.**

Another consequence of single point responsibility is that it is possible to construct detailed overall performance warranties and to render them meaningful with coordinated liquidated damages clauses. For example, it is common to require the design builder to warrant that the facility will yield an output of a certain number of kilowatt hours and to link that requirement with a liquidated damages clause in the event that the output falls short of the warranty. The liquidated damages could be quantified as the market value of each lost kilowatt hour, enabling the owner essentially to guarantee a minimum revenue stream. The ability to structure the design build contract with such meaningful remedies may be critical to project financing.

Overall performance warranties are generally not available in traditional construction projects because the constructor may blame the designer and vice versa for the failure. Only with design build is a single entity sufficiently responsible for the project to give such a warranty. However, even in design build projects, the performance warranty will generally have exclusions for defective feedstock or other issues for which the owner is contractually responsible.

### **Packaging other services.**

Some design builders have taken the concept of single point responsibility a step further, assuming additional duties in their contracts. It is common for design builders to provide turnkey services, which often include performance testing and personnel training, so that the facility is ready to operate when the owner "turns the key." Other design builders offer financing for their projects, either from a lending source or via ownership and leaseback agreements. In some industries, design builders establish operating divisions, offering to design, build and operate the facility.

### **Continuity between designer and constructor.**

For some facilities, particularly those involving new technologies, it is critical for both the designer and constructor to understand the technology and related processes. Plans and specifications can communicate the design concepts, but they do not transfer expertise from the designer to the contractor. In design build projects, the same entity that had the expertise to design the project also constructs it.

Even for facilities that do not rely on new technology, there are often communication problems between the designer and the contractor. Communication difficulties may result in

an overly formal or adversarial approach to the project, usually to the owner's expense and detriment. In a design build project, the designer and contractor are the same entity, working toward the same goals, unlikely to suffer the same kinds of communication problems.

## **Drawbacks and Obstacles**

Experience with design build construction has shown that it suffers from some drawbacks compared to traditional projects. Also, in some places, there are some obstacles to the use of design build project delivery methods. These drawbacks and obstacles include:

### **Loss of checks and balances.**

In traditional construction, the owner retains the designer during the construction phase to act as a watchdog to help ensure that the facility is built as designed. The designer contracts directly with and owes his loyalties to the owner. In design build projects, the designer and contractor are on the same team and are often, at least technically, adverse to the owner. The degree of adversarialism may vary with the nature of the contract (lump sum contracts are more adversarial than reimbursed cost contracts) and may be reduced if the design builder is hoping to do other projects for the owner.

Nevertheless, the changed incentives may pose problems for an unsophisticated owner. Owners in design build projects would be well advised either to have experienced engineers in-house or else to retain an outside consultant for this purpose.

### **Less owner control.**

Because the designer is on the contractor's team in a design build project, the owner may find itself without access to the kind of information that it would have on a traditional project. Although the design builder may issue regular status reports, the information in them is usually less useful to an owner than what would ordinarily be provided by an engineer loyal to the owner. Similarly, the relationship between the designer and contractor may cause plans to be prepared with less than the traditional degree of detail, which may adversely affect the owner's ability to understand and control design intent.

This drawback can be overcome by advance planning. The design build contract should specify the kinds of information and detail that the design builder must supply to the owner. The owner must have available sufficiently

knowledgeable and experienced personnel or consultants to understand and analyze the information provided by the design builder.

#### **Difficulty obtaining competitive bidding.**

Design build projects do not lend themselves easily to competitive bidding. The design builder is chosen at the commencement of the project, and there is ordinarily little competitive pressure on the contractor. However, to some extent, competitive pressures can be generated by requiring that each trade contract be competitively bid. And the compensating advantage to the inability to competitively bid the project as a whole is that a firm price and schedule can be guaranteed far earlier than in traditional construction.

#### **Institutional obstacles.**

Particularly in some areas in the United States, state and municipal laws and regulations severely limit or restrict the use of design build. Many states have competitive bidding requirements for public projects or projects funded with public money. Licensing restrictions for design professionals and contractors may restrict the types of design build business structures. Insurance and bonding may be more complicated to arrange in a design build project. However, public laws and regulations have been changing as the popularity of design build continues to grow, and the insurance and bonding industries are in the process of developing new products tailored to design build.

## **The Design Build Contract**

In design build projects, the owner's most important protection is the terms of the design build contract. This is particularly true in light of the loss of checks and balances. It is beyond the scope of this article to provide a list of important contract provisions, but owners should carefully consider the following observations and advice.

Each design builder's standard proposal or contract form always favors the design builder. The very structure of the interactions between the parties is typically designed to favor the design builder. For example, even seemingly innocuous provisions pertaining to owner approval of the design at various stages can be used to transfer liability from the design builder to the owner when construction in accordance with the plans fails to achieve the desired results.

The standard form contract documents prepared by trade organizations (such as the AIA, AGC or EJCDC) rarely serve owners' purposes without substantial modifications. By their nature, they must be uniformly applicable and are therefore too generic for many types of projects. Furthermore, they are usually drafted to favor the trade organization that publishes them.

An owner embarking on a design build project would be well advised to work closely with a lawyer experienced in projects of that type to prepare a customized design build contract. The contract should be based in part on information and provisions in the design builder's proposal. However, it should avoid incorporating the proposal in its entirety and should carefully craft the parties' rights and remedies so that it reflects their actual assumptions and understandings about the project. Contrary to the practice of many members of the construction industry, the contract should be treated as the essence and embodiment of the parties' agreement, not as a collection of boilerplate provisions to be negotiated after the deal has been made.

## About the Authors

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