

# Design-build becoming a revolution

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During the last half of the 20th century, interest in non-traditional construction procurement methods grew as owners demanded quicker delivery times and earlier knowledge of construction costs. Alternative procurement approaches included design-build, construction management - both at risk and for fee - and bridging.

Design-build is not new. Its roots are found in medieval master builders. The key aspect of design-build is that the owner has a single point of responsibility for design and construction, potentially reducing litigation and claims.

Design-build has shown a steady market penetration in some countries. In the U.S. and the U.K., it grew from less than 10 percent in the early 1980s to more than 30 percent today. However, owners must evaluate procurement strategies to determine their suitability for each project. Each procurement method has strengths and weaknesses. An organization's culture and staff, combined with the project goals, helps determine the best procurement method.

## Five Keys to Successful Design-Build Projects

- Match the method to the project. Design-build works, but it may not be the best procurement method for every client or every situation.
- Get the requirements right. Design-build begins to lose some of its advantages when changes occur during the contract period.
- Maintain good communication. The owner and design-builder must have clear, response communications internally and between themselves to keep the project moving.
- Pick the right provider. Besides the usual credentials, verify the designers and constructors are really a "team."
- Stay involved. Design-build is not a "hands-off" method. It requires continual owner involvement.

Design-build requires a single entity for design and construction. Traditionally, design and construction are undertaken by separate companies in most countries: architects and engineers provide a professional service and contractors provide a product. To provide design-build, constructors and designers form joint ventures and contractor led teams employ designers as a subcontractor. Contractors tend to lead design-build alliances because they have the bonding capability. Where design-build has a good share of the market - as in the U.K. and the U.S., design-build firms have in-house design and construction skills.

<b>Table 1: Design/Build Use and Trends</b>						
	Are design-build contracts common?	Estimated use of d-b in private sector	Estimated use of d-b in public sector	Trend in use of d-b in private sector	Trend in use of d-b in public sector	Does standard d-b contract exist?
<b>EUROPE</b>						
Austria	No	3%	2%	↑	↑	No
Belgium	No	5%	5%	↑	↑	No
Denmark	Yes	30-50%	10-30%	↑	↑	Yes
Finland	Yes	10-15%	0-5%	↑	↑	No
France <sup>1</sup>	Yes	85-95%	85-95%	↔	↔	Yes
Great Britain	Yes	40-50%	25-35%	↔	↑	Yes
Greece	Yes	50%	70%	↔	↓	No
Ireland	No	2-3%	2-3%	↔	↔	No
Italy	No	0-10%	Very little	↔	↔	No
Norway	Yes	85%	15%	↔	↑	Yes
Russia	Yes	30-40%	10-15%	↓	↔	Yes
Spain	No	30%	10%	↑	↔	No
Sweden	Yes	40-50%	20-35%	↓	↔	Yes
<b>AMERICAS</b>						
Brazil	Yes	30%	0% <sup>2</sup>	↔	na	No
Canada	Yes	na	na	↔	↔	Yes
Mexico	No	60%	40%	↔	↓	Yes
USA	Yes	25-35%	5%	↑	↑	Yes
<b>PACIFIC</b>						
Australia	Yes	30-40%	20-30%	↔	↓	Yes
China	Yes	5%	1%	↑	↑	Yes
Japan	Yes	30-35%	0% <sup>3</sup>	↑	↑	No
New Zealand	No	5-10%	2%	↔	↔	No
Thailand	Yes	50%	30%	↔	↔	No
<b>LEGEND:</b> ↔ Steady, ↑ Rising, ↓ Falling						

*Notes to Table 1:*

- 1. Even France's traditional procurement method can be considered as a form of design-build. The project is bid using drawings that are 50 to 60 percent complete by U.S. standards --- providing basic design intent and performance specifications. Bidding contractors complete the design. Consequently, 'Design & Build' is not considered as a different procurement option. Bridging in the U.S. market is a modification of this method. Design-build (turnkey) is known as Clé-à-Main in France.*
- 2. Not feasible in the public sector.*
- 3. The public sector must purchase design and construction separately, in principle. The purchase of design and construction as one package is tentatively proposed.*

The degree of integration between the designer and constructor is a key component of design-build. Teamwork is important. Providers who can demonstrate established communication channels and relationships among team members should have an advantage in the fast-paced design-build process. A single company may pose less risk than a type of alliance. Consider the risk of litigation between them.

**Table 2: Facility Types Likely to Use Design/Build**

	Manufacturing, Distribution & Warehousing	Office buildings	Retail	Education	Hospitals	Multi-family residential	Justice facilities	Utilities	Roads/Highways	Rail
<b>EUROPE</b>										
Austria	▶	▶	▶	▶	▶	∅	∅	▶	▶	∅
Belgium	●	●	▶	∅	∅	●	●	▶	∅	∅
Denmark	●	●	▶	∅	∅	●	▶	▶	▶	▶
Finland	●	●	▶	∅	∅	●	∅	▶	∅	∅
France	●	●	●	●	●	●	●	●	●	●
Great Britain	●	▶	●	●	●	●	▶	▶	▶	▶
Greece	∅	●	▶	●	●	∅	▶	∅	▶	∅
Ireland	▶	∅	▶	∅	∅	∅	∅	▶	∅	∅
Italy	▶	∅	▶	∅	▶	∅	∅	∅	▶	▶
Norway	●	●	●	▶	∅	●	▶	▶	∅	∅
Russia	●	▶	▶	∅	∅	●	∅	●	●	∅
Spain	▶	▶	▶	∅	∅	▶	∅	▶	●	●
Sweden	●	▶	●	▶	∅	▶	▶	▶	∅	∅
<b>AMERICAS</b>										
Brazil	▶	▶	▶	▶	∅	▶	∅	▶	∅	∅
Canada	●	●	●	∅	∅	▶	∅	∅	∅	∅
Mexico	∅	∅	∅	∅	∅	∅	∅	∅	∅	∅
USA	●	▶	▶	▶	∅	▶	▶	▶	▶	∅
<b>PACIFIC</b>										
Australia	●	▶	▶	∅	▶	∅	∅	▶	▶	▶
China	●	▶	∅	▶	▶	∅	∅	∅	∅	∅
Japan	●	▶	∅	∅	∅	▶	▶	∅	∅	∅
New Zealand	●	▶	▶	∅	∅	▶	∅	∅	∅	∅
Thailand	●	▶	▶	▶	∅	▶	∅	∅	▶	∅
<b>LEGEND: ● Likely, ▶ Maybe, ∅ Not likely</b>										

Communication is key to a successful design-build project. Early involvement by the owner with the design-build team is important. The owner needs a single voice with access to the expertise and knowledge of all of the owner's team. Speed - compared to traditional methods - is the important cost savings component. Responsive communications and quick decisions keep the project moving.

Owners should avoid thinking that design-build requires less involvement than traditional methods - after all price and scope are settled. The design-build process still requires management from the owner. Proactively manage with regular status meetings and update reports. Implement a process for requesting and approving changes that fully discloses cost and schedule impacts. There are inherent risks when moving quickly without a full design. Owners must be comfortable with the risks and be savvy in their approach to mitigating them.

Guaranteed maximum price (GMP) is often associated with design-build. However, design-build does not limit contract term methods - fixed price/lump sum, GMP, cost-plus fee and unit price. Providing some degree of price certainty early in the process is an advantage of design-build touted by its proponents. It does allow owners the opportunity to select based on best value for price rather than low price.

Post-contract variations create potential cost problems. It is important to clearly define requirements in the Request for Proposal (RFP). Engage the right people from the beginning to create a complete and correct requirements definition. Design-build works well for owners who know what they want and can convey it in the RFP -performance rather than prescriptive specifications.

Our survey found that the detail of a design-build RFP varies greatly. RFPs may provide little more information than a program/brief used to procure design services - a list of required spaces with their sizes and some requirements for materials and quantity, but no designs/plans. At the other extreme, RFPs may approximate a schematic design submittal. This would begin to look like bridging.

It appears that market penetration and facility types using design-build may correlate with level of RFP detail. Higher market penetration and use in more complex projects may lead to increased detail in the design-build RFP.

### **Projects Using Design-Build**

A common stereotype is that design-build projects are simple - usually manufacturing and warehousing buildings. This may indeed be the case in some countries - Italy, Japan and New Zealand. It is more mainstream with owners using it for large, complex projects in many countries - Denmark, Finland, U.S. and Mexico. Steve O'Neill of Rawlinsons in Australia notes that design-build projects in Australia "tend to be large, complex projects for the public sector (e.g., Melbourne Commonwealth Games housing, railway station redevelopment, toll roads). Generally, they are simple projects for the private sector."

The growing use of public-private partnerships (PPP) may contribute to this distinction between use of design-build in the public and private sectors. (See Intelligence Watch.) Henk Heirbaut of BoPro in Belgium says, " design-build is used to build office buildings or court-houses by means of a lease contract. It is then a design-build-finance-transfer contract." Increasingly, it is common as part of PFI (Private Finance Initiative) funded schemes for the public sector in the United Kingdom. The multi-phase renovation of the Pentagon is a good example of a complex public sector design-build project.

Design-build has lower penetration in the public sector market than the private sector. It often

requires legislation to allow its use. Its use is growing in the public sector, particularly where it finds support from the party in power.

Worldwide, the trend for using design-build is positive judging from the responses to our survey, but its growth is not universal. The two largest construction markets - U.S. and Japan account for nearly 40 percent of world's construction value - see it as a growth market. Design-build already has about one-third of both U.S. and Japanese domestic markets. France, Great Britain, Italy, Canada and Brazil -other top-10 construction market countries - believe market share for design-build may have peaked for now.

The construction industry of fractured design and construction activities -some cite the Industrial Revolution as its origin - may well be experiencing a shift toward integration as design-build grows. Industry mergers often involve construction and design firms creating an integrated company to serve the design-build market.

Are we seeing the beginning of a shift in how the construction industry is organized? Should design-build dominate the construction market? Will distinct design and construction companies become the exception, not the rule? There is already a consolidation of design and construction firms to provide integrated design-build services. Perhaps, if the proponents of design-build are right, the construction sector will follow a more industrial model of integrated design and production in the future.