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SPECIAL REPORT: MASTER PLANNING

Bridging the Oversight Gap

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Design-build can formally be defined as the process by which a project's design and construction are contracted to a single contractor; however, when experiencing time and financial constraints, proponents may describe it as the project delivery method causing the least headache. In the last 15 years, the actual or desired advantages cited by project owners have fueled the growing popularity of this process. In reality, contractors offering turnkey solutions and liability assumption are too tempting for most owners to resist.

Accountability is one of many beneficial aspects of design-build cited by owners. From a legal and financial perspective, the transference of liability to contractors is an appealing concept. Communication improves in a design-build project, as exchanging information with one source reduces the risk of errors when making scope adjustments. A reduction in schedule times also can occur as a result of simultaneous execution of design and construction. Lastly, the potential exists for reduced costs, as a design-build team can negotiate costs and offer the owner less expensive options.

However, for every enthusiastic champion of design-build, an equally ardent opponent can be found. The standard key advantages cited by owners have not been able to offset completely the documented risks associated with this delivery method. For instance, design-build can lead to a lack of design oversight as owners relinquish design control to the contractor. Design discrepancies are realized post construction, and potentially significant financial repercussions can occur as a result

of insufficient oversight by the owner. At the same time, owners can experience expensive material replacement or maintenance costs in the future due to initial poor quality selections by the contractor.

Additionally, the absence of oversight can undermine the inherent checks and balances between design and construction teams. When design and construction teams are combined, traditional independent, unbiased quality assurance and quality control practices may be compromised. Finally, scope changes can result in cost increases and budget overruns, particularly in projects lacking design maturity.

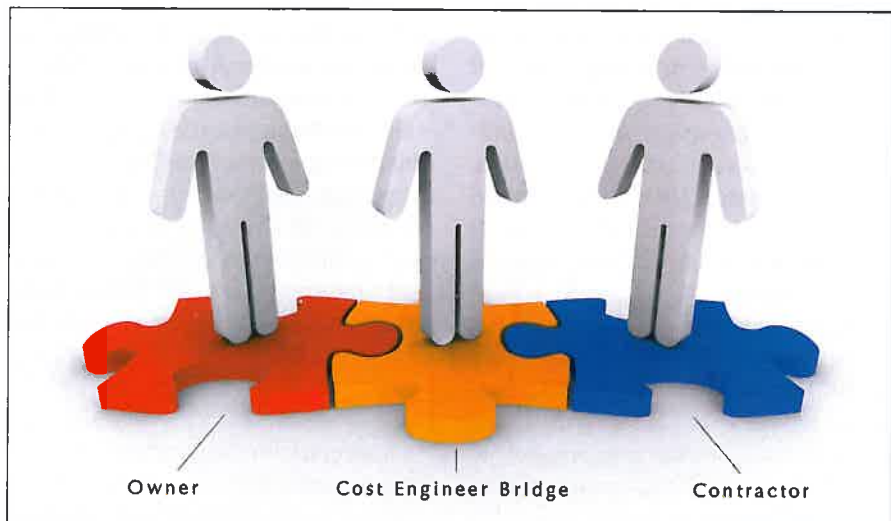
Despite one's support or opposition of design-build, a staunch reality looms: A potentially hazardous oversight gap exists between owners and contractors.

Upgrading the Design-Build Model

Although builders assume the majority of liability in the design-build process, owners, specifically those with ties

An effective cost engineering and controls system is critical to overcoming potential disadvantages of the design-build delivery method.

Project stakeholders including the U.S. Army Corps of Engineers have incorporated cost engineering teams to help minimize the risk of overruns of cost and time.



to public funds, negate "due diligence" when real-time, 100 percent oversight is omitted. With the country immersed in a volatile economic climate, federal agencies are being cautioned to achieve construction goals and limited liability without financial repercussions for stakeholders. Demands for transparency and unbiased business practices are heard daily throughout the media as well as the halls of Congress, the intent being assurance to tax payers that all monies expended on federal projects are validated.

Now that more than a decade of lessons learned have been collected, the pros and cons of design-build are serving as a blueprint for success. Innovative professionals, through oversight, are assisting agency owners with the management of cost, schedule and risk. For example, the U.S. Army Corps of Engineers (USACE) regularly executes complex projects on behalf of other federal agencies. Responsibly, USACE has repeatedly incorporated cost engineering teams as a bridge to ensure the execution of lean cost practices by contractors.

The Cost Engineering Bridge

Tools that enable owners to achieve financial control of projects include owner's representation; thorough technical scope development; detailed cost estimating and budgeting; schedule development and management; value analysis and engineering; earned value management systems; and risk analysis and management.

According to the USACE Jacksonville District, the district's cost engineering branch plays an integral role in the project delivery team during all project phases, from planning through completion of construction. As the second-largest civil works district in the nation, this has enabled USACE Jacksonville District to control time and expense on multi-million-dollar projects throughout their region.

The design-build model, while not perfect, does not have to be abandoned to cure the issues cited by its many critics. Although a substantial list of cons suggests that portions of the model are inherently flawed, the many advantages of the process suggest it is still a

viable option. Accordingly, applying from inception an external, unbiased cost engineering bridge can eliminate the oversight deficiency that most critics cite as the culprit in unsuccessful design-build projects.

Cost Engineering

In early 2001, a U.S. industrial project began to encounter numerous publicized design-build issues. Reportedly, lack of oversight, "fast tracking" of construction and defective equipment supplied by the contractor ultimately led to a \$4 billion increase in the project completion cost estimates. Other factors that enabled continued cost growth included a combination of estimate maturation, project execution performance issues and unplanned technical scope growth.

USACE, on behalf of the agency owner, successfully inserted a cost engineering bridge in late 2005. This step was taken to apply a financial tourniquet and needed oversight. Through the provision of owner's representation, cost-estimating reviews, cost analyses, support negotiations, cost-risk analyses, value engineering and schedule reviews, the agency owner obtained data to control its project and reduce unnecessary spending going forward.

Institutionalizing Oversight

The project initially received cost, risk, schedule and technical scope validations. The information was derived from a review of relevant baseline information, planning documents, project status reports, technical documents and procedures provided by the agency owner and its contractor. The cost engineering bridge independently assessed relevant technical, cost and schedule areas. This evaluation equipped the agency owner with pricing accuracy, knowledge of material usage and realistic timelines for execution. An owner with a cost engineering mechanism in place to monitor each phase of design and construction protects stakeholders from expenditures stemming from errors.

Preventing Lifecycle Costs

Confirmation of equipment durability and compatibility is essential. In the case of the sample project, the absence

of this step led to costly repeat construction. Having an independent compatibility and quality evaluation of materials is a preventive measure proven to yield future and in some cases immediate cost savings to owners. Contractors purchasing low-grade materials will, over time, saddle owners with repetitive replacement costs due to low product durability.

Managing Cost Increases

Assessment of the sample project concluded with a conditional validation of the baseline. There were 12 findings in the area of risk management, project controls, design review, project execution plans and hazard analyses. Ultimately, 25 observations and more than 40 specific recommendations for project improvements were reported. The cost engineering team assisted with the development of a detailed corrective action plan and oversaw efforts to resolve many of these findings. However, the maximum financial benefit to this and any owner is realized when a check and balance process is installed at a project's inception. A cost engineering team simultaneously verifying contractor submittals results in:

- independent assurance that proposed budgets and services are aligned;
- identification and clearance on materials to be utilized by the contractor; and
- oversight of designs up to 100 percent completion, preventing construction errors and unnecessary expenditures due to costly corrective work.

Closing the Gap

While there is no perfect project delivery method, there are processes and specialized tools available to optimize an owner's execution choice. The higher standard of care placed on federal agencies requires that more be done to safeguard public funds. From inception to completion, the most responsible approach on any government project begins and ends with an effective controls system. TME

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