Finding the Value in Value Engineering: When to do it and What to expect from it

By Tom Dionne, Vice President of Preconstruction and Design

In our first white paper we defined what value engineering (VE) is; to recap – Value Engineering is an additional layer of cost analysis that the construction manager can perform to arrive at an improved functionality-to-cost ratio, without sacrificing quality. This analysis can consist of budgetary cost information for different systems or materials that may be desired but not required, alternate systems/materials, and corresponding cost comparisons.

It's an important piece of the overall preconstruction estimating picture because it provides the owner with information from which they can make educated decisions and thereby limit the need for costly design or scope changes.

This whitepaper will address two central topics:

1. ***When is the best time to perform value engineering analysis***
2. ***What should owners and architects expect***

Case Study 1, from our previous white paper, will serve as the basis for our analysis. We will outline the ways VE was approached during the preconstruction stage of this project and identify alternative ways to better align expectations with opportunities for cost savings.

Case Study 1 Recap:

An educational institution wants to build a new, ground-up 50,000 SF addition to their existing building. The architect has completed Schematic Design (SD) for this project.

The school issues a Request For Proposal to qualified Construction Management (CM) companies. Each CM is asked to provide a conceptual budget for the project based on the SD set of architectural drawings. A specific list of VE items has been provided as part of the RFP. Each CM is required to include pricing for all of the items on the list as part of the budget.

Analysis:

When approached this way, it is difficult to identify which VE items are relevant to the project, since only the Schematic Design phase has been completed. In the context of Case Study 1, the design is not far enough along for the CM to provide the level of VE analysis needed to assist in decision-making. This in turn, undermines the owner and architect's ability to clearly identify areas where design changes should be considered.

Initial VE conversations during the RFP process can help the owner and architect assess how a CM will approach the project. However, the owner should consider if the CM has enough information from which to offer meaningful VE suggestions. This is especially important when the project is over budget.

VE becomes an exercise in speculation rather than a way to gauge potential cost savings. In a competitive bid process, this approach can make it harder for the owner to understand if there are areas for cost savings and what those might be. In reference to Case Study 1, the key takeaway is understanding that this is not the most effective way to approach Value Engineering.

There are other ways VE can be approached more effectively in this situation.

First and foremost, it's important for the owner to identify what they are hoping to achieve. **The goals an owner should prioritize at this stage can include:**

A better understanding of project costs

How to achieve cost savings without sacrificing quality

Assess how a Construction Manager will approach VE

In the context of Case Study 1, the design is not at the point where meaningful VE ideas can be evaluated – even though that's what's being asked for. In this scenario, it would be more effective and worthwhile for the owner to select a CM and subsequently work through a value engineering effort involving input from the architect and CM.

Taking these factors into account, it's important to understand the role timing plays in determining what results owners can and should expect from the VE process.

The earlier the CM is brought on board the better, since it's easier and more efficient to address any changes early in the design process. The further along design gets, the more time (and money) will be spent to make design changes. Furthermore, once selected, the CM can provide the owner and architect with alternate systems/materials as well as information on product availability, lead times, reliability, and when items are required to be on-site.

Ideally, Value Engineering should take place throughout the phases of design, as part of developing the cost model. The cost model serves as a guide and budget reconciliation tool as the project design progresses, as scope and systems become more defined and as the contract drawings and specifications become more refined. Any exclusions and/or inclusions are tracked by the CM as part of developing the cost model so the owner receives the most accurate information possible from which to make informed decisions.

The owner can also ask the project architect and CM the following questions to get a better understanding of how extensive the Value Engineering effort will be and what they can expect:

1. At what stage is the design process?
2. Does the CM have enough information to develop a conceptual budget and VE suggestions?
3. Will the CM obtain input from subcontractors and vendors/suppliers to develop the budget?
4. To what extent will the budget be based on historic unit cost information?

In conclusion, the maximum benefit can be reaped from VE early on in the design process. This requires the owner to select a CM to work with at the same time or soon after engaging a project architect. This way both the CM and architect can identify areas of cost savings and design changes the owner may want to consider. This cost analysis can help the project team by proactively providing pricing information, thereby enabling ownership to make decisions upfront, limiting the needs for costly design or scope changes later on.

About the author

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A graduate of the University of New Hampshire with a degree in civil engineering Tom's interest in architecture led him to the construction industry, where he has served in many roles from design to estimating and management. Tom joined Connolly Brothers in 1995. As Vice President, Tom leads all preconstruction budgeting, preliminary scheduling, subcontractor bidding, and final development of contract amounts. Drawing on decades of industry experience, he works closely with clients to develop comprehensive preconstruction strategies that support successful project outcomes.

About Connolly Brothers Inc.

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