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Issue: 09/24/2012

Target Value Design Makes Lean Construction Work Better

09/19/2012

By *Jim Parsons*

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Photo courtesy of Balfour Beatty
Continual evaluation by the entire project team can lead to ongoing solutions that achieve the owner's goals.

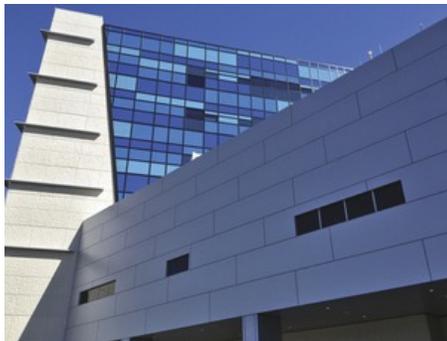


Photo courtesy of DPR Construction
DPR Construction used target value design during construction of the \$320-million Sutter Medical Center in Castro Valley, Calif.

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Every contractor has seen it happen: a project design that, for whatever reason, exceeds the owner's budget. If there's no leeway to spend more—and these days, there usually isn't—the contractor has little choice but to value engineer the design down to size.

Some value engineering decisions are relatively easy, others aren't. Although the result may satisfy the owner's pocketbook, not everyone perceives value engineering the same way. Rationalizing a successful project outcome that pleases few people doesn't seem entirely acceptable either.

The advent of lean construction and integrated project delivery (IPD) practices have gone a long way toward narrowing budget-driven differences that can necessitate value engineering. Having all participants actively involved and communicating from the outset often yields far more consensus than conflict about what actually gets built.

Still, gaps usually exist between what's wanted and what's affordable in capital construction, and the latest IPD iteration, target value design (TVD), offers the potential to ensure that owners get what they pay for—and often much more. Rather than designing first and estimating later, TVD pegs a project's validated estimated cost as the starting point. Targets are established for all relevant components (e.g., building envelope; structural system; interior finishes; mechanical, electrical and plumbing systems; etc.), and then they are adjusted up or down collaboratively by cross-disciplinary teams as the design evolves.

But cost is only one component of TVD. The project team also sets and designs toward other owner-established targets such as sustainability, staffing, square footage, operations and life-cycle costs. As the TVD process progresses, various options and their effect on other parts of the project are continually considered and discussed within the context of the overall project.

For example, relocating a chiller from the roof to the basement for seismic reasons may require more expensive HVAC equipment, but it will also reduce the building's upper-level structural support requirements.

And by using a back-loaded schedule to determine lead times, the entire project team knows when decisions absolutely have to be made, thereby ensuring sufficient time to fully assess and discuss options.

Dick Bayer, interim executive director of the national nonprofit Lean Construction Institute (LCI), which works to reform management of production in capital facilities design, engineering and construction, calls TVD "a very robust process to cut out contingencies and waste and drive efficiencies without sacrificing quality. And as costs

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go down, the team can add other features that enhance the project's overall value while still maintaining the budget target."

Although cost certainty is a key outcome in TVD, Dean Reed, lean coordinator for DPR Construction Inc., San Francisco, says it's a mistake to think that cost drives design. "Cost informs design throughout the conversation between designers and builders," Reed explains. "That makes for a healthy dialogue and debate to work through differences and find a solution that meets the owner's goals."

Contractors as Catalysts

While all members of a team bring valuable perspectives to TVD, contractors play a particularly pivotal role as they continually provide estimates and constructability insights, resulting in more informed, realistic design decisions. "What better source of expertise and

knowledge for improving the process than the general contractor?" Bayer asks.

"Contractors have to drive the process," agrees Victor Sanvido, president of Garden Grove, Calif.-based mechanical contractor Southland Industries and chair of LCI's national board. "Their knowledge is what enables the team to control the design and achieve the balance of selecting the right systems at the right price."

Keywords: Target Value Design; Lean Construction; Integrated Project Delivery; Lean Construction Institute; Collaborative Design

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Contractor involvement also helps reduce the risk of owner or design team expectations that might not match realities. "The most fertile environment is when contractors have a full understanding of the intent of the design and designers know the ability of the trades to carry it out," adds Romano N.A. Nickerson, a principal in the San Francisco office of Boulder Associates, which uses TVD for health care projects in California.

Though TVD is a relatively recent addition to the family of project-delivery approaches, it has already garnered an impressive track record across a variety of projects. As chief engineer for implementing the California Prison Health Care Receivership's multibillion-dollar update and expansion of its health care facilities, architect Stan Chiu, now a senior vice president at HOK, Los Angeles, organized and managed the seven cross-functional groups tasked with addressing aspects of the program. Over the course of a few weeks, the teams focused on specific issues, with regular integration events to share results. "It was almost like a telethon, as you saw each group making progress toward its targets," says Chiu. "They went from higher-order concepts to specific designs, from things with big impacts to smaller issues."

By the time the group finished, what had been a \$7.2-billion design program was confidently priced at \$5.7 billion. "We didn't cut back on beds, but we did improve the quality of patient care, cut staffing needs and make operations more efficient," Chiu says.

Other medical facilities have benefited from TVD, including the \$320-million, 230,000-sq-ft Sutter Medical Center in Castro Valley, Calif., for which DPR is serving as general contractor. "Projects such as these have the conflicting goals of sustainability and LEED certification, building system capacity and operational support for 24/7 acute clinical care," Reed says. "The only way we could reconcile them was setting the goal up front and working through issues."

Making TVD Work

Though many lean construction advocates feel TVD has a place in every project, Mark Konchar, Balfour Beatty's vice president of national integration, counters that its success depends on the right environment. "You need an owner that's open-minded and willing to commit to lean construction early so that the best tools for the project—including TVD—can be identified," Konchar says.

Nickerson adds that unless team members think beyond their core areas of expertise and constantly consider the project as a whole, "it's a recipe for disaster. Individuals need to offer lessons learned from other projects they've been involved with but also accept critiques and other perspectives."

Contractors should also fully understand the owner's business and what trends and issues influence it. "You add value because you understand what value means to the owner," Sanvido says.

Above all, participants in a TVD project must continually reject any assumption that improvement is not possible. "You can't do business as usual," Sanvido adds, "because you'll only get a conventional solution at a conventional price."

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