

Measure up: A new way to choose and manage contractors

by Melissa Crytzer

Imagine hiring painting crews to complete 11 high-dollar projects, but giving them no technical specifications. You are the project manager. But imagine their surprise when you also refuse to check the quality of their work...work that is budgeted at \$2.3 million.

Then imagine your delight when you realize this hands-off approach saved you \$700,000, resulted in on-time and ahead-of-time delivery, and a higher quality finished product.

“Why *would* somebody hire an expert and then manage him?” asks Dean Kashiwagi, director of the [Performance Based Studies Research Group \(PBSRG\)](#) in Arizona State University’s [Del E. Webb School of Construction](#). “Because it’s been done for years” is simply not a good enough answer for Kashiwagi. And his research proves that a less-is-more management style really does work.

Kashiwagi’s concept is called the Performance Information Procurement System (PIPS). It works contrary to traditional price-driven construction procurement.

“The traditional model includes a Request for Proposal (RFP). Owners set minimum requirements for a project, send them to all vendors, and the lowest bidder wins,” explains Kashiwagi.

The end result is not a winning combination. Because the contract is based on price, the highest performing contractor isn’t always selected. “This means the client - or owner - has to manage and inspect to make sure the contractor is meeting that minimum standard,” Kashiwagi says.

Contractors also won’t exceed those minimum standards, he says, because it’s not part of their contract. They’ll do only what they are told. The final outcome is an owner who must assume all risk associated with the project.

The price-based model also fosters poor performance, late projects, and increased change orders, according to the PBSRG research project team that includes Kashiwagi, Kenneth Sullivan, John Savicky, and Jacob Kashiwagi.

“PIPS is a pure outsourcing methodology. We never tell the contractor what to do, because we’re hiring him to know what he’s doing,” explains Kashiwagi. “It’s based on just a few simple concepts.”

The 1-2-3 of PIPS

PIPS helps owners select contractors based on past performance. It also relies on a project risk-assessment plan that demonstrates the contractor’s ability to complete the project on-time and on-budget. In this model, the onus of responsibility is placed on the contractor, not the owner.

First, interested contractors ask past clients to complete and submit performance satisfaction surveys to PBSRG. The client responses are fed into a computer system and earn weighted “points” in various categories.

Each contractor then receives the owner’s project requirements and are asked to submit an estimate and develop a risk-assessment plan.

“We’re asking the contractor to minimize risks they don’t control,” explains Kashiwagi, pointing to things such as late supply deliveries and material quality. “All we’re really forcing them to do is to think about what they’re going to do before they do it.”

Such a plan weeds out the inexperienced from the experienced, he says. “A high-performing contractor looks ahead on a project, lays out his schedule, and sees the risk that’s coming because he’s done it before,” Kashiwagi says.

Meanwhile, PBSRG staff members are interviewing key contractor personnel to determine their value to the project. The performance data, contractor bids, and contractor interview scores are entered into a “displaced ideal” decision-making model. The formulated spreadsheets assign numerical ratings to each contracting company.

“We weight price and various performance categories. Then we add the contractors’ scores. It’s all multiplication and addition. It’s a simple linear model,” Kashiwagi says. “The contractor with the biggest score wins.”

The ASU researchers have also developed a risk model that uses the same performance information to prioritize contractor/vendor proposals based on risk. “The farther you are from the best number, the bigger risk you become,” Kashiwagi adds.

Once a contractor is selected and the project is underway, contractors submit mandatory weekly reports to the owner. The reports identify any risks that might jeopardize the schedule, budget, or project quality. “The contractor documents everything,” says Kashiwagi.

If an outside source tells the contractor he will provide an item or service by a specified time, it’s written down. If someone signs off late on a review, it’s documented.

“Anyone who touches the contractor is measured,” explains Kashiwagi. He and his team developed a computerized barcode system that tracks the activity of each player in the project. “An owner can click on any project in the weekly spreadsheet report. The report will tell him exactly the individual who is bringing him the risk for that project.”

What Kashiwagi’s team has found is that everyone working with the contractor - others on his construction team, individuals at the owner’s organization, sub-contractors - wants to avoid landing on the weekly report.

The resulting minimized bureaucracy doesn’t leave room for excuses, says Kashiwagi. “We don’t care why your project is bad - except that you are the guy who made it bad,” he says.

A Formula for Success

The high-accountability approach is working. Since 1994, PIPS has been applied to more than 440 construction projects worth more than \$488 million. Among those clients was the University of Hawaii, for which the 11 painting projects were procured. The projects came in 28 percent under the amount budgeted by the university. Internal management, inspection, and decision-making was also minimized by 80 percent.

Across all of the PIPS projects completed to date, owners report 98 percent on-time delivery from contractors, zero change orders, and an 80 percent reduction in management functions.

“PIPS is about finding the best people and contractors to do your job and getting them to plan ahead,” says Nathan Chong, assistant chief of staff for Installations, Environment & Facility Management, U.S. Army Medical Command. During the past three years, Chong has applied PIPS concepts to more than 120 construction renovation projects at Army medical facilities in the United States.

“Before using PIPS, a lot of our contractors were showing up on site to do work and not understanding what the scope was,” he says. “We took PIPS pre-planning concepts and developed tools that we could use at our facility.”

Each week, PBSRG sends a report to Chong. That report updates the total construction budget, number of on-time and on-budget projects, the change order rate, the total number of delays, and the number of overdue risks. “They give me a report that tells me the top 10 - most risky - projects we should concentrate on,” says Chong.

The benefits of the PIPS system are not one-sided. “A lot of contractors have said that they were looking for a way to define why they are better than other contractors,” adds Chong. PIPS provides that leverage, and, according to Dr. Kashiwagi, contractors frequently report increased profits on PIPS projects as well.

“The system promotes a partnering ‘win-win’ scenario between the owner and the contractor that requires minimum project management resulting in on-time, on-budget, and outstanding quality construction,” said Charlie Serikawa of University of Hawaii in a letter to PBSRG staff. One-hundred percent of the contractors completing the 11 painting projects felt the PIPS process was fair.

Research funding comes directly from PIPS industry clients. The technology is licensed by the ASU. Since the program’s inception, more than \$6 million in research funds has been generated for new research and modification of the existing program. For more information, and for the latest results from the Performance Based Studies Research Group, visit www.pbsrg.com