



BY MICHAEL J. SIBLEY & ROGER N. SWANGER

One Contractor's Use of Lean/Six Sigma to Address Challenges

Since 1968 and 1993, Charles Perry Construction and PPI Construction Management, respectively, have completed a variety of projects across such industries as higher education, biotechnology/innovation, government, and health care. In July 2011, the principals of these two companies (Breck Weingart, John Carlson, Domenic Scorpio, and Brian Leslie) decided to unite and form Charles Perry Partners, Inc. (CPPI) to improve client focus by allowing a more effective use of resources, including personnel.

The merger introduced challenges, including maintaining and consolidating multiple accounting systems for existing projects, as well as comingling personnel, who operated under two different sets of policies and procedures. The time and energy spent on setting up a new company in addition to existing job duties began to impact employee morale. The accounting department was working overtime – almost every weekend for several months – in order to catch up. In addition, responsibilities and job functions needed to be defined and reallocated.

Adopting a new process means accepting change, and implementing change in any organization can be difficult. Domenic Scorpio commented, “It is painful for a company to want to reevaluate what they have been doing for a long time. For companies that have been slowly evolving, it is hard to put on brakes and adopt a new philosophy.” The principals began investigating options to address CPPI's challenges and decided to work with an outside facilitator to implement Lean/Six Sigma to improve its processes.

What Is Lean/Six Sigma?

Lean is a concept that has been around for centuries; some theories trace it back as early as Eli Whitney's perfection of a musket manufacturing process for the U.S. government in the late 1700s. Throughout the next century, Lean evolved in the manufacturing industry where it was used to improve large-scale processes (e.g., Henry Ford and Charles Sorensen organizing all elements of the Ford Model T automobile manufacturing system – machines, tools, products, and people – into a continuous process).

Today, some define Lean as “doing more with less” or “increasing efficiencies.” Lean's focus is on making a process more efficient, gaining capacity, and increasing speed. The key principles of Lean require that you begin with the end in mind. These principles include:

- 1) Focus on the customer (customers define value)
- 2) Identify the work that provides value (vs. non-value)
- 3) Manage and improve process flow
- 4) Remove waste
- 5) Involve and equip individuals involved in the process with the tools they need
- 6) Undertake improvement activity in a systematic way
- 7) Develop a corporate culture of continuous improvement

While Lean equates to speed, Six Sigma equates to quality. Developed by Motorola in the 1980s and made popular by Jack Welch with General Electric in the mid-1990s, Six Sigma is a business management tool focused on developing a nearly flawless process.

The term Six Sigma originated from terminology associated with statistics. In a perfect environment (i.e., one without the chance for error), Six Sigma applied to its fullest potential would allow for only 3.4 defects per million opportunities (DPMO). Six Sigma removes variation in a process while allowing for flexibility to use professional judgment. The Six Sigma model focuses on five key elements, commonly known as the DMAIC process:

- 1) *Define* – Begin with the end in mind. Set goals, scope, objectives, timeline, etc.
- 2) *Measure* – Understand the current state of the process and focus on the key changes needed. Obtain expert opinions, develop a value-stream map, identify output/input relationship, and prioritize.
- 3) *Analyze* – Tear the process apart to determine where there is waste, inefficiency, poor quality, and bottlenecks. Get to the root of the problem to determine the most useful steps in the improvement process.

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- 4) *Improve* – Test ideas, make changes, and document processes and procedures to create the “future state.” Avoid adding resources and focus on continued process improvement.
 - 5) *Control* – Get the buy-in needed to sustain the new process. Individuals may fall back into the old process because that’s what they are used to doing.

By applying Lean without Six Sigma, a process will be faster, but you may be speeding up the rate at which errors go through the system. By applying Six Sigma without Lean, the product developed may be nearly flawless, but the process to create the product will be slower. Combined, these terms make Lean/Six Sigma – a way to do things better.

The Project

Initially, CPPI’s goal was to reduce its financial closing and reporting process from 45-60 days on a quarterly basis to 15 days on a monthly basis to allow the principals and management to receive real-time financial reports and make more informed decisions. However, after addressing the details associated with this project, the focus turned to the cash disbursement process because of its significant role in the closing and reporting process timing.

A team comprised of 12 CPPI employees was formed to tackle this project, which included two outside, certified Lean/Six Sigma Green Belt advisors. Each team member had a role defined by specific responsibilities:

- *Champions* – The voice of the company was represented by two CPPI principals. They only participated in meetings that denoted their role in the processes.
- *Leader* – Having the most to gain from the project, this individual was represented by CPPI’s Director of Accounting and set the schedule, selected the cross-functional team members, and made assignments.
- *Cross-functional members* – This group included CPPI’s entire accounting department and a vice president, director, and senior PM, each representing various operational divisions. They had specific knowledge of the processes, which was critical to the project’s success. The items they introduced were evaluated and prioritized by facilitators.
- *Facilitators* – Two facilitators, independent of CPPI, were responsible for providing training and assistance.

The team met for several days during a two-month period to analyze and review current processes, identify critical areas for improvement, and develop solutions associated with each process based on Lean/Six Sigma techniques and procedures. The project goals included:

- Streamlined processes through consistency and communication for faster payment to subcontractors and vendors.
- Fewer documentation errors by PMs to the accounting department.
- Better coordination between the operations and accounting departments.
- Improved relationships and communication with customers, subcontractors, and suppliers for timely receipt of documents required to make payment.
- More timely and meaningful internal financial reporting to decision-makers.

The Lean/Six Sigma solutions drafted for CPPI were unique to its culture and specific to the process chosen. In order for CPPI’s process to be successful, it was important to keep the following Lean/Six Sigma elements at the forefront:

Top-Down Support

The leaders of an organization largely influence their company’s culture. If they do not believe improvement is needed (or possible), then any process improvements will be met with resistance, and failure is certain.

All of CPPI’s principals agreed the best way to address the various process issues was through implementing Lean. Two of the principals were present during a majority of the time spent addressing each project.

Employee Engagement

In order for a process to be adopted, a system must be in place to ensure employees remain engaged in the process (e.g., part of employees’ annual reviews or tied directly to their compensation structure).

CPPI continues to hold bimonthly accountability meetings, led by the outside facilitator, to ensure CPPI continues to put their ideas for process improvement into action within pre-determined time frames. These meetings also allow the team to measure their accomplishments against results attained prior to implementation of the improved process.

Project Focus

When considering project scope, determine if those involved in each step of the process should be included in the discussions.

For example, PM participation was critical when analyzing CPPI’s cash disbursement process, especially when addressing 1) subcontractor management alongside subcontract data entry and 2) timeliness and proper coding of payment applications.



Customers Define Value

Teams need to listen to the “Voice of the Customer” when developing the process. A customer is any end user of the process, including company employees. Lean/Six Sigma stresses that 100% internal customer satisfaction will help achieve external customer satisfaction.

It was helpful for the CPPI principals to communicate to the accounting department which reports they rely on for corporate analysis – and why. This understanding provided clarity and motivation for the accounting department to provide the needed reports in a timely manner, prioritize duties, and eliminate reporting that was considered less important or valuable.

Patience Is Key

Once the benefits of the improved processes are realized, teams may try to achieve new goals without implementing the change needed to accomplish them. While some solutions can be implemented within a short time frame, others may take months.

At CPPI, the accounting department was so excited about the new goals that they attempted to achieve them without first implementing some of the necessary solutions. So, the team created a timeline to follow in the appropriate order to meet the end goal.

The Results

Domenic Scorpio noted, “It was eye opening for the principals and the project management members of the team to learn what really happens in accounting. They became advocates of the process and messengers to the rest of the company on the benefits of going through the Lean/Six Sigma process.”

Many solutions were identified during the project that CPPI will implement over the next year, including:

- Developing and implementing training programs for all personnel involved in the cash disbursement process, including reference guides for PMs to use when coding accounting documents.
- Replacing the project management software with one that integrates directly with the accounting system to reduce the amount of time spent on duplicate data entry so the company can reassign responsibilities within the accounting department and reduce overtime.

Looking Forward

The combination of a soft U.S. economy, struggling real estate market, and continued turmoil in the financial markets continues to stress the construction industry. Many real estate

owners do not have a need for new construction or are unable to obtain financing, resulting in fewer projects and increased competition. In response, many contractors are merging, shrinking their operations, and learning how to do more with less.

Intricately understanding each of your company’s processes allows you to become bolder in addressing commitments to customers because scheduling and completion dates are more predictable.

By developing a culture that seeks continuous improvement and conducting periodic and purposeful reassessments of processes, contractors can maintain their edge in this challenging economic environment and stay ahead of the competition. ■

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