

POSITION STATEMENT – USE OF LEAN IN DESIGN-BUILD

POSITION

The Design-Build Institute of America (DBIA) and the Lean Construction Institute (LCI) share the common goal of transforming the AEC Industry. The Design-Build process benefits from the proper application of Lean principles, tool and practices. The Lean Construction movement benefits from broader application and development of Lean applications among Design-Build practitioners. Accordingly, it is in the interests of both organizations to collaborate and enhance each other's effectiveness in the transformation of the AEC Industry.

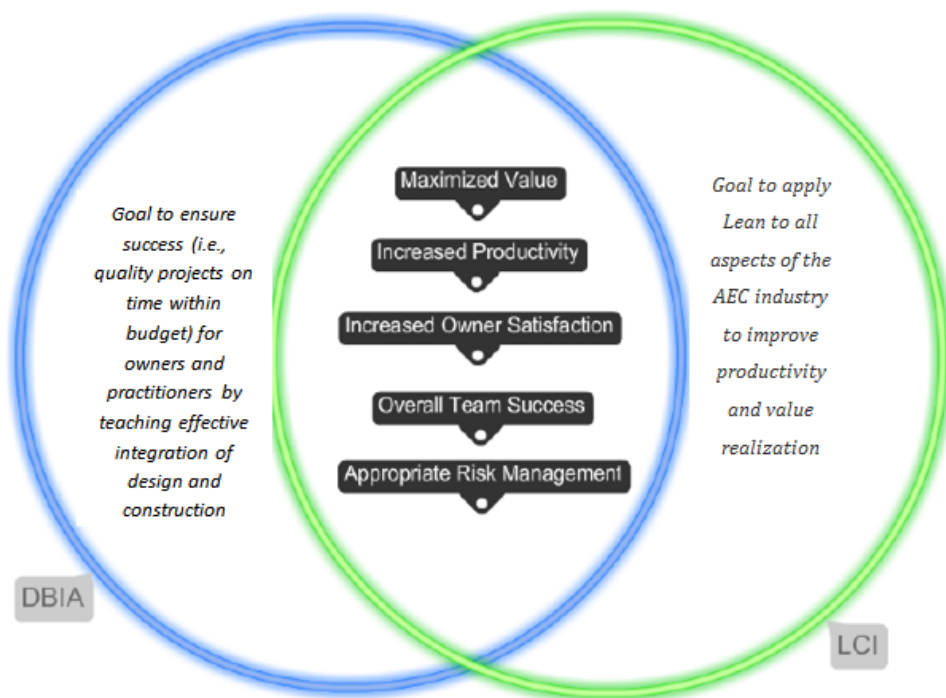
BACKGROUND

The Design-Build and Lean Construction movements share roots in the Total Quality Management (TQM) revolution of the 1950's, when quality management pioneers such as W. Edwards Deming and Joseph M. Juran were engaged to rebuild Japan's manufacturing industry. Juran ("Quality by Design") recognized that traditional, siloed design functions frequently were the source of quality problems because they did not understand the challenges of manufacturing and maintenance operations. Juran noted that design is the driver of almost all embedded and lifecycle costs. The solution was to engage suppliers, manufacturing and assembly operations experts and users earlier in design. Deming ("The Deming Management Method") championed a whole-systems perspective that applied quality management and statistical process control to every aspect of an enterprise from manufacturing to management. The Japanese auto industry applied TQM and operations science to their unique problem of limited production resources and variable demand. They figured out how to rapidly and efficiently create small batches of different products, just in time, from a single assembly line, which revolutionized production management theory. All these new techniques required increased teamwork, collaborative management, a change in culture and thinking, and new tools and techniques which continue to evolve today.

According to the U.S. Department of Commerce's Bureau of Labor Statistics, productivity and efficiency in the construction industry has lagged far behind other industries. In fact, construction labor productivity has decreased while all other non-farming labor efficiency has doubled or more since 1960. It is important to note that this study did not include design-build projects. During the last two decades, design-build projects have produced significant

improvements above and beyond the traditional linear design-bid-build method. Design-Build now accounts for approximately 40 percent of all design and construction in the U.S. and has resulted in significant time and cost savings as well as increased quality.

The Design-Build methodology provides an optimal environment for successful incorporation of Lean techniques. The foundation of DBIA's Design-Build Done Right™ requires team-wide responsibility to gain a full understanding of the factors that will drive value into the process and outcome. The following graphic depicts the overlapping and mutually supporting relationships between the Design-Build and Lean Construction goals and potential benefits:



Lean Construction Principles and the Design-Build Delivery System require a culture of team alignment, open communication and mutual respect between the project owner, the architect/engineer and the contractor. The result is maximized value, minimized waste and improved outcomes.

Used individually, both lean tools/techniques and Design-Build Done Right™ enhance the chances of overall project and team success. Used together, however, opportunities for success, innovation and creativity are greater resulting in:

- Maximized value, including first- and life-cycle costs, achieved through optimization of budgets;
- Increased productivity resulting in time savings and earlier project completion;
- Increased owner satisfaction including better quality, fewer change orders, reduced conflict, and a greater return on investment;
- Increased likelihood of overall team success including favorable profit margins and expanded team capacity for future projects; and
- The appropriate management of risk leading to a reduction in uncertainty as well as enhanced transparency and collaboration.

Unfortunately, delayed communication, difficulty in coordination and goal misalignment are common challenges across the industry, driving project teams to seek more integrated forms of interaction.¹ Traditional project delivery shortcomings have led to the steady growth and acceptance of the use of integrated forms of project delivery -- in particular design-build.

Both DBIA and LCI are committed to working together to model the collaborative interactions both organizations promote in the industry, with particular emphasis on how the combination of Design-Build Done Right™ and Lean concepts can further enhance the AEC industry.

¹“Examining the Role of Integration in the Success of Building Construction Projects”, A report for the Charles Pankow Foundation and Construction Industry Institute, January 2014