

BIM, PROJECT DELIVERY METHODS, WASTE, & LACK OF LEADERSHIP

A WHITE PAPER

Introduction

Traditional design-bid-build (DBB) contracting techniques, and even more recent attempts to improve DBB such as design-build (DB), CM@R, etc. should not be considered efficient construction delivery methods. Their limitations and deficiencies are well known.

The need to enhance quality while decreasing cost, and compressing the delivery times across the Architecture, Engineering, Construction, Operations, and Owner (AECOO) sector has never been greater.

“Alternative delivery methods” with a LEAN best management practices pedigree and over a quarter century of proven performance, including demonstrated nine-seven percent (96%) satisfaction levels and measurably higher productivity, nonetheless represent less than five percent (5%) of all construction projects.

The question therefore must be asked why real property owners, facility managers, and oversight groups continue to settle for poor performance.

The AECOO Dilemma

The reasons for the rampant mismanagement and waste across the AECOO sector can be categorized into two basic categories, technical competency and cultural/political.

Technical explanations account for cost overrun in terms, delays, and poor quality in terms of improper cost estimation techniques, inadequate data, and basic lack of competency in the various competencies associated with life-cycle management of the built environment.

Cultural/political explanations account for mismanagement in terms of unsupportable pressures to compete for, and win jobs, a general lack of responsibility, failure of owners/facilities managers to accept their role as stewards of the built environment, acceptance if not reliance upon “scope creep” where the construction requirements and costs are actually expected to increase, and a higher than average general complacency endemic to the AECOO community.

The Opportunity for Improvement

BIM, Building Information Modeling / Management was viewed as a solution, however, software vendors and implementers focus upon 3D visualization and technology versus process, change management, and improving life-cycle management competencies. Even to this day, many, if not most AECOO

community members view BIM as a software tool. BIM, while holding long-term promise, therefore remains stagnated in confusion.

Access to collaborative LEAN construction delivery, however, is available through a flexible sets of alternatives. Focus is upon OUTCOMES and BEST VALUE. Involving all project participants during the planning stages, a key aspect of LEAN construction delivery, reduces total the time from planning to construction as well as greatly improves productivity, quality, satisfaction, and cost control.

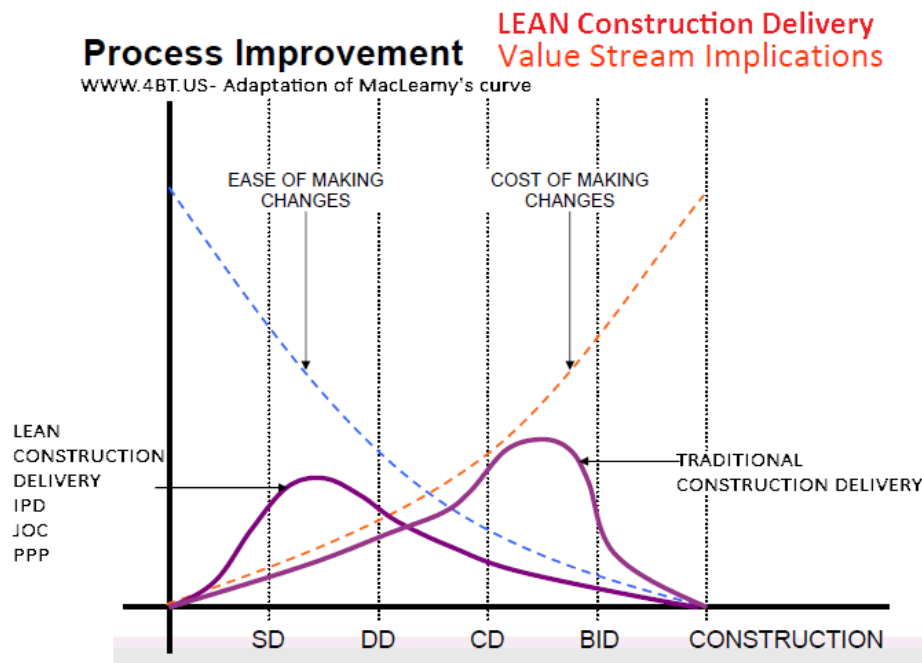


Figure 1 – LEAN Construction Delivery VALUE STREAM

LEAN construction delivery methods position owners as both LEADERS and collaborative partners with respect to service providers. Owners organize and coordinate planning, design, and construction activities without exercising excessive management and control. Each participant is enabled to share their expertise while also accepting their portion of both risk and reward.

Collaborative LEAN Construction Delivery Methods

Two robust LEAN collaborative construction delivery methods, Integrate Project Delivery (IPD), for major new construction and Job Order Contracting (JOC) for renovation, repair and minor new construction, coordinate pre-construction, construction, and post-construction. They *require* collaboration and transparency via proven best management practice processes that are documented within written operations/execution manuals which a component of associated contracts.

Activities and processes address specific aspects and/or stages within the construction project life-cycle. Common terms, definitions, and data architectures (MasterFormat/Uniformat, etc.) are central to collaborative and transparent communications and management.



Figure 2 - LEAN Construction Delivery

Should collaborative construction delivery methods be instituted and managed properly, the rewards are significant. For example, the following results of a research study on “JOC ORDER CONTRACTING PERFORMANCE” published in 2016,¹ demonstrates the higher levels of quality, satisfaction, as well as, significantly increased percentage of construction project completed on-time and on-budget achievable.

- 96% of projects completed with satisfactory results.
- 87% of projects delivered on time.
- 91% of projects are delivered on budget.
- 24% average administrative cost savings versus traditional delivery methods.
- 30% increase in transparency versus traditional delivery methods.

For JOC, awarded contractors furnish design and construction services on each project/work order. Unlike design-bid-build, DBB, the contractor not only has input for design, but is actually responsible for it. With DBB, design is either done in-house for by a third party consultant. The lack of a contractual and collaborative link between the designer, the contractor, and the owner is a fatal flaw within the DBB process. The net result is that DBB actually establishes and promotes adversarial relationships among parties versus productive long term collaborative partnerships.

¹ 2015, JOC Performance Study, Arizona State University, PBRSG

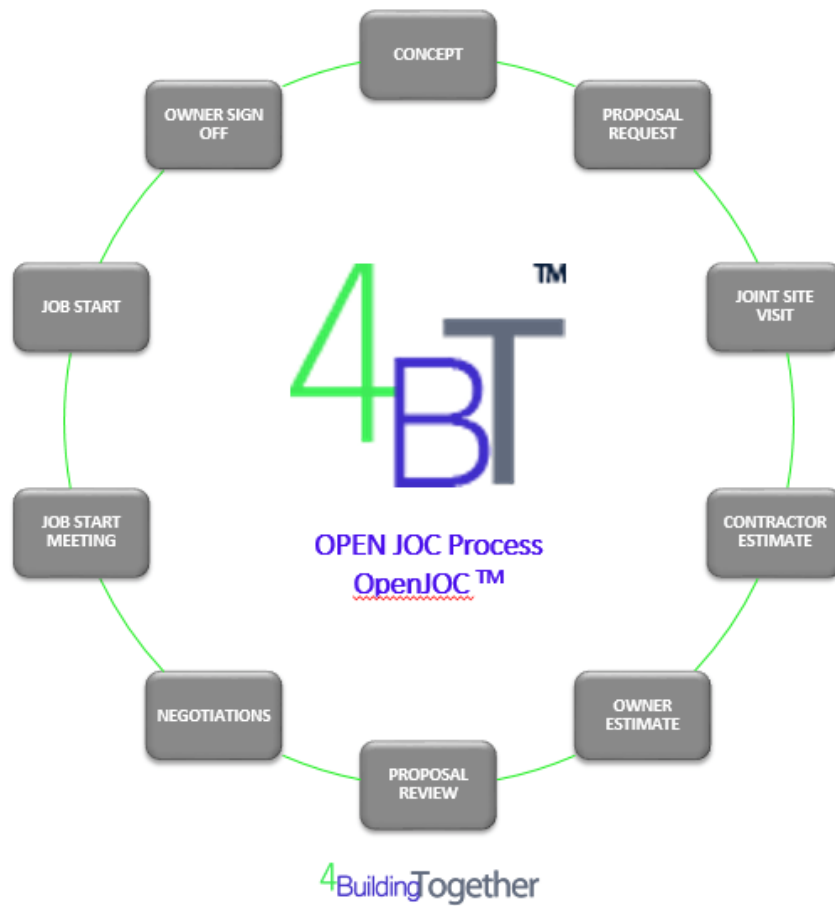


Figure 3 - Representative Process for Job Order Contract Task Order



Figure 4 - LEAN Construction Delivery Core Competencies

Job order contracting provides a quick and cost-effective means of acquiring and meeting renovation, repair, and maintenance needs. A JOC contract can be used to accomplish projects for buildings, structures, or other real property. JOC is not used to purchase supplies, services, or architect and engineer (A-E) services. Facilities management must ensure that requests for work other than construction are not sent to the JOC group. For example, the following items are generally not authorized for acquisition under a JOC contract task order:

- Fuels
- Utilities
- Construction equipment
- Administrative equipment
- Furnishings
- Construction materials only (lumber, concrete, etc.), for other than valid JOC projects
- Architect-Engineer Services (Brooks Act)
- Administrative services such as typing, transportation, reproduction, graphics, and interior design services not part of a JOC contractor construction proposal
- Housekeeping services

LEAN construction delivery methods typically share the following core principles.

- Best value procurement

- Mandatory early and ongoing collaboration among all project participants
- Jointly developed criteria/scope of work
- Financial Transparency
- Use of common terms, definitions, and data formats
- Monitoring and key performance indicators – KPI's
- Shared risk/reward
- Ongoing education and training
- Organizational support, “top-down & bottom-up”
- Global oversight and local action
- Long term relationships/commitments
- Continuous improvement
- Supporting/enabling technologies
- Performance-based incentives
- Mutual trust and respect
- Detailed contract and program/project guide(s)
- Co-location of teams

Conclusion

Shared responsibility for the complex issues associated with the AECOO sector is extremely important. Owners must no longer position themselves the adversary, but rather a team member participant providing leadership. A team member that is involved throughout the program/project life-cycle.

While owners must lead and guide the team, they should not “micro-manage” and/or exercise excessive management and control. Rather, decisions should be made jointly, and leverage the expertise of the best qualified team members available.

As a whole the AECOO industry must converge faster on a suitable solution to improved productivity and stewardship. User needs must be met faster. Overall education and competency must be addressed and accountability must clear and measured.

- Collaboration is critical to efficient construction project delivery.
- There are multiple levels of collaboration.
- Owners drive the level of collaboration for any project.
- The role of technology is to support and enable low cost deployment, as well as improvement of, proven best management practices
- The construction deliver method fundamentally supports or limits the level of collaboration, and significantly impacts ultimate success or failure.

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