



# Delivering Better Facilities through Lean Construction and Owner Leadership

By Peter Cholakis

The ability to significantly improve how facilities are constructed, managed and operated depends largely on whether owners provide high levels of leadership, knowledge and collaborative support. Owners are in the best position to validate appropriate planning, capability, tools, information and processes. They can require all stakeholders to collaborate, be transparent, build strong relationships and drive higher productivity and value for the facility.

Productivity in the architecture, engineering, construction, owners and operations (AECOO) industry lags behind other industries. Given the impact that facilities have on the financial and operational performance of an organization, increasing productivity can make a big difference to the bottom line. However, to achieve better results, owners must be more involved. Traditional construction delivery methods (e.g., design-bid-build and low-cost-bidder) and newer methods (design-build) are not up to the task. Ultimately, these methods fail to integrate the unique variables of each construction project. Lean construction is a solution for the facilities industry, as it has been for other industries facing similar struggles.

## Lean Construction Basics

Lean construction delivery provides a process framework to improve outcomes. When properly implemented, more than 90% of lean projects (renovation, repair and new construction) are on time, on budget and satisfactory for all parties.

Many business sectors have successfully applied lean processes, most notably in auto manufacturing. Lean processes propelled the productivity and quality advantages Henry Ford achieved and Japanese automakers later advanced. Software development, electronics and process industries also have achieved notable results.

## The Lean Core

The lean construction method requires all participants, including all external providers and internal actors (finance, real property, design, engineering, operations and maintenance, personnel, purchasing/procurement and building users) to collaborate, and puts the focus on the customer, better education and early and ongoing communication. Owners typically have promoted and led successful lean implementations in construction, according to authors James Womack and Daniel Jones in *Lean Thinking*:



**FIGURE 1:** Lean construction requires a balance of strategic, tactical and operational considerations. Within each category, smaller, often day-to-day elements support the process.

## Banish Waste and Create Wealth in Your Corporation.

Features of the lean method include:

- Early and ongoing involvement of participants and stakeholders
- Best value selection
- Collaboration
- Mutual respect and trust
- Common data environment
- Financial transparency
- Shared risk/rewards
- Performance-based reward system
- Long-term relationships
- Enhanced leverage of localized knowledge
- Global oversight/leadership
- Competent leadership without excessive management and control
- Key performance indicators (KPIs)
- Ongoing training
- Continuous improvement

Though not itself the primary driver, technology is important in lean delivery. Too often, organizations view technology as the solution rather than a tool. Technology should support established organizational objectives and change-management activities and help meet phased milestones. Cloud-based technology that supports common data formats is a good starting point.

## Lean Implementation and Workflow

Lean contracting puts the value on relationships over the formal terms of a contract. The relationship approach maximizes collaboration among the many stakeholders throughout the life cycle of a construction project. However, to achieve such collaboration, lean processes must be part of the business contract.

The most frequently used lean construction processes are Integrated Project Delivery (IPD) and Job Order Contracting (JOC), which are construction delivery methods as well as procurement mechanisms. IPD is reserved for major new construction projects, whereas JOC is deployed for renovation, repair, maintenance and minor new construction projects.

Also known as IPD-lite, Task Order Contracting (TOC) and Simplified Acquisition of Base Engineer Requirements (SABER), JOC is a project delivery method utilized by organizations to get numerous commonly encountered construction projects done quickly and

Phases of JOC Task Order	
PHASE 1	Owner establishes a current construction need, determines preliminary budget and confirms funding availability.
PHASE 2	Owner team (technical/facilities management, JOC program/project manager, contracting/purchasing or building user) conducts a pre-proposal meeting and drafts a JOC task order signed by the JOC contract administrator.
PHASE 3	Owner team and JOC contractor make a joint site visit and confirm work scope, site conditions and any unusual requirements.
PHASE 4	Owner creates an independent, detailed, line-item cost estimate.
PHASE 5	Contractor creates estimate. (Both owner and contractor use the contract-required unit price book.)
PHASE 6	Contractor submits a task order proposal/estimate. Owner compares it to independent owner estimate.
PHASE 7	Owner and contractor negotiate any variances or conflicts with the JOC program. There are three possible outcomes: 1) Owner issues a notice to proceed (NTP); 2) Owner issues specific changes or requests additional information; or 3) Owner cancels task order.
PHASE 8	A project kickoff meeting takes place; and the worksite is handed off to the contractor.
PHASE 9	Owner conducts weekly site visits and reviews progress reports submitted by the contractor.
PHASE 10	Project closes out with a final package of warranty and maintenance information as specified in the JOC operations/execution manual.

easily through multi-year contracts for a wide variety of renovation, repair and minor construction projects. JOC is most commonly used to clear deferred maintenance backlog, perform rapid-response recurring project needs and construct minor renovation projects.

These and other forms of best-value collaborative methods provide frameworks for lean construction implementation and a path to better outcomes. Owners that are capable of leading lean construction environments are better positioned to collaborate and share information with their architecture and construction service partners throughout the facility life cycle. Process experts find JOC to be most cost-effective for owners when their annual total construction volume exceeds \$2 million.<sup>1</sup>

Some argue that lean delivery is necessary when using a building information

model (BIM). Both require a multiparty contract and a written execution guide (the rulebook for executing lean construction). The guide specifies roles, responsibilities, deliverables, rewards and performance metrics, including:

- Strategic and tactical considerations for planning, developing, bidding, awarding, executing and monitoring a JOC, IPD or BIM contract.
- Overview of the construction delivery method (key characteristics, benefits versus traditional construction delivery methods, general statement of work, etc.).
- Roles, responsibilities and deliverables for all participants.
- Defined workflows for advertising, bidding, awarding contracts and task orders, doing inspections, reporting, making payments, resolving disputes, etc.
- Training/certification requirements.

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## The Common Data Environment

To improve construction delivery, stakeholders need a common data environment (CDE). A CDE helps owners and service providers to share information and communicate using common terms, definitions and data architectures. The CDE spans business domains and core competencies associated with the life cycle of a physical asset.

Data architectures must not be overly complex for users. The AECOO industry

already has considerable CDE references, such as construction dictionaries and standard abbreviation/symbol formats. Robust architectures, including CSI UNIFORMAT, MASTERFORMAT and OMNICLASS, are available.

## Key Performance Indicators

Defining success is impossible without measurement. Key performance indicators (KPIs) provide a means to monitor historical, current and predicted perfor-

mance and help ensure compliance with statutes, regulations and contracts.

KPIs for JOC use units of numeric quantity, minimum/maximum/average dollar values, time and percentages.

They include:

- Owner requests for proposals (RFPs) and estimates
- Contractor estimates and technical capability
- Time from RFP to contractor estimate
- Owner/contractor estimate variance and negotiations cycles
- Project time/cost
- Change orders
- Quality level
- Problems/issues
- Time-based analysis
- Maintenance backlog/deterioration rate
- Special versus standard tasks

To ensure transparency and avoid conflicts, lean contracting also includes regular third-party and internal audits.

## Continuous Steps to Success

To succeed with lean construction, many organizations must change their daily policies and practices—a challenging task that requires ongoing attention. All participants should make a long-term commitment to continuous improvement.

Lean construction is most successful when organizations implement it at a gradual pace and with realistic expectations. Benefits don't occur immediately or even during the first year.

Failures will occur. Learn from them. Accept input from all participants. Adapt processes and requirements to each organization and its capabilities. Build a repository of best practices, knowledge and actionable information.

Keep communications open, keep learning and keep improving. [JNIBS](#)

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## References:

- <sup>1</sup>Center for Job Order Contracting Excellence, "Job Order Contracting: A Facilities Management Tool," [jocexcellence.org](http://jocexcellence.org).

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