

Real-Time Project Imaging and Archiving Drives Lean Construction

Project managers use on-site, time-lapse construction cameras to challenge doctrine of “time, quality and cost”

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CHALLENGE:

Save time, manage costs and maintain quality through lean construction

It is a long-held belief in the construction industry that there must be a trade off among time, quality and cost. The lean construction movement challenges that notion. Through the use of lean construction tools like time-lapse cameras that provide photographic documentation and virtual site access, project managers can improve planning and control, maximize value and minimize waste throughout the construction process.

According to the Lean Construction Institute, key tenets of lean construction project management compared to non-lean project management are:

- **Control** is redefined from “monitoring results” to “making things happen.” Planning system performance is measured and improved to assure reliable workflow and predictable project outcomes.
- **Performance** is maximizing value and minimizing waste at the project level. Non-lean practice attempts to optimize each activity and thus reduces total performance.
- **Project delivery** is the simultaneous design of the facility and its production process. This is concurrent engineering. Non-lean practice, even with constructability reviews is a sequential process unable to prevent wasteful iterations.
- **Value** to the customer is defined, created and delivered throughout the life of the project. In non-lean construction practice, the owner is expected to completely define requirements at the outset for delivery at the end, despite changing markets, technology and business practices. Coordinating action through pulling and continuous flow is preferred, as opposed to traditional schedule driven push with its over-reliance on central authority and project schedules to manage resources and coordinate work.



Part of the Texas Children's Hospital Pavilion for Women Bridge Project.

Decentralizing decision-making occurs through transparency and empowerment. This means providing project participants with information on the state of the production systems and empowering them to take action.

“As an advocate of lean processes, FKP Architects is constantly seeking ways to enhance value and eliminate waste. The decision to install a live OxBlue jobsite camera has improved our team's efficiency, assisting us significantly during the construction of the Texas Children's Hospital Pavilion for Women Bridge project. Due to the complexity of the coordination and integration involved on this project, multiple users benefit from the convenient camera access including the City of Houston, the Texas Medical Center and Houston METRORail, in addition to the design and construction team.”

SOLUTION:**Real-time, virtual jobsite access enables lean project delivery**

Access to jobsite images through a simple, clean, easy to use Web-based software interface enables project managers to achieve the promise of lean construction by providing a real-time view of current project status with vivid clarity, easy review of historical “moments in time” and virtual jobsite access throughout the construction process.

More Effective Project Control and Performance Management

In order to move from the retrospective “monitoring of results” toward proactively “making things happen,” one must provide broad stakeholder access to job site events as they happen in real-time and impact the larger planning system. According to LCI, in a lean construction planning system, performance is measured and improved to assure reliable workflow and predictable project outcomes. Through the use of real-time visual access to the jobsite, performance can be measured and improvements made at literally any moment in time.

Lean performance requires maximizing value and minimizing waste at the project level rather than within each individual activity. In other words, lean performance means you don’t sacrifice total project performance for the sake of one efficient task. Big picture analysis and decision making is best achieved by providing everyone invested in overall performance management with a comprehensive, real-time “virtual” access to the evolving project.

Dynamic Engineering Versus Sequential Process Execution

LCI describes lean project delivery as the simultaneous design of the facility and its production process. This is opposed to a traditional approach that relies on constructability reviews to preemptively manage risks such as:

- Inconsistencies between plans and specifications
- Site and/or project access issues
- Coordination of trades
- Sequencing and project scheduling

Even the most thorough constructability review cannot eliminate the need for production-driven design adjustments that become necessary as projects evolve. On-site construction cameras facilitate dynamic, concurrent engineering by providing virtual access to the job site throughout the construction process. Design teams and project managers can easily make adjustments to the design and production process in response to new information and events.

Value enhancement through dynamic, decentralized decision-making

No project happens in a vacuum. As such, value cannot be ensured without ongoing consideration of changing markets, technology and business practices. A major premise of lean construction is the continuous regard for dynamic environments, context, risks, and stakeholder involvement. The final two tenets of lean construction are defined by LCI as the “continuous pursuit of value” and the “decentralization of decision making.” The former cannot be fulfilled without the latter. And neither can happen without the constant dissemination of information that portrays in real time the evolving conditions within which a project is being fulfilled. Onsite cameras provide remote project participants with real time, visual access to the production system, enabling them to take action to manage resources and coordinate work – ultimately enhancing value for the customer.

As the industry continues to evolve toward lean construction as standard practice, photographic technology will play an important role in more effective and efficient project management.

About OxBlue: OxBlue is a leading construction camera service provider, giving numerous Fortune 500 companies the hardware, connectivity and expertise to enable constant access to job sites through high-resolution, time-lapse, web-enabled construction camera images. OxBlue’s cameras connect people on and off site, and help measure variables such as labor, risk, quality and materials. The cameras provide accountability and increase communications between construction companies and clients.