

# Construction

## *Industry Advisor*



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## Lean project delivery

# Contractors go on the “skinny”

**L**ean, not mean, may soon become the new mantra at construction sites in the United States and abroad. Putting projects on the skinny can improve workflow, productivity and profitability without counting calories or fat grams. In fact, lean construction may be the easiest diet to undertake, no matter the project. But it calls for a pretty drastic change in work habits, too, which may account for why it hasn't found widespread acceptance just yet.

### What is lean construction?

Lean construction is a production-management-based approach to project delivery that requires tight coordination among all workers, empowering them to do their jobs well within tight deadlines. The process focuses on eliminating problems before they arise: Crews are expected to stop production if they find a defect. In this way, lean thinking focuses on how one activity affects the next; the project is more about the whole than its pieces.



With traditional construction, projects are first broken into activities, with the activities placed in a logical order. Estimates for time and resources are then prepared for each activity. To reduce overall project costs, contractors try to reduce the cost of each piece in the schedule. Safety, quality, time and cost are measured in terms of negative variance from standards.

The problem with that approach is that it tends to ignore the big picture. Lean construction focuses on improving total project performance rather than merely reducing the cost or increasing the speed of any activity. It requires a fundamental shift in how planners, designers and contractors conceive and manage projects. There must be a shared understanding of common goals and an equitable distribution of risk and profit.

### Why is cooperation key?

A lean project emphasizes teamwork and cooperation from concept through delivery. The owner, builder, architect and subcontractors are treated as equals, unlike in a traditional “top-down” project management approach, where a project manager plans and controls schedules.

With a lean approach, general contractors and subcontractors discuss their plans for executing a project with an architect during conceptualization. Ideally, the information they share is integrated into the project's design to minimize the need for change orders later on.

As the project moves forward, the goal is to maximize value and reduce waste. If the project owner is willing to pay for something, it's value. If not, it's waste, which typically includes:

- Defects,
- Duplication of efforts,
- Idle time, and
- Unnecessary movement of materials or workers.

A simple way to stay lean is to track productivity and percent-of-plan-completed every day. Implement a schedule board that lists each crewmember's assignment and target completion time. The board can also include space for recording results of actual production hours against the plan. This approach helps clarify

workers' responsibilities, gives them feedback on the physical and financial progress of the job, and encourages them to identify and resolve problems.

Another lean technique is to integrate just-in-time delivery of materials to avoid on-site inventory buildup. Centralizing supplies in an easily accessible location can also help you get lean because it cuts down on the number of trips that workers must make to get materials. The goal is to eliminate the waste of motion from making more trips than necessary.

### Are you ready to get lean?

Lean construction has taken off in many countries, including Finland, Australia, Brazil, Chile and Peru. Denmark has its own lean construction institute and has made the concept almost a national construction policy. Contractors in the United States have been a little slower to adopt the concept, but are developing a growing appreciation for it.

When all is said and done, lean construction is really about continuous improvement and cross-collaboration to reduce schedule delays, budget overruns, late deliveries of materials and other problems that can plague projects. It isn't just a quick fix, though — the lean approach requires a change in mindset for project management and delivery. Think about adopting lean and mean to become better, more efficient and more profitable. *T*

## Lean construction in action

One California construction business put lean construction principles into action to complete more projects without adding staff. The company accomplished its goal in a little more than a year by improving its design and procurement processes to reduce costs and construction times.

The company identified two significant obstacles in achieving flow in the whole construction process: 1) inefficient supply of materials, which slowed job progress, and 2) incomplete design information, which caused frequent redesigns.

The contractor eliminated these problems by investing in a computerized, three-dimensional design system to provide a faster method of redesign, leading to better construction information. The company also developed and adhered to a reliable weekly work plan. Central to the planning were the concepts that work must be assigned in the right sequence (in an amount that matches labor and equipment capacity) and that assignments must be finished on time.

## Take the pain out of change order management

**C**hange is inevitable on just about every construction job. Many unexpected situations can arise, because of weather, design revisions, owner changes and material availability. Although it's impossible to control unforeseen circumstances, you can smooth an otherwise bumpy ride by adequately documenting and tracking your change orders.

Contractors who effectively manage change orders are typically more profitable and better able to keep projects on schedule, and stand a better chance of minimizing claims and legal disputes. So how can you make change orders work in your favor? Establish and adhere to a comprehensive process for accepting, pricing and managing change orders.

### Be proactive

When you're first awarded a contract, carefully review it, along with all the plans and specifications. After all, it's impossible to identify a change unless you know how it differs from the original contract plan. Look for weaknesses that could eventually cause change orders and account for them during the contract stage. Doing so will help you to save money and provide higher-quality services.

Above all, encourage communication and accountability and follow notification procedures to the letter. When difficulties arise in collecting on change orders, it's often because there's a question about who ordered the change. To avoid that problem, put changes in

writing immediately, price them accordingly and have both parties sign off on the change order.

Timely notice and exchange of information minimizes the potential for surprises and helps ensure that there will be enough time to work out solutions that satisfy everyone involved.

## *Encourage communication and accountability and follow notification procedures to the letter.*

### **Keep accurate records**

Another critical component of a well-managed change order system is a comprehensive documentation system. To help you resolve change requests, make sure that daily reports, project correspondence, meeting minutes, schedules, cost records, photos and other records indicate whether planned operations are delayed, prevented or changed in nature.

Also, records should be complete, error-free and stored for seven years in case change requests lead to mediation, arbitration or litigation. In such cases, negotiations may begin months or years after the work was performed, and it may be impossible for you to remember specific details. Moreover, courts and arbitrators give more credence to written documentation than to testimony.

In addition, your profit margin could suffer if you don't take into account the additional expense and markup of each change, because even a minor change can cost you significant time and money. Your documentation can help you accurately charge for a requested change.

Perhaps the most important record of all, however, is a written, signed and authorized change order document. Include a date on the document to prove you gave owners plenty of notice regarding the associated costs. Also include a written explanation of how their changes will affect the

entire schedule and delivery date. Lack of notice can be a strong defense for owners — following these steps will help increase the likelihood that you'll get paid for the extra work.

### **Invest in software**

Scheduling and project management applications can help you track proposed change orders, those under negotiation, rejected proposals and notices to proceed. Some software also produces change order forms, eliminating the need for you to buy preprinted forms. Plus, change orders can be permanently saved to a computer's hard drive, giving you a complete history of your projects.

As an alternative to using change order functionality in scheduling and project management software, consider using an up-to-date spreadsheet program. Some contractors use a six-column model for their change order reports, which includes the current contract amount, current budget, budgeted gross margin, incurred costs, estimated costs at completion and estimated margin at completion.

### **Change with care**

Change orders are a normal part of the construction business. But you must approach them with care, executing all changes, extras, deviations, amendments, expansions and variations to a job as originally specified in a contract under a formal change order management process. Change orders can lead to a healthy profit for the overall project as long as they're properly managed and executed. †



# How does your business stack up?

*Use benchmarking to find out*

If you're curious about how well your construction company is doing compared with either its own past performance or with its competition, there's a way to find out. You can learn precisely how your business measures up through benchmarking — the practice of looking inside and outside your construction company to evaluate and compare common functions and practices, called metrics.

## Choose your approach

The first step in the benchmarking process is to choose your general approach. At the simplest level, you can benchmark internally by comparing your construction company's past performance with its current performance. Many contractors, however, want to know how they stack up against their competitors. Thus, *competitive benchmarking* involves analyzing your company's metrics against those of other construction businesses in a given market or across the industry as a whole.

*Just about anything that can be observed or measured can be benchmarked. For example, you'll want to look at project quality, on-time delivery, safety record and job costs.*

You might undertake a competitive benchmarking effort by meeting with others in your niche from outside markets and comparing notes. A national or regional builder's association meeting, for instance, may provide an ideal setting to learn more about your peers' operations and get some ideas about how to improve yours.

If you want a more objective approach, consider joining a trade organization that performs annual financial surveys or working with a construction consultant who has access to a large database of contractor data. Either way, the premise is the same: You're comparing your operations to others in the construction industry to determine whether you're where you should be.



## Identify your metrics

Next you need to decide which metrics you want to assess. Just about anything that can be observed or measured can be benchmarked. For example, you'll want to look at project quality, on-time delivery, safety record and job costs.

Choose the specific metrics on which you wish to improve. If you want to improve safety, for example, look at the number of accidents that transpired on your jobs, and when and where they occurred. Then compare these figures with internal data from previous years or with your competitors' metrics.

If you want to enhance your profit margins, you'll need to compare actual job costs to each project's revised budget, overbillings and underbillings to volume, and cash flow to gross margins. An internal benchmarking assessment can stop there, but a competitive one can, again, compare this information with competitors' results in these areas.

## Analyze your findings

Whichever benchmarking method and specific metrics you choose, your company won't realize any improvements unless you analyze the information you've gathered.



Because it's easy to get bogged down in the details, design a spreadsheet that lists your company's jobs throughout the year and displays columns for each benchmark. (Your CPA can help you with this task.) Doing so will allow you — and anyone else interested

in your company's performance — to visualize where you stand in light of the metrics you've chosen.

After setting up your spreadsheet, follow its format consistently with each subsequent benchmarking effort. But also realize that it's not set in stone: Once you've established a baseline, you'll need to tweak it occasionally to get the information you need.

### **Make it a habit**

Benchmarking isn't a one-time project — it's a continuous improvement process and needs to become a habit if you're serious about improving your construction company's performance. Although benchmarking does require time and effort, its benefits typically outweigh the costs. Remember, if it can be measured, it can be improved. ↑

## **4 high-tech building materials that can save you time *and* money**

From advances that help you build more quickly to those that create a dynamic aesthetic, today's high-tech building materials can save you time *and* money. Here are four to consider:

**1. Precast concrete.** This humble building material is revolutionizing the industry by allowing contractors to finish jobs much faster than traditional poured-in-place concrete or steel frame construction. Precast concrete metal framing is delivered to construction sites ready to install for both floors and walls.

Additionally, architectural or decorative concrete design has advanced to the point where it can trick the eye by mimicking higher-end rivals, such as brick pavers and granite, and also meet or exceed the structural capacity of the material it emulates.

**2. Engineered wood wall framing.** The decreasing supply of large-diameter, old-growth trees is making this material an increasingly popular replacement for traditional lumber. Using young trees, the framing is formed into strands that are coated with adhesive and compressed into panels, boards and framing material.

**3. Flooring products.** The trend toward green building is inspiring the use of eco-friendly flooring products such as bamboo, cork and natural linoleum. These materials emit little in the way of volatile organic compounds — a source of indoor air pollution — and are more durable and easier to maintain than traditional hardwood flooring.

**4. Recycled rubber.** In some cases, ordinary materials are being used in new ways to transform buildings and reduce the waste going to landfills. For example, rubber is being recycled from tires and other postconsumer products to make "green roofs." A green roof system involves the creation of a contained green space of plants and trees that is an extension of a building's existing roof. To create a green roof, recycled rubber is first melted and spread over a concrete deck. A tear-resistant sheet is then placed over the first layer, and a layer of rubberized asphalt is applied. Green roof systems help reduce energy consumption in large and small buildings, whether commercial or residential.



# Contractor's toolbox

## You get what you pay for

### *Tips on offering competitive compensation*

**H**iring and retaining good employees means providing competitive compensation that's aggressive enough to lure the cream of the crop, but not so lucrative that it eats into your profits or threatens your survival. While you want to be generous, you also want the company to thrive for the long term.

You don't need to be the highest-paying construction company in your area, but it's generally better to be closer to the top than the bottom. After all, as with most things in life, you get what you pay for.

#### **Know how much a job is worth**

To better understand general salary trends and parameters, check out one of the many online salary survey tools, such as [www.salary.com](http://www.salary.com) and [www.salaryexpert.com](http://www.salaryexpert.com). These sites offer free basic search services by job category, including construction, as well as detailed construction wage surveys for purchase. You can find construction-specific information at [www.pas1.com](http://www.pas1.com), [www.constructionexecutive.com](http://www.constructionexecutive.com) and [www.wageaccess.com/ncs/construction.asp](http://www.wageaccess.com/ncs/construction.asp).



Another way to keep up to date on the salary landscape is to monitor classified advertisements in national and local newspapers, trade magazines such as *Construction Executive* and *Contractor*, and online job boards. Look for jobs similar to yours in the descriptions.

Depending on the position and periodical, ads sometimes list the salary or salary range.

If the free resources don't provide what you're looking for, consider purchasing an extensive wage survey that compares geographic areas, company size, revenue, financial assets and job descriptions, among other variables, allowing you to compare apples to apples.

#### **Account for internal issues**

One caveat: Surveys are helpful, but don't use them as your only source when determining pay scales. You must also take into account internal issues, such as:

- Growing or declining revenue and sales,
- Employee experience and expertise,
- Where you're recruiting from, and
- Whether your company is regional or national.

Also consider the big compensation picture. You can probably pay a little less and still attract great employees if you offer a first-class health care package, retirement plan and other benefits, such as flexible work schedules. If those perks aren't an option for your business, you could provide bonuses tied to company performance.

Ultimately, try to establish a low, midrange and high pay level for each position. Starting someone at the low end of the range is cost efficient in the short term and provides room for you to offer future increases.

#### **Budget for the future**

The decision about wages and compensation usually comes down to assessing how you value each position and what your construction company can afford. Be fair and compensate accordingly, but leave some wiggle room for contingencies. Your CPA can help you with the dollars and cents of the decision. Also work with your attorney to avoid running afoul of employment or antidiscrimination laws. **T**