Three Easy Ways to Reduce Change Orders

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EXECUTIVE SUMMARY

An unexpectedly high number of change orders on a construction project can quickly exhaust contingency funds, delay the schedule and increase project costs. While some changes are unavoidable (e.g., change resulting from technology advancements, as is the case in hospital construction), many can be circumvented if the project team works collaboratively and relies on an in-place system that provides transparency and a disciplined process for approving changes.

INTRODUCTION

Change isn't always bad, but on a construction project, it usually isn't good. Change orders can wreak havoc on a construction schedule and raise project costs beyond the allocated budget.

According to the April 2006 research study "Comparative Analysis of Total Project Costs with Versus without a Construction Manager" prepared for the CMAA Research and Development Committee, change orders can account for as much as 28 percent of total project costs.

"Most organizations want predictability. They set budgets and schedules, and change orders disrupt both of those," explains Charles Thomsen, FAIA/FCMAA, an industry consultant and author. The causes of change orders are almost limitless; however, most fall into one of the following categories:

- Errors and omissions in plans or specifications.
- Unforeseen site conditions.
- Owner requests.
- Advancements in technology.
- Code changes.
- A late-arriving epiphany.

Before a problem or opportunity necessitates a change to the original construction contract, it usually passes through a few phases:

1. An issue arises that creates the potential for a change order.
2. A formal claim is made and submitted.
3. The claim is accepted between all parties and becomes a formal change order.

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If plagued with a high percentage of unexpected change orders, a project is likely to have cost overruns and delays and other problems will ensue. "It destroys relationships. People lose confidence in the developer or the contractor, and it deteriorates the whole collaborative environment very quickly. When you start breaking up that trust, it's a death blow," says Jim Buttarazzi, a project director working on projects ranging from $200 million to $1 billion U.S. dollars in the Middle East.

While some change orders are inevitable, others are unnecessary. There are three easy ways to reduce the number of change orders on current and future construction projects and better manage those changes that cannot be avoided—increase collaboration, increase transparency and introduce a structured change management approach.

"If you can create an environment where, when potential claims are being submitted from the contractor real-time, everyone has access and they can all see it, that really builds confidence with the money partners and the lenders." Jim Buttarazzi, Asset Manager,Arabtec Consolidated Contractors JV

INCREASE COLLABORATION

Collaboration is at the heart of alternative project delivery methods such as integrated project delivery (IPD), design-build, CM@Risk, bridging, etc. Rather than having all project team members work in independent silos (often with conflicting goals), these methodologies encourage interaction and information sharing throughout various stages of the construction process. The rising popularity and attention these approaches demonstrate the value of increased collaboration.

Firms seeking to embrace IPD – where the parties are bound by a contract that mandates cooperation – need to understand that shared data in this environment is essential. A precept of IPD is that when it the combined parties have access to good information, it reduces the likelihood of construction delays, because most problems are solved by the team before the problems reach the field.

When project teams work closely and have clear and frequent communication, problems that might otherwise become costly change orders can be identified early and resolved cost effectively.

"The more brain power you have that understands what's going to happen downstream, and the more eyes you have on something, the more apt you are to uncover future problems," says Thomsen.

If contractors, and even subcontractors, are on board early there is a greater potential for uncovering design errors before construction begins when the cost to make a change is significantly less. Using a collaborative platform to communicate and share information on potential claims increases the agility of the team to react efficiently and promptly apply a cost effective solution.

Establishing a clear project definition is more likely when project team members work collaboratively from the project's

onset. The Independent Project Analysis (IPA) is a think tank in Virginia that does project research for very large petrochemical and pharmaceutical projects.

"IPA's president told me that projects that started with excellent project definition cost 17-percent less than the average. The projects that started with poor project definition cost 20-percent more than the average. That's a 37-percent swing," says Thomsen.

A collaborative process that facilitates clearer definition of the owner's requirements and a highly evolved design results in fewer change orders during construction.

"If a developer wants to go out quicker with a design that's really pushed in a short time period, the percentage [of change orders to total project costs] will be much higher; it could be as high as 20 or 25 percent," says Buttarazzi. "But generally speaking, if it's a really hard lump-sum type contract, and they take the proper time to do the design, by the time you award a contract, a really good job would be around 5 percent; they tend to be around 10 or 15 percent."

INCREASE TRANSPARENCY

The more visibility into potential changes and the sooner you can provide this information to key players, the greater the chances that a change can cost less, create less disruption to the schedule or can be avoided entirely.

As a project director, Jim Buttarazzi strives to create an environment that encourages contractors to make a potential claim on a request for information (RFI) or shop drawing. According to him, "If you know you have a potential claim, you can address it and make it go away." In order for this strategy to be successful though, parties must have access to the same real-time information so the issue can be addressed and resolved immediately. "On a typical job like a 30- to 40-story building, we can have as many as 500 to 750 potential claims. But the claims submitted will be reduced down to 100 or 200, and then actual claims that become change orders to the contract generally tend to be much less, maybe 25 to 50," explains Buttarazzi.

Transparency of information and visibility into potential problems enables parties to act quickly. And on construction projects, time really is money. "The faster you respond to a change order, usually the less expensive it is," says Thomsen. "A dollar's worth of change in the requirements becomes ten dollars in design, becomes a hundred dollars in construction documents, becomes a thousand dollars in construction, and becomes ten thousand dollars during occupancy."

Getting information on potential claims to people who can act on it quickly enables a proactive – not reactive – approach, which saves time and money.

In addition to helping avoid costly change orders, transparency also reduces the owner's risk. "At any point in the project life, there could be 50 to 100 [potential changes (PCs)] or change orders in the process of being reviewed," says Guillermo

Ramos, Design & Construction Leader, Accomplished Facilities Management. "Not knowing the status, [or] clearly knowing who's doing what with those PCs or change orders, the amount and which ones impact the schedules and budget, is a huge risk for the owner."

Having a disciplined process and system to keep track of all information and documentation related to change orders makes it easier to manage the cost implications of potential changes.

"At all times we have live information related to our liabilities and our budget," says Ramos.

The ability to view the status of potential claims and their impact on the project budget has benefits that owners, project managers and money lenders all recognize.

"If you can create an environment where, when potential claims are being submitted from the contractor real-time, everyone has access and they can all see it, that really builds confidence with the money partners and the lenders," explains Buttarazzi. Seeing for themselves that potential claims are being addressed proactively in a financially responsible manner gives lenders confidence in the project and its management.

At the University of Texas Southwestern Medical Center, the Capital Improvement Project team has increased visibility with weekly reports. "We get updates on a weekly basis of pending change orders that we share before the meeting to allow everyone to review all the pending changes [and] issues ongoing for the project," adds Ramos. "This has been very helpful to remind folks of things that are behind schedule. If a change order has fallen behind, I could easily access the PC and help my project manager with expediting the review." This

has expedited the review process and ensured projects are not delayed by change orders falling through the cracks.

At the most basic level, increasing the visibility around potential changes heightens everyone's awareness and results in better management and lower costs. It's an application of the continuous improvement process – "what gets measured improves."

A STRUCTURED CHANGE MANAGEMENT PROCESS

Putting a process in place to manage potential claims and formal change orders can help you minimize their impact on schedule and budget or, whenever possible, eliminate them altogether. It also helps you deal with those changes that are inevitable.

A solid process should define the stages that a claim goes through and the steps to be taken (and by whom) as soon as a potential change is identified. "On day one, you have to mount the ground rules for how you're going to manage the change. You need to know who has the authority to approve the change for how much," says Thomsen. It's important to map out and communicate the decision-making hierarchy and set approval levels that reflect how evolved the design is, the scale of the project, the type of contract and delivery system

PUT IT IN WRITING!

"You want to define the process and you want to control the timeframe for each stage of the process, and that has to be written in everyone's agreements, from the consultants and the design team to the LLC and the partnership with the money partners, and obviously, most importantly, with

the general contractor," advises Buttarazzi. Your change management process should also track the impact of each potential change order on the overall budget. If this is neglected, chances for cost overruns escalate.

A formal change management process and system are beneficial for many reasons. It can:

1. Manage and increase early visibility of potential claims, enabling a prompt response to issues before they escalate into formal change orders.

2. Determine the root cause of changes, enabling you to identify and eliminate those that are within your control.

3. Provide documentation validating why decisions were made, protecting you from unjustified (and costly) changes and providing a historical record for an audit.

4. Facilitate a consistent method for claim review and change order approval to prevent individuals from making unauthorized approvals or from unauthorized individuals becoming involved.

5. Hold team members accountable when addressing potential claims and formal change orders by ensuring that a consistent and transparent process is adhered to, one which leaves a clear audit trail of predictable actions.

At a minimum, the process must be documented and agreed to by the project team. Beyond that, a person or multiple people must regularly audit the process and ensure that it is executed properly. It takes a focused approach to implement a process, work out the kinks, and ensure that it is followed throughout the project.

Project management software further reduces change orders and cost by greatly improving your ability to execute the processes that you put in place. Once you've designated approval levels and determined which individuals are involved

at what steps, it "forces" a methodical and consistent procedure so every change is addressed the same way. It also consolidates all documentation related to the change, tracks the change as it moves through each stage in the process, and measures the timeframe each claim remains in any one stage.

Most importantly, such a tool makes the change management process repeatable and measurable, increasing your ability to improve upon it over time and, as a result, reduce the number and cost of change orders.

SUMMARY

Change orders on any project can be reduced by improving collaboration between team members earlier in a project's development, increasing visibility among stakeholders to the information that could impact project cost and schedule, and implementing a tight process to manage change.

Collaborative project management software greatly enhances your ability to manage cost, schedule and change, and as projects grow in size and complexity, it is the only way to efficiently execute these initiatives.

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