

What happened to the budget? Not the question an owner wants to wrestle with when construction ends. Although both time and money are the time-honored barometers for measuring project success, this article will focus on the budget and how owners can limit their exposure to unacceptable levels of cost growth during construction.

Most projects, whether completed by a private owner or through a public procurement process, have three distinct parts; the design phase, construction phase and administrative close-out. Owners expend considerable energy developing accurate budgets for all phases of a project for the purpose of satisfying interested parties, such as equity partners, investors, governing boards and taxpayers. Often, these budgets establish the parameters that design professionals work within so construction costs are kept at acceptable levels. Notwithstanding this effort, owners may find themselves holding an empty wallet at the end of the construction phase wondering where all of the money was spent.

Once an owner enters the construction phase, its ability to control cost diminishes. Consequently, owners are well advised to expend an appropriate amount of resources during design and exploration that is commensurate with the level of risk it faces during construction. Depending on the type of project undertaken, one common area of cost growth during construction is the discovery of one or more Differing Site Conditions (DSC's). By definition, a DSC is either a subsurface or latent physical condition at the site that is materially different than the conditions indicated by the contract or an unknown physical condition at the site, unusual in nature, that differs materially from conditions ordinarily encountered and not typical of the type of work undertaken. Projects that involve a considerable amount of excavation, subsurface drilling, tunneling, rehabilitation or restoration are candidates for increased exploration during the design phase so as to limit cost growth.

The most common causes of cost growth due to the presence of a DSC may be enlightening to many owners. Disputes surface because pre-construction exploration is often 1) inadequate for the amount of work involved, 2) undertaken in areas outside the limits of where the majority of the subsurface work is to occur, or 3) not conducted at the proper depths. For example, a major dispute erupted on a multi-million dollar project over the volume of a specific type of soil expected in the excavation. This particular soil type was contractually specified for re-use on other portions of the project. Of the more than 100 bore logs taken during the design phase, only two (2) were within the limits of the excavation. In another DSC case on a large school rehabilitation project, after only three weeks of construction, all work was suspended for nearly six (6) months due to the discovery of asbestos.

In today's cost-conscious environment, Owners may choose to limit the amount of funds spent on exploration during the design phase. Unfortunately, this decision may lead to the discovery of conditions that wreak havoc on an Owner's budget. At the design phase of a project, Owners exert the most control and influence over a project's outcome. During this critical time, owners are well advised to establish a design review panel that closely examines the extent of subsurface exploration and its relationship

to the final location of its temporary and permanent structures. Notwithstanding the type of information needed for design purposes, an owner should consider the following questions during this critical phase:

- What percentage of the total construction cost will be spent on work that is subsurface or latent?
- What is the likely effect on construction if the contractor encounters a DSC in areas where subsurface or latent conditions may exist?
- Are there requirements within the contract specifications that depend on the veracity of subsurface conditions?
- Would minimally invasive destructive testing provide valuable information to the design team resulting in a more accurate description of the work required under the construction contract?

Had the owners of the previously mentioned projects investigated the answers to these questions during the design phase, it is likely that their contract documents, and their budgets, would have properly addressed the conditions actually encountered during construction.

Once construction begins, it is generally not the actions of an owner that causes the greatest cost growth, but rather their lack of action. With today's complex and fast paced construction projects, standby costs due to delay can be thousands of dollars per day and literally dwarf the cost of extra work and scope changes. Allegations from a contractor regarding untimely owner responses involve the following usual suspects:

- Requests for Information (RFI's)
- Requests for Clarification (RFC's)
- Change Order Requests (whether denied or accepted)
- Processing of Authorized Change Orders
- Investigations of Alleged DSC's
- Design Bulletins and Deltas
- Submittal Reviews
- Applications for Payment

Most public and private owners are engaged in projects of sufficient size and complexity to require this type of communication and project documentation. Unfortunately, many owners do not have sufficiently trained or experienced staff to adequately address these project needs and, more often than not, retain these valuable resources from its Architect, Engineer and, perhaps, from a construction management firm. Despite these efforts, though, the analyses of contemporaneous project records still reflect untimely and sometimes inadequate responses in many of these crucial areas, which lead to project delay and unacceptable cost growth. How does this happen?

The complete answer may be as complex as the project itself but often reduces to a few prominent issues, which may include:

- Contract documents between the owner and contractor that do not address or identify response times by the owner or its agents.
- Professional services contracts that do not have provisions

in them that require it to respond within a reasonable period of time.

- Management's lack of awareness of when responses are needed or required under the contract.
- Inefficient and time consuming document flow from the contractor to the appropriate party and back to the contractor.
- Lack of sufficient experience to properly manage a large or complex construction contract.

There are many ways for an owner to solve these problems and improve the likelihood of successfully completing its project within the forecasted budget. A comprehensive constructability review that includes all of the construction documents and professional services contracts is a good place to start. The firm conducting such a study should have a proven track record and staff experienced in recognizing not only constructability issues but should also be well versed in dispute avoidance. This type of consulting service should include a review of the general provisions and general requirements of the contract in order to address any shortcomings in the flow of information to and from the contractor.

Untimely responses to documents that require the review of design professionals may be eliminated by either co-locating this staff to the project site or by initiating a system that allows for electronic transfer of these documents if co-locating staff is impracticable. While improved processing eliminates and reduces untimely responses, the most noteworthy issue for an owner is staffing a project with resources that do not possess sufficient experience in construction and construction management, negotiations, and

dispute avoidance. On their own, process improvements will not prevent untimely owner responses unless Professional Services contracts specify the qualifications and years of experience for key positions on the management team.

Addressing these issues satisfies another area of potential cost growth for owners, extended contract close-out. This administrative process does not begin at substantial completion or at beneficial occupancy but, rather, at the Notice to Proceed. A sufficiently trained and experienced construction management team understands that axiom and begins its preparations for close-out at the onset of construction. Drawn out change order negotiations, late review of contractor claims and failure to timely collect contract deliverables lead to cost growth in professional service contracts and increases the likelihood of all-encompassing impact claims.

No construction project has ever been built without experiencing some level of cost growth. Owners trade the economic infeasibility of perfecting a set of construction documents with contract provisions that allow it to deal with changes during construction. As these changes are not competitively bid they have a built-in premium attached. Thus, limiting cost growth is simply an exercise in limiting the unexpected. Owners can accomplish this feat by focusing on areas where cost growth is likely to occur, such as conducting effective exploratory work that reduces the likelihood of encountering unknown subsurface or latent conditions, improving its construction management practices by performing constructability reviews and retaining more experienced construction professionals to manage projects. Improvement in these areas will produce more accurate project budgets, reduce cost and allow an owner to devote its valuable resources to other projects.

### ABOUT THE AUTHOR-

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