A Design Team's Approach to On Budget Vertical Construction Projects

What is one of the most dreadful realizations for a significant building project? To some, it is likely the dreaded phrase, "we are over budget." If you are an architect, contractor, or owner that does building projects, I would almost guarantee you have paid witness to at least one over-budget project. Why does a project go over budget? There is always a myriad of things that can cause it, and a whole lot of finger-pointing happens if the team is not set up to succeed even from the beginning.

One of the best strategies to employ is having the contractor selected simultaneously as the design team or, at a minimum, have a cost estimator on the team upfront. Competent designers can do a good job of estimating a project cost, but designers do not know the current market. Typically, designers use past project examples and data to determine future costs. That is somewhat accurate for construction cost but does not always accurately identify the subcategories of work and materials. The subcategories' accuracy is the key to identifying strategies for moving a project towards the budget and keeping it on budget.

The Earlier, The Better – Project Definition

Whether it is design-build, CM at risk, design-bid-build, integrated project delivery, or any other hybrid versions, they all have their merits. With all delivery methods, the issue of an over-budget project can happen. It just might not always be visible to all parties involved in the project.

The best time to identify if a project is within budget or not? Well, that is simple. The earlier, the better. The first piece of the puzzle, is the budget realistic? Are you trying to build an acute care hospital for $125 per square foot? We know from day one that is not realistic;

someone will have to come to grips with reality in that scenario. So, step one, is the project's budget realistic? If it is, you have made it past step 1.

During the project definition phase, the design team should create a program satisfactory to the owner's needs. This is step 2 in the budget process. The program will identify the types, sizes, and overall size of the project in a spreadsheet format. It is wise to check the total project size versus what the market has delivered for similar projects on a cost per square foot basis. Are you on budget? If not, depending on the project, it is time to think about the program and see which elements should be removed. Think of the times where a project tried to modify the program after bidding. This type of project is usually a project that never seems to fire on all cylinders and end with everyone feeling good about the project. Upfront is the time to determine the project size. Once the project is right-sized and on budget, move on to the next step.

Details Begin to Form - Schematic Design

Up next, schematic design. This is when we start to add some of the project's conceptual ideas and more detail. By detail, it is not nuts and bolts yet. We are several steps from that. Schematic design is when materials, systems, layout, manufacturers, and specifications begin to take shape for the major project elements. Now is the time to dive into some more detail with the cost. The mechanical system, major electrical, exterior shell of the building, the foundation system, and specialty interior finishes are usually the major cost contributors at this level. Getting some market costs at this point in the design is an excellent way to meter the project's direction. Step three is to ensure you have the contractor or the cost estimator engaged in helping understand these items' costs. At this phase of the design, it is relatively simple for the design team to provide options and shape the design to fit the budget.

Detailed Design Decisions - Design Development

Assuming the design team and contractor have massaged the project within budget, we move onto the next phase, design development. More detail starts to make an appearance on the documents. Wholesale design options likely disappear from the design documents during this phase. This is the phase of design when finishes and detailing of materials and systems begin to shape the cost. For example, detail on a simple parapet can add an alarming amount of cost to a project. Trust me, I know from experience. During this step, step 4 is paramount that the contractor or cost estimator constantly communicates with the design team. Design decisions at this phase can have enormous cost impacts. It is critical that during this phase, the design team takes some of the typical details to a construction document level of detail. Why? So contractors can accurately gauge cost.

When the costs come back from design development, documents are sometimes much like a WWE battle. If everyone laid the proper groundwork in the previous phases, this phase could be manageable. This is step 4 of the budget process for designers. During this phase of the design, the design team starts to select specific makes and models of the major MEP equipment, elevators, curtain wall, glazing systems, building skin, roof, interior finishes, and a host of other big-ticket items. If we go past this point without knowing the suppliers and manufacturers for those major items, it will have consequences that often plague the project to completion. This fourth step is usually when the contractor starts to get specific bids on the major components such as the MEP, civil, landscape, structural, glazing, exterior skin, and specialty finishes.

Budget Reconcillation – Construction Documents

The fourth phase of design is construction documents. During this phase of the design, the design professionals are typically coordinating and finalizing the project's details. In the steps related to budget, this is step 5; the step when the design documents reconcile what was learned from the pricing completed on the design development documents. When the design development documents were priced, the contractor or cost estimator typically identified cost savings options and opportunities. Working through these cost solutions and incorporating them into the design documents helps reconcile the project to be on budget.

Market Confirmation and Success

The fifth phase of design is referred to as bidding and negotiation. This is the final phase where design can affect change to keep the project on budget before construction starts. At this sixth step of the budget, the market will determine how accurate everyone's work was up to this point. From my experience, if everyone put in the hard work together and kept an open line of communication with each other, the project will be on budget.

Admittingly I have left out a lot of the detail in each step and phase of budgeting and design. From experience, if a design team follows the phases of work openly and adequately communicates with a selected contractor or cost estimating specialist, the project has a far greater chance of being on budget and being an overall success for the entire team.

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