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Estimating the Cost of Risk at Preconstruction

By: Bruce E. Schlesier, CPE, LEED AP BD+C

Construction is a minefield of risks, and cost estimators often have to operate as risk managers. Failure to identify, categorize, and forecast how to mitigate risks during the preconstruction phase can be devastating to a construction company's financial future.

Mitigating risks can be expensive, and can push the proposed cost of the project out of bid consideration, so strategic decisions must be made when estimating to assess areas of greatest risk and determine a mitigation plan for those risks. The decision may be based on, for example, understanding what risks your company does well versus poorly.

Location may also be important due to differing levels of compliance with laws, codes, and regulations. For example, in New York City, meeting the safety requirements alone can add hundreds of thousands or even millions to construction cost. Risks come in many types, including legal, political, financial, economical, environmental, technical, scheduling, and management risks. This is a brief overview of the preconstruction department's role in assessing and costing risk. A preliminary risk analysis (PRA) for the project should be developed during the preconstruction phase to plan and determine the cost of mitigation. This effort requires collaboration with team members from the executive, safety, scheduling, and project delivery teams.

The contract documents used for each project include the agreement, drawings, specifications, general conditions, supplemental conditions, addenda, and contract modifications made during contract performance. I leave the contract agreement to the attorneys; however, it is important to understand the general conditions and contract terms that will contain cost and risk impacts. Most contractors use standard forms of contracts for predictability. The standard contract agreements for construction are typically provided by either ConsensusDocs, a coalition of forty major owner and construction industry associations, or the American Institute of Architects (AIA). It is necessary to understand the differences between the two major suppliers.

AIA documents typically shift risk away from the architect, and ConsensusDocs emphasize fair risk allocation between all project parties. Standard contract documents contain some bias based on the originator. If you are coming from an owner representative or General Contractor background, you may prefer ConsensusDocs documents. If you're coming from an architectural background, you may prefer the AIA forms. Everyone should be aware of the slight nuances between the two publishers of these documents as it is likely most of you will be working with one of the two types.

Preconstruction considerations: Estimation, Safety, Logistics and Scheduling

Each of these contain levels of risk and cost. Estimation, which is high-risk, includes developing the cost of general requirements, safety, logistics, scheduling, means and methods and, of course, all the materials, labor and equipment required to complete the project. The process begins with a full review of the contract documents. The level of development of these documents has an impact on the contingency to be carried.

Often owners will ask for a budget based on conceptual drawings so they can reach out to the debt market for financing. So, it is imperative to carry adequate contingency for both design and construction at this phase. The site for logistics is one of the first elements to look at when developing a conceptual budget, as the site can be a large cost, and includes the subsurface investigation report for rock and water table levels.

Risk Analysis Steps/Process

Assign parts of the project to the estimating team based on their competencies. The assigned estimator will be responsible for completing the internal estimate, developing the Scope of Work (SOW) list used for the Request for Proposal (RFP) to the subcontractors, and communication with the subcontractors.

Set up a Day One Team Meeting for a page turn of

documents, and include members from the estimating, project delivery, safety, and scheduling departments to develop the plan for construction. This meeting will identify the impact on General Requirements (construction aids) and General Conditions where the schedule duration determines the cost. Means and methods for project delivery are also discussed during this meeting so the estimating department can price accordingly.

Develop a list of subcontractors to be reviewed with the project team. This is a high-risk area, so it is very important to maintain a company Master Bidders List that is comprised of prequalified subcontractors. Prequalification is a vetting process where the subcontractor provides their history, financials, insurances, employer modification ratio (EMR), which is an indicator of safety, bonding capacity, if any, enterprise designation, and largest completed project. Companies can customize the documents and questions required. Most construction companies use services to generate a score based on this information to determine if they are qualified or if mitigation is required.

The SOW (Scope of Work) list which is used with the subcontractor RFP (Request for Proposal) from estimating as opposed to the SOW narrative developed together with the project team is typically called "Exhibit A", and is included with the contract agreement. Both the SOW list and narrative typically start with a template containing static elements already included and then the project specific scope is added. The template speeds up the process — which is key to getting this document out early to the subcontractors and suppliers. Develop a bid form which is often part of the SOW sheet, where the subcontractors break out their proposal values, so they can be compared to the other bidders. This is part of the leveling process. To level bids without this structure in place is nearly impossible because they submit proposals in different ways. Once the leveling sheet is completed a short list is created with two or three of the bidders and a face-to-face meeting is set with each subcontractor involving the preconstruction and project delivery team. They then review the SOW document with this subcontractor, a process also known as de-scoping.

This process further reduces risk.

This process requires many steps prior to submitting the bid to the owner, and it is nearly impossible on a stipulated sum where you may be given only three weeks to submit, requiring higher contingences based on higher risk. Owners have recognized this and have adjusted to other forms of project delivery, including the guaranteed maximum price (GMP) contract where after selecting a general contractor or construction manager, the project will be bought out up to typically 80% prior to settling on a GMP amount. The contingency at this point has been reduced significantly or eliminated. Other forms of project delivery include an integrated project delivery (IPD) concept where the contractor (a specialist in the cost of a building) is involved during the design process to control the cost of construction, which is in the best interest of the owner's budget.

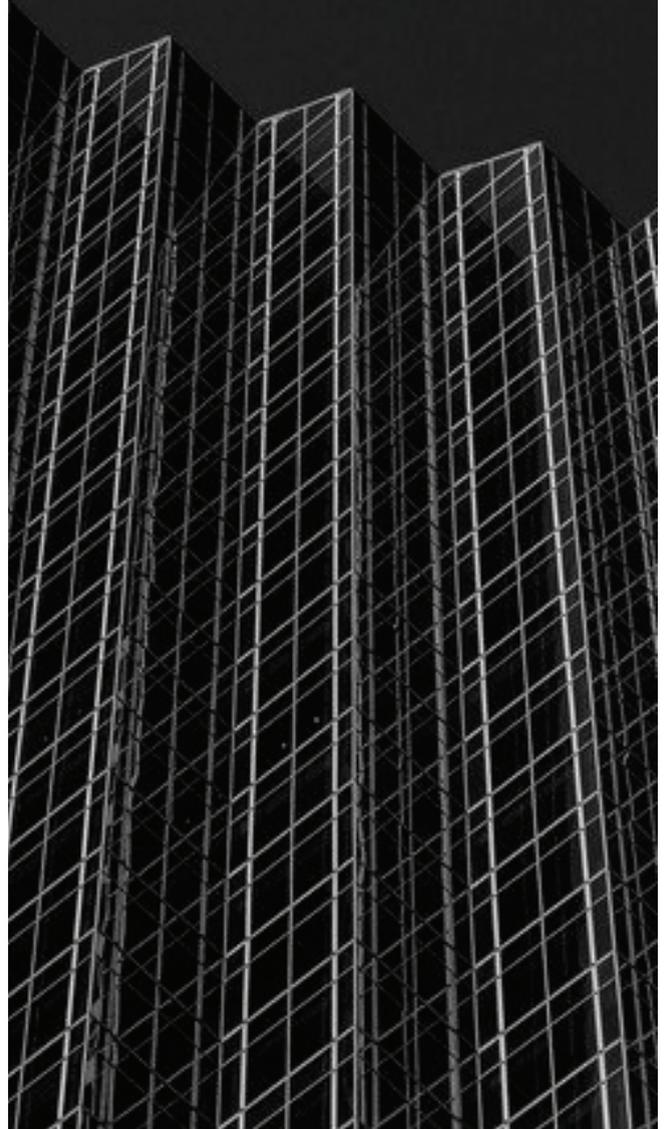
The preliminary risk analysis (PRA) during the preconstruction phase is critical to project success and profit. This high-level overview is primarily based on a GMP method of project delivery; however, it contains considerations on whichever method of project delivery agreement is selected.

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