

One of the biggest benefits of the Construction Manager-at-Risk (CMAR) delivery method is the development of a working partnership between the owner, design team, and contractor. Typically, with the CMAR process, the contractor will be hired during the design phase shortly after an architect has been selected. The architect and contractor each have separate contracts with the owner and work together through preconstruction and construction.

Early involvement from the contractor helps to remove barriers typically associated with the design-bid-build method. The contractor is able to provide constructability reviews, cost estimating and scheduling support throughout the process, leading to more accurate budgets and schedules as well as increased knowledge of the project before construction begins. When managed effectively, this approach ensures a smoother process characterized by fewer RFIs (requests for information) and change orders. Ultimately, the team is better positioned to deliver the project on schedule and in budget.

Pros

- Gives owners more flexibility in contractor selection process by emphasizing the experience of the contractor's team members and the firm's experience with the building type, not just price
- Provides design phase assistance and input from contractor for cost, schedule, phasing, site logistics, safety, quality, and constructability of the proposed design
- Builds team and collaboration and creates a non-adversarial relationship between design team and contractor
- Allows faster design and construction schedule with possibility of multiple bid packages
- Keeps design control with the owner
- Maximizes opportunities for virtual construction (BIM)
- Allows more flexibility to change certain elements of the project with less exposure than when construction is underway
- Affords an "open book" approach to project costs
- Holds contractor accountable for schedule and guaranteed maximum price
- Allows subcontractors to provide valuable input regarding quality, constructability and coordination

Cons

- Limited number of qualified contractors who have proven systems and robust preconstruction services in place
- Some architects are not used to interacting with a contractor during the design phase and perceive their involvement as a threat
- Sometimes the contractor does not take responsibility for errors in preconstruction or construction
- Less emphasis on lowest cost than traditional design-bid-build approach

Three Common Areas of Frustration

1. Delaying or Avoiding the Establishment of a Guaranteed Maximum Price (GMP)

A GMP is a not to exceed price that includes all projected construction costs, contractor managed contingency funds and fees. Ideally, the owner, design team, and contractor will have a conversation during contract negotiations to define when the GMP will be established. For example, if a GMP will be established when contract documents are 65% complete, it is critical that the team members clearly define what level of detail is expected at that stage of drawing development. This helps keep everyone on the same page and provides a measurable standard by which to hold team members accountable. While the term "at-risk"

could refer to the contractor's risk associated with holding trade contracts and general construction performance, most contractors equate the "risk" with setting a GMP. Controlling the owner's financial risk is one of the benefits of using the CMAR delivery method. Owners should select a contractor with a history of working through these types of scenarios and one who is willing to work through the pros and cons of different timelines for establishing a GMP. Setting clear expectations, defining deliverables at the drawing development stages and holding team members accountable will lead to a better overall CMAR experience.

2. Mismanagement of Contingency Funds

Construction projects typically have two types of contingency funds: owner managed and contractor managed. The same strategy for establishing clear expectations in regard to a GMP is relevant when setting the stage for how, when and why these contingency funds will be used. If the rules are established up front, Owner managed contingency funds (including design contingency) are set aside to cover unanticipated owner directed scope changes, design changes, or unforeseen conditions after the establishment of a GMP. Typical scenarios include purchasing the latest equipment and/or equipment upgrades or executing end-user change requests. The purpose of Owner contingency is to cover the "I wish we would have done this" items. The contractor managed contingency is a quantification of the risk associated with the refinement of the drawings, and inflation or price escalation that may occur between the GMP until buyout. Contractors should adjust the amount of money accordingly on a sliding scale as the undefined scope of the drawings becomes more defined. The goal is to release as much of the contingency funds back to project as early as possible. The earlier the contractor can release contingencies, the bigger impact those dollars will have. It is much more cost effective to add money back into the project during construction than at the end of the project, because it reduces or eliminates the rework necessary to accommodate the changes. The diagram below outlines a typical timetable for reducing the amount of contingency during the project.

3. Lack of Preconstruction Services

A major benefit of the CMAR process is to capture the contractor's knowledge and expertise during the early design stages of the project, when adjustments are easiest and least costly to make. The goal of preconstruction services should be to maximize value for the owner with the budgeted funds available for the project. Construction firms that excel at conceptual cost estimating and constructability reviews are very skilled at looking around corners and peeling back layers of the project, even when working with early schematic designs and drawings with limited detail. With their past experience, contractors understand what it's going to take to build the building and to make a building function the way it is intended. They are able to help owners maximize their budgets because they work collaboratively with the architect to create substance by defining the project in a detailed scope narrative that outlines the assumptions they made along the way to get to a budget. As a valued team member and industry expert, the contractor will make recommendations and analyze the pros and cons of different materials, building systems, and scheduling strategies.

Where owners typically sour on the CMAR process is when the contractor provides only baseline estimate checks that provide little detail or value to the project team. These scenarios are characterized by projects coming in dramatically over or under budget. When the building project comes in dramatically under budget, the opportunity to maximize value is missed. The project could have had more square footage, higher quality, a more efficient mechanical system, etc. On the flip side, projects that come in over budget lead the project team down the path of late stage value engineering. This process is characterized by cutting scope, decreasing the quality of finishes or changes in systems. Identifying savings in a timely manner is an imperative function of the CMAR delivery and responsible contractors acting as stewards of the client's money will release those savings back to the owner as early as possible so the owner has the option and time to reallocate those funds back into the project or in a manner relative to the project.

Vaughn Construction has served as a construction manager-at-risk for the Alamo Community College District (ACCD) for several years and over several projects, primarily at their San Antonio College campus. One of the benefits of this delivery method ACCD finds most valuable is the realization of cost savings in the project and at a stage in the project where the owner can utilize those funds to enhance scope, aesthetics or other means relative to the project. Two projects for the campus, the

Nursing and Allied Health Facility and the Academic Instruction Center, demonstrate how the realized savings within the GMP were appropriate to the overall project cost. On the Nursing and Allied Health project, the GMP reduction was \$85,000 to a \$24,107,538 GMP. This small variance testifies to the accuracy of Vaughn's preconstruction efforts for this project. Moreover, on the Academic Instruction Center, Vaughn returned \$400,000 to ACCD on a \$12,952,000 GMP. ACCD utilized that savings to fund access security software and wiring. The savings were realized early enough in the project for ACCD to procure it in time to be installed prior to turnover of the facility.

On another ACCD project for which Vaughn served as CMAR, San Antonio College Phase II, a dynamic bidding environment acknowledged early on in the project helped ACCD take advantage of significant cost savings. Vaughn reduced the GMP so ACCD could fund a related small renovation project for two departments being impacted by the larger renovation. Through a proactive CMAR process, not only did ACCD realize more scope for its budget, it also saved time by consolidating two project phases.

Being aware of common pitfalls of CMAR and strategies that can be used to guard against them can help establish a firm foundation to maximize the value of capital construction projects. The CMAR delivery method can be extremely effective if a true GMP is established, contingency funds are managed responsibly, and the contractor provides exceptional preconstruction services.

About Vaughn Construction

Vaughn Construction is a Texas-based construction company that specializes in new construction, renovations and additions to civic, healthcare, education and research facilities. The privately-held company has offices in Austin, Bryan/College Station, Dallas/Fort Worth, El Paso, Galveston, Houston, Lubbock, San Antonio, and the Texas Medical Center (Houston). For additional information, visit www.vaughnconstruction.com.