

The Role of the Construction Manager

Managing Large Public Works Projects Can Be a Complex and Challenging Endeavor, Construction Management Firms Can Help Lead the Way

By James Joyce, P.E.

One of the most frequently touted buzzwords in the construction industry is "construction management." It seems that almost every firm is now offering this service; however, the interpretation of construction management and the services it entails greatly varies.

According to the Construction Management Association of America, "construction management is a professional service that applies effective management techniques to the planning, design and construction of a project from inception to completion for the purpose of controlling time, cost and quality." While the definition may seem simple enough, the selection of the proper firm can either make or break your project.

By selecting the proper construction management firm, you can help manage risks and control costs at every stage of the project from pre-construction planning and complete construction oversight to post-construction services.

What is The Role of a Construction Manager?

Undertaking a construction project is a complex and challenging endeavor. As such, it is critically important that owners are armed with the proper information and clearly articulate their goals for the project to all members of the design and construction team including the architect, engineer and contractor. Construction management firms can help aid in this quest by leveling the playing field between the owner and the contractor, as well as ensuring that everyone is informed and understands their role, expectations and schedule for completing the project on time.

The role of a construction management firm is especially important in the public sector as many who work for public agencies, especially in smaller communities, undertake substantial construction projects — such as a fire station, library or community center — only once during the course of their career. However, the construction firms that they will be working with construct many similar projects in the course of one year. This leads to a gap in knowledge and experience. By integrating a construction management firm into the project, however, you can balance the experience level between the owner and the construction firm.

For example, a recent tunneling project became delayed and mired in construction claims because of the lack of experience and understanding of the on-site "construction manager." The public agency believed the job was not complex enough to warrant hiring a professional construction manager to oversee the project and manage the work at the job site. As such, a staff member was

assigned to oversee the daily construction of the project. During the tunnel construction, however, the contractor experienced unanticipated difficulties that they believed would require additional cost and resources not available under their existing contract agreement. The contractor thus opted to stop work in order to pursue additional funding and resources from the owner. The staff member assigned to oversee the construction dutifully inquired as to why construction had stopped on the project and was advised by the contractor that a fictitious part had broken on the tunneling machine. The contractor indicated that the "part" would need to be refurbished before construction would resume. The inspector noted this in his daily reports for several days until a more senior and knowledgeable staff member read the reports and readily identified that the inspector had been misled by the contractor. By this time, critical information needed to assess the operations and methodology of the contractor were lost, placing the owner at a disadvantage in determining what was actually necessary to complete the project and if a contract modification was warranted. In contrast, a more experienced construction manager would have avoided this mistake and alleviated this entire scenario.



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Yet another reason a firm that specializes in construction management is necessary is because construction management services are often included with the architectural and engineering services as an afterthought or merely as a requirement. Unfortunately, by the time construction begins, the design team may very well see their profit margin for the project shrinking. To accommodate the shrinking budget, it is common practice to send the rookie or team member who bills the lowest to monitor the project and provide the promised construction management services. This person may have had little involvement on the project before this and may not feel comfortable asserting the owner's interest to the contractor. Further, this representative may lack the necessary experience to truly be a creative problem-solver. This approach results in construction observation rather than construction management because the construction process is just being monitored rather than

explored for methods to control the cost and schedule.

When to Hire

Recognizing that true construction management can improve the success of your project, it is important to hire a firm whose core competency is construction management. Contrary to popular belief, the first firm hired for a project should be the construction manager, not the architect or contractor. A construction management firm is most

effective when it is not only afforded the opportunity to manage the construction, but also be part of the design as it can bring great value to a project before the contractor is on-site. By hiring the construction management firm at project inception, it can work with the owner to develop contract documents that are owner-friendly as well as focus on pre-construction services, value engineering and cost estimating on the front end. This will help control costs and ensure adherence to the schedule. Further, since the design process often takes longer than expected (which results in a shortened construction schedule in many cases), having the construction management firm involved from the beginning can assist in keeping all phases of the project on schedule and ensure optimal results.

Early involvement also allows the construction manager to conduct a constructability review and examine the construction documents before they go out for review. With this approach, minor revisions can be made to increase efficiencies. For example, a project can be on the drawing board for several years with intimate involvement from the architect, engineers and owners. This team then expects a contractor to review the documents and understand all the background information that led to the development of the documents in a mere four to six weeks. It is easy for the design team to overlook certain items and not clearly articulate their goals because of the intimate involvement. However, review by a construction manager ensures that items are properly spelled out, which helps to avoid change orders and schedule delays that add cost to a project. This allows the contractor to provide the best possible bid cost and schedule.

For example, H.R. Gray was retained by a major metropolitan city as construction manager to provide constructability, scheduling, estimating and full-time on-site management services for the relocation of an existing 123-in. tunneled sewer line and associated lines to a new location outside of a proposed arena site. Also included in the project was the widening of the street in front of the arena, construction of new sidewalks and relocation of utility lines. Relocation of the 123-in. line also required the construction of two diversionary chambers around the existing line. To accommodate the owner's schedule, the constructability, design and bid processes were accelerated and materials were pre-purchased. The construction process also had to be accelerated and was reflected in the construction manager's project schedule and schedule narrative in the bid documents. Extended work hours and a second shift were required. Early involvement by the construction management firm resulted in careful planning and scheduling, timely responses from the design consultant, and on-the-spot resolutions of construction problems by the management team — ensuring continuing progress of the work and successful completion of the project ahead of schedule and within budget.

After successful completion of this project, H.R. Gray served as the construction manager for the ensuing sewer relief and 60-in. combined sewer bypass project — a combination of two separate projects required for completion of the aforementioned arena project. The combined sewer relief phase of the project included construction of a diversionary chamber; underground electrical transformer vault; addition to an existing regulator; relocation of water, sewer and electrical lines; construction and repair of sidewalks, cobblestone, concrete and asphalt roadways; as well as the installation of a 108-in. reinforced concrete sewer

line. This work, performed in three phases to allow continued access to the business and office buildings and to maintain both pedestrian and vehicular traffic along the roadways, involved a 60-in. bypass line to an active existing 60-in. line to allow rerouting of the existing line. By incorporating a construction management firm into the process, the owner benefited from a timely design process, good cost estimates, a clearly defined schedule and set of construction documents for contractors to bid on, as well as coordination of all utilities and infrastructure needs during the project. This provided a trouble-free project for the public owner, permitted appropriate notification to local businesses regarding utility and traffic disruptions, and allowed the completion of the project in time for the facility use.

Documenting Success

Another area where the construction manager can offer considerable expertise is with the contract documents. Often, the contract form architectural firms use is a standard document available from the American Institute of Architects (AIA); therefore, it is ultimately serving the best interest of the architect. While these standard agreements provide a good starting point, it is in the owner's best interest to review and alter the documents to ensure they are positioned in the best place. For example, AIA documents are not specific about timing. The documents state the architect will review contractor questions or change orders but it does not cite a timeframe for response. This can lead to a slow response, which can become a source of claims.

A construction manager's expertise also extends to coordination with the contractor. Often on public works projects, the firm with the lowest bid secures the work. This philosophy provides contractors with the necessity of maximizing their profit on change orders since they have already been asked to skinny-down their profit in the low bid. An "owner-friendly" contract can provide more specific language for the owner to control the project and limit risk. A construction management firm can incorporate schedule milestones into the documents to provide accountability for the contractor. When goals and requirements are clearly explained in the documents, the

risk of claims and change orders is reduced.

Selecting the Right Firm

One of the most important elements to consider when hiring a construction management firm is experience. Examine the firm's experience in projects similar to yours and be sure that they served as the construction manager for those projects, not merely as the contractor or another member of the team. Also, be sure to check references. Ask for a list of owners that they have worked with and contact them to evaluate the firm's performance. Finally, make sure that the firm provides comprehensive management with preconstruction, construction and post-construction services. The proper firm will help level the playing field between the owner and contractor to ensure project success.

James Joyce, P.E., is President and CEO of H.R. Gray, a management and consulting firm that offers public entities program and construction management services for complex projects as well as analysis and resolution of construction disputes. He has almost 25 years of experience in the engineering, construction and facilities management industry.

Construction Management Services

- Cost and resource scheduling
- CPM schedule development and monitoring
- Value engineering
- Constructability reviews
- Design and construction schedules
- Contract document development
- Contract bidding, negotiation and award
- On-site management and coordination
- Contract administration
- Quality control and inspection
- Master plan implementation
- Safety monitoring
- Budget management
- Change control and management
- Audits and cost-to-complete estimates
- Operation and maintenance manuals
- Owner training and orientation
- Project completion and close-out
- Final project walk-through
- Final billings and contract close-outs