Contractor Participation in the Design Process

Traditional water projects delivered under the “design-bid-build” method of delivery have limited contractor participation in the planning and design process. This approach could result in underestimated budgets, constructability issues during construction, and very often unexpected changes in contract terms because of misinterpretation of owner needs and project expectations by contractors.

Almost all of the alternate delivery systems of water projects involve contractor participation in the planning and design process of a water system capital project. It is recognized by most utility owners that early contractor involvement can help with planning complex water projects, streamline the design process, and most importantly, help with the financial planning for the project by providing input on construction budgets.

A typical water project planning and design phase commences with a feasibility study performed by the engineer. This phase establishes the methodology for development of the project and also sets up the capital budget to achieve the goals of the program. If the project is deemed to be viable at that point by the utility owner, a pre-design phase is initiated that sets up the design criteria and begins the development of a construction cost estimate.

The pre-design phase is followed by the detailed design and construction phase. If alternate delivery methods are preferred by the owner, the project’s detailed design and construction phase will be altered to accommodate the delivery method.

The detailed design begins with a preliminary design phase in which conceptual layout of the facility is developed, major equipment functions are defined and conceptual process designs are performed. The utility owner provides input during this phase and directs the commencement of the intermediate and final design phases.

During the intermediate and final design phases, concepts developed during the preliminary design phase are detailed and cost estimates are refined for purposes of construction. The final design phase terminates in construction documents that are used to permit and construct the project.

It is in the best interest of the utility owner to continuously involve contractors, suppliers, and fabricators in all steps of the design process to provide constructability and cost input to the design process. This practice will ensure the financial and operational success of any water project. Contractors can typically provide input on capital budgets and cost estimates, constructability, layouts, and design details and alert the owner about potential claims in a typical water project.

**Budget Development & Cost Estimates**

Contractors are ideal entities to develop budgets and cost estimates for a utility project. They are closely involved with trades and familiar with the labor, equipment, and materials market. Contractors would bring real-world perspectives to construction budget development. Contractors can often draw on the experiences of major suppliers and trade contractors to establish true price information for the project.

**Layouts, Design Details, Constructability & Schedule Analysis**

Contractors can assist greatly with layout and design details. A contractor’s input during design ensures proper layouts, site plans, and “buildable” designs. When contractors are absent from the design table, very often constructability issues come to the surface during construction when all parties have already committed resources, and revising design becomes expensive for either the utility owner, the engineer, or the contractor—and very often for all parties in the construction process.

For example, if a deep clear well is designed in close proximity to an existing structure on grade, protecting the existing building by designing proper foundation shoring becomes important. A
contractor can recognize this risk at the time the layouts are prepared and suggest alternatives to eliminate or minimize this risk.

Likewise, a contractor is very familiar with construction scheduling that can be a valuable asset to the engineer during the design and planning phases.

Minimizing Potential Claims

In many construction projects, cost claims during construction can be attributed to a misunderstanding of the owner’s expectations by the contractor or the reluctance of an owner to properly compensate the contractor for time or resources spent performing work greater in scope than the originally contracted work. Contractor involvement in the design process can minimize occurrences of such false expectations by both contract parties. Potentially, a contractor can predict possible pitfalls in contract documents that could result in unforeseen claims by providing input on clear definitions of all contract terms and conditions.

Contractor Participation

In a traditional design-bid-build project, contractor involvement in the design phase can become difficult. Very often municipal owners would not like to give one contractor an undue advantage in the bid by allowing it to participate in the design process. One way to circumvent this would be to hire retired contractors or trade personnel and place them on the design team. Such individuals with past construction experience can bring needed experience to the design process.

In alternate delivery systems like design-build and CM-at-risk projects, the contractor and/or builder is a direct participant in the design process. In these types of projects, the planning and design phases are controlled by builders/contractors; therefore, constructability and schedule issues are addressed up front.

The Contractor’s Council of the Florida Section, AWWA, invites all readers to participate in the council. We believe that active participation by utility owners and engineers can allow us to get together for ideas to deal with contractor participation in the design process and develop standards to improve the final product delivered to our customers.