Understand Bidding, Bonding and Value Engineering

Prepared by

Asian Contractor Association (ACA)
DBA Asian Contractors and Engineers Association (ACEA)

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Asian Contractors and the related Parties
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1. INTRODUCTION

This paper is to describe the bidding process and how the process should be conducted. It also refers to bonding and value engineering that they are the important elements in connection with the binding process. The purpose of this paper is to provide key information to Asian contractors in order for them to better respond to the request of services by an organization. The scope of the associated study is limited to the projects relating to construction.

The bidding process is an essential element of the procurement process which refers to purchasing and contracting (Reference 1, ACA). The purchasing, and in turn the bidding, is generally a competitive process for any purchase of higher than a specified dollar amount (Reference 2, COA Electric Utility Commission). This competitiveness provides an optimal purchase that the cost of purchase is minimized while the quality or specification of the purchase is satisfied. In other words, the method of value engineering can be applied to the purchase, or the bidding process.

A bidding process is often classified into a bid and a proposal, such as an "invitation for bid (IFB)" or "request for quotation (RFQ)," and "request for proposal (RFP)." An IFB is judged by the security of the bid and a detailed list of the price presented by the vendor or contractor. The RFP is awarded on the basis of the best value to the owner organization. Normally an evaluation committee is organized for the selection of the best proposal in response to RFP. Sometimes, an IFB also requires a written proposal be included in the bidding process.

With reference to City of Austin (COA), the bidding of a project requires bonding at a stage in the bidding process. There are various types of bonds to be explained in the later section.

2. FORMULATION OF A BIDDING PROCESS

To request service for a project, the owner organization of the project issues an open invitation to these contractors who have registered to the organization. As an example, the COA Financial Service Department (FSD) requires that all contractors who plan to do business with the City to be registered in its vendor database entitled "Financial Online." The FSD is solely responsible for the City's purchase and the associated bidding process. The purchasing request may be originated from any department of the city. However, the FSD takes the responsibility to complete the purchase through a bidding process. This bidding process is competitive for any dollar amount greater than a specific value.

With the FSD being solely responsible for the city's purchase, it's convenient for the city to have an overall plan to manage and optimize its bidding process. Also, the FSD has to ensure that the bidding process is justful that it's anti-collusion, anti-lobbying, offer confidentiality, and no conflict of interest is associated with the offeror.

In general, the bidding process for the purchase can be characterized by the following facts:

- One of the work units of the owner organization, such as the Financial Service Department of COA is solely responsible for the City's purchase and may initiate a bidding process.

- At the COA, Public Works Department is responsible for the design, monitoring, and management of the capital construction projects. However, the Financial Service Department takes care of the procurement process for the projects.

- The bidding process may be an IFB, RFQ, or RFP, which is mostly competitive.

- The bid package from the owner organization contains project details that the contractors are able to produce an accurate bid (Reference 3, Procore).

- The participation of minority or women contractor should be a requirement for purchase and be included in the bidding process.

- Bond and insurance requirements are clearly specified in the bidding process.

- An optimal process or value engineering method can be used in the bidding process.

3. STEPS OF BIDDING FOR A CONSTRUCTION PROJECT

A bidding process plays an important role in achieving a construction project. This process is to ensure an organization to find the best fit for the project. In construction, the bidding process may consist of five steps as specified below (Reference 4, Carroll).

(1) Request for bidding: As described in Section 2, the owner organization issues a request to the registered contractors to begin a bidding process. The request should contain a bid package of the detailed information concerning the project.

(2) Bid submission: Once the request is issued, the interested contractors may prepare a bid to submit for consideration. The bid is to comply with the requirements of the bid package such as engineering drawings, construction specifications, project requirements, contract type, delivery method, and bonding and insurance requirements.

(3) Bid selection: The selection of bids is normally based on the price, quality, and security of the bid. Project manager for the bid team should be familiar with the process of selection. Knowledge of cost estimating and value engineering is important for preparation of the selection.

(4) Contract negotiation: Once a contractor is selected, the hiring and/or owner organization is to negotiate with the selected contractor concerning the terms and conditions of a contract. These items such as compensation, timeline, and access of resources are important for discussion.

(5) Project delivery: As the final step of the construction bidding, it is required that at the different stage of the construction, the project be delivered to the owner organization in accordance with the planning and methods agreed at the beginning of the bidding process.

4. VALUE ENGINEERING

Value engineering (VE) is a method or approach to minimize the cost in achieving a project in accordance with its specification. For a construction project, the owner may follow VE to organize a bidding process, while the bidder often uses this method to formulate a detailed bid for submission. It was defined that VE is a systemic, organized approach to providing necessary functions in a project at the lowest cost (Reference 5, the Investopedia Team). "Function" here means a specific work that it was designed to perform, such as a bid request or a bidding process.

VE method was first developed in the 1940's at General Electric (GE) during World War II. A purchase engineer, Lowrance Miles, and others sought for the substitute of materials and components of the space ware. Some substitutions were often found that the substituted materials can reduce costs and produce equal or better performance. This constitutes the concept of VE method that the cost of the product can be minimized while the value and function of the product are maintained. Miles (Reference 6, Miles) further developed an equation which relates the value of a product to its cost and function, i.e.,

$$\textbf{Product Value} = \textbf{Function} / \textbf{Cost} \qquad \text{[Equation]}$$

Where function is an activity which can be completed by the alternative methods; cost is the expense of labor and materials; product value is the achieved value of a project. According to this equation, the value of a product is largely increased when the cost of the product is minimized, while the function of the product is fixed as a constant. In the building construction, for example, if the building can be constructed equivalent to the original design, i.e., the function of the building has no change when the cost of construction is minimized, then the value of the construction project is greatly enhanced. As another example, the team member in a construction project can propose alternate construction methods, designs, or materials in order to improve the value of the project (Reference 7, Horst construction).

5. STEPS IN APPLICATION OF VALUE ENGINEERING

The use of VE method in construction should take place right before the project starts. The construction phase is not an ideal time for the use of VE since the schedule of construction is generally tight. Following items identify VE method of six (6) steps (Reference 5).

(1) Data collection: Collect information about the project such as cost, schedule, objective, and specification.

(2) Functional Analysis: Analyze each element to determine its function and necessity for the project.

(3) Creativity & innovation: Develop alternate ways to achieve the function of each element.

(4) Evaluation of Solutions: Asses alternative solutions for their advantages and practicality.

(5) Development of Alternatives: Formulate alternatives by evaluating their impacts on cost, quality, schedule, and objective.

(6) Presentation of Findings: Share promising alternatives with the project owner.

6. BONDING FOR A CONSTRUCTION PROJECT

VE method can be used in the bidding process for a construction project. On the other hand, bonding is a necessity for participation in the bidding process.

(1) Annual Bond and Surety Bond

Vendors doing business with COA are required to have an Annual Bond of $5,000. This bond is mandatory for obtaining the licenses and permits to conduct business legally (Reference 8, Axcess). While there is an increasing demand for adherence to local regulations, to have this bond can significantly boost business reputation and trustworthiness. The $5,000 Annual Bond specifically protects against potential losses to ensure a business meeting all contractual and legal obligations.

Annual Bond is a surety bond of one year. The surety bond is designated for new and existing businesses, and those contractors who are either expanding services or existing service providers. The bond provides benefits to both the bond holders and their clients. These benefits include financial protection, regulatory compliance, customer assurance, business credibility, and affordable coverage.

When applied for a permit to use the “Right of Way of COA,” a permit surety bond may be required. This bond covers a wide range of claims when the contractor fails to protect and cause damages to the right of way.

The COA Small and Minority Business Resources Department (SMBR) has expertise which provides consulting services in bonding.

(2) Bid Bond, Performance Bond, and Payment Bond

Bid, Performance, and Payment Bonds are special types of surety bond which are required in Austin, Texas for construction projects. These bonds are typically required during the bidding process or contract execution in order to provide financial protection and project completion according to the contract term and schedule (Reference 9, Brunswick).

Bid Bonds are normally required for public works projects, and sometimes for private projects. A bid bond guarantees the contractor accepts the job if he/she is chosen as the winning bidder. If the bid is selected but the contractor declines the job, the project owner can make a claim on the bond to take difference of the bid price between this bid and the next highest bid.

Performance bonds guarantee the contractors finish the job in accordance with the contracted term. If a contractor fails to comply with the term, the project owner can make a claim using the fund to pay a second contractor to finish this job.

Payment bonds guarantee an adequate payment for services rendered, when the lead contractor is unable to pay for the services. The bond money is then used to reimburse contractors, suppliers, and others who have performed work for the project.

7. CONCLUSION

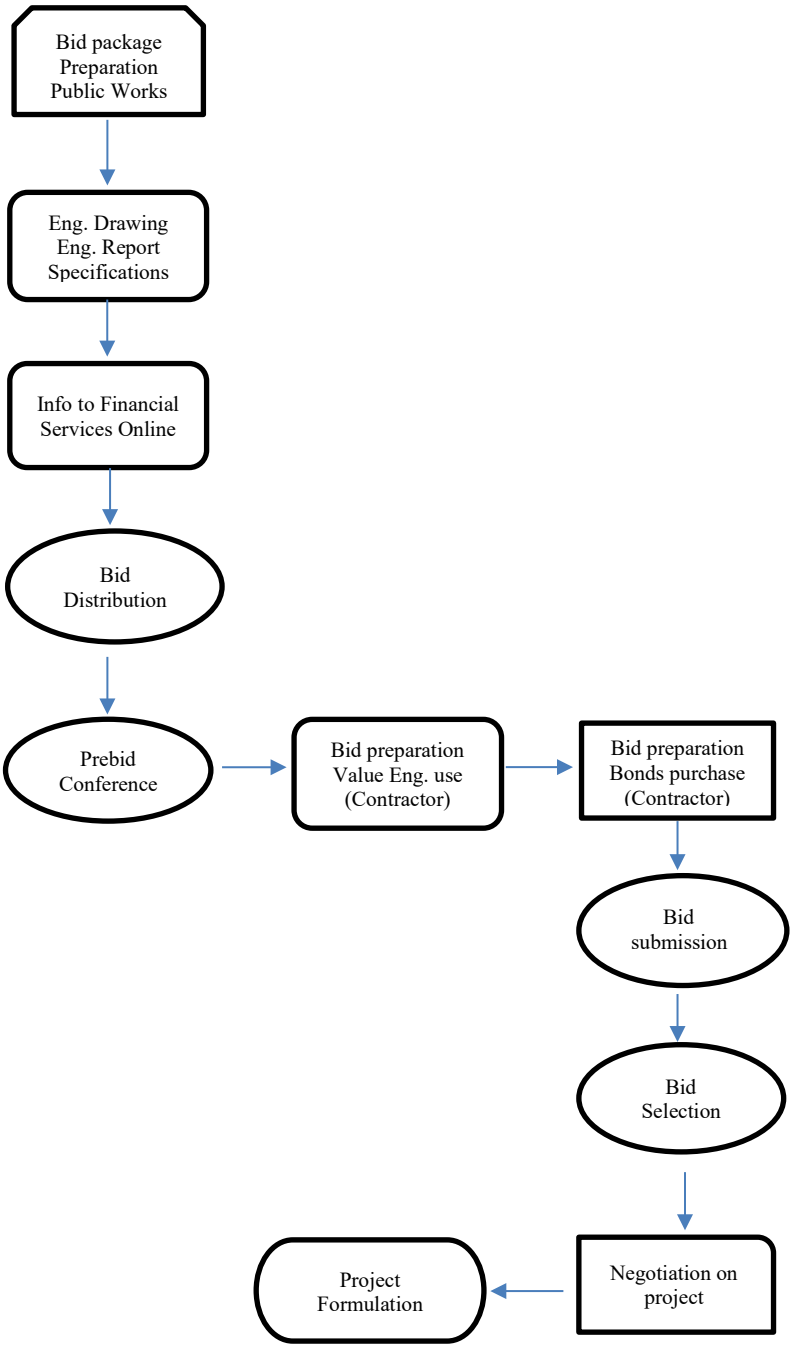
This paper describes the bidding process and its related subjects such as value engineering and bonding. The flow chart of the next page identifies this process and the related elements.

Normally, the owner organization such as COA presents a bid package to the registered contractors to start a construction project. A bidding process takes place before the actual construction begins. In general, the process consists of five steps including request for bidding, bid submission, bid selection, contract negotiation, and project formulation.

Value engineering (VE) method is often used in formulating and conducting a bidding process. This method is to minimize the cost of completing a project, subject to the requirements of the bidding specifications. For a building construction project, VE is to minimize the cost of the construction while the building can be constructed according to the original design. In this regard, the function of the building is kept constant. The value of the project is greatly enhanced.

Bonding is a necessity for the construction project. The bond provides benefits to both the bond holders and their clients. A surety bond is designated for contractors meeting all contractual and legal obligations. Bid, performance, and payment bonds are special types of surety bond. A bid bond guarantees a contractor accepts the job if the contractor is chosen as the inning bidder. Performance bonds guarantee the contractors finish the job in accordance with the contracted term. Payment bonds guarantee an adequate payment for services rendered by the contractors if the lead contractor is unable to pay for the services. This bond money is used to reimburse contractors, suppliers, and others who have performed jobs for the project.

8. FLOW CHART FOR A BIDDING PROCESS



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