

4. Preparing Engineer's Estimate

The critical review of any bid depends on the reliability of the estimate it is being compared to. Therefore, agencies are strongly urged to devote sufficient attention to preparation of estimates using the same level of detail as the contracting industry. The engineer's estimate should reflect the amount that the contracting agency considers fair and reasonable and is willing to pay for performance of the contemplated work. Under-estimating causes project delay while additional funding has to be arranged to meet the contract costs. On the other hand, over-estimating causes inefficient use of funds that could be used for other projects. In addition, the engineer's estimate serves as the benchmark for analyzing bids and is an essential element in the project approval process. There are three basic approaches to estimating: actual cost, historic data, and a combination of historic data and actual cost. One of the most important factors in obtaining a good engineer's estimate is the experience of the estimator. While documented estimating procedures are helpful, contracting agencies are encouraged to provide sufficient training opportunities for their staff.

Estimating Methods

a. Actual Cost Approach

The actual cost approach takes into consideration factors related to actual performance of the work (i.e. the current cost of labor, equipment, and materials; sequence of operations; production rates; and a reasonable value of overhead and profit). This approach requires the estimator to have a good working knowledge of construction methods and equipment. Also the estimator should have resources available for determining production rates from actual work performed by the contracting industry on similar type projects as well as resources for determining current construction methods and equipment. While adjustments for current market conditions may be required, this approach typically produces an accurate estimate and is useful in the bid review process in aiding the decision to award or reject the project.

b. Historic Data Approach

The use of historic data from recently awarded contracts is a cost-effective method to develop the engineer's estimate, however, solely relying on historic data may not be appropriate when the data is based on a non-competitive bidding environment. A file of previous unit bid prices should be maintained according to type, size, and location of project. Upcoming projects should be matched to the most recent projects to develop base prices for estimating the value of the unit prices. Under this approach, bid data are summarized and adjusted for project conditions (i.e., project location, size, quantities, etc.) and the general market conditions.

This approach requires the least amount of time and personnel to develop and produces an adequate estimate for use in budgeting/programming, as long as competitive bid prices are used to build the estimate. Non-competitive bidding and unbalanced practices are the least recognizable using the historic data approach to estimating. Further adjustment of the base prices should be considered based upon the ages of the similar projects, but past inflation rates should not be projected into the future unless based on circumstances which can be reasonably expected to occur, such as labor rate increases through labor negotiations and known material price increases. Where the magnitude and timing of future increases are uncertain and would have a major effect on critical unit prices, price adjustment clauses may be a better alternative.

c. Combination Approach

This approach combines the use historic bid data with actual cost data. Most projects contain a small number of items that together comprise a significant portion (e.g. 75 percent) of the total cost. To the extent practical, agencies should collect information on local market prices of materials, equipment manufacturers, dealers, and rental companies, and material suppliers to obtain current cost information on a regular basis. Davis-Bacon prevailing wage rates on Federal-aid contracts could be easily incorporated to provide labor costs as determined by Department of Labor. Current material costs are obtained from local approved sources. The remaining items are estimated based on historical prices and adjusted as appropriate for the specific project.

Confidentiality of the Engineer's Estimate

Procedures and policies concerning confidentiality range from including the total estimated construction cost in the bid proposal to keeping the estimate confidential from the public even after the project has been constructed. Benefits of making the total estimate public include eliminating the possibility of only one or some of the bidders knowing what the agency believes the project is worth plus removing any pressure from agency to release the estimated cost secretly. One disadvantage of making the estimated cost public is that firms desiring to rig bids can use the engineer's estimate as a basis for determining the low-bid amount to be submitted. This is especially important in cases where the contracting agency anticipates minimal competition and/or a single bid for construction.

While confidentiality of the estimate obviously will not by itself successfully deter a firm from conspiring with other bidders, it does prevent bidders from knowing what approximate amount the contracting agency is willing to accept. A policy of providing a specified dollar amount for a bid bond could indicate the amount of the estimate. This procedure should be revised to specify a percentage of the bid submitted, thus maintaining the confidentiality of the estimate.

Accuracy of Engineer's Estimate

The estimate must have credibility if the bid review process is to be effective. Estimate accuracy should be judged by comparing the estimate against the low bid (%). Estimate accuracy relies on the estimator using all the available resources to create a fair and reasonable value for the work given all particular job conditions and evaluating these conditions accurately to establish a credible estimate. It is realized that estimate preparation is not an exact science; however, it is felt the engineer's estimate should be within +10 percent of the low bid for at least 50 percent of the projects. If this degree of accuracy is not being achieved over a period of time, such as one year, confidence in the engineer's estimates may decline. Further, if estimated total costs are made available to the public, even after the letting, and are consistently running well above the low bid (say 15-20 percent) when a sufficient workload is available, bidders may be cognizant of the higher estimates and may submit higher bids accordingly.

Where confidence in the estimate has been established by the contracting agency, it follows that to be an effective tool the agency must show that confidence by rejecting those low bids that are not within a reasonable percentage above the estimate. Adjustments to the estimate for projects to be re-advertised should not be made to correspond to the previous bids submitted without adequate justification. Attachment A provides a review guide for assessing a contracting agency's procedures for developing the engineer's estimate.

