ESTIMATING:
The Vital Function

Proper management of the estimating function can return as much, or even more, profits than any other construction activity.

High risk, strong competition and a substantial rate of business failure are typically associated with the construction industry.

And the estimate-bid function can have a substantial impact on these characteristics. Most contractors can recall incidents where decimal points were misplaced, sections of jobs overlooked, or quantities incorrectly priced.

In most cases, these errors or failures in the system can be traced to the absence of adequate management control.

The estimating process rarely functions profitably without the input of experienced construction personnel. Because the risk of this function weighs heavily on overall operations, the successful contractor usually has top management’s full participation and control over these activities. Management understands that experienced judgments during the critical stage of pulling an estimate together can generate as much, if not more, profit than comparable attention to other construction activities.

Evaluate Projects

The timing and dollar value of each project available for bid have important implications for the profitable contractor. Without sufficient time for estimating the normal risk will increase and may have an adverse effect on profitability.

Further, if a project exceeds the company’s personnel and funding capabilities over an extended time period, bidding would be seriously questioned.

Reliable internal data is necessary to determine whether resources will be available when required. Such resources are: the adequacy of the company’s bonding capacity, joint ventures or associate contractor arrangements.

The profitable contractor determines needed resources in advance of detailed analysis because he recognizes that without viable solutions to such problems further job analysis is a costly exercise.

A successful contractor knows the marketplace and evaluates competitors who might bid on a project. By retaining competitors’ bid tabulations, judging their current workload and keeping in touch with the construction community, he can better gauge his chances of submitting successful bids.

Knowledge of competition is matched by self-knowledge. By evaluating his own expertise, he avoids submitting bids where risk is compounded by lack of skill.

The location of a project is extremely important. Of major concern are the labor and subcontract markets, and the cost of doing business. Bidding in an unfamiliar marketplace usually requires investigation of the business climate to sufficiently justify the risk. The profitable contractor carefully rates the availability of qualified craftsmen, the technical competence, financial stability and dependability of subcontractors, and the general cost of out-of-town business.

Direct results of risk and cost assessments are the decisions reached concerning using craftsmen on his payroll as opposed to subcontracting, requiring subcontract bonds, or not bidding the project.

Plans, Specifications

Once a project is initially evaluated, plans and specifications are investigated in detail. A contractor will normally appraise drawings, specifications, sample contract agreements, and the proposal form as well as general and special conditions.

By deciding whether to bid during this review (and before detailed estimating procedures), a contractor can dramatically improve the efficiency of his estimating staff.

The proposal form and contract documents receive the full attention of top management because an insufficient review can have severe economic consequences. Thus, the profitable contractor is prepared with a checklist of terms and conditions that are generally acceptable to his company. The following reference points may be included:

- scope of work, scheduling, supervision, claims and changes (extras), stored material, performance and/or termination of operations, disputes and arbitration, liquidated damages, payment and acceptance.
- legal commitments: lien rights, latent defects, hold harmless provisions, insurance, guarantees.

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— continuing commitments: system warranty, design deficiencies, completed operations coverage

The profitable contractor is well aware that the language of a contract document can bind him to conditions of increased risk and, perhaps, limit his ability to recover costs. His checklist is one method of insuring that “out of the ordinary” terms are not routinely accepted.

The AIA Statement of General Conditions together with the AIA subcontractor’s agreement A-401, now under revision, are reasonably equitable agreements and can be used to formulate a checklist that will generally protect against undue exposure.

There is no substitute, however, for competent legal advice and successful contractors will often seek counsel.

Control Concepts

When the decision is made to bid on a job, accumulating information into a bid tabulation begins. Because, time constraints can lead to errors, adequate controls are essential.

A checklist approach can help control the final tabulation. A more comprehensive procedure utilizes a preprinted estimate summary form listing all major repeat items and allowing entry of the specification reference, staff responsibility and any tier subcontractor quotes-per-item. This procedure conserves times, facilitates bid review, and substantially reduces the possibility of error through omission. In many instances, summaries are also supported by preprinted detail estimate sheets (for work performed by the subcontractor’s own labor force) and any necessary subcontractor quote forms.

A contractor’s major risk area involves work installed by his own forces. Because the estimated cost of this work depends on the number of units placed, accurate detail take-off is the first step to determine fair value.

The method used in detail take-off is only as good as the experience of the individual performing the function. Profitable contractors control this area through experienced employees trained in company practices and sufficient management review.

Control is also exercised in the acquisition of subcontractor quotes for work the wall and ceiling contractor does not perform with his own forces and for material quotes. Unsatisfactory communication of the job scope or specified material to quoting parties can make a low quote practically impossible.

Under such circumstances, an estimate becomes more of a “guesstimate.” Because many value judgements must be made, the successful contractor limits guesswork when calculated estimates can be obtained.

Work Pricing

The profitable contractor uses a dynamic unit cost approach—with timely cost adjustments—to arrive at prices for each item of work he performs. Relying on historic averages alone can prove inadequate because job conditions, labor rates, productivity and material costs vary almost daily.
Based on cost per unit of measure, unit costs can be developed from a cost accounting system, or obtained in a more refined manner through statistical sampling techniques. Unit costs are, at best, often a guide to the right price, and the judgement of experienced construction personnel should prevail.

An approach gaining popularity in estimating labor cost is the hours-per-unit-of-labor method. When jobs are initially bid in hours, later conversion for comparing estimated labor to actual labor is not necessary.

Field hours are normal input to the payroll system and cost coding would be the only added step. Using this method eases the implementing of cost and productivity measurements.

Where special applications make it impractical to use a unit cost method for estimating labor, a work flow procedure should be used relating man hours to the work that must be performed. Extensive field experience is required and, in many cases, top management itself will do the estimating. The man-hour method is also used as a checking procedure by contractors applying other unit cost methods.

Pricing Materials

A subcontractor can price his estimate using the quotes submitted or discount the quotes by an estimated buy-out. The discounting procedure is often necessary because preferential quotes have been allowed and, to remain competitive, the risk must be taken.

Because the profitable contractor knows his market, the estimated discount is a judgement often that he expects to making on a recurring basis. He also realizes that should he submit the low bid, his leverage to make an acceptable buy-out is substantially increased.

Summary, Review

After all quotes are received and unit cost pricing completed, final bid tabulations are developed.
Many profitable contractors include columns headed Bid No. 1 and Bid No. 2 in their summary. The second column is used for adjusted price extensions resulting from discounting quotes, inserting alternate items, corrections, etc. This feature permits bid preparation using the original facts and then varying the facts for management judgement.

Another control device is the “rule-of-thumb” check. Based on management’s general cost experience for different types of construction, rule-of-thumb prices can provide a rough estimate of the total job costs. If a significant difference exists between these checks and the accumulated amount of the bid, figures are challenged and cost justifications are required.

Upon acceptance of the cost estimate, the overhead and profit to be added to the final bid are carefully judged. How does the profitable contractor determine his margin of profit? Does he consistently add on the same percentage, or will it vary on each job bid?

Factors considered include the level of risk, job size and length, competition and current workload. A contractor’s percentage of profit, therefore, should reflect careful evaluation of the varying conditions of each job.

**Conclusion**

The estimate-bid process is as important as the build function—and probably more important. Weakness or strength in this process can cost or generate as many, if not more, profit dollars than comparable attention to the installation function.

Top management’s full attention and participation in this activity is a necessity. In today’s economy, adequate control of estimate-bid has become fundamental to a contractor’s profitability.

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**STEEL**

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stresses for bending, depending on the shape of the member, the new concept permits the use of the cross-sections’ properties in getting the load a member can carry.

The U.S. LRFD concept is a spin-off to load factor design for steel bridges except that it includes resistance factors while the bridge version does not.

The American Iron and Steel Institute is sponsoring research on LRFD.

Research is reportedly just about complete and an advisory task force is going over two studies by structural engineering firms that designed buildings using present design standards and then designed them using LRFD.

Hansell says his report will be turned over to the American Institute of Steel Construction within a year.