The control of construction projects in progress has never been easy. Yet, this control is fundamental to effective contracting.

The small owner-contractor personally oversees every aspect of each job. He bids every job, pays all bills, supervises construction, bills the customer and summarizes the job status periodically.

He knows when he bids a job poorly, when labor is too high, when cash is not coming in, and generally where he stands at all times.

For the larger contractor, the process is the same except that systems must replace the on-site personal knowledge of the owner-contractor.

The development of an effective job cost control system for managing projects in progress is a vital transition in the evolution of the growing contractor. Such a system typically includes five primary components:

- a formalized estimating procedure based upon current standard unit costs
- an effective bidding procedure which contains proper front end loading to maximize cash flow
- a simultaneous accounting and project progress data capture procedure
- a standardized approach to record work completed in a particular time period and estimate remaining labor and materials needed to finish the job
- a method to summarize and stratify data to cut down on paper work.

How are each of these subsystems important in the control of construction projects? More importantly, how can they be integrated into one effective system for job cost control?

**Estimating**

A detailed plan for labor, material and overhead costs is fundamental to the control of any project. In order to effectively estimate and profitably bid on a project, it is necessary to standardize the estimating procedure.

Elements of the procedure would include standard forms and unit costs for material and labor. This standardized approach should result in a profitable bid as well as providing useful benchmarks for measuring project costs as the job progresses. While the function of estimating is primarily to submit the best bid, it is also useful, at this early stage, to set prerequisites for effective job progress control.

**Bidding**

Once the cost estimates for a project have been completed, the actual bid is prepared. It is typical for a contractor to carefully front end load the early phases of the project to minimize cash flow during the billing process.

However, as in the estimating process, a problem in planning can occur. If the process of front end loading and developing the final bid is not standardized, accounts receivable and billing controls will typically not be established.

In the absence of such standardization, there is little hope of controlling the cash flow over the life of the project.

**Simultaneous Data Capture**

To maximize job cost control and efficiency, information should be cap-
tured simultaneously for both the general accounting system and the job cost system from the same source documents. To accomplish this simultaneous data capture, forms must be developed which will enable information to be inputted and controlled once, while feeding all systems from a common data base.

Fundamental to accomplishing this process is the creation of a chart of accounts. This charge of accounts can be utilized both in the job cost system subsidiary ledgers as well as at a summarized level for general financial statement reporting purposes.

A creatively designed chart of accounts should also facilitate the generation of financial information by profit center and geographic division, and even the preparation of customer profitability summaries, if desired.

Estimates to Complete

One of the most common failures of a job cost system is that it only compiles costs to date and stops at that point. Management must be able to control projects and know the status of profitability and cash flow.

To accomplish this, a standard field-prepared document that records units of work completed and estimates remaining man-hours and material requirements should be prepared. By using such a procedure, management is aware of the percentage of completion of the job, regardless of whether or not they are on the percentage completion method for accounting.

This procedure will also allow management to know whether billings are in excess of costs, and what the estimated profit and cash flow will be at project completion.

Effective Summarization

One of the unfortunate results of many potentially good job cost control systems is the failure to summarize data for various levels of management. While the individual job supervisor may need the job broken into two or three hundred components, it will only be necessary for middle management to see the job summarized into four components, and for top management to see one line per job.

By stratifying reports in this manner, top management can note exceptions and delve deeper into individual projects as necessary to determine where problems exist and take corrective action.

Integrating Systems

The integration of the estimating, bidding, project reporting, accounts receivable and accounting subsystems into a complete management control system is the element which ties the entire process together.

This completes the management information cycle necessary to effectively control job costs and ultimately the entire construction activities of the company.

By effectively updating unit costs with actual operating data at appropriate times, by measuring the actual results of projects against original estimates and by comparing cash receipts with original cash flow projections, management is in a better position to bid and control construction
costs and progress in the future.

The integration of the data and the generation of reports from a common data base results in a highly reliable and controlled system while at the same time simplifying the input procedures and related efficiencies from field operating personnel.

**Conclusion**

When a contractor has evolved to the size where the top executive can no longer personally oversee every construction project, the importance of job cost controls is evident.

As the size of a contracting firm increases, the complexity of the control problem is magnified, and the need for an effective system to monitor the construction process becomes critical. Job cost control must begin with the estimating process and follow through completion of projects with ultimate comparisons against original plans. The integration of accounting sub-systems so that they automatically generate job cost reports results in efficiencies and controls which are man-
Exhibit 3
The Pricing System

What do we need to consider to establish a price for this job?

Do we have reliable cost histories on jobs like this?
Do these costs reflect the best possible approach to the job?

Does this job “fit” into our overall cost structure and our current volume/cost relationships?

How does this job fit into our profit budget?

Can we make any decisions about alternative materials that will affect cost?
Do we have sufficient lead time to negotiate good prices on materials?
Do we have known efficiencies that give us a competitive edge on this type of work?
Which foremen and superintendents will be available for the job?
Do we have the necessary equipment available or will we have to acquire?
Can we rely on known subcontractor relationships to keep the job on schedule?
Are other direct costs for this job calculated in a manner consistent with our cost structure?
Is this job more or less labor or equipment intensive than our usual job?
Is this job larger or smaller than our average job?

What are our marketing objectives?
What are the influences of our projected budget?
Do we have excess capacity we need to utilize?
What is our ROI objective?

(Materials)
(Labor)
(Equipment)
(Subcontracts)
(Other Direct Costs)
Profit
Total Direct Costs
Overhead
Total Contract Price
If reports are to be relied upon and prepared on a timely basis.

In summary, the most effective job cost systems are ones which are integrated with other operational and information systems. Through the use of this concept the construction process can be effectively planned and managed to aid in the achievement of profit and cash flow objectives.

Note: Since this article was published in 1975, Mr Kangas has become Managing Partner of Touche Ross Company, located in New York.