The considerations of any building project can be grouped into three broad categories. They are Time, Quality and Cost. It follows that what we cut must be achieved in those three categories. In regard to time, time is money when we expedite the overall completion of a project consistent with an efficient operation.

This will reflect itself in lower costs for financing, taxes and construction overhead. Fast tracking is now a common word that describes the procedure whereby the construction process is commenced before final design is completed.

Not only does it contract the overall development time of a project but it does, in fact, provide for design flexibility. By illustration, if the more traditional approach were followed wherein a design is fully completed before construction is started, then we would find ourselves stifled in attempting to value engineer any of the early design decisions. Furthermore the ability to take advantage, say of a changing market situation that might dictate a different structural concept, would be foreclosed since so many other decisions down the road had already been finalized.

There is no question that fast tracking has its hazards and if a professional team is not properly put together then this technique can result in utter confusion. The benefits, however, for cutting costs by using this technique can be considerable and should not be overlooked.

Now for the second category in what costs we cut, we address our-

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selves to the quality aspects. Cutting quality obviously shouldn’t mean an indiscriminate insensitivity to the requirements of a project. What it does mean is to reduce criteria that is overspecified; to insure that the program is warranted by the needs; and to analyze the quality from a life cycle analysis standpoint.

Cutting life cycle costs might mean an increase in first cost in order to provide a long term maintenance, replacement or cost of operation benefit.

Value Engineering

Finally, the third category where reductions can be made is in the cost itself of individual elements or systems that go into the construction of a project. Value Engineering (asking the question: Are we getting the most value for the dollar?) must be asked in the context of first cost as well as life cycle costing on everything that goes into a project.

Now we come to the question of when do we cut? The biggest potential for cost savings are those savings which can be achieved at the earliest time in the development of a project. We can divide the timing of a project into three broad categories. The first is the concept or planning stage; the second is the design stage and the third is the construction stage.

During the concept stage our potential for cost savings is biggest because that is the time when we can question the program, question the criteria and conduct various life cycle analyses. As to program: do the needs really exist? Are we over building in whole or in part? Is there a proper mix of uses in a commercial venture?

As to criteria: have we provided for too much flexibility? Are we being overly conservative in our live-load assumptions? Are our lighting levels to high? Are we anticipating unrealistic electrical power levels and consequently, air conditioning loads that are far in excess of anything that will really be achieved?

It’s all well and good to design for the future, but very often when the future comes, we find that our needs are different. Certainly at least, these elements must be questioned.

As we go into ‘the design state, there is still considerable potential for improving the cost picture of the project. We can continue to question criteria in a more detailed fashion. We also have the opportunity of questioning the individual cost elements of the systems that go to make up the project. We continue with life cycle analysis and other economic analyses of building systems.

The opportunity for saving time and its consequent cost benefits occurs during the design state when we can overlap the construction phase of a project.

Finally, during the construction phase the cost improvement process continues, although by this time its potential is greatly diminished. By maintaining flexibility, costs are improved as each trade or system is contracted.

Galex, Guttenberg, N.J. located on the Palisades overlooking Manhattan. This development consists of 1,200 rental apartments plus extensive recreation, shopping and parking facilities.

Here then is an opportunity for a last crack at value engineering but obviously restricted to those elements which have less impact on the planning of the project and on the construction that is already underway.

Not to be overlooked, of course, during the construction stage, is the opportunity of cost savings in the efficient management of the construction process itself.

How do we cut the costs? Some of the same answers show up as in answering the questions of what we cut and when we cut? One means, although time consuming and often frustrating, is getting building codes changed and modernized.

Construction has been accused of being far behind the times, and so it is, but the dynamic improvements that we find ourselves' faced with can only be accomplished with flexible building codes that are merit and performance oriented.

Life Cycle Costs

Next on the list how to cut costs is the matter of life cycle cost analysis. Some of the considerations that go into, such an analysis are: The return on investment, the payback period; replacement; obsolescence; maintenance; value of money; depreciation; tax credits; risk management and lending institution attitudes.

Often, the attitude of lenders is counter-productive to what should be their ultimate goal. In not fully availing themselves of the benefits of life cycle analysis, the lending institution may be forcing an owner to consider only first cost, since his financing will not permit him the luxury of investing in what would be an ultimate cost saving benefit. If more of us were to try to persuade lenders to change their policies, the entire building community would benefit.

Another “how to” example is: consult with building product producers. This involves both an evaluation of the producers’ own suggestions and potential new products as well as feedback to the producers so they have a better understanding of the requirements and the shortcomings of the present practices and products.

This gives an owner and a builder an opportunity to get a jump on his competitors but he must not be afraid to try new ideas before they are proven by wide use.

Progress requires the taking of calculated risks. Two excellent examples of this are the use of Gypsum board and plank construction in lieu of Masonry and the use of molded FRP bathroom fixtures and walls in lieu of conventional fixtures and ceramic tile.

These are developments that our firm pioneered. They found their first application in the construction of New York’s World Trade Center in one instance, and in Detroit’s Renaissance Center in the second instance, both to obvious construction economic benefits for the building owner without any sacrifice in quality of construction, in fact, with an improvement.

A similar route for “how to cut” is pursuing the suggestions of subcontractors by soliciting their alternatives in bid proposals. Such alternatives that tend to reduce (Continued on Page 29)
construction. Too many of the rules, regulations, laws and controls, serve as prime examples of this misunderstanding. They’re geared more to the hardware manufacturer or the factory situation and thus are not geared to construction which is an entirely different animal. These rules and regulations if improperly used, can add substantially to construction costs.

DIMENSIONS: Would the recent call for an Office of Construction still be an appropriate mechanism for this goal?

VOLPE: Yes, it would be. Construction amounts to what, 9-10% of Gross National Product? It’s probably the biggest industry in the country but we still don’t have sufficient input on problems that could be resolved.

DIMENSIONS: With the lack of work situation the way it is now, there doesn’t seem to be much room for play in bidding work.

VOLPE: There’s room if you allow for flexibility. Where we bid a job, our only variable is profit. As long as the sheets are priced to do the job and recover costs—that’s all costs, now—you can play with profit all you want.

You start playing with anything but the profit and you’re courting disaster. Even with profit, you should be careful, that is what keeps you in business and allows you to grow. That’s the condition the construction industry finds itself in today. There should still be some profit—but too many are getting mighty close to the equity line.

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costs, speed up the project or improve the quality deserve preferential consideration in the award of a contract.

Value engineering discussions should be pursued with trade contractors all throughout the design stage of a project and these discussions in turn will keep a builder sharpened on the changes in the marketplace.

Tailoring the scope of bid packages is another important method of effecting a savings. Various combinations of trades and systems lend themselves to more competitive bidding by a wider group of contractors.

Another “how to cut” involves the wide use of mockups and trial installations and these of course can be made in conjunction with producers’ and subcontractors’ evaluations.

Last on my outline of “how to cut” are the opportunities for what we call double duty systems. Automation control that can double for both fire safety and energy utilization is a good example of this.

Summary

What I’ve outlined sounds very complex and indeed it is in contrast to the traditional way of doing things—that is, completing the design and then awarding a lump sum general contract. I have outlined a process that integrates the steps of planning, design and construction and provides the decision maker with alternatives.

In order to accomplish it, a good team with strong leadership must be put together. The leadership can either come from a very knowledgeable owner, it can come from a strong Architect/Engineer or it can come from a professional Construction Manager.

The integrated approach has many hazards and its share of failures. They key to its success is flexibility and professional team work.

Through the team, the building product producers have opportunities to influence change and demonstrate their own capability. Such producers who show an ability to respond to this type of initiative will soon find that they can drastically reduce the time for bringing their new products and systems from the research labs to the marketplace, all the while, contributing to the implementation of “sensible money saving techniques.”