# Estimatinng concrete work - X

By Edward G. Le Jeune*

In this last chapter of my series, it is possible to obtain a total material and labor cost. These two totals should be as close to actual costs as possible with no fat included. If a contractor is asked how much he can take off his bid, he should not have to look over his material and labor costs again. These should be enough to cover each item of cost, but not any more than is necessary, because every item should be priced as if he wanted the job very much. If you want to "fatten up" your bid, put it in the overhead and profit, where you can tell at a glance if you can cut your bid, and how much you can cut it.

Next add on state taxes, if they apply. In some states the sales tax is on material only; in other states the tax is on material and labor, and still other states have a direct income tax applied on the gross amount of the work. A contractor must understand the state taxes where he is bidding the work, and on what types of jobs they apply. He must be careful to add the tax only on necessary items, since this is one more amount that may unnecessarily "fatten up" the bid. Always estimate all jobs "to get them" as far as all direct costs are concerned, so that you know exactly what you have and you can say, "This is the job cost without office overhead and profit."

Insurance and taxes on labor is another item that is sometimes carelessly applied. In some offices, this includes welfare, pension, and other items paid on direct labor, otherwise known as "fringe benefits. " If these fringe benefits are already included in the unit labor rates, do not include them also in the insurance and taxes category when it is added to the total labor cost. At this point the estimator should sit down with the accountant and examine the insurance and tax package. He should find out what percent they are of the total labor cost. The estimator will know if his unit prices include fringe benefits, which roughly average 5 percent of the labor cost. If they do, he should ask the accountant only for the percentage of labor cost for all other insurance and taxes, which should then be added to the total labor cost. These will vary from 10 percent to 15 percent, depending on the size and operation of the company and can be checked with the accountant about every six months for possible variations. If the estimator does not have the fringe benefits in his unit labor costs, then he must have the accountant include them in the percentage to be added to the total labor cost. Once again, be careful to include fringe benefits, insurance and taxes on labor costs, but include them in only one place in the estimate.

Once a total material and labor job cost has been determined, office overhead and profit should be added onto the recap sheet. The job cost should include all items that are concerned with the one job only, or are "expendable" on the job being bid. Equipment rental for a job is a good example of a completely expendable item that belongs in the job cost. Equipment that is owned by a contractor and on which his accountant is charging depreciation in his office overhead is a good example of an item that does not belong in the job cost. This is strictly an office overhead item because the cost must be distributed over many jobs. The estimator has to be careful not to charge in an item as a job cost that is also charged as office overhead expense.

The largest item of office overhead, and the most easily controlled, is salaries. The owner's salary, or drawing account, is the largest and most flexible. In January of each year the owner should make a "projected budget" or overhead expense sheet for the coming year. Only the owner, or the top man in each company, can complete this budget. He can get help from his accountant, estimator, superintendent or anyone else, but only the owner, or top man, knows the final answer. The owner's salary should be carefully calculated in order to keep his budget low. During the year, he can take more, if it is a good profitable year. Only the owner knows how much and when he intends to give salary raises. These must be included in the budget if it is to be a realistic projected overhead expense.

The budget for last year is a very good guide for next year, but it is only a guide. The owner must anticipate the coming year and plan his budget overhead expense accordingly. Such items as rent, phone, office supplies and so forth are routine, with the exception of the fact that an increase in the volume of business planned for next year will make most of these items increase on a percentage basis. An automobile that is leased for business purposes, even though used also for personal use, can be charged off wholly as a business expense. The same will apply for gasoline credit cards. All new equipment purchases, formwork material and so forth must be anticipated, and included in the budget overhead ex-

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TABLE I

| | Fixed Budget Overhead Next Year | Fixed Gross Business Next Year | Percent Overhead & Profit | Percent of Overhead | Percent of Profit | Actual Profit for Year |
|---|---|---|---|---|---|---|
| 1. | $50,000 | $450,000 | 10% | 11%+ | —1% | $4,500 loss |
| 2. | 50,000 | 500,000 | 10% | 10% | 0% | None |
| 3. | 50,000 | 550,000 | 10% | 9%+ | 1% | 5,500 |
| 4. | 50,000 | 600,000 | 10% | 8⅓% | 1⅔ % | 10,000 |
| 5. | 50,000 | 650,000 | 10% | 7.7% | 2.3% | 14,950 |

penses. This is not to say that he cannot buy a truck during the year if it was not included in the budget. However, the budget must be revised to properly charge in the cost of the truck, or any other item added to office overhead during the year.

Once all this information has been compiled, a chart projecting business volume for the forthcoming year should be prepared.

Overhead and profit, of course, are added at the end of a completed estimate, but there is no profit until overhead has been paid. The table on the opposite page shows how actual profit for the year can be figured under a budget with a fixed overhead expense, and varying amounts of gross business. The principle remains the same regardless of the amount budgeted for overhead. In this example I have assumed, for the sake of simplicity, an overhead expense of $50,000. A maximum of 10 percent for overhead and profit is all that can usually be added to a bid and still be competitive. So let us see what happens in Table I, with a fixed overhead and a fixed markup for overhead and profit.

In each line of the table the fixed overhead divided by gross business will provide the percent of overhead. By subtracting the percent of overhead from the 10 percent fixed markup for overhead and profit I can determine the percent of profit. This percent of profit times the gross business will give me the actual profit I will make for the year. In Line 1, the percent of overhead exceeds the overhead and profit by about 1 percent. This leaves a loss of $4,500.00 for the year. Obviously, my budget overhead is too high for the gross business I am doing. In Line 2, my percent of overhead equals my percent of overhead and profit. This leaves no profit and is not a good condition because there is no money for business growth. In Line 3, my 9 percent of overhead leaves 1 percent profit or $5,500. This is the start of a healthy business. In Lines 4 and 5, I have shown what each increase of $50,000 in gross business on the same fixed overhead can mean in profit.

The conclusion to be reached here is that once a budget overhead has been established for the coming year it should be watched carefully to see that operations are staying within it. If it becomes necessary to increase the overhead during the year because of increased business, then try to make the increase in business pay for the addition to the overhead. The final conclusion to be drawn is that if the business continues to operate in accordance with Line 1 of the table (where operating overhead is too large for the gross volume of business that can be handled), then the business should be shut down before the invested capital slowly dribbles away. At a loss of $4,500 per year it is a simple matter to calculate how long it will take to go bankrupt with a given amount of capital.

The discussion of reinforcing steel and mesh in concrete work has been left until now because reinforcing is generally handled as a sub-contract. As such, it does not belong in the material and labor columns with insurance, taxes, overhead and profit added to the subcontract price. The subcontract cost of reinforcing steel and wire mesh should be added only after a bid price for the concrete work with overhead and profit included has been reached. A percentage (somewhere between 3 percent to 5 percent) of the sub-contract cost should also be added for overhead and profit for handling the subcontract work.

On some jobs, it is necessary to take off the reinforcing steel and mesh. The reinforcing bars are taken off in lineal feet to the closest 3 inches for each bar size. For lengths over 20 feet, 10 percent should be added for lapping the bars. These lengths are multiplied by the pounds per lineal foot to convert them to a total weight for reinforcing bars needed for the job. Material and labor for reinforcing bars are priced by the pound, and unit prices for material and labor should be checked locally. Reinforcing mesh for slabs is taken off in square feet. The area of the slabs with mesh in them can be taken from the finishing areas, but 10 percent must be added to these areas for lap and waste to get the area of reinforcing mesh needed in these slabs. Material prices per square foot vary with the size of wire and the spacing. Unit prices for both material and labor per square foot should be checked locally.

Finally, it is most important to be extremely careful when submitting a bid proposal. To protect yourself, give not only the name of the job, but the architect's name, the section of the specifications, the drawing numbers

from which the estimator worked and their dates and any addenda that may have come through. If, as frequently happens, the general contractor provides only the concrete section of the specifications, check the general conditions for the job which always apply to each section of the specifications and may affect the bid. Always list any exceptions to the specifications by noting these as items that are "included" or "not included." The less exceptions made in a bid, the more help it is to the person to whom the bid is submitted. If he does not have time to contact the bidder, he must make allowances as best as he can for each of the exceptions so he can compare it to the other bids. This will mean that he will add in a comfortably safe allowance for each item marked "not included." This may make your bid look higher than it should be, and the general contractor will not use it. The net result is that it costs him time that he did not have to spare in preparing his bid, and it makes you look as if you did not know how to figure a job properly, and he will not be likely to call on you the next time. All alternates should be figured for the same reason and they should be listed by the architect's number or by some type of description. If the general contractor gives you only the concrete section of the specifications, be sure to ask if there are alternates listed anywhere else in the specifications. Unit prices for parts of your work are items of which to be especially wary, and should always be figured on the high side. Architects frequently ask for a unit price per cubic yard of concrete or square foot of formwork. Since concrete can vary in cost about 100 percent depending on where it is being placed, and formwork can vary about 300 percent from footings to columns and beams, a unit price is difficult to give unless a number of exceptions are made to the architect's request. There is not room on the bid form for exceptions, so the next best thing is to figure the most costly type of work for additions, and the lowest priced work for deductions. Additions for unit prices should include overhead and profit, and deductions for unit prices should not include overhead and profit. This last sentence applies to all additions and deductions on a contract. An addition to any contract price should include overhead and profit because of the cost of figuring the additional work. A deduction from any contract should not include overhead and profit, because it costs the contractor money to figure out the cost of omitting the work. This procedure is fairly well established, and recognized by all good architects and is provided for in their specifications and bid documents.

All concrete estimates should end with a cost check per cubic yard of concrete in place. By dividing the bid price by the cubic yards of concrete needed, you can determine an average cost per cubic yard of concrete for the job. Experience should tell you if this is a reasonable answer, or if you should look the estimate over for a serious error. This is the time to apply the rule: "Don't hurry...we haven't a dollar to lose." This is the last check that can be made on an estimate, before submitting a bid that will determine the profit or loss on what may be a future job.

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