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In view of the dissimilarity between the balance-sheet items of a contractor and those of a manufacturing concern, the credit-men of banks are liable to find some difficulty in properly reading the actual financial status from the balance-sheet of the former, unless it is presented with considerable clarity. The banker is unable to apply some of the tests that he is in the habit of using, e. g., the ratio of merchandise on hand to sales, and that of accounts receivable to turnover. Moreover, the ratio of quick assets to current liabilities will not always show 1.5 to 1, which is usually the banker's minimum requirement. It becomes necessary, therefore, to supply the banker with a statement, supported by a profit and loss account, that will furnish him with the salient factors of the business, from which an analysis can readily be made. For this to be possible there is the fundamental requirement of a properly expressed set of accounts and a practical system.

A coördinated cost system will also be found of inestimable value in comparing, at frequent intervals, the actual unit costs with the estimates prepared by the engineer, upon whom devolves the work of classifying the various expenditures estimated, as to labor, material and overhead. Naturally, if the comparisons are to be of any value, the classification of accounts in the cost records should conform to that of the engineer.

At the outset I might say that I have found it not unusual for contractors to have little respect for the value of sound bookkeeping methods and to be content with charging to a single account, termed "contract," all labor and material items, applicable thereto, only when paid. Thus, the materials in some instances

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may have been used or consumed on the job, but no entry therefor will have been made upon the records. It will be obvious that by this method the accounts payable for purchases are not made a part of the records; whereas the setting forth of all liabilities is a most important factor without which nothing like a true statement can be prepared.

Recording of Materials and Supplies

It is assumed that all purchases are made by the general office, with the exception of minor requirements frequently of an emergency nature which are, for convenience, bought and paid for by the field office upon authority of the superintendent. These latter transactions can easily be handled by means of a revolving fund placed with the field office, invoices therefor accompanying the periodical report to the general office. Freight bills also would be paid from the revolving fund and be forwarded to the general office.

It will be found preferable to maintain stock ledgers, appropriately classified, in the field office which will be controlled upon the general ledger. To the various stock accounts, therefore, would be charged the purchases of all materials and supplies not going directly to the job. In the latter case it is more convenient and equally good practice to make the charge direct to the cost of contract.

Triplicate purchase invoices should be demanded from the vendor, the original being for use of the general office, the duplicate for the field office and the triplicate for the purchasing agent. After numbering each set of invoices received, they should be registered numerically and distributed, the original being filed pending the approvals for receipt of goods, and as to quantity, quality and price. The system that appears to the writer to have the greater advantages is the one which compels the receiving clerk to fill out a material receipt upon the delivery of goods without reference to the invoice. Under this method the material receipt is made up in duplicate, the original being perforated and sent to the field office stock ledger clerk who compares the quantities with his copy of the vendor's invoice and, if in order, mails the material receipt to the general office. Errors can frequently be corrected by this plan, without an unnecessary amount of correspondence.

The material receipt is then attached to the original invoice, which previously should have been approved as to prices and extensions, is ready for vouching, and when entered upon the voucher register will be charged to materials and supplies account.

Materials should be requisitioned from stores upon appropriate forms; and these should be summarized weekly or monthly by the field office, the summary being sent to the general office to be posted to the cost ledger, in detail, credit being passed to materials and supplies account. As an illustration of some of the various accounts that it may be found desirable to keep in the cost ledger, under the materials section, the following brief list is submitted:

Steel	Fuel
Cement	Gasoline for tractors, etc.
Sand and gravel	Repair parts for machinery
Lumber	" " " tractors, etc.
Hardware	Small tools

It would be well to mention that, inasmuch as many classes of materials are purchased under contract in specific quantities, it becomes desirable for the purchasing agent to keep a record of each contract, showing the quantities purchased and the unit price thereof, and also the quantities delivered thereunder in accordance with invoices, the balance undelivered being useful in indicating the occasional necessity of placing further contracts. It will readily be seen that on an ascending market these records will prove of value in assuring the company of total contract deliveries at the contract price.

Labor

Few difficulties will present themselves in the recording of the charges for labor. Perhaps the best method to be pursued is to have the payroll made up in duplicate and paid by the field office, for which a payroll fund would be maintained for the purpose of paying off men who leave between pay days. The payroll would be summarized as to distribution, according to the cost ledger classification, and the original would be forwarded to the general office for reimbursement.

OVERHEAD

It is not intended by the writer that the salaries of the superintendent and clerks at the field office should be included under the caption "overhead," but that those charges should appear, as such, in the cost ledger, inasmuch as they are specifically allocated to a particular contract.

The accounts coming under this head would comprise the proportion of the general and administration expenses, as determined. The apportionment of expenses over the various contracts must be on an equitable basis, and there can be no objection to the use of total material and labor expenditures.

In regard to the question as to whether interest should be included under the heading of overhead, I can only say that it would seem preferable to me to exclude it and to treat it as a division of profits. This question is, of course, a moot point upon which there are, naturally, divergent opinions among accountants. If, however, interest on borrowed money is treated separately in the profit and loss account, it would appear to be the best practice to treat discounts taken on purchases as a financial item, by charging the work-in-progress account with gross invoice price, and discount would then be deducted from interest account in presenting the profit and loss statement. Depreciation on machinery and equipment, which naturally constitutes an important element of cost, will be discussed later.

Contracts are frequently entered into on the basis of unit prices for the various classes of work to be done, payment to be made monthly at the rate of 90 per cent of work completed, as computed and certified by the engineers. In this case the cost account is credited with 100 per cent, or in other words the total of the certified estimate; an account receivable is charged with 90 per cent thereof, the remaining 10 per cent being carried to an account termed "retention of percentage on work completed."

A bond for assuring completion of the contract is usually granted by the contractor, the premium of which can be either carried as a deferred charge and prorated or be charged to cost of work in progress direct, preferably the latter. Compensation insurance should be accrued at the policy rate applied to the monthly payroll, and any premium deposited should be carried as a deferred charge.

Machinery and Equipment

When a contractor has several pieces of work in hand at the same time, it becomes desirable to maintain a record of the individual items of machinery and equipment. A simple but efficient way in which this may be kept is to open an ordinary subsidiary ledger account for each machine, truck, etc., or by groups, as purchased, showing date purchased, name of vendor, unit price and amount, the controlling account thereof being kept in the general ledger. The particular contract upon which it or they are being used should be designated on the subsidiary ledger account. When the machine is transferred to another contract, depreciation should be calculated thereon for the time it has been in use and be credited to the account, cost of work being correspondingly charged under the head of depreciation.

The same procedure applies when a job has been completed, for all machinery and equipment used thereon. The balance of each account should then be brought down and notation should be made as to where the machine has been placed. It may be noted that it is preferable to apply the depreciation rate upon the original cost rather than the reducing balance. It would also be well to bear in mind that when a machine is placed in warehouse, depreciation should also be computed thereon, but at distinctly lower rates than when in use on contracts, and that this depreciation is chargeable to general overhead, as such.

At the close of a fiscal year it is inadvisable to depreciate machinery and equipment that is in use, if no profit or loss is being taken on the contract. It is preferable to account for depreciation only when a closing or part closing is made, at which time cost of work is charged, as described heretofore. In the opinion of the writer this method is sound, because depreciation on machinery, etc., taken while work is in progress, would have the effect of reducing fixed assets thereby and increasing current assets, inasmuch as a corresponding charge would be made to cost of work in progress, which is classified as a quick asset.

On the other hand, if a profit or loss is being estimated and taken on a partly completed contract at the close of a fiscal period, it becomes imperative, if good accounting is to be followed, to compute and set up depreciation of machinery and equipment for

the period in use and to charge it to cost before calculating the estimated profit.

It is hardly necessary to mention that depreciation on furniture and fixtures is chargeable as a general overhead expense and has no relation to direct cost of completed contracts.

Profits on Contracts

Perhaps one of the most perplexing problems that confronts the auditor who is called to examine the accounts of a contractor having large undertakings on hand at the close of the fiscal year, in various stages of progress or development, is to ascertain, with any degree of accuracy, the profit that fairly may be taken thereon. Several factors must be given due consideration, such as the proportion of the work completed, the existing labor conditions and other circumstances, the status of the contracts entered into for materials and in some cases the past experience of the contractor. In the final analysis, the estimating of part profits partakes more of an engineering problem than of one of accounting. It naturally behooves an auditor, however, to pay close attention to this important question.

In many cases it will be found not a difficult matter to ascertain with substantial accuracy the profits earned on contracts that have been only partly completed, provided the cost system is founded on good accounting principles and is expressive of the actual conditions, with a sufficiency of detail.

Illustration of such a case is found in the contract undertaken at unit prices for the several classifications of work performed and not at any flat figure. If the cost records reflect the actual expenditures under a distribution similar to that upon which the contract has been calculated, inasmuch as the reports from the field and the estimates approved by the engineers will show the amount of the work done under the respective classes to the closing date, the unit costs can be determined by dividing the units of work completed into the total costs thereof. The difference between the sum of the costs and the total of the amounts due under the contract, which is determined by multiplying the units of work completed by the respective contract prices, will represent the gross profit on the work performed, from which is deductible the proportion of overhead expenses.

Inasmuch as it is by no means a universal practice among

contractors to maintain stores accounts—the method employed being to charge all materials and supplies direct to the contract—it must be borne in mind that in such cases a physical inventory of materials unused and on hand should be taken as of the close of the fiscal year and be credited to the cost of work in progress, being shown separately in the balance-sheet under materials and supplies.

In the case of a contract which is practically completed, an estimate is made by the engineer of the cost of work to be done and by adding this amount to the cost to date, and deducting the sum from the contract price, the estimated profit is ascertained.

It would be well at this point to warn against taking profits that may have accrued on uncompleted contracts unless the work done has been of sufficient volume to warrant this practice; and it is the duty of the auditor to see that due allowance is provided for all contingencies and that the estimated profits are calculated upon a conservative basis.

On the other hand, it is incumbent upon the auditor to satisfy himself that there is no loss on an uncompleted contract, and if, upon investigation, a loss is disclosed he should not fail to give effect to the necessary adjustment to the accounts. It may happen, however, that the loss on one uncompleted contract is much more than offset by the part profits on other contracts, and that no cognizance has been taken thereof by the contractor. In this event it is usually considered sufficient to mention the facts in the report without adjusting the accounts.

When part profits are taken, it is by all means the best practice clearly to identify them as such in the profit and loss account.

Among the benefits from a good cost system is the valuable statistical information that is gained, providing, of course, that the system is efficiently carried out. The data furnished are most useful in comparing unit costs between different concurrent contracts and furthermore they form an essential basis for bidding on future contracts. This feature alone cannot be too strongly emphasized, since upon it may rest the success or failure of a venture of considerable magnitude.