

CONTRACTS—A COMPARISON OF "COST PLUS" WITH OTHER FORMS*

BY ERNEST WILDER CLARKE

THE use during the past two years of the "cost plus" form of contract on very large and complicated construction work seems to the writer to render the time opportune for a general discussion of the advantages and disadvantages of this type of contract.

In order to bring the matter before the society, the following résumé of some of the more or less self-evident faults and virtues of the usual contract forms are presented, not with the idea of informing the members of the society, but to establish a basis for discussion.

Lump-Sum Contracts

The usual methods of paying for work are by lump-sum, by item charges and by cost plus a percentage. Under the first two methods, the contractor takes the engineers' or architects' specifications and estimates of the quantities, possibly checks the latter by his own computation, guesses at the interpretation which will be placed by the owner's representatives on the terms of the specifications and, from his knowledge of cost of materials and cost of labor, makes up a bid.

In a lump-sum contract the preliminary estimate of quantities is final, as are also the original plans of foundations, details, etc. Any changes must be a matter of settlement between the owner and the contractor. The latter takes all the gamble, and if conditions or quantities turn out more favorably than was anticipated, he wins; otherwise, he loses, or is tempted to decrease the cost to himself by some method which generally means a poorer grade of work than that contemplated in the specifications. If conditions turn out much worse than anticipated by the contractor, he may forfeit whatever bond he put up and leave the owner and bondsman to settle. The owner very often desires to change the plans as the work progresses, either to cheapen the job or to add new features or improvements, and as there is no basis in the contract for payment to the contractor for such changes, a new bargain must be made. Generally, it is almost impossible to let additional work to a new contractor, so the owner is at the mercy of the original one and must submit to whatever terms he offers or forego the changes. The lump-sum contract has all the seeds of misunderstanding, disputes, lawsuits and poor work; and not even the benefit of a pre-knowledge of ultimate cost, as there is almost invariably a long list of "extras."

"Item" Contracts

In "item" contracts, the award is made on the sum of the products of the units in each item multiplied by the bid per unit. In most engineering work, the preliminary estimate of unit quantities is necessarily approximate—often the owner is unwilling on account of cost or unable for various reasons to make the investigations which would afford a basis for an exact determination. This is especially true of sub-surface structures, but quantities even in superstructures cannot always be accurately computed in advance. This is one of the great sources of disappointment to the owner in the ultimate cost of work let under this form of contract—of gambling on the part of the contractor and of loss or unfair cost to both.

The contractor and the owner may disagree on the interpretation of the data for the estimate—the contractor backs his judgment by bidding low on items which he thinks are over-estimated and high on those which are under-estimated. His total bid is lower than he would be willing to take the work for if the preliminary estimate of quantities was known to show also the final estimate, but allows a fair or better profit if the final estimate approximates that made by himself. In other words, the owner thinks he is

letting the work to cost one sum, and the contractor expects to receive another and larger sum. Badly unbalanced bids are often thrown out, but a skilful bidder does not make his unbalancing so raw as to justify this action. This kind of bidding is not, per se, unfair or dishonest, and the ability thus to bid safely may be truly a part of the contractor's equipment, but it results in disappointment to the owner when he finds his final estimate largely in excess of that anticipated. If, on the other hand, such bidding is merely a wild guess or due to optimism on the part of the contractor, it is a gamble pure and simple which, if unsuccessful, results in loss to himself and often to the owner.

Definition of Items

Item bids require as a basis a set of definitions. Some items are so self-evident that no confusion can possibly arise as to the meaning of the definition; others shade into other items, and it is hard to define the line of demarcation. Other items are described as containing certain materials in certain proportions, and any variation from these proportions constitutes a new item, more or less expensive. Another item is described as being a certain stock material or machine, and any variation ordered or permitted raises the question of cost to the contractor. The possibility and even probability of argument and variation in cost, due to varied reading of definitions or changes in details of items, could be elaborated almost indefinitely, but enough has been said to illustrate how fruitful of bills for extra cost this part of the specification can be.

The "item" contract is better than the lump-sum in that changes in plan, due to the development of the work or the meeting of unforeseen conditions and variations in unit quantities, can be adjusted under the terms of the original contract, if the items included in that contract can be reasonably construed to apply to the new conditions; but it is still limited by the items which can be so construed and which both the contractor and owner are willing to admit are fair as to cost under these new conditions.

Applying to both these forms are several factors which are taken into account in their bids by all successful contractors and for which all owners pay indirectly. Some of these are the clauses removing responsibility from the owner for the accuracy of the preliminary data; for errors in laying out work; for refusing to accept the action of the owners' inspectors at the time of actual construction and retaining the right of rejection to the final inspection; making the owner's engineer the final interpreter of his own specification and allowing him to supplement his drawings and specification in any way, in order to make the meaning conform to this interpretation. The contractor has to take the gamble that the original data are reasonably accurate, that the work of laying out will be carefully done, or else maintain an engineering organization to check the work—for which duplicate organization the owner will pay—that the engineers will be just, and that the original engineer will remain in charge throughout the life of the work.

Test of Material Requirements

Many specifications require tests of material which, if rigidly enforced, would often cause great delay and expense to the contractor or the carrying of a large stock, entailing interest charges, storage space, rehandling and other expenses. The contractor usually expects that the purchase of material from well-known manufacturers or certificates from them will avoid the enforcement of these clauses, but if he is wise, he considers the possibility that they may be insisted on, and bids accordingly.

In short, the tendency of the entire specifications is to remove responsibility from the owner and his representatives and place it on the contractor; also, all the gamble on weather, foundations, changes in labor and material market, and every other unknown or unknowable factor is carefully unloaded on him.

The contractor accepts all this, but the owner pays. The individual owner may save money, because the gamble went against the contractor on his job, but his neighbor loses, because in the long run the contractor must make money to

*A paper presented before the American Society of Civil Engineers and printed in the Proceedings, Vol. XLV, No. 6, pp. 443-449.