

## COST-PLUS CONTRACTS FOR WATER WORKS CONSTRUCTION\*

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**P**RIOR to the great war, the "cost-plus" form of payment on contracts in the water works field was limited to a relatively few large projects built as a whole under this type of contract for private corporations and to numerous small unexpected features of enterprises executed under municipal contracts where "extra work" clauses were attached to either lump-sum (bulk) or unit-price contracts. During the war a large amount of emergency government work which had to be performed in the shortest possible time gave great impetus to the "cost-plus" form of contract, or what the British call "prime-cost-plus-profit" type contract.

The unstable condition of the market for labor and materials now found in many places causes this form of handling construction work to come up repeatedly for discussion. Such discussion results from the necessity for finding expedients to meet present emergencies which, while not comparable with those of the war period, are nevertheless present during this reconstruction period to an extent which perhaps is not generally recognized.

At this time when contractors are sorely puzzled to know how to bid or tender on construction material on which quotations are made by dealers only on the basis of changes in price contingent on the actual date of future deliveries, and when labor is uncertain in quantity and of reduced and somewhat uncertain efficiency as to output of work per hour, it is obviously necessary to look conditions squarely in the face. Add to this the difficulties in transportation of construction materials and the loss incident to the contractor having a substantial payroll for labor when materials to work with are lacking, and it is readily seen that this is a time for considering fundamental principles in handling construction work to an extent that would not be of interest under normal conditions.

### Reduced Construction Policy Advisable

The writer believes that water works construction which reasonably can be deferred should not be contracted for at present. In the case of many water works projects, the existing works can with propriety be patched and overhauled in a manner similar to that adopted by the individual who under present stress makes use of old and patched clothes. There are some water works betterments which cannot be postponed owing to the fact that this expedient has been resorted to for so long that further postponing means positive disaster along various lines associated with a water famine.

Much needed work is now impossible of accomplishment due to the inability of labor agencies to supply men, of manufacturers to supply material and of transportation facilities to deliver goods. Competition between owners will only increase the already serious aspect of obtaining material for construction work which it is important to have done in the near future.

Some water works construction must go forward. With conditions as they are at present, the contractor, if he bids on a lump-sum or unit-price basis, is bound to name a price which, in his opinion, will protect him from loss, and if possible assure a reasonable return on his capital investment and for the work of himself and his organization. Under these circumstances it is important to discuss briefly the cost-plus form of contract with a view to seeing if the burden of uncertainty, in some respects, cannot be shifted from the contractor to the owner to the advantage of all concerned. In fact, if construction work is to go forward, there are some projects where such steps seem imperative.

Before pointing out briefly the advantages and disadvantages of the cost-plus form of contract, it is well to

recall that there is serious doubt as to the legal right of municipalities, in some localities at least, to enter into such contracts. State and provincial laws and municipal charters usually call for the letting of contracts for public works by open competitive bidding for all work in excess of certain specified amounts. Also, such laws provide, almost without exception, that contracts shall not be made in sums in excess of appropriations duly authorized and in some cases above the estimates of the engineer of the governing body.

As regards the first restriction the intent is obviously to take advantage of competition in making sure of proper market prices. The second restriction is a check on total estimated costs by actual bids for the work. In the absence of preliminary bidding, work might be started when appropriations are insufficient for completion, or opportunities might be lost for reducing costs by subsequent lettings through correction of misunderstandings as to construction procedures. Stabilization through such restrictions should not be abandoned unless there is a great emergency.

### Cost-Plus Contracts

There have been and always will be certain construction problems in which some means of payment in the form of actual cost plus, a percentage or lump-sum is legitimate and desirable, if not necessary. This is true even with lump-sum contracts in which certain features may be indefinite or subject to changes regarding the character of the work. Cost-plus provisions for extra work, or supplementary contracts, based on such arrangements or estimates, are also pertinent where sufficient investigation previous to a letting is undesirable or too expensive in time or money for the advantage gained, such as extensive street openings to locate existing structures, and also in cases where the owner desires to retain complete control of the work regardless of the cost.

It is claimed that under the cost-plus method a contractor has little incentive to keep down the cost of the work. This is frequently true of the cost-plus-percentage but need not be true of the cost-plus-lump-sum type. In any case it must be remembered that a contractor who will deliberately be inefficient on a cost-plus project is equally sure to attempt improper or inadequate construction on lump-sum or unit-price agreements.

There have been a great many variations of the cost-plus contract applied to construction work, but the more important are:—

1. Actual proved cost with labor and material furnished without restriction by the contractor, plus a fixed percentage or lump sum to represent profit, supervision, financing, use of tools and plant, or any or all of these.
2. Actual proved cost of labor furnished by the contractor and with materials furnished by the owner, with a fixed percentage or lump sum as above.
3. Actual proved total cost for specified work plus a percentage for specified or unexpected extra or unforeseen work in connection with lump sum or unit price contracts.
4. Actual proved total cost to the contractor plus a sliding scale fee and upset maximum fee.
5. Actual proved total cost to the contractor plus a fixed plant charge and fixed construction fee.

### Advantages of Cost-Plus Contracts

The following advantages are claimed for the cost-plus contract:—

1. The work may be started at any time and is not dependent on the prior completion of the plans.
2. The owner may radically increase or decrease the quantities during construction, with lump-sum fees subject to review.
3. The owner may change the kind of construction during the progress of the work.
4. The contractor will not try to skimp the job as is often done after finding himself losing under lump-sum or unit-price contracts.
5. There is less need of having accurate preliminary estimates. In unit-price contracts the preliminary estimate

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