

## Civil Engineering Estimates

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An estimate is a calculation of the quantities of various items of work, and the expenses likely to be incurred thereon. The total of these probable expenses to be incurred on the work is known as estimated cost of the work. The estimated cost of a work is a close approximation of its actual cost. The agreement of the estimated cost with the actual cost will depend on accurate use of estimating methods and correct visualization of the work, as it will be done. Importance of correct estimating is obvious. Under-estimating may result in the client getting an unpleasant shock when tenders are opened and drastically modifying or abandoning the work at that stage. Over-estimating may lose the engineer or estimator his client or his job, or in any case his confidence.

Estimating is the most important of the practical aspects of construction management, and the subject deserves the closest attention of one aspiring to a career in the profession. It is a comparatively simple subject to understand; however, as it brings one up against practical work, methods and procedure, knowledge of it cannot be acquired without close application.

### . Purpose of Estimating:

*To give a reasonably accurate idea of the cost*

An estimate is necessary to give the owner a reasonably accurate idea of the cost to help him decide whether the work can be undertaken as proposed or needs to be curtailed or abandoned, depending upon the availability of funds and prospective direct and indirect benefits. For government works proper sanction has to be obtained for allocating the required amount. Works are often let out on a lump sum basis, in which case the Estimator must be in a position to know exactly how much expenditure he is going to incur on them

#### *1. Estimating Materials*

From the estimate of a work it is possible to determine what materials and in what quantities will be required for the work so that the arrangements to procure them can be made.

#### *2. Estimating Labor*

The number and kind of workers of different categories who will have to be employed to complete the work in the specified time can be found out from the estimate.

#### *3. Estimating Plant*

An estimate will help in determining amount and kind of equipment needed to complete the work.

#### *4. Estimating Time*

The estimate of a work and the past experience enable one to estimate quite closely the length of time required to complete an item of work or the work as a whole.

Whereas the importance of knowing the probable cost needs no emphasis, estimating materials, labor, plant and time is immensely useful in planning and execution of any work.

### . Types of Construction Estimates:

There are several kinds of estimating techniques; these can be grouped into two main categories

1. Approximate estimates
2. Detailed estimates

#### *1. Approximate Estimates*

An approximate estimate is an approximate or rough estimate prepared to obtain an approximate cost in a short time. For certain purposes the use of such methods is justified.

#### *2. Detailed Estimate*

A detailed estimate of the cost of a project is prepared by determining the quantities and costs of every thing that a

contractor is required to provide and do for the satisfactory completion of the work. It is the best and most reliable form of estimate. A detailed estimate may be prepared in the following two ways

- (a). Unit quantity method
- (b). Total quantity method.

*(a) Unit Quantity Method*

In the unit quantity method, the work is divided into as many operations or items as are required. A unit of measurement is decided. The total quantity of work under each item is taken out in the proper unit of measurement. The total cost per unit quantity of each item is analyzed and worked out. Then the total cost for the item is found by multiplying the cost per unit quantity by the number of units. For example, while estimating the cost of a building work, the quantity of brickwork in the building would be measured in cubic meters. The total cost (which includes cost of materials, labor, plant, overheads and profit) per cubic meter of brickwork would be found and then this unit cost multiplied by the number of cubic meters of brickwork in the building would give the estimated cost of brickwork. This method has the advantage that the unit costs on various jobs can be readily compared and that the total estimate can easily be corrected for variations in quantities.

*(b) Total Quantity Method*

In the total quantity method, an item of work is divided into the following five subdivisions:

- (I) Materials
- (II) Labor
- (III) Plant
- (IV) Overheads
- (V) Profit.