Salahaddin University - Erbil
Colege of Engineering
Architectural Engineering Department
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Estimation and Specifications

ESTIMATION AND SPECIFICATION

Dr. Husein Ali Husein
husein.ali@su.edu.krd
dr.arch.huseinali@gmail.com

Estimation & Specifications

Ground rules:

- **Coming in late not allowed.**
- **Individual work only is allowed.**
- **Don’t copy previous year work.**
- **When confused ask instructor.**
- **Academic honesty.**
- **Cell Phones are strictly prohibited Please.**
- **Don’t bring your cell to the lecture or**
- **keep it always closed**

Course Objectives:

1. Be able to calculate of the quantity for each item for building construction as concrete, plastering, concrete blocks,…etc.
2. Be able to analysis the cost and prepare the cost per unit price
3. Be able to prepare BOQ.
4. Be able to prepare the specification required for building construction

ESTIMATION

Estimation is the scientific way of working out the approximate cost of an engineering project before execution of the work.

- It is totally different from calculation of the exact cost after completion of the project.
- Estimation requires a thorough Knowledge of the construction procedures and cost of materials & labor in addition to the skill , experience, foresight (the ability to predict or the action of predicting what will happen or be needed in the future) and good judgment.

NEED FOR ESTIMATE

1. It help to work out the approximate cost of the project in order to decide its feasibility with respect to the cost and to ensure the financial resources, if the proposal is approved.

2. Requirements of controlled materials, such as cement and steel can be estimated for making applications to the controlling authorities.

3. It is used for framing the tenders for the works and to check contractor's work during and after the its execution for the purpose of making payments to the contractor.

4. From quantities of different items of work calculated in detailed estimation, resources are allocated to different activities of the project and ultimately their durations and whole planning and scheduling of the project is carried out.

ESTIMATE

An estimate of the cost of a construction job is the probable cost of that job as computed from plans and specifications.

- For a good estimate the actual cost of the proposed work after completion should not differ by more then 5 to 10 % from its approximate cost estimate, provided there are no unusual, unforeseen circumstances.

SITE CONDITIONS AFFECTING THE OVERALL COST

- Each type of work requires a different method of construction.
- Construction may be of an ordinary house or office and it may also be of a Dam, Tunnel, Multistory building, Airport, Bridge, or a Road, already in operation.
- Each of these works requires totally different construction techniques, type of machinery, and formwork.
- Quality of labor and labor output varies in different localities.
- Weather conditions greatly affect the output and hence the overall cost.

- The source of availability of a sufficient supply of materials of good quality is also a factor.

- Ground conditions vary and change the method of construction. For example, excavation may be dry, wet, hard, soft, shallow or deep requiring different efforts.

- The availability of construction machinery also affects the method of construction.

- Access to the site must be reasonable. If the access is poor, temporary roads may be constructed.

ESSENTIAL QUALITIES OF A GOOD ESTIMATOR

- In preparing an estimate, the Estimator must have good knowledge regarding the important rules of quantity surveying.
- He / She must thoroughly understand the drawings of the structure, for which he is going to prepare an estimate.
- He / She must also be clearly informed about the specifications showing nature and classes of works and the materials to be used because the rates at which various types of works can be executed depend upon its specifications.

A good estimator of construction costs should possess the following capabilities, also:-

- A knowledge of the details of construction work.
- Experience in construction work.
- Having information regarding the materials required, machinery needed, overhead problems, and costs of all kinds.
- Ability to collect, classify and evaluate data relating to estimation.
- Ability to visualize all the steps during the process of construction.

Before preparing the estimate, the estimator should visit the site and make a study of conditions, there.

For example, if the construction of a large building is planned, the estimator or his representative should visit the site and:

- Note the location of the proposed building.
- Get all data available regarding the soil.
- Make a sketch of the site showing all important details.
- Obtain information concerning light, power, and water.
- Note conditions of streets leading to railway yards and to material dealers.

Reinforcement-works specifications:

- Shall be protected from dirt, paint, oil.....etc.
- All bending must be done with bending tools.
- Lapping for bars should be limited and according to specifications, welding not allowed.
- Fixing must be done probably, using concrete blocks, plastic cover, bar-supports and must bond &tied using steel wire.
- A minimum concrete cover must be provided to protect steel from corrosion & fire.
  - ❖For slab min 2.5 cm
  - ❖For Columns and beams min 4 cm
  - ❖For foundations min 5 cm if no contact with soil
  - ❖For foundations min 7 cm if contact with soil

TYPES OF ESTIMATES

There are two main types of estimates:-

(1) Rough cost estimate.

(2) Detailed estimate.

Depending upon the purpose of estimate, some types of detailed estimate are as follows:-

a) Contractor's estimate

b) Engineer's estimate

c) Owner's estimate

Rough cost estimate

Rough cost estimate: Estimation of cost before construction from plans or architectural drawings of the project scheme, when even detailed or structural design has not been carried out, is called Rough cost estimate.

- These estimates are used for obtaining Administrative Approval from the concerning Authorities.
- Sometimes, on the basis of rough cost estimates, a proposal may be dropped altogether.

DETAILED ESTIMATE

Detailed estimates are prepared by carefully and separately calculating in detail the costs of various items of the work that constitute the whole project from the detailed working drawings after the design has been finalized.

- The mistakes, if any, in the rough cost estimate are eliminated in the detailed estimate.
- Detailed estimates are submitted to the competent authorities for obtaining technical sanction.

- The whole project is sub-divided into different items of work or activities. The quantity for each item is then calculated separately from the drawings as accurately as possible. The procedure is known as **"taking out of quantities".**

- The quantities for each item may be estimated and shown in the pattern which is called **"Bill of Quantities."**

- The unit, in which each item of the wok is to be calculated, should be according to the prevailing practice as followed in various departments of the country.

QUESTIONS?