Engineering Cost Estimation

– Project cost estimation is the process of valuing on monetary expression, including the cost of all possible entrants necessary for the planning, implementing and monitoring stages of the proposed project under consideration.

Cost Estimation

- Preliminary investigation (project appraisal costs)
- design and supervision (consultancy cost)
- construction works (contractor’s cost)
- land owning cost
- monitoring and evaluation costs
- Operational and maintenance costs

Types of costing or estimating

- Preliminary/approximate costing
  - Cost per functional unit
  - Plinth area method – cost per m2 of a building
  - Cubical Content method – cost per m3 of the building
  - Elemental/parametric Estimate – roughly grouped quantities or elemental bill
- Detailed estimate or item rate method
- Supplementary Estimate
- Rate Analysis

Rate Analysis

- Rate Analysis is the process of fixing cost per unit of measurement for the different item of works.
- Cost due to construction (contractor's cost) is given special attention here.
- Total cost per unit of work (TC) may be grouped into two components; direct cost and indirect cost.
- The direct cost (DC) includes:
  - cost due to material, cost due to labor, cost due to equipment,
- the indirect(IC) cost covers:
  - overhead costs, and contractor's profit.

…Rate Analysis

- Material Breakdown
  - E.g.
    - Quantity of materials required for brick masonry laid in 1:4 cement mortar
    - Quantity of materials required for C -25 cement concrete (1:2:3),
    - Quantity of Materials required for stone masonry laid in 1:3 cement mortar
    - Materials required for 12mm thick cement plaster in 1: 4 cement mortar

…Rate Analysis

- Calculation of Unit Price (rate)

  The following information is required to define cost per unit of work:

  1. Correct information of the market price of the materials at the time of need to be used as a prime cost
  2. Correct information of the rates of various categories of skilled and unskilled laborers as wage rates to be used for daily work rate
  3. Output of laborers per day for various types of items (productivity)
  4. Correct information of the rates of various categories of equipment and tools as rental rates to be used for major items of rates
  5. Up-to-date knowledge of the construction methods.

- Cost per m2 of 25cm thick brick masonry wall, laid in 1:4 cement mortar
- Unit price for C -25 concrete per m3 of work