



Salahaddin University
College of Engineering
Architectural Engineering Department
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Estimation and Specifications

ESTIMATION AND SPECIFICATION

DETAILED ESTIMATION

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

BILL OF QUANTITIES

The term Bills of Quantities (B.o.Q.) is defined in the SMM as a list of items giving brief identifying descriptions and estimated quantities of the works to be performed. The B.o.Q. forms a part of the contract documents, and is the basis of payment to the

Contractor.

Sr. No	Item description	No	Unit	Measurements			Quantity	Total Quantity	Remarks
				Length	width	Height (Depth)			
1	Earth works								
1.1	Tie Beam	3	m ³	6.6	1.2	0.8	6.336	19.008	
1.2	Single Found.	4	m ³	2.4	2.4	1.2	6.912	27.6478	

SMM Standard Method of Measurement for Civil Engineering Works (1992 Edition)

PRICED BILL OF QUANTITIES

Sr. No.	Description of Item	Unit	Quantity	Rate	Cost	Remarks

DETAILED ESTIMATE

- ❖ Each item of the work is then multiplied by its estimated current rate calculated by a fixed procedure to find out **cost of the item**.
- ❖ At the end, a total of all items of the work are made to get the **total estimated cost**.
- ❖ The rates are usually as per **Schedule of Rates** for the locality plus a **premium** to allow for rise in labor and material rates over and above the schedule of rates.
- ❖ A percentage, usually 5% is also provided on the total estimated cost for the work to allow for the possible **contingencies** due to unforeseen items or expenditure or other causes, besides 2% **establishment charges**.

Besides drawings and details of measurements and calculation of quantities (Bill of Quantities), the following documents are also usually submitted with the detailed estimate for obtaining Technical Sanction:

- (1) A **report** explaining History, necessity, scope and main features of the project, and its design, etc.
- (2) **Specifications** laying down the nature and class of work and material to be used in various parts of the work.
- (3) The **abstract of cost** (priced Bill of Quantities) showing the total quantities under each sub-head, rate per unit of measurement, and cost.
- (4) **Calculation sheets** showing calculations for important parts of the structure.

METHODS OF DETAILED ESTIMATE

- ❖ The dimensions, length, breadth and height or depth are to be taken out from the working drawings (plan, elevation and section).
- ❖ **Junctions of walls, corners** and the **meeting points** of walls require special attention.
- ❖ For symmetrical footings, which is the usual case, earthwork in excavation in foundations, foundation concrete, brickwork in foundation and plinth, and brickwork in superstructure may be estimated by either of the **two methods**:

- (1) **SEPARATE OR INDIVIDUAL WALL METHOD**
- (2) **CENTER LINE METHOD**

SEPARATE OR INDIVIDUAL WALLS METHOD

- ❖ The walls running in one direction are termed as "long walls" and the walls running in the transverse direction, as "Short walls", without keeping in mind which wall is lesser in length and which wall is greater in length.
- ❖ Lengths of long walls are measured or found "Out-to out" and those of short walls as "In-to-in".
- ❖ Different quantities are calculated by multiplying the length by the breadth and the height of the wall.
- ❖ The same rule applies to the excavation in foundation, to concrete bed in foundation, D.P.C., masonry in foundation and super structure etc.

For symmetrical footing on either side, the center line remains same for super structure, foundation and plinth. So, the simple method is to find out the centre-to-centre lengths of long walls and short walls from the plan.

Long wall length out-to-out

Center to center length + half breadth on one Side + half breadth on other side.

Center to center length + one width

Short wall length in-to-in = Center to Center length - one width.

CENTRE LINE METHOD

- ✚ In this method, total length of centre lines of walls, long and short, has to be found out.
- ✚ Find the total length of centre lines of walls of same type, having same type of foundations and footings and then find the quantities by multiplying the total centre length by the respective width and the height.
- ✚ In this method, the length will remain the same for excavation in foundations, for concrete in foundations, for all footings, and for superstructure (with slight difference when there are **cross walls** or **number of junctions**).
- ✚ This method is quicker but requires special attention and **considerations** at the junctions, meeting points of partition or cross walls.

- For rectangular, circular polygonal (hexagonal, octagonal etc) buildings having no inter or cross walls, this method is quite simple.
- For buildings having cross or partition walls, for every junction, half breadth of the respective item or footing is to be deducted from the total centre length.
- Thus in the case of a building with one partition wall or cross wall having two junctions, deduct one breadth of the respective item of work from the total centre length.

QUESTIONS?