

King Fahd University of Petroleum & Minerals
College of Environmental Design
Construction Engineering & Management Department
CEM 511
Construction Estimating
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Quantity surveying

A detailed compilation of the nature and quantity of each work type required.

Why do A/E takes off quantities:

- Preparing bid form.
- Defining the total scope of work.
- Having a common basis for comparing bids.
- Preparing cost estimates for owners.
- Making payments for contractors.
- Check the pace of contractors with the schedules.



Quantity surveying

Why do contractors take off quantities:

- The contractor adheres to work types and units given by the A/E.
- A/E estimates are stated to be approximations only.
- Estimating costs and preparing bids.
- Provide intimate familiarity with the job requirements.
- Prepare schedules.
- Evaluate efficiency of labor, equipment, and material usage.



Quantity surveying

Why do contractors take off quantities:

- Contractor normally limit takeoff to work items that he accomplishes using his own forces.
- Perform unbalancing if he found out about errors in A/E quantity survey.
- Prepare pay requests.
- Select the optimum method of construction.
- Make payments to subcontractors.
- Determine his plan for material purchasing.



Quantity surveying

Why do contractors take off quantities:

- Cost accounting and cost control.
- Monitoring progress and updating schedules.



Quantity surveying

Units of measurements:

- Cubic meters.

Three dimensional work items of height usually more than 20 cm.

Examples including excavation, backfilling, plain concrete, Reinforced concrete, Brick works, ...etc.

- Square meters.

For works that are basically two dimensional.

Examples including plastering, floors, paintings, ...etc.



Quantity surveying

Units of measurements:

- Meter long.

Works that are best be measured in terms of one dimension.

Examples including pipe lines, ... etc.

- Number.

Works that can not be measured by the previous units.

Examples including doors, windows, electric fixtures, ...

Etc.



Quantity surveying

Units of measurements:

- Weight.

Example including metal works.

- Lump sum.

Works that contain more than one work items.

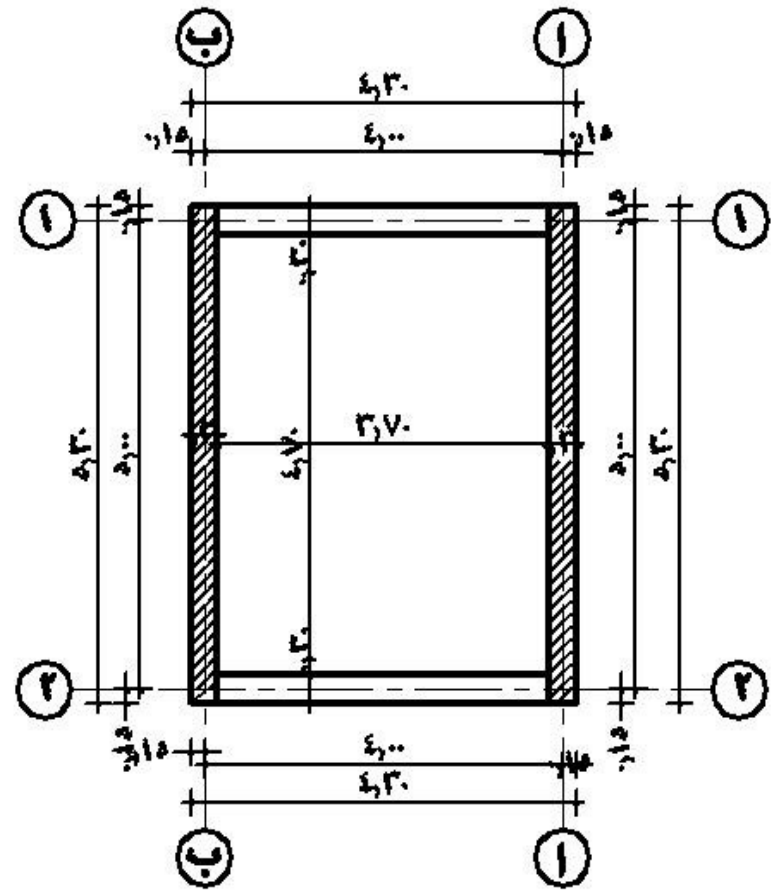
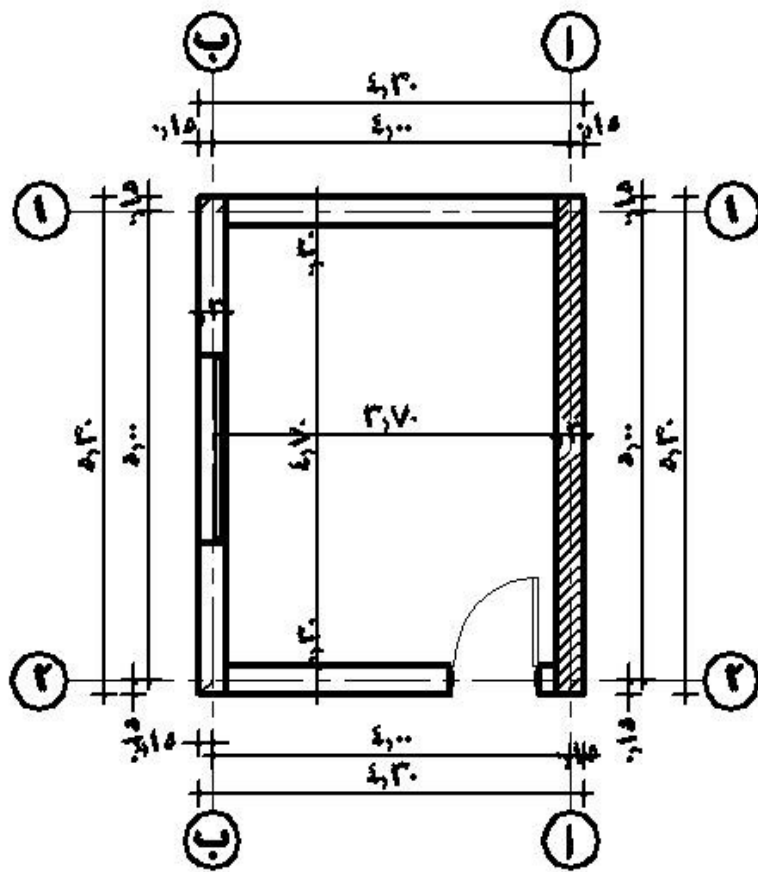
Example: catch basin that involves excavation, brickwork, plain concrete, plastering, and metal cover.



Quantity surveying

Work item	Unit	Quantity	Dimensions			Partial		Net total
			length	wide	height	add	deduct	





Quantity surveying

Work item	Unit	Q.	Dimensions			Partial		Net total
			length	wide	height	add	deduct	
Axis A	m3	1	5.30	0.3	3.00	4.77		
Axis B	m3	1	5.30	0.3	3.00	4.77		
Window on axis B	m3	1	1.20	0.30	1.20		0.432	
Axes 1, 2	m3	2	3.70	0.30	3.00	3.33		
Door on axis 2	m3	1	1.00	0.30	2.10		0.63	
Total	m3					12.87	1.062	11.808



Detailed cost estimating

Requirements:

- Finalized working drawings and specifications are available.
- Complete and detailed survey of work quantities.
- Identification, compilation, and analysis of many items of cost that will enter into the construction process.
- Intimate knowledge of the prices, availability, and characteristics of material, equipment, and labor.

