

What is a bill of quantities?

A tender document produced by a Designer at the design stage which translates relevant information on construction drawings into bill of quantities (BQ) that fully describes the quality and quantities of work to be carried out by a Contractor or Principal Contractor during the construction stage. It is basically a list of work items with brief detailed descriptions and firm quantities for different elements of work to be carried out.

What are main purposes of a bill of quantities?

The main purposes of a BQ are:

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To provide the same information to all tendering Contractors or Principal Contractors, that enables them all to prepare their tenders efficiently and accurately based on the same information

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When a contract has been entered into, to:

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Provide a basis for the valuation of completed work for the purpose of making interim payments to the Contractor or Principal Contractor

- Provide a basis for the valuation of variation work

What are benefits of a bill of quantities?

Regardless of what form of contract is used, at some stage in the project's procurement process, someone will need to quantify the extent of works to be undertaken for the purpose of:

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Obtaining prices from several Contractors or Principal Contractors for completing the works

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Valuing the extent of work and variations completed for the purpose of issuing payment to a Contractor or Principal Contractor

The detailed measurements for the purpose of bill of quantities production is beneficial for a number of reasons:

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It saves the cost and time of several Contractors or Principal Contractors measuring the same design in order to calculate their bids for competition

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It provides a consistent basis for obtaining competitive bids

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It allows the Client to compare different returned bids using a standard measurement, before taking into account quality considerations

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It provides an extensive and clear statement of the work to be completed

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It provides a very strong basis for budgetary control and accurate cost reporting of the contract (i.e. post contract cost control), including:

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Preparation of cash flow forecasts

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A basis for valuation of variations or changes to the works

- A basis for the preparation of interim payments

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When priced, it provides a useful source of cost data, which can be used to support claims for grants and for estimating the cost of similar future path construction projects in cost estimating works e.g. approximate estimating and setting costs for budgeting purposes

What is basic format for a bill of quantities?

The most common format for a BQ is a elemental bill. Elements of measured works are arranged into sequence that is clear and easy to understand and price for a fixed price contract (lump sum). The BQ can be abstracted easily and quickly with measurement and descriptions already grouped in the elemental format. Under each element, the order of works generally follows construction sequence e.g. site preparation works, drainage works, earthworks, formation layer works, base layer works, surface layer works, and landscaping works.

Why are written descriptions required for a bill of quantities?

A BQ requires clear and concise written descriptions in order for tendering Contractors or Principal Contractors to price the work properly. The essential parts of a clear and concise descriptions are:

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All information required by a Contractor's or Principal Contractor's estimator to build up a realistic price

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The first few words in a written description should indicate clearly the nature of work required to be completed

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Order of stating dimensions should be consistent and generally in sequence of length, width and depth (where sequence is not appropriate or where ambiguity could arise, dimensions should be specifically identified)

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If a item of work cannot be accurately or fully described, reference should be made to the appropriate constucution drawing

- The written description must be concise and not to lengthy, can be shortened by references to the specification

What content should be included in a bill of quantities?

A BQ should contain basic information presented in elemental format that is clear, concise and

easy to understand and price, such as:

Preliminaries

Work items referring to everything the Client wants the Contractor to do before they actually start path construction work or other items that will affect the implementation of the works. Allowances are given for such things as: temporary site welfare facilities; site clearance; dismantling and removal of existing structures; and disposal of waste.

Preliminaries are not required to be measured work items but need to be described in detail and the tendering Contractors will have to price the items that will affect the cost of the works in a 'lump sum' price.

New Class (Measured Work)

This refers to measured work as 'individual' or 'aggregated' construction work items. Each measured work item should include reference to specifications and construction drawing as appropriate and should cover all aspects of the specification. Aggregated construction work items are a way of simplifying the BQ and are well suited to smaller, straightforward path construction projects. Each measured work item quantity should be measured as accurately as possible so that no parties will make a loss during the implementation of works.

An example of separate individual construction work items (descriptions and quantities) for path construction work

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|------|
| Item |
|------|

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|-------------|
| Description |
|-------------|

Bill of quantities

Quantity

Unit

£ rate

£ cost

1

Formation layer works

Excavate turfs and topsoil to form 1.5metre wide x 150mm deep formation tray in accordance with drawing

500

lin.m

2

Base layer works

Bill of quantities

Supply, lay and compact 1.5metre wide base layer on Autoway 150 geotextile sheet using 150mm depth

500

lin.m

3

Surface layer works

Supply, lay and compact 1.5metre wide surface layer using 25mm depth 6mm granite dust to form 1:50

500

lin.m

One aggregated construction work item for the same path construction work would be:

New Class

Bill of quantities

Item

Description

Quantity

Unit

£ rate

£ cost

1

Construct 1.5metre wide granite dust path on Autoway 150 geotextile sheet using 150mm depth recycle

500

lin.m

Provisional quantities Items

Produced similarly as New Class items above but are for work which cannot be accurately measured at the time of preparing the BQ. This situation can happen due to incomplete information about the proposed work or in case whereby the extent of work cannot be fully determined until the work is completed. Such work will be subjected to remeasurement after the work has been carried out.

Provisional Items

For work or costs that cannot be entirely defined or detailed as provisional quantities items at the time the BQ was prepared.

For example, soft spots can be a common provisional item. If the contractor encounters soft spots at the formation level in the formation tray which need to be excavated out and backfilled with granular sub base material before the path is built, they can invoke the provisional items without needing to negotiate a contract variation. If no soft spots are encountered then you get charged nothing at all.

Dayworks

These are contingency sums allocated for any unforeseen, extra works or work items that were more difficult to determine at the time when the BQ was prepared. The Contractor or Principal Contractor is paid per day working on site and has to make an allowance for plant, materials and labour, based on the size of the project. It is always worth asking Contractors or Principal Contractors to provide costs for daywork items, but it may be cheaper to negotiate and agree any extras by using the original BQ work item rates rather than daywork rates. It will be a saving to the Client if such contingency sums are not expected due to no unforeseen extra works.

[Find out more about how a BQ is prepared by Quantity Surveyor \(Designer\) here.](#)

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