

Introduction to Measurement of Building Works (EQS 3134)

**Introduction of Quantity Surveying
(Week 2)**

Contents outline

Bill of Quantities

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WHAT THE CONTENTS

Bill of Quantities

Last Updated:*

CONTENTS BILL OF QUANTITIES

- Preliminaries
- Specification
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- Provisional Sum

FINAL SUMMARY OF TENDER
CADANGAN MEMBINA DAN MENYIAPKAN BANGUNAN TAMBAHAN LOJI PAN
KEJURUTERAAN KIMIA (CEPP) (RMKe-9), DI UNIVERSITI TEKNOLOGI
MALAYSIA, SKUDAI, JOHOR DARUL TAKZIM

| ITEM NO. | DESCRIPTION | FROM PAGE NO. | TOTAL AMOUNT (RM) |
|---|---|---------------|---------------------|
| 1. | SECTION I - A Preliminaries & General Conditions | Prelim/69 | 120,000.00 |
| 2. | SECTION II - B Bill No. 1 – Piling Works | B1/ SUM | 499,942.00 |
| 3. | SECTION II - C Bill No. 2 – Building Works | B2/ SUM | 1,922,702.60 |
| 4. | SECTION II - D Bill No. 3 – Infrastructure Works | B3/ SUM | 287,410.90 |
| 5. | SECTION II - E Bill No. 4 – Prime Cost & Provisional Sums | B4/ SUM | 1,275,200.00 |
| TOTAL CARRIED FORWARD TO FORM OF TENDER SECTION I – PART B ON PAGE 3 : | | | 4,105,255.50 |

Total Tendered Sum (In Words);
Ringgit Malaysia
.....
.....

Signature of Tenderer

Signature of Tenderer





Preliminaries

- Define : The scope and nature of the work and contain details of the contract conditions to the project.
- The aim is to provide a comprehensive schedule of items relating to:
 - The project generally
 - The contract
 - The employer's requirements
- Contractor general cost item
- All items should be measured in lump sum
- Examples; site office, site safety equipment, electrical installation and etc.

Specification

- Details of the material quality and methods to execute the work.
- This is normally provided if the items are not drawn in the drawings. So during the pricing process, contractor must read the specification to price the works.
- Examples:
 - 📁 All the floor tiles should use White House Brand only, and it should be standard colour of Blue.

Measured Works

- Measured works should cover all items/works in the drawing according to the group or element based on instruction under the SMM.
- Element/group [Example; Work Below Lowest Floor Finishes]
- Each of the sub element is called items which refer to the work will be execute at site.
- Example: Foundation
 -  Excavation Works
 -  Formwork
 -  Reinforcement
 -  Concrete Work

Measured Works

- All measurement of work should be referring to Standard Method of Measurement of Building Works (SMM).
- SMM provide basic information for measuring building works;
 - 📁 Method of Measuring
 - 📁 Description
 - 📁 Quantities
- All items should be taking off using the traditional dimension paper or slip sort paper.

Prime Cost Sum (PC Sum)

- Prime Cost Sums are the amounts included in Bill of Quantities to be paid by the Main Contractor to the Nominated Suppliers or the Nominated Sub-Contractors, statutory undertakers, or utility companies on the Architect's written instructions.
- Used for works to be carried out by Nominated Sub-Contractors, statutory authorities or for goods to be supplied by Nominated Suppliers.

Prime Cost Sum (PC Sum)

- 0 A Prime Cost (PC's) is an agreed reasonable estimate for materials (fixtures and fittings) which you may not have selected at the time of entering into the contract. Usually, PC's are one-off item, however they can relate to a large number of items when the labour cost remain constant.
- 0 Examples may include kitchen and bathroom items, supplying the roofing tiles to site by the supplier and been laid by the roof tiler/skilled workers; Mechanical and Electrical Works by M&E Engineer.

Provisional Sum

- Provisional Sums are the amounts included in the Bill of Quantities for works to be carried out by the Main Contractor which have not been specified in details at the time of tendering.
- Used for works which cannot be fully detailed or for costs which are unknown at the time bills are prepared.
- A Provisional Sum (PS's) is reasonable estimate for material and labour of a particular part of the home which the builder cannot give a definite price for. The reason being the owner had not decided.
- Examples; Swimming pool, landscaping and piling works.

WHAT THE TYPES

Bill of Quantities

Last Updated:*

TYPES BILL OF QUANTITIES

- Bill of Quantities based on Fixed Price/ Lump Sum Quantities;
- Bill of Quantities based on Approximate Quantities;
- Bill of Quantities based on Drawings and Specification.

Bill of Quantities based on Fixed Price/Lump Sum Quantities

- 📁 A detail breakdown of all the quantities is shown in the BQ.
- 📁 The architects and engineer prepare detail construction drawings.
- 📁 QS measures the quantities in detail based on the construction drawings.
- 📁 Both quantities and unit rates form part of the contract.
- 📁 Virtual completion of the design proceeds the signing of the contract.
- 📁 The empty bill is supplied to the contractors to tender the project.







Bill of Quantities based on Approximate Quantities

- ✂ The QS prepare BQ based on the adjustment but subjected to later adjustment.
- ✂ The architects and engineer prepare detail construction drawings.
- ✂ QS measures the quantities in detail based on the construction drawings.
- ✂ Only unit rates form part of the contract.

Bill of Quantities based on Approximate Quantities

- Virtual completion of the design proceeds the signing of the contract.
- The empty bill is supplied to the contractors to tender the project.
- The signing of the contract beginning of the project may proceed before the whole design is complete.

Bill of Quantities based on Drawings and Specification

-  The contractors are supplied with drawings with full specifications.
-  The architects and engineer prepare detail construction drawings and QS measures the quantities in detail based on the construction drawings.
-  No empty bill is supplied to the contractors.
-  Virtual completion of the design proceeds the signing of the contract.
-  The contractor prepare their own BoQ.
-  Suitable for small project (value of project less than RM500,000.00).

WHAT THE FORMAT

Bill of Quantities

Last Updated:*

FORMATS OF BILL OF QUANTITIES

0 Annotated Bills of Quantities

- 0 The annotations can be provided in a separate document, in a separate section of the bill or most usefully, facing each item on the back of the preceding page in the bill.
- 0 This format was developed as an extension of the location bill.

FORMATS OF BILL OF QUANTITIES

o Locational Bills of Quantities

- o The quantity for each item is broken down and allocated to a particular position within the project (e.g. particular building, a part of a building , a house type).
- o This format was developed to assist the more accurate pricing of items.

FORMATS OF BILL OF QUANTITIES

o Elemental Bills of Quantities

- o The sections are based on the functional elements of the building, normally those used by the Building Cost Information Service (BCIS) with the work in each elements being arranged in Uniclass works sections.
- o This format was developed to facilitate elemental cost analysed and as aid to cost planning.

ADVANTAGES & DISADVANTAGES

Bill of Quantities

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Advantages

- 0 Provide an open basis for the contract; the client provides an extensive and clear statement of the work he/she requires and the contractor states the price at which he/she is prepared to undertake the job.
- 0 Provide a very strong basis for financial administration of the contract.

Advantages

- 0 Save the cost and time of several contractors measuring the same design in order to calculate their bids for competition.
- 0 Provide a consistent basis for competitive bids so that the contractor who is the most efficient and least expensive in providing the items of work is likely to be commissioned for the job.

Disadvantages

- 0 BOQ covers major items also, still possibly variation may exist due to lack of specifications, revision on drawings, change in interest etc.
- 0 If planning & programming prepared based on the BOQ, consequently due to variations it may affect its scheduled planning & programming
- 0 Scheme and cost can be checked by other than intended parties also



Q & A

Last Updated:*

References

- 1) Ahamad Abdullah, Khairuddin Abdul Rashid, *Pengukuran Kuantiti Bangunan (Beserta Contoh Kerja Berdasarkan (SMM2)*, 2003, Prentice Hall.
- 2) *Malaysian Standard Method of Measurement of Building Works 2*; Institution of Surveyors Malaysia (ISM); ISM; 2001
- 3) Ivor H. Seeley, *Building Quantity Explained (3rd Edition)*, 1979, Southeast Asian Reality