

PAHO Smart Hospital Project

SMART GUIDE TO BILLS OF QUANTITIES

Lessons Identified

Acknowledgement of contributors to this document

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CASE STUDY

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PAHO Smart Hospitals Projects started in 2013 and has been implemented across nine countries in the Caribbean Region. Lessons have been learnt from the retrofitting of facilities as the project progresses. The information being presented highlights our experiences.

This case study offers specific guidelines for Quantity Surveyors and Estimators to adhere to when preparing and submitting Bills of Quantities (BOQ) as part of a tender package. The following guidelines were developed to mitigate variance in prices between tenderers.

1 BACKGROUND

These guidelines are not meant to be a lesson in extracting quantities from the respective drawings and incorporating same in the Bills of Quantities; it is to highlight issues which should be avoided when compiling the Bills.

- 1.1.1 These guidelines are influenced by considering the Estimators use and interpretation of the Bills of Quantities when they are required to price the Bills.
- 1.1.2 The Bills should be sufficiently detailed so that the Estimator does not have to constantly refer to the drawings to take out his own quantities when developing the tender price.
- 1.1.3 If tender prices received pursuant to a tender action vary considerably with each other, chances are the Bills of Quantities did not unambiguously represent the scope of work and tenderers were left to apply their interpretations which may vary with each tenderer.
- 1.1.4 If the tender prices show low variances with each other but vary considerably with the pre-tender estimate, chances are that there is an error in computing the pre-tender estimate.

2 USE OF THE BILLS OF QUANTITIES

There are two primary participants in the construction industry – the Employer and the Contractor. It is accepted that there are sub-sets affiliated with each side.

- 2.1.1 On this premise, all revenues earned by the Contractor side would flow from the Employer side. This is reflected in all the various Forms of Agreements where it is expressly stated that the Contractor would execute the works shown in the contract documents and the Employer will pay the contract price for the same.
- 2.1.2 If the Employer can do things or refrain from doing things in a way that would result in lower costs to the Contractor ultimately the Employer actions would result in lower costs to the industry which would be beneficial to the Employer.
- 2.1.3 Where Bills of Quantities do not form a part of the tender documentation, each tenderer has to extract his own quantities to inform his pricing of the works. This results in higher tender levels, which the Employer ultimately pays for, owing to:
- 2.1.4 Each tenderer would incur individual costs in taking out the quantities resulting in costs to the industry.
- 2.1.5 Since the Contractor would now be taking the quantification risks associated with the project, there will be associated costs.
- 2.1.6 The optimum cost from the industry standpoint would be achieved where the Employer side takes the quantification risk and prepares the Bills of Quantities leaving it up to the Contractor to give their best prices.

2.2 Bills of Quantities also serve other purposes some of which are:

- 2.2.1 It provides a uniform way for all tenderers to compute the tender prices.
- 2.2.2 The prices can be used as a basis for valuing varied works.
- 2.2.3 The prices can be used as a basis for assessing interim payments to the Contractor while executing the works.
- 2.2.4 The respective unit prices can be used in determining the final price to be paid to the Contractor for the project.
- 2.2.5 The Bills of Quantities is, therefore, a useful tool to compile the tender price and for the post-contract administration.

3 COMPILING THE BILLS OF QUANTITIES

In order to effectively serve its intended purpose, the Bills of Quantities must be adequately prepared. Clear descriptions of the work to be done are equally important as the accurate extraction of quantities from the drawings.

- 3.1.1 Standard Methods of Measurements are developed for use in the construction industry. These are compiled with inputs from all the major stakeholders in the industry such as contractors, employers, suppliers and designers. The Standard Method of Measurement provides good guidance in directing what should be measured and how it should be measured. A Standard Method of Measurement should be adopted in the preparation of the Bills and the selected Standard Method of Measurement should be stated in the Bills.
- 3.1.2 The Estimators are deemed to know the rules of the Standard Method of Measurements and would price the Bills accordingly. If the rules stipulate that certain items of works should be measured in a particular way and in presenting the Bills the item of work did not sufficiently meet the requirements, it would result in claims by the Contractor. Care should be taken in ensuring compliance with the rules.
- 3.1.3 The need to exercise care in the compilation of the Bills should never be seen as a reason for having the Contractors take the quantification risk. The big picture remains that when the Contractor has to take the quantification risk, prices in the industry would reflect the associated costs.
- 3.1.4 The rules in a Standard Method of Measurement are guidance for the minimum requirements and it is always advisable to give additional information if such would further clarify the works to be priced. Put yourself in the shoes of the Estimator when preparing the Bills – If you cannot price the items properly then certainly the Estimator would not be able to do so.

3.2 Two significant tips in describing work items:

- 3.2.1 All items, except only for labour only items of work, must contain three dimensions. If an item is enumerated i.e. measured using the unit of measurement as the 'number', then the description must show its length, its width and its depth. If an item is measured linearly i.e. measured using the unit of measurement as the 'length' then the description must show the width and depth [or thickness]. If an item is measured square i.e. measured using the unit of measurement as the 'area' then the description must state the thickness. If an item is measured cubic i.e. using volume as the unit of measure, there would be no mandatory requirement to state any measure in the description. Measurement by weight would already contain three dimensions given that weight is derived from volume and density.
- 3.2.2 Terms with different units of measurements must not be combined in one description as it cannot be priced that way. For example, a floor slab might be measured by area stating the thickness, in this instance, avoid stating 'include in the price for the perimeter formwork'.

4 PRESENTING THE BILLS OF QUANTITIES

- 4.1.1 It is always left up to the individual quantity surveyors to determine how the Bills would be presented. The Bills normally make provision for the Contractors to price for any temporary installations and site overhead costs associated with the project in a separate section – The Preliminaries. Material specification and other detailed requirements associated with how the works should be undertaken are normally placed in a separate section – The Preambles. This leaves the actual quantification of the works for separate sections.
- 4.1.2 The further sectioning of the Bills should reflect the use of the Bills as a tool for post contract administration. Consideration should be given for separate sections to represent the major physical separation of the works such as different types of building blocks being separately billed.
- 4.1.3 Dividing the Bills into ‘elements’ rather than into ‘trades’ should be considered but it should never be part of one and part of the other. The elemental bill is more user friendly during the post-contract stages since the categorization of the items as elements follows the way the works would be built. For example, bills showing the foundations, the building frame, the suspended slabs, the walls, the roof etc. separately would better serve the post-contract purpose than a bill which groups concrete, blockwork, roof sheeting etc. together. It is accepted that the trade by trade bill would be more convenient to the tenderer in pricing the bill since all trades would be grouped but the benefits of the elemental bills outweigh that of the trade by trade bill.
- 4.1.4 Give consideration to preparing the ‘Summary Pages’ of the final document first as this would give good guidance for grouping the work into separate Bills. It also helps in developing page referencing.
- 4.1.5 The pricing of items for Bonds and Insurances are dependent on the aggregated sub-total of all other costs and prices in the bills. The tenderers should not be asked to price these items within the sub-sections of the Bills. Provision should be made for these at the very end on the Main Summary page.