



**DEPARTMENT OF BUILDING
UNIVERSITI TEKNOLOGI MARA
(PERAK)**

PREPARATION OF BILL OF QUANTITIES

**Prepared by:
MOHAMAD AIMAN HAFIZ BIN JAMIL
2016618062**

**DEPARTMENT OF BUILDING
FACULTY OF ARCHTECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA
(PERAK)**

DECEMBER 2018

It is recommended that the report of this practical training provided

By

**Mohamad Aiman Hafiz Bin Jamil
2016618062**

Entitled

Preparation of Bill of Quantities

Accepted in partial fulfilment of requirement has for obtaining Diploma In Building.

Report Supervisor : En. Noor Azam Bin Yahaya

Practical Training Coordinator : En. Muhammad Naim Bin Mahyuddin

Programme Coordinator : Dr. Dzulkarnaen bin Ismail

DEPARTMENT OF BUILDING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA
(PERAK)

DECEMBER 2018

STUDENT'S DECLARATION

I hereby declare that this report is my own work, except for extract and summaries for which the original references stated herein, prepared during a practical training session that I underwent at Majlis Perbandaran Segamat for duration of 14 weeks starting from 3 September 2018 and ended on 7 December 2018. It is submitted as one of the prerequisite requirements of DBG307 and accepted as a partial fulfilment of the requirements for obtaining the Diploma in Building.

Name : Mohamad Aiman Hafiz Bin Jamil

UiTM ID No : 2016618062

Date : 18/12/2018

ACKNOWLEDGEMENT

Alhamdulillah, praise to Allah, the Most Merciful, the Most Graceful.

I would like to extend my heartfelt gratitude for the guidance, advice and help rendered throughout the period of training by the following group of amazing individuals. First and foremost, I would like to thank Tuan Haji Masni Bin Wakiman for the opportunity given, to conduct my training in his esteem company. His team of professionals comprising of Tuan Haji Shamsul Arieff Bin Sulaiman , En. Mohd Yunos Bin Abdul Aziz and En Mohd Faizul Bin Jasmi, have enabled me to learn and develop my understanding, knowledge and feel of real time projects, and the theory involved in analysis of structures, building and civil works. They are also responsible towards streamlining and assessing my training. Also to the office personnel in Majlis Perbandaran Segamat, Segamat who have extended their cooperation and help to further enhance my ability in understanding the procedures, site safety and best practices in the industry. It is an honour for me to be given the opportunity to work with all of you.

I would like also like to extend my deepest appreciation to the lecturers who are directly involved during my training period. To Encik Noor Azam Bin Yahaya, Supervising Lecturer, En Muhammad Naim bin Mahyuddin, Practical Training Coordinator, Cik Norazizah Talkis, Practical Training Coordinator and Dr. Dzulkarnaen bin Ismail, Programme Coordinator. I value the time, effort, encouragement and ideas that they have contributed towards the successful completion of my training, this report and the valuable knowledge that have been shared over the last few semesters.

Last but not least, my special thanks to my beloved parents for their sacrifices over the years.

Thank you so much.

ABSTRACT

Bill of Quantity (BoQ) is a document used by quantity surveyor to estimate the cost of a project. The main objective that were discussed in this report is related to preparing a Bill of Quantity of a construction of 3 units recreational huts in the recreational park Sungai Kapeh, Segamat, Johor Darul Takzim. This report elaborates the method to prepare a Bill of Quantity. It also describes what are the item that usually listed in the taking off list. In conclusion, this report includes the requirements for BoQ and the process of preparing BoQ which will be used by Civil Engineer or Quantity Surveyor. Observations, Q&A sessions and Document review were required to finish this task. In conclusion, this reports provide the process for preparing a Bill Of Quantites (BoQ) which are the main elements in a construction.

CONTENTS	PAGE NO
ACKNOWLEDGEMENT	i
ABSTRACT	ii
CONTENTS	iii
LIST OF TABLES	iv
LIST OF FIGURES	v
CHAPTER 1.0 Introduction	
1.1 Background and Scope of Study	2
1.2 Objectives	3
1.3 Methods of Study	4
1.3.1 Primary Data	4
1.3.2 Secondary Data	4
CHAPTER 2.0 Company Background	
2.1 Introduction of Company	5
2.2 Company Profile	6
2.3 Organization Chart	8
2.4 List of Project	9
2.4.1 Completed Project	9
2.4.2 Project in Progress	10
CHAPTER 3.0 Case Study	
3.1 Introduction to Case Study	11
3.2 Method of Preparing Bill of Quantities	14
3.3 Rate Of Material And Labour Cost	22
CHAPTER 4.0 Conclusion	24
REFERENCES	25
APPENDIX	

LIST OF TABLES

Table 2.1: List of MPS Completed Project.....	9
Table 2.2: List of MPS Project in Progress.....	10

LIST OF FIGURES

Figure 2.1: MPS Logo.....	6
Figure 2.2: Overall MPS Organization Chart.....	8
Figure 3.1: Map of site location	13
Figure 3.2: Example of Taking Off list with units.....	14
Figure 3.3: Example of dimension paper with columns.....	15
Figure 3.4: Bill of Quantities 1/9.....	16
Figure 3.5: Bill of Quantities 2/9.....	17
Figure 3.6: Bill of Quantities 3/9.....	17
Figure 3.7: Bill of Quantities 4/9.....	18
Figure 3.8: Bill of Quantities 5/9.....	18
Figure 3.9: Bill of Quantities 6/9.....	19
Figure 3.10: Bill of Quantities 7/9.....	19
Figure 3.11: Bill of Quantities 8/9.....	20
Figure 3.12: Bill of Quantities 9/9.....	20

CHAPTER 1.0

INTRODUCTION

The bill of quantities (sometimes referred to as 'BoQ' or 'BQ') is a document prepared by the cost consultant (often a quantity surveyor) that provides project specific measured quantities of the items of work identified by the drawings and specifications in the tender documentation.

The bill of quantities is issued to tenderers for them to prepare a price for carrying out the works. The bill of quantities assists tenderers in the calculation of construction costs for their tender, and, as it means all tendering contractors will be pricing the same quantities (rather than taking off quantities from the drawings and specifications themselves), it also provides a fair and accurate system for tendering. Bill of Quantities prepared according to the procedure set forth herein the following words and expressions have the meanings hereby assigned to them, except where the context otherwise requires. (Thomas Telford,1985).

There are a lot of things to consider in Bill of Quantity and the aim of this report is to prepare the Bill of Quantity for recreational huts.

1.1 Background and Scope of Study

The study is carried out in 'Projek Membina dan Menyiapkan 3 Unit Pondok Saiz 10'x10' Di Taman Rekreasi Sungai Kapeh' which located near Bandar Utama, Segamat, Johor Darul Takzim. This project is about building three units of huts in the recreational park at Sungai Kapeh, Segamat. The study focuses only on the preparation of the Bill of Quantities (BoQ) to know the method and applications involves in the preparation of bill of quantities.

1.2 Objectives

1.2.1 Aim

The aim of this study is to accomplish the task of preparing the bill of quantities for 3 units of huts in Taman Rekreasi Sungai Kapeh, Segamat.

1.2.2 Objective

1. To study the preparation process for bill of quantity for the project.
2. To identify the rate of main materials of concrete, cement and bricks as well as the labour cost to finish the project.

1.3 Methods of Study

1.3.1 Primary Data

i. Q&A Session

Question and Answer session with Puan Siti Zubaidah and Encik Mohd Yunos on how to prepare the bill of quantity for a project. They are the workers that are in charge of preparing the bill of quantity for projects.

ii. Observation

Observe the workers when they are preparing the bill of quantity of a projects. The data that they acquire form the project are listed in the bill of quantity.

iii. Document review

Reviewing the past documents to see how the bill of quantity is prepared. Collecting data from the documents of the process and guideline on preparing a bill of quantity with guidance and explanation from the supervisor.

1.3.2 Secondary Data

The main reason for literature review is able to study and find out regarding the building quantities about the common step to prepare the bill of quantities, the software to use and how to calculate the cost through relevant books, articles and thesis at National library and UiTM Seri Iskandar Library, Perak.

CHAPTER 2.0

COMPANY BACKGROUND

2.1 Introduction of Company

Majlis Perbandaran Segamat is one of the local authorities in Segamat, Johor, as well as Labis District Council. MPS is a local autonomous Johor state autonomous body with a total area of 103.55 square miles and a population of 92,000 according to the census in 1991. The population growth rate is 1.8 percent.

Majlis Perbandaran Segamat is a local authority which existed since 1912. It was originally a city board established in 1912. It was then upgraded to the Town Council in 1951 with the coming into force of the Local Authorities Election Ordinance from 1950 to 31 December 1970.

On 1 January 1977 through the Local Government Act 1976 it became known as the Majlis Daerah Segamat Utara, while in 2001 his name changed to Majlis Daerah Segamat. Then, on January 1, 2018, it was upgraded to the Majlis Perbandaran Segamat.

2.2 Company Profile



Figure 2.1 MPS Logo

Company Name : Majlis Perbandaran Segamat

Address : No 1, Jalan Abdullah,
85000 Segamat,
Johor Darul Ta'zim

Telephone

Fax

E-mail : mpsegt@gmail.com

Website : <http://mpsegamat.gov.my/ms>

Board of Directors : 1. Tuan Haji Mohd Masni Bin Wakiman
2. En. Shamsul Arieff Bin Sulaiman

Vision :

Making Bandar Segamat as the centerpiece of the economic development of the Southern Region of the Southern Region of Peninsular Malaysia as well as the provision of adequate social facilities within the urban garden environment.

Mission :

- Segamat City Center development needs to be integrated to create a complete and organized trading and service center.
- As a city that takes into account the social importance and the perfection of the lives of every neighborhood, the need to have adequate and orderly social facilities.
- In line with the goal of making Bandar Segamat a park city, land use development needs to be controlled and coordinated towards creating a clean and beautiful environment.
- Urban development should be supported by comprehensive and effective road network and communication systems.
- Bandar Segamat will also serve as an important stopover town in the main route through the provision of suitable facilities and attractive images.

2.3 Organization Chart

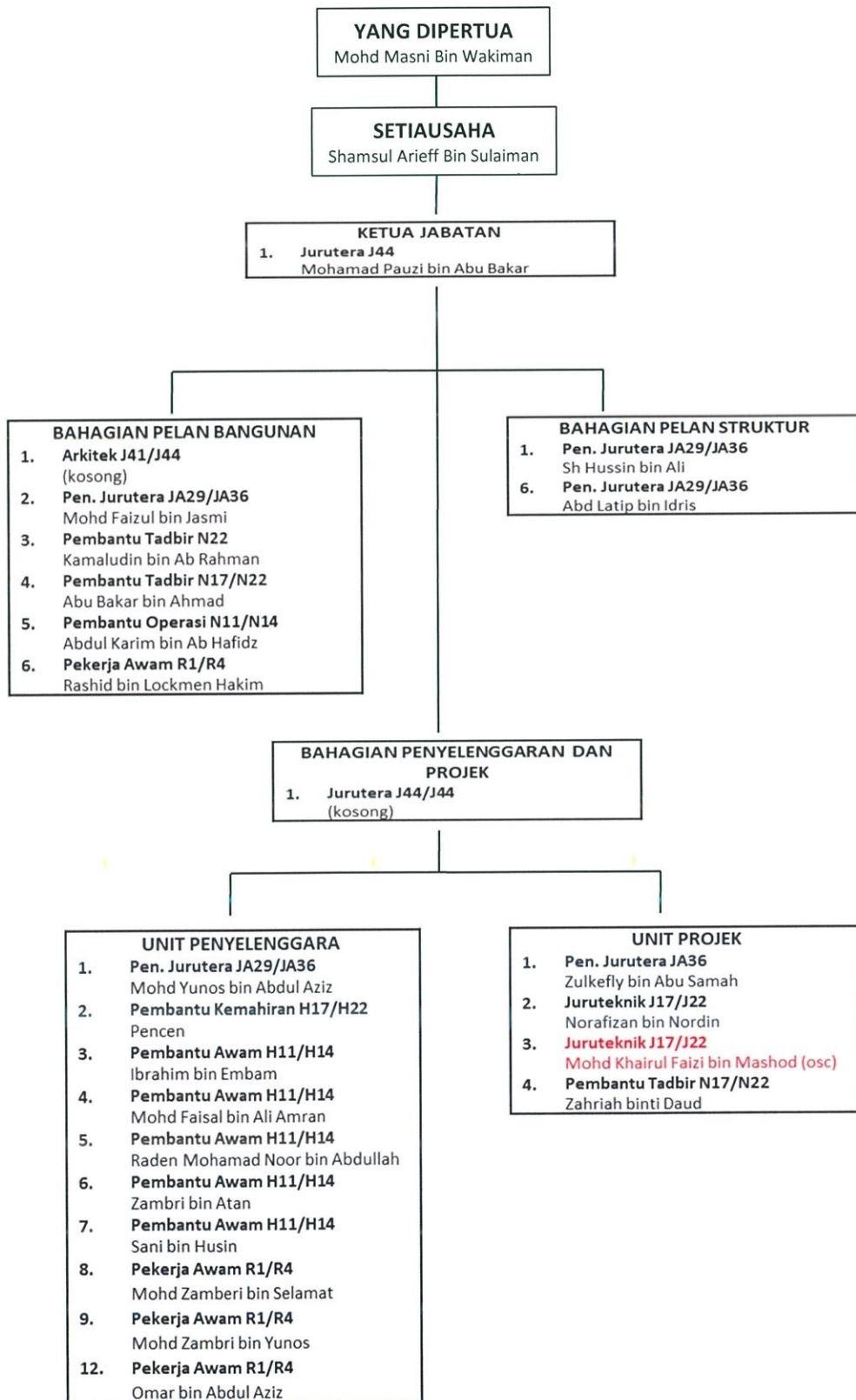


Figure 2.2 Overall Majlis Perbandaran Segamat organization chart

2.4 List of Project

2.4.1 Completed Project

Table 2.1: List of MPS Completed Project

No.	Project Name	Start Date	Completed Date
1.	Built and Completing 1 Unit Medan Selera, Bandar Putra	25.1.2017	18.12.2017
2.	Build and Completing 1 Unit 'Gym Rakyat', Segamat Baru	15.12.2015	5.8.2016
3.	Build and Completing 10 Unit Bus Stop In Segamat	31.7.2015	10.6.2017

2.4.2 Project in Progress

Table 2.2: List of MPS Project in Progress

No.	Project Name	Start Date	Completed Date
1.	Build and Completing 'Sekolah Sains Segamat', Buluh Kasap	20.1.2018	-
2.	Repair Roads In Kampung Jawa, Segamat	18.8.2018	-
3.	Building And Completing Sport Complex, Segamat Baru	15.2.2018	-

CHAPTER 3.0

CASE STUDY

3.1 Introduction to Case Study

‘Projek Membina dan Menyiapkan 3 Unit Pondok Rehat 1 Tingkat (10’x10’) Di sepanjang laluan pejalan kaki di Taman Rekreasi Sungai Kapeh, Segamat. This project started on 3rd August 2017 and expected to finish on 3rd November 2017. The duration of the project is 14 weeks. This project cost RM 49,320.80 thousands.

his project has 3 units of huts. The size of the huts are (10’x 10’). This project is located in Sungai Kapeh, Segamat, Johor Darul Takzim. This site area is very strategic since it is a well known recreational park in Segamat. This area is near to several of housing area and also near to commercial area. This recreational park is also 5 minutes drive from Segamat’s Bus Stand.

The client of this project is Majlis Perbandaran Segamat (MPS) and the builder assigned for this project is Jabatan Bangunan Dan Kejuruteraan Majlis Perbandaran Segamat (MPS).

For this case study, the focus are on the preparation of Bill Of Quantity. The Bill Of Quantity is prepared using Microsoft Excel.

Table 3.1: List of Consultant

Client	Majlis Perbandaran Segamat	1, Jalan Abdullah, Kampung Gubah, Segamat 85000, Johor
Builder	Jabatan Bangunan Dan Kejuruteraan MPS	1, Jalan Abdullah, Kampung Gubah, Segamat 85000, Johor

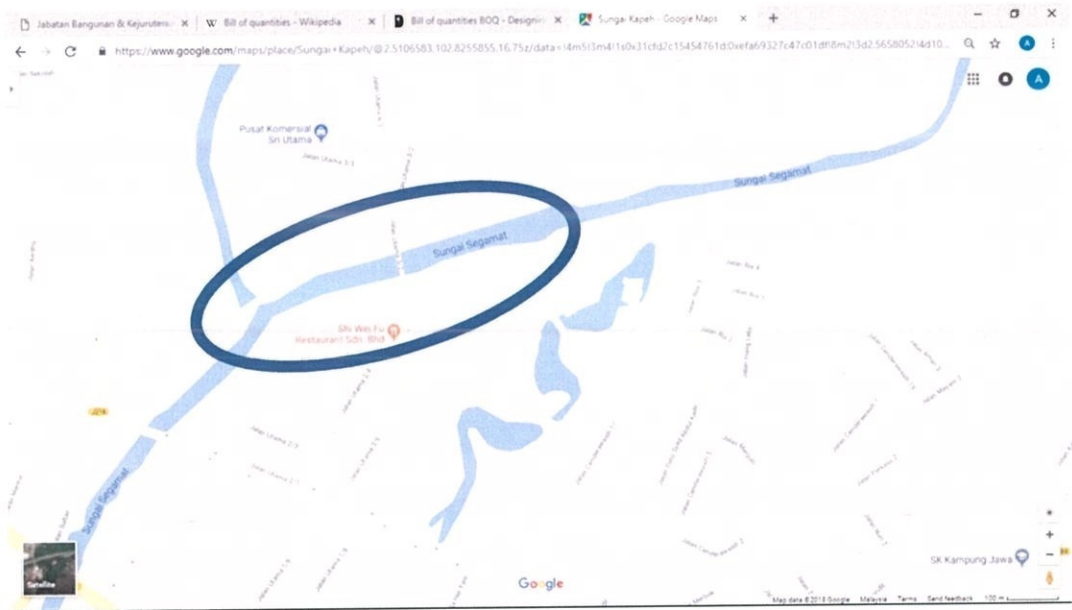


Figure 3.1: Map of site location

3.2 Method of Preparing Bill Of Quantity

The method to prepare the Bill Of Quantities of a recreational hut using the traditional method, according with the Standard Method of Measurement edition. This was accomplished through three steps:

1. Taking - off
2. Abstracting and Squaring
3. Preparation of Bill Of Quantities

Taking – off pointed out that the cost – generating mechanism in construction cost estimates depends on associating, or connecting, the quantities of units to some form of known monetary and time impact for accomplishing a single quantity of that unit. The starting point is the determination of these ‘quantities’.(Stuart H. Bartholomew,2000). For every new project there is the first step and the last step. For establishing the desirable result each and every step between must be accomplished by organization and cooperation. Taking off is the process where all the item that will be accounted are listed in the taking off list. The items are listed according to the process that are done first. Taking off list item usually listed with their units in the column.

No	Item	Unit
1.00	Kerja-kerja Awalan	H Pukal
2.00	Membina Tapak dan Bangunan Pondok 3 Unit	
2.01	Tiang Footing dan Rasuk	M3
2.02	Lantai Dan Bangku	M2
3.00	Membina Bumbung Pondok 3 Unit	
3.01	Kerangka Bumbung	M2
3.02	Atap Bumbung	M2

Figure 3.2 Example of taking off list with units

The next step of processing a Bill of Quantity is abstracting and squaring. Bill of Quantities are often prepared in the dimension paper. The paper are divided into several columns and the columns are labelled differently. The column are labelled as item column, item description column, quantity column, unit column, rate column, percentage column, and lastly the amount column. This list identifies the contractor's current use of the BQ for post-tender work based on eight case studies, and establishes the 'extent of use' thus highlighting the re-working of the bill. The purpose of these columns are to assist estimators to produce an accurate tender efficiently and to assist the postcontract administration to be carried out in an efficient and cost-effective manner. A well organized check-list of work will help reduce the chances of omitting an item. The material quantity takeoff is extremely important for cost estimating because it often establishes the quantity and unit of measure for the costs of labor and contractor's equipment.

Item No.	Description/ Particulars	Quantity	Unit	Rate	Per (Unit)	Amount

Figure 3.3 Example of dimension paper with columns

The final step in this process is to prepare the Bill of Quantities. Each estimator must develop a system of quantity takeoff that ensures that a quantity is not omitted or calculated twice. The method of preparing were explained in the Standard Measurement Method (SMM). The Bill of Quantities (BOQ) is defined as a list of brief descriptions and estimated quantities. The quantities are defined as estimated because they are subject to admeasurement and are not expected to be totally accurate due to the unknown factors which occur in civil engineering work. It should be noted that the quality of the drawings plays a major part in achieving these aims by enabling the taker-off to produce an accurate bill and also by allowing the estimator to make sound engineering judgments on methods of working. The bill of quantities, when completed, is traditionally presented in trade format; that is in a given order, for example demolition and alteration, then, groundwork, then, concrete work, then, masonry and lastly etc.

Figure 3.4 Bill of Quantities 1/9

BIL	BUTIRAN KERJA	UNIT	SEBUT HARGA		PERUBAHAN KERJA	
			KADAR HARGA (RM)	JUMLAH (RM)	Kuantiti	Jumlah (RM)
1.00	KERJA KERJA AWALAN					
1.01	Kehendak Permulaan Dan Syarat-Syarat Am Forman dan Pembantu pembantu Pratahan dan Jendera Insuran Kematangan dan Kerusakan Harta Benda Insuran Kerja Mempemas, membesih dan membaiki apabila siap Kecacatan Selepas Siap	H Pukat		1 000 00		1 000 00
1.02	Ganti bida kemajuan kerja sebelum sedang dan selepas siap, bila dibina mengikut pemohonan bujukan kerja sebanyak 2 sft.	H Pukat		200 00		200 00
1.03	Papan Tanda Projek seperti pelan pialawan (A) & (B)	No	1 00	500 00		500 00

Item No.	Description	Unit	Quantity	Unit Price	Total Price
101	Kehendaki Permulaan Dan Syarat-Syarat Am - Formen dan Pembantu-pembantu - Peralatan dan Jentera - Insuran Kemalangan dan Kerosakan Harta Benda - Insuran Kerja - Mengemas, membersihkan dan membaiki apabila siap - Kecacatan Selepas Siap	H.Puktal	-	1,000.00	1,000.00
102	Gambar foto kemajuan kerja sebelum, sedang dan selepas siap kerja, dibuahkan mengikut perincian butiran kerja sebanyak 2 set	H.Puktal	-	200.00	200.00
103	Papan Tanda Projek seperti petan piawakan (A) & (B)	No	100	500.00	500.00
2.00	MEMBINA TAPAK DAN BANGUNAN PONDOK BEHAT 3 UNIT				
2.01	TIANG, FOOTING DAN RASUK				
a	Menggali tanah bagi Penapak tiang kedalaman hingga 1500mm dengan jentera	M3	18.00	12.00	216.00
b	Konkrit tiang disitu bertetulang (1:2:4-9mm hingga 20mm) termasuk mencurah ke dalam acuan dicelah letulang bagi membina footing, tiang bangu dan rasuk bumbung pondok	M3	4.20	220.00	924.00

Figure 3.5 Bill of Quantities 2/9

Item No.	Description	Unit	Quantity	Unit Price	Total Price
39	Konkrit tiang disitu bertetulang (1:2:4-9mm hingga 20mm) termasuk mencurah ke dalam acuan dicelah letulang bagi membina footing, tiang bangu dan rasuk bumbung pondok	M3	7.00	220.00	1,540.00
40	Konkrit tiang disitu bertetulang (1:2:4-9mm hingga 20mm) termasuk mencurah ke dalam acuan dicelah letulang bagi membina footing, tiang bangu dan rasuk bumbung pondok	M3	220.00	7.00	1,540.00
c	Acuan Konkrit pada permukaan tepi dan bawah kepada rasuk bumbung dan bangu	M2	39.30	80.00	3,144.00
47	Acuan Konkrit pada permukaan tepi dan bawah kepada tiang dan bangu	M2	80.00	83.00	6,640.00
d	Batu bata tanah liat 113mm sekeliling tiang termasuk melepai dengan simen dan pasir (1:3): 12mm	M2	46.20	80.00	3,696.00

Figure 3.6 Bill of Quantities 3/9

			D	E	F	G	H	
52	d	Batu bata tanah liat 113mm sekeliling bang	M2	46.20	80.00	3.696.00	0.00	0.00
53		termasuk melepada dengan simen dan pasir (1 3), 12mm						
54		tebal seterusnya mengecat dengan 2 lapisan cat						
55		rintangan cuaca (weathershield) pada permukaan						
56		konkrit dengan warna yang ditentukan oleh PP atau						
57		waliknya						
58								
59		Batu bata liang bangku	M2		80.00		1.00	80.00
60								
61	e	Melepada rasuk bumbung dengan simen dan pasir (1 3),	M2	24.00	20.00	480.00	0.00	0.00
62		12mm tebal seterusnya mengecat dengan 2 lapisan						
63		cat rintangan cuaca (weathershield) pada permukaan						
64		konkrit dengan warna yang ditentukan oleh PP atau						
65		waliknya						
66								
67								
68								
69								
70								
71								
72								
73		JUMLAH DI BAWA KE MUKA SURAT RS/2				10.160.00		10.176.00
74								
75								
76								
77								
78								
79								

Figure 3.7 Bill of Quantities 4/9

			D	E	F	G	H	
52	d	Batu bata tanah liat 113mm sekeliling bang	M2	46.20	80.00	3.696.00	0.00	0.00
53		termasuk melepada dengan simen dan pasir (1 3), 12mm						
54		tebal seterusnya mengecat dengan 2 lapisan cat						
55		rintangan cuaca (weathershield) pada permukaan						
56		konkrit dengan warna yang ditentukan oleh PP atau						
57		waliknya						
58								
59		Batu bata liang bangku	M2		80.00		1.00	80.00
60								
61	e	Melepada rasuk bumbung dengan simen dan pasir (1 3),	M2	24.00	20.00	480.00	0.00	0.00
62		12mm tebal seterusnya mengecat dengan 2 lapisan						
63		cat rintangan cuaca (weathershield) pada permukaan						
64		konkrit dengan warna yang ditentukan oleh PP atau						
65		waliknya						
66								
67								
68								
69								
70								
71								
72								
73		JUMLAH DI BAWA KE MUKA SURAT RS/2				10.160.00		10.176.00
74								
75								
76								
77								
78								
79								

Figure 3.8 Bill of Quantities 5/9

BIL.	BUTIRAN KERJA	UNIT	SEBUT HARGA			PERUBAHAN KERJA	
			KUANTITI	KADAR HARGA (RM)	JUMLAH (RM)	KUANTITI	JUMLAH (RM)
	Jumlah di bawa dari muka surat RS-1				10,160.00		10,176.00
2 02	LANTAI DAN BANGKU						
a	Konkrit siap bancuh Grade 20 (1 2-4-9mm hingga 20mm) termasuk mencurah ke dalam acuan dicelah betulang bagi membina Lantai dan bangku pondok						
i)	Lantai Konkrit, (tebal 150mm) 4860mm x 4860mm = 23.6 m2	M2	70.80	180.00	12,744.00	70.80	12,744.00
ii)	Bangku, (tebal 75mm) 3810mm x 450mm x 3 = 5.1 m2	M2	15.30	180.00	2,754.00		0.00
ii)	Bangku, (tebal 75mm) 3260mm x 430mm x 3 = 4.2 m2			180.00		12.00	2,160.00
b	Kepingan jejaring No A10 berbentuk jejaring 100mm x 400mm beratnya 6.16kg setiap meter persegi	M2	86.10	18.00	1,549.80		0.00

Figure 3.9 Bill of Quantities 6/9

BIL.	BUTIRAN KERJA	UNIT	SEBUT HARGA			PERUBAHAN KERJA	
			KUANTITI	KADAR HARGA (RM)	JUMLAH (RM)	KUANTITI	JUMLAH (RM)
	Kepingan jejaring No A10 berbentuk jejaring 100mm x 400mm beratnya 6.16kg setiap meter persegi	M2	86.10	18.00	1,549.80		0.00
	Kepingan jejaring No A10 berbentuk jejaring 100mm x 400mm beratnya 6.16kg setiap meter persegi			18.00		80.00	1,440.00
	Turapan simen dan pasir (1:3) atau skrid dilepa licin pada permukaan lantai dan bangku (12mm)	M2	86.10	18.00	1,549.80		0.00
	Turapan simen dan pasir (1:3) atau skrid dilepa licin pada permukaan lantai dan bangku (12mm)			18.00		80.00	1,440.00
	Membekal dan memasang 300mm x 300mm x 8mm jubin homogenous tidak termasuk skrid pada bangku	M2	20.70	32.00	662.40		0.00
	Membekal dan memasang 300mm x 300mm x 8mm jubin homogenous tidak termasuk skrid pada bangku dan lantai			32.00		89.50	2,864.00
3.00	MEMBINA BUMBLUNG PONDOK REHAT 3 UNIT						
3 01	KERANGKA BUMBLUNG						
a	Membekal dan memasang kayu yang telah diketam dan dibongkang termasuk mengikat, membentuk, menapak, meletak dan lain-lain kerja berkaitan bagi membina rangka dan esakan masia bumbung pondok						

Figure 3.10 Bill of Quantities 7/9

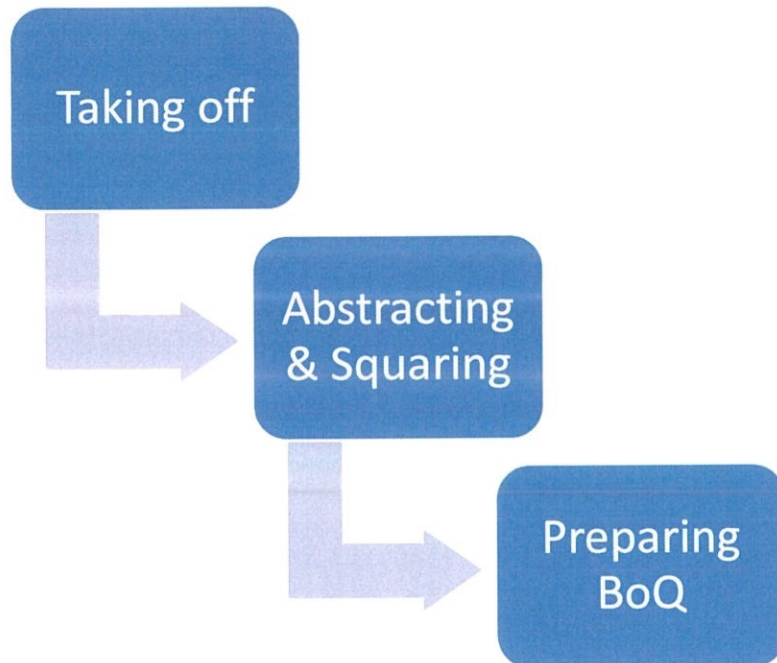
121								
122	3 01	KERANGKA BUMBUNG						
123								
124	a	Membekal dan memasang kayu yang telah diketam dan dibidang termasuk mengerat, memberuk, menebuk, melelap dan lain-lain kerja berkaitan bagi membina rangka dan papan manis bumbung pondok.						
125								
126								
127								
128								
129	i)	Rangka Bumbung, kayu berol (SG 2), 50mm x 125mm, Panjang = 70m	M	210.00	48.00	10.080.00	210.00	10.080.00
130								
131								
132	ii)	Papan Manis (12mm tebal) 4860mm x 150mm x 4 = 2.9m2	M2	87.00	18.00	1.566.00		0.00
133								
134								
135	ii)	Papan Manis (12mm tebal) 4860mm x 150mm x 4 = 2.9m2			18.00		9.00	162.00
136								
137								
138								
139								
140								
141								
142								
143								
144								
145								
146								
147		JUMLAH DI BAWA KE MUKA SURAT RS/2				41,066.00		41,066.00
148								

Figure 3.11 Bill of Quantities 8/9

BIL	BUTIRAN KERJA	UNIT	SEBUT HARGA			PERUBAHAN KERJA		
			KUANTITI	KADAR HARGA (RM)	JUMLAH (RM)	KUANTITI	JUMLAH (RM)	
151								
152								
153								
154								
155								
156								
157								
158								
159	3 02	ATAP BUMBUNG						
160								
161	a	Membekal dan memasang kepada bumbung curam berkeluasan 27 meter persegi dari jenis genting tanah liat termasuk kayu berol kumpulan B berukuran 50mm x 25mm	M2	81.00	90.00	7.290.00	81.00	7.290.00
162								
163								
164								
165								
166								
167	b	Membekal dan memasang perabung atau limas yang sepadan dengan genting dan dipasang dengan menggunakan legapan simen (1:3) yang menyerupai warna bumbung	M	42.90	12.00	514.80	42.90	514.80
168								
169								
170								
171								
172	c	Membekal dan memasang kayu tunjuk langit daripada kayu	NO	3.00	150.00	450.00	3.00	450.00
173								
174								
175		JUMLAH KE SELURUHAN				49,320.80		49,320.80
176								
177								

Figure 3.12 Bill of Quantities 9/9

Flow Chart



3.3 Rate Of Materials and Labour Cost

The material cost and labour cost are two of the main item in preparing a Bill of Quantities. However, material cost and labour cost are completely two different things, with two different commonalities. Both types of cost can be deducted, and both are used to make a product or provide a service to customers. Both costs are calculated during the budgetary process and are typically considered when determining the amount to charge for the end product. Understanding the difference between labor costs and material costs is essential to accurate budgeting and making profit, especially in preparing a Bill Of Quantities.

In this case study, there are three different materials that are commonly used in a construction. The aim of this study is to identify the rate of the material and also to identify the labour cost of the material used in this project which is “Membina 3 Unit Pondok Di Taman Rekreasi Sungai Kapeh,Segamat”. The three materials will be studied and identified to get the price of the materials. In most projects, labour costs approximately 25 to 35% of the total project costs, with materials taking the rest.

1. Concrete
2. Cement
3. Bricks

The first material to be studied is the price rate and the labour cost of concrete. Concrete are the main material in a construction no matter the scale of the construction. In this project, they used Grade 20 concrete. The ratio for this grade of concrete is 1:2:4 which is 1 for aggregates 2 for sand and 4 for cement. This is the common grade of concrete used throughout Malaysia for small scale project. According to Mr. Yunos, for this project, the price rate for Grade 20 concrete altogether is RM 220.00/m³. The labour cost for concreting is RM 25.00/m³. The total cost for concreting in this project is RM 10340.00.

The second item is the cement. The cement type that is used in this project is the Portland cement which is widely used in the construction industry. This type of cement is also used widely in Malaysia. According to this Bill of Quantity, the price rate and the labour cost of the Portland cement is RM 18.00/m². The normal rate for a bag of Portland cement is RM 18.00/bag. The labour cost of the cementing is RM 8.50/m². The total cost for cementing works in this project is RM 1440.00.

The last item to study is the bricks. There are many type of bricks that is used in the construction industry. This project uses clay bricks to finish the building. This type of clay bricks costs RM 0.385/piece. The labour cost for brick laying in this project is RM 80.00/m². This project uses brick for 46.2 m². The total cost for brick laying is RM 3696.00.

4.0 Conclusion

Overall after involvement in the project of Recreational Huts Sungai Kapeh, Segamat, Johor Darul Takzim. The Bill of Quantities are vital items for a project. Without the Bill of Quantities, the client, contractors, engineers and all the party that involves in a construction will have a hard time estimating and determining the cost of a project whether the project is a big scale project or a small scale project like this project. Bill of Quantities also played a big role in the tendering process. The methods of preparing a Bill of Quantity are usually the same as the one that mention in the theory. Firstly, the surveyor must take off the item that were used to estimate cost, then, the surveyor must also prepare a dimension paper that were divided into several columns. Lastly, finished the Bill of Quantities according to the item as follows. The Bill of Quantities will be examined by the contractors during the bidding. After agreement is achieved, the contractor can now proceed on starting the work that were bid.

REFERENCES

Books :

Thomas Telford, (1985), Civil Engineering Standard Method of Measurement, London

Stuart H. Bartholomew, (2000), Estimating and Bidding For Heavy Construction, U.S.A

Websites :

1. Dr. Emad Elbeltagi

<http://deltauniv.edu.eg/new/engineering/wp-content/uploads/Cost-Ch2.pdf>

2. Gw Kodikara (1993). The Use Of Bill Of Quantities.

<http://www.tandfonline.com/doi/abs>

MEMBINA 1 UNIT PONDOK REHAT DI TAMAN REKREASI BUNGA KAPEH, SEGAMAT

Perubahan Kerja

BL	BUTIRAN KERJA	UNIT	REBUT HARGA			PERUBAHAN KERJA	
			KUANTITI	KADAR HARGA (RM)	JUMLAH (RM)	KUANTITI	JUMLAH (RM)
1.00	KERJA-KERJA AWALAN						
1.01	Kahandak Permulaan Dan Syarat Syarat Am, Fomen dan Pembantu-pembantu, Peralatan dan Jester, Insuran Kemalangan dan Kerosakan Harta Benda, Insuran Kerja, Mengemas, membersihkan dan membaiki apabila siap, Kecacatan Selepas Slap	H Pukal	-		1,000.00		1,000.00
1.02	Gambar foto kemajuan kerja sebelum, sedang dan selepas siap kerja, dibukukan mengikut perincian butiran kerja sebanyak 2 set	H Pukal	-		200.00		200.00
1.03	Papan Tanda Projek seperti pelan jawalan (A) & (B)	No	1.00	500.00	500.00		500.00
2.00	MEMBINA TAPAK DAN BANJUNAN PONDOK REHAT 1 UNIT						
2.01	TIANG, FOOTING DAN RASUK						
a	Menggali tanah bagi Penepek yang kedalaman hingga 1500mm dengan jentera	M3	18.00	12.00	216.00	18.00	216.00
b	Konkrit tuang ditu bertulang (1:2:4-8mm hingga 20mm) termasuk menaruh ke dalam acuan ditelah tetulang bagi membina footing, tiang bangu dan rasuk bumbung pondok	M3	4.20	220.00	924.00		0.00
	Konkrit tuang ditu bertulang (1:2:4-8mm hingga 20mm) termasuk menaruh ke dalam acuan ditelah tetulang bagi membina footing, tiang bangu dan rasuk bumbung pondok	M3		220.00		7.00	1,540.00
c	Acuan Konkrit pada permukaan tepi dan bawah kepada rasuk bumbung dan bangu	M2	39.30	80.00	3,144.00		0.00
	Acuan Konkrit pada permukaan tepi dan bawah kepada tiang dan bangu	M2		80.00		81.00	6,480.00
d	Batu bata tanah lat 11.3mm sekeliling tiang termasuk mepa dengan simen dan pasir (1:3), 12mm tebal seterusnya mengikat dengan 2 lapisan cat rintangan cuaca (weathershield) pada permukaan konkrit dengan warna yang ditentukan oleh PP atau waklianya	M2	48.20	80.00	3,856.00	0.00	0.00
	Batu bata tiang bangu	M2		80.00		1.00	80.00
e	Melepai rasuk bumbung dengan simen dan pasir (1:3), 12mm tebal seterusnya mengikat dengan 2 lapisan cat rintangan cuaca (weathershield) pada permukaan konkrit dengan warna yang ditentukan oleh PP atau waklianya	M2	24.00	20.00	480.00	0.00	0.00
	JUMLAH DI BAWA KE MUKA SURAT R 1/2				16,160.00		10,176.00

RS/1

BIL	BUTIRAN KERJA	UNIT	BEBUT HARGA		PERUBAHAN KERJA		
			KUANTITI	KADAR HARGA (RM)	JUMLAH (RM)	KUANTITI	JUMLAH (RM)
	JUMLAH DI BAWA DARI MUKA SURAT R 8/1				10,160.00	10,176.00	
2.02	LANTAI DAN BANGKU						
a	Kanak' sap, bantuk Grade 20 (1.2-4.5mm hingga 20mm) termasuk mencarai ke dalam acuan dicelah tetulang bagi membina Lantai dan bangku pondok						
	i) Lantai Konkrit, (tebal 150mm) 4860mm x 4860mm = 23.6 m ²	M ²	70.80	180.00	12,744.00	12,744.00	
	ii) Bangku, (tebal 75mm) 3810mm x 450mm x 3 = 5.1 m ²	M ²	15.30	180.00	2,754.00	0.00	
	iii) Bangku, (tebal 75mm) 3260mm x 450mm x 3 = 4.2 m ²			180.00	12.00	2,160.00	
b	Kepingan jejering No A10 berbentuk jejering 100mm x 400mm beratnya 6.16kg setiap meter persegi	M ²	86.18	18.00	1,549.80	0.00	
	Kepingan jejering No A10 berbentuk jejering 100mm x 400mm beratnya 6.16kg setiap meter persegi			18.00	80.00	1,440.00	
c	Turapan simen dan pasir (1:3) atau skrid dilepa lori pada permukaan lantai dan bangku (12mm)	M ²	86.10	18.00	1,549.80	0.00	
	Turapan simen dan pasir (1:3) atau skrid dilepa lori pada permukaan lantai dan bangku (12mm)			18.00	80.00	1,440.00	
d	Membekal dan memasang 300mm x 300mm x 8mm jubin homogenous tidak termasuk skrid pada bangku	M ²	28.78	32.00	662.40	0.00	
	Membekal dan memasang 300mm x 300mm x 8mm jubin homogenous tidak termasuk skrid pada bangku			32.00	88.60	2,884.00	
1.00	MEMBINA BUMBUNG PONDOK BEHAT 1 UNIT						
3.01	KERANGKA BUMBUNG						
a	Membekal dan memasang kayu yang telah diketam dan di idang termasuk mengikat, membentuk, meletak, meletak dan lain-lain kerja berkaitan bagi membina rangka dan papan manis bumbung pondok						
	i) Rangka Bumbung, kayu beres (SG 2), 50mm x 125mm, Panjang = 70m	M	210.00	48.00	10,080.00	210.00	10,080.00
	ii) Papan Manis (12mm tebal) 4860mm x 150mm x 4 = 2.9m ²	M ²	87.00	18.00	1,566.00	0.00	
	iii) Papan Manis (12mm tebal) 4860mm x 160mm x 4 = 2.9m ²			18.00	9.00	182.00	
	JUMLAH DI BAWA KE MUKA SURAT R 8/2				41,068.00	41,068.00	

RS/2

BIL	BUTIRAN KERJA	UNIT	BEBUT HARGA		PERUBAHAN KERJA	
			KUANTITI	KADAR HARGA (RM)	JUMLAH (RM)	KUANTITI
	JUMLAH DI BAWA DARI MUKA SURAT R 8/2				41,068.00	41,068.00

3.02	ATAP BUMBUNG						
a	Membekal dan memasang kepada bumbung curam berjalanan 27 meter persegi dari jenis genting tanah lat termasuk kayu berot Kumpulan B berukuran 50mm x 25mm	MZ	81.00	80.00	7,290.00	81.00	7,290.00
b	Membekal dan memasang peribung atau limas yang sepadan dengan genting dan dipasang dengan menggunakan lepaan simen (1:3) yang menyerupai warna bumbung	M	42.90	12.00	514.80	42.90	514.80
c	Membekal dan memasang kayu tunjuk langit daripada kayu	HQ	3.00	150.00	450.00	3.00	450.00
JUMLAH KE SELURUHAN					48,220.80		48,220.80

R15/3