ESTIMATING AND BUDGETING FOR A PROPOSE MEDIUM SCALE B UILDING

(A CASE STUDY OF A PROPOSED HOSPITAL BUILDING FOR THE INSTITUTE OF ENVIRONMENTAL STUDIES, KWARA STA TE POLYTECHNIC ILORIN)

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A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF QUA NTITY SURVEYING, INSTITUTE OF ENVIRONMENTAL STUDIES, (IES) KWARA STATE POLYTECHNIC, ILORIN.

IN PARTIAL REQUIREMENT FULFILLMENT OF THE REQUIREMENT FO R THE AWARD OF NATIONAL DIPLOMA (ND) IN QUANTITY SURVEYIN G.

JULY, 2025

CERTIFICATION

This is to certify that this project is original work carried out by the following M atriculation numbers **ND/23/QTS/PT/0012, ND/23/QTS/PT/0013, ND/23/QTS/PT/0 014, ND/23/QTS/PT/0015, ND/23/QTS/PT/0016,** of the Department of Quantity Su rveying and has been prepared in accordance with regulation governing the pre paration and presentation of the project in Kwara State Polytechnic, Ilorin.

_____ _____

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Project Supervisor

_____ _____

DAT

E
(Part time coordinator)

_____ _____

QS SIDIQ LATEEF **DATE**

HOD

_____ _____

QS ZAKARI MAHMUD **DATE**

(External Examiner)

DEDICATION

This project is dedicated to Almighty Allah the father of the whole universe for his prominent grace and favour right from the beginning of this project to the Accomplishment of it.

ACKNOWLEDGEMENTS

All glory is returned to Almighty Allah for his shower of blessing, a nd also for the Gift of knowledge and wisdom utilize in the accomplish ment of this project.

We express our profound gratitude to the desirable and competen t (coordinator) and all lecturers in my department, and non teaching staf f in the department, May almighty God grant your effort in abundantly (Amin).

Our profound gratitude also goes to our enduring and accommoda ting supervisor **QS AZEEZ ALAO.** Who gave lucrative instructions attach ed with enlightening advice and correction when and where necessary f or the accomplishment of this project. Your effort on us is highly apprec iated. May almighty God help us to reward Him (Amen).

Our gratitude goes to our respective and lovely parents for their i mmense contribution toward the accomplishment for this project with g reat emphasis on how caring they have been right from when we step i nto this world. May Almighty God fulfill your dreams and aspirations ove r us (Amen).

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CHAPTER ONE

INTRODUCTION

1:0 BACKGROUND INFORMATION

This project is based on estimating and budgeting for a propose medium scale building.(A case study of a proposed hospital building for the institute of environmental studies, Kwara State Polytechnic, Ilorin.) Kwara State Ilorin is one of the 36 States we have in Nigeria.

Kwara State is located in the northern part of Nigeria. It comprises of sev eral higher institution which include University of Ilorin, Kwara State college of e ducation, Al- Hikmah University, Summit university, Offa Crownhill university, Uni versity of Offa, Lens Polytechnic Offa, The Polythenic Igbo Owu, Graceland Poly technic, Ahman Pategi university, Thomas Adewunmi University, Newland Polyte chnic, Kwara State University, Federal Polytechnic Offa, Landmark University and Kwara State Polytechnic, which serves as our area of concentration in which the proposed hospital will be located.

Due to high development in terms of building construction that is going o n in Kwara State Polytechnic which give room for the erection of a new hospital for Kwara state Polytechnic. In order to care and facilitate and effective workin g condition for the benefit of both lecturer and the student which do not exclud e the institution.

As a result of the above mentioned reason, estimation (I.e taking off, abst racting, bills,) is to be prepared, which serves as the main objectives of this proj ect because many buildings in Nigeria today have not been completed as a resu lt of improper cost planning.

The design team on consultancy services is headed by the architect, civil e ngineers, who carry out the design. This process are planned office work into th e requirement of the client. The production of a building in a more economical, quick and orderly manner, other professional functions along side with the Arch itect for the cost implication and professional needed at the stage is the Quanti ty Surveyor. It is plant material and financial aspect in order to produce building in the quick and economical manner.

1.1 DESCRIPTION OF WORKS

The building project comprises of the construction of a proposed mediu m scale building,(A case study of a proposed hospital building for the institute of environmental studies for Kwara State Polytechnic, Ilorin.) The building has a rectangular shape with land area of about 36000mm in length and 11,600m wi

dths.

The construction is found on the plain in-situ concrete foundation with ov er site concrete floor which is of a reinforced concrete slab (150mm thick). The walls are 230mm thick hollow sand Crete block. The roofing used is long span aluminum on timber roof structure, windows are of aluminum glazed sliding by two (2) side and swing opening in the center, steel frame security metal door wi th top fixed aluminum window and hard wood frame solid oak panel door with season wood, thick ply wood in 150mm x 150mm hard wood timber frame.

The walls are rendered and painted with emulsion internally and textured paint externally. Floor finishing is of tiles finishing on 150mm concrete floor.

Services conducted are mechanical and electrical installation as well as fi re fighting and alarm system.

1:2 AIM AND OBJECTIVES

The aim of the project is to estimate and budget for a propose medium s cale building. (A case study of a proposed hospital building for the institute of environmental studies, Kwara state polytechnic, Ilorin).

1:2:1 OBJECTIVES

1.The objective of this project or study determines the effect of site location and

Construction on estimating and budgeting of cost of building project.

2.To determine the effect of site location and construction on the cost of buil ding

Project.

3. To understand the process involved in preparation of Bills of Quantities (B OQ).

1:3 SCOPE AND LIMITATIONS

The scope of this project is to prepare a bill of quantities (BOQ) for a pro posed hospital building for Kwara state polytechnic.

1:3:1 LIMITATION

1. Inability to conduct proper site investigation.
2. Inadequate design information.
3. Pricing (market survey) was not carried out to determine actual price of m easured items.

1.4 DEFINITION OF TERMS

PRIME COST SUM: This is an allowance within a construction contract for t he cost of specific goods or services, typically chosen by the client and supplie d by a nominated contractor or supplier. Essentially, it's a budget for items like f ixtures or fittings where the exact details and cost are not yet determined when the main contract is signed.

CONTINGENCY SUM: Is a pre-determined amount of money set aside to c over unforeseen costs or risks that may arise during the project's execution.

PROVISIONAL COST SUM: is an estimated amount of money included in a construction contract to cover work or materials that are not fully defined or de tailed when the contract is signed.

ESTIMATING: Is the process of finding an approximate value or quantity, of ten without precise measurement or calculation And Predicting cost of constru ction.

PRELIMINARIES ITEMS: Are costs and activities necessary for a project's setup and execution that are not directly tied to the finished work.

TENDER: Is a formal offer, also known as a bid, submitted by a contractor t o undertake a specific project or provide services at a predetermined price and within a set time frame.

PLANT: These are tools, machines and equipment needed for the smooth execution of project.

PROJECT: A temporary endeavor (it has a start and end date), undertaken to create a unique product, service.

CHAPTER TWO

SITE REPORT

2:0 TITLE

Estimating And Budgeting for a Proposed Medium Scale Building. (A Cas e Study Of a Proposed Hospital Building for The Institute Of Environmental Stu dies, Kwara State Polytechnic, Ilorin.)

2:1 SITE DESCRIPTION

The proposed hospital building has a total length of 36000mm and 11,600 mm in width which appear to be in a rectangular shapes.

The site is located at Kwara State Polytechnic at the Polytechnic at the scho ol premises. It comprises of small and big trees which needs to be cleared awa y from the site.

2:2 LOCATION

The site is located within the Institute of Environmental Studies (IES) at th e permanent site of Kwara state Polytechnic.

2:2:1 ACCESSIBILITY

There are unbound roads leading to the site from the main road in the sch ool, So there is no problem for the accessibility of material to be delivered on si te and the labor to resume to work as early as possible.

2:2:2 NATURE OF THE LAND

The proposed site of the building is a virgin land. The land is human natur e and frictional with a flat surface, this will minimize the construction cost of th

e foundation because of the balanced surface compare to that of the sloppy ar ea which increase the constructional cost.

2.3 AVAILABILITY AND PROXIMITY OF RESOURCES

Availability of construction resources simply means the extent of convenie nce at which the resources can be found in the market and the selling price. Whi le proximity means the closeness of the materials resources of the proposed si te, the construction resources include the following.

PLANT

All necessary plant needed for the proposed projects are readily available in Ilorin. Such plant include concrete mixer, bulldozer, electric generator, compacting machine etc all mentioned planed can be hired in area's not far to t he site.

MATERIALS

The whole material necessary for this project all are available at Ilorin, but costly to some materials price in some area of the country.

However, all the materials needed for the smoothly execution of this prop ose project is a little but remote to the site.

LABOUR

The human effort that is necessary and needed on the proposed project, All can be found at nearly village and area's the need to be transported on a dail y basis from their homes to the site within a short distance.

2:4 TENDER OF PRELIMINARY REQUIRED

To an extent preliminaries items have a great effect on construction proje ct such preliminaries items are explained below.

SCAFFOLDING

There should be a provision for scaffolding because the project required r oofing works, there will be needed for rendering and painting at the higher level of the building.

SETTING OUT

This is the transfer of information on the building drawing to the ground w ith high degree of accuracy. In setting out site clearance is necessary by cutting down for tress and edges & topsoil excavation before making the provisions of setting out instruments such as profile pegs, measuring tape, Builder square et c before the commencement of site operations.

TEMPORARY ROAD

This is done temporary to provide easy access to the site during work.

TEMPORARY FENCE

Temporary fence should be done to cover and protect the materials on sit e from vandalism.

FIRST AID BOX

This is very important in any construction due to some injury that may occ ur on site which might be minor or major Injuries before being taken to the hos

pital.

CHAPTER THREE

PROJECT METHODOLOGY

3:0 TAKING OFF PROCESS

The order of taking-off as described [Seeley 1988] largely fellows the ord er of construction to simplify the work and to reduce the risk of items being mi ssed, but it's not necessarily that adopted in standard method of measuremen t.

The measured items will then subsequently be solved into bill order which can embrace the work section in standard method of measurement to secure u niformity and assist with a number of skin work sections such as 1.5 (excavatin g and filling] 1.11[mixing, casting turning in situ zone), 1.14[brick and block wall ing].In a simple building the order of taking off could take from shown in the fol lowing schedule.

Although it will be appreciated that this may be varied to suit individual pre

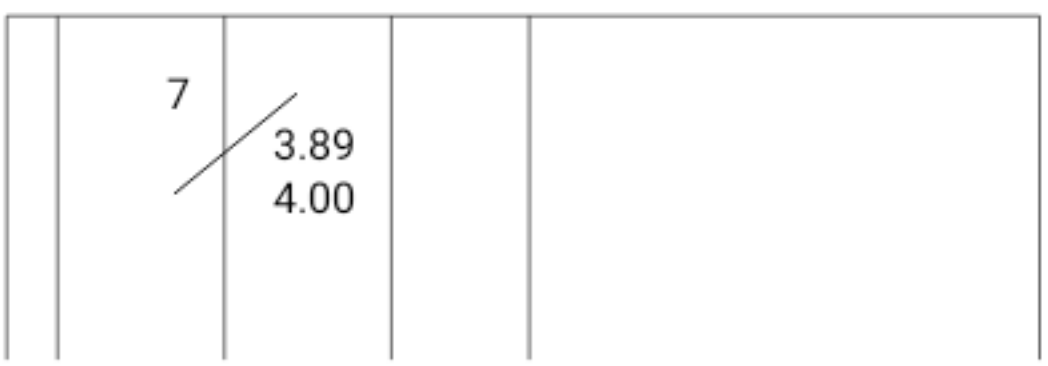
ferences and specific location.

Section of work copied from [BESMM 4 R]

	A	B	C	D	A	B	C	D

Columns A: are the time sing columns: these columns are used to enter multi

pliers when there is more than of the particular items being measured.



TIMESING COLUMN

COLUMNS B ; are the dimension columns these columns are used to record the

dimension in meters. Each linear dimension is underlined.

		3.45		Length	AREA
		7.59		Width	
		3.45		Length	VOLUME
		7.59		Width	
		0.15		Height/depth	
		2			NUMBER
		Items		Allow for bringing to site and removing from site all plant required for th	

NOTE: The order of entering dimensions is strictly

1. Length 2. Width 3. Height/Depth

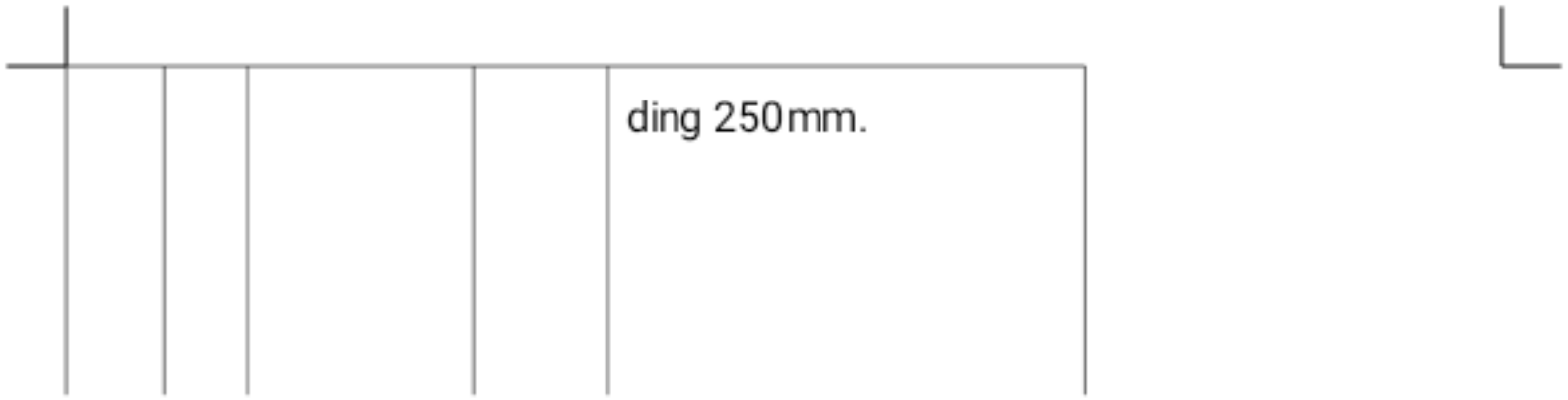
				is work section

COLUMN C: are the squaring column; the resulting areas and volumes inserted i n the timesing and dimension columns are subsequently calculated and entere d into the squaring column, opposite their respective dimensions.

	4	3.45 7.59 0.15		
			1 5 . 7	
			1	

COLUMN D: are the description column, there are many ways of inserting descri ption on the dimension sheet but the most acceptable however, is description which commence in the same level with its first dimension. The example below shows the dimension and description should be arrange in dimension sheet.

	4	3.45 0.68 0.45	7.90	Hardcore filling to make up level under floor aver age thickness not excee



WASTE CALCULATION

This is an imaginary column occupying the right hand side of the descript ion columns in which the take-off inserts any preliminary calculation (waste) wh ich may be necessary in order to arrive at the dimensions.

All preliminary calculations must be shown in waste, they need to be set down accurately and carefully so they can be checked.

They should be written either above or below the descriptions to avoid c onfusion.

Waste calculations is necessary for each dimension except in the followi ng situation:-

A When a scaled or figured dimensions, can be transferred direct from the draw ing to the dimension column.

B. When the dimension has been deprived from a previous waste calculation s.

C. When a dimension has been inserted from a previous dimension.

D. In all other instance the preliminary calculation, should be on waste.

Waste calculations should be done in millimeters (mm) or in three places o

f decimal. Final figures are then rounded off to the nearest 10mm before being transferred to the dimension column.

3:0:1 METHOD OF TAKING-OFF

NILL: Is a method of canceling wrong during taking-off process. Nil may be don e in three (3) ways i.e. on waste calculations, on framed description and on figu red dimensions.

3.0.2 SELECTION OF TAKING-OFF

The taking off dimension is usually divided into section under the main sub divi sion of

a) Sub structure

b) Super structure

c) Finishes

d) Services

e) External work

This section found in a normal building would generally comprises the fol lowing:

a) Sub structure

b) Super structure

1. Sub structure
2. Frame
3. upper floors
4. Roof
5. Stairs

	6. external walls
	7. windows and doors
	8. internal walls and partitions
	9. internal doors
c) Finishes	10. Walls finishes
	11. ceiling finishes
d) Services	12. Sanitary appliance
	13. disposal installations
	14. waste installations
	15. Heating installations
	16. Electrical installations
	17. Gas installations
	18. Lift installations
	19. Communication installations
	20. Builder's work in condition with service
e) External work	21. Site work
	22. Drainage

3.1 ABSTRACTING PROCESS

After the squaring process, the next process is abstracting. This is in a s

pecially ruled sheet. The sheets are ruled with series of vertical lines that are sp aced about 250mm apart and usually on A4 in width. Each abstract sheet is he aded with the job reference, sheet number and work section and possibly the s ub-structure of the work to which the abstract dimension refer, the sheet may b e divided into work section or element.

Abstracting is process where various items are stored out into their resp ective trades as they are entered on the abstract paper.

Description are usually spaced over two columns. The dimension are entered in the left hand column while any deductions are entered on the right hand colum n.

The order of abstracting is to commence with cubic items, followed by superfic ial (square), linear and finally enumerated items. Also labour items should proce ed labour and materials, smaller items proceeding larger ones and cheaper ite ms proceeding more expensive items.

3:2 BILL OF QUANTITIES (BOQ)

A Bill of Quantities is a document used in construction projects to detail t he quantity and cost of materials, labor, and other items needed for a project, s erving as a basis for tendering and cost management.

It is a crucial document for both contractors and clients, ensuring trans parency and accuracy in the tendering and contract administration process.

BOQ itemizes all the elements of a construction project, including materia

ls, labor, and equipment, with clear descriptions and quantities.

CONTENTS OF THE BILLS OF QUANTITIES (BOQ)

The principal use of the bills of quantities is to obtain competitive tenders and for this purpose BOQ should be prepared to a recognized method of meas urement to standardize the bills. Bills of quantities prepared in accordance with a standard method of measurement, fully described and accurate represent the works to be executed and this provides a uniform basis for competitive tenderi ng.

During the construction of the project, the client and the contractor se th e bill as the basis for financial management.

Bill of quantities may consist some or all of the followings:

BILL Nr.1. Preliminaries

BILL Nr.2. Preambles

BILL Nr.3. Measured works

(A) CARCASS

1) Foundations (substructure)

ii) Frame (column &beams)

iii) External & Internal walls

iv) Partitions

v) Floors

vi) Roofs

(B) FINISHING

1) External & Internal finishing (walls, floors & ceilings)

ii) Windows

iii) Doors including openings without joinery

iv) Fixtures & Sundries

v) Stairs & Lifts

vi) Plumbing & Engineering Service

(c) EXTERNAL WORKS

1) Drainage

ii) Roads, Paths, Site layout, out buildings e.t.c

(D) SPOT ITEMS- These items are alteration and repair items of a building.

BILL Nr.4. Provisional quantities

BILL Nr.5. Prime cost & Provisional Sum

BILL Nr.6. General Summary

PURPOSE OF A BILL OF QUANTITIES

a. It serves as a schedule on which all variation in the work may be value

d

b. To provide detailed list of every service to be performed.

c. To supply each contractor with information which will enable him or her to tender on the basis as his competitor.