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**VICTOR**

**DEPT :18/ENG03/031**

**COURSE CODE: ENG 284**

**COURSE TITLE: ENGINEERING IN  
SOCIETY**

## **QUESTION 1**

### Proposed scope of works in detail in order of occurrence

#### 1. CLEAN UP AND REMOVAL

- Removal and carting away of existing dilapidated roof and ceilings if necessary.
- Removal and carting away of existing windows, burglary proofs and doors if necessary.
- Removal and carting away of existing floor tiles where necessary.
- Removal and carting away of existing sanitary wares if necessary.
- Removal of electrical fittings if necessary.
- Demolition and carting away of walls where necessary.

#### 2. RECONSTRUCTION

- Construction of partition walls as may be required.
- Installation of new roof
  - ❖ Installation of woodwork carcass and all associated works.
  - ❖ Installation of roof covering (Aluminum roofing sheets).
  - ❖ Installation of Noggins.
- Electrical works stage 1: piping and wiring.
- Mechanical works stage 1: piping, construction of septic tank, soak away pit and inspection chambers or repairs as may be required.

#### 3. INSTALLATION AND FITTING

- Installation of doors, windows and burglary proofs.
- Rendering/ plastering of walls as may be required and repair of cracks.
- Installation of suspended ceiling.
- Floor and wall tiling.
- Installation of sanitary wares.

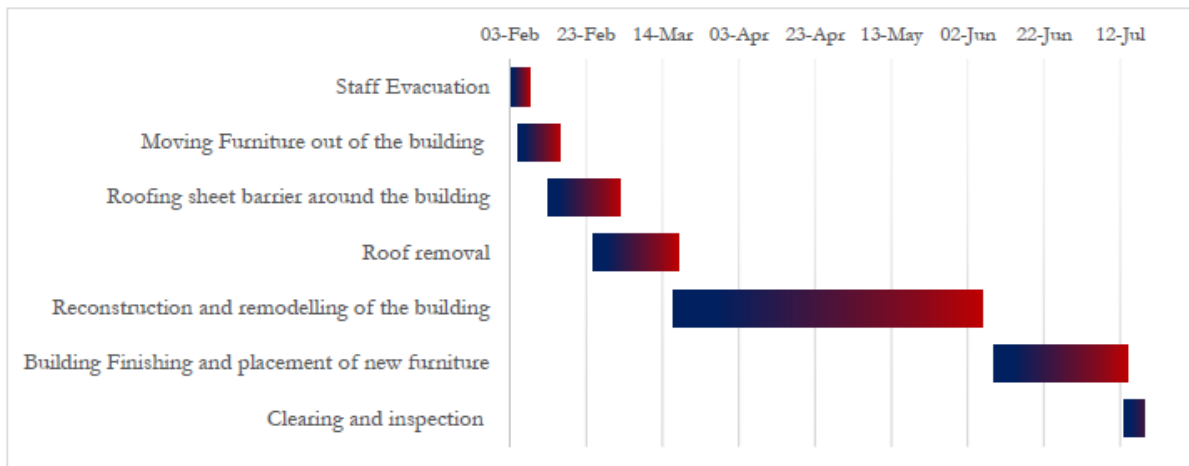
#### 4.FINISHING

- Painting stage one: priming.
- Installation of electrical fittings.
- Painting stage two: final coats.
- Clean up and demobilization.

### QUESTION 2

#### GANTT CHART FOR ALFA REHABILITATION PROJECT

TASKS	Start Date	Duration
Staff Evacuation	03-Feb	5
Moving Furniture out of the building	05-Feb	11
Roofing sheet barrier around the building	13-Feb	19
Roof removal	25-Feb	22
Reconstruction and remodelling of the building	17-Mar	81
Building Finishing and placement of new furniture	09-Jun	35
Clearing and inspection	13-Jul	12



### **QUESTION 3**

**Project Human Resource Management** includes the processes that organize, manage, and lead the project team. The project team is comprised of the people with assigned roles and responsibilities for completing the project.

The project team would consist of following professional members;

- **Quantity surveyors** who will ensure that all the materials used for the project are of good quality and can be used and also to ensure that the materials are in good shape.
- **Electrical Engineer** that will ensure that all the electrical connections are correct and the electrical are installed correctly. The Electrical Project Engineer's responsibilities include reviewing all engineering design plans, performing complex calculations, designing and constructing electrical systems and their components.
- **Architect**; who will design the new structure.
- **Structural Engineer** that will ensure that the new structure can hold and can live up to its expectation. They configure structures, choose appropriate building material, inspect the construction work and ensure the structural soundness of buildings and structures.
- **Water works engineer** who will ensure that the plumbing facilities are in good order.
- **Project Manager** that will have the responsibility of planning and executing the project.
- **Client** Has opinions and specifications on what the project comprises.
- **Main Contractor** Oversees the construction site and hires sub-contractors.

The lead consultant will be **THE ARCHITECT**.

### **QUESTION 4**

#### **Reason for securing the site**

Health and safety are one of the most important considerations you should take before any construction project gets underway. Health and safety in construction are particularly important because the industry is prone to hazardous situations and can be dangerous at times. The site would be secured with roofing sheets and the only entrance would have chains and padlock when the work for the day is over.

This to limit the number of people to have access to the site during working hours, so as to avoid accidents during work hours. So it would only be workers and officials on the site during working hours. After working hours the gate would be closed, so as to avoid anyone to be able to enter and steal any material from the site. So generally, the site is secured to avoid accident due to ignorance and theft.

<b><u>QUESTION 5- BEME</u></b>					
ITEM	DESCRIPTION	UNIT	QTY	RATE (N)	AMOUNT(N)
1	<b><u>BILL NO. 1 - Demolitions, Removal and Cart Away</u></b>				
*	Remove unsuitable existing roof and ceiling and cart away	LS			50,000.00
*	Remove doors, windows and burglary proof, to be replaced and cart away	LS			30,000.00
*	Remove existing floor and wall tiles and cart away	LS			65,000.00
*	Remove existing sanitary wares and cart away	LS			10,000.00
*	Remove existing electrical fittings and cart away	LS			15,000.00
					-
*	Demolish and cart away some internal walls as instructed by the client representative	LS			50,000.00
	<b>BILL NO. 1 ESTIMATE</b>				<b>220,000.00</b>
2	<b><u>BILL NO. 2 - New Internal Walls</u></b>				
	Hollow sand Crete blockwork in cement and sand mortar (1:6) in:				
*	225mm thick block wall	LS			

					150,000.00
*	150mm thick block wall	LS			130,000.00
	<b>BILL NO. 2 ESTIMATE</b>				<b>280,000.00</b>
3	<b><u>BILL NO. 3 - New Roof Installation</u></b>				
*	Hardwood structural timber in rafters, wall plate, purlins, tie beams and fascia well treated and installed for roof carcass	LS			650,000.00
*	0.55mm thick Aluminum roofing sheets fixed to timber purlins according to Manufacturer's instructions	LS			850,000.00
*	Install semi hard wood for noggins, to receive suspended ceiling	LS			310,000.00
	<b>BILL NO. 3 ESTIMATE</b>				<b>1,810,000.00</b>
4	<b><u>BILL NO. 4 - ALL ELECTRICAL SERVICES</u></b>				
	-				
	provide a provisional sum for all electrical services including piping, wiring and installation of fittings	LS			3,550,000.00
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	<b>BILL NO. 4 ESTIMATE</b>				<b>3,550,000.00</b>
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5	<b><u>BILL NO. 5 - ALL MECHANICAL SERVICES</u></b>				
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	provide a provisional sum for all mechanical services including piping, construction of septic tank, soak away pit, inspection chambers, installation of all sanitary wares and air conditioning units	LS			5,000,000.00
	<b>BILL NO. 5 ESTIMATE</b>				<b>5,000,000.00</b>
6	<b><u>BILL NO. 6 - WALL FINISHINGS : RENDERING</u></b>				

*	12-25mm cement and sand smooth rendering to all new walls and for repair of cracks	LS			340,000.00
	<b>BILL NO. 6 ESTIMATE</b>				<b>340,000.00</b>
7	<b><u>BILL NO. 7 - CEILING FINISHINGS</u></b>				
*	provide a provisional sum for suspended ceiling, supply and installation according to client's representatives instruction	LS			1,000,000.00
	<b>BILL NO. 7 ESTIMATE</b>				<b>1,000,000.00</b>
8	<b><u>BILL NO. 8 - WINDOWS, DOORS AND BURGLARY PROOF</u></b>				
*	Supply and fix the approved factory-made aluminum window units glazed with 5mm thick tinted glass complete with locks and burglary proof	LS			3,000,000.00
*	Supply and fix doors to the required specifications and sizes including all iron monger, hinges and frames	LS			1,500,000.00
	<b>BILL NO. 8 ESTIMATE</b>				<b>4,500,000.00</b>
9	<b><u>BILL NO. 9 - FLOOR AND WALL TILING</u></b>				
*	Supply non slip vitrified floor tiles as approved by the engineer and lay on screeded bed, skirting inclusive	LS			2,000,000.00
*	Supply vitrified wall tiles as approved by the engineer and lay to approved pattern on screeded bed	LS			340,000.00
	<b>BILL NO. 9 ESTIMATE</b>				<b>2,340,000.00</b>
10	<b><u>BILL NO. 10 - PAINTING</u></b>				
	prepare and apply one undercoat and two finishing coats of superior quality paint approved by the engineer on:				

*	Rendered walls, internally and externally	LS			815,000.00
*	Reveals not exceeding 100mm wide internally	LS			145,000.00
	<b>BILL NO. 10 ESTIMATE</b>				<b>960,000.00</b>
	<b>TOTAL ESTIMATED COST (TEC)</b>				<b>20,000,000.00</b>
	MISCELLANEOUS = 10% of TEC =				2,000,000.00
	CONSULTANCY FEE = 15% of TEC =				3,000,000.00
	SITE PREPARATIONS AND CLEARING AFTER COMPLETION = 5% of TEC =				1,000,000.00
	TRANSPORT = 12% of TEC =				2,400,000.00
	PROFIT = 20% of TEC =				4,000,000.00
	<b>TOTAL</b>				<b>32,400,000.00</b>



**QUESTION 6-PAYMENT SCHEDULE OF ALFA BELGORE CENTRE PROJECT**

<b>TOTAL ESTIMATED COST (TEC)</b>				<b>20,000,000.00</b>
MOBILIZATION = 30% of TEC =				6,000,000.00
10% RETENTION ON MOBILIZATION = 10% of Mobilization =				600,000.00
<b>Amount Paid =</b>				<b>5,400,000.00</b>
50% PROJECT COMPLETION = 30% of TEC =				6,000,000.00
10% RETENTION ON SECOND PAYMENT = 10% of 50% Project Completion =				600,000.00
<b>Amount Paid =</b>				<b>5,400,000.00</b>
PROJECT COMPLETION AND HANDOVER = 40% of TEC =				8,000,000.00
10% RETENTION ON FINAL PAYMENT = 10% of Project Completion and handover =				800,000.00
<b>Amount Paid =</b>				<b>7,200,000.00</b>
Total Retention for 6 months defect liability =				<b>2,000,000.00</b>

CHECK:  
TOTAL ESTIMATED COST (TEC) = TOTAL PAYMENT + RETENTIONS

TOTAL PAYMENTS = 18,000,000.00

RETENTIONS = 2,000,000.00

**TEC = TOTAL PAYMENTS + RETENTIONS = 20,000,000.00**

**BEME**; For all engineering works, it is required to know beforehand the probable cost of construction known as estimated cost. Bill of Engineering Measurement and Evaluation (BEME) also referred to as 'Bill'; is a tool used before, during and post-construction to assess and value the cost of construction works. This includes the cost of materials, labor, equipment and all/any other resource(s) required for the success of any construction endeavor based on a predetermined scope and specification.

**The defects liability period** (or 'DLP') is a fixed period of time, starting from the date of practical completion, during which the contractor has an express contractual right to return to the site to rectify defects.

**The lead consultant** is the consultant that directs the work of the consultant team and is the main point of contact for communication between the client and the consultant team, except for on significant design issues where the lead designer may become the main point of contact.

**A project life cycle** is the sequence of phases that a project goes through from its initiation to its closure. The number and sequence of the cycle are determined by the management and various other factors like needs of the organization involved in the project, the nature of the project, and its area of application. The phases have a definite start, end, and control point and are constrained by time. The project lifecycle can be defined and modified as per the needs and aspects of the organization. Even though every project has a definite start and end, the particular objectives, deliverables, and activities vary widely. The lifecycle provides the basic foundation of the actions that has to be performed in the project, irrespective of the specific work involved.

**Environmental Impact Assessment (EIA)** is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.