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**ENGINEERING**

**COURSE CODE: ENG 284**

**COURSE TITLE: ENGINEERS - IN- SOCIETY.**

**THE ALFA BELGORE REHABILITATION PROJECT IS ONGOING. AS A DESIGNATED STUDENT CONSULTING ENGINEER YOU ARE  EXPECTED TO DO THE FOLLOWING**

**1. OUTLINE THE SCOPE OF WORK IN DETAIL IN ORDER OF OCCURRENCE**

**2. PREPARE A PROJECT GANT CHART**

**3. LIST ALL THE HUMAN RESOURCES NEEDED AND CONSTITUTE THE PROJECT TEAM STATING WHO THE LEAD CONSULTANT IS.**

**4. EXPLAIN WHY THE SITE WAS SECURED**

**5. DEVELOP A BEME FOR THE PROJECT BY LUMP SUM PROJECTIONS INCLUDING 10% OF THE TOTAL ESTIMATED COST (TEC) AS MISCELLANEOUS, 15 % TECH AS CONSULTANCY FEE, 5% TEC FOR SITE PREPARATIONS AND CLEARING AFTER COMPLETION, 12% OF TEC FOR TRANSPORT COST. 20% TEC AS PROFIT**

**6. PREPARE A PAYMENT SCHEDULE AS FOLLOWS**

**(A) 30 % TEC FOR MOBILISATION   (B)  NEXT 30 % TEC AT 50% COMPLETION (C) FINAL PAYMENT OF 40 %TEC AT COMPLETION AND HAND OVER. RETAIN 10 % TEC FOR A 6 MONTHS DEFECT LIABILITY PERIOD**

**7. WHAT IS BEME, DEFECT LIABILITY PERIOD, LEAD CONSULTANT, PROJECT LIFE CYCLE, ENVIRONMENTAL IMPACT ASSESSMENT (EIA)**

**SOLUTION**

**QUESTION 1**

As a chosen engineer consultant, some of my duties include;

1. Supervising work
2. Site survey and soil investigations
3. Ensuring project feasibility
4. Designing algorithms for executing tasks based on standard
5. Estimating initial planning and budgeting costs

Reasons for this rehabilitation project;

* The need for more space to accommodate more people there
* The need to improve the hall and provide it with modern days facilities as it is a centre piece in the school

Scope of work in order of occurrence for the Alfa Begore rehabilitation project

1. Understand why the project is initiated and its objective
2. Project life cycle which involves the FORMATION STAGE (project idea conception, project definition).
3. Mobilization stage which covers preparation of designs and drawing, resource mobilization, etc.
4. Construction stage which includes;
* Planning and controlling execution
* Construction and commissioning
* Final handling over to client

More stages needed;

1. THE CLEARING

At this stage the building would be cleared of all the furniture and facilities. These would be taken to a safe and secured environment probably a ware house. Business operations that take place in the building would be moved to a temporary spot as the construction of Alfa begore continues.

1. SECURING THE SITE

At this stage a barrier made of roofing sheets or other materials would be used to secure the site. This is necessary so as to ensure no one would be able to enter and leave the site at will. The only set of people with access to the site would be authorised personnel, official personnel, workers and official owners of the projects to inspect. This would be in order to prevent unnecessary accidents and limit to movement on site and also secure the equipment’s used on site.

1. REMODELLING Works

This is when the main work begins; we will start by removing the roof of the building. After that we will then beginning other re modelling work on the building. This consists of laying blocks in accordance to the plan that has been drawn

1. Clean up

This is the final stage of the project, where all the excess materials used along with the equipment’s used, the roofing sheets would also be cleared

**QUESTION 2**

**GNATT CHART**

**QUESTION 3**

The human resources needed are both skilled and unskilled

Skilled

These include the professionals such as engineers, architects, estate surveyors, quantity surveyors, town planners, accountants, civil servants, technicians, electricians, consultants etc.

Unskilled

These include labourers, messengers, plumbers etc.

Both the above mentioned personnel’s all constitute the project team. The lead consultant is the designated consultant chosen by the client. The individual is usually an engineer.

**QUESTION 4**

Construction sites are often natural targets for theft and vandalism.

Theft: individuals are capable of stealing fuel and materials from site for their personal benefitment if the site is not secured.

Vandalism: this is caused by deliberate damaging of properties. It is usually caused by individuals who oppose the construction project.

**QUESTION 5**

BILL OF ENGINEERING MEASUREMENT AND EVALUATION (BEME)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ITEM NO | DESCRIPTON | QUANTITY |  UNIT COST  |  TOTAL COST  |
| 1 | Roofing sheet | 100 |  ₦ 1,400.00  |  ₦ 140,000.00  |
| 2 | cement bags  | 700 |  ₦ 180,000.00  |  ₦ 108,000,000.00  |
| 3 | Trucks of gravel | 12 |  ₦ 35,000.00  |  ₦ 420,000.00  |
| 4 | Trucks of sand  | 15 |  ₦ 45,000.00  |  ₦ 675,000.00  |
| 5 | Glass which will be brought as 12x12 | 10 |  ₦ 50,000.00  |  ₦ 500,000.00  |
| 6 | Light bulbs fittings | 40 |  ₦ 8,000.00  |  ₦ 320,000.00  |
| 7 | Light bulbs | 40 |  ₦ 2,500.00  |  ₦ 100,000.00  |
| 8 | Copper wires | 60 |  ₦ 2,000.00  |  ₦ 120,000.00  |
| 9 | Projector | 2 |  ₦ 150,000.00  |  ₦ . 300,000.00  |
| 10 | T.V | 4 |  ₦ 100,000.00  |  ₦ 400,000.00  |
| 11 | Pipes of different sizes | 46 |  ₦ 80,000.00  |  ₦ 3,680,000.00  |
| 12 | Window  | 10 |  ₦ 450,000.00  |  ₦ 4,500,000.00  |
| 13 | CCTV cameras for security | 12 |  ₦ 25,000.00  |  ₦ 300,000.00  |
| 14 | CCTV system | 1 |  ₦ 50,000.00  |  ₦ 50,000.00  |
| 15 | Total estimated cost |  ₦ 119,505,000.00  |
| 16 | Miscellaneous (10%) |  ₦ 11,950,500.00  |
| 17 | Consultancy Fee (15%) |  ₦ 17,925,750.00  |
| 18 | Site preparations and clearing after completion (5%) |  ₦ 5,975,250.00  |
| 19 | Transportation (12%) |  ₦ 14,340,600.00  |
| 20 | Profit (20%) |  ₦ 23,901,000.00  |

**QUESTION 6**

**PAYMENT SCHEDULE**

* 30% of Total Estimated cost for Mobilisation
* 30 % of Total Estimated cost
* 50% of Total Estimated cost for completion
* Finally payment of 40% of Total Estimated cost at completion and hand over
* Retain 10% of Total Estimated cost for a 6 months defect liability period.

**QUESTION 7**

1. Bill of Engineering Measurement and Evaluation (BEME)

In any engineering related work, 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 pre-determined scope and specification.

1. Defect Liability Period

Also known as ‘DLP’. This 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.

1. Lead Consultant

The [lead consultant](https://www.designingbuildings.co.uk/wiki/Lead_consultant) is the [consultant](https://www.designingbuildings.co.uk/wiki/Consultants) that directs the [work](https://www.designingbuildings.co.uk/wiki/Works) of the [consultant team](https://www.designingbuildings.co.uk/wiki/Consultant_team) and is the main [point](https://www.designingbuildings.co.uk/wiki/Points) of contact for communication between the [client](https://www.designingbuildings.co.uk/wiki/Clients) and the [consultant team](https://www.designingbuildings.co.uk/wiki/Consultant_team), except for on significant [design](https://www.designingbuildings.co.uk/wiki/Design) issues where the [lead designer](https://www.designingbuildings.co.uk/wiki/Lead_designer) may become the main [point](https://www.designingbuildings.co.uk/wiki/Points) of contact.

1. Project Life Cycle

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.

1. Environment Impact Assessment (EIA)

The term "environmental impact assessment" (EIA) is usually used when applied to actual projects by individuals or companies and the term "[strategic environmental assessment](https://en.wikipedia.org/wiki/Strategic_environmental_assessment)" (SEA) applies to policies, plans and programmes most often proposed by organs of state .It is a tool of environmental management forming a part of project approval and decision-making. Environmental assessments may be governed by rules of [administrative procedure](https://en.wikipedia.org/wiki/Administrative_law) regarding public participation and documentation of decision making, and may be subject to judicial review.