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**DEPARTMENT: ELECTRICAL/ELECTRONICS**

**MATRIC NO: 18/ENG04/008**

**COURSE CODE: ENG 284**

**COURSE TITLE: ENGINEERS IN SOCIETY**

# **ASSIGNMENT**

**PROJECT TITLE: REHABILITATION OF ALFA BELGORE IN AFE BABALOLA UNIVERSITY ADO-EKITI.**

**CLIENT: Afe Babalola University Management.**

**ADDRESS: Afe Babalola University, Ado-Ekiti, Ekiti State, Nigeria.**

## **SCOPE OF WORK**

The scope of work entails the order in which the project is to be followed starting from making the budgets. A budget is a sum of money allocated for a particular purpose. Even though budgets can't be accurate, there should be an estimated amount that will be readily available for use to avoid delay for the completion of the project. The steps to be followed are explained as follows. They include;

### **1. Design and Planning**

A sketch on a cocktail napkin, full-blown architectural plans, or just a firm set of thoughts about how the remodel should progress. It is cheaper and less frustrating to correct mistakes before the remodel takes physical form. Ensure that you have funding for your renovation.

- Draw up a simple "yes/no" list of do-it-yourself projects and projects you want professionals to do.
- Look for contractors and subcontractors for those jobs you do not want to do yourself.
- Apply for permits.

### **2. Roof, Foundation, Water Issues, Siding, Windows**

Roof replacement or repair; foundation fix; stopping water infiltration; installing or repairing siding and windows. Large projects must be done first because subsequent projects are impacted by them.

- Protect your future renovation work by making certain the house won't collapse on you (foundation, major structural problems) and that it will remain dry (roof, siding, windows).

- Secure the foundation.
- Make major foundation repairs to areas such as weakened walls, joists, and carrying beams.
- Repair or replace the roof.
- Replace seriously damaged windows that may threaten future remodeling work. If not seriously damaged, leave it for later in the process.
- If the siding is so damaged that it will allow water infiltration, repair or replace the siding. If not seriously damaged, leave it for later in the process.

### **3. Demolition**

Demolishing and disposing of sections of the house that will be replaced by later projects.

- Rent a large container for waste.
- Carefully demolish all or some of the areas of the house that will be renovated. Demolish as much as possible if you will not be living in the house.
- Exercise caution when demolishing surfaces coated with lead-based paint.

### **4. Structural Carpentry**

Carpentry that is in support of other work such as drywall, new or moved walls, windows, doors, etc.

- Moving walls.
- Constructing new walls.
- Significantly enlarging the window openings.
- Adding beams to support a greater weight upstairs.
- Punching in new doors (or removing existing doors).
- Adding new construction windows.

### **5. HVAC Ductwork, Electrical, and Plumbing**

Vital services that need to be installed when the walls and ceiling are open.

- With the walls and ceiling open, it is time for the HVAC company to install ductwork for central heating and air conditioning.
- Run new electrical and plumbing systems. Electrical and plumbing inspectors will visit at this time, too.

## **6. Insulation**

Laying the insulation in the walls and ceiling.

- Install fiberglass insulation in the walls and attic.
- Insulation goes fast, so make sure that your drywall company is ready to go soon after this.

## **7. Drywall**

Closing up the walls with drywall: hanging it, mudding it, and sanding it.

- A second inspection from the electrical inspector (and perhaps the plumbing inspector) will give you the go-ahead to close up the walls.
- Drywalls hang sheets of drywall, apply drywall compound, and let the compound dry. After drying, they sand it smooth. Sometimes, they will repeat the process until they achieve a seamless surface.

## **8. Windows**

Installing new-construction or replacement of windows;

- Window installation, whether whole-house or partial, almost always plays into a home remodel project.

## **9. Fine Carpentry**

Carpentry that is not supportive: baseboards, molding, trim around windows and doors, built-in elements (bookcases, breakfast nooks, etc.).

- Fine carpenters give your house that finished touch.

## **10. Interior Painting, Wallpaper, and Other Surface Finishes**

Painting interior walls, hanging wallpaper, painting molding and trim, staining and sealing trim.

- All of these detail-oriented surface finishes should be one of the last items you do indoors as this work can damage other work of yours.
- Should you paint before installing or sanding your flooring or the reverse? This is debatable. Laying flooring first means that paint might get on the flooring. Painting first means that the floor sander may scuff your walls.

## **11. Flooring**

Your final floor covering—lamine, solid hardwood, tile, engineered wood.

- Installing the flooring as late as possible in the renovation process saves your flooring surface from significant damage.

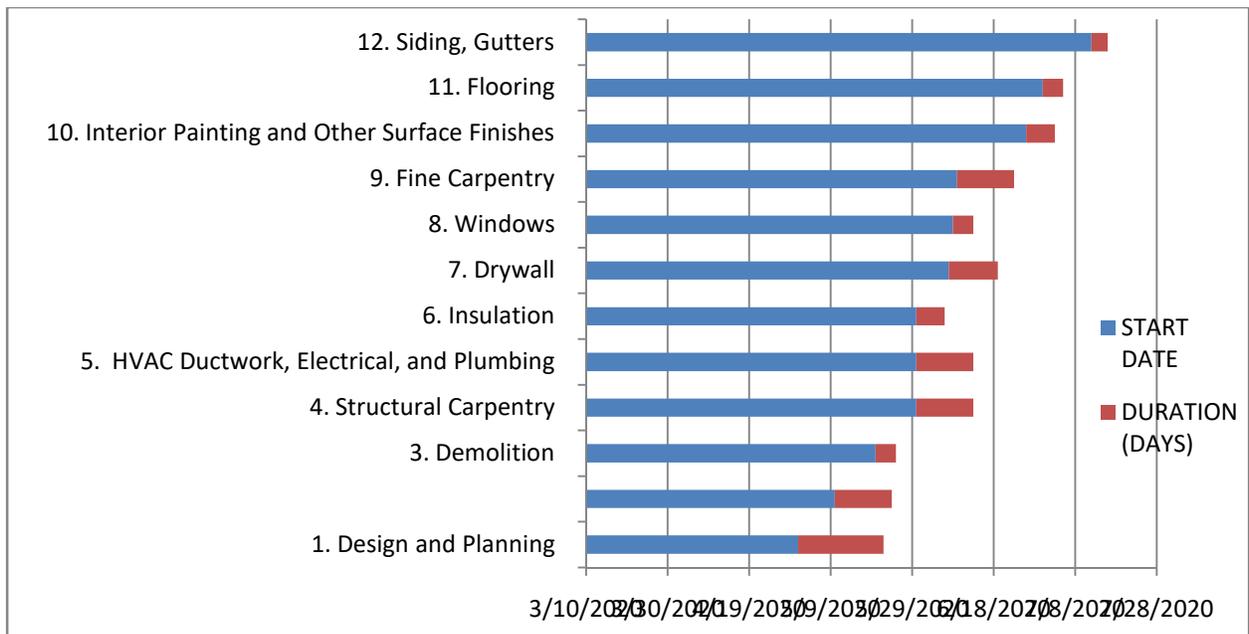
## **12. Siding, Gutters**

Exterior work on the outside of the house.

- With the house mostly finished, it is safe to put on the siding. You do not want to do this earlier (unless absolutely necessary) because doors and windows may get punched out, ruining the siding.

## GANTT CHART

TASK	START DATE	DURATION(DAYS)
<b>1. Design and Planning</b>	<b>01/05/2020</b>	21
<b>2. Roof, Foundation, Water Issues, Siding, Windows</b>	<b>10/05/2020</b>	14
<b>3. Demolition</b>	<b>20/05/2020</b>	5
<b>4. Structural Carpentry</b>	<b>30/05/2020</b>	14
<b>5. HVAC Ductwork, Electrical, and Plumbing</b>	<b>30/05/2020</b>	14
<b>6. Insulation</b>	<b>30/05/2020</b>	7
<b>7. Drywall</b>	<b>07/06/2020</b>	12
<b>8. Windows</b>	<b>08/06/2020</b>	5
<b>9. Fine Carpentry</b>	<b>09/06/2020</b>	14
<b>10. Interior Painting and Other Surface Finishes</b>	<b>26/06/2020</b>	7
<b>11. Flooring</b>	<b>30/06/2020</b>	5
<b>12. Siding, Gutters</b>	<b>12/07/2020</b>	4



3.)

There are a lot of professionals that will be involved in the rehabilitation of alfa belgore. Some of the professionals are highly learned while some have very little level of formal education. Some of them will be listed and the part they will take in the completion of the project will be well explained below. Some of the professionals are;

### **Client**

A client (in this case) is any person who wants to own a project completed and is responsible for financing the entire project either with their own money or from the bank; a client is the one that initiates the construction process by looking out for the services of professionals like architects, engineers, surveyors and so on.

### **Architect**

The architect's role is to transform the client's needs and specifications into a design. An architect is involved in planning and drawing of this design, as well as well as overseeing its construction. The architect takes into consideration environmental, social and economic factors, as well as the needs of the construction team in order to have a successful project.

### **Land surveyor**

The land surveyor's role is to determine boundary lines and measurements of land. They are always needed before starting the construction work of any project, so that they can re-establish the property boundaries and to ensure clarity between neighbours. The land surveyor will also be useful in plotting out every feature like buildings, trees, electric poles, rocks and so on, with their accurate placement on the land, and as well as indicating the level differences of the land.

### **Structural engineer**

The structural engineer's role is all about ensuring that a structure is capable of standing strong and can withstand the pressures of use that the building is subjected to. They are capable of doing mathematical calculations that makes it possible for the building to not only withstand its own weight and internal use, but also endure external (natural and artificial) forces, like winds, earthquakes, collisions factors that might destabilise the building.

### **Quantity surveyor**

The quantity surveyor specialises in estimating the value of construction works. This may include new builds, renovations or maintenance work. From early design costs to final figures, quantity surveyors seek to minimise the costs of the project. In lay man simple terms call them the accountants of a building project. They are the ones that prepare the Bills of Quantities.

### **The Building Service Engineers**

Building services engineering is an aspect handled by Mechanical and Electrical Engineers they are referred to as (M&E), in the local Nigerian parlance it called plumbing and electrical, in some countries it's called (MEP) engineering adding plumbing or public health. This involves the production and maintenance of a stable internal environment that has the correct temperature, air quality and lighting levels. It requires the provision of all the necessary backup support systems such as power, hot and cold water and lifts. The installation of life protection systems such as fire alarms, and sprinkler systems is an important responsibility as well. These functions must be linked to sophisticated building management systems to ensure effective control and to minimise energy consumption.

Building services engineers work closely with other construction professionals such as architects, structural engineers and quantity surveyors. They influence the architecture of a building and play a significant role on the sustainability and energy demand of your building. They design layouts and requirements for building services for residential or commercial developments which is one of the requirements for building approval.

### **Artisans**

These are the real workmen on site. They are mostly technicians that have acquired various skills either on the job or in various skill acquisition institutes. They have improved skill on- the -job. They work with the various professionals carrying out their duties based on instructions though imputing their skills.

There are various artisans in the building construction industry for example masons, carpenters, electricians, iron fixers, tillers, and plumbers to mention a few.

There are other workers that are non-artisans. They are referred to as unskilled labours but they are actually skilled. The nature of their job requires little skill and they are usually non-persistence on the job. Their range of jobs include site clearance, minor excavation and other petty site jobs.

### **The Consultants**

The building consultancy teams bring together project managers, building surveyors, quantity surveyors, architects, engineers, interior designers and other construction professionals, but his loyalties is with the building owner. To bridge the knowledge gap, the owner should hire a construction consultant. The consultant should be engaged early in the project, so the owner can utilize the consultant's services in selecting construction professionals and contractors and in reviewing plans and budgets.

The construction consultant's role is to represent the owner and to lend practical expertise to the job. The construction consultant is simply the client representative that wants the owner to achieve what the owner has contracted for from the contractors. He is the value-for-money bargainer, Working on behalf of the owner, the consultant can identify and address potential construction problems in the design stages and, as an independent party, may be in the best position to suggest cost saving or time saving alternatives and to evaluate suggestions made by the other parties.

### **The Building Contractor**

Looking at the volume of professionals and artisans involved in building construction working with a building owner who is a non-professional, it will be a HELL talking to each of them. There is a need for a firm to harness all this together and do all the jobs required. The contractor brings a team of all the required professionals together, oversees the construction and ensures that all necessary measures are taken to execute a project. A building contractor is an organisation that engages in the Planning, Developing and Coordinating activities in the building of structures.

The building contractor draws up a plan to carry out the construction project. This extends anywhere from hiring workers to developing a step-by-step timeline that the project will follow from start to finish. The BC is responsible for hiring, supervising, firing and payment of workers alongside obtaining materials for the project to precise specifications, mostly using the services of suppliers.

### **4.0) REASONS FOR SECURING CONSTRUCTION SITES**

Construction sites are expensive work areas that are, unfortunately, very vulnerable to many types of problems. As they are a work in progress, aside from the building or buildings or whatever is being constructed, expensive equipment and valuable materials are kept on site. The tools, equipment, machinery and materials on a construction site alone can be worth many thousands or even millions of dollars, depending on the size of the construction project itself. A site can also be under construction for many weeks, months or years, leaving all that valuable equipment, the site itself and the property open to a host of potential disasters. Examples of such disasters are;

- Fire
- Theft
- Vandalism
- Accidents
- Natural disasters
- Wind damage e.t.c

## 5.0

### **BILL OF ENGINEERING MEASUREMENTS AND EVALUATION**

S/N	Items	Specification	Quantity	Unit cost	Estimated Cost (N)
1	Cement		100 bags	1,000	100,000
2	Planks	Soft wood(1*12*12)	500	750	375,000
3	Stainless steel		2 sheets	25,000	50,000
4	Gravels	25 tons	1	30,000	45,000
5	Sand	25 tons	2	15,000	30,000
6	Transportation to site				50,000
7	Labour				100,000
8	Galvanized iron sheet	200*120*230 mm	2	28,000	55,000
9	Grinding plate	Power flex	1	20,000	20,000
10	Clearing of site	m <sup>2</sup>			60,000
11	Consultancy fee				250,000
12	Moulded Bricks		50	800	65,000
13	Miscellaneous				100,000
	Total				1,300,000

### **6.) PAYMENT SCHEDULE**

A budget of five hundred thousand naira(#500,000) has been budgeted as the fee that will be given to the contractor for the activities that will be carried out during the project. Below is a detailed schedule of how the money will be paid with respect to the completion of the project and also the defect liability period.

S/N	Amount of work completed	Price (N)
1	At the start of the project	136,000
2	At 50% completion	136,000
3	At completion and Handover	182,000
4	Defect Liability period	46,000
	Total	500,000

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- **BEME**

Bill of Engineering Measurement and Evaluation (BEME) is used before, during and post-construction to assess and value the cost of construction works. This includes the cost of materials, labor, equipment and any other resources required for the success of the project.

- **DEFECT LIABILITY PERIOD**

This is a period of time following practical completion during which a contractor remains liable under the building contract for dealing with any defects which become apparent. A defects liability period is usually a period of around six or 12 months but it can vary depending on the contract used.

- **ENVIRONMENT IMPACT ASSESSMENT**

Environment impact assessment (EIA) is a process to assess the environmental consequences of any project and design proper mitigation plans to minimize the possible adverse impacts.

- **PROJECT LIFE CYCLE**

Every large construction has a life cycle which can be compared to a biological life cycle where activities begin gradually and build rapid as the project commences to final deliverables.

- **LEAD CONSULTANT**

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, expect for mon significant design issues where the lead designer may become the main point of contact.