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**DEPARTMENT: COMPUTER
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**COURSE CODE AND TITLE: ENG 284
ENGINEERS IN THE SOCIETY**

The Alfa Begore 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

Scope of work in detail of occurrence of Alfa Begore hall

STEP 1: PROJECT DESCRIPTION:

Afe Babalola University is a private university located 7.670929°N 5.307051°E in Ado-Ekiti, Ekiti State. The school is looking at expansion of its hall to a 2 storey building. The building is a one storey building that consists of just the hall and the toilets.

STEP 2: PROJECT OVERVIEW:

After getting the project description we get the contract. It is a more formal, legally binding agreement based on mutually agreed details. After we have an overview on the project as to why the school wants to expand the hall (purpose) so as we know what to work with.

STEP 3: PROJECT PLANNING:

Then secondly we get /plan a schedule of requirement (SOR). It will allow us review the pertinent documents, visit the site and provide a drawing and specifications (D&S), so that the school may prepare a **Drawings & Specifications** to solicit a Contractor to carry out the demolition work and the container yard reconstruction.

This is a detailed description of the goals of the construction project (Alfa Begore Hall), the work that is going to be done. Here we are given the following

- Insight into quality of materials
- Addition of square foot of Alfa Begore hall
- Hall conversion
- Redesigning of the hall and any other thing such as toilet, etc.
- Splitting the building into interior and exterior, and then split the interior and the exterior into the front of the building, back of the building, and landscaping.

Exterior

Once the project overview and description are filled out sufficiently, we proceed to create a scope of work for the exterior. In this part of the scope of work, we breakdown all the work that needs to be completed on the outside of the property and the materials needed to do so:

- Roof
- Rain Gutters
- Siding & Stucco
- Windows
- Paint
- Landscaping
- Fencing
- Doors
- Lighting

- Termite Damage
- Demolition Of Unwanted Fixtures
- Concrete

Interior

No two buildings are the same, nor should an investor ever expect them to be. What one building needs may be entirely different from another, and vice versa. In this part of the scope of work, we breakdown all the work that needs to be completed on the inside of the property and the materials needed to do so:

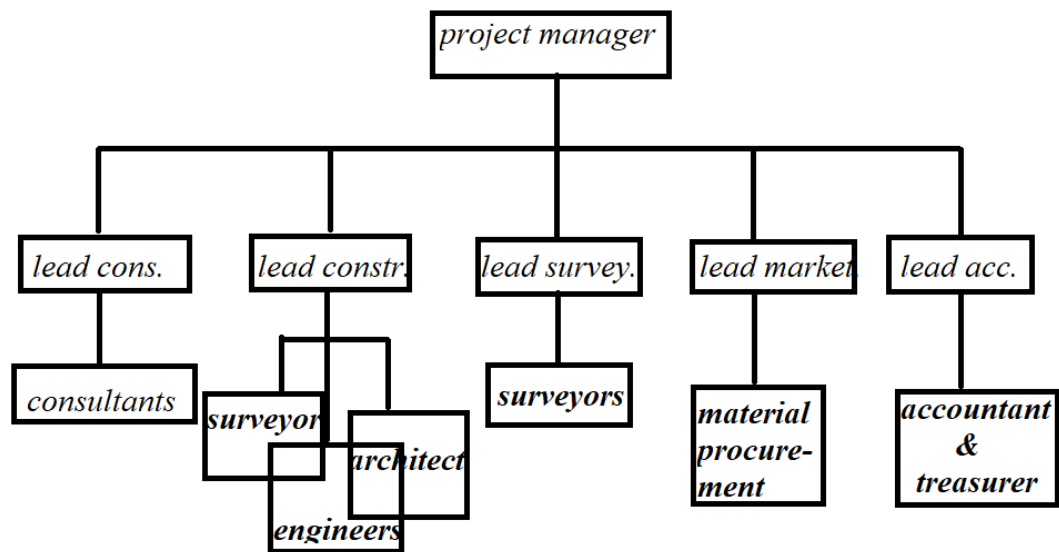
- Floor planning/ flooring
- Condition
- Sheetrock & Drywall
- Demo
- Patch Walls
- Paint
- Doors
- Moulding
- Light Fixtures

Step 4 management team: Here we list who will be managing the project and their contact information.

- **Project manager:** Entails payment information, any changes to the original contract, and legal requirements, planning, hire and supervise, set goals, deliver on time, stay on budget, Keep client and your boss informed about everything, manage risks. It consists of the different heads of each department. He also most times shares responsibility with the site manager
- lead consultant
- lead construction
- lead surveyor
- lead marketer
- lead accountant
- **Lead construction:** The construction team is a group of people responsible for the planning, designing and construction of a project. The professionals in the industry include the Architects, Quantity Surveyors, Engineers (Civil, Mechanical, Structural, Electrical) the Building Contractors, Artisans and the suppliers.
- 1. **Architect:** They develop the creative plans, communicate the plans to others, and oversee their execution. They must be involved in a project from start to finish to ensure that the client's vision is being implemented properly.

2. **Construction Foreman:** The foreman is the head of the workers in the field. He oversees the project on-site and tracks worker's timecard and completion of tasks on schedule. The foreman is the direct response for any problems or injuries that occur on a job site. He is also in charge of personnel including timecards, payroll, and often hiring or promotion. Mobile technology aids the foreman in his communication from the job-site to the back office.
3. **Site engineer:** A **site engineer's** role is vital to a construction project: they have a number of responsibilities including solving technical issues, providing advice, management and preparing reports.
4. **Site manager:** **Site manager's** role is vital. They are responsible for ensuring that a construction project is completed on time and within budget. Site Managers work on construction sites and work often begins just before construction.
5. **Engineers:** They are involved in building constructions and are classified into three.
 - **The structural engineers:** Provide design drawings which show the locations, sizes, reinforcement and details of structural elements at their appropriate scales, to enable the fabrication, installation, and connection of the elements in a reasonable sequence by a reasonably competent general or subcontractor who is familiar with the techniques of construction for the specified materials.
 - **Mechanical engineers:** Prepare, complete, contract drawings using the same scale as that of the building layout drawings showing the mechanical services needed and their location. The mechanical services include: plumbing, drainage, heating, ventilating and air conditioning, fire protection, process piping and equipment and other special systems necessary
 - **The electrical engineers** prepare complete, contract drawings using the same scale as that of the building layout drawings showing the electrical services needed and their location. The electrical services include: lighting and power,
6. **Lead surveyor:** consists of a surveying team. They are professionally trained, qualified and experienced personnel in dealing with problems relating to construction cost, management and communication in the construction industry.
 - **Lead consultant:** The **lead consultant's** role include: Co-ordinating, monitoring and reviewing the work of the **consultant** team. They also advise the client on the need to appoint additional advisers, **consultants** or specialist designers.
 - **Lead accountant:** Interpret reports and advise the company of the financial position, tax situation or other area of job focus. They have a team of accountants, treasures that create budgets, manage cash, prepare financial statements and check them for accuracy, and identify things that need your attention.
 - **Lead marketer:** involved in buying of materials for construction and preparing budget and cost of this materials. A material procurement manager gets the materials required.

Chart of management that help in building and construction



Step 5 budgets and cost:

S/N	Item	Item description	Budget	Cost
1	Demolition	Demolition of the existing hall and toilet	5,000,000,000	7,000,000,000
2	Foundation	New foundation for the addition	3,000,000,000	4,000,000,000
3	Roof	Replacing the roof for the existing structure and new roof for addition	1,000,000	900,000,000
4	Exterior	Improvement of exterior (repainting, window, doors)	500,000	500,000
5	Interior	Improvement of interior (flooring, door, window)	500,000	500,000
6	Appliances	New fans & AC	200,000	250,000
7	Electrical work	New light fixtures, switches etc.	100,000	50,000

8	Plumbing work	Repair the plumbing for the existing structure, and new plumbing system for the addition	400,000	600,000
9	Plans /permit	Architect plans, structural engineering and building permit	700,000	650,000
10	Survey/ inspection	Surveying & inspecting of the building	400,000	500,000

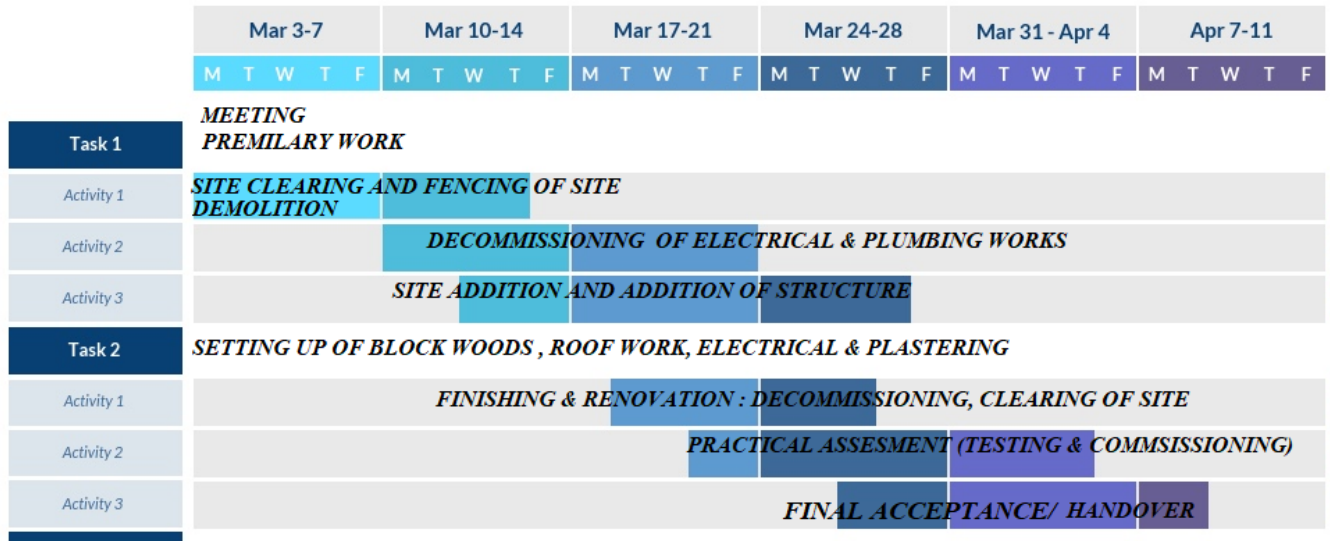
Step 6 Project Schedule: Order of the different tasks of the construction project and how long each task will take.

- Inspection – 2 weeks
 - Planning – 2 weeks to 2 months
 - Laying of new foundation and structure addition – 2 months
 - Major exterior repairs : 1 week to 1 month
 - Demolition – 3 weeks
 - Interior repairs : Framing, rough Plumbing, etc. 1 month
 - Interior finishes : 1 to 3 months
 - Final exterior repairs: Roofing, windows, Exterior Doors, exterior painting , landscaping (1 month)
 - Final interior finishes :
1. Electrical Rough-in/Re-wire (3 days)
 2. Plumbing Rough-in (1 day)
 3. Miscellaneous Drywall Patching & Texturing (3 days)
 4. Interior Doors - 12 interior doors (2 days)
 5. Interior Painting - (3 days)
 6. Toilet Remodels
 7. Hardwood Flooring - 300 sf (2 days)
 8. Light Fixtures (1 day)
 9. Appliances Delivery & Installation (4 hours)
- Final cleaning

Step 7: Acceptance: Clearly outline all inspection requirements, testing and validation processes, permits that need to be obtained, approval process, and borrower sign-offs.

2. Prepare a project Gant Chart

GANTT CHART



3. List all the human resources needed and constitute the Project Team stating who the Lead Consultant is.

CIVIL SUPERVISOR IS THE LEAD CONSULTANT

HUMAN RESOURCES NEEDED

- 1) Civil supervisor {Lead consultant }
- 2) Electrical supervisor
- 3) Mechanical supervisor
- 4) Surveyor
- 5) Architect
- 6) Carpenter
- 7) Iron bender
- 8) Painter
- 9) Plumber

1. **A surveyor** is a property specialist who can value a property, and assess it for any defects, future issues or problems.

2. **An architect** is a person who plans, designs, and reviews the construction of buildings. To practice architecture means to provide services in connection with the design of buildings and the space within the site surrounding the buildings, which have as their principal purpose human occupancy or use.

3. A **carpenter** is a person who works with wood. They can make cabinets, build houses, or do other things with wood.
4. A **plumber** is a tradesperson who specializes in installing and maintaining systems used for potable water, sewage and drainage in plumbing systems.
5. An **electrical supervisor** is someone who supervises the electrical aspect of the work
6. **Civil supervisor** is someone who supervises the construction of the building
7. **Mechanical supervisor** supervises the plumbing aspect
8. **Iron Bender** one who is an expert on bending metals, one who works in forging **iron**.
9. **Painter** is someone who paints walls, doors, and some other parts of buildings as their job. The site is being secured to prevent object from flying around or getting people or students from been injured

4. Explain why the site was secured

The site was secured so as to prevent

- Theft
- Vandalism
- Students from entering the renovated building when it is not safe
- Students from falling into excavation holes or piles of sand or gravel during renovation
- Provide security for the construction materials.

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 siZte preparations and clearing after completion, 12% of tec for transport cost. 20% tec as profit

<u>S/N</u>	<u>TASK / DESCRIPTION</u>	<u>MODULES</u>	<u>PERCENTAGE</u>	<u>AMOUNT</u>
1	Miscellaneous	. Bonus time . Feeding . Extra materials	10%	8,000,000
2	Consultancy Fee	. Doctors . Architect . Consultant	15%	12,000,000

3	Site Preparation	. Clearing of rubes . Barricading	5%	4,000,000
4	Transport cost	. Bringing of items to the site . Mobilization and Demobilization . Importation of materials	12%	40,000
5	Profit		20%	50,000
6	Other expenses	Final inspection . Final testing . Cost of material and equipment	62%	80,000
7	TOTAL			800,000

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

Payment Schedule						
Description	Percentage	Total Estimated Cost(tec)	Total amount to be paid	Percentage Retained	Amount Retained	Payment
Mobilization	30%	₦ 600,000,000	₦ 240,000,000	0%	₦ -	₦ 240,000,000
At 50% completion	30%	₦ 400,000,000	₦ 250,000,000	0%	₦ -	₦ 250,000,000
Final Payment	40%	₦ 700,000,000	₦ 230,000,000	10%	₦ 70,000,000	₦ 230,000,000
After 6months (and no defect found)	10%	₦ 500,000,000	₦ 70,000,000	0%	₦ -	₦ 70,000,000
Total						₦ 900,000,000

7. What is BEME, Defect Liability Period, Lead Consultant, Project Life cycle, Environmental Impact Assessment (EIA)

- **BEME**

(Bill of Engineering Measurement and Evaluation)

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.

- **Defect Liability Period**

A **defects liability period** 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

- **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,

- **Project Life cycle**

A *project life cycle* is the sequence of phases that a *project* goes through from its initiation to its closure. A standard **project** typically has the following four major phases (each with its own agenda of tasks and issues): initiation, planning, implementation, and closure.

- **Environmental Impact Assessment (EIA)**

Environmental assessment is the assessment of the environmental consequences of a plan, policy, program, or actual projects prior to the decision to move forward with the proposed action

