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Department: BIOMEDICAL ENGINEERING
Course: Engineer in Society
Course Code: ENG 284

Assignment

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 Mobilization (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)

ANSWER

1. SCOPE OF WORK

The layout plan for 2nd Floor of The Alfa Belgore Rehabilitation project

- a) Preliminary works (e.g. re-design of all systems in compliance with new layout, dismantling works, cleaning, etc.)
- b) Interior construction and finishing works: floors, ceilings, doors, fixtures, fittings, Etc.;
- c) Mechanical: water supply, sewerage, AC and other works;
- d) Electrical: lighting, power and other works;
- e) Obtain all necessary permits, licenses, insurance, etc. necessary for the execution of the Works;

f) Testing

DESIGN

Final Design Documentation:

- Architecture,
- Electrical & Small Current/Data Network,
- Mechanical (AC, Water, sewerage)

Doors

Supply and install doors (full height) and steel frames of a quality suitable for the hall, the door fittings and handles are to be made of metal. Each door to be lockable from either side with a minimum three keys provided for each lock.

CEILINGS & FLOORS

Suspended Ceiling/Plasterboard Ceiling

Install and/or modify the suspended ceiling at appropriate height for window openings for ventilation and lighting for the area.

Raised Floor System

Supply and install carpet tiles.

Communications (Coms) Room

The Communications Room will be covered in anti-static sheet vinyl or vinyl tiles.

PAINT WORKS

All walls to be skimmed and emulsion paint finished.

AC

Provide air conditioning capable of delivering a space temperature of 16°C (with sufficient Ceiling). As the air conditioning equipment ages and becomes less efficient the extra capacity will enable 23°C to be maintained.

Lighting

Supply and install 600 x 600 recessed light fittings (or similar), non-reflective energy saving units, to provide adequate light. Lighting should also be provided by low voltage spotlights.

The Communications Room (Coms Room) is to have energy saving lighting units capable of providing a minimum light at bench level of 500 Lux.

Security

CCTV - Supply and install additional analog CCTV cameras (Panasonic or similar) as per the fit-out plan to cover the following areas; one outside main entrance door showing external lobby and entrance door; one inside main entrance door to clearly view all persons entering and leaving the hall. All cameras are to be mounted so as to be obvious to visitors. Connect all cameras to existing CCTV analog System

Communications/IT Room (Coms Room)

The Communications Room will be located in the position as shown on the fit-out plan and will contain a switch board Server Rack), a UPS unit, , etc.

All structural cabling for voice/data will be brought back, terminated and connected to the patch panels located inside the Server Rack located in the Coms Room.

Power & Data Circuit

Provide a suitable distribution board, located in the Coms Room, with adequate circuit breakers to protect each circuit. The drawing indicates the location of each set of floor boxes.

Each grouping is to provide four power sockets (one socket is to be connected to the UPS, clearly marked or of different color e.g. red) and two RJ45 data sockets.

Additionally, power points are to be provided in the corridor areas for fax, printer, photocopier and vacuum cleaner any other small power requirement in the area.

In the Coms Room a minimum of 10 power points are to be provided in specific locations.

FIRE & EMERGENCY

Supply and install sufficient fire detection, smoke detection, sounders and emergency light in compliance with state and local regulations.

Emergency lighting must provide immediate secondary lighting when the power supply to the normal lighting fails e.g. due to a fire. The minimum backup duration of emergency lighting as specified by regulations is generally between 1 and 3 hours.

Supply and install the international “pictogram” style fire exit signs, identifying the main means of escape. These are to be suspended from the ceiling and to be illuminated where required to comply with state and local legislation.

SANITARY

The hall must have 6 built-in toilets within the demise (men/women) with good quality sanitary appliances and fittings.

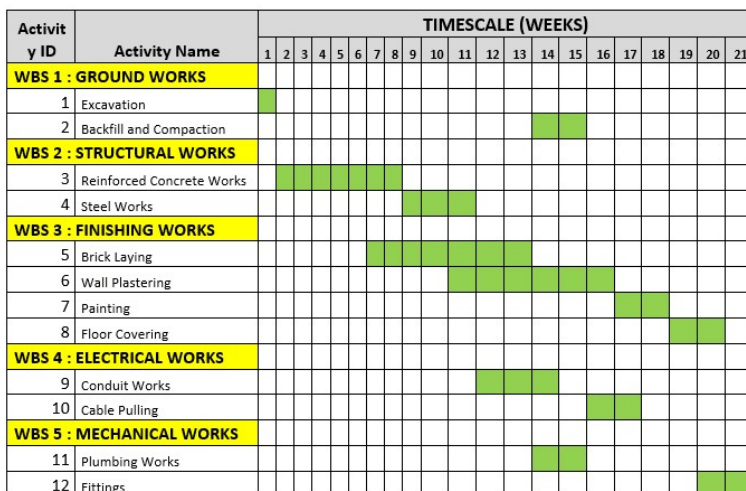
GENERAL

All of the works, equipment and materials shall be supplied and installed to comply with all state & local legislation including approved codes of practice, good standards of workmanship and manufacturers recommendations.

TRAINING & DOCUMENTATION

The Contractor shall provide all the necessary training for appropriate staff that will operate the systems supplied and installed by the Contractor under this Scope of Work

2. Gantt Chart



3. The human resources needed

- Consultants. - Lead consultant-Harding-Udoh Titania B.
- Business administrators
- Construction organizations and strategy.
- Construction recruitment agency.
- Corporate social responsibility in construction.

- f. Employee.
- g. Equal opportunities policy.
- h. Facilities manager.
- i. First aider.
- j. Health and safety inspector.
- k. Performance management plan.
- l. Record keeper.
- m. Relationship manager
- n. Resource manager
- o. Site administrator.
- p. Site induction.
- q. Site facilitator.
- r. Succession planner
- s. Team management for building design and construction projects.
- t. Toolbox
- u. VAT.
- v. Welfare facilities.

4. Explain why the site was secured

- a) The site is secured to avoid theft, Vandalism, Arson
- b) it is secured to avoid any intruders who intend to commit suicide
- c) to protect the people living around the area
- d) to protect site assets and safety
- e) to provide controlled and monitored site evacuation

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, and 12% of Tec for transport cost. 20% Tec as profit

BEME; Bill of Engineering Measurement and Evaluation

Works	Work Cost
Removal of Structure	₦1,000,000
Masonry Works	₦500,000
Fabricated Materials and Hardware	₦750,000
Waterworks	₦250,000
Pipelines	₦500,000
Brickwork	₦3,000,000
Concrete	₦10,000,000
Human Resources	₦3,500,000
Total Estimated Cost (TEC)	₦19,500,000
Consultancy Fee	15% of (TEC) = ₦2,925,000
Site Preparation	5% of (TEC) = ₦975,000

Clearing after Completion	5% of (TEC) = ₦975,000
Transport Cost	12% of (TEC) = ₦2,340,000
Profit	20% of (TEC) = ₦3,900,000

6. Prepare a payment schedule as follows

(a) 30 % Tec for Mobilization (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

The starting date for the contract- 12/02/2020

The estimated total construction contract amount. - ₦30,615,000

The amount to be paid as an initial payment- ₦9,184,500

Mobilization- ₦9,184,500

Final Payment- ₦12,246,000

6 months Defect Liability Period- ₦3,061,500

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

BEME (Bill of Engineering Measurement and Evaluation) is a tool used before, during and post-construction to assess and value the cost of construction works

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. It is usually a period of around six or 12 months but it can vary depending on the contract used

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

The Project Life Cycle is a cycle of the project from beginning to its end, usually divided into four phases; initiation, planning, implementation, and closure

Environmental Impact Assessment (EIA) 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. It 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.

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