# KWARA STATE POLYTECHNIC ILORI

## A TECHNICAL REPORT OF THE STUDENTS INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)

## HELD AT:

## NUTUYE MIGERIA EMTERPPISES COMFORT PLAZE OPPOSITE, PEMODA FILLING STATION MONATAN IWO ROAD IBADAN, OYO STATE

**PREPARED BY**

**OLALEYE NUTUDEEN AYOBAMI**

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**SUBMITTED TO:**

**DEPARTMENT OF BUILDING TECHNOLOGY INSTITUTE OF ENVIRONMENTAL STUDIES, KWARA STATE POLYTECHNIC,ILORIN**

**INPARTIAL FULTULMENT OF THE AWARD OF THE REQUIREMENT OF NATIONAL DIPLOMA IN BUILDING TECHNOLOG**

## DEDIICATIONI

**I** dedicate this technical report to the Almighty Allah the giver of knowledge, wisdom and who is rich in mercy. And also to my parent MR. AND MRS. OLALEYE for their effort and support towards me.

## ACKNOWLEDGEMENT

I am thankful to Almighty God for His inspiration, guidance and strength throughout the course of this work.

I am immensely indebted to my beloved Parents Dr & Mrs. OLALEYE and my Siblings for their dearest Love and Support in my course of study.

## ABSTRACT

*I was attached to Fast Approach Konstruction Ltd which had an on-going project; the construction of a residential building at Mile 2. My duties were to observe and report the weekly construction activities, procedures and work progresses carried out on the site and make a weekly presentation to the office on the various building stages, construction processes and knowledge obtained on the project. This report is therefore an illustration of the nature of works and activities carried out on the construction site and the nature of works done during the course of the industrial programme. It also provides a detailed principle of building construction and some aspects of Health and Safety Environment in reference to building technology and how they are applied practically in the construction of buildings.*

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# CHAPTER ONE

# INTRODUCTION

## STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES) BACKGROUND

In the earlier stage of science and technology education in Nigeria, students were graduating from their respective institutions without any technical knowledge or working experience. It was in this view that students undergoing science and technology related courses were mandated for students in different institution in view of widening their horizons so as to enable them have technical knowledge or working experience before graduating from their various institutions.

The Student Industrial Work Experience Scheme (SIWES) was established by the Industrial Training Fund (ITF) in 1973 to enable students of tertiary institution have technical knowledge of industrial work base on their course of study before the completion of their program in their respective institutions. The scheme was designed to expose students to industrial environment and enable them develop occupational competencies so that they can readily contribute their quota to national economic and technological development after graduation. The major background behind the embarkment of students in SIWES was to expose them to the industrial environment and enable them develop occupational competencies so that they can readily contribute their quota to national economic and technological development after graduation. The major benefit accruing to students who participate conscientiously in Students Industrial Work Experience Scheme (SIWES) are the skills and competencies they acquire. The relevant production skills remain a part of the recipients of industrial training as life-long assets which cannot be taken away from them. This is because the knowledge and skills acquired through training are internalized and become relevant when required to perform jobs or functions.

## 1.1 OBJECTIVES

The Industrial Training Funds policy Document No. 1 of 1973 which established SIWES outlined the objectives of the scheme. The objectives are to:

1. Provide an avenue for students in higher institutions of learning to acquire industrial skills and experiences during their course of study.
2. Prepare students for industrial work situations that they are likely to meet after graduation.
3. Expose students to work methods and techniques in handling equipment and machinery that may not be available in their institutions.
4. Make the transition from school to the world of work easier and enhance students' contacts for later job placements.
5. Provide students with the opportunities to apply their educational knowledge in real work situations, thereby bridging the gap between theory and practice.
6. Enlist and strengthen employers' involvement in the entire educational process and prepare students for employment in Industry and Commerce (Information and Guideline for SIWES, 2002).

## 1.2 BODIES INVOLVED IN THE MANAGEMENT OF SIWES

The bodies involved are:

- The Federal Government.
- Industrial Training Fund (ITF).

Other supervising agents are:

- National University Commission (NUC)
- National Board for Technical Education (NBTE)
- National Council for Colleges of Education (NCE)

The functions of these Agencies above include;

- Establish SIWES and accredit SIWES unit in the approved institutions.

- Formulate policies and guideline for participating bodies and institutions as well as appointing SIWES coordinators and supporting staff.
- Supervise students at their places of attachment and sign their lob-book and IT forms.
- Ensure payment of allowances for the students and supervisors.
- Ensure adequate funding of the scheme.

## 1.3 BACKGROUND OF ESTABLISHMENT

Fast Approach Konstruction (FAK) Limited was incorporated as a limited liability company in March 2003, the company which was formerly known as FAK Ventures started business in April 2000 and with the needs of expansion and bringing in more investors, the company became a limited liability company with the name Fast Approach Konstruction (FAK) Limited.

The company was formed because of the realization that Nigerian construction professionals should take the bull by the horn and dictate the pace for the complete development of the construction and real estate sector of the economy. Because of the competitive nature of the terrain of business, the Organization is aware that for indigenous engineering companies to survive, a complete re-orientation of the erstwhile Nigeria approach to business must be embraced.

To this end, the organisation' s subscription to Total Quality Management is unsurpassed consequently therefore matters such as;

- Conducive business environment.
- Competitive pricing.
- Employees and Public safety.
- Commitment to ultimate quality.
- Staff welfare
- Commitment to project on-time delivery.

- Effective management techniques have become second nature to our organization.

FAK Limited provides and deploys the best in class project management techniques and procedures in executing all projects to the highest standard. Projects undertaken include Construction, Engineering and Architectural Design, Interior Decoration, Procurement and Consultancy to both private and corporate clients in Nigeria.

**FAK Limited Team**

- **MD/CEO: ABOABA F. OLAKUNLE**

  M.sc Const. Mgt, B.sc. Civil Engr., ANIM,

  He has a versatile knowledge of the construction industry since 1990.

- **Executive Director: AGBOOLA FESTUS**

  M.pm, HND (QS), RQS.ANIQs.

  He has been fully involved in both the construction and real estate industry since 1991, which has equipped him with good Professional/ Technical experience.

- **Technical Director: OGUNFEMI JACKSON**

  MBA (Fin.Mgt), B.sc. Building FNIOB, Reg. Builder.

  He has a versatile knowledge of the construction industry and has been in practice since 1991.

- **Site Manager: LOUIS ABI-DAHER CHARBEL**

  B.sc. Architecture

  He is experienced Interior and building designer with over 15 years of working Nigeria.

# CHAPTER TWO

## 2.0 LITERATURE REVIEW

Building construction is an ancient human activity. It began with the purely functional need for a controlled environment to moderate the effects of climate. Constructed shelters were one means by which human beings were able to adapt themselves to a wide variety of climates and become a global species.

The present state of building construction is complex. There is a wide range of building products and systems which are aimed primarily at groups of building types or markets. The design process for buildings is highly organized and draws upon research establishments that study material properties and performance, code officials who adopt and enforce safety standards, and design professionals who determine user needs and design a building to meet those needs. The construction process is also highly organized; it includes the manufacturers of building products and systems, the craftsmen who assemble them on the building site, the contractors who employ and coordinate the work of the craftsmen, and consultants who specialize in such aspects as construction management, quality control, and insurance.

Building construction today is a significant part of industrial culture, a manifestation of its diversity and complexity and a measure of its mastery of natural forces, which can produce a widely varied built environment to serve the diverse needs of society.

## 2.1 BUILDING DESIGN AND CONSTRUCTION

### Design programming

The design of a building begins with its future user or owner, who has in mind a perceived need for the structure, as well as a specific site and a general idea of its projected cost. The user, or client, brings these facts to a team of design professionals composed of architects and engineers, who can develop from them a

set of construction documents that define the proposed building exactly and from which it can be constructed.

Building design professionals include those licensed by the state—such as architects and structural, mechanical, and electrical engineers—who must formally certify that the building they design will conform to all governmental codes and regulations. Architects are the primary design professionals; they orchestrate and direct the work of engineers, as well as many other consultants in such specialized areas as lighting, acoustics, and vertical transportation.

The design professionals draw upon a number of sources in preparing their design. The most fundamental of these is building science, which has been gradually built up over the past 300 years. This includes the parts of physical theory that relate to building, such as the elastic theory of structures and theories of light, electricity, and fluid flow. There is a large compendium of information on the specific properties of building materials that can be applied in mathematical models to reliably project building performance. There is also a large body of data on criteria for human comfort in such matters as thermal environment, lighting levels, and sound levels that influence building design.

In addition to general knowledge of building science, the design team collects specific data related to the proposed building site. These include topographic and boundary surveys, investigations of subsoil conditions for foundation and water-exclusion design, and climate data and other local elements.

**Construction**

Construction of a building is usually executed by a specialized construction team; it is normally separate from the design team, although some large organizations may combine both functions. The construction team is headed by a coordinating organization, often called a general contractor, which takes the primary

responsibility for executing the building and signs a contract to do so with the building user. The cost of the contract is usually an agreed lump sum, although cost-plus-fee contracts are sometimes used on large projects for which construction begins before the contract documents are complete and the building scope is not fully defined. The general contractor may do some of the actual work on the building in addition to its coordinating role; the remainder of the work is done by a group of specialty subcontractors who are under contract to the general contractor. Each subcontractor provides and installs one or more of the building systems—e.g., the structural or electrical system. The subcontractors in turn buy the system components from the manufacturers. During the construction process the design team continues to act as the owner's representative, making sure that the executed building conforms to the contract documents and that the systems and components meet the specified standards of quality and performance.

# CHAPTER 3

## 3.0 WORK EXPERIENCED DURING ATTACHMENT

I was introduced by my site supervisor to the construction site in general, the contractor, project manager, and site engineers in charge of the on-going project who further exposed me to proper site work. The on-going project was the construction of a Terraced Triplex House.

A Terraced house is a type of building that has a row of dwellings joined together by dividing walls, each having its own entrance at ground level while the Triplex is a residential building of three floors all connected together owned by a person.

## 3.1 INTRODUCTION TO SITE MATERIALS, EQUIPMENT AND MACHINERIES

In the process of my work experience program I was introduced to various materials, equipments and machineries used in the construction and development of a building.

### MATERIALS

Example of materials used in building construction is as follows;

**Cement**: This is a powdered substance that develops strong adhesive properties when mixed with water. It is used in Block work, Plastering, Rendering and Concreting. The establishment of Cement is achieved by burning a mixture of clay and chalk or limestone in a kiln. A proportion of the raw materials in a definite proportion are converted into liquid state by grinding, mixing and watering, termed Slurry. The slurry is then conveyed through a set of pipes to rotary kiln which dry and burn the constituent in a high temperature to form hard lumps. This process changes the slurry to hard lumps called Clinker, which afterwards pass on through a conveyor belt to the grinding mills for grinding to a fine powder in its final process. During the final grinding, small quantity of gypsum of between 2

and 5% of the whole materials is added to retard the setting time. Tests are usually carried out on the finished product occasionally to ensure high quality.

This process is mainly on Ordinary Portland Cement (OPC) used for general purposes. There are other types of cement made for special purposes, including Rapid Hardening Portland Cement (RHPC), Sulphate resisting Portland cement and Low Heat Portland Cement.

**Reinforcement:** Reinforcement is provided in concrete structures to enhance its tensile strength. Therefore in all structural elements, the reinforcement is provided in the region of the element that will be subjected to tension. Standard bar diameters ~ 6, 8, 10, 12, 16, 20, 25, 32 and 40 mm.

**Aggregates**: This consists of sand, ground crushed stone, pebbles, broken blocks and similar such materials. Aggregates may either be light or heavy weight and also All-in-Aggregates. Aggregates must be clean, structural sound, well graded, weather resistance and inert in the presence of water.

Aggregates are of two types:

Fine Aggregate; this should be clean, sharp and passes through the sieve size of 4.5mm.

Coarse Aggregate; aggregate which consists largely of particles over 5mm in diameter. This is usually gravel or crushed stones.

**Water Bars:** A strip of rubber or plastic embedded into a sill or threshold to inhibit the passage of water. The water bars were fixed into the reinforcements with the use of Binding wire at the four edges/corners of the septic tank to avoid the passage of Moisture.

**Bituminous Felt:** A waterproofing membrane consisting of a thin fibrous mat of polyester or glass fibres saturated with bitumen or a bitumen-polymer. The

Bituminous Felt was used for the tanking of the Tank Slab on the Building and it was applied with the use of a Burner.

## EQUIPMENTS

The following are examples of various tools used in construction;

**Trowel:** This is a flat metal blade fixed to a short handle used for the application, jointing, smoothing and shaping of mortar in masonry. It is also used in the trimming of block/bricks. Trowel sizes ranges from 225-350mm measuring from the blade.

**Spirit Level:** This is a Hand-tool used for indicating true horizontal and vertical of a work, by means of an air bubble sealed in a marked, liquid-filled glass tube mounted in a frame; the tube is horizontal when the bubble is between two marks. Spirit levels are of various length ranging from about 225mm to 1.2m.

**Straight Edge:** The kind of straight edge that was used on the construction site is an Aluminum frame of about 2m in length. The straight edge is used to check the fairness of the newly laid piece of a wall and to ensure that all the blocks are laid to the same level of each course.

**Iron Square:** This is a hand tool of angle 90 which measures 600mm by 450mm long. It is used for setting out walls at right angles to check for square nature of a section of work.

## MACHINERIES

The machineries that were used on site were brought into considerations so as to promote high standards required particularly in the context of structural engineering works. Machineries are used on site to eliminate heavy manual work thus reducing fatigue and as a consequence increasing productivity. Such machineries that were used include;

**Tilting Drum Concrete Mixer:** This is a type of concrete mixer with a rotating hinged drum in which the constituent materials are mixed thoroughly and can be tilted to enable emptying. Choice of Mixer ~ the factors to be taken into consideration when selecting the type of concrete mixer required are …

1. Maximum output required (m3/ hour).
2. Total output required (m3).
3. Type or method of transporting the mixed concrete.
4. Discharge height of mixer (compatibility with transporting method).

**Jack Hammer:** This is a percussive power tool that combines a hammer and chisel used for the drilling, breaking, demolishing and the digging of stone. During my attachment it was used in the demolition/ leveling of the extended pile foundation for the septic tank in the process of its excavation.

**Figure 2: Jack Hammer**

**Poker Vibrator:** This consist of a hollow steel tube casing in which is a rotating impellor which generates vibrations as its head comes into contact with the casing.It is immersed in fresh concrete to provide compaction through gentle agitation,

**Roller Machine**: This is a compacting machine that provides a rolling compaction used for evening and flattening of a freshly laid surface. It was used to even the surface of the car park/ yard after hardcore had been placed for the construction of interlocking tiles.

## 3.2 CONTROL OF INTERNATIONAL WORKPLACE HAZARD

This information was provided by the Health and Safety Environment (HSE) Officer to acquire the knowledge of safe use of equipments and machineries

| **Category** | **Type** | **Hazards** | **Injuries** | **Safe use/ Control measures** |
|---|---|---|---|---|
| Hand-held tools | Tools that are entirely powered manually, including axes to wenches, hammers chisels and saws. | Injuries often due to misuse or operator incompetence. | Mostly contact injuries, where a part of the body strikes, or is hit by the tool itself. | Use of tools suitable for task and environment. Appropriate training of operatives and use of PPE. Regular pre-use checks and maintenance. |
| Portable power tools | Hand-held with an external power source (i.e. electricity, compressed air, fuel) include electric screwdrivers, pneumatic or disc cutters. | Operator error, misuse and improper maintenance. Risk of fire due to fuel spillages, flammable vapors, dust emissions, trip hazards due to cables. | Injuries due to puncture wounds, splintering, entanglement in moving machinery and abrasions. | Appropriate for the task and environment. Proper training in the correct use of tools and use of PPE. Use of guards, clamps and safety switches. Routine and thorough inspections and maintenance. Proper storage of cutting equipments. |

## 3.3 CONSTRUCTION OF THE SECOND FLOOR

The construction of the second floor involved the establishment of the **Formwork;** Temporary structure erected to contain concrete during placing and initial hardening. It is used to give temporary support for in-situ concrete while it hardens.

After the Establishment of formwork, the arrangement of reinforcement rods proceeded. The reinforcements of 12mm in diameter were arranged in a Grid manner at150mm centres. The reinforcements are then tied with **Binding Wire;** soft iron wire for tying reinforcing bars together before the casting of concrete. The insertion of **Spacers;** a small piece of concrete fixed under the reinforcing bars to provide the appropriate amount of concrete cover between the bar and the formwork surface.

**CONCRETING;** This is generally referred to as Casting. It is a process of working with freshly mixed concrete especially the placing of concrete. Before the

establishment of the second floor some procedures where undertaken. Such procedures include;

1. **Material Supply and Storage:** This is the receiving on site of the basic materials namely cement, fine aggregate and coarse aggregate and storing them under satisfactory conditions.

   Cement is supplied in bags form and was stored on racks to prevent moisture penetration from the ground in a dry store free from draughts which can introduce moist air and cause air set of the material. Cement should not be stored on the site for long period of time on site; therefore provision should be made for rotational use so that the material being used comes from older stock.

   Aggregates were stored in Bays on a clean firm base to ensure that foreign matter is not included when extracting materials from the base of the stock pile.

2. **Batching:** Before mixing was carried out, the ingredients have to be measured in their correct proportion to enhance the quality of the concrete. Volume batching was used in this process with the aid of a head pan with a ratio of 1:2:4 and this was supervised by the site engineer.
3. **Mixing:** The purpose of mixing is to coat the surfaces of Aggregate particles with cement paste and to make it a uniform mass. The quality of mixture depends on the accuracy of proportioning of the materials and the method of mixing. The method of mixing was carried out mechanically through the use of a Tilting Drum concrete mixer.
4. **Transportation:** This involves the means of conveying concrete from the point of mixing to the point of placement. The choice of transportation depends on the size and complexity of the site, weather condition and the height of the placement of the concrete. The mode of transportation used was the manual

method with the use of head pans and labour. A mason' s ladder made of both bamboo and timber was constructed to enhance vertical/inclined movements.

5. **Placing:** Before the concrete was placed in the formwork, the inside of the formwork is thoroughly cleaned and a release agent (lubricant) was applied after the formwork was blown off of dust. The concrete was placed at a reasonable height of not more than 1m so as to avoid the segregation of its component materials.
6. **Compacting:** The Compacting of freshly placed concrete is to make it a unit mass by eliminating voids within it. The method and the type of compaction given to concrete depend on the nature of work. Poker Vibrator was used for the compacting of concrete during the construction of the second floor.
7. **Curing:** After the placing and compacting of the concrete it is allowed to sufficiently harden for a day then the curing process comes in which involves the prevention of the evaporation of moisture in the concrete. The concrete was watered for 7days with use of a hose pipe connected to a tank. This was done to avoid shrinkage of the concrete and cause a more permanent and durable material produced.

After 21 days the formwork and Arcos used in supporting the second floor are removed completely to enhance the full setting of the reinforced concrete floor.

## 3.4 BLOCKWORK

The walling system was mostly carried out using sandcrete hollow blocks. The sizes of blocks were used in respect to their functions. The 6 inches blocks were used mostly for internal walls like the toilets and the store partitioning while the 9inches blocks were used in load bearing areas and external walling. The bonding process used in the union of these block is Stretcher Bond; which is when the stretcher faces of the blocks appear on the front or rear elevation of the wall.

## 3.5 LINTELS

Lintel is referred to as the beam above an opening in a building, which supports the weight above it and transmits such weight of the imposed materials to the vertical sides of the wall opening. The lintels used on the site were Precast Reinforced Concrete Lintels that were constructed on site by using a wooden mould. The precast lintels were transported and placed manually with use of labor. One of the advantages of precast lintel is that it quickens production.

## 3.6 PLASTERING

Plaster is referred to as the type of aggregate when mixed with cement and water it is used to spread over irregular and coarse textured walls and ceiling surfaces to provide a smooth level finishes. The purpose of plastering is to provide a smooth, hard, level finish which can be painted for the sake of appearance and as a light colored finish to gain the reflection of daylight. Plastering is considered only on the internal part of building. A gauge is established on the wall to determine the thickness of the plaster. The average thickness of plaster on site is 1.5inches.

## 3.7 RENDERING

This is a type of Plastering done on the external or outer part of a building. It mixing ratio defers from plastering due to their differences in functional requirement. Rendering serves as a protection against weather conditions. A gauge is established on the wall to determine the thickness of the rendering. The average thickness of plaster on site is 2inches.

## 3.8 CONSTRUCTION OF THE SEPTIC TANK

Septic Tank is referred to as a small-scale watertight treatment plant for domestic sewage from a building or complex in which the drainage flow is slowed to allow sedimentation and sludge digestion by bacteria to take place and the remaining effluent is purified and released. The Septic Tank is 15*13*7 feet in measurement used in the construction of the septic tank. Excavation of the trench for the septic tank was procured by the means of manual labor. After which earthwork support

was established due to nature of the soil as it is a water lodge area. The construction of the earthwork support was to keep the excavation open by acting as a retaining wall to the sides of the trench and to protect the operatives while working in excavation. Later on the Formwork construction took place for the purpose of housing and providing support for the wet concrete. The arrangement of reinforcement bars was carried out after the formwork process to give tensile and retaining strength to concrete. Water bars were later inserted and were attached to the reinforcements with the use of binding wire at each corner of the septic tank both vertical and horizontal to prevent the penetration of moisture and to support tanking. Casting commenced soon after the application of a release agent was achieved and a ratio 1:2:4 was used as the batching ratio. The method of curing by watering was used so after the sufficient hardening of the concrete had taken place to prevent the evaporation of moisture. Water was poured on the concrete for 5 days through the use of a hose pipe connected to a water tank.

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## 3.9 CONSTRUCTION OF THE ROOF

The roof is the top-most part of a building. It sheds off water without leaking, it beeps out grits and dusts, it also provides shades and sometimes light and insulate

against heat and wind. Roofs are of different types depending on its physical or functional factor.

The type of roof used on the construction was a **Gable roof;** a type of roof that has a ridge at the center and slopes in two directions. The process of its construction is as follows;

**Construction of the Roof beam**: The roof beam is referred to a series of horizontal structural members for supporting roof construction either on the top of a wall or top of columns to another. The construction of the roof beam include the construction of formwork after which a 1m level must have been established on the columns or walls using a builder' s level and the arrangement of reinforcement for tensile support after which the U-bars and L-bars are tied to the beam reinforcement with the aid of binding wire to hold the wall plate and also hang the roof mould respectively before it is casted with concrete. Poker vibrator is also used for the compacting of the wet concrete and curing method of watering is used to prevent the rapid evaporation of water.

**Establishment of wall plates:** Wall plate is a longitudinal member incorporated into or placed on a wall floor joists or rafter. It transmits the load of the roof to wall of the building.

The construction of the tie beams and the kingpost proceeded and then the establishment of rafters and purlins. Afterwards the attachments of roofing sheets took place. Bituminous felt was applied to puncture places on the roofing sheets to avoid leakages.

**Terms Used in Roof Construction**

Knowing the basic vocabulary is a necessary part of Roof construction. The following are terms used in roof construction;

**King Post** is a central vertical strut rising from a tie beam and carrying a ridge purlin.

**Span** is the horizontal distance between the outside top plates, or the base of two abutting right triangles.

**Unit of run** is a fixed unit of measure, always 12 inches for the common rafter. Any measurement in a horizontal direction is expressed as run and is always measured on a level plane. Unit of span is also fixed, twice the unit of run, or 24 inches. Unit of rise is the distance the rafter rises per foot of run (unit of run).

**Total run** is equal to half the span, or the base of one of the right triangles. Total rise is the vertical distance from the top plate to the top of the ridge, or the altitude of the triangle.

**Pitch** is the ratio of unit of rise to the unit of span. It describes the slope of a roof. Pitch is expressed as a fraction, such as 1/4 or 1/2 pitch. The term " pitch" is gradually being replaced by the term " cut." Cut is the angle that the roof surface makes with a horizontal plane. This angle is usually expressed as a fraction in which the numerator equals the unit of rise and the denominator equals the unit of run (12 inches)

**Rafters** are the members making up the main body of the Framework of all roofs. They do for the roof what the joists do for the floor and what the studs do for the wall. Rafters are inclined members spaced from 16 to 48 inches apart. They vary in size, depending on their length and spacing. The tops of the inclined rafters are fastened in one of several ways determined by the type of roof. The bottoms of the rafters rest on the plate member, providing a connecting link between the wall and the roof.

# CHAPTER FOUR

## 4.0 PROBLEMS ENCOUNTERED DURING ATTACHMENT

1. **Access Road:** The access road to the site is extremely poor due to the lack of drainages and constant passage of heavy vehicles such as trailer and Lorries.

2. **Land Pollution:** The soil and water of the land is polluted as a result of oil spillage from trailers and lorries that where formerly abandoned on the land. The borehole that was sunk by the company was producing water of brownish color.

3. **Nature of Soil:** The area of the site appears to be water logged thereby providing ponds of water in excavated trenches.

4. **Site Accommodations:** The site accommodation is quite poor. The lack of provision of sleeping materials like beds and mosquito treated nets. Laborers sleep on plywood and use only bed covers to protect themselves against mosquitoes and other harmful insects.

## 4.1 RECOMMENDATION

The following Recommendation is referred to the Establishment I undertook my SIWES program, my college, Industrial Training Fund and the Government; in order to improved and enhance the expected results of the Student Industrial Work Experience Scheme;

1. The Federal Government should establish and promote laws and agencies that regulate land use to prevent pollution.
2. The Federal Government should provide and construct adequate roads in less developed areas.
3. The Federal Government should provide industries and organizations with incentives to encourage and solicit for their cooperation and contribution to the programme
4. The management of Fast Approach Konstruction Ltd can create and organise a special forum for students on attachment, this will help in discovering students' potentials and to appropriately use them effectively.
5. The management of Fast Approach Konstruction Ltd should provide adequate social amenities for their workers and enhance the welfare of their workers.
6. The management of Fast Approach Konstruction Ltd should try to encourage workers initiatives and contributions to projects so at to enhance their esteem and contributions to such projects.
7. The Industrial Training Fund should provide a network in which Establishments and Students could communicate better so promotes easier means of finding placements.

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