A TECHNICAL REPORT ON THE STUDENTS INDUSTRIAL WORK EXPERIENCE SCHEME

UNDERTAKEN AT

EASY PLANNING AND CONSTRUCTION WORK

BY

OLUWASEGUN IBUKUNOLUWA CHRISTIANAH
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Submitted to:

THE DEPARTMENT OF ARCHITECTURAL TECHNOLOGY, INSTITUTE OF ENVIRONMENTAL STUDIES (IES)KWARA STATE POLYTECHNIC, ILORIN, P.M.B 1375 ILORIN, KWARA STATE.

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DEDICATION

I referenced all praise and adoration to **Almighty God**, who has shown me immeasurable mercies all through the duration of my SIWES program and also my beloved brother who has endlessly given me his support to ensure the successive achievement in my academic career.

ACKNOWLEDGMENT

My gratitude goes to the creator and the controller of the whole universe, the most powerful great and most beneficent almighty God who has never failed at any point of my life.

I am greatly indebted to my loving and caring late parent for their remarkable support, financially, morally and spiritually to ensure I succeed academically.

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CHAPTER ONE

1.0 INTTRODUCTION

Student industrial work experience skill as a program was establish by ITF in 1973 in other to seek a lasting solution to the problem of inefficiency and lake of practicable skill and the technical know-how required of graduate after graduation

The scheme exposes students to industrial based skills necessary for a smooth transition from the class room to the world of work.

It affords student of tertiary institution the opportunity of been familiarize and exposed to the needed experience in handling machinery and equipment which are usually not available in the education institution and also serve as a preparatory employment training and enhancement of the theoretical lectures they have been taught in the confines of the classroom walls.

The scheme is commissioned by the federal government and funded through the industrial trust fund (ITF). And the duration of the program spans for four months

Training is a key factor in enhancing efficiency and expertise of the work force.

The scheme is therefore a skill training-oriented program so as to expose the student on work they will meet after graduation

DEFINITION OF SIWES

SIWES is an acronym of the student industrial work experience scheme. It is a practical skill program developed and designed to prepare student to gain more practical experience and for transition and enhancement of the theoretical lecturing in the classroom experience to practice experience

1.1.1 AIM OF SIWES

The purpose of SIWES is to promote industrialization and the avenue between the wall of teaching, learning industrial experience and work with reference to a field of study

1.3 OBJECTIVES OF SIWES

The specific objective of SIWES is summarize by the federal government gazette of April 1978 are listed below

i. To provide an avenue for the student in the institution of the higher learning to acquire the industrial skill and experience in their course of study

ii. To make the transaction from school to the world of work easier

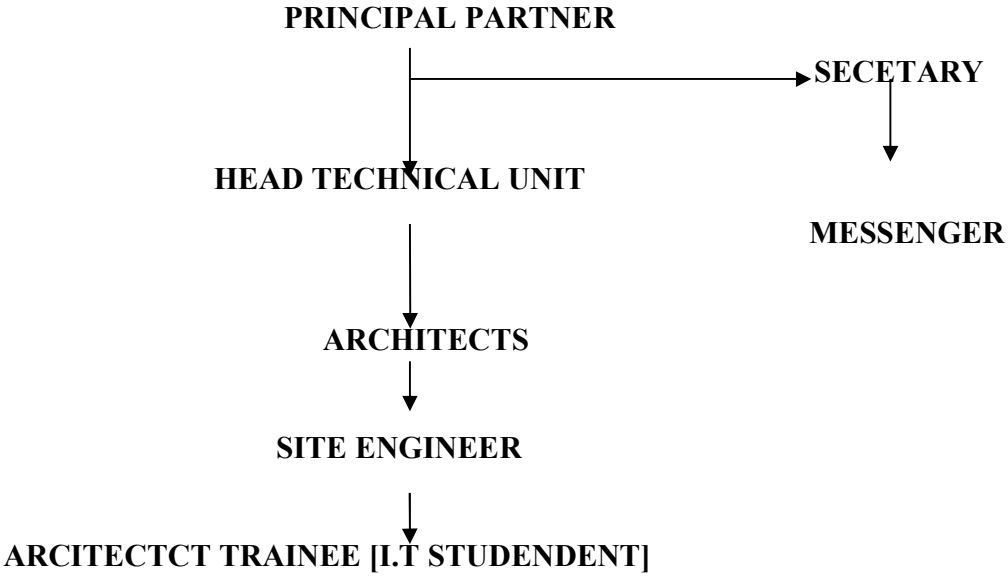
iii. To enhance student contact for better later job placement. And actual –practice

iv. To provide the student with an opportunity to supply their knowledge in real work actual practice

CHAPTERTWO

ORGANIZATION STRUCTURE

ORGANIZATION CHART



Name and Address of the Company: EASY PLANNING AND CONSTRUCTION LIMITED, No2, Court of Appeal Gerri Alimi, Ilorin, Kwara State

1.4 Major Activities

Production of Architectural design

Supervision of construction

1.5 Unit function

1.5.1 Architectural Unit

1. This is the main unit if an architectural firm, which are in charge of collecting information and getting data from client and carry out site investigation to produce architectural working drawing.
2. The unit carry out proper supervision and monitoring of construction of building.
3. The unit serve as client's representative to planning authority, on client demand.

CHAPTER THREE

THE KNOWLEDGE AND EXPERIENCE EASY PLANNING AND CONSTRUCTION LIMITED

INTRODUCTION

Brief introduction on the course Architecture, what it entails, and its relationship to others field that works hand to hand for the complete construction of a project also the commitment to put to become a great and successful architect.

ARCHITECTURAL INSTRUMENT AND THEIR FUCTION

Explaining the various architectural instruments to my colleagues and me and their various functions. E.g. Tee-square for horizontal line.

Adjustable set square for vertical lines and for angles, circles template for

Arch and circle, furniture arrangement, stencil for writing Alphabets and numbers and scale rule for measuring etc.

LETTERING, CONVERSION AND ACCURACY

This is the act of written an alphabet and number in architecture.

Letterings is important in architecture because is the act that will teach how to write in an architecture.

CONVERSION

This is the process of changing measurement from one unit to another e.g. changing of feet to meter, minimize to feet etc.

Table 2.0

Minimize for (mm)	Meter m	Inches (“)	Feet (‘)
25	0.025	1.	0
50	0.050	2	0
300	0.300	12	1

Example 1. 350mm = 0.35m = 1!2”

2. 11.750mm = 11.75m = 39!2”

3. 525mm = 0.525 = 1!9” etc.

ACCURACY

This is an attempt to establish the difference between the measured value and the true value. Although absolute accuracy is not possible.

DIMESSION: This is the ac of measuring the drawing so as to known the size of the drawing i.e. to know the length and breadth of a project.

DRAWING

Various types of drawing involved to make up is plan of a building are:

1. Architecture drawing
2. Structural drawing
3. Service drawing/electrical and mechanical drawing

ARCHITECTURE DRAWING

There are two classes of drawing in Architecture namely working drawing and Presentation drawing

WORKING DRAWING

This is the type of drawing that is used for the construction of a project and is also the drawing that others draw i.e. Structural, Electrical and Mechanical drawing will follow for the production of their own drawing. An Architect must sure that the drawing is well discussed.

PRESENTATION DRAWING

This is the type that is presented to the client so as to know the his/her project project will look like and is also a drawing that is submitted to the authority for approval of project.

FLOOR PLAN

This is plan that shows the arrangement of different rooms (spaces) and passage. Each floor must be provided with a floor plan, unless each floor is identified.

A floor plan is usually a sectional plan at about the edge level of the observer and must give the details of the following.

- The direction of north
- The size and spacing of all supporting members and the thickness of all walls.
- The exact location of doors, windows, cupboards, water closets, sinks, baths or any other features that can be seen. (These objects must be indicated by the appropriate standard symbols.)
- The overall dimensions and sizes of individual's parts.

ROOF PLAN

This is the plan that shows the roof of a building when its viewer above i.e. the view is above the plan. Roof plan must at least be 600mm projected away from the normal building this is because it will prevent the building from direct rays, do sun and rain. The projection is called roof overhead is not projected. This is because gutter has run along the building.

SECTION

This is the plan that shows the skeletons of a building so as to detail some feature that can be seen in the elevations.

We have two types of section namely:

1. Cross section
2. Longitudinal section

CROSS SECTION

These are vertical section elevation through the building.

LONGITUDINAL SECTION

These are horizontal or long sectional elevation through the building section must be chosen so that they cut (and show) as many detail as possible. The following details must be given.

- Detail of construction materials (which may be shown symbolically), together with the thickness of each.
- The height of doors, windows, cupboards and ceilings.
- The depth and width of foundations, beams, walls and floors.
- The arrangement for and the slope of the roofs.
- The street and ground elevation
- Details of stair cases

ELEVATION

This is the plan that shows the external faces of a building which will have four types of elevation.

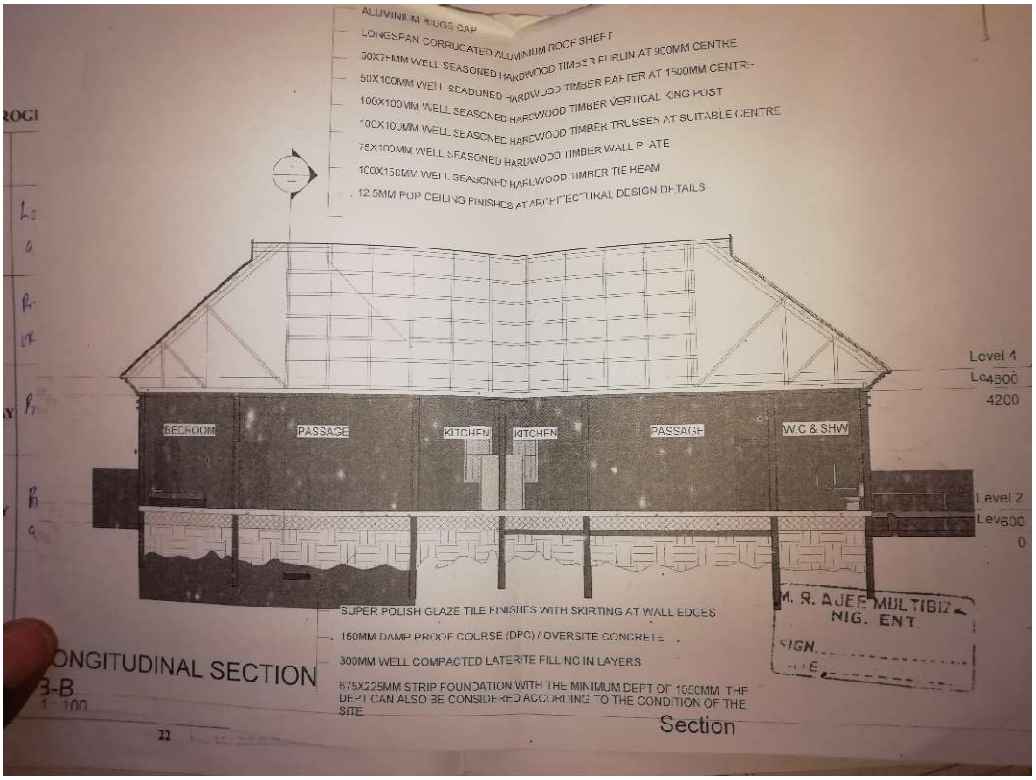
1. Front elevation
2. Right elevation

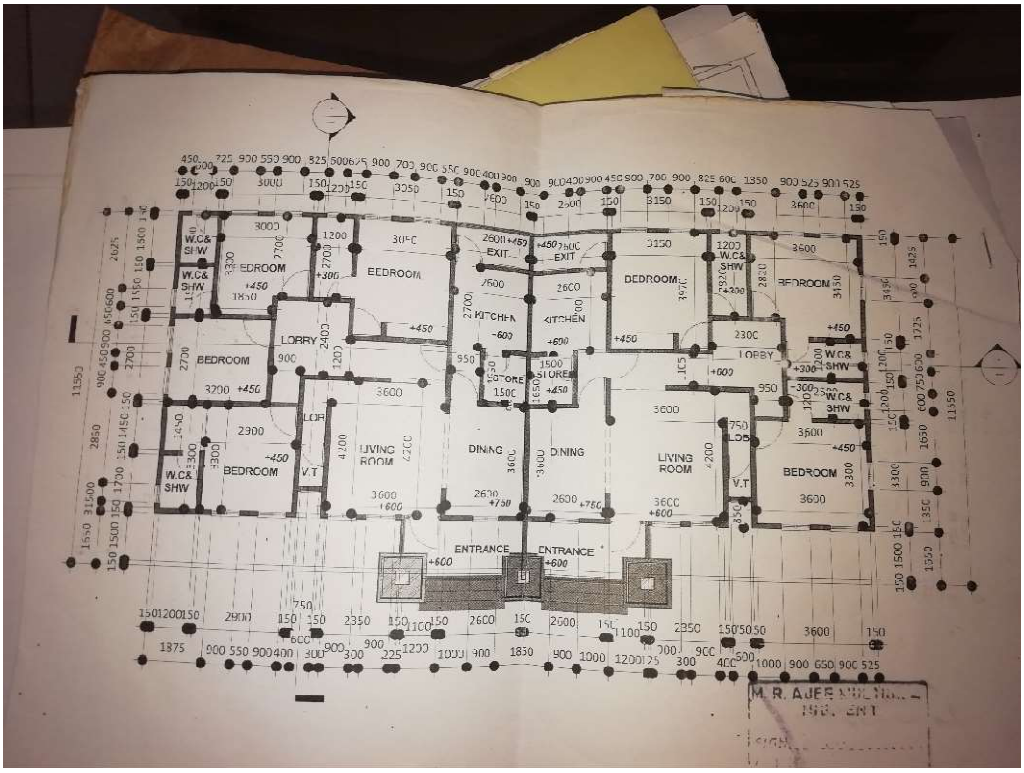
3. Left elevation
4. Back elevation

TYPES OF BUILDING

A building is a structural enclosing space parts of a building (such as walls, columns, roofs, balconies or staircases) may also be referred to as building we have four (4) types of buildings.

a. Residential building e.g. house
b. Commercial building e.g. Shops and commercial offices
c. Industrial building e.g. Factories, Ware House, Laundries.
d. Public building e.g. place of Worship, School, Hotel etc.





Architectural Design

CHAPTER FOUR

CONSTRUCTION TERMS AND TECHNIQUES

The Construction techniques and terms described in this report involves the various methods of construction carried out in the course of building construction for both structural and non-structural elements of the building. While on site, certain terms were used during the construction. These terms could be referred to as technical terms or site terms or language being used by the site workers. As an architect, adequate knowledge of these terms must be paid attention to in order communicate effectively with the workers. Below are some site terms and definitions.

BLOCKWORK

This is the process of laying concrete masonry units to form either external walls as in-fills or lock wall which are load-bearing or non- load bearing or internal walls as partitions. These masonry units are commonly hollow sand-crete blocks which are much economical per unit of wall area. The standard sand-crete block wall is explained below;

Sequence of laying of sand-crete block wall:

•A bed of mortar is spread on the footing/floor.

•The first course of blocks for a lead is laid on the mortar. The mortar for the head joint is applied to the end of each block with the trowel before the block is laid.

•The lead is built higher. Mortar is normally applied only to the face shells of the block and not to the webs.

•As each new course is started on the lead, its height is checked with either a folding rule or a story pole marked with the height of each course.

•A line is stretched between the leads on line blocks.

•The course between the leads are laid rapidly by aligning each block with the stretched line.

•The last block to be installed in each course of infill blocks, the closer must be inserted between blocks that have already been laid then the block is lowered carefully into position.

PLASTERING

Plastering is the most common treatment for external and internal walls to help withstand weather conditions. Plasters are used to render, run an uneven surface into a smooth level surface. Plaster is a mixture of sand and cement at a ratio of 4:1 or 3:1(i.e. 8/6 head pans to1 bag of cement). Plastering is also used to correct mistakes and to provide a smooth surface area for other finishing types like painting.

FLOATING

Floating is the backing coat that is usually made of plaster such as **Plaster of Paris(P.O.P)**that provides a true or smooth surface for the final finishing coat on a wall after plastering has been carried out on a wall surface. Most importantly, floating is carried out on wall surfaces to fill up all uneven areas on a wall surface and may be applied on the internal or external surface of walls, and also on ceilings. On majority of the sites I went to, all the internal walls were floated with P.O.P after cement plastering was done.

TILING

Tiling in general terms can be defined as the cladding of a surface. We have floor tiling and wall tilling (both external and internal walls).

Tiles come in two forms namely:

•**Vitrified tiles**: these are tiles with the same properties all through, i.e. when wearing occurs, the subsequent layers have the same texture, density and material. They are mainly used for external walls and floors.

•**Ceramic tiles**: these tiles are made with clay and laminated surfaces, they are usually used for toilets and kitchen tilling. Surface finish for tiles are either glazed or unglazed and the material used for making the tiles include stones, clay, and plastics, etc.

PARAPET WALL

A parapet wall is a protective wall constructed on the perimeter edge/area of a roof slab to protect rain water accumulation on the gutter /drainage of the roof slab from draining down the sides of a building. It is usually of reinforced concrete and cast-in-situ. On site, a parapet wall was constructed to a height of 1.0m.

2.8 ROOF GUTTER

Roof gutter is the drainage path created on a flat roof slab to channel accumulated rain water for the roofing sheet into the drainage pipes on the roof slab.

DRAINAGE PIPES

Drainage pipes are pipes installed on the roof slab to drain rain/storm water on roof slab. They are channelled through the roof beams and connected to the exterior columns which are then sent down to the inspection chamber. They are made of PVC plastic pipes and are100mm in diameter width.

FELTING

Felting of a roof slab involves the protection of the exposed concrete surface of the roof from water penetration and infiltration, and all forms of damp and moist actions by laying a thick damp proof membrane on the roof slab. One of the most common felts applied on roof slab sis the bituminous felt. It is hot –mopped with asphalt to create a strong damp proof membrane.

BUILDING SERVICES

In the construction of any building, there are two main services that must be provided in the building in order to create a comfortable and habitable internal building environment for the building occupants. These services are divided into two main branches namely:

- **Electrical engineering services**
- **Mechanical engineering services**

CONCRETE

Concrete is a mixture of coarse and fine aggregates, cement and water which is allowed to harden. Coarse aggregate used on site is normally gravel and Fine aggregate is sand

Concrete mixes/ratio:

Concrete "slump test":

On site, before any concrete is cast into the formwork or mould, a slump test is always carried out on it to test for its consistency and quality check to determine the desired degree of workability. Freshly mixed concrete is an unstable mixture of solids and liquids. If it is vibrated excessively, and dropped from a height, it is likely to segregate, which means that the coarse aggregate work sits way to the bottom of the form and the water and cement paste rise to the top. The result is concrete of non-uniform and with unsatisfactory properties.

''Curing of concrete''

Concrete cures by hydration and not by drying. Thus, it is essential that the concrete must be moist until its required strength is achieved. Maximum strength for concrete is attained after 28days(4 weeks) of curing. If it is allowed to dry at any point during this timeframe, the strength of the cured concrete will be reduced and its surface hardness and durability are likely to be adversely affected.

REINFORCEMENT BARS

Concrete has no useful tensile strength and is limited in its structural uses. Steel reinforcement bars are used in concrete columns beams, and slabs. Reinforcement bars have various diameter sizes. They come in 12mm,16mm 18mm, 20mm 24mm 30mm and 32mmdiameter sizes.

CASTING

Casting is the process of pouring concrete mix into a mould or form laid with reinforcement bars to form a solid mass structure.

Casting a concrete wall

•Vertical reinforcing bars are first wired to the dowels that project from the foundation footing and horizontal bars are wired to the vertical bars as seen in the illustration below.

•The formwork is erected. Sheets of plywood form the face of the concrete and are supported by wooden studs. The studs are supported against the pressure of the wet concrete by horizontal supports.

•The concrete is then poured, compacted and cured.

CHAPTER FOUR

CONCLUSION

To conclude my report, I have seen to essence of going through the student industrial work experience scheme (SIWES) the impact of the training on me cannot be over emphasized in the sense that I have been able to understand practically the important aspect of the course of my study which might not have possible without this program

SUGGESTION/RECOMMENDATION

I hereby suggest to the organization to expand more time and energy to the I.T student, so as for them to take more serious their SIWES program. To this end, as To the polytechnic, I suggest institution and the industrial training fund office to find a suitable solution to the problem that the student are facing during industrial attachment program, the federal government should urge prospective cooperation and the company where student undertake their SIWES program to pay more attention to them and also assist them whenever their assistance is required, the institution and industrial training fund office should ensure that the unprivileged student get good replacement

Finally, all experience gained during my SIWES program at ministry of housing and urban development are relevance to the field of architecture and it has equipped me to overcome challenges that may ensue when am expected to discharge a certain responsibility as an architect