A

TECHINICAL REPORT ON THE

STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)

UNDERTAKEN AT

FEDERAL MINISTRY OF WORKS AND TRANSPORTATION, DEPARTMET OF CIVIL ENGINEERING, ILORIN KWARA STATE

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DEDICATION

I gratefully dedicate this SIWES report to Almighty Allah, the most perfect and merciful for giving me the uncountable opportunity to participate in the SIWES program.

ACKNOWLEDGEMENT

I would like to place on record my deep sense of gratitude to Allah for His love, mercy, favour and protection during this Student Industrial Work Experience Scheme (SIWES).

I appreciate the efforts of my parent, MR & Mrs Fajuyitan, my Siblings, my grand mum, Mrs Fajuyitan, the one I love dearly, and my friends who where a source of support for me all through the SIWES period.

I express my profound gratitude to my Department Lecturers and my SIWES supervisor **MR AYUBA ABDULSALAM** and coordinator for the support towards the success of my SIWES. Also, I give thanks to my brothers, sisters, and the entire family of Fajuyitan Family for their advice to me during my SIWES program. May Allah bless you all (AMEN).

I also appreciate the effort of the entire staff of the **Federal Ministry of Works and Transport** for the tremendous moral assistance throughout the period of my attachment; and my lovely friends for their contribution in one way or the other. May Almighty Allah bless them all and provide for their needs.

ABSTRACT

This report shows the work done and the experience gained by Fajuyitan, Abdulqoyum Olakule during the Student's Industrial Work Experience Scheme program (SIWES). The SIWES program was carried out at Federal Ministry of Works and Transportation, Kwara state Branch. for the duration of four months. The following project were carried out during the period; (I) Road pavement, (II) Drainage construction, (III) Culvert.

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CHAPTER ONE

1.0 INTRODUCTION

The student industrial work experience scheme (SIWES) was introduced by the Federal Government through the Ministry of commerce and Industry Training Fund (ITF). ITF established SIWES in 1973 to solve the problem of lack of adequate practical skill preparatory for employment in industries by Nigeria graduates of tertiary institutions.[2]

The (SIWES) program helps the student to practicalize most of the theoretical aspect of their curriculum which they have been taught in their first year in school, this will enable them to always remember and be in their mind forever because is what they practiced with their own hands. This report is based on the experience, which I gained during my three months industrial Training at the Ministry of Works and Transportation Ilorin.[1]

This program provides employment opportunities for students. It also exposed students to the need experience in the reel time job demands and human relation within and outside the country depends on the area in which they find themselves.[3]

1.1 DEFINITION OF SIWES

The student industrial work experience scheme (SIWES) is a skill acquisition training program that forms part of the minimum academic requirement standards in various program of Nigeria tertiary institution, help's student to put what they have learnt theoretically in class into practice in the real problem world. It commences after the second semester exam and is a compulsory course to all ND 1 proceeding to ND 2, it is a Two (2) unite credit course, so if by any adventure a student fails to participate in the exercise, will attract him/her a failure which makes the person repeat by delaying for an extra year in school. [3]

1.2 PURPOSE OF SIWES

SIWES was purposely introduced in order to make student acquires more knowledge about methods of some professional works and to exposed them to get up and safeguard their own industry and organization in future.

1.3 OBJECTVE OF SIWES

Specifically, the objectives of the student industrial work Experience are:

- It enabled student to be self-dependent not in the theoretical aspect but also in the practical aspect in the field of study.
- The SIWES program prepares students for the work situation they are likely to meet after graduating from school.
- It's express's the students to some equipment which is not available in school.
- It also helps to know the general precaution, rules and regulation of an establishment.

1.4 ROLES OF ITF IN SIWES

The main roles of ITF in SIWES are to:

- Interact with the SIWES agencies to ensure prompt receipt and processing of placement list.
- Co-ordinate, direct and finance the SIWES program in it is attachment stipend and lecture supervisor allowance.
- Supervised student's attachment in different organizations across the country.
- Ensure that all institutions concerned submit to the ITF office at the end of SIWES program report from.

- Ensure the establishment of SIWES in all universities and other institution of Higher learning so as to provide for easy and effective co-operation of all SIWES matters.
- Interact with the sister's area offices to ensure payment of unpaid students through their respective institution. Agriculture, Medical, Management and Other professional program in Nigerian tertiary institutions.

It is aimed at exposing student to machines and equipment work and ways of safe guarding the work areas and workers in industries and other organization. The scheme is a tripartite program, involving the students, the universities and industries (Employers of labours). The scheme is organized, funded and directed by ITF for students undergoing studies in Tertiary institutions.

CHAPTER TWO

2.0 BRIEF HISTORY OF HE ORGANIZATION

Federal Ministry of works and transport was sited along Ahmadu Bello way. It was set up by the state government to control some specific activities in rural and urban central development in term of routes and other external works in the state. The organization was first known as public work co-operation since creation of Kwara state in 1967 until some years back when it was changed to "Kwara state ministry of works and transport" with is headquarter at Ilorin the state capital.

Kwara state ministry of works and transport was meant for developments of new route, construction of road network and countdown of bridges for public utility project in the state. The organization has done so many constructions work and has been the client of majority of construction works done in Kwara state. Examples construction of township roads along Sabo-Oke, GRA, Ipata, Songo, Construction of Post office flyover in Ilorin, and so many constructions work that could not be mentioned. They are ensuring the easy conveyance of goods services from one area to the other through construction and Rehabilitation of roads, Highways, Bridges, Flyover.

2.1 MAJOR ACTIVITIES OF THE ORGANIZATION

Civil engineering department of the ministry of works and transport represent government in any ongoing project I.E. Engineering project (I.E; Civil, Electrical, Mechanical) to ensure that the said project is done to specification. Also, job of the ministry of works and Transport are to monitor the activities on road, development of new routes and maintenance of road and advised the State Government on what to do to make such read effective.

The ministry is also responsible for the supervision of the activities of the following underlined parastatals:

- Kwara road maintenance agency (KWARMA).
- Kwara state transport co-operation (KWARA EXPRESS).

2.3 THE ORGAINZATION CHART

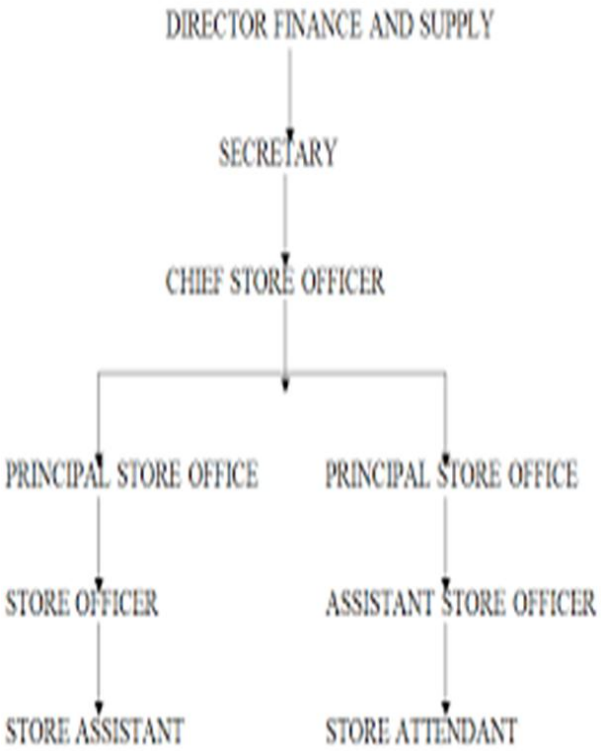

Fig 2.1: Unit of the Organization and their Specific Function

A section was established within the civil department of the organization;

- Civil engineering design unit
- Civil engineering construction unit.
- Civil engineering management of materials.
- Civil engineering maintenance unit.

CHAPTER THREE

3.0 INDUSTRIAL WORK EXPERIENCE

This chapter is an exposition on the experience gained during the student's industrial work experience scheme. However, during the SIWES program, I partake in the project of construction of (I) Road pavement, (II) Drainage and (III) Culvert.

This project involves the construction of a residential road, At **Osin,** Kwara State, Ilorin.

3.1 ROAD PAVEMENT

Road pavement is the portion of the road located directly above the sub grade and beneath any wearing surface. In urban areas it is often bordered by kerbs and channel and in rural areas by road shoulders.

3.1.2 TYPE OF ROAD PAVEMENT

There are main types of road pavement; these are:

- **FELEXIBLE PAVEMENT:** This is a road pavement with a structure that defects or flexes, under loading. A flexible pavement structure is typically composed of several layers of materials, each layer receives the road from the above layer, spread them out, then passes on this load to the next layer below.

- **RIGID PAVEMENT:** This is a pavement structure that deflects very little under loading due to the high modulus of elasticity of it surface course. Because of it relative rigidity, a rigidity pavement structure distributes load **over** a wide area with only one, or at most structural layers.

3.2 DRAINAGE CONSTRUTION

Drainage is the natural or artificial removal of surface and sub-surface water from an area. Drainage construction as the name implies is one channel where excess water is discharged to the outline. Drainage is constructed beside a road so as to carry away excess water from the road to prevent cracks or other failures on the road.

3.2.1 TYPE OF DRAINAGE CONSTRUTON

There are different types of drainage construction These are:

- **BLOCK LINE DRAINAGE:** This is a drainage that has been constructed using a block as the wall of the drain. This drainage is cost efficient compared to other types of drainage.
- **REINFORCED CONCRETE DRAINAGE:** This is a drainage that is constructed using reinforced concrete as the wall of the drain. Reinforced concrete is brought in as the wall of the drain.

3.2.2 PROCESS DRAINAGE OF CONSTRUCTION REINFORCED CONCRETE

- **Measurement of width:** The measurement of width of the trench and pegging is done with rope to obtain a straight trench of the drainage.
- **Blinding:** This is done to give a good attachment to both ground and concrete.
- **The walking reinforcement casting:** These are laid in to prevent under movement of the drainage wall.
- **Form work construction:** This is the process of fixing planks together to guide the falling walling concrete casting.

- **Concrete mixing and casting:** This is the mixing of gravel, sand cement and water at a ratio depending on how you want it. Mixing concrete is being transferred to the spacing provided with a wheel barrow and head pan.
- **Removal of the from work:** After some days the form work will be removed, at this the concrete would have been enough to hold itself off.

Fig. 3.1

Fig. 3.2

3.2.3 IMPORTANT OF DRAINAGE

- It prevents damage to the road.
- It provides direction of flow of water.
- It prevents the wearing away of the soil (example; Erosion).

3.3 CULVERT

A culvert is a structure that allows water to flow under a road. Typically embedded so as to be surrounded by soil, a culvert may be made from a pipe, reinforced concrete or other material. Culvert is another form of road drainage which arises when a lying area of a stream or river

crosses. The alignment of the road at this point, a culvert or bridge has to be constructed so that the water of the river or stream is made to pass on the other side of the road through them. Such as culvert or structure is known as cross drainage work or simply drainage work.

3.3.1 CLASSIFICATION OF CULVERT

- Cast in-situ concrete culvert.
- Precast concrete culvert.

3.3.2 TYPES OF CULVERTS

- Box culvert.
- Ring culvert.

3.3.2.1 BOX CULVERT

Box culverts are made of a box in which the wall, base and the deck or slab of the culvert are reinforcement is in ‘’U’’ position and concrete deck or slab is cast on it. The inlet and outlet are rectangular in shape. Box culvert is applicable in an area where is a river or stream for which a pipe or ring culvert is inadequate across the proposed road.

Fig. 3.3 Box Culvert

3.3.2.1.2 CLASSIFICATION OF BOX CULVERT

- Singler cell box culvert.
- Double cell box culvert.

- Triple cell box culvert.

Their uses on the volume of water and which can also withstand high comprehensive load.

3.3.2.2 RING CULVERT

Ring culvert is also known as “pipe culvert” and is made up of ring/pipe in which the flow of water will pass through. The sizes are 900MM, 750MM, and 600MM. Ring or pipe culvert are named with respect to their shape and can be applicable in the entrance of complex companies and they are called “Access culvert” while those on the main road are referred to “cross culvert”.

3.3.2.2.1 CLASSIFICATION OF RING CULVERT

- Single ring culvert.
- Double ring culvert.
- Triple ring culvert.

3.3.3 EQUIPMENT USED IN CULVERT CONSTRUCTION

- **EXCAVATOR**: It is used to dig and make trenches.

FIG: 3.4: EXCAVATOR

- **<u>CONCRETE MIXER MACHINE</u>:** It is used for mixing wet concrete (wet concrete composed of aggregates, sand cement and water).

FIG:3.4: CONCRETE MIXER MACHINE

3.3.4 MATERIALS INSTRUMENT USED IN AN CULVERT

- Cement.
- Sharp sand.
- Granite/gravel.
- Reinforcement bar.
- Hammer.
- Shovel.
- Wood plaque.
- Head pan/wheelbarrow.
- Range.

3.3.5 PROCEDURE OF CULVERT

- Levelling.
- Excavation.
- Blinding.
- Reinforcement.

- Casting of the concrete.
- Removal of the form work.
- Back filling.
- Curing.

3.4 LESSONS LEANT DURING MY SIWES PROGRAM

- Proper way of construction of road drainage.
- How to take and transfer levels in road construction.
- Procedure of constructing Asphalts-road movement.

3.5 PROBLEM ENCOURTERED AND SOLUTIONS PROFFERED

3.5.1 WEATHER-RELATED DELAYS

- Issue: Weather-related Delays or changes, affecting construction schedules.
- Solution: Use weather forecasting and monitoring tools to anticipate and prepare for weather-related disruption.

3.5.2 LABOR DISPUTES

- Issue: Labor disputes or shortages, affecting construction timelines.
- Solution: develop and implement effective labour management strategies, including communication, training and conflict resolution. Ensure compliance with in labour regulations and industry standards.

3.5.3 SAFETY RISKS

- Issue: Safety risks to construction workers, motorists, or pedestrians.
- Solution: Develop and implement comprehensive safety plans, including hazard identification, risk assessment, and mitigation strategies. Ensure compliance with safety regulations and industry standards.

CHAPTER FOUR

4.0 CONCULUSION

The organization to which I was attached-to give me more impression about my course of study. The engineers are hard-working, they are always in the team which makes the organization. I am also impressed about the way they always plan their work which makes things easier and faster. Also, the industrial based supervisor on student industrial work experience scheme programme always gives special assistance to the SIWES student for the to achieve their goals.

4.1 RECOMMENDATION TO THE ORGAIZATION ON SIWES PROGRAM.

I will suggest to the organization to always accept the entire student that comes for their SIWES program. Also, I will recommend the industrial based on supervisor to always have special attention to the SIWES student on their program.