KWARA STATE POLYTECHNIC

P.M.B 1375, ILORIN - NIGERIAN

www.kwarapoly.edu.ng

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

HELD AT:

FEDERAL MINISTRY OF WORKS & HOUSING

PREPARED BY:

POPOOLA FERANMI SAMUEL
ND/23/CEC/FT/034

SUBMITTED TO:
DEPARTMENT OF CIVIL ENGINEERING, INSTITUTE OF TECHNOLOGY,
KWARA STATE POLYTECHNIC, ILORIN
IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF NATIONAL DIPLOMA

AUGUST - NOVEMBER 2024

DEDICATION

I dedicate this SIWES Works to Almighty Allah whose supremacy in the knowledge of everything is absolute and my parent **Mr. and Mrs. Popoola**

ACKNOWLEDGEMENT

Express my deep gratitude to Engr. A.K Muyideen, the SlWES coordinator in Kwara State Ministry of Works for his Valuable and Guidance rendered throughout the four (4) months of Student Industrial Work Experience Scheme (SIWES). I greatly express my gratitude to my lecturers in the Department of Civil Engineering for their advice to all their students. A special thanks to my parents (Mr and Mrs Popoola). I am really proud of them for their effort, counseling and guidance and others members of my family. Also very huge thanks to Engr. Wopa the SIWES coordinator in Civil Engineering Department for taking his time to ensure that my Industrial training in Kwara State Ministry of Work was smooth.

TABLE OF CONTENT

CHAPTER ONE

1.1 INTRODUCTION TO SIWES

The student industry work experience scheme (SIWES) is the acceptable skills training program which forms part of the approval minimum academic standard in the various degree programs for all Nigerian tertiary institutions.

It is an effort ti bridge the gap existing between theory and practical of science, Engineering and Technology, Agriculture, Management and all other professional education program in Nigerian tertiary institutions.

It is aimed at exposing students to machine and equipment professional work method and way of safe guarding other organizations. The scheme is a tripartite program involving the polytechnic, university and college of Education all going into the industries [employer of labor].

1.2 BACKGROUND OF SIWES

The student industrial work experience scheme (SIWES) is a skills training program designed to expose and prepare student of higher institution for the working environment they are likely to meet after graduation. SIWES was established by industrial Training Fund (ITF) in 1973 to solve the problem of lack of adequate practical skills, in preparation for employment in industries by Nigerian graduates.

The SIWES program runs in the Nigeria universities in conjunction with the industrial Training Fund unit, to promote practical in tertiary institutions. The aim of the program is to bridge the gap existing between theoretical aspects of what is being taught in the lecture rooms and what is actually obtained in the field it is aimed at exposing students to challenges they are likely to come across upon their graduation from the universities and to adequately expose students to professional work methods.

Participation in industry training is a well known strategy. Classroom studies are integrated with learning through hands-on work experience in a field related to the student academic major and career goal. It enhances an experiential learning process that not only promotes career preparation but also provides opportunities for learning to develop skills necessary to become leaders in their chosen profession.

Participation in SIWES has become a necessary pre-condition for the award of Diploma and Degree certification in specific discipline in most institutions of higher learning in the country in accordance with the educational policy of government.

OPERATORS OF THE SIWES PROGRAM: the industrial training fund (ITF), employers of labour, the higher institutions, and some coordinating agencies like Nigeria Universities commission (NUC), National commission for civic Education (NCCE) and national Board for Technical Education (NBTE) are the operators of this program.

FUNDING: the federal government of Nigeria fund this program

BENEFICIARIES: undergraduate students of the following Agricultural, Engineering Technology, Environmental, Science, Medical sciences and pure and Applied Science.

DURATION: one year for polytechnic, four months for college of education and six months for the Universities.

1.3 AIMS AND OBJECTIVES OF SIWES

AIMS:

The aims of the student industrial work experience scheme (SIWES) are as fellows

- To expose students to industrial base skills necessary for smooth transition from classroom to the world and the applicability of work done in various schools go meet the industrial demand.
- To bridge the gap existing between theoretical aspects of what is being taught in the lecture rooms and practical aspects what is actually gained in the field.

- To expose students to the challenges they are likely to come across upon their graduation from the university and to adequately expose student to professional work methods.

OBJECTIVES:

- Expose students to work method and techniques in handling equipment and machinery that may not be available in the school.
- Prepare students for the work situation they are likely to meet after graduation.
- To provide an avenue for students in the Nigeria universities & polytechnic to acquire industrial skills and experience in their course of study.
- To make the transition from polytechnic to the world of work easier and enhance student contact for later job placement.
- Provide students with an opportunity to apply their theoretical knowledge in real work situations thereby bridging the gap between polytechnic work and actual practice.

CHAPTER TWO

2.1 BRIEF HISTORY OF THE ORGANIZATION

Lagos is the most populous city in Lagos State, Nigeria as a whole, and the continent of Africa. The conurbation is one of the most populous in the world. Lagos is a port which originated on islands separated by creeks, such as Lagos Island, fringing the southwest mouth of Lagos Lagoon while protected from the Atlantic Ocean by barrier islands and long sand spits such as Bar Beach, which stretch up to 100 kilometres (62 miles) east and west of the mouth. The metropolitan area of Lagos includes Ikeja (which is the capital of Lagos State) and Agege and mushin.

Before the Portuguese name of Lagos had been adopted, Lagos' initial name was Eko which referred mainly to the Island. The first to settle in Eko were the Aworis in the 15th century and the Binis in the 16th century. The Awori were conquered by the Benin empire. The Awori hunters and fishermen had originally come from Ile-Ife to the coast.

It was in 1760 that the name Lagos was adopted by the Portuguese. Naming it after a city in Southern Portugal which was used as port for slave trade. In 1861, Oba Docemo was the one who signed the treaty making Lagos a British colony.

On August 27 1991, the Federal Military Government announced the creation of 15 new Local Government Councils throughout the federation that included Eti-Osa Local Government Council. Consequently, due to the intense requests received from the people of Lagos for the creation of more Local Government Councils, and in response to the massive population increase experienced within the state, Ikoyi-Obalende Local Council Development Area was created on October 2003 along with thirty-six (36) other LCDAs in Lagos State.

2.2 MISSION AND VISION OF ORGANIZATION

VISION

To be Excellent in Sustainable Infrastructure Development and Service Delivery

MISSION

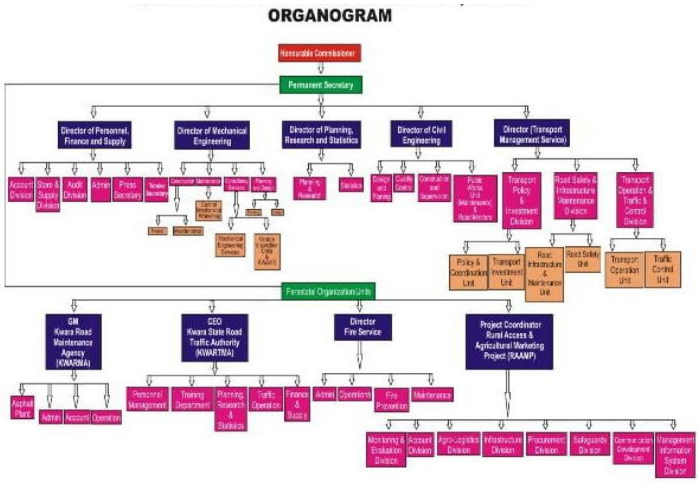
To facilitate the provision of adequate and affordable housing for all Nigerians in both urban and rural areas in a secure, healthy and decent environment through access to functional Nigerian roads at all times

To pursue economic empowerment and development with the following major components:

- Provision of basic amenities
- Improving Infrastructure
- Poverty alleviation programmer
- Skills Acquisition Programme
- Private Sector Partnership

2.3 STRUCTURE OF ORGANIZATION

An organization structure can improve or hinder efficiency in an organization. The structure plays a crucial role in an organization. It defines the allocation of responsibilities and powers, reporting relationships and processes, hierarchy levels and value added, allocation resources and determining skills requirement and affordability.



CHAPTER THREE

3.1 CONSTRUCTION OF FOUNDATION

Foundation is the lowest part of the building or the civil structure that is in direct contact with the soil which transfers loads from the structure to the soil safely. Generally, the foundation can be classified into two, namely **shallow foundation** and **deep foundation.** A shallow foundation transfers the load to a stratum present in a shallow depth. The deep foundation transfers the load to a deeper depth below the ground surface. A tall building like a skyscraper or a building constructed on very weak soil requires deep foundation. If the constructed building has the plan to extend vertically in future, then a deep foundation must be suggested. To construct a foundation, trenches are dig deeper into the soil till a hard stratum is reached. To get stronger base foundation concrete is poured into this trench. These trenches are incorporated with reinforcement cage to increase the strength of the foundation.

Foundation Construction Steps

1. Ground breaking, excavation. Grading the lot and getting it tested for compaction. Digging trenches for footings. ...
2. Footings dug, rebar set, inspection, footings poured. Installing rebar (and using safety caps) "Boom pumping" concrete.
3. Polysteel stem wall forms, stems poured, rough-in plumbing.

3.2 STEPS TO ROCK-SOLID FOUNDATION FOR CONSTRUCTING A STOREY BUILDING

Constructing a storey building requires a solid foundation to ensure structural integrity, stability, and longevity. A strong foundation provides the necessary support for the entire structure. Here are key steps to establish a solid foundation for building a storey building:

1. **Conduct site analysis:** Before construction, conduct a thorough site analysis to assess the soil conditions, groundwater level, and any potential risks or limitations. Engage a geotechnical engineer to perform soil testing and provide recommendations for foundation design based on the site's specific characteristics.
2. **Engage a structural engineer:** Consult with a qualified structural engineer to design the foundation system suitable for your storey building. The engineer will consider factors such as building loads, local building codes, soil reports, and the desired number of storeys.
3. **Choose the appropriate foundation type:** Based on the engineer's recommendations and site conditions, select the most suitable foundation type. Common options for storey buildings include shallow foundations (such as strip footings, isolated footings, or raft foundations) and deep foundations (such as piles or piers). The choice will depend on factors like soil bearing capacity, load distribution, and local regulations.
4. **Prepare the site:** Clear the construction site of any vegetation, debris, or obstructions. Level the ground and ensure proper drainage to prevent water accumulation near the foundation. Excavate the area to the required depth for the foundation and establish the building footprint.
5. **Construct footings:** The footings distribute the building load to the soil. Excavate trenches for the footings according to the engineer's specifications. Reinforce the footings with steel bars and pour concrete into the trenches to create a solid base for the walls.
6. **Build foundation walls:** Construct foundation walls above the footings, following the architectural and structural drawings. Use reinforced concrete or masonry materials to ensure strength and stability. Install waterproofing

measures, such as damp-proofing or waterproof membranes, to protect the foundation from moisture penetration.

7. **Install drainage systems:** Integrate proper drainage systems around the foundation to divert water away from the building. This includes installing French drains, sump pumps, or external waterproofing systems, depending on site conditions and local regulations.
8. **Consider expansion joints:** In areas with significant temperature fluctuations, incorporate expansion joints in the foundation and structure to allow for thermal expansion and contraction. This helps prevent cracks and damage caused by temperature changes.
9. **Inspect and test the foundation:** Once the foundation is constructed, engage a building inspector or structural engineer to conduct a thorough inspection and perform necessary tests to ensure compliance with building codes and standards. This includes verifying the foundation's load-bearing capacity, reinforcement, and overall structural integrity.
10. **Maintain proper documentation:** Keep detailed records of the foundation construction process, including drawings, permits, inspections, and test results. This documentation will be valuable for future reference and potential legal or insurance requirements.

3.3 THIS TYPE OF FOUNDATION OFFERS AN EXTENDED PIECE OF SUPPORT TO A LINEAR STRUCTURE LIKE A WALL

Individual footings

Mat foundations

Pile foundations

Drilled shafts

Combined footing

Pile foundation

Isolated footing

Strip footing

Shallow foundation

Spread footings

Strap footing

Deep foundation

Drilled shaft foundation

Pier foundation

Foundation

Wall footing

Grillage foundation

Slab foundations

Basement foundation

Crawl space

Isolated footings

Caissons

Concrete

Caisson foundation

Strip foundation

Spread footing










CHAPTER FOUR

4.1 CONSTRUCTION OF DRAINAGE SYSTEM

Drainage is the natural or artificial removal of a surface's water and sub-surface water from an area with excess water.

4.2 TYPE OF DRAINAGE

- Surface Drainage System

Surface drainage systems remove excess water from the land’s surface through channels or ditches.

- Subsurface Drainage System

Subsurface drainage systems are implemented beneath the top layer of soil. Sometimes referred to as a French drain, they work at the root level to remove excess water.

- Slope Drainage System

Slope drainage systems are built to allow water to flow from a structure in a downward direction.

- Downspouts and Gutter Systems

Downspouts and gutter systems are a structure’s first defense against over-saturation from storm water.

4.3 ADVANTAGES OF DRAINAGE SYSTEMS:

1. Flood Prevention and Water Management: One of the primary advantages of drainage systems is their ability to prevent flooding and effectively manage water.
2. Improved Sanitation and Public Health: Drainage systems play a critical role in maintaining public health by removing wastewater, sewage, and other forms of liquid waste.

3. Enhanced Urban Planning and Development: Efficient drainage systems enable better urban planning and development.

4. Preservation of Land and Soil Quality: Proper drainage systems help preserve land and soil quality by preventing waterlogging and excessive moisture.

5. Reduced Infrastructure Damage: Without a reliable drainage system, water accumulation can cause structural damage to roads, buildings, and underground utilities.

6. Environmentally friendly: Another benefit of drain jetting is that it's an environmentally friendly option for cleaning and unblocking drains

7. Cost-effective: Despite its effectiveness and efficiency, drain jetting is a cost-effective option compared to other drain cleaning methods.

4.4. DISADVANTAGES OF DRAINAGE SYSTEMS:

1. Environmental Impact: One of the primary concerns associated with drainage systems is their potential environmental impact.

2. Cost and Maintenance: The installation, maintenance, and repair of drainage systems can be costly.

3. Impact on Land Use: Large-scale drainage systems require significant land allocation, particularly in urban areas

4. Potential for Over drainage: Improperly designed or managed drainage systems can lead to over drainage, where excessive water is removed from the soil, impacting plant growth and ecosystem health.

5. Technical Challenges and Limitations: Designing and implementing effective drainage systems require technical expertise and knowledge of hydrology, soil conditions, and local climate patterns. Designing efficient drainage systems can be complex in some areas with challenging topography or high water tables.

4.5. MATERIALS USE FOR DRAINAGE PROCESS

1. Cements
2. Granite
3. Sand
4. Water
5. Marine board & 2 by 2 wood
6. Iron rod
7. Banding wire
8. Nails

4.6. EQUIPMENT NEED FOR DRAINAGE PROCESS

1. Excavator

2. Concrete mixer

3. Poker Vibrator

4. Shovel

5. Wheelbarrow

6. Truck

7. Measuring wheel

8. Dumpy level

9. Tripod

10. Leveling staff & staves

4.7. PROCESS OF CONSTRUCTING DRAINAGE

1. Excavation of the drainage trench: this is the process of excavating to the proper slope for water flow. Which has 1.2 depth and 2.5 width with the use of excavator.

2. Survey leveling: this is the process of determining the height of one level relative to another.

3. Concrete blinding: this is the process of pouring 50mm thickness of concrete onto the prepared excavated ground for a level and stable foundation for the drain. The mixture ratio of the concrete is 1:3:6

4. Fixing of Reinforcement and casting of concrete base: this is the process of pouring and shaping concrete to create the base for a drainage system. The concrete ratio use is 1:2:4

5. Construction of Formwork: this involves in propping and bracing of temporary structure known has formwork, which hold the concrete in place while it is set up for the construction of drainage wall.

6. Casting off the drainage side walls: this involves pouring and shaping concrete to create vertical side wall for drainage structure. The concrete ratio use is 1:2:4

7. Removing of the formwork panel from the side wall

8. Back filling and compaction of trenched side

CHAPTER FIVE

5.1 EXPERIENCED GAINED

1. I was able to gain a first-hand practical experience in civil engineering. I leant that good team work is important for fast and good quality job delivery. I also gained knowledge on how to manage personnel on a site.

2. I understood that proper field survey and inventory are pertinent to good quality desk study/work. I also learnt that good supervision produces good quality outcome of work.

3. I learnt that proper project supervision is essential to produce good quality job. I also learnt that good technical, communication and project management skills are important to ensure completion of a project within budget and stipulated time period.

4. I learnt that proper planning and execution are paramount to the success of a project. Also good environmental consideration should be taken.

5. I gained full experience and attract full knowledge of achievement relating to the drainage construction, earthwork and construction of flexible road pavement.

5.2 PROBLEMS ENCOUNTERED

1. Due to the heavy rainfall, there were days whereby petite activities took place, thus limiting work progress on site.

2. The presence of water pipe within the drainage construction area leading to proper planning, coordination, and transferring of the water pipe in small length away from the drain line, leading to delays in the work progress on site.

3. During my first few weeks, I had difficulties understanding a lot of the terms and terminologies that was used at the office because a lot of them were very new to me. This made it hard for me to follow the procedures.

5.4 RECOMMENDATION

In view of the relevance of the SIWES program, it is important that it is sustained by the government through the Industrial Training Fund (ITF) as it exposes the student to work tools, facilities, and equipment that may not be available in their respective institutions in relation to their course of study.

To this end, I recommend that the following under-listed points should be implemented:

1. Students' Industrial Works Experience Scheme (SIWES) needs to be strengthened by all concerned stakeholder in order for its objectives to be fully realized.
2. Regular monthly allowances for students on attachment should be paid promptly.
3. Organizations should always accept students for SIWES and subsequently assign them to relevant jobs.
4. Experience staff should always be made to train the students on attachment
5. There should be more funding of the scheme by the government in order for it to be more effective.
6. The companies should put in place all the necessary facilities needed to enhance the knowledge of the student in industrial attachment.
7. It will be of great benefit if the institution can create a platform whereby student can obtain pre- Siwes knowledge or excursion programs, before student embark for general 4 months industrial training programme.

5.5 CONCLUSION

In road construction, the preliminary stage must involve a reconnaissance survey, the desk study, oral interview for the people around the proposed road.

A detailed survey of the proposed road site must be carried out for a good vertical and horizontal alignments.

The geotechnical and physio technical investigations of the proposed road site must be given full consideration in the road design and in the preparation of the Bill of Engineering Measurement and Evaluation (BEME). The Bill of Engineering Measurement and Evaluation must contain all necessary items of work in the right quantities.

Civil Engineering, thought very wide, is an interesting field of Engineering. Civil Engineering practices are easy in as much the technical know-how is acquired. Every task in life possesses some challenges. So, one must be ever ready to face and solve the problems encountered in any tasks for the benefits of mankind and oneself.

Since this programme is of great importance to student under no circumstance. Should the programme be eradicated because it is indeed a great programme enhance student not only academically but also intellectually.