



TECHNICAL REPORT
ON
STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)
HELD AT
LOWER NIGER RIVER BASINS DEVELOPMENT AUTHORITY
No. A1, Baisn Road, Ilorin, Kwara State.

SUBMITTED BY
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SUBMITTED TO:
THE DEPARTMENT OF CIVIL ENGINEERING
KWARA STATE POLYTECHNIC, ILORIN
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
AWARD OF NATIONAL DIPLOMA (ND) IN CIVIL ENGINEERING
DEPARTMENT, INSTITUTE OF TECHNOLOGY.

AUGUST TO NOVEMBER, 2024.

DECLARATION

I, ***Hammed Abdulgafar Kehinde***, hereby declare that this report is a true and accurate account of my Student Industrial Work Experience Scheme (SIWES) program conducted at Lower Niger River Basins Development Authority, No. A1, Basin Road, Ilorin, Kwara State, Nigeria. This report is submitted in Partial Fulfillment of the Requirements for the Award of National Diploma in Civil Engineering.

DEDICATION

This report is dedicated to Almighty Allah for His Guidance and Protection throughout the duration of my SIWES program. I also dedicate it to my Parents and loved ones for their Unwavering Support, Encouragement, and Prayers.

ACKNOWLEDGMENT

I sincerely appreciate the management and staff of **LOWER NIGER RIVER BASINS DEVELOPMENT AUTHORITY** for providing me with the opportunity to gain practical knowledge during my SIWES program.

My gratitude goes to my supervisor for their mentorship and guidance throughout the training period.

I also acknowledge the efforts of my Lecturers and the Industrial Training Fund (ITF) for coordinating this program. Special thanks to my family and friends for their support and encouragement.

ABSTRACT

This report documents the Four Months Student Industrial Work Experience Scheme (SIWES) program undertaken at Lower Niger River Basins Development Authority, a Civil Engineering Company. The program provided hands-on experience in various aspects of construction, including Bush Clearing, Excavation, Foundation Works, Block Setting, and Casting.

The report outlines the activities carried out, challenges faced, and the solutions implemented. It also highlights the technical and interpersonal skills gained during the program. Recommendations are provided to improve future SIWES programs for Students.

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CHAPTER ONE

INTRODUCTION

1.1 Background of SIWES

The Student Industrial Work Experience Scheme (SIWES) is a skill acquisition program designed to bridge the gap between theoretical knowledge acquired in academic institutions and practical industrial work experience. It is an initiative of the Industrial Training Fund (ITF) introduced in 1973 with the aim of equipping students with the necessary skills and practical exposure required in their respective fields of study.

The program was introduced in response to the lack of adequate practical knowledge among graduates, which hindered their ability to meet the demands of the labor market. SIWES provides a platform for students in science, engineering, technology, and other disciplines to apply classroom knowledge to real-world scenarios, fostering a better understanding of professional practices and enhancing their employability.

The scheme is a collaborative effort between the Federal Government of Nigeria, the Industrial Training Fund (ITF), tertiary institutions, and industries. Students are placed in various organizations where they gain hands-on experience in their field of study under the supervision of industry professionals. The program typically spans six months, depending on the institution and course of study, and it serves as a mandatory requirement for graduation in most technical and professional programs in Nigerian higher institutions.

For Civil Engineering students, SIWES offers an opportunity to work on construction sites, analyze engineering designs, and participate in the implementation of various engineering projects. The experience gained during SIWES is invaluable, as it enhances students' technical skills, problem-solving abilities, and understanding of safety protocols in the workplace.

Through SIWES, the government aims to produce a workforce that is better prepared to contribute to national development, reduce unemployment, and foster technological advancement. The program's success is attributed to the cooperation of all stakeholders, including the students, institutions, and host organizations.

1.2 Objectives of SIWES

The objectives of the Student Industrial Work Experience Scheme (SIWES) are as follows:

1. To provide students with practical experience that complements their theoretical knowledge.
2. To expose students to modern tools, equipment, and industrial processes.
3. To enhance students' understanding of workplace ethics, safety standards, and organizational structures.
4. To bridge the gap between academic training and the requirements of the labor market.
5. To develop students' problem-solving, teamwork, and communication skills.
6. To create opportunities for students to gain industry connections and potential employment.
7. To prepare students for meaningful contributions to national industrial and technological development.

1.3 Scope of the Report

This report covers the activities and experiences undertaken during the six-month Student Industrial Work Experience Scheme (SIWES) at TAIROSE GLOBAL MULTI-SERVICES LTD, located at No. 1, Amule Street, Moro, Ife North LGA, Osun State, Nigeria.

The report highlights the following:

1. Overview of the organization and its operations.
2. Detailed descriptions of the construction-related tasks and projects carried out, including bush clearing, setting out, excavation, block setting, casting, roofing, and other civil engineering activities.
3. Tools, techniques, and safety practices observed during the internship.
4. Skills acquired and challenges encountered during the program.
5. Recommendations for improving future SIWES programs and personal reflections on the training experience.

CHAPTER TWO

COMPANY OVERVIEW

2.1 History and Background of LOWER NIGER RIVER BASINS DEVELOPMENT AUTHORITY

Lower Niger River Basins Development Authority is a reputable organization located at No. A1, Basin Road, Ilorin, Kwara State, Nigeria. The company specializes in providing a wide range of Civil Engineering and Construction Services, contributing significantly to the development of infrastructure in its region of operation.

Founded with the mission of delivering high-quality engineering solutions, LOWER NIGER RIVER BASINS DEVELOPMENT AUTHORITY has built a strong reputation for professionalism, efficiency, and adherence to industry standards. The organization is committed to meeting client expectations through innovative construction techniques, skilled manpower, and the use of modern tools and equipment.

Over the years, the company has handled various projects, including residential, commercial, and industrial construction. Its operations cover activities such as site preparation, foundation works, structural development, roofing, and finishing. The organization also emphasizes safety and sustainability in all its projects, ensuring that all tasks are carried out in compliance with environmental and workplace safety standards.

With a well-structured organizational framework, LOWER NIGER RIVER BASINS DEVELOPMENT AUTHORITY fosters teamwork, continuous learning, and technical excellence among its employees. These attributes have enabled the company to remain competitive and consistently deliver quality results.

As a host organization for the Student Industrial Work Experience Scheme (SIWES), the company provides a conducive environment for students to gain practical experience in civil engineering, offering exposure to real-world construction projects and professional practices.

2.2 Organizational Structure

LOWER NIGER RIVER BASINS DEVELOPMENT AUTHORITY has a well-defined organizational structure designed to facilitate efficient project execution and smooth internal operations. The company's structure is hierarchical, with clear roles and responsibilities at each level to ensure coordination and accountability. Below is an outline of the main components of the organizational structure:

1. Board of Directors

At the top of the organizational structure is the Board of Directors, which provides strategic direction and oversight for the company. The Board is responsible for making key decisions regarding the company's operations, finances, and future growth.

2. Managing Director/Chief Executive Officer (MD/CEO)

The MD/CEO oversees the day-to-day operations of the company, ensuring that all departments and projects are running smoothly. The MD/CEO reports to the Board and is responsible for executing company policies, managing resources, and driving business growth.

3. Project Manager

The Project Manager is responsible for the overall management of construction projects, from planning to completion. This includes budgeting, scheduling, and supervising the construction crew. The Project Manager ensures that projects are completed on time, within budget, and according to specifications.

4. Site Supervisors/Foremen

The Site Supervisors or Foremen are in charge of supervising the construction activities on-site. They coordinate daily tasks, manage laborers, and ensure that safety protocols are followed. They report directly to the Project Manager.

5. Engineers (Civil/Structural)

Civil and Structural Engineers provide technical expertise for the design and execution of construction projects. They are responsible for ensuring that engineering standards are adhered to during construction, and they assist in the preparation of designs, drawings, and calculations for projects.

6. Safety Officer

The Safety Officer is responsible for monitoring and enforcing safety standards and protocols on construction sites. They ensure that all workers use appropriate personal protective equipment (PPE) and that safety regulations are strictly followed to minimize the risk of accidents and injuries.

7. Laborers and Technicians

The laborers and technicians perform manual tasks on the construction site, such as excavation, block setting, formwork, and reinforcement. They report to the Site Supervisors and are critical to the successful execution of daily construction activities.

8. Support Staff (Admin, Accounting, Procurement, etc.)

The company also has a team of administrative and support staff who handle logistics, procurement, accounting, and administrative duties. These roles ensure the smooth running of the business by managing resources, finances, and communication.

2.3 Nature of Operations

LOWER NIGER RIVER BASINS DEVELOPMENT AUTHORITY specializes in a diverse range of construction and civil engineering services, offering innovative solutions to meet the needs of various sectors, including residential, commercial, and industrial construction. The company operates with a focus on quality, efficiency, and safety, ensuring that every project is completed to the highest standards.

The primary nature of the company's operations includes:

1. Construction and Civil Engineering

LOWER NIGER RIVER BASINS DEVELOPMENT AUTHORITY handles all aspects of construction, from site preparation to the final completion of structures. The company is involved in the construction of foundations, superstructures, roofing, and finishing. The team works on both new builds and renovation projects, providing structural integrity and design expertise to clients.

2. Site Development and Earthworks

The company undertakes comprehensive site preparation services, including bush clearing, excavation, leveling, and backfilling. These activities ensure that sites are properly prepared for the construction of structures. The company also carries out soil compaction to ensure the stability of the foundation.

3. Structural Engineering Services

LOWER NIGER RIVER BASINS DEVELOPMENT AUTHORITY provides structural engineering solutions, including the design, development, and implementation of foundations, columns, beams, and slabs. The company ensures that all structural elements comply with industry standards and regulations.

4. Formwork and Concrete Works

The company specializes in formwork design and the casting of concrete for various structural elements such as lintels, columns, beams, and slabs. This process is carried out with precision to ensure the structural integrity of the building.

5. Roofing and Finishing

The company also handles roofing works, including the installation of roof carcasses, trusses, and sheeting, as well as other finishing tasks like plastering, tiling, and painting. These tasks contribute to the overall aesthetic and functionality of the buildings.

6. Drainage and Sewage Systems

LOWER NIGER RIVER BASINS DEVELOPMENT AUTHORITY is involved in the installation of drainage systems, soakaways, and septic tanks, ensuring effective water management and sanitation for residential and commercial buildings.

7. Project Management

The company oversees the planning, coordination, and execution of projects, ensuring that they are completed within budget and on time. This includes managing resources, labor, and subcontractors to ensure smooth operations on-site.

LOWER NIGER RIVER BASINS DEVELOPMENT AUTHORITY combines technical expertise, skilled manpower, and advanced equipment to deliver high-quality

construction projects. The company prides itself on adhering to safety standards and sustainability practices, ensuring that its operations are environmentally responsible and safe for workers and the community.

CHAPTER THREE

TRAINING ACTIVITIES

During the course of the SIWES program at LOWER NIGER RIVER BASINS DEVELOPMENT AUTHORITY, I was actively involved in a range of Civil Engineering activities that provided me with practical exposure to the construction process. Below are the tasks I participated in:

3.1 Bush Clearing

Bush clearing is one of the initial steps in preparing a construction site. It involves removing vegetation, trees, and debris from the site to ensure the area is ready for construction activities. I assisted in the operation of equipment used for clearing and manual labor tasks, ensuring that the area was cleared of all obstructions to provide a clear and safe working environment.

3.2 Setting Out

Setting out is the process of marking the layout of the building on the ground based on the architectural and engineering drawings. I was involved in the use of measuring instruments like theodolites, leveling instruments, and measuring tapes to accurately position foundation points, walls, and other structural elements on the site. This ensured that the construction adhered to the approved design specifications.

3.3 Excavation of Foundation Trenches

Excavating foundation trenches is critical for laying the foundation of any building. I was involved in the excavation process, where I worked with the team to dig trenches to the specified depth and width. This activity required the use of excavation tools and machinery while ensuring that the excavation followed the exact measurements for a strong and stable foundation.

3.4 Blinding

Blinding is the process of laying a thin layer of concrete over the excavated foundation trenches to provide a level base for the foundation. I assisted in preparing and laying

the blinding concrete, ensuring proper compaction and leveling to create a smooth surface for the next stages of construction.

3.5 Block Setting (Substructure)

Block setting is the process of laying the first rows of blocks to form the base structure of a building. During my training, I was involved in laying blocks for the substructure, ensuring that each block was positioned correctly, the mortar was applied evenly, and the work was level and plumb. This was crucial in establishing the foundation for the rest of the building.

3.6 Back Filling

Backfilling involves filling the excavated foundation trenches with soil or other materials after the foundation is laid. I assisted in the process of backfilling, ensuring that the soil was compacted properly to prevent future settling or movement of the structure.

3.7 Compaction

Compaction is the process of applying force to soil or aggregate to increase its density and stability. I was involved in operating compaction equipment to ensure that the backfilled soil and other materials were compacted correctly, which is crucial for the structural integrity of the building.

3.8 Casting of DPC (Damp Proof Course)

The Damp Proof Course (DPC) is a layer of material placed in the foundation to prevent moisture from rising through the walls. I was involved in the casting of the DPC, ensuring that it was positioned at the correct height and level to prevent water ingress into the building's structure.

3.9 Block Setting (Superstructure)

After the substructure is completed, block setting continues for the superstructure. I worked alongside other team members to lay blocks for the walls of the building's superstructure. This required ensuring precise alignment, correct mortar application, and maintaining structural stability.

3.10 Formwork for Lintel and Columns

Formwork is used to mold concrete into the desired shape. During my training, I assisted in constructing formwork for lintels and columns, ensuring that it was secure and well-constructed to support the concrete. This also involved ensuring the proper dimensions and alignment of the formwork according to the project specifications.

3.11 Casting of Lintel and Columns

The casting of lintels and columns involves pouring concrete into the formwork to create structural elements. I participated in mixing and pouring concrete, ensuring proper curing and that the work was carried out safely and according to design specifications.

3.12 Roof Carcass

The roof carcass refers to the framework that supports the roof structure. I was involved in assembling and installing the roof carcass, which included positioning beams, trusses, and supports. This activity required precision in aligning the components to ensure that the structure was stable and ready for roof covering.

3.13 Excavation of Soakaway and Septic Tank

Excavating soakaways and septic tanks is essential for waste management in a building project. I assisted in the excavation and preparation of these systems, ensuring that they were positioned correctly and the dimensions followed the approved plan. This process required knowledge of drainage systems and environmental considerations.

3.14 Block Setting

Block setting continued throughout the construction process. I participated in setting blocks for various walls and partitions, ensuring that the work was level, plumb, and aligned according to the architectural design. This also involved mixing mortar and applying it correctly for strong bond formation between blocks.

3.15 Slab Reinforcement Arrangement

Reinforced concrete slabs require careful placement of steel reinforcement bars (rebar) to ensure strength and durability. I assisted in arranging and tying the rebar according to the structural design, ensuring the bars were correctly positioned for optimal strength.

3.16 Formwork for the Slab

Formwork for the slab was constructed to hold the concrete in place while it cured. I worked alongside other workers to create formwork for the slab, ensuring it was secure and level before the pouring of concrete. This process required attention to detail to ensure the final slab was of the required quality.

3.17 Casting of the Slab

Casting the slab involved pouring concrete into the formwork to create a solid floor or ceiling structure. I participated in mixing, pouring, and leveling the concrete, ensuring that it was compacted and allowed to cure for strength and stability.

CHAPTER FOUR

SKILLS ACQUIRED

During my SIWES training at LOWER NIGER RIVER BASINS DEVELOPMENT AUTHORITY, I gained valuable skills that have significantly enhanced my knowledge and capabilities in civil engineering. These skills can be categorized as follows:

4.1 Technical Skills

1. Site Preparation and Setting Out

- Learned to use tools such as leveling instruments, theodolites, and measuring tapes for accurate site layout.
- Developed expertise in marking foundation points and structural layouts based on engineering drawings.

2. Construction Techniques

- Gained hands-on experience in block setting, concreting, and formwork construction.
- Acquired knowledge of proper concrete mixing ratios for various construction applications.
- Learned to arrange steel reinforcements for slabs, lintels, and columns in compliance with design specifications.

3. Equipment Operation and Maintenance

- Operated construction tools and equipment such as compactors and concrete mixers.
- Gained insight into the proper handling and maintenance of tools to ensure their longevity and efficiency.

4. Safety Practices

- Learned the importance of safety standards and the use of personal protective equipment (PPE).
- Observed and implemented safety measures to prevent accidents on construction sites.

4.2 Problem-Solving Skills

1. Adapting to Site Challenges

- Learned to identify and address issues such as uneven ground, material shortages, and unexpected weather conditions.
- Developed the ability to think critically and propose practical solutions to site-related problems.

2. Decision-Making

- Gained experience in making decisions during construction tasks, such as adjusting measurements and selecting appropriate materials.
- Learned to prioritize tasks to meet project deadlines efficiently.

3. Error Detection and Correction

- Improved skills in identifying errors in block alignment, formwork construction, and reinforcement arrangement, and learned how to correct them promptly.

4.3 Communication and Teamwork

1. Collaboration with Team Members

- Worked effectively with engineers, supervisors, and laborers to complete tasks as a team.
- Learned the importance of clear communication in ensuring tasks were completed accurately and on time.

2. Instruction Following and Delegation

- Gained experience in following instructions from supervisors and delegating tasks to laborers when necessary.

3. Conflict Resolution

- Learned to address disagreements and misunderstandings on-site, fostering a collaborative working environment.

4. Professional Interactions

- Improved communication skills when interacting with clients, supervisors, and other stakeholders.

CHAPTER FIVE:

CHALLENGES, SOLUTIONS, AND RECOMMENDATIONS

5.1 Challenges and Solutions

During my SIWES training, I faced challenges such as adverse weather conditions, material shortages, equipment malfunctions, communication gaps, safety hazards, and time management issues. These were mitigated through strategies like adjusting schedules, improving inventory management, conducting regular equipment maintenance, enhancing communication through daily briefings, enforcing safety protocols, and implementing contingency plans to manage delays effectively.

5.2 Recommendations

To improve future SIWES programs, the following are recommended:

1. Comprehensive orientation to prepare students for workplace demands.
2. Timely provision of resources and tools by host organizations.
3. Strict enforcement of safety measures and regular audits.
4. Clear and consistent communication practices.
5. Extended duration of the program for deeper learning.
6. Regular monitoring and feedback from institutions.
7. Exposure to modern construction technologies and techniques.
8. Assignment of experienced mentors for effective supervision.

5.3 Summary of Experience

The SIWES program provided hands-on experience in construction activities and fostered the development of technical, problem-solving, and teamwork skills. Despite the challenges, the training enriched my understanding of civil engineering practices and prepared me for future professional opportunities.

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