A TECHNICAL REPORT ON
STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)

HELD AT:

ADBOND HARVEST AND HOMES LTD
No 14, Allen-Avenue, Ikeja, Lagos

WRITTEN BY

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SUBMITTED TO

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DEDICATION

I dedicate this report to Allah, the source of my strength and ability. To my parents Mr. &. Mrs. Akorede.

ACKNOWLEDGEMENT

My profound gratitude goes to all those that contributed in one way or the other for the realization of this long-term dream of contributing my own little quota to anyone reading this SIWES report.

I acknowledge the work done by the various staffs of **Adbond Harvest and Homes Ltd.** for giving me the opportunity to be in their midst to achieve my objectives and I also appreciate my parents Mr. and Mrs. Akorede for their financial and spiritual support to make this come to pass.

Finally, my special thanks to Almighty God for giving me the privilege to write this report.

PREFACE

This report contains all experience gained during the time of my student industrial work experience scheme (SIWES). Thus, it vividly gives a comprehensive summary report of the engaged and experience gained at **Adbond Harvest and Homes Ltd**.

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CHAPTER ONE

1.0 INTRODUCTION

The student industrial work experience scheme (S.I.W.E.S) is a four month program usually commences between August to December, which is setup by the Federal Government for practical improvement of student in engineering, socials sciences and other related courses in order to expose the learners to what they are expected to meet in the professional market after graduation.

In fulfillment of mandatory four-month training, I did my Student Industrial Work Experience Scheme (S.I.W.E.S) at **Adbond Harvest and Homes Ltd.**

1.1 DEFINITION OF STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (S.I.W.E.S)

S.I.W.E.S is an abbreviated word which means Student Industrial Work Experience Scheme. The scheme was established by the Industrial Training Fund (I.T.F) in 1973 to solve the problem of lack of adequate practical skills needed for employment in industries by Nigerian graduates of tertiary or higher institutions. This program mainly focuses on development of the individual student in the field of work and it is based on how the student can relate theory to practical in their course of study.

In addition, it is a decision for students in tertiary institutions to gain an experience in his/her workplace during the period of attachment.

Finally, it is a program setup by NABTEB for the practical improvement of the engineering, social sciences and other related course.

1.2 AIMS AND OBJECTIVES OF S.I.W.E.S

The aims and objectives of Student Industrial Work Experience Scheme (S.I.W.E.S) are outlined as follows:

- To install in the students, self-confidence and self-reliability in their fields of operation.
- To expose students to work methods and techniques in handling equipment and machineries that may not be show to them in their various schools.
- To prepare students for their work situation that they are likely to meet after graduation from school.
- To make the students practically oriented on what they were thought in class.
- To enlighten the students about the various aspects of the course of study.
- To expose the students to some safety precautions while working with machines or equipment.

CHAPTER TWO

2.1 LOCATION AND HISTORY OF ADBOND HARVEST AND HOMES LTD

Adbond Harvest and Homes Ltd. is a **construction and engineering firm** located in No 14, Allen Avenue, Ikeja, Lagos State. The company was established in (year) and has handled various civil engineering projects such as **residential buildings, commercial structures, and infrastructure projects**.

2.2 OBJECTIVES OF THE COMPANY

The company aims to:

- Deliver **high-quality engineering solutions**.
- Ensure **structural integrity** in construction.
- Improve construction techniques using **modern technology**.
- Train young engineers and students on **practical construction methods**.

2.3 ORGANIZATIONAL STRUCTURE OF THE COMPANY

The company operates through different departments, including:

1. **Structural Engineering Department** – Designs and oversees structural projects.
2. **Construction and Site Management** – Supervises on-site operations.
3. **AutoCAD and Drafting Unit** – Creates and modifies building plans.
4. **Quality Control and Testing Unit** – Ensures material and construction quality.

2.4 DEPARTMENTS AND THEIR FUNCTIONS

1. **Structural Engineering**: Focuses on building stability and load-bearing capacity.
2. **Construction Management**: Handles site operations, safety, and workforce supervision.
3. **AutoCAD Drafting**: Prepares structural drawings and blueprints.
4. **Quality Control**: Tests concrete, steel, and other materials for durability.

CHAPTER THREE

3.0 WORK DONE AND EXPERIENCES GAINED

During my SIWES training at Adbond Harvest and Homes Ltd., I was exposed to different aspects of Civil Engineering Construction**.** My training covered various foundation types, AutoCAD drafting, column base installations, steel reinforcement, concrete mixing, and roofing structures**.** Below is a detailed breakdown of the tasks I performed and the knowledge I gained**.**

3.1 FOUNDATION AND ITS TYPES

A foundation is the sub-structure of a building that supports the entire structure by transmitting loads to the ground. The choice of foundation type depends on factors such as soil type, building load, and environmental conditions.

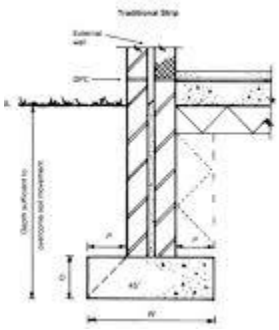
Types of Foundations I Worked On

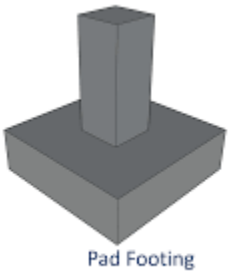
During my training, I learned about the following types of foundations:

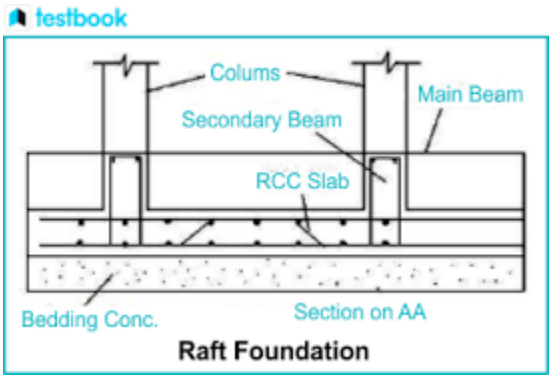
1. Shallow Foundations

These are used when the soil near the surface is strong enough to support the structure. The types include:

- **Strip Footing:** A continuous strip of concrete that **supports** load-bearing walls**.**
- **Pad Footing:** A **single, isolated footing** used to support **columns** in small buildings.
- **Raft Foundation:** A **large slab** covering the entire building area to distribute loads evenly.





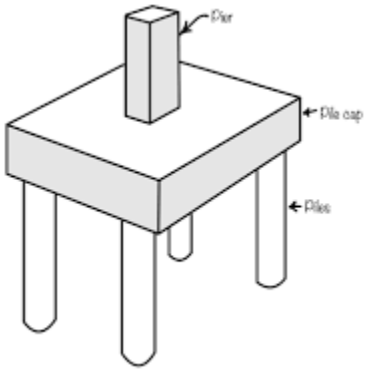


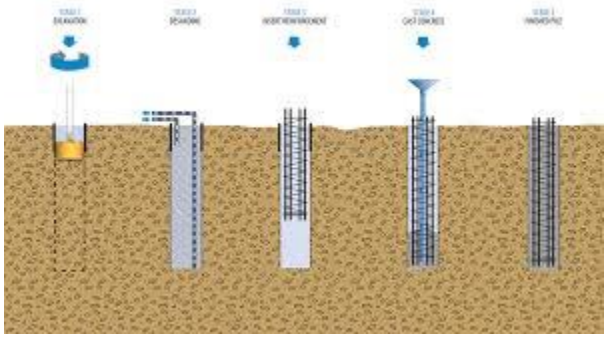
Strip footing

2. Deep Foundations

Used for high-rise buildings and weak soil conditions. They include:

- **Pile Foundation:** Long columns of reinforced concrete or steel driven deep into the ground.
- **Drilled Shafts (Caissons):** Large-diameter concrete cylinders used to support **heavy structures**.





Pile Foundation **Drilled Shaft**

3.2 AUTOCAD FOR CIVIL ENGINEERING

AutoCAD is an essential software used in structural and architectural design. I was trained in using AutoCAD for drafting and modifying structural drawings.

Skills I Gained in AutoCAD

- Creating 2D and 3D drawings **for buildings and foundations.**
- Drafting foundation layouts, column placements, and floor plans**.**

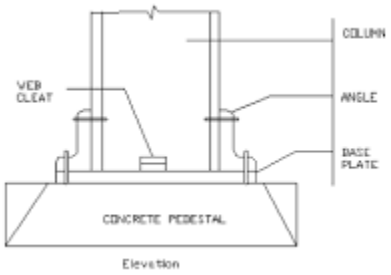
- Adding dimensions, annotations, and symbols **to structural drawings.**
- Using layers to organize different elements of a drawing**.**

3.3 COLUMN BASE AND STRUCTURAL STEEL USAGE

A column base is the lower part of a column that transfers loads to the foundation. It is a critical component in steel and reinforced concrete structures.

Types of Column Bases

- **Slab Base:** A steel plate that supports a column, commonly used in reinforced concrete buildings.
- **Gusset Base:** A base with additional plates for extra strength, used in steel structures.



Steel Usage in Engineering Construction

Steel is widely used in construction due to its high strength, durability, and flexibility. The main types of steel used in building construction include:

1. Mild Steel**:** Used for general reinforcement.
2. High-Tensile Steel**:** Used for bridges and skyscrapers.
3. Structural Steel Sections (I-beams, H-columns): Used for steel-framed buildings**.**

3.4 STEEL BARS AND THEIR TYPES

Steel bars (reinforcement bars or rebars) are used to reinforce concrete and improve its tensile strength.

Types of Steel Bars

1. Mild Steel Bars: Smooth bars used in general construction.
2. Deformed Steel Bars: Have ridges and ribs to improve bonding with concrete.

3. Thermo-Mechanically Treated (TMT) Bars: Stronger steel used for high-rise buildings and bridges.
4. Welded Wire Mesh**:** Used in slabs and walls to reinforce concrete.

Practical Experience with Steel Bars

- Measuring, cutting, and bending reinforcement bars using steel-cutting machines.
- Tying steel bars together with binding wire to form reinforcement cages.
- Placing reinforcement in slabs, beams, and columns before pouring concrete.

3.5 CONCRETE MIX RATIOS AND TYPES

Concrete is a mixture of cement, sand, gravel (or crushed stone), and water**.** Themix ratio determines its strength and application.

Common Concrete Mix Ratios

- **1:2:4** (Cement: Sand: Gravel) – Used for columns, beams, and slabs.
- **1:3:6** – Used for mass concrete foundations and non-load-bearing structures.
- **1:1.5:3** – Used for high-strength structures**.**

Types of Concrete

- Ready-Mix Concrete: Prepared in a batching plant and transported to the site.
- Site-Mixed Concrete: Mixed manually on-site.
- Reinforced Concrete: Contains steel bars for added strength.

3.6 REINFORCEMENT AND ROOF STRUCTURES

Reinforcement is added to concrete to increase strength and durability. I worked on reinforcing beams, slabs, and columns by:

- Placing stirrups and ties in beam reinforcements.
- Ensuring proper cover spacing to prevent corrosion.
- Fixing reinforcement bars in the correct positions before concrete pouring.

Roof Structure and Installation

I was involved in the installation of roof trusses and purlins, which support the roofing sheets. I learned about:

- Timber Trusses: Used for residential buildings**.**
- Steel Trusses**:** Used for large-span structures like warehouses**.**

Roofing Materials

- Galvanized Steel Sheets – Used for industrial buildings.
- Aluminum Roofing Sheets – Lightweight and corrosion-resistant.
- Asphalt Shingles – Used for modern residential roofing.

CHAPTER FOUR

4.1 WORK EXPERIENCES AND SKILLS ACQUIRED

4.2 EXPERIENCES GAINED IN SPECIFIC CONSTRUCTION ACTIVITIES

4.2.1 Foundation Construction

One of the most critical aspects of my training was learning about different foundation types and their construction processes.

- **Excavation and Soil Preparation:** I assisted in digging trenches for shallow foundations and observed pile driving for deep foundations**.**
- **Concrete Pouring and Curing:** I learned how to mix concrete for pad footings and strip foundations, ensuring the correct cement-sand-aggregate ratios were used**.**
- **Reinforcement Placement:** I helped position reinforcement bars (rebars) inside foundation trenches before pouring concrete.
- **Compaction and Leveling:** I worked with senior engineers to ensure the foundation was properly compacted and levelled before proceeding with further construction.

4.2.2 AutoCAD and Building Design

During my training, I worked with AutoCAD software to create and modify structural drawings.

- **Drafting Building Plans:** I assisted in modifying floor plans, foundation layouts, and reinforcement details under the guidance of experienced engineers.
- **Dimensioning and Scaling:** I learned to add dimensions and annotations to construction drawings.
- **Interpreting Architectural Drawings:** By studying blueprints and technical drawings, I improved my ability to understand and follow construction plans on-site**.**

4.2.3 Structural Steel and Column Base Installation

One of the most challenging yet interesting aspects of my training was working with steel structures.

- **Fabrication of Steel Components:** I observed and assisted in cutting and welding steel plates for column bases and beams.
- **Installation of Column Bases:** I helped in aligning and securing column basesusing bolts and welding.
- **Checking Vertical and Horizontal Alignment:** I learned how to use a plumb bob and spirit level to ensure proper column alignment**.**

4.2.4 Reinforcement and Concrete Works

Concrete and steel reinforcement are essential for constructing durable and load-bearing structures**.**

- **Measuring and Cutting Steel Bars:** I learned how to **measure, cut, and bend reinforcement bars** using cutting machines.
- **Tying Steel Reinforcement:** I practiced **binding reinforcement bars together** using steel wire to form reinforcement cages.
- **Concrete Mixing and Pouring:** I worked with site engineers to mix concrete in **the correct ratios (1:2:4, 1:3:6, etc.)** for different construction elements.
- **Slump Test and Cube Test:** I assisted in **testing concrete consistency and strength** before using it in construction.

CHAPTER FIVE:

5.0 SUMMARY, CONCLUSION, AND RECOMMENDATION

5.1 SUMMARY OF ATTACHMENT ACTIVITIES

My industrial training at **Adbond Harvest and Homes Ltd.** gave me hands-on experience in:

1. Foundation construction techniques**.**
2. AutoCAD design and modification**.**
3. Steel reinforcement and structural support**.**
4. Concrete mixing, pouring, and testing**.**
5. Roof structure and reinforcement techniques**.**

5.2 PROBLEMS ENCOUNTERED DURING THE PROGRAM

- Limited access to advanced structural software.
- Delays due to weather conditions**.**
- Insufficient materials causing work stoppages.
- Short internship duration, limiting exposure to complex engineering tasks.

5.3 SUGGESTIONS FOR IMPROVEMENT

- Provide students with longer training periods.
- Introduce modern engineering software like Revit and STAAD Pro.
- Ensure adequate material supply for uninterrupted work.

5.4 CONCLUSION

This SIWES program was a valuable experience that enhanced my civil engineering knowledge and practical skills**.** I gained insight into foundation construction, reinforcement, AutoCAD drafting, and concrete mixing. This experience will be useful in my future career as a Civil Engineer.