# A REPORT ON THE STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)

UNDERTAKEN AT

**GREAT BUILDERS CONSULT,IREWOLEDE, ILORIN, KWARA STATE**


COMPILED BY

***JIMOH,IMAMANIF BABATUNDE***

***ND/23/CEC/PT/0153***


SUBMITTED TO

**THE DEPARTMENT OF CIVIL ENGINEERING TECHNOLOGY,INSTITUTE OF TECHNOLOGY,KWARA STATE POLYTECHNIC,ILORIN KWARA STATE**

SUPERVISED BY

IN FULFILMENT OF THE REQUIREMENT OF THE ORDINARY NATIONAL DIPLOMA(OND) IN CIVIL ENGINEERING TECHNOLOGY.

**MARCH 2024**

# DEDICATION

I am thankfully dedicating this report to Allah the one which in his infinite mercy and greatness granted me the opportunity to conclude my SIWES program.

# ACKNOWLEDGEMENT

Alhamdulilllah Rabil Alamin,All thanks and praise be to ALLAH his unwavering support, mercy and protection upon me during my SIWES program.

I sincerely appreciate the efforts of my parents Mukadam Ahmad Jimoh and Sayyida Ruqayat Salahuddin who have been a source of support to me in various ways, may ALLAH bestow upon you more of his rahmah and barakah. AMIN.

My profound gratitude goes to the one who kept me going with his advice and support in person of Mukadam Abdulrahman Abdulganiy Alege, may ALLAH increase your knowledge and bless you in various aspects of your life. AMIN.

I really appreciate the efforts of my on-site supervisor Engineer Abdulhakeem for the various kinds of knowledge, advice and insights he bestowed upon me both on-site and off-site during my siwes program, I say Jazakumullahu khairan. Amin.

I appreciate the efforts of those who may have contributed directly or indirectly towards the success of my SIWES program, may you all be rewarded abundantly and may ALLAH crown your efforts with success in your endeavors. AMIN

# SUMMARY

This report reflects the experience gained by JIMOH, Imamanif Babatunde during the period of his industrial work experience scheme. The SIWES was done at Great Builders Consult, Irewolede, Ilorin, Kwara State during a period of 16 weeks equivalent to 4 months. The industrial training took place at a construction of a residential building at Las Vegas Estate, Ilorin. The following projects were carried out;

- ✓ Casting of ring beams.
- ✓ Casting of concrete slabs.
- ✓ Casting of staircase.
- ✓ Erection of block walls..

I was also enlightened about various essential constituents that I am supposed to have a knowledge about as an aspiring civil engineer. These includes;

- ✓ Meaning of setback in construction.
- ✓ Linear measurements.
- ✓ Purpose and uses of various tools and equipment and how to operate them.
- ✓ Knowledge about reinforcement bars.
- ✓ How to treat concrete.

# TABLE OF CONTENTS

# CHAPTER 1

## 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.

The (SIWES) program helps the student to put to pratice 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 four months industrial training at **GREAT BUILDERS CONSULT. IREWOLEDE.**

This program provides employment opportunities for students. It also exposes students to the needed experience that a real time job demands and human relations within and outside the country depending on the area in which they find themselves.

## 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, helps the student to put to practice what they have learnt in class in the real world. It commences after the second semester exam and is a compulsory course to all ND 1 proceeding to ND 2, it is a four (4) unit

credit course, meaning that it is needed by a student in order to bag his/her NATIONAL DIPLOMA CERTIFCATE.



**1.2 PURPOSE OF SIWES**

SIWES was introduced with the purpose of making student acquire and gain firsthand more knowledge about methods of some professional works and to expose them to how they can buckle up to meet expectations from the industry, organization and clients in future.

**1.3 AIM/OBJECTIVES OF SIWES**

The objectives of the student industrial work Experience are:

- It enables student to be self-dependent not in the theoretical aspect but also in the practical aspect in their field of study.
- The SIWES program prepares students for the work-like situations they are likely to come across after graduating from school.
- It exposes the students to some equipment that are not available in school.

It also helps the students to be aware of general precautions, rules and regulations of an establishment and how it operates.

**1.4 ROLES OF ITF IN SIWES**

The main roles of ITF in SIWES are:

- Interacting with the SIWES agencies to ensure prompt receipt and processing of placement list.

- Co-ordinate, direct and finance the SIWES program in its attachment stipend and lecture supervisor allowance.



- Supervises 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.
- 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 program involving the students, the universities and industries. The scheme is organized, funded and directed by ITF for students undergoing studies in Tertiary institutions.

# CHAPTER 2

## 1.0 INDUSTRIAL WORK EXPERIENCE

This chapter is an exposition on the experience gained during the student's industrial work experience scheme.During the SIWES program, I took part in the project of construction a residential building at Phase two of Las Vegas Estate, Ilorin, there I actively took part in the preparation of the following structural components:

1. Ring beams
2. Concrete slabs
3. Stairs
4. Erection of block walls

Then I learnt about some other vital aspects like:

1. Setback in setting out.
2. Linear tape measurement.
3. Uses and functions of various tools.
4. Various ways to treat concrete. e t c

### 2.1.1 RING BEAMS

A ring beam is a continuous horizontal beams that encircles a structure, typically at floor or roof level, to provide structural reinforcement and distribute loads evenly. It is commonly used in concrete and steel constructions to enhance stability and resist lateral forces.

### 2.1.2 FUNCTIONS OF RING BEAMS

1. Structural Integrity- It helps in holding walls together and preventing cracks due to uneven settling.
2. Load distribution- It transfers roof and floor loads to supporting wall or columns.
3. Seismic Resistance- Strengthens a structure against earthquakes by tying walls and columns together.
4. Prevention of Differential Settlement-Reduces the risk of uneven sinking in weak soil conditions.



**2.1.3** Positions in which ring beams are used

- Above walls in masonry structures.
- At the foundation level in high rise buildings.
- On top of columns to support trusses.
- In water tanks, silos, and towers for circular reinforcement.

**2.1.4** Preparation of a Ring beam

Here's a step by step guide:

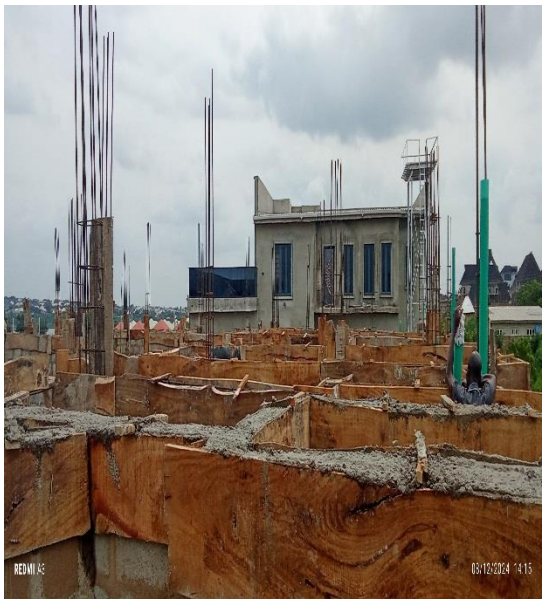
1. Site preparation
   - Ensure proper marking of beam location using chalk, string lines, or laser levels.
   - Verify structural plans and dimensions as per the engineer's design.

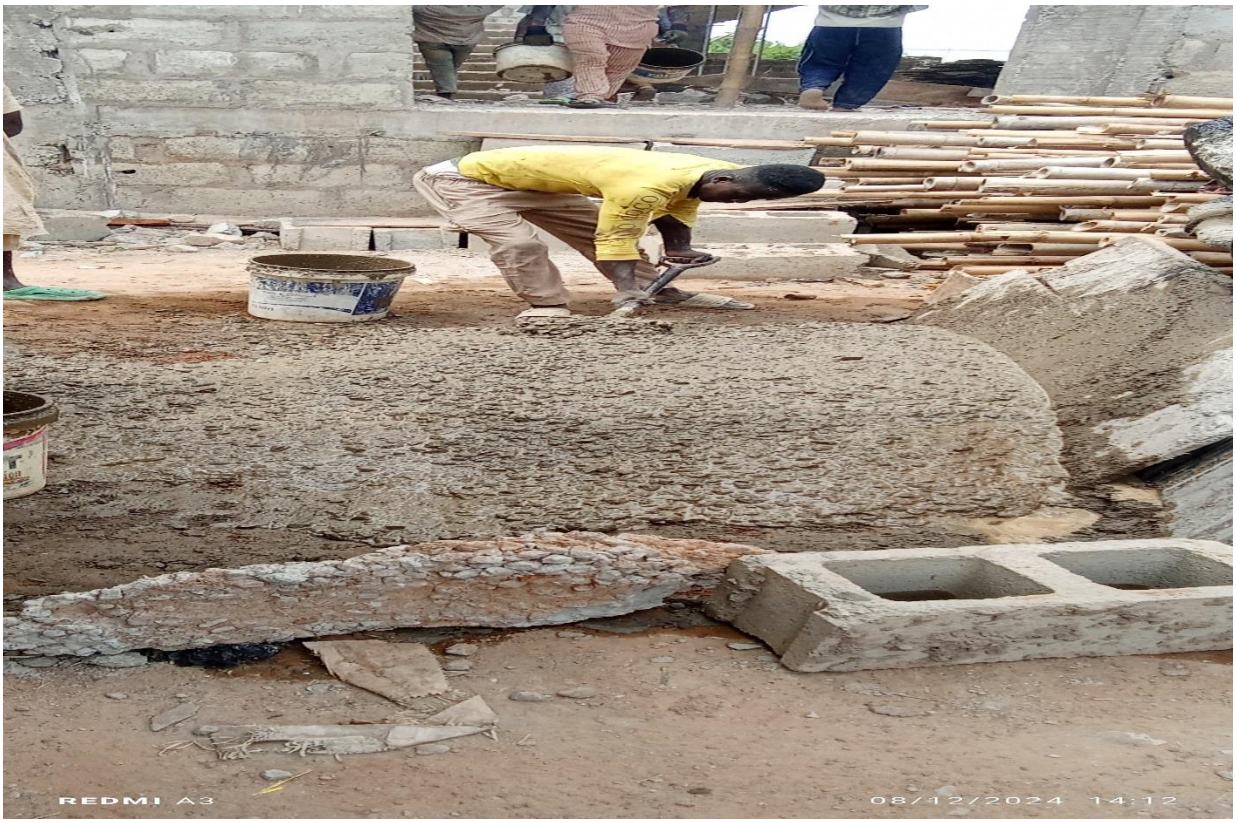
2. Formwork setup
   - Use wooden or metal formwork to create the mold for the beam.
   - Ensure formwork is well supported to prevent deformations.
   - Apply oil or a grease agent on the inner surface for easy removal.
3. Reinforcement preparation
   - Cut and bend steel reinforcement bars as per structural design.
   - Tie reinforcement bars together using binding wire to maintain spacing.
   - Use spacers and chairs to ensure proper concrete cover (typically between 25-50mm).
4. Concrete mixing and pouring
   - Mix concrete in right ratio as specified by the engineers.
   - Pour concrete into formwork in layers and compact it using vibrators to eliminate voids or air pockets.
   - Level and smoothen the surface using trowels.
5. Curing process
   - Keep the concrete moist for at least 7-14days to prevent cracks and enhance strength.
   - Cover with wet sacks or apply water at regular intervals.

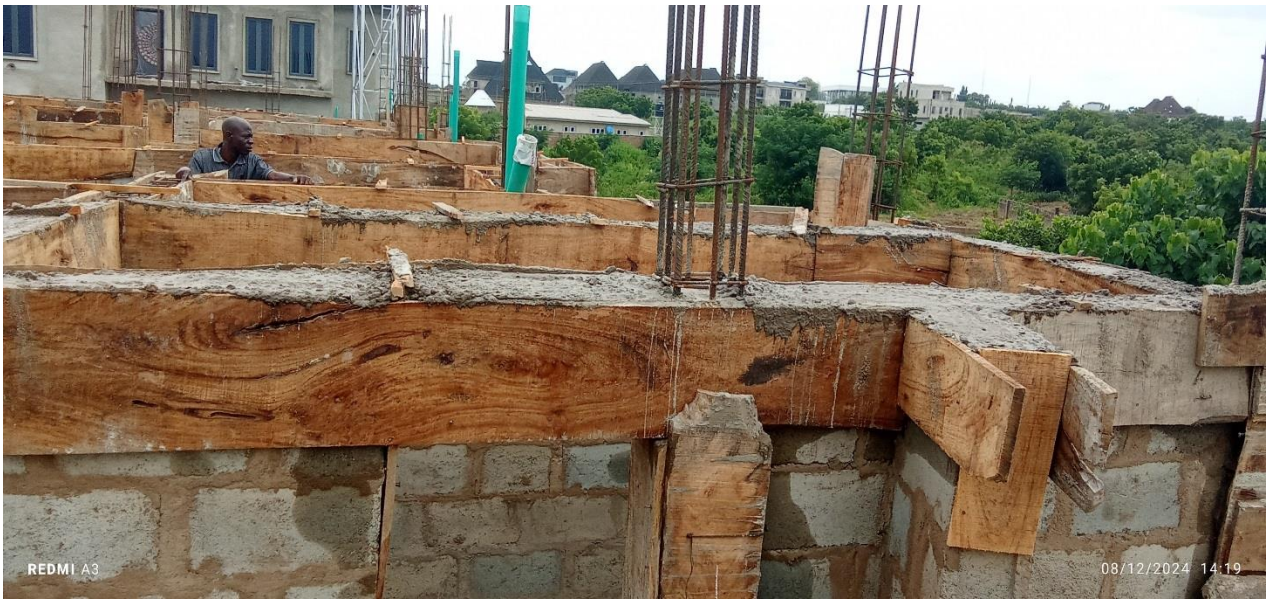
6. Formwork Removal
    - After curing, carefully remove the formwork.
    - Inspect for defects and repair any visible cracks.

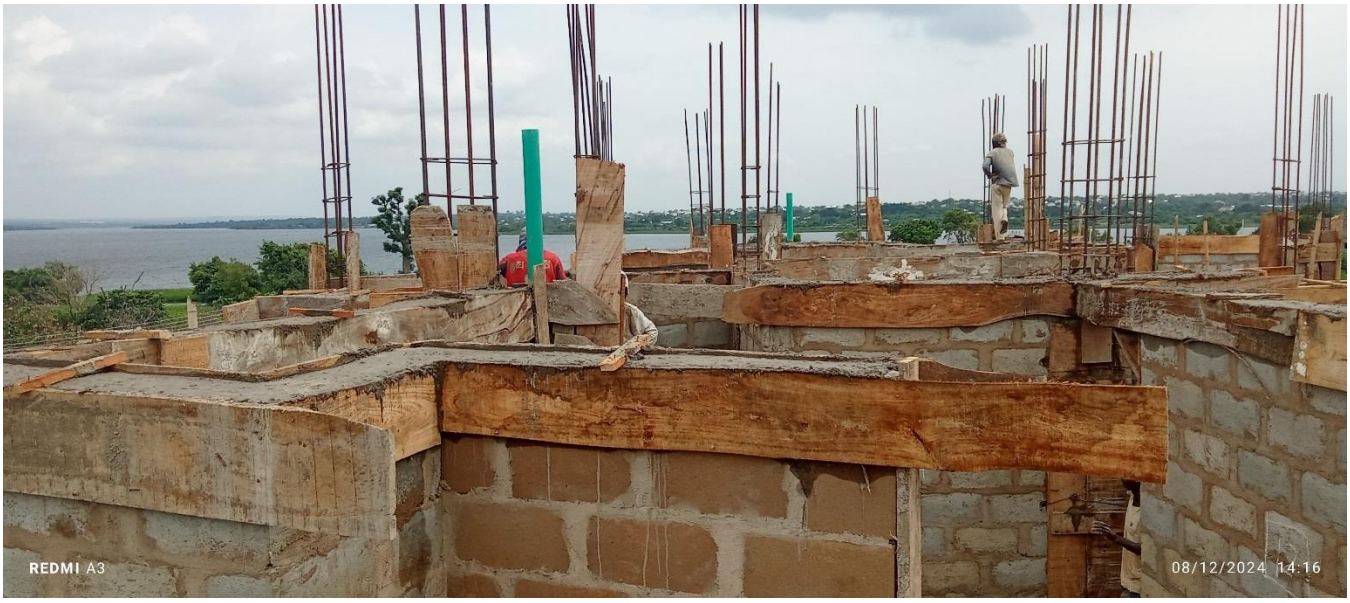


**2.1.5** PICTURES/DIAGRAM OF RING BEAMS


REDMI A3
08/12/2024 14:12


REDMI A3
08/12/2024 14:19






### 2.2.1 CONCRETE SLABS

A concrete slab is a flat, horizontal structural element made from cast concrete, commonly used in floors, ceilings, and pavements. Slabs can be supported by the ground (slab-on-grade) or elevated (suspended slab).

### 2.2.2 USES OF SLAB

- Foundations for buildings
- Floors in basements, garages, and homes
- Pavements and sidewalks
- Bridge decks and industrial platforms
- Ceilings/roofs in multistory buildings

### 2.2.3 PREPARATION OF SLABS

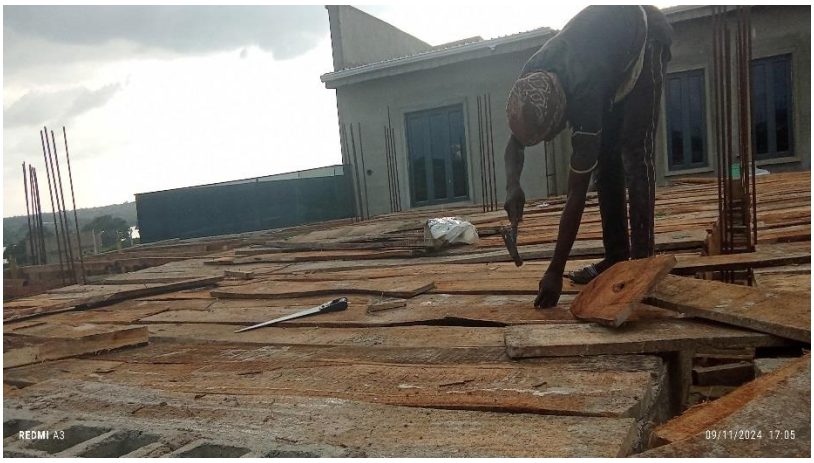
- Site clearing and excavation: Remove vegetation, debris, and top soil. Level the area

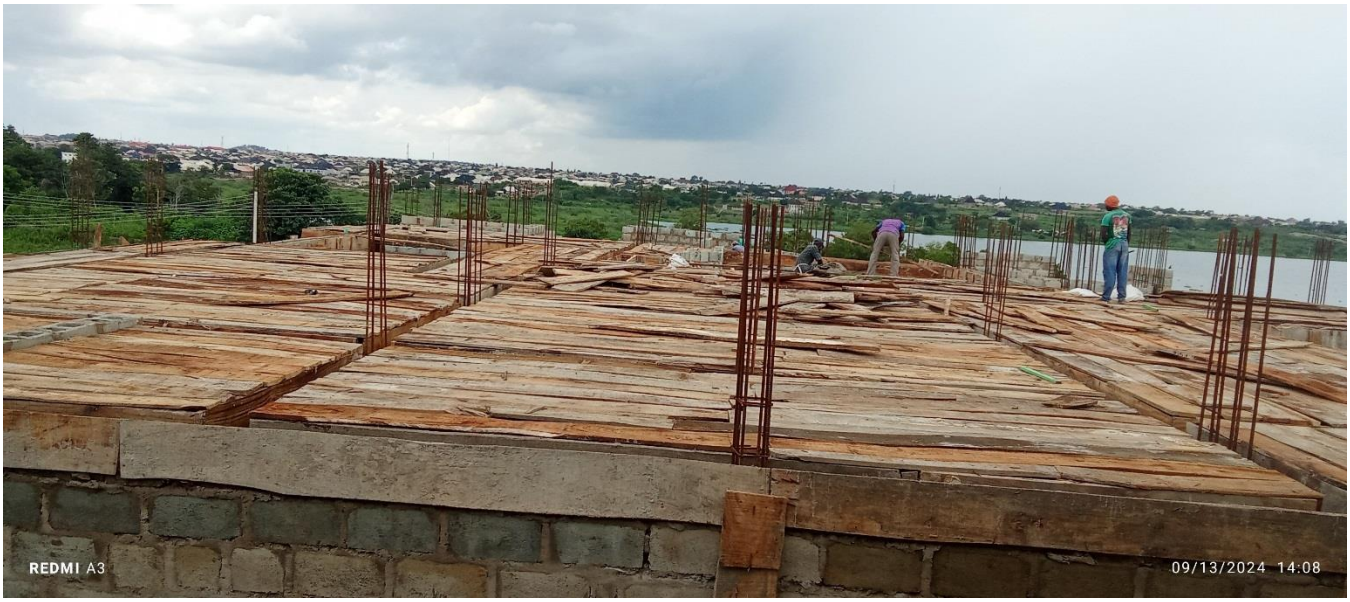
- Formwork setup: Install wooden or metal forms to shape the slab.
- Installation of damp proof membrane: This is done to prevent the escape of water during casting.
- Reinforcement placement: Install steel rebar or wire mesh to add strength
- Mixing and pouring concrete: Pour and spread the concrete mix evenly.
- Leveling and finishing: Screed and smooth the surface using trowels or floats.
- Curing: Keep the slab moist for several days to prevent cracks and ensure strength gain.

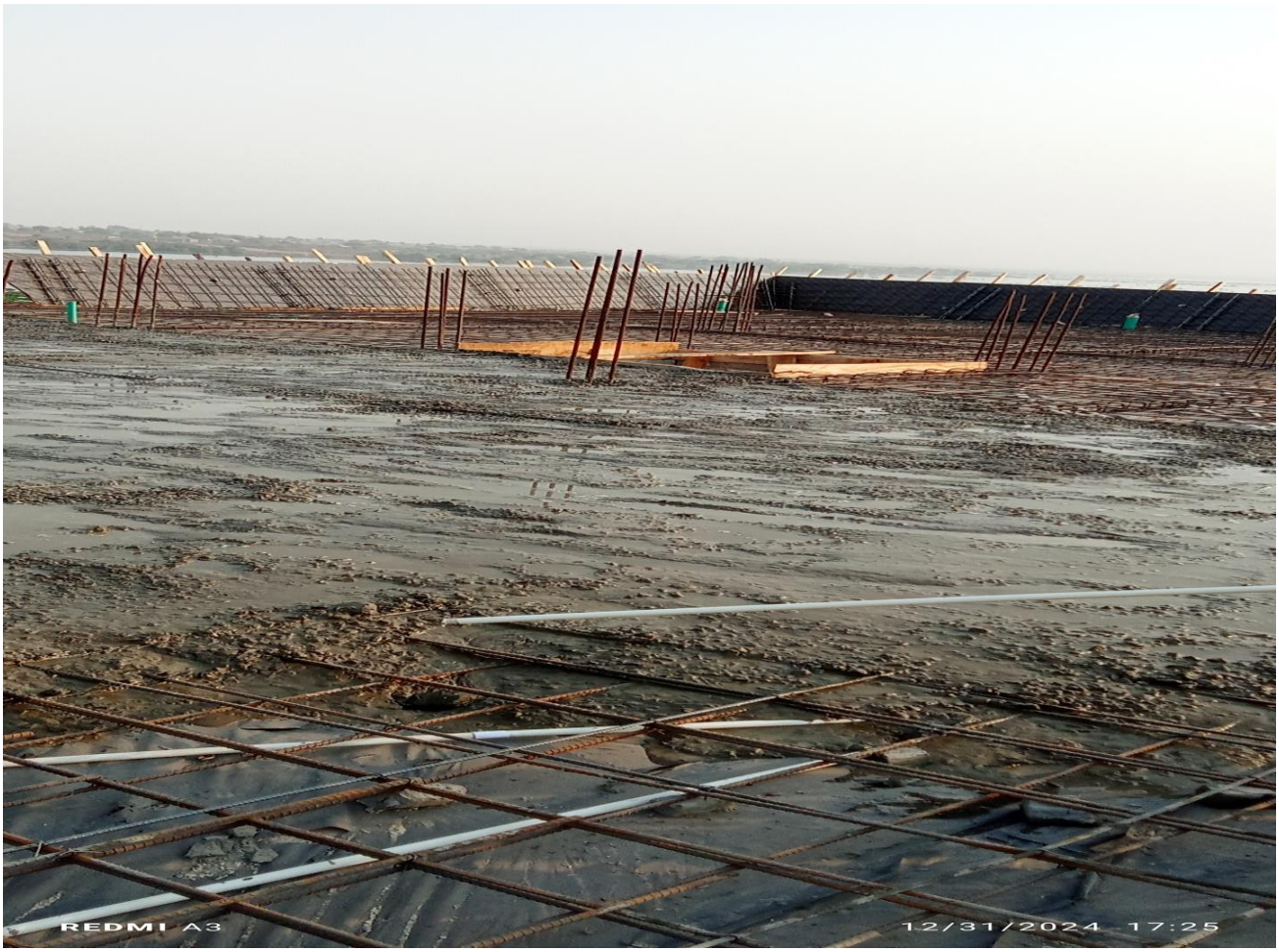
### 2.2.4 FUNCTIONS OF SLABS

- Load bearing: Spreads loads to the grounds or to the beams.
- Durability: Resists wear, moisture, and pressure over time.
- Insulation and sound proofing: Acts as a thermal and acoustic barrier (especially in multistory buildings).
- Structural support: Integral to the stability of buildings and infrastructure.

### 2.2.5 PICTURES






### 2.3.1 STAIRS

Stairs are a series of steps arranged to provide a means of vertical movement between different levels or floors of a building or structure. They consist of horizontal platforms known as treads and vertical elements known as risers often supported by stringers and are designed for both functional access and safety in compliance with building codes

### 2.3.2 COMPONENTS OF STAIRS

1. Basic components

- Tread: The horizontal part of the step where you place your foot.

- Riser: The vertical portion between each tread.
- Stringer: The inclined structural member that supports the treads and risers.
- Landing: A flat platform between flights of stairs.
- Handrail: Safety features for grip and fall prevention.

2. Design considerations:

- Rise and run: Rise which is the vertical height of each step and run with is the horizontal depth of each tread must be balanced for comfort.
- Slope (Angle): Typically between $30^0$- $37^0$ for most buildings.
- Headroom: Minimum vertical clearance to avoid hitting one's head.
- Load bearing capacity: Must support anticipated traffic and weight.

### 2.3.3 MATERIAL USED IN STAIRS

1. Concrete.

2. Steel.

3. Wood.

4. Glass or stone.

### 2.3.4 FUNCTIONS OF STAIRS

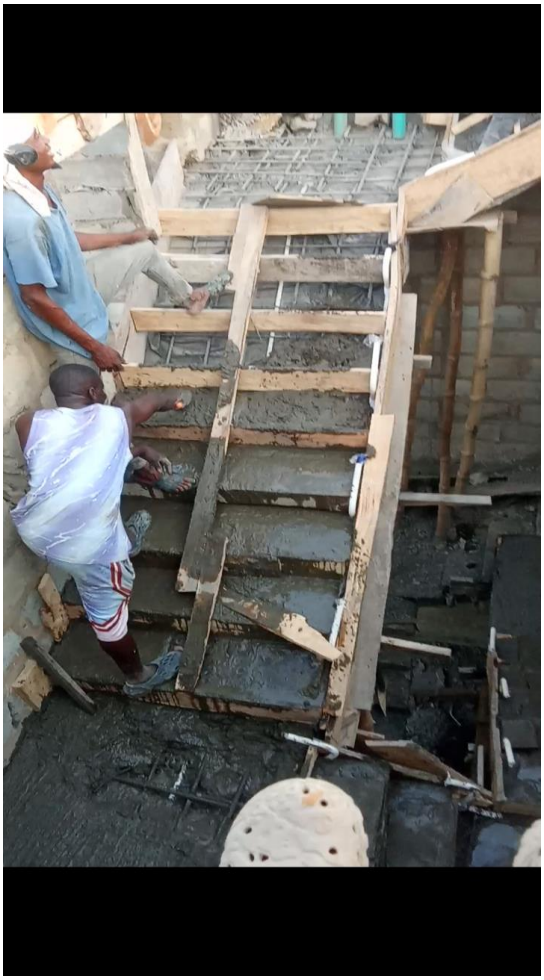
Stairs serve several critical roles in buildings:

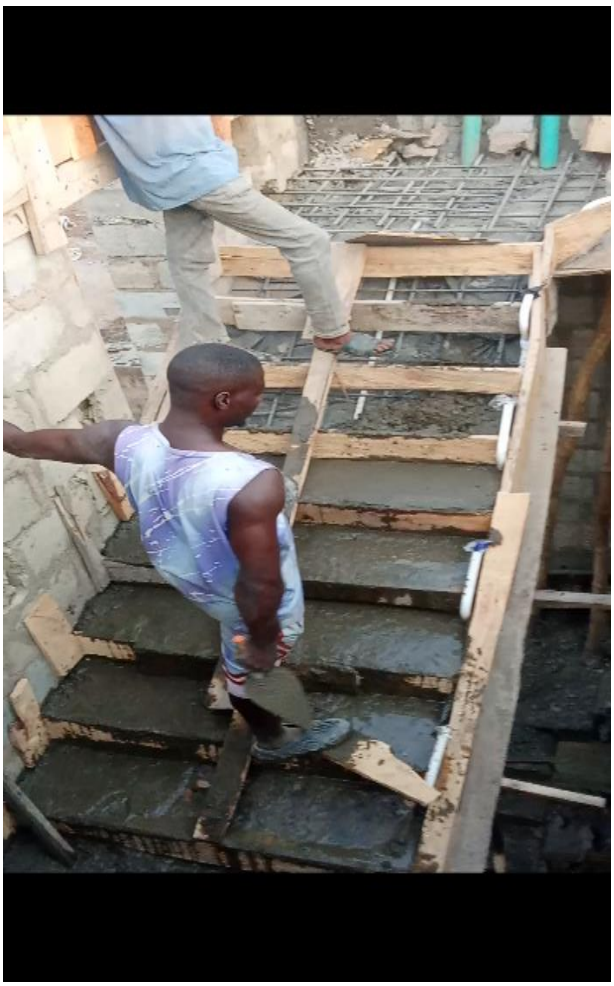
- Vertical circulation: Provide a means to move between floors when elevators are not available.
- Emergency access: Acts as an escape routes during fires or emergencies.
- Structural integration: Can be a part of the building's load-bearing system.
- Aesthetic or architectural value: Enhance the interior or exterior look of buildings.

### 2.3.5 CONSTRUCTION PROCESS OF STAIRCASE

- Marking and layout: Layout dimensions on site based on drawings.
- Formwork (for concrete stairs): Build molds using wood or steel.
- Reinforcement: Install steel rebars to strengthen the stairs.
- Pouring concrete: Pour concrete carefully and vibrate to remove air pockets
- Finishing: Finish surfaces (e.g., plaster, tile, polish) and installation of handrails and guardrails.

### 2.3.6 SITE IMAGES





### 2.4.1 BLOCKWALLS

A block wall is a wall built using precast concrete blocks. These walls can be used for both load bearing applications and non-load bearing applications.

### 2.4.2 CLASSIFICATION OF BLOCK WALLS

1. Based on materials:

- Hollow concrete block walls.
- Solid concrete block walls.
- Aerated autoclaved concrete (AAC) block walls.
- Cinder block wall.
- Fly ash block wall.

2. Based on purpose

- Load bearing block wall.
- Non-load bearing block wall.

### 2.4.3 FUNCTIONS OF BLOCKWALLS

- Structural support: For load bearing applications.
- Partitioning: To divide internal spaces.
- Enclosure: For external walls and boundary walls.
- Fire resistance: Blocks provide fire-rated wall assemblies.
- Thermal and sound insulation: Some blocks have good insulation properties.
- Aesthetic appeal: Can be finished with plaster, paint, tiles, etc.

### 2.4.4 CONSTRUCTION PROCESS OF BLOCK WALLS

1. Site preparation:

- Clear and level the area.
- Layout wall lines using chalk or string.

2. Foundation:

- Excavate trench for footing.
- Pour concrete foundation or footing as per design.

3. Block laying:

- Mix mortar
- Start laying blocks; Begin from the corners, use plump to level and keep the walls vertical.
- Lay blocks in desired bond.

4. Apply Mortar

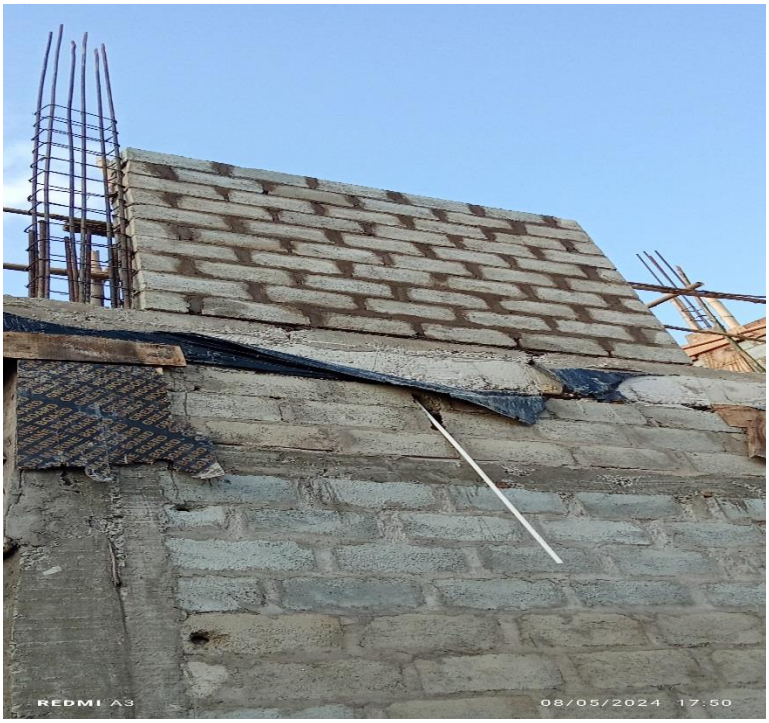
    - On bed(bottom) and head(side) of each block

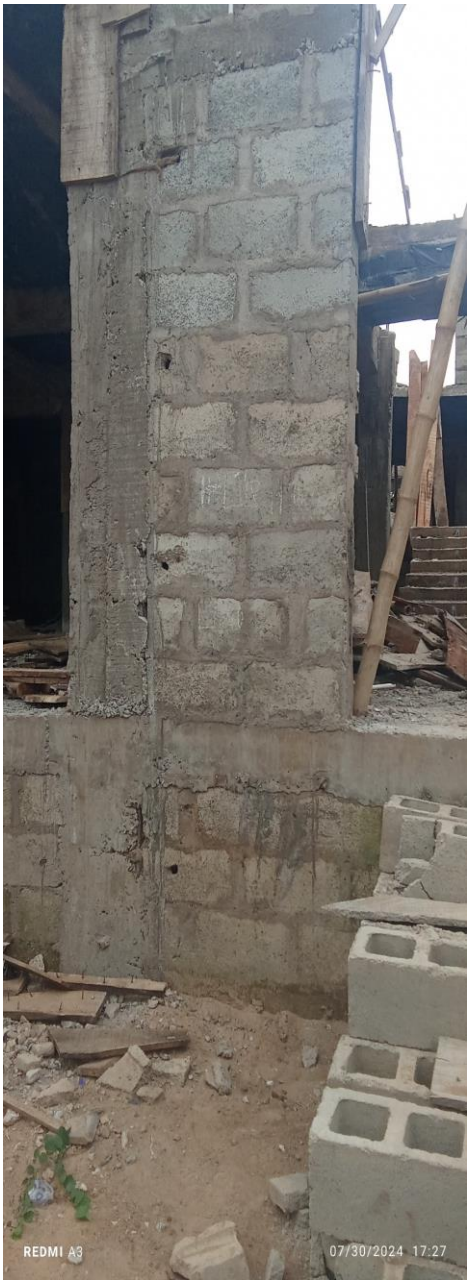
5. Curing: Keep the wall moist for 7 days or more to strengthen the mortar.

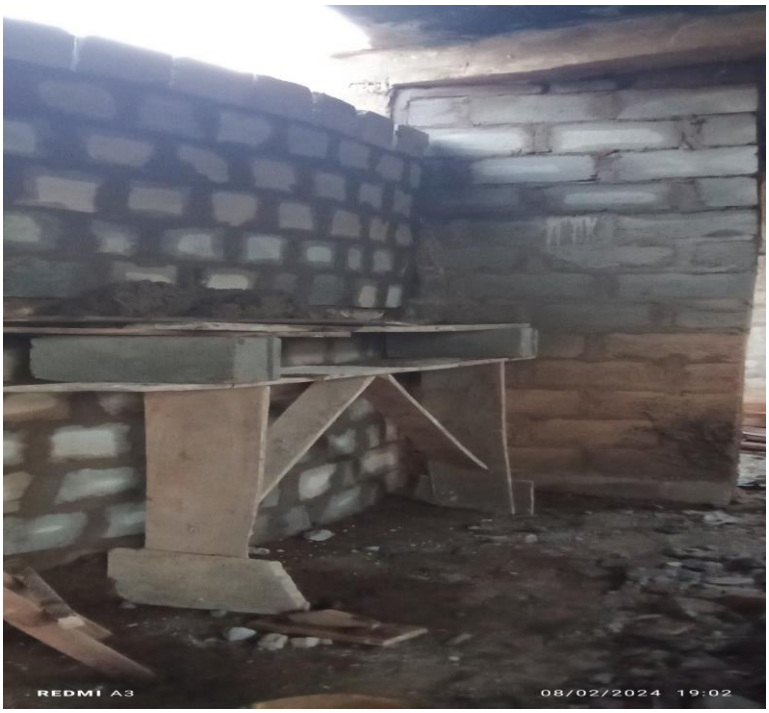
6. Finishing:

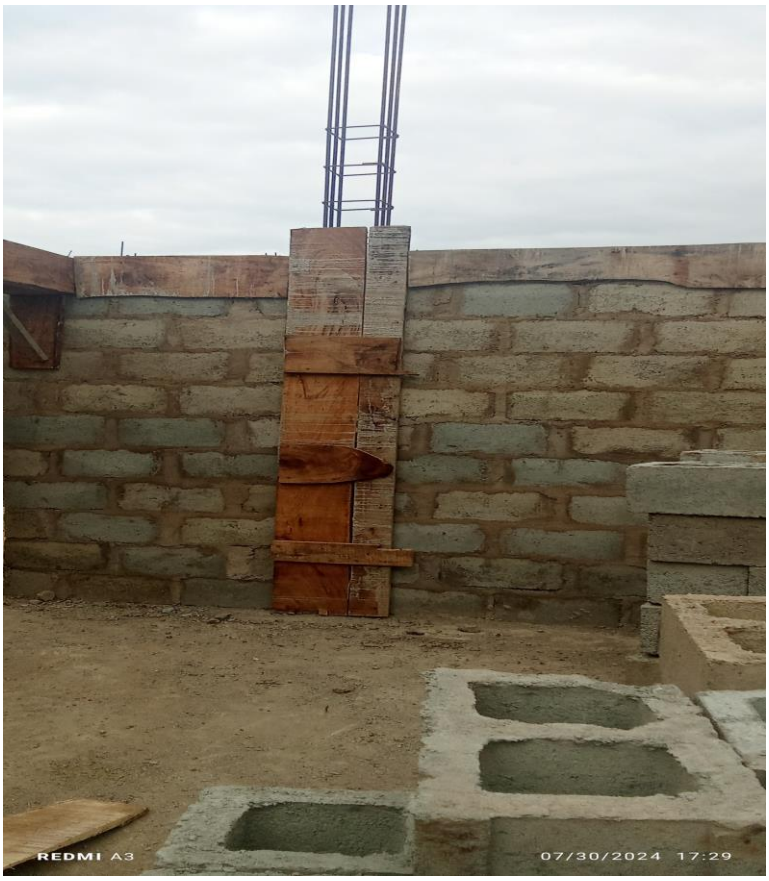
- Apply plaster, paint, or cladding
- Install lintels above openings(doors/windows)

### 2.4.5 IMAGES




REDMI A3
08/02/2024 19:02


REDMI A3
07/30/2024 17:29

## CHAPTER 3

## CONCLUSION

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 always gives special assistance to the SIWES student for them to achieve their goals. I hope what I've learnt will always be beneficial to me in future endeavors.

## RECOMMENDATION TO THE ORGANIZATION ON SIWES PROGRAM

I will suggest to the organization to always accept the students that come for their SIWES program. Also, I will recommend the industrial based supervisor to always give special attention to the SIWES student during their program.