A TECHNICAL REPORT ON

STUDENTS INDUSTRIAL WORK EXPERIENCE SCHEME(SIWES) UNDERTAKEN

AT

MINISTRY OF WORKS AND INFRASTRUCTURE, ABEERE, BOLA IGE HOUSE, STATE SECRETARIAT, ABERE, OSOGBO, OSUN STATE , NIGERIA.

BY

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ND/23/ARC/FT/0013

SUBMITTEDTO

DEPARTMENTOFARCHITECTURAL TECHNOLOGY AND INSTITUTE OF ENVIRONMENTAL STUDIES

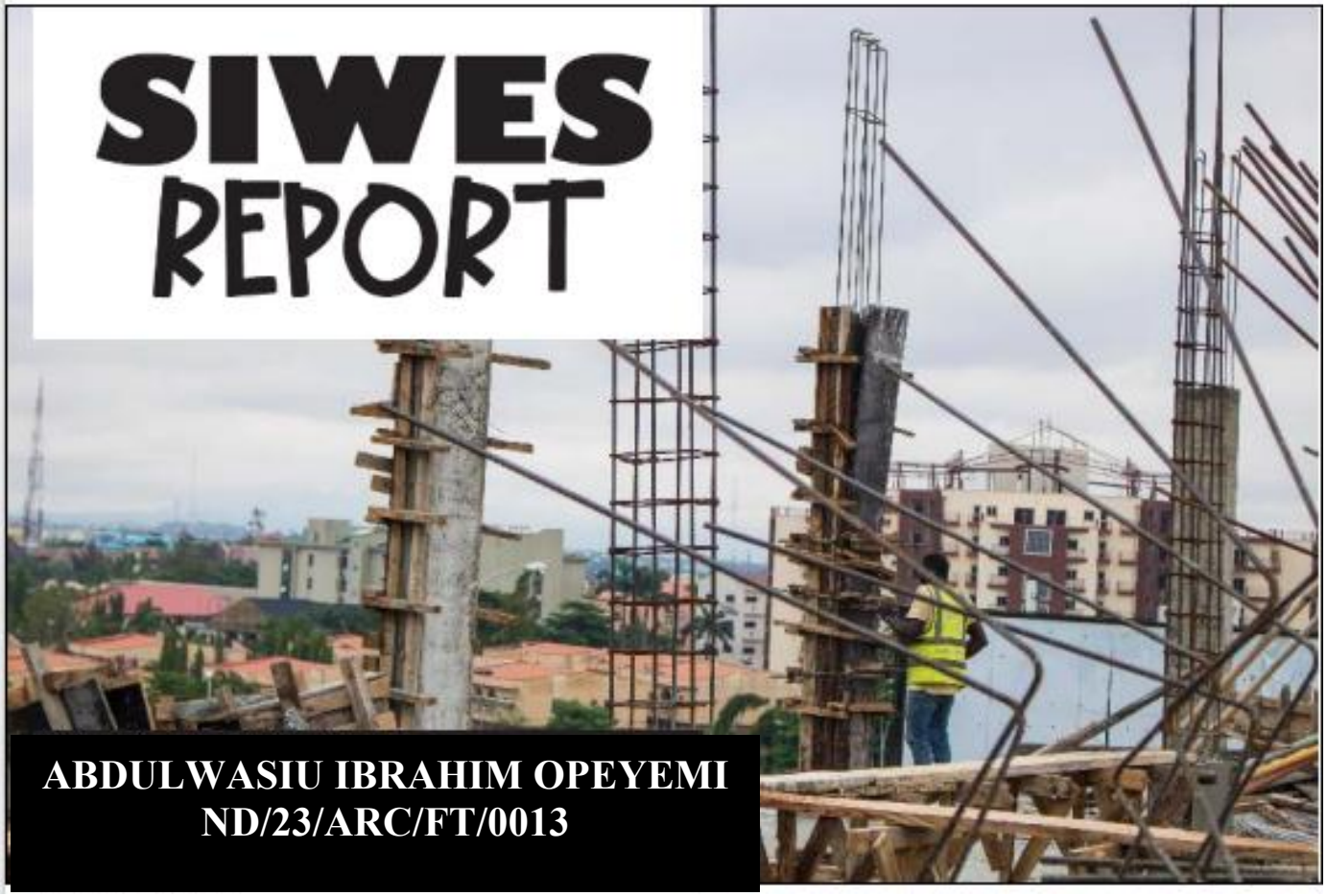
KWARA STATE POLYTECHNIC, ILORIN

ILORIN, KWARA STATE, NIGERIA

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF NATIONAL DIPLOMA IN ARCHITECTURAL TECHNOLOGY

MARCH , 2025

SIWES REPORT



ABDULWASIU IBRAHIM OPEYEMI
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DEDICATION

This report is dedication to Almighty Allah, for His mercies and blessing shown on me before, during and after my SIWES program. I will also like to dedicate this report to my parents and Principal Architect and Industrial Supervisors who stood by me and also help me in many ways during this period of my internship and also preparing this report.

DECLARATION

I, ABDULWASIU IBRAHIM OPEYEMI MATRIC NO ND/23/ARC/FT/0013 hereby declare that this student industrial work experience scheme (SIWES) technical report was solely written by me, with guidance of the Principal Architect of Ministry Of Works And Infrastructure, Abeere, Bola Ige House, State Secretariat, Abere, Osogbo, Osun State , Nigeria.

. I also declare that all site pictures attached to this report were taken by me and my fellow IT student on site visits.

STUDENT SIGN **DATE**

_____ _____

SUPERVISOR SIGN **DATE**

_____ _____

H.O.D SIGN **DATE**

_____ _____

ACKNOWLEDGEMENT

I will like to take a little portion of this report to express my profound gratitude to these intellectuals whom without their constant support I would have encountered a lot of stopping blocks during the course of my internship. Above all, my utmost appreciation goes to the Almighty, who has seen me through the different challenges and spared my life in good health, giving me the opportunity to write this report. Next, to my parents for their constant financial and moral support, I pray you live long enough to reap the sweetened fruit of your labour. I also want to appreciate SIWES Coordinator for their unending care always. The entire staff of Ministry Of Works And Infrastructure, Abeere, Bola Ige House, State Secretariat, Abere, Osogbo, Osun State , Nigeria. I beseech prosperity in the wonderful firm. Special appreciation goes to the Principal Architect and partner, Architect Abdulrazaq Olarenwaju Adio for giving me the opportunity to undertake my internship in their prestigious firm, I pray the Almighty continues to bless you. Also, to my affable and erudite supervisor Arc. Christopher Adokiru, I thank you so much for the constant support and the

peerless knowledge you have impacted on me, I pray God continues to bless you, your family and your amazing brain. Much thanks to all the architects in the firm for impacting knowledge on me.

I also say a big thank you to Director and my co interns, I pray we are again chanced to meet in future in sound health and good wealth. To those I have not singled out, God knows I really appreciate your being part of my life experience.

SPECIAL RECOGNITION

The **Ministry of Works and Infrastructure** in Osun State, Nigeria, is a key government department responsible for the planning, development, and maintenance of public infrastructure, including roads, buildings, and other public facilities. It is located in the **Bola Ige House**, within the **State Secretariat** in **Abere, Osogbo**, Osun State.

Brief History:

Formation and Evolution:

The Ministry of Works and Infrastructure was established to oversee and manage the construction and maintenance of public works, including the development of roads, bridges, and government buildings, critical to the socio-economic development of the state.

The state of Osun was created in **1991** from the old Oyo State, and along with it, various ministries were established to handle the governance and development of the state. The Ministry of Works and Infrastructure has been one of the essential departments in ensuring the physical growth of the region.

Bola Ige House:

The Ministry is housed in the **Bola Ige House**, which is named after **Chief Bola Ige**, a prominent Nigerian lawyer and politician, who served as the Governor of Oyo State and later as the Minister of Justice and Attorney General of Nigeria. He was an important figure in Nigerian politics and is remembered for his contributions to governance and the development of the South-West region.

Role and Functions:

The Ministry handles the construction and maintenance of state-owned infrastructure, including roads, public buildings, and other civil engineering projects. It also plays a role in the planning of urban development and environmental management within the state.

The Ministry works to ensure that critical infrastructure is developed to improve the living standards of the citizens and attract both local and international investments.

State Secretariat (Abere):

The **State Secretariat** in **Abere**, Osogbo, is the administrative center of Osun State. It houses the offices of various state ministries, including the Ministry of Works and Infrastructure. The Secretariat serves as the hub for government administration, policy formulation, and coordination of state programs.

The **Ministry of Works and Infrastructure** has played a vital role in shaping Osun State's infrastructural landscape, contributing to the state's development, and supporting its economic growth through various infrastructure projects.

ABSTRACT

SIWES programme has provided an avenue for students to gain the type of knowledge that manifest itself as skills. This kind of knowledge is very important to understand how things actually works. As it occurs and develop in those concrete situations where it is learnt, it is contextual and social in nature and helps one acquire the specific techniques that becomes the tool of one's trade.

I started the four-month programme with the enthusiasm to improve in my architectural skills and it has eventually come to an end. The knowledge gained is now part of myself but there is a necessity for students who have undertaken this programme to provide written evidence in form of report that the period of the course duration was judiciously utilized rather than wasted.

This report gives account in a logical and comprehensive manner, of the experience gained in the course of my SIWES programme.

CHAPTET ONE

INTRODUCTION

The second semester year-one course is one of the most compulsory courses for undergraduate students in the department of Architecture, same for some other departments in the Kwara State Polytechnic and other higher institutions. Students' Industrial Work Experience Scheme (SIWES) according to the curriculum of Architecture department, students are expected to spend a period of four months in an establishment where they are granted the opportunity to work as an intern. It exposes the student to architectural office practice in real environments. Acquisition of skill for competence in the execution of practical Architectural projects, safe handling of equipment and avoidance of hazards associated with them, and skill of observation, recording and documentation on construction sites.

The scheme exposes students to industrial based skills necessary for a smooth transition from the class room to the field of work. It affords students of tertiary institutions the opportunity of being familiarized and acquainted to the needed experience in handling machinery and equipment which are usually not available in our institutions. Thus, the participation in SIWES has become a necessary prerequisite for the award of Diploma and Degree certificates in specific disciplines in most institutions of higher learning in the country, in accordance with the education policy of government.

CORPORATE BACKGROUND

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The **Ministry of Works and Infrastructure** has played a vital role in shaping Osun State's infrastructural landscape, contributing to the state's development, and supporting its economic growth through various infrastructure projects.

VISION

To build a thriving construction business in Nigeria

MISSION

To grow our clientele base through regular innovations in our service offerings and consistent focus on our clients.

SERVICES INCLUDES:

1. planning
2. Design
3. Construction
4. Monitoring and Evaluation.
5. Project Management.

TARGETED CLIENTS:

Cooperate and Mutil Nationals, Federal and State Government, and the General Public.

GOALS AND OBJECTIVES:

Our Objectives is targeted towards high structural strength, stability, and economical service time delivery to ensure that the facilities are functioning and adequately fulfill the purpose for which it is provided.

In our usual character, the company has executed a wide range of construction works to the best satisfaction of our clients.

Among the project completed and handed over to our clients are; construction of concrete and block lined drainage works, box culvert and pipe culvert, construction of housing estate, construction of feeder roads, construction of hostel rooms for student ,and block of class rooms and office complex.

ORGANIZATION STRUCTURE

Ministry Of Works And Infrastructure, Abeere, Bola Ige House, State Secretariat, Abere, Osogbo, Osun State , Nigeria. is using the administrative organization structure type. The organization is headed by the three partners, they act as the principal consultants. They all have direct access to the admin and finance department to keep abreast of the monetary aspects of the transactions carried out within the firm. Other positions held in the architectural firm and their functions are duly highlighted below;

DEPARTMENT HEAD / SENIOR MANAGER

Senior management architect, quantity surveyor, and civil engineer or on registered graduate; responsible for major department(s) or functions; reports to a principal or partner.

PROJECT MANAGER

Licensed architect or non-registered graduate with more than 10 years of experience; has overall project management responsibility for a variety of projects or project teams, including client contact, scheduling, and budgeting.

SENIOR ARCHITECT / DESIGNER

Licensed architect or non-registered graduate with more than 10 years of experience; has a design or technical focus and is responsible for significant project activities.

ARCHITECT / DESIGNER III

Licensed architect or non-registered graduate with 8-10 years of experience; responsible for significant aspects of projects.

ARCHITECT / DESIGNER II

Licensed architect or non-registered graduate with 6-8 years of experience, responsible for daily design or technical development of projects.

ARCHITECT /DESIGNER I

Recently licensed architect or non-registered graduate with 3-5 years of experience; responsible for particular parts of a project within parameters set by others.

THIRD-YEAR INTERN

Unlicensed architecture school graduate in third year of internship; develops design or technical solutions under supervision of an architect.

SECOND-YEAR INTERN

Unlicensed architecture school graduate in second year of internship.

ENTRY-LEVEL INTERN

Unlicensed architecture school graduate in first year of internship.

UNITS AND FUNCTIONS

Regardless of her administrative structure, Ministry Of Works And Infrastructure, Abeere, Bola Ige House, State Secretariat, Abere, Osogbo, Osun State , Nigeria. also has some divisional characteristics. Ama Designs also adopts the principle of "division of labour" to ensure utmost productivity in various aspects. The different units in the architectural firms and their respective functions are adequately explained below.

DESIGN DEPARTMENT

This department is responsible for the preparation of detailed plan of the form or structure of something, emphasizing features such as its appearance, convenience, and efficient functioning. This department utilizes their creative skills with the use of architectural softwares to strategically create plans in form of 2-dimensional drawings and 2-dimensional visualizations for actualization of certain development projects.

Other processes include:

SKETCH DESIGN

FEASIBILITY STUDY

3D IMAGES AND MODEL

PRELIMINARY DESIGN

NIGERIAN PERMIT APPLICATION

PROCUREMENT AND TENDER PHASE

CONTRACTUAL DOCUMENTS

CONSTRUCTION PHASE

The construction phase of the project brings the dream to life and demands rigor. It involves checking any documents and drawings that the contractor puts forward and ensuring that the works are carried out in conformity with the building contract.

It's a very important phase in the architect's scope of works as it is the only way that the architect can ensure that the project gets built as he has designed and developed with the client. It usually requires weekly meeting with minutes by the architect.

Depending on the type of building contract the architect helps coordinate the works with the different trades, making sure that good common practice is respected, standards and regulations are followed. The architect can explain each part of the construction process and makes sure that all the different specialized participants don't lose site of the big picture. Each month the architect examines any invoices raised by the contractor to ensure that any payment that is requested corresponds to completed works on site.

At the end of the building site phase the architect reviews the works with the contractors to complete any last details.

HANDOVER OF THE WORKS AND PRACTICAL COMPLETION

At the end of the construction phase the architect assists the client with the handover of the building. In the UK it's known as practical completion. It involves a formal visit of the works and a report, sometimes with a list of defects or snagging list that is put together by the architect for the client. It's the moment when the client can list any works that they feel aren't complete or don't satisfactorily meet their expectations but only defects in relation to a contract is listed.

AS BUILT DOCUMENTS AND BUILDING USER MANUAL

At the end of the building project the architect will collate for the client all the construction drawings that were used to build the project together with the manuals, certificates and guarantees that apply.

ADMIN DEPARTMENT

This department is responsible for supporting their organization in a variety of ways including bookkeeping, communications, scheduling, data entry, secretarial services and much more. The role of administrator involves a great deal of multitasking. They work with teams, oversee the operations within your company, manage groups, coordinate with management and engage in planning according to the needs of

the company. If there are office resource or administrative issues, they are the people expected to deal with them.

PERSONNEL UNDER THE ADMINISTRATIVE DEPARTMENT

INCLUDE:

- **RECEPTIONIST:**
- **ADMIN ASSISTANT:**
- **OFFICE MANAGER:**
- **EXECUTIVE/PERSONAL ASSISTANT:**

- **OFFICE ASSISTANT:**
- **RECORD OFFICER**:

FINANCE DEPARTMENT:

This department is responsible for running the accounting and financial activities of the firm. They analyses the economic stability of the company and provide financial information to other departments, enabling these department to make budgeting and investment decisions. They report on costs, productivity, margins and company expenditures.

CHAPTER TWO

SITE EXPERIENCE

Construction starts with planning, design, and financing; it continues until the project is built and ready for use.

The importance of construction to an architect cannot be overemphasized. Nowadays, architecture students learn to design buildings within the walls of the studio. The modern day architecture school problem revolves around most students not knowing the construction process of what they design.

Thus, here is a list of what I have come to gain during the **SITE EXPERIENCE** of my **SIWES** The importance of construction to an architect cannot be overemphasized. Nowadays, architecture students learn to design buildings within the walls of the studio. The modern day architecture school problem revolves around most students not knowing the construction process of what they design.

programme:

I ACQUIRED SITE-SENSITIVITY:

No matter how many site visits and analysis you make, you could never achieve the same site sensitivity as you would by working on it. As I worked on the site, I fully grasped its nature. This way, I was able to shape my building per site conditions to the tee!

I UNDERSTOOD MORE ABOUT MATERIAL APPLICATION:

It shouldn't come as a surprise that participating in building process boosts one's understanding of material applications. After all, construction site serves as a perfect platform for exploring the inherent connection between architecture and its materials.

Once you're a part of the building-making process, you might end up discovering your own sustainable materials that are suitable for construction.

Thus, if given a fair chance on site, architects can not only become proficient in the art of building but also contribute to expanding the possibilities of material applications.

IT DEVELOPED MY CRAFT SKILLS:

It is a well-established fact that any hands-on experience is a better teacher than most classrooms. Likewise, working directly on the site would develop one's trade skills and craftsmanship more than any studio room.

To elaborate further, take an example of an instruction manual. Just like this manual would tell you what to do to make a certain product in steps, your college education teaches us how to make a building. It is not until we start following those steps that we find ways to change the instructions a bit for more efficiency. Similarly, when we craft building not on paper but on a construction site, we can see the impact of your design decisions right away and change those decisions per necessity.

Through this process, I attained a better understanding and appreciation of the efforts it takes to create the desired result.

CONSTRUCTION SITE GAVE ME EVEN MORE UNDERSTANDING OF WHY SITE KNOWLEDGE IS PARAMOUNT:

Knowing and doing are two very different things. This is not to imply that the academic part of architectural education is not good enough, rather it's not sufficient. We, architecture students, have been adding a junction box in our technical drawings for years.

Practical experiences on the site gave me mirages of realization over and over again. I realize that what I've been drawing for years had major gaps in construction knowledge. Hence, it is essential that I have construction site experience.

The act of being actively involved in any construction process cannot be overemphasized as it opens the architect's eyes to things that cannot be fully grasped in the design process.

SITE VISITATION

Site pictures found in this chapter were taken by me and my colleague from sites we visited, as instructed by my establishment of attachment for my SIWES programme. The buildings were designed and were being supervised by Ministry Of Works And Infrastructure, Abeere, Bola Ige House, State Secretariat, Abere, Osogbo, Osun State , Nigeria.
during the period of my SIWES programme.

MABUSHI SITE

• Client Name: Vodi Group

• Site Description: A 6 floor building including a basement and a pent floor. Workshops, goods, display areas, restaurant, kitchens, lettable spaces, conference room, auditorium space, pool at the pent floor, outdoor terrace.

• Construction Start: Dec. 2017

• Location: Plot 321, cadastral zone B06, Mabushi district, FCT abuja

• Consultant: MOLAK ENGINEERING AND CONSTRUCTION NIG. LTD/acres consults, lystra electrical limited, Hi-speed.

• Total Site Area: 2175m2

CONSTRUCTION PROCESS

"When walking alone, the architect reviews general progress and also zooms in on areas that are flagged in their mind: the area that is complicated, the area where there is little tolerance allowed, the area that was supposed to be fixed last week, the area that was problematic on other floors, the area you haven't seen in a while. The detail level of the observations depends on the phase of construction or special circumstances. Because of phasing, one area may require more detailed observations early because it will not be accessible later." ***Unknown*** The Architect's work during the construction phase is usually called CA (Construction Administration or Contract Administration).

There are weekly (or biweekly, depending on the size of the project) meetings led by the Owner/ Contractor team that keep the A/E (architect/engineer) team informed about how to prioritize their efforts.

Working with the Architect on sites during the period of my internship, I was able to acquire the following construction processes:

CONSTRUCTION OF CONCRETE WALLS, COLUMN EXTENSIONS

These kinds of wall are built of the mixture of sand, cement, gravel and water in a specific proportion. The right proportion is determined by the intended purpose. However, they have a similar method of construction. This begins by determining the exact position on site which the wall will constructed. The area is then measured and marked out. The marked area is excavated.

Excavation is either done manually or mechanically. During the excavation, the trench is dug a little wider than the needed region. Then major purpose of the excavation is to give the wall a firm base to prevent any form of overturning. When the trenches are set, construction of formwork begins.

Formworks for In-situ Concrete Work is defined as "A mould or box into which wet concrete can be poured and compacted so that it will flow and finally set to the inner profile of the box or mould." Formwork can be made using molds out of steel, wood, aluminum and/or prefabricated forms. Formwork is an ancillary construction, used as a mould for a structure. Into this mould, fresh concrete is placed only to harden subsequently. The construction of formwork takes time and involves expenditure up to 20 to 25% of the cost of the structure or even more. These are

Temporary structure required to safely support concrete until it reaches adequate strength.

PLASTERING OF WALLS

This is the process by which layers of cement-sand screed is applied to the wall, either on the interior or on the exterior. Cement plastering is commonly used as ideal coating for external and internal surface of wall. Cement plaster is usually applied in a single coat or double coat. Double coat plaster is applied where thickness of plaster is required to be more than 15 mm or when it is required to get a very fine finish.

CHAPTER THREE

SITE KNOWLEDGE

Construction projects involve the co-ordination of a great number of people, materials and components. Regular inspection is a crucial part of ensuring that the works progress as intended, both in terms of quality and compliance. Inspections will be carried out for a number of different purposes throughout the duration of a project.

The inspection process is separate from the contractor's own supervision of the works. Inspection is carried out purely to give an independent view of the works either for the client or a third party. Inspection of the construction works will be carried out as they proceed to verify compliance with the requirements of the contract documents.

Site inspectors provide an independent assessment of the works and will generally report to the contract administrator. They keep a site diary, attend construction progress meetings and to produce regular written reports.

SKILLLS SET AQCUIRE

I spent a good time in Ministry Of Works And Infrastructure, Abeere, Bola Ige House, State Secretariat, Abere, Osogbo, Osun State , Nigeria. I didn't just sit down and watch things being done, I paid thorough attention, asked technical questions, and hearkened to important instructions. I was also given a number of projects to work on. All under the guidance of my supervisor. In this course, I started to notice the general improvement in my architectural skills. The acquired skills are so peerless that no amount of lengthy writing can adequately express its extent. Some are explained below:

- Autodesk Revit Architecture
- 3D Studio Max Software
- Sketchup and Other Auxiliary Soft-wares
- Conceptual Development
- Design Development
- Elevation Treatment
- Building Approval

PROJECT WORKED ON

The huge number of the studio works I carried out were majorly based on designing residential and commercial buildings. The major tool used to accomplish my task in the studio were computer aided design software. These software applications aided the precision and accuracy of the designs to a good extent. The software applications include: Autodesk Revit architecture, 3D Studio Max, AutoCAD and other auxiliaries.

During my course of work in studio I got to understand more about designing and space management. I learnt more about flexibility in designing and gleaned some knowledge of how designs are being tackled from the brief to the final presentation to the client. Below are highlights of some of the projects I handled.

CHAPTER FOUR

SUMMARY

Prior to the commencement of my SIWES programme, I made a list of objectives. These objectives were planned to have all been attained at the end of my programme. They include but not limited to:

- To be able to create plans following all the laws and safety regulation.
- To be able to work towards a particular budget
- To learn new materials and new construction methods
- To improve my material selection
- To be aware of common and innovative construction processes on site
- And to gain additional architectural skills

For the ease of explanation, I have grouped my experience gained into two

- Site experience
- Studio experience

Out of the number of sites currently under construction, I was given the opportunity to be present on 4. I witness and in some cases, I was instructed by my supervisor to supervise some common and innovative construction processes and material installation.

PROBLEM ENCOUNTERED

Besides the extent of the good outcome of the programme, the experience wasn't free from hitches. There are some aspects of the scheme that isn't good enough and requires appropriate attention. These problems were avoided as possible but they proved to be inevitable. This chapter points out a few of these problems, explaining the bad effects they might have, and the assumed causes.

- Difficulty in securing a SIWES placement
- Inadequate orientation

DIFFICULTY IN SECURING A SIWES PLACEMENT

The first major problem faced by myself and most of my colleagues is the difficulty to secure a SIWES placement. We found out that a lot of the firms out there are unwilling to employ interns. This might be caused by the poor performance of the previously employed students. The extent of this problem is huge that most of my counterparts spent for closed to a month searching for a firm that will at least give them audience. I am also not an exception. This almost resulted into frustration and depression.

RECOMMENDATION

In the previous topic, some of the problem faced during my SIWES programme were discussed. These problem requires prompt attention and rectification, as it poses a great threat on the productivity of interns. Urgent attention to these problems will foster the growth of the scheme and improve the willingness of student to participate.

In this section, I will suggest some possible solutions for the university authorities that may reduce or even completely solve some of the problems discussed in the previous chapter.

- Liaising with firms
- Provision of fund
- Introduction of leave
- Elimination of academic distraction

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