

## CHAPTER ONE

### 1.1 INTRODUCTION

Before the establishment of the Scheme (SIWES), there was a broad gap between practical education and those that are solely on theoretical experience. This no doubt led to high level of incompetence workers in most of our industries which then ignited the campaign against pure theoretical education to certain disciplines and competency among our industrialists. They were of the opinion that most graduates of the institutions of higher learning lacked adequate practical knowledge in preparation for employment in the industries. Therefore, they unanimously agreed that the theoretical education as it is impacted on students is not enough to secure the student adequate job.

The Students Industrial Work Experience Scheme (SIWES) popularly called Industrial Training (IT) is the accepted technical training programme which forms part of the approved minimum academic standards in various degree programmes for all Nigerian universities and other institutions of higher learning e.g. Polytechnics. The aim of the programme amongst other things is to impose students on institutions equipment, parastatals of both private and public sectors in order to broaden their knowledge on practical experience of their work studies in the university, polytechnic, monotechnic, college of education (college of higher learning) so as to bridge the gap between the school work and the real work in the outside school environment (society). There are no doubt the different graduates of technical related departments and the likes have little difficulty after their years of study, on how to cope with the real experience. Since the introduction of Students Industrial Work Experience Scheme (SIWES) in 1973 by the then military head of state - Rtd. General Yakubu Gowon, the gap and lapses that have been the order of the day has been curtailed to a great extent.

This technical report on the industrial attachment is what follows after the completion of the work experience scheme. This report as a student of Environmental Management of Federal University of Technology Owerri, is to be submitted to the Department (Environmental Management). This is expected to cover all the works undertaken by me, during my period of attachment as an Industrial Training (IT) Student, at FEDERAL HOUSING AUTHORITY (FHA), Festac Town, Lagos. This should cover amongst other things - works, experiences, commendation, recommendation, problems, etc. that I had during my attachment.

#### 1.1.2 AIM OF SIWES

The goal/aim of setting up SIWES is to expose and prepare students on the industrial work experiences which they are likely to meet after graduation thereby smoothing their transition from the classroom to the world of work.

#### 1.1.3 OBJECTIVES OF SIWES

For the goal to be achieved, the following objectives of SIWES must come to play:

- Giving opportunities to the students to apply their theoretical knowledge in real work situation.
- The students should be allowed to practice using the equipment they have already learnt about in the theory basis.
- Students should be made to appreciate their professions as they experience the practical aspect of the profession.

#### 1.1.4 ROLES OF BODIES INVOLVED IN THE MANAGEMENT OF SIWES

Students Industrial Work Experience Schemes as a national programme involves different bodies of the national, state/regional and local status. Their roles differ in attempt to achieve the above mentioned goal. The following bodies are involved with their respective functions:

The Federal Government;

The Industrial Training Fund (ITF);

The National University Commission (NUC);

The Institution;

The Employers;

The Students

#### 1.1.5 ROLES OF THE STUDENTS

The students, being the major and the sufferer of the whole actions of industrial training must play active roles to ensure that the programme went on. Without much saying, needless of this party, industrial training could have not been initiated. He has the following roles to play:

- The students before industrial training must attend institution SIWES orientation programmes;
- The students must be obedient, humble, punctual, and hardworking, above all, adhere strictly to all the rules and regulations of the establishment.
- He is expected to keep proper records of jobs undertaken and other assignment done in his log book;

- He must be friendly to all the workers in the establishment to have access to clarity of any confusion as at when due.

## 1.2 INTRODUCTION TO THE COMPANY

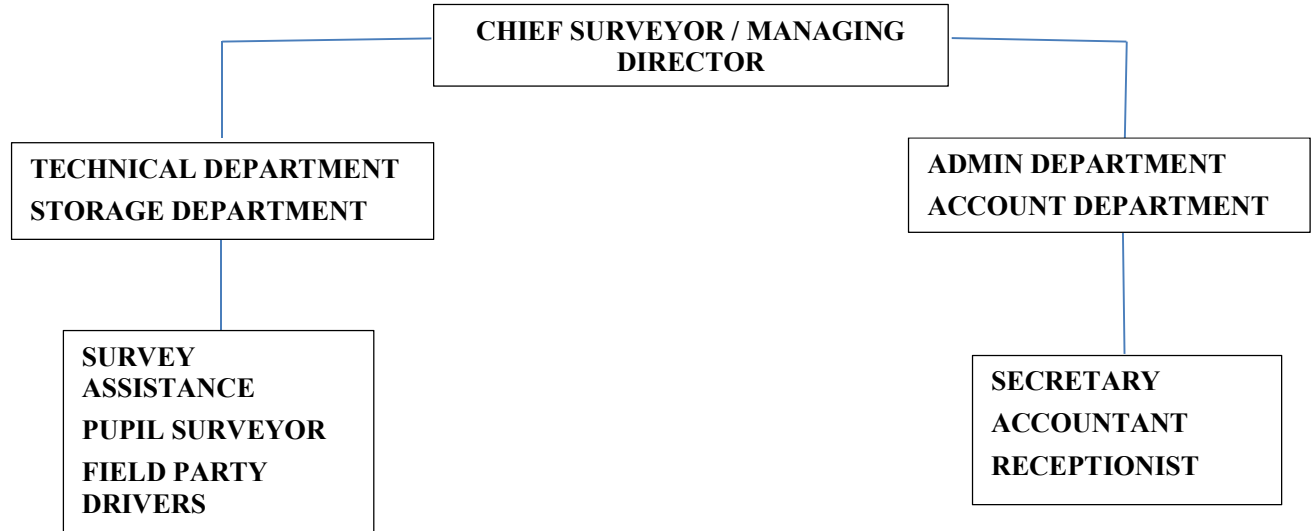
The name of the company where I did my SIWES is Dimart Surveys situate at No. 61 Orlu Road Amakohia Owerri Imo State. It is a registered company with the SURCON and CAC in the year of 2020 and was approved for practice on January 2022, found by Surv. Diwego Martins E. to render surveying services.

### 1.2.1 SERVICES RENDERED BY THE COMPANY

Dimart Surveys is a registered company that specialized in rendering the following services

- Cadastral Surveying
- Litigation Surveying
- Topographic Surveying
- Engineering surveying

### 1.2.2 COMPANY'S ORGANOGRAM



## CHAPTER TWO

### WORK OVERVIEW

On the 16<sup>th</sup> of March, 2023 was my first day at the Dimart Surveys, amakohia owerri, accompanied by my fellow IT members. We were Welcomed by the chief surveyor and was interviewed at a length, and further telling us how lucky we were to be the first trainee to be with them and for all students to portray good conduct. After which we were later

introduced to all the staff. During my stay at Dimart Surveys, I was exposed to the real practical experiences and equipment used in my field of study (Surveying and Geoinformatics).

## **2.1 TECHNICAL REPORT OF WORKS ON PERIMETER SURVEY / PROPERTY SURVEY**

Property survey involves the spatial determination of the boundaries of a particular area of land by traversing with survey instruments (compass, theodolite, total station, DGPS.) establishing monuments (beacons), producing the plan of the land and its registration for the Client's acquisition of Certificate of Occupancy (C of O).

Property survey must be executed on the land before the owner can have legal right of ownership. Owners of a land are diverse. A land can be owned by a single individual, a family, an organization, a community and/or the government. It can also be acquired by inheritance or purchase.

Generally before a permanent development and/or purchase are made on the land, a property/cadastral/land survey must be carried out on it by a land Surveyor. The reasons are to legally register the land to the ministry of land (evidence of legal property right), to determine the area of the land for the purpose of planning, development and to demarcate the boundary corner point with beacon to prevent intruders.

Several property survey projects were carried out during my work experience at DIMART SURVEYS at different locations within Imo State.

### **2.1.1 AIM**

To produce a certified survey plan

### **2.1.2 OBJECTIVES OF PROPERTY SURVEY**

To carry out land Survey in order to:

- Establish Beacons on the corners of the land
- Run a traverse on the particular land.
- Determine the land area in square meters
- Produce the survey plan of the survey for beacon purchase
- Register the land to the ministry of land and housing.
- Produce the certified survey plan
- Capping and writing of beacon number in the field.

### **2.1.3 METHODOLOGY**

#### **➤ RECONNAISSANCE / SITE INSPECTION.**

To carry out any survey job, recce is the first and foremost stage carried out prior to any field survey. Recce is the act of going round the whole area to be surveyed in order to determine the following:

- To take a general view of the site
- To choose the instrument stations
- To check the nearest control station (for red copy plans )
- To obtain a diagram (not drawn to scale) of the entire area

Moreover, it is an important stage to the surveyor because it enables the surveyor to obtain the pictures of what is required before the job, hence it enables costing and the man power involved. In relation to survey work, recce involves the following:

Prior to the day of the survey, the client took us to the landed property. We walked round the area and fixed signal plant (as flags) on the boundaries. We then moved round looking for connection beacons and fortunately we found some beacons. The Recce also helped us to determine the number of stations and beacons required for the demarcation of the boundaries.

#### **➤ FIELD TRAVERSING**

This is the process of measuring the angles or bearing and distance between a series of points or survey station. This should be done clockwise from (known station) to unknown points/station.

The traversing was carried out using the differential global positioning system (GDPS) starting from the first point.

#### **➤ OFFICE WORK**

Here all the information gotten from the field were then computed and reduced to be used for the production of the survey plan for the client and

### **2.1.4 INSTRUMENTS USED**

- DIFFERENTIAL GPS
- CUTLASS
- BEACONS
- Steel TAPE
- CEMENT
- BUCKET AND TROWEL

- NAIL

### **2.1.5 PARTY MEMBERS**

✓ Surv. Martins E.	Chief Surveyor
✓ Victory Chinemerem	P.A
✓ Ajoku Akachukwu	IT student
✓ Okonkwo Chidiebere	IT student
✓ Olachi Precious	IT student
✓ Miss Golden Amarachi	staff
✓ Precious Njoku	staff
✓ Favour Best	staff

### **2.1.6 MOBILITY**

Toyota corolla

### **2.1.7 DATA PROCESSING / PLOTTING**

All data captured from the field were processed and presented with the aid of Notepad and AutoCAD 2007.

## **2.2 TECHNICAL REPORT ON LAYOUT / PARCELLATION SURVEY**

A layout survey is carried out for the purpose of dividing parcel into sizeable plots in order to provide good road network and to facilitate the sale of the property.

### **2.2.1 Aim**

- To get the total area of the site and divide them into equal parts with its road networks

### **2.2.2 Objectives:**

- Reconnaissance survey is to determine the number of instrument stations, established beacons or pegs and also obtain the general over view if the site. A recce diagram drafted at the end of the exercise.
- Fix your beacon and Run the perimeter survey of the entire area to be parcellated using traversing method.
- Compute and adjust the traverse to get the corrected values.
- Plot the traverse to a desirable scale
- Design or divide the property into suitable portions with the road networks on paper.

- vi) Go to the site and set out what is on the plan onto ground and number them serially.

### **2.2.3 FIELD WORK**

Here we actually went to the site as scheduled by the director with the GNSS Equipment, tape, prismatic compass beacons, shovel and cutlass on that day and as the client were showing us the boundaries, we were pegging them, taking our GPS values and also making a diagram of the entire land. So after this, we already know the number of beacons and numbers it will take as we actually came prepared base on assumption (for the number of beacons and other logistics)

The steps we took are:

- Burying the beacons at those point we pegged
- Setting-up the instrument (GNSS Equipment)
- Connecting the CORS STATION with the rover and creating a file for the job
- Traversing the whole point i.e. the boundaries of that particular layout

### **2.2.4 OFFICE WORK**

When we returned to the office, we exported the data from the tablet in excel format and put it into notepad font that is acceptable in autocad language

- ✓ Pasting the coordinates using line tools in AutoCAD 2007
- ✓ Plotting the job and producing the plan for the director to see which gives the shape and area of the land.

### **2.2.5 LAYOUT DESIGN**

Before this time I have been taught or lectured on many times on how to design a land, the tricks, skill and what I should have in mind when dividing a parcel of land.

This layout design actually took me some days as our director keeping rejecting and correcting me till I get the best design and am very happy that I can do a layout design with ease.

NOTE: The layout design was designed using the perimeter survey and as directed by my boss.

### **2.2.6 PROBLEMS ECOUNTERED**

The major problem we encountered was, the Differential Global Positioning System (DGPS) was unable to fix on time there by causing delays on site.

#### **2.2.7 INSTRUMENTS USED**

- Differential Global Positioning System (DGPS)
- Prismatic Compass
- CUTLASS
- BEACONS
- Steel TAPE
- CEMENT
- BUCKET AND TROWEL

#### **2.2.8 PARTY MEMBERS**

- |                        |                |
|------------------------|----------------|
| ✓ Surv. Martins E.     | Chief Surveyor |
| ✓ Victory Chinemerem   | P.A            |
| ✓ Ajoku Akachukwu      | IT student     |
| ✓ Okonkwo Chidiebere   | IT student     |
| ✓ Olachi Precious      | IT student     |
| ✓ Miss Golden Amarachi | staff          |
| ✓ Precious Njoku       | staff          |
| ✓ Favour Best          | staff          |

#### **2.2.9 MOBILITY**

Toyota corolla



## **2.3 TECHNICAL REPORT ON DISPUTE SURVEY / LITIGATION SURVEY**

### **INTRODUCTION**

A litigation survey is a comprehensive research and analysis conducted in the context of legal disputes or litigation. It serves as a vital tool for attorneys, legal teams, and clients to gather essential information, assess the strengths and weaknesses of a case, and make informed decisions throughout the legal process. This survey encompasses a wide range of activities, including data collection, document review, witness interviews, and expert analysis. Its primary goal is to provide a strategic advantage by helping legal professionals understand the facts, evidence, and potential outcomes associated with a lawsuit, enabling them to build a compelling case or negotiate settlements more effectively.

#### **2.3.1 AIM**

- The aim of this survey is to gather and provide clear and compelling presentation of facts ( information and data ) that can be used as evidence in legal proceedings.

#### **2.3.2 OBJECTIVES**

Litigation surveys serve several objectives in legal proceedings:

- Evidence Gathering: They help gather information and evidence relevant to a case, such as witness statements, documents, or expert opinions.
- Case Assessment: Litigation surveys can assess the strengths and weaknesses of a case, allowing attorneys to make informed decisions about pursuing or settling a lawsuit.
- Witness Credibility: Determine the credibility of potential witnesses by evaluating their knowledge, reliability, and consistency in their statements.

Overall, litigation surveys play a crucial role in the legal process by providing essential information and guidance for attorneys and parties involved in a lawsuit.

**2.3.3 PROJECT LOCATION:** The project is located at Umuma-Isiaku Ideato South L.G.A Imo State.

**2.3.4 INSTRUMENT USED:** The instrument used are, compass, tape, ranging pole, red spray paint, cutlass.

## **2.4 TECHNICAL REPORT ON TOPOGRAPHIC SURVEY DONE AT OBINZE OWERRI WEST.**

This is a survey profession which gears towards determining the locations of points on the earth surface, the natural and man-made features and the elevations. It is a 3-dimensional map showing all the features and improvements. It is a system of survey in which sides of various shapes are measured directly in the field. This kind of survey is mainly used in our daily activities especially, in the constructions and engineering works, helping to know about the terrain of the environment we live in.

### **2.1.1 AIMS**

- To produce a topographic plan / map for engineer Beckley Nwanekwu

### **2.1.2 OBJECTIVES**

- To select a place (suitable framework)
- Horizontal distance measurement
- Leveling
- Recording of data and computations

## **2.2 METHOD**

The method used in topographic survey is as follows

- Reconnaissance: this refers to, an inspection of the area to be surveyed and prepare a reconnaissance plan and procedure.
- Station Selection: after the first stage, is to mark stations using suitable means such as fixing ranging poles, driving pegs.
- Reference sketches: After marking in the station, draw a reference sketches to show the plan or site of choice.
- Observersation: This refers to the process of taking the necessary records of the site.

**2.3 INSTRUMENT USED:** The instrument we used in this process of topographic survey includes; Differential Global Positioning System, metric steel tape, Ranging pole, Wooden peg and nail, Hammer, Automatic level, etc..

**2.4 LEVELING:** This is a process of determining relative altitudes of points on the surface of earth or beneath the earth surface. This is a branch of surveying that deals with measurements in vertical planes.

## **2.5 THE BASIC DEFINITION OF TERMS USED IN LEVELING**

- **Back sight:** This is the first reading taken when the leveling instrument has been set up.

- **Foresight:** It is the last reading taken before changing the instrument point.
- **Intermediate sight :**It is the reading taken between the back sight and foresight
- **Benchmark:** This is a point of reference where the leveling exercise commences.
- **Temporary bench mark:** These are marks set up on stable point in which all leveling operation on the particular site may be referred.
- **Reduce level:** This is the elevation of points relative to the mean sea level.

## 2.6 SOURCES OF ERRORS IN LEVELING

- Instrumental Errors.
- Human Errors
- Environmental Errors

## 2.7 PRECAUTION

- The staff should be kept vertically for accurate reading.
- Obstacles to ranging and sighting should be avoided.
- The bubble in the automatic level should be central to obtain an accurate line of sight.
- The foot screws in the automatic level should be used carefully.
- To avoid errors, read the staff in the increasing direction of reading
- Readings should be taken with care, noting down the figures along with the correct direction.

## 2.8 PARTY MEMBERS

✓ Surv. Martins E.	Chief Surveyor
✓ Victory Chinemerem	P.A
✓ Ajoku Akachukwu	IT student
✓ Okonkwo Chidiebere	IT student
✓ Olachi Precious	IT student
✓ Miss Golden Amarachi	staff

## MOBILITY

Toyota corolla

## CHAPTER THREE

### 3.0 ANALYSIS OF DATA AND PRESENTATION

The data acquired during this period were gotten using compass observation method and the use of digital equipment like differential global positioning system and level instrument. These data were computed manually and digital means and were plotted using Autocad software, surfer, cadastral wizard software. The data sometimes undergoes certain procedures which enable it to be a certified survey plan that is being issued to the client. The data was plotted using the software listed above and some of them were shown here for clarity purposes such as, the layout plan/design, a topographic plan and some certified survey plans.

### 3.1 BRIEF GUIDE ON INSTRUMENT USED

#### 3.1.1 Compass :

The surveyors compass is a magnetic compass which gives the bearing and direction of a survey line on the earth surface.

##### ➤ The errors in compass

The errors involved in compass are caused as a result of observation methods, the environmental factors and the instrument factors.

#### 3.1.2 DIFFERENTIAL GLOBAL POSITIONING SYSTEM (DGPS)

This is a GNSS receiver which uses satellites and ground based reference stations to provide improved accuracy for GPS receiver. It takes information from the GPS satellite and adds extra accuracy from ground based reference stations.

##### ➤ PROCEDURES/STEPS FOR SITTING UP DIFFERENTIAL GLOBAL POSITIONING SYSTEM FOR FIELD TRAVERSING:

- ✓ Mount the pole on the ground and fix the rover or antenna
- ✓ Connect the antenna cable to the monitor ( tablet ) and on it.
- ✓ Click on Landsat icon and wait for its response (connection successfully)
- ✓ Go project screen and create a new project and put in the coordinate system.
- ✓ Go to work mode and click and accept the referencing coordinate station (OWERRI CORS STATION)
- ✓ Wait for the response(applying correction data, and fix)if fix it will indicate green light and the data will be accurately high.
- ✓ Go to surveys and click on point survey to start the traverse

- ✓ Move around the points and be picking out there coordinates

#### ➤ **PROBLEMS ENCOUNTERED**

In most site especially at IDEATO SOUTH, the problem we had was in the area of network between the instrument and the CORS STATION at NIS was unable to correct and fix fast due to far distance and valley place together with the weather variations, and it was solve after some period of time after changing points by moving to hill place, also we were disturb by the rain during field practice which lead to certain change in operation.

### **3.2 INDUSTRIAL EXPERIENCE**

This 24 weeks industrial training played a vital role to me in regards to my profession as a Geomatics engineer. It gave me the opportunity to acquired and exploit my knowledge in the practical aspect in surveying and geoinformatics.

The experiences I got during this period were in the areas of travelling, use of survey software, computations, filed practical exposures etc.

- **TRAVELLING:** The industrial training gave me the room to travel to places as part of work experience I got in the firm where I did my SIWES. As a surveyor, work from different locations within or outside your base will engage you to travel a lot more.
- **USE OF SURVEY SOFTWARE:** The use of software in surveying plays a vital role in this modernized age, thereby giving me leverage to understand the principle, it's effectiveness as regards to solving numerous survey jobs or plans. It's more easier and faster now compared to days you have to plot your survey plans manually, such software are like AUTOCAD, SURFER, CADASTAL WIZARD, and a few knowledge in Archi cad..
- **COMPUTATIONS :** This created an avenue for me to acquire more knowledge in the computation and calculation aspect of surveying in the real world. It exposed me to understand some critical means to be used when calculating traverse in other to make it fast.
- **FIELD PRACTICAL EXPOSURES :** I gained more agility in practical field work as regards to surveying jobs also, it equipped me in handling survey instruments and a good manner of approach towards clients and public sector. Subsequently, this period also gave me the opportunity to learn special skills which was profitable to me during the week of surveyors which was more like a free week for surveying IT students who couldn't go for meeting. I used the free period to gain more skill as an electrician in electronic components.

- **CHALLENGES FACED BY THE STUDENT**

During my training, I faced a lot of challenge in the area of transport and housing. Transporting myself to the firm where I did my training becomes a problem as transport system increases in money aspect,

## CHAPTER 4

### 4.0 CONCLUSION

The development of the human environment has depended heavily on surveying. Construction, planning and execution both depend on it. It's most common contemporary applications are in the areas of transportation, building and construction, communications, mapping, and the establishment of legal property boundaries.

My SIWES phase, which lasted for 24 weeks, was one of the best parts of my B.TECH curriculum. The Student Industrial job experience was a worthwhile exercise, and I suggest taking it seriously because it broadens our perspectives on the field. I was exposed to a lot of different aspects towards my profession.

The industrial training program was useful and important. It provided me with a wealth of real-world opportunities in the field, office, and profession at large. It had an impact on the knowledge and abilities that will prepare me to deal with the obstacles of the profession, which I may probably encounter at some point in the future.

The knowledge I acquired during this period made me to see that the objectives of SIWES as stated earlier in this report are being achieved.

### 4.1 RECOMMENDATIONS

Following my experience during this period, I recommend that:

1. Students should put in effort and treat the program seriously.
2. The SIWES unit of educational institutions should make an effort to assist students in obtaining good places of attachment, notwithstanding the fact that they have put a lot of effort into doing so.
3. The government organization in charge of the students' industrial attachment should try to pay them during their attachment time, or even set a schedule for monthly payments.
4. The SIWES stakeholders should make sure that the program's goal is realized. When students return from an attachment, they should make sure they can connect the concepts they learned in class to real-world situations.
5. Representatives from the department/school should be serious in paying visit to the students where they are employed.

### 4.2 REFERENCE

1. Basic principles of surveying.(Surv. Chris U. Madu .2008)

2. Surveying and Leveling . (R. Subramanian, 2010)
3. Web: The student's industrial work experience scheme
4. Mentor : sir frank onyeagorom