A TECHNICAL REPORT ON STUDENT INDUSTRIAL TRAINING WORK EXPERIENCE SCHEME [SIWES]

UNDERTAKEN AT:

GAB GEOMATIC AND CONSULT LTD is located at:

NO.82,OPPOSITE ROYAL EATRY,UPPER TAIWO ROAD,

ILORIN,KWARA STATE.

PRESENTED

YUSUF FAIZAT

ND/23/SGI/FT/0023

SUBMITTED TO THE DEPARTMENT OF SURVEYING AND GEO- INFORMATICS

FACULTY OF ENVIRONMENTAL STUDIES, KWARA STATE POLYTECHNIC, ILORIN KWARA STATE.

IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF ORDINARY

NATIONAL DIPLOMA (OND) IN SURVEYING AND GEO- INFORMATICS.

MARCH, 2025

CERTIFICATION

I, **YUSUF FAIZAT with** Matric number **ND/23/SGI/FT/0016** hereby certify that the information contained in this SIWES report were obtained as a result of my experiences during my 4 month SIWES programme at **GAB GEOMATIC AND CONSULT LTD** in accordance with survey rule and regulations and departmental instructions. I therefore submit the report as a partial fulfillment of the requirements for the student work experience scheme requirements for KWARA STATE POLYTECHNIC ILORIN , KWARA STATE , student work experience scheme.

_____ _____

DATE

(SIWES SUPERVISOR)

_____ _____

DATE

(SIWES COORDINATOR)

_____ _____

DATE

(HEAD OF DEPARTMENT)

_____

_____

Dr. OKENIYI O.M. **DATE**

DIRECTOR, DIRECTORATE OF

INDUSTRIAL LIAISONS PLACEMENT

DEDICATION

This Siwes report is dedicated to my lovely parent

ACKNOWLEDGEMENT

Praises and thanks to the Almighty GOD for his showers of blessing throughout my Industrial Training period and for a successful completion. I would like to express my deepest and sincere gratitude to my training supervisor and management of GAB GEOMATIC AND CONSULT LTD and other sectional heads in person of Surv. B. A. Jimoh. He has given me the opportunity to carry out this Industrial training; providing invaluable guidance throughout the training period. His supervision, vision, sincerity and motivation was deeply inspired me. I am extremely grateful for what he has offered me. I would also like to thank him for his friendship, empathy and great sense of humor.

Also to thank my sectional head, head of field and Carto- section in Person of Surv. Babatunde Kabir, for all his trust, support and advice during my SIWES programme at the Company words cannot express all the knowledge he impacted in me. May God Almighty Allah bless you and your home.

Nevertheless, my profound acknowledgement will extend to my Head of Department of Surveying and Geo- informatics,KWARA STATE POLYTECHNIC ILORIN and all other departmental lecturers for the advice, support and correction made to me while in the classroom, during practical and every time I need their assistance. I pray you all continuous to leave in good health and more promotion on your field sir and ma.

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CHAPTER ONE

1.0 INTRODUCTION

This report presents my experiences and achievements during my six-month industrial attachment at GAB GEOMATIC AND CONSULT LIMITED. The report provides an overview of the organization, its objectives, and the activities I was involved in during my attachment.

It also highlights the skills and knowledge I acquired during the period, including practical experience with surveying equipment, geospatial software, and project management techniques.

1.1 INCEPTION OF STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME

The Students Industrial Work Experience Scheme (SIWES) is a program that was established in Nigeria to bridge the gap between theoretical knowledge acquired in the classroom and practical skills required in the workplace. SIWES was initiated in Nigeria in 1973 by the federal government as a response to the need for practical exposure of students in higher institutions to real work environments. Its relevance in the education system cannot be over emphasized as it develops the student to become skilled and experience professionalism in the various disciplines. It enables students to appreciate the basic concept involved in their field of study. SIWES, which involves the university authorities and the industrial sector, runs for 24 weeks for students in the fourth academic year in the universities. The scheme was organized by the federal Government and jointly coordinated by the Industrial Training Fund (ITF) and the Nigerian Universities Commission (NUC). The importance of the training scheme is justified as it is a research field, which enables students to be totally in- depth in finding the working culture, practice and tools in their various areas of specialization.

1.2 OBJECTIVES

The Students' Industrial Work Experience Scheme (SIWES) was created with the goal of fostering and supporting the development of skills in business and industry in order to create a pool of qualified native workers sufficient to meet the demands of the economy. Any industrial organization's most valuable resource depends on the technical proficiency of its workforce to operate and maintain its non- human assets and resources, which is why SIWES is required. According to the program's operational norms and guidelines, students are assigned to a structured environment (private or public), whose operations are related to their course of study. The purpose of this training time is to help students at different levels connect the theory they learn in class to real- world applications. According to the government's education policy,

CHAPTER TWO

2.0 DESCRIPTION OF THE ESTABLISHMENT OF ATTACHMENT

GAB GEOMATIC AND CONSULT LTD is a private surveying and geospatial services company located in [City, State]. The company was established in 2021 with the aim of providing innovative and cutting-edge solutions in surveying, mapping, and geospatial consulting.

The company has a flat organizational structure, with a managing director at the helm. The managing director is supported by a team of experienced surveyors, geospatial analysts, and administrative staff.

Facilities and Equipment

GAB GEOMATIC AND CONSULT LTD has a well-equipped office with state-of-the-art surveying and geospatial equipment, including:

- **Total stations**
- **GPS receivers**
- **GIS software (ArcGIS, QGIS)**
- **Surveying software (Autodesk, Carlson)**
- **Computers and laptops**

Services Offered

The company offers a range of services, including:

- **Topographic surveys**
- **Boundary surveys**
- **GIS mapping**
- **Geospatial consulting**
- **Project management**

2.1 LOCATION AND BRIEF HISTORY OF ESTABLISHMENT

GAB GEOMATIC AND CONSULT LTD is located at:

NO 82, OPPOSITE ROYAL EATRY, UPPER TAIWO ROAD,

ILORIN, KWARA STATE

Brief History Of Establishment

GAB GEOMATIC AND CONSULT LTD was established in 2021 by Surv. BABATUNDE KABIR a seasoned surveyor with eleven years of experience in the industry.

The company started as a small surveying firm providing services to local clients but has since grown to become a leading provider of surveying and geospatial services in [Region/State]. Over the years, the company has built a reputation for delivering high-quality services and has worked on numerous high-profile projects in Industry

GAB GEOMATIC AND CONSULT LTD is a private Survey firm. The company was established and legal registered under C.A.C corporate commission in the year 2021, the firm name has been in existences since seven year back. And the firm has fully involved in both government and privates survey job both in the state and outside the Kwara State.

The mandate of the ministry is primarily to formulate and implement the policies, programmes and projects of the Federal Government of Nigeria (FGN) with respect to road transport, highway construction and rehabilitation; highways planning and design monitoring and maintenance of federal roads and bridges nationwide.

2.2 OBJECTIVES OF ESTABLISHMENT

The primary objective of establishing GAB GEOMATIC AND CONSULT LTD is to provide innovative and cutting-edge surveying and geospatial services to clients in various industries, including:

Infrastructure Development : To support the development of infrastructure projects, such as roads, bridges, and buildings, by providing accurate and reliable surveying and mapping services.

Land Administration: To assist in the management and administration of land resources by providing services such as land surveying, mapping, and GIS analysis.

3. *Environmental Monitoring*: To support environmental monitoring and management efforts by providing services such as GPS tracking, GIS analysis, and remote sensing.

4. *Professional Development To provide training and development opportunities for surveying and geospatial professionals, promoting capacity building and skills development in the industry.

aims to become a leading provider of surveying and geospatial services in the region, known for its excellence, innovation, and commitment to delivering high-quality services.

Topographic Surveying

Geographic Information System Analysis

Digital Mapping and Street Guide Mapping

Drone Mapping and Analysis

Hydrographic Surveying

2.3 Departments and Units in the Firm

The following departments/section were operated and function well, they are:-

ii. Managing Director

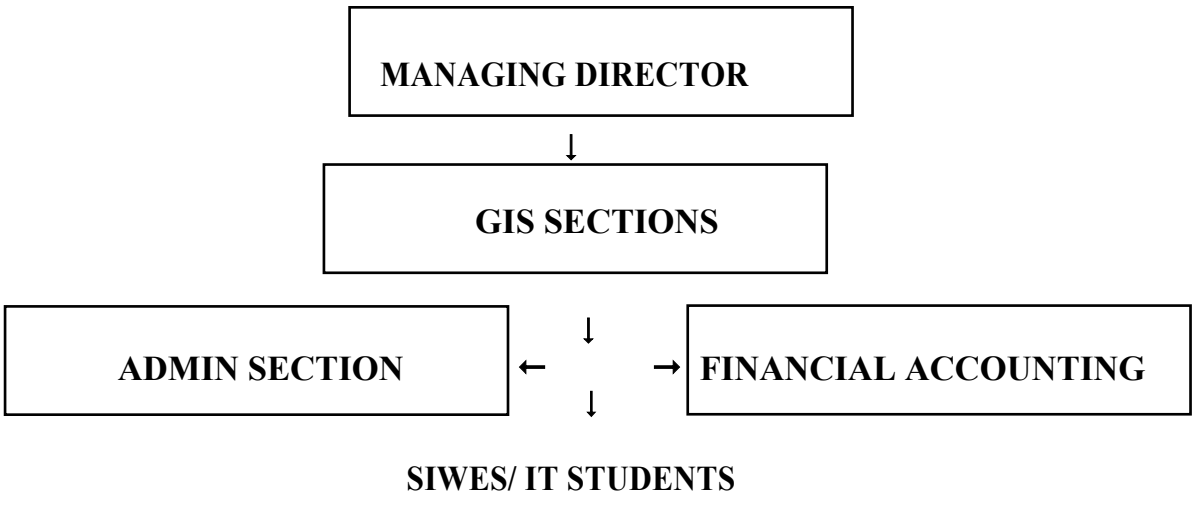
iii. GIS Section

iv. Admin. Section

v. Finance and Accounting Section

vi. SIWES/IT Student Section

2.4 ORGANIZATION STRUCTURE



CHAPTER THREE

INTRODUCTION TO LEVELING

3.5 DEFINITION OF LEVELING

WHAT IS LEVELING?

Leveling is the process of measuring the difference in height between points on the surface of the earth. It is a crucial process in various fields including Construction, Engineering, and Geography.

3.2 AIMS OF LEVELING

The main aims of Leveling are to determine the relatives height of points on the ground and to establish a horizontal reference line.

3.3 OBJECTIVES

1. **TO ESTABLISH A REFERENCE DATUM;** To create a bench mark that will serve as a basis for measuring the height of other points.
2. **TO PROVIDE ACCURATE MEASUREMENT FOR CONSTRUCTION;** This is to ensure tyat buildings, roads, and other infrastructure are constructed on a level surface.
3. **TO CREATE TOPOGRAPHIC MAPS;** to gather data for the creation of topographic maps
4. **TO SUPPORT G.I.S;** To provide accurate and reliable data for geographic information system (G.I.S).
5. **To determine the relative height of points.**
6. **To establish new vertical control.**

3.4 SCOPES OF LEVELING

1. **CONSTRUCTION:** Leveling is used to ensure that buildings, roads and other infrastructure are constructed on a level surface and to provide accurate measurements for the engineering design
2. **ENGINEERING;** Leveling is used to determine the height of points for engineering project such as Bridges, tunnels, dams, E.T.C
3. **LAND SURVEYING;** Leveling is used to determine the boundaries of properties and to provide accurate measurement for land surveying

3.5 INSTRUMENT USED FOR LEVELING

1. Total Station
2. Tripod
3. Leveling Staff
4. Field Book
5. Ranging pole.

3.6 METHODOLOGY USED IN LEVELING

1. **INSTRUMENT PREPARATION:** The Leveling instrument is set up on a stable Tripod and

Adjusted to ensure it is perfectly level.

2. **MEASURING THE HEIGHT DIFFERENCE :**The instrument is used to measure the height difference between two points .
3. **RECORDING THE READING :**The height difference is recorded and the process will be repeated for multiple purpose .
4. **CALCULATING THE REDUCE LEVEL:** The recorded reading are used to calculate the reduce levels which are the height of the point relative to the bench marks.
5. **ADJUSTING THE LEVELING:** The reduce levels are adjusted to ensure that they are accurate and reliable.

3.6 COMPUTATION OF LEVELING

The major method used for computing leveling are :

1. Height of instrument .
2. Rise and Fall method.

Computation of leveling using height of instrument:

B.S	I.S	F.S	H.I	R.L	B.M	Rmk
0.11			**100.11**	**100.00**		
	0.30			**99.81**	**0+000**	
	0.37			**99.74**	**0+010**	
	0.50			**99.61**	**0+020**	
	0.61			**99.50**	**0+030**	
	0.75			**99.36**	**0+040**	
	0.98			**99.13**	**0+050**	
	1.09			**99.02**	**0+060**	

	1.135			98.975	0+070	
		1.22		98.89	0+080	

METHOD USED FOR CALCULATING HEIGHT OF INSTRUMENT

1ST STAGE: B.S + R.L = H.I
H.I - I.S = R.L

2ND STAGE: H.I - F.S = The answer you get + B.S
It will give us the next H.I
THEN ; H.I - I.S = R.L

SO THEREFORE ; B.S means BACK SIGHT
F.S means FORE SIGHT
H.I means HEIGHT OF INSTRUMENT
I S means INTERMEDIATE SIGHT
R.L means REDUCE LEVEL

3.8 COMPUTATION OF LEVELING USING RISE (+) AND FALL (-)

B.S	I.S	F.S	RISE (+)	FALL (-)	R.L	B.M	Rmk
0.11					100.00		
	0.30			0.19	99.81	0+000	
	0.37			0.07	99.74	0+010	
	0.50			0.13	99.61	0+020	
	0.61			0.11	99.50	0+030	
	0.75			0.14	98.36	0+040	

	0.98			**0.23**	**99.13**	**0+050**	
	1.09			**0.11**	**99.02**	**0+060**	
	1.135			**0.045**	**98.975**	**0+070**	
		1.22		**0.085**	**98.89**	**0+080**	

METHOD FOR CALCULATING RISE AND FALL:

- **B.S - I.S = RISE (+) OR FALL (-)**
- **R.L - RISE (+) OR FALL (-)**

SO THEREFORE:

- **B.S means BACK SIGHT**
- **I.S means INTERMEDIATE SIGHT**
- **F.S means FORE SIGHT**
- **(+) Means RISE**
- **(-) Means FALL**
- **R.L means REDUCE LEVEL.**

- **Plotting was done on the data acquired then data processing on the data acquired at site was done on the computer system**

3.7 EXPERIENCE GAINED.

- **I was introduced to leveling, how to carry out leveling surveying using instrument with its accessories.**
- **I also learned how to maintain the instrument to avoid damages**
- **Practical on how to carry out leveling surveying on a road of 500m.**
- **Aloe learn on how to compute leveling using two methods which are:**
  - **A. Height of instrument**
  - **B. Rise and fall method**

3.8 PROBLEM ENCOUNTER.

- **Stress passing through when setting the instrument**
- **Weather condition**

CHAPTER FOUR:

INTRODUCTION TO AUTOCAD.

INTRODUCTION TO AUTOCAD

4.1 **WHAT IS AUTOCAD?**

AUTOCAD is a computer-aided design (CAD) software used for creating, modifying, and analyzing digital models of physical object and environment.

4.2. **HISTORY OF AUTOCAD**

AUTOCAD was first released in 1982 by Autodesk inc, and has since become one of the most widely used CAD software in various industries.

4.3. **TYPES OF AUTOCAD**

1. AUTOCAD (FULL VERSION): The standard, Full featured version of autocad suitable for most user.
2. AUTOCAD CIVIL 3D: A specialized version for civil engineers with features for infrastructure design, analysis and simulation.
3. AUTOCAD MAP 3D: A version for geographic information systems (GIS) and mapping professionals
4. AUTOCAD PLANT 3D: A version for plant design and engineering, with features for 3D plants design and documentation.
5. AUTOCAD ARCHITECTURE: A version designed for architecture with features for building design documentation and visualization.

4.4 **BENEFITS OF USING AUTOCAD**

1. Improval accuracy
2. Increased productivity
3. Enhance collaboration
4. Cost-effective

4.5 **PROCEDURE FOR PLOTTING AUTOCAD**

STEP 1: HOW TO SET PRIMARY SETTING
* Go to format
* Click on unit
    * Lenth - decimal
    * Precision - 3 decimal places
    * Unit of scale - METER

    * Angle type - deg/min/sec
    * Precision - 0°00'00"
* Then click on clockwise
* Click direction - NORTH
* Click "OK"

STEP 2: HOW TO SET BEACON SIZE

* Go to format
* Click on point style
* Point scale/style
* Scale - 1:500 = 1.2
          1: 1000= 2.4
* Invalid input: click on "set size in absolute unit"

STEP 3: HOW TO SET TEXT STYLE SETTING

* Go to format
* Click on text style
* Click on Font name : Time New Roman
* Click on Font style: Regular
* Click on height: 1.2
* N.B: the height depends on the scale you see
* Click on Apply
* Then close

Now we can start picking our point by input coordinate.

CHAPTER FIVE

5.0 Summary of attachment activities

5.1 Problem Encounter during the program

5.2. Suggestions for the improvement of the scheme

5.3 Recommendation