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

UNDERTAKEN AT:

SHIMAT GEO-DATA LIMITED is located at:

No 99 BALOGUN STREET OFF OBAFEMI AWOLOWO ROAD IKEJA LAGOS

PRESENTED

By

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ND/23/SGI/FT/0078

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

MARCH, 2025

CERTIFICATION

I,**AYENI HANIFAT MORENIKEJI** with Matric number **ND/23/SGI/FT/0078** 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 **SHIMAT GEO-DATA LIMITED** 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)

_____

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SURV. AKINSANYA OLASHILE A. M

DATE

DIRECTOR, DIRECTORATE OF
INDUSTRIAL LIAISONS PLACEMENT

DEDICATION

This Siwes report is dedicated to my lovely supporter/guidance/parents

MR & MRS AYENI

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 **SHIMAT GEO-DATA LIMITED** and other sectional heads in person of **SURV. AKINSANYA OLASHILE.A** 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.

Nevertheless, my profound acknowledgement will extend to my Head of Department of Surveying and Geo- informatics Kwara State Polytechnic 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.

TABLE OF CONTENTS

CHAPTER ONE

1.0 INTRODUCTION

This report presents my experiences and achievements during my six-month industrial attachment at **SHIMAT GEO-DATA 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 ESTABLISHEMENT OF ATTACHMENT

SHIMAT GEO-DATA LIMITED is a private surveying and geospatial services company located in Lagos State The company was established in 2020 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

SHIMAT GEO-DATA LIMITED 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

No 99 BALOGUN STREET OFF OBAFEMI AWOLOWO ROAD IKEJA LAGOS

Brief History of Establishment

SHIMAT GEO-DATA LIMITED was established in 2008 by **SURV. AKINSANYA OLASHILE .A** a seasoned surveyor with Six (6) 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 [Kwara 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

SHIMAT GEO-DATA LIMITED is a private Survey firm. The company was established and legal registered under C.A.C corporate commission in the year 2019, 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 Lagos 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.

2.3 OBJECTIVES OF ESTABLISHMENT

The primary objective of establishing **SHIMAT GEO-DATA LIMITED** 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

2.5 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

ORGANIZATION STRUCTURE

MANAGING DIRECTOR

↓

GIS SECTIONS

↓

ADMIN SECTION → FINANCIAL ACC.

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SIWES/ IT STUDENTS

CHAPTER THREE

Introduction to Setting Out in Surveying

Setting Out in Surveying: A Comprehensive Guide

Setting out is a critical process in surveying that involves transferring design specifications from drawings, plans, or digital models onto the ground. This process ensures that construction elements, such as foundations, roads, buildings, and other structures, are accurately positioned. Setting out is an essential step in civil engineering, building construction, and infrastructure development, as it prevents costly errors and rework.

The Importance of Setting Out

Setting out plays a vital role in ensuring the accuracy and precision of construction projects. Its importance cannot be overstated, as it directly impacts the efficiency, cost-effectiveness, and structural integrity of the project. Some of the key reasons why setting out is crucial include:

1. Accuracy and Precision: Setting out ensures that all elements are correctly positioned according to the design specifications, preventing errors and rework.

2. Efficiency: By providing a clear and accurate layout, setting out enables contractors to work systematically, reducing delays and increasing productivity.

3. Cost Reduction: Setting out minimizes errors that could lead to costly modifications, thereby reducing the overall cost of the project.

4. Structural Integrity: Setting out ensures that buildings and infrastructure are properly aligned, enhancing safety and durability.

5. Legal Compliance: Setting out ensures that construction adheres to regulatory requirements and property boundaries, avoiding potential legal issues.

Basic Principles of Setting Out

Setting out involves several basic principles that must be followed to ensure accuracy and precision. These principles include:

1. Establishing Control Points: Permanent reference points, also known as benchmarks, are set up using total stations, GPS, or traditional leveling instruments. These control points serve as a reference for the entire project.

2. Marking Grid Lines: A grid is created on-site using pegs, ranging rods, or string lines to guide construction. This grid provides a clear and accurate layout for the project.

3. Checking and Verification: Frequent re-measurements are done to ensure accuracy and precision. This involves checking the position of control points, grid lines, and other construction elements.

4. Use of Coordinates: Surveyors use coordinate systems, such as UTM or local grids, to position elements correctly. This ensures that all construction elements are accurately located in relation to each other and the surrounding environment.

Common Methods and Equipment

Several methods and equipment are used in setting out, including:

1. Total Stations: These instruments are used for precise angle and distance measurements. They provide accurate measurements and are commonly used in construction and surveying projects.

2. GPS Surveying: GPS surveying is used for large-scale projects requiring high accuracy. It provides precise location data and is commonly used in infrastructure development, such as road construction and bridge building.

3. Dumpy Levels & Theodolites: These instruments are used for height and angle measurements. They provide accurate measurements and are commonly used in construction and surveying projects.

4. Measuring Tapes & Pegs: These traditional tools are used for marking positions and measuring distances. They provide a simple and effective way to mark out construction elements.

Setting Out Techniques

1. Radiation Method: This method involves setting out a series of radiating lines from a central point to define the location of a building or structure.
2. Grid Method: This method involves setting out a grid of intersecting lines to define the location of a building or structure.
3. Coordinate Method: This method involves setting out points using their coordinates (x, y, z) to define the location of a building or structure.

Setting Out Instruments

1. Theodolite: A theodolite is an instrument used to measure angles and directions.
2. Total Station: A total station is an instrument used to measure angles, distances, and directions.
3. GPS Receiver: A GPS receiver is an instrument used to determine precise locations using satellite signals.
4. Level: A level is an instrument used to measure heights and differences in height.

Setting Out Procedures

1. Establishing Control Points: Control points are established to provide a reference for the setting out process.
2. Measuring Distances: Distances are measured from control points to define the location of a building or structure.
3. Measuring Angles: Angles are measured from control points to define the orientation of a building or structure.
4. Checking and Verification: The setting out process is checked and verified to ensure accuracy and precision.

Setting Out Software

1. AutoCAD: AutoCAD is a software used for computer-aided design (CAD) and drafting.
2. Civil 3D: Civil 3D is a software used for civil engineering and surveying applications.
3. Survey Pro: Survey Pro is a software used for surveying and mapping applications.
4. GPS Software: GPS software is used to process and analyze GPS data.

Setting Out Challenges

1. Accuracy and Precision: Ensuring accuracy and precision in the setting out process can be challenging.
2. Weather Conditions: Weather conditions, such as rain or extreme temperatures, can affect the setting out process.
3. Site Conditions: Site conditions, such as uneven terrain or obstacles, can affect the setting out process.
4. Equipment Malfunction: Equipment malfunction can affect the setting out process.

Setting Out Best Practices

1. Use High-Quality Equipment: Using high-quality equipment can ensure accuracy and precision in the setting out process.
2. Follow Established Procedures: Following established procedures can ensure consistency and accuracy in the setting out process.
3. Conduct Regular Checks: Conducting regular checks can ensure accuracy and precision in the setting out process.
4. Document the Process: Documenting the process can ensure that the setting out process is transparent and accountable.

In conclusion, setting out is a critical process in surveying that ensures the accuracy and precision of construction projects. Its importance cannot be overstated, as it directly impacts the efficiency, cost-effectiveness, and structural integrity of the project. By understanding the basic principles of setting out and using the right equipment and methods, surveyors and contractors can ensure that construction projects are completed accurately, efficiently, and safely.

AutoCAD and How to Use It

What is AutoCAD?

AutoCAD (Automated Computer-Aided Design) is a powerful software developed by Autodesk that is used for creating 2D and 3D drawings, designs, and blueprints. It is widely used by architects, engineers, designers, and drafters to create precise technical drawings for construction, manufacturing, and product design.

Key Features of AutoCAD

1. 2D Drafting and Drawing: Allows users to create floor plans, technical drawings, and schematics with high accuracy.

2. 3D Modeling: Enables the creation of 3D objects, surfaces, and solid models for visualization and analysis.

3. Layers and Annotation Tools: Helps organize drawings by using layers and adding dimensions, text, and symbols.

4. Block and Library Features: Users can create reusable symbols and import libraries for efficiency.

5. Precision and Measurement Tools: Ensures accurate measurements with grid snapping, scaling, and coordinate input.

6. File Compatibility: Supports multiple file formats like DWG, DXF, PDF, and more for easy sharing and collaboration.

7. Customization and Automation: Users can create macros, scripts, and use AutoLISP for automated processes.

How to Use AutoCAD

1. Getting Started

Download and Install: Install AutoCAD from Autodesk's official website.

Launch the Software: Open AutoCAD and select the workspace (2D Drafting & Annotation or 3D Modeling).

Familiarize with the Interface: The AutoCAD interface includes the Ribbon, Command Line, Model Space, Layouts, and Toolbar.

2. Basic Drawing Commands

LINE (L): Creates straight lines between points.

CIRCLE (C): Draws circles by specifying the center and radius.

RECTANGLE (REC): Creates rectangular shapes.

POLYLINE (PL): Draws connected line segments.

ARC (A): Creates an arc between points.

3. Editing and Modifying Commands

MOVE (M): Moves objects from one location to another.

COPY (CO): Duplicates selected objects.

ROTATE (RO): Rotates objects around a base point.

SCALE (SC): Changes the size of objects.

OFFSET (O): Creates parallel copies of lines or shapes.

TRIM (TR): Cuts unwanted parts of objects.

EXTEND (EX): Extends lines to meet other objects.

4. Working with Layers and Annotations

LAYERS (LA): Helps organize objects by assigning colors and line types.

TEXT (T): Adds annotations and labels to drawings.

DIMENSION (DIM): Adds measurements for accuracy.

5. Saving and Exporting Drawings

SAVE (CTRL + S): Saves your work in DWG format.

EXPORT (PDF, DXF): Converts files for sharing or printing.

6. Introduction to 3D Modeling

EXTRUDE (EXT): Converts 2D objects into 3D.

REVOLVE (REV): Creates 3D objects by rotating a shape.

UNION / SUBTRACT: Combines or removes parts of 3D objects.

CHAPTER FIVE

PROBLEM ENCOUNTERED

I encountered financial support during the training

5.2 SUGGESTION FOR THE IMPROVEMENT OF THE SCHEME

Based on my experience during the SIWES program, I propose the following suggestions to improve the scheme:

- **Better Supervision and Mentoring**

- Assign experienced supervisors/mentors to guide students throughout the program.

- Regular meetings and feedback sessions to ensure students are meeting program objectives.

- **Enhanced Orientation Program**

- Conduct a comprehensive orientation program for students before the commencement of the SIWES program.

- Provide detailed information on program objectives, expectations, and evaluation criteria.

- **Improved Logistical Support**

- Provide adequate logistical support, including transportation, accommodation, and equipment.

- Ensure that students have access to necessary resources and facilities.

- **Regular Evaluation and Feedback**

- Conduct regular evaluations and feedback sessions to assess student performance.

- Provide constructive feedback to students to improve their performance.

5.3 RECOMMENDATION

There is no doubt that some students during their Industrial Training do not have the opportunity of being exposed or intentional do not attend SIWES PROGRAMED.Those external supervisors should be sent to the various industrial training attachment

areas and centers to find out if the Industrial Training is suitable and functional or even

at times do not see any place of attachment.