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

UNDERTAKEN AT:

KAMCO GEO SPATIAL SERVICE is located at:

NO.198, STATION ROAD ODE-OKE AREA EDE

OSUN , STATE.

PRESENTED

AFOLAYAN JOSHUA OLUWADAMILARE

ND/23/SGI/FT/0002

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, **AFOLAYAN JOSHUA OLUWADAMILARE** with Matric number **ND/23/SGI/FT/0002**

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 **KAMCO GEO SPATIAL SERVICE** 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)

_____

_____

Surv. RIDWAN **DATE**

DIRECTOR, DIRECTORATE OF

INDUSTRIAL LIAISONS PLACEMENT

DEDICATION

This Siwes report is dedicated **GOD** and to my lovely parent

Mr & Mrs AFOLAYAN

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 **KAMCO GEO SPATIAL SERVICE and** other sectional heads in person of **Surv**. **RIDWAN** 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 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 **KAMCO GEO SPATIAL SERVICE.** 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

KAMCO GEO SPATIAL SERVICE is a private surveying and geospatial services company located in Osun 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

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

KAMCO GEO SPATIAL SERVICE is located

198, Station Road Ode- Oke Area Ede Osun, STATE

Brief History Of Establishment

KAMCO GEO SPATIAL SERVICE was established in 2018 by **Surv**. **RIDWAN** 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 Osun 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

KAMCO GEO SPATIAL SERVICE 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 **KAMCO GEO SPATIAL SERVICE** 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

MANAGING DIRECTOR

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GIS SECTIONS

↓

← →

↓

SIWES/ IT STUDENTS

CHAPTER THREE

INTRODUCTION TO CADASTRAL SURVEY

A Cadastral Survey is a type of land survey focused on determining the boundaries, locations, and ownership of parcels of land. It is an essential process in establishing land rights and is a critical component of land administration systems. The purpose of a cadastral survey is to create and maintain an accurate and reliable record of land ownership, land use, and the physical boundaries of land parcels. The term "cadastral" comes from the word "cadastre," which refers to an official register of land, typically including information on the location, boundaries, size, and ownership of land parcels.

Purpose of Cadastral Surveys

Cadastral surveys are important for several reasons:
1. **Legal Land Ownership**: Cadastral surveys provide a legal description of the boundaries and ownership of land parcels. They help to prevent disputes over land ownership and boundaries.
2. **Land Valuation:** Accurate surveys are critical for tax assessment purposes, as they define the value of land based on its size, location, and use.
3. **Land Use Planning:** Cadastral surveys are vital for urban planning and zoning regulations. Accurate parcel boundaries help in land development and effective allocation of land for various uses, including residential, commercial, industrial, and agricultural purposes.
4. **Public Infrastructure Development:** For projects such as roads, utilities, schools, and hospitals, understanding the land's boundaries is necessary to avoid conflicts and ensure that infrastructure is built on the correct land.
5. **Environmental Management:** Cadastral surveys also assist in environmental conservation by defining land that may be subject to environmental protection laws or restrictions.

Key Components of Cadastral Survey

A cadastral survey typically involves:
1. **Boundary Determination:** The most critical element of the survey is the identification and definition of land boundaries. Surveyors rely on various techniques such as measurement of angles, distances, and the use of maps and historical records to delineate boundaries accurately.
2. **Land Parcel Identification**: Each parcel of land surveyed is assigned a unique identifier (like a parcel number) in the cadastral system. This helps in distinguishing one parcel from another and is essential for land transactions and ownership records.
3. **Survey Marks:** Cadastral surveyors use physical markers, such as boundary stones, metal stakes, or survey monuments, to denote property boundaries on the ground. These markers are important for future reference and verification.
5. **Land Records:** After conducting the survey, surveyors prepare official land records, which include survey maps, legal descriptions, and other related documentation. These records are maintained in government offices and are accessible to the public for legal and administrative purposes.

Types of Cadastral Surveys
1. **General Cadastral Survey:** A general survey involves mapping all land parcels in a particular area, including rural, urban, and private lands. This type of survey may involve re-surveying older, poorly defined boundaries.
2. **Subdivision Survey**: This type of survey is conducted when land is divided into smaller parcels, often for development purposes such as residential or commercial subdivisions.
3. **Boundary Survey:** This is a survey conducted to establish or reaffirm the exact boundaries of an individual parcel of land, often in response to a boundary dispute.
4. **Topographic Cadastral Survey:** This survey not only marks boundaries but also records features of the land, such as slopes, natural features (rivers, hills), and man-made features (roads, buildings).

Process of Cadastral Survey
The cadastral survey process can be broken down into the following steps:

1. Pre-Survey Research:
   - Review of historical records, deeds, maps, and previous surveys to gather background information.
   - Verification of the legal ownership of land and ensuring that the boundaries are well-defined.

2. Field Survey:
   - The actual measurement and marking of boundaries on the ground. Surveyors use instruments like total stations, GPS equipment, and leveling tools to take accurate measurements.
   - Identification of key features and landmarks that might influence the parcel boundaries.

3. **Mapping and Documentation**:
   - The collected data is then translated into a detailed cadastral map or plan. This map includes the dimensions and location of the boundaries, the parcel number, and surrounding features.
   - The surveyor prepares a legal description of the land parcel, which is used in official documents like titles or deeds.

4. **Post-Survey Validation**:
   - The data and maps are verified by relevant authorities to ensure compliance with legal requirements.
   - The completed survey may be recorded with a governmental body, ensuring the land's status is officially recognized.

5. **Publication**:
   - The cadastral records, including the maps, legal descriptions, and other details, are made publicly available in land registry offices. This ensures transparency and accessibility to the public, especially for potential buyers and legal purposes.

Conclusion
Cadastral surveys are integral to effective land administration, property rights, and urban development. They ensure accurate records of land ownership, boundaries, and land use, supporting legal, economic, and social stability. As land becomes increasingly valuable and scarce, the importance of cadastral surveys in managing land resources effectively cannot be overstated. With the advent of advanced technologies, cadastral surveying has become more accurate, efficient, and accessible, paving the way for better land management practices worldwide.

CHAPTER FOUR

Introduction to AutoCAD

AutoCAD is a leading computer-aided design (CAD) software developed by Autodesk. It is used extensively by professionals in fields such as

architecture, engineering, construction, and product design for creating 2D and 3D drawings and models. AutoCAD provides powerful tools for drafting, designing, and modeling, making it a staple in the design and construction industry.

AutoCAD allows users to create precise and scalable designs, as well as render detailed blueprints, plans, and diagrams. It is known for its versatility, as it supports both 2D drafting and 3D modeling, making it an invaluable tool in various design processes.

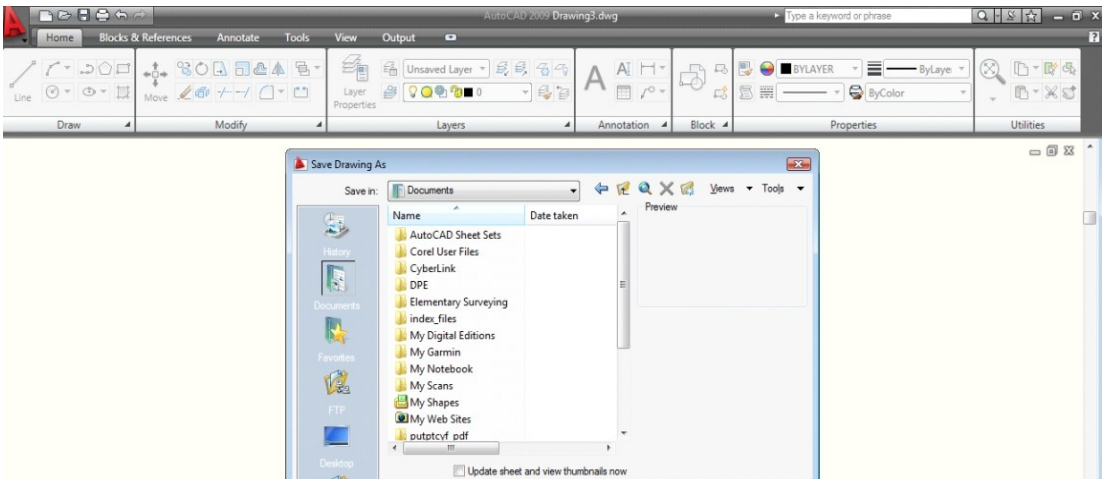
The Process of Using AutoCAD

The process of using AutoCAD can be broken down into several stages, from setting up the software to creating detailed drawings and models. Below is a step-by-step guide to using AutoCAD:

STEPS IN AUTO-CAD

Step 1: Open AutoCAD.
Double click on AutoCAD icon on the desktop, or
Click the AutoCAD icon on the programs menu bar

Step 2: Name the page by
- clicking on *save*
- Type in the name e.g. survey of Mr. Smith Mekwe,
- Click on *save*



Step 3 SET DRAWING UNITS

Command: *units* or click on *format* select units

Step 3i

Length	Angle
Set Type = *Decimal*	Set Type = *Deg/Min/Sec*
Set Precision = *0.000*	Set precision = *0d00'00''*
Insertion Scale	click *clockwise*
Set unit to scale inserted content = *meters*	

Click *Direction*
Click *North*
Click *ok*

Step 3ii SET POINT STYLE

Click on format
Click on point style
Choose beacon type
Point size: 2.000 units
Set size in *absolute units*
Ok

Step 4: SET LAYERS

Step 4i: Click on format, from the *format* menu click on *layer*

Click on new layer

Right click (the name column) on the new layer created, type in the layer name.

LIST OF LAYER NAME FOR A PLAN

- main plan
- beacon
- beacon number
- bearing and distance
- road
- detail
- title
- scale
- border
- Coordinate lines/ north direction.

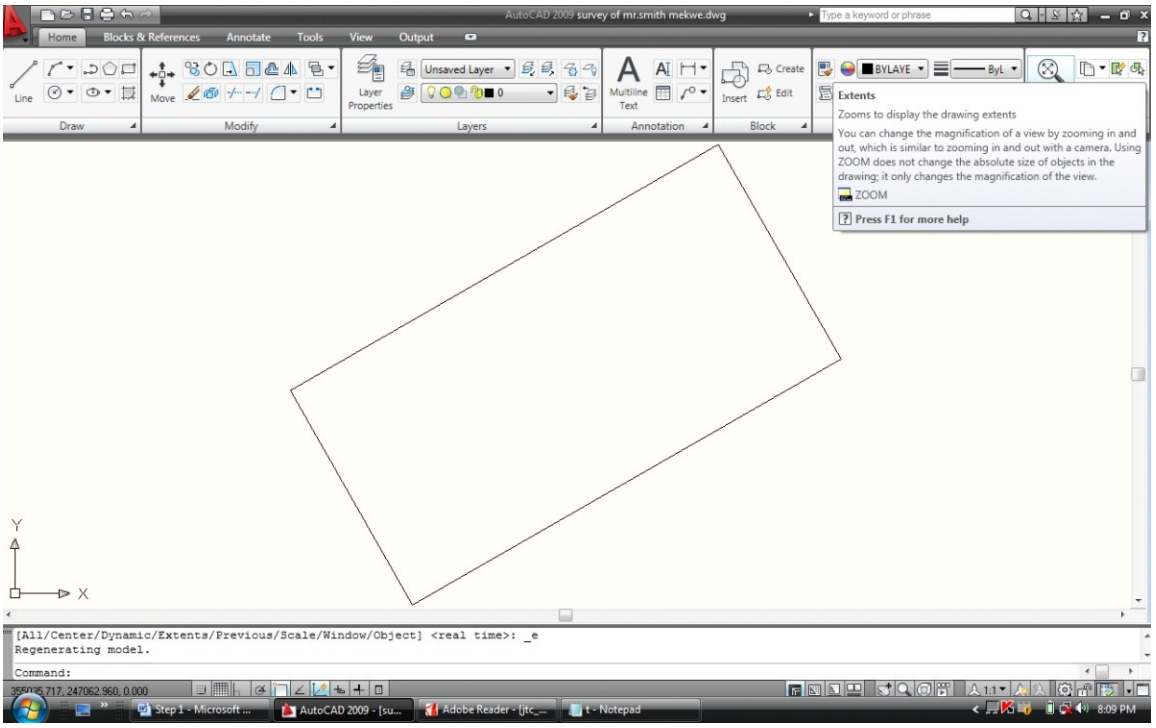
Step 5 Start PLOTTING
Click on the layer menu and select *main plan*

PLOTTING BY CARTESIAN OORDINATES

- Type *line* in the command box then press *enter*. Or
- Click on the *line* symbol
- Type in the coordinate of points accordingly
- Specify first point: 355013.495,247063.130
- Specify next point or[Undo]:type 355028.614,247036.647
- Specify next point or[Close/Undo]:type 354975.701,247006.240
- Specify next point or[Close/Undo]:type 354960.612,247032.721
- Type *close*
- Type *zoom extent* or click on *zoom extent*

PLOTTING BY RECTANGULAR COORDINATES

- Type *line* in the command box then press *enter*. Or
- Click on the *line* symbol
- Type in the rectangular coordinate for the reference point.
- Specify first point: 355013.495,247063.130
- Specify next point or[Undo]:type @30.50<150d17'
- Specify next point or[Close/Undo]:type @61.00<240d06'
- Specify next point or[Close/Undo]:type @30.50<330d17'
- Type *close*
- Type *zoom extent* or click on *zoom extent*



Step 6: **SET BEACON**

- Click on the layer menu and select *beacon*
- Command: Type *point* then *enter* or
- Click on draw then click on *multiple point*
- Take the mouse to the edges of the plot and click on each.
- *Esc*

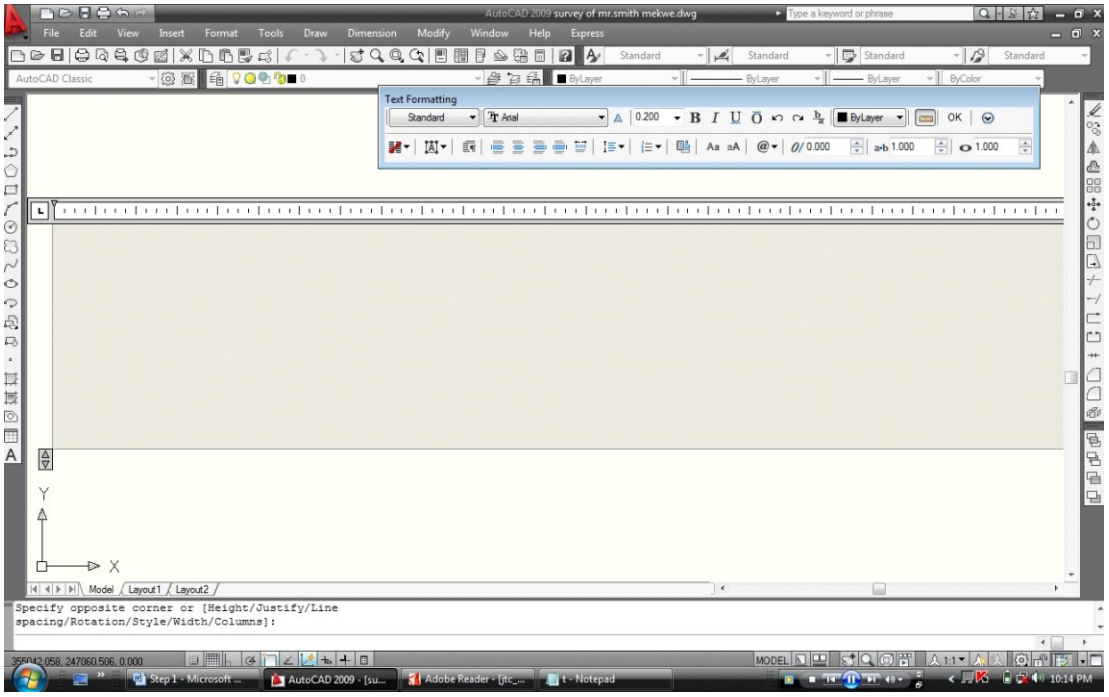
Step 7: WRITE BEACON NUMBER

- Clicks on the layer menu and select *beacon number*

Command: multiline text or click A

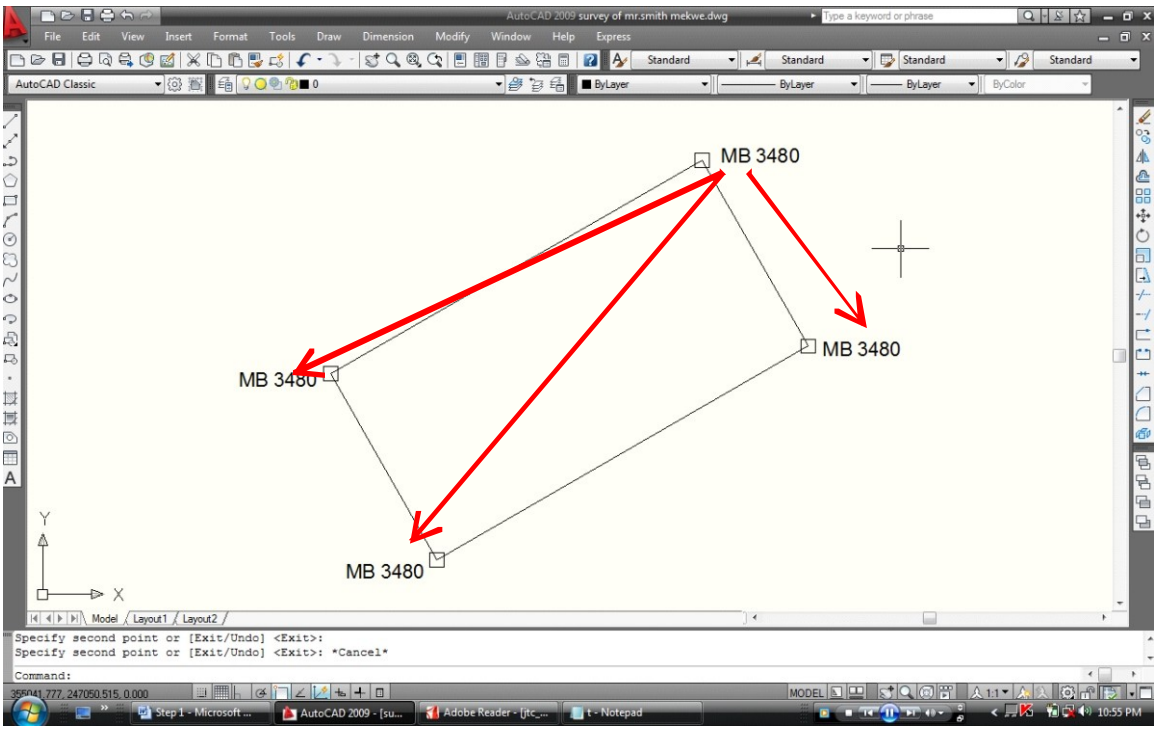
- Draw a rectangle and click

(*Note: the rectangle defines the writing area for the text.)*



- Set text height to 2.000
- Type MB 3480 (beacon number of first point).
- Click *Ok*

- Copy MB 3480 and
- paste on other corners of plot



Step 7i: Edit newly copied beacon numbers by double clicking on each,
Step 7ii correct the beacon number, MB 3481, MB 3482, MB 3483.
Ok.

Step 8: Plotting BEARING AND DISTANCE

Set layer to *bearing and distance*

- Set *ucs(user coordinate system).*
- From the menu bar click on *tools*, *new ucs, object*.
- The select line MB 3483- MB 3480

Step 8ii: Command: *text or* click A.

- Write 60%%d 06' *enter,* write 61.00m, *ok*
- Write the bearing and distance and repeat process for other lines.

Step 9: plotting ROAD

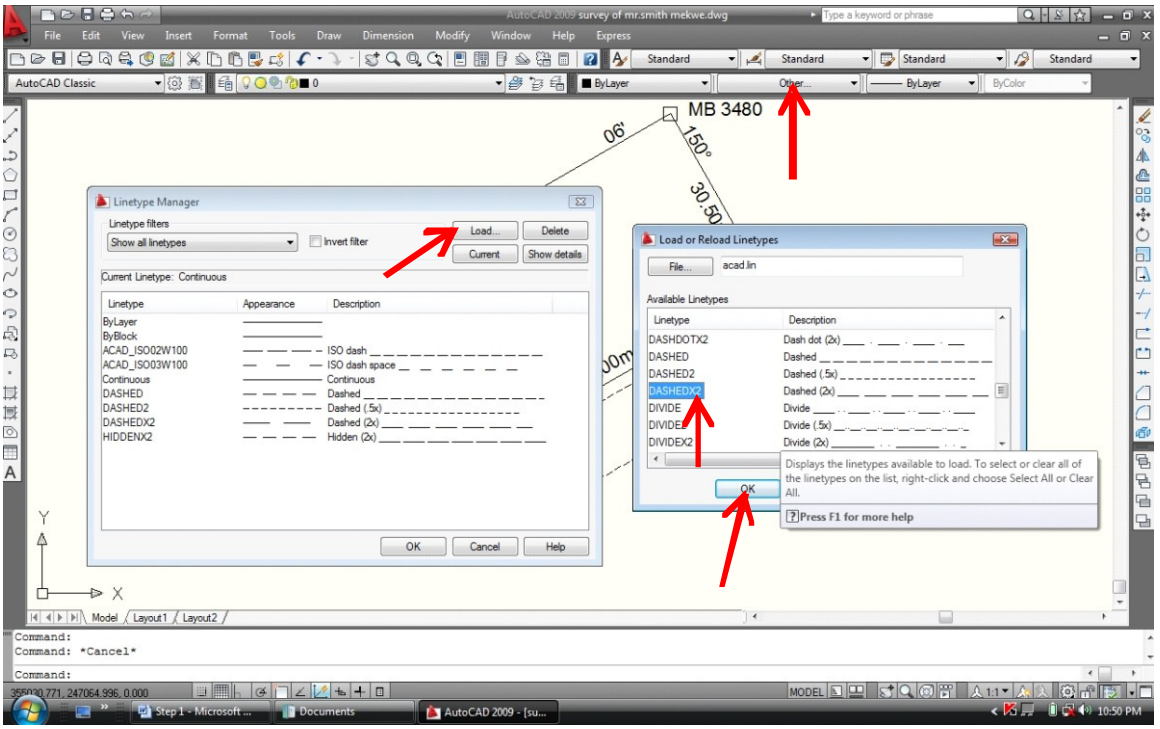
set layer to *road*

Command: *offset* or click *offset*

- *Specify offset distance or [Through/Erase/Layer] <Through>:* 12(12m offset) *enter*. A little box is formed on the mouse cursor click the box on line MB3481 to MB3482
- Then click the empty space in the direction of the road on the sketch given.
- *Select object to offset or [Exit/Undo] <Exit*>: *enter*
- repeat offset process for 2.5m, the other side of the road is formed.

To peck the road.

- click on line type on the menu bar,
- click on *other,*
- click on *load,*
- select *DASHEDX2*

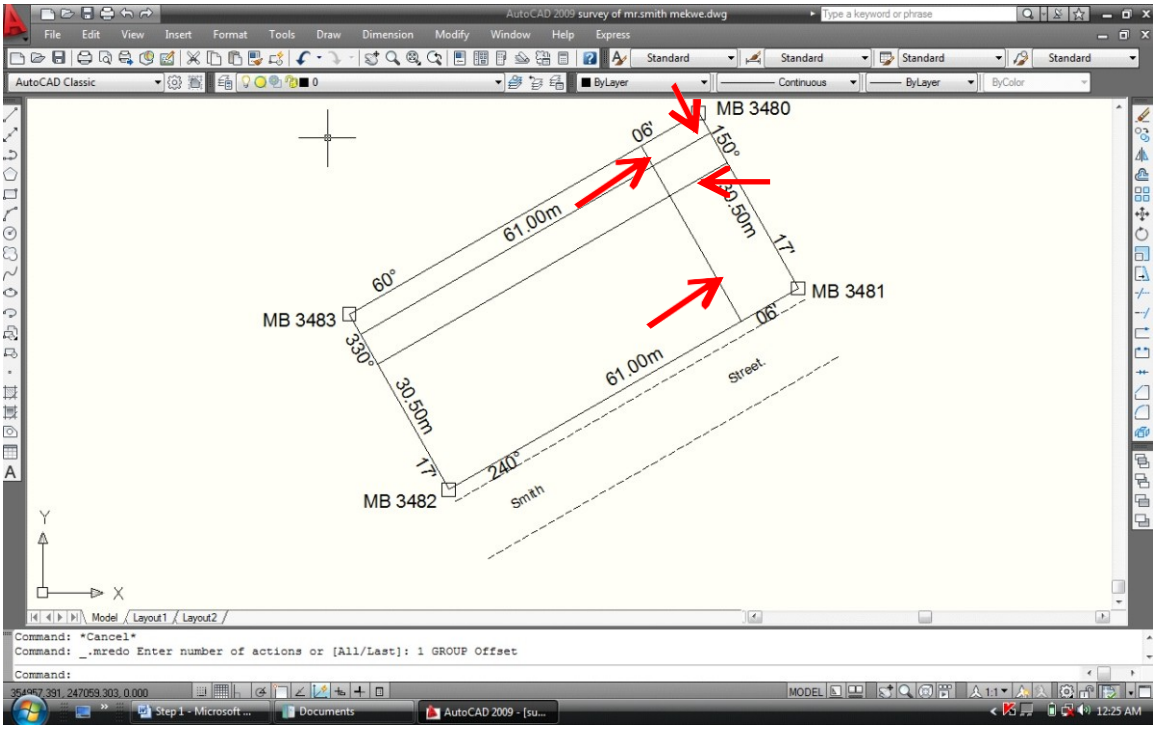


- *ok*
- Highlight the two sides of the road by clicking on both.
- Click on the line type menu,
- Choose *DASHEDX2*
- Esc (on keyboard)
-

Step 9iii WRITE THE STREET NAME

- orient the *ucs* along the road
- command : text write Smith Street
- Perfectly align using, command *move enter*
- Using the cursor right click on the write-up the left click to move.
- Esc.

- From the new offset line take offset of 5.2m

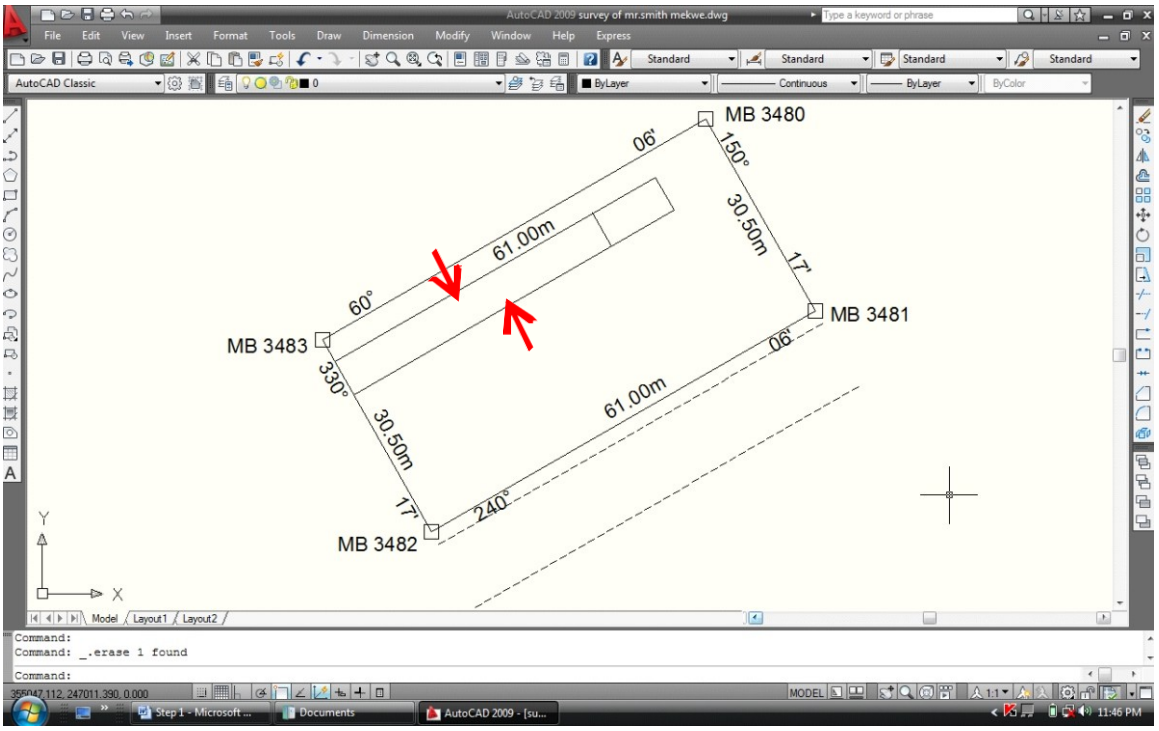


- trim the lines the arrows are pointed at,

Command: *trim* or click on the *trim* icon,

- Take the cursor to any line to be trimmed and right click on it, then left click on each line and it will be trimmed.

- Take an offset of 10m from line the arrow is pointed.



- Trim both lines and the detail is defined.

Step 10i HATCHING THE BUILDING

command : *hatch enter*

Step 11: Set TITLE

- select form the layer menu *title*

Command: *text* or click A

- Draw a rectangular box with the cursor.
- Set text size to 2m
- Type: PLAN SHEWING LANDED PROPERTY OF
- *Enter*
- Set text size to 2.5m, click on bold and underline
- Type : MR. SMITH MEKWE
- *Enter*
- Set text size to 1.5
- Type : AT WARD 37B
- *Enter*
- Type : PORTHARCOURTH CITY
- *Enter*
- Type : RUMUO OLA LOCAL GOVERNMENT AREA
- Enter
- Type : RIVER STATE
- *Enter*
- Type : NATIONAL ORIGIN
- *Enter*
- Type : AREA:-1860.121SQM
- *Enter*
- Type : SCALE:- 1:500

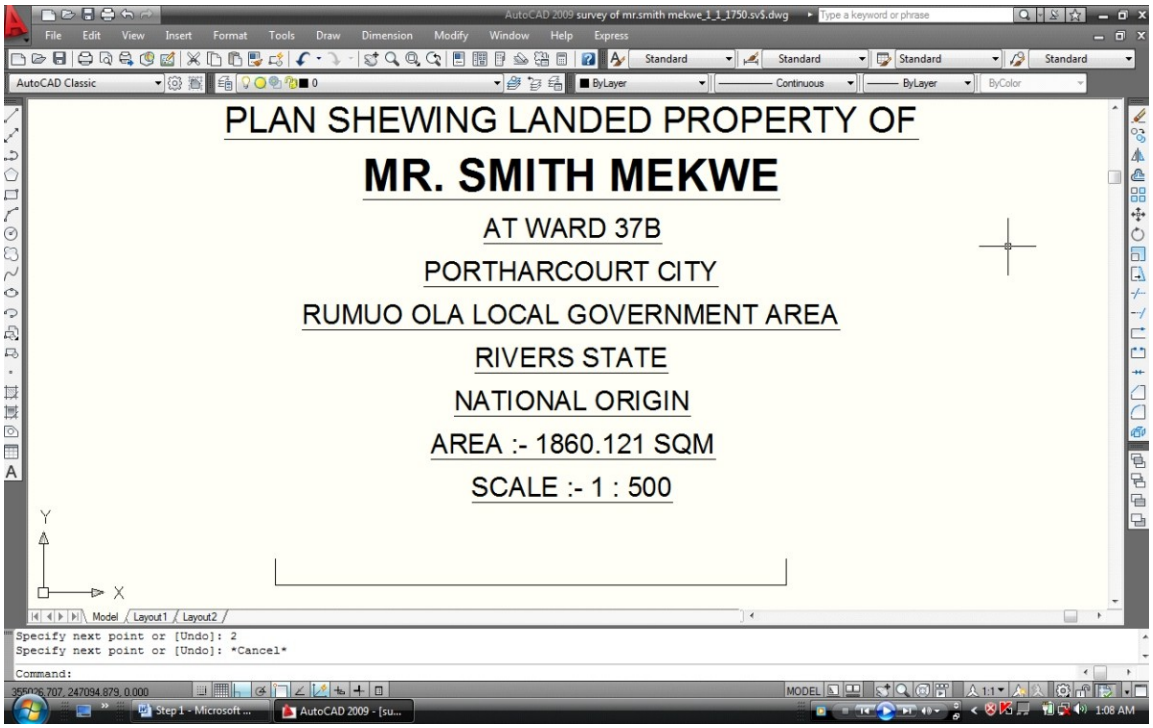
- Command: *Zoom out* (reduce the size of drawing)
- Highlight the title by clicking on it
- Command: *move*
- Click again to move.
- Move title to the top of the plot.

Step 12: Set layer to SCALE

- set to ortho mode, command: *ortho*
- Enter mode [ON/OFF] <OFF>: on

Command: *line* or click on line symbol.

- Type 40.0<90d0'0', and then *enter*
- Click on the left side of the line
- Type 2.00<0d0'0"
- Repeat on the right side of the line.



. **OFFSET LINES**

Command: *offset*

- Type in 1.5
- *Enter*
- Click just above the long horizontal scale line.
- *Esc*

Command: *offset*

- Type 10, then *enter*
- From the left short vertical line, then click within the confines
- Repeat process based on the new lines established, dividing it into four (4) equal paths.

Command: *offset*

- Type 5,then enter
- Click on the short vertical line on the left, and then click within the first column, its divided in two equal parts.

Step 13: Set layer to BORDER

Command: *rectang* or click on the rectangle symbol

- With the cursor draw a rectangle as a border over the TITLLE and THE MAIN PLOT.

Step 13i: Highlight border by clicking on it,
Click on line weight control.
Select 0.60mm (to thicken the border).
Esc

Step 14 : COORDINATE LINES / NORTH DIRECTION

Command: *ortho*

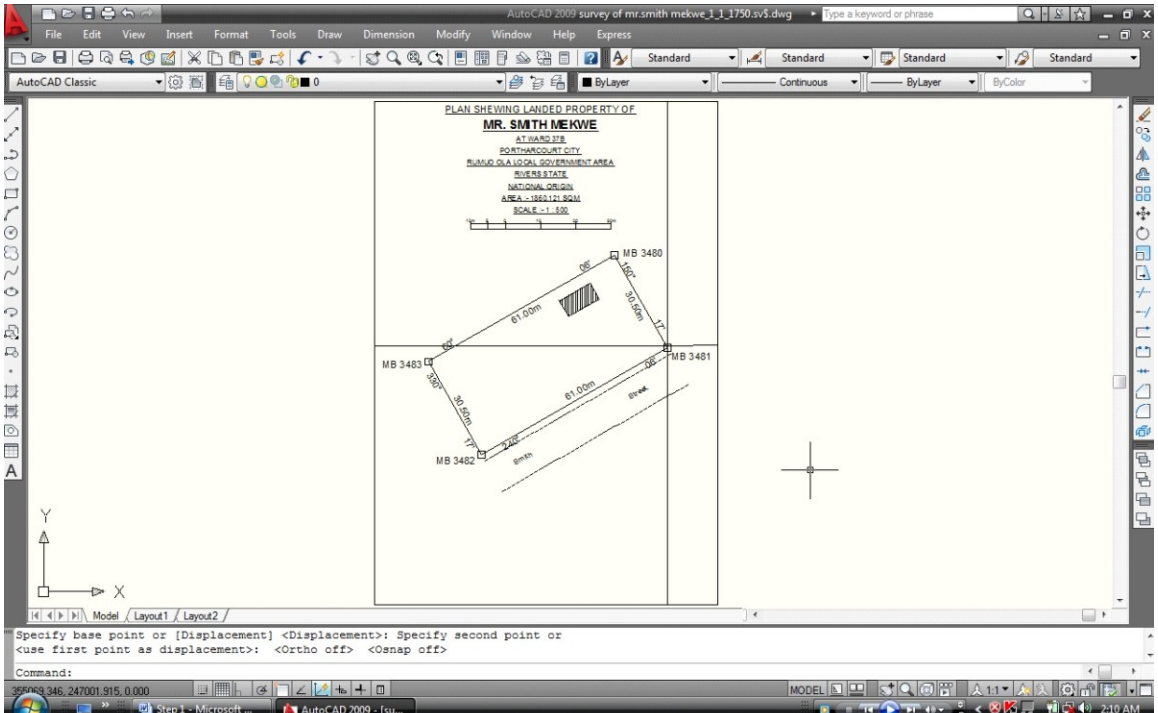
- Enter mode [ON/OFF] <OFF>: on

Command: *osnap*

- *Ok*

Command: *line*

- Take the cursor to point MB 3481; click the highlighted part of the box.
- Pull the line drawn vertically upward towards the border and end it at the border. (turn of osnap before the border)
- Do the same in the horizontal direction.



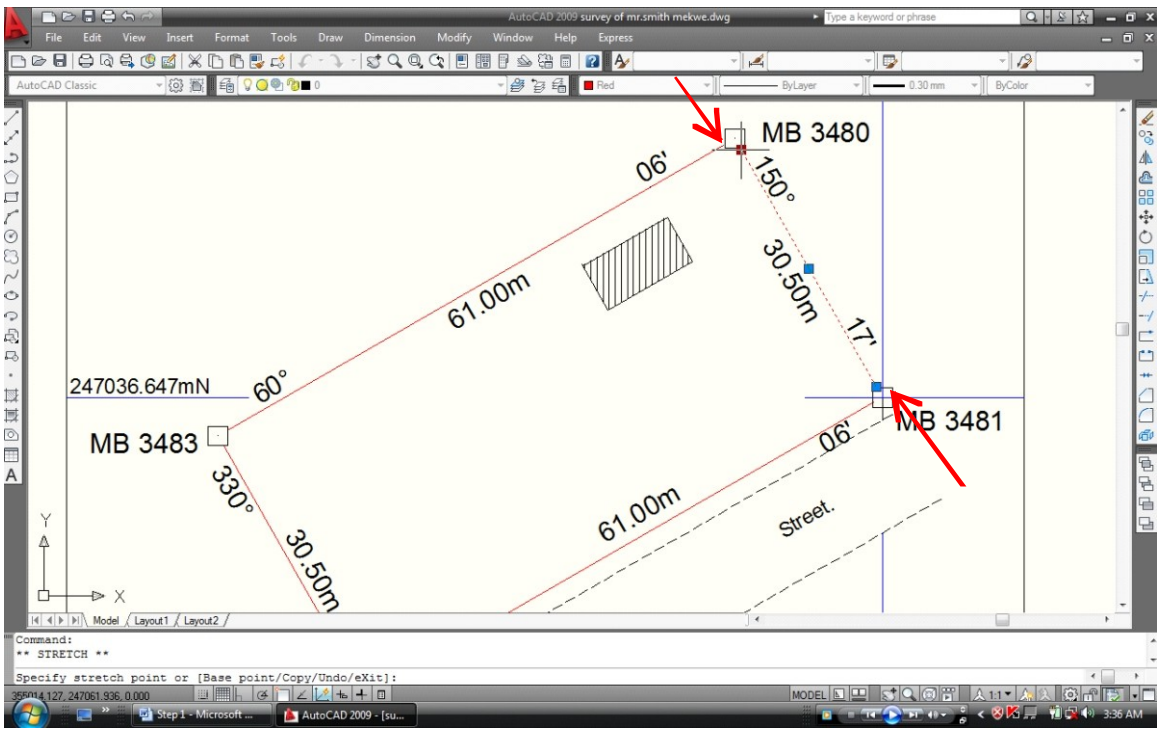
Command: *trim*

- Trim line within the plot and road.

- Create a north symbol over the north line,
- By *line* and *curve* commands.
- By text command write the NN (National North)

Step 15: VERGE THE PLOT

- Select the four border of the plot
- Click *color control (by layer)*
- Click on *red*
- Click on *line weight control*
- Select 0.30mm
- Esc
- Highlight the northing and easting lines
- Click on *blue*
- Edith the title by double clicking on in,
- Highlight the area and select *red*
- Click *ok* to exit
- Create a position for plan no.
- Highlight each line between the beacon
- From the end point gently pull out of the box(beacon symbol)



Repeat carefully for each line at both ends

Note: press esc after each line

Command: *text*

- Set *text height* to 2.000
- Click on B(bold)
- Type (.)dot

Note: the area captured is the area to be printed.

- Click *apply to layout*
- *Ok*

CHAPTER FIVE

5.0 **Summary of attachment activities**

I was exposed to different fields of surveying in a wider scope by the 15 weeks

industrial attachment. I participated fully in almost all the projects executed I can now

boast of carrying out property survey, leveling and some managerial works.

5.1 **Problem Encounter during the program**

Problem encountered during the programme was no financial support and long distance of placement

5.2. **Suggestions 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.

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.