PERIMETER AND DETAILING SURVEY

OF

KWARA STATE POLYTECHNIC,

(A CASE STUDY OF INSTITUTION OF ENVIRONMENTAL STUDIES,

KWARA STATE POLYTECHNIC, ILORIN)

PRESENTED BY

OLUWAMOTITO DEBORAH AYOMIDE
MATRIC NUMBER: ND/23/SGI/PT/0009

TO

THE DEPARTMENT OF SURVEYING AND GEO INFORMATICS,
INSTITUTE OF ENVIROMENTAL STUDIES,
KWARA STATE POLYTECHNIC, ILORIN.

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR AWARD OF

NATIONAL DIPLOMA IN SURVEYING AND GEOINFORMATICS.

JULY, 2025.

CERTIFICATE

I **OLUWAMOTITO DEBORAH AYOMIDE,** with the **Matriculation number ND/23/SGI/PT/0009** hereby certify that all the information given in this project work was carried out in accordance with the survey Laws, Regulations and departmental instructions. Submitted to the Department of Surveying and Geoinformatics, Institute of Environmental Sciences, Kwara State Polytechnic, Ilorin, Kwara State. In partial fulfilment of the requirements for award of National Diploma in Surveying and Geoinformatics.

Candidate's Name: **OLUWAMOTITO DEBORAH AYOMIDE**

Matric No: **ND/23/SGI/PT/0009**

Signature ..... Date:……...

CERTIFICATION

This project titled "Perimeter and Detailing Survey of Kwara State Polytechnic Institution of environmental studies, the area cover by this project is part of institution of environmental studies, Kwara state polytechnic, Ilorin ." by **OLUWAMOTITO DEBORAH AYOMIDE,** with the **Matriculation number ND/23/SGI/PT/0009** meets the regulations governing the award of National Diploma (ND) of Kwara State Polytechnic, Ilorin and it is approved for its contribution to scientific knowledge and literary presentation.

.....	.....
Surv. A. O. AKINYEDE (Project Supervisor)	Date and Sign
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Surv. F. D. BELLO (Project Supervisor)	Date and Sign
.....	.....
Surv. R. S. Awoleye Project Coordinator	Date and Sign
……..	… ..……
Surv. I. I. Abimbola Head of the Department	Sign and Date
.....	.....
External Examiner	Sign and Date

DEDICATION

I wholeheartedly dedicate this work to my family, especially my parents, for their endless support and prayers, and to every student determined to achieve greatness through diligence and discipline.

ACKNOWLEDGEMENT

I thank God for seeing me through this project with strength, direction, and wisdom. I am especially grateful to my supervisors, Surv. A. O. Akinyede and Surv. F. D. Bello, for their professional guidance, motivation, and dedication towards the success of this project. I also appreciate the leadership and academic excellence provided by the Kwara State Polytechnic, Ilorin, especially the Department of Surveying and Geoinformatics. I extend my gratitude to my family and colleagues who stood by me throughout this academic pursuit

ABSTRACT

This perimeter and detailing survey project involves accurately identifying land boundaries and mapping physical features with a specific area. It uses tools like total station and GPS to gather data, which is then processed to create detailed maps. The results support land ownership verification, planning and future development, ensuring accuracy and compliance with surveying standards.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Perimeter survey is a specific type of survey that measures the distance along the boundary lines of a given land. A perimeter survey is important to find out the exact location of the landed property and probably determine the extent of such land also the extent of encroachments can be evaluated in case of the landed property dispute. Surveying began in Babylon and Egypt in the form of field measurements. The great pyramids which are mystery hitherto could not have been built without the knowledge of surveying principal in spite of the conflicting views about its physic construction. The Egyptians used stones to mark boundaries of their farmland along Nile valley as temporary beacons even though the beacons used to be washed away later. This led to proper and solid demarcation of boundaries by permanent beacons.

Detailing is defined as the process of fixing topographical features to the survey line, Any of these under listed methods could be used,

a. Chain survey method (tie line and offset)
b. Plane table survey method

STAGES OF OPERATION IN PERIMETER AND DETAIL SURVEY

Perimeter and details survey involves the following operation:

- Reconnaissance both in the office and field
- Total station for detail fixing/contouring
- Computation
- Plan production

Land is considered to be one of the best long-term assets that anyone can have. It is of high value, is always in demand, and is easy to liquidate. On the other hand, owning a piece of land is not that easy. It includes

certain duties and responsibilities that the landowner is required to perform in order to maintain its market value. Perhaps one of the most important duties is performing an updated Perimeter and detail Survey to determine the land's boundaries and size. A Perimeter and detail Survey is a type of land survey that defines the perimeter boundaries of a particular parcel of real estate property. This survey maps a strip along the boundaries using a minimum width of 15 feet. This requires surveying the entire perimeter of the said real estate in order to determine the exact acreage and geometry of the property and identify any easements and encroachments that may be present within the land.

This process will require the installation of monuments to mark the boundary corners of the land for future references. This requirement can be waived through a written agreement between the surveyor and homeowner. Perimeter and detail Surveying is a service that can be performed by a professional land surveying firm, such as Godfrey-Hoffman & Hodge in Connecticut, to ensure reliable, accurate, and detailed surveying results.

A Perimeter and detail Survey pinpoints any visible evidence of easements and other public facilities within the property.

• A Perimeter and detail Survey detects any visible ingress and egress on the property.

• A Perimeter and detail Survey resolves conflicts on maps and deed descriptions.

• Perimeter and detail Surveys are used to identify the location of old boundary monumentation and survey pins, or they can be used to set up new ones.

• A Perimeter and detail Survey does not identify the features and improvements that exist within a property, such as barns, garages, sheds, dwellings, surface utilities, roadways, pools and visible bodies of water; only features that fall within the 15 foot width around the boundary perimeter will be depicted.

A detail survey is used to determine and locate the features and improvement on a parcel of lane. The word ‘’FEATUES’’ here means both natural and man-made structures on a pieces of land such as vegetation, types of soil, buildings, and utilities fences and boundaries roads, and marks and so on. Professional land surveyors use different tools & techniques in Perimeter and detail Survey that includes both conventional and modern technologies. However, most of the surveyors prefer to use the conventional surveying tools & techniques that include bearing and distance or compass and tape. Although they are considered primitive tools, they still remain an important asset to a land surveyor. Although there are some minor adjustments and improvements in the compass and tape, they still follow the same age-old concept and technique. In addition to them, surveyors will use GPS technology in a Perimeter and detail Survey which is one of the greatest advancements in the surveying industry. Both of these two techniques, if carried out by a professional, can result in a detailed analysis of your property with a small margin of error. Typically, a surveyor would prefer to use the bearing and distance technique when working over a smaller distance and use GPS technology on larger distances.

A Perimeter and detail Survey is a specific type of property survey that maps and measures a distance along the property boundary. Professional land surveyors use either Bearing and Distance (compass and tape) or GPS technology for a Perimeter and detail Survey. They are generally out using survey equipment such as total station and theodolites. The data is then carried to the office for analysis and preparations of detail plan are. These plans are usually useful for engineers and architects who use them in their design and plain. The survey should be carried out by a qualified land surveyor who may be assisted by a chairman. With this kind of survey one can obtain a property which would consist of the inventory of all the property lines together with a list of the reputed owners and the type and use of building thereon. These data will be plotted on maps as accurately as possible considering the best sources of information.

A Perimeter and detail Survey can determine the measurement around your property and is conducted by a professional surveyor to ensure that an accurate report is conducted and recorded. A Perimeter and detail Survey is a specific type of survey that measures the distance along the boundary lines of your land. A Perimeter and detail Survey is important to find out the exact location of your property lines and you can also discover if there is any encroachment on your property. Although it might sound like a simple survey where you just need to measure the length of your boundary, in reality it includes many other assumptions and calculations. While the surveyors use this approach, they have to analyze, calculate and measure a wide range of factors which includes but not limits to:

- Boundary monumentation
- Boundary encroachments
- Unresolved conflicts with existing property deeds & maps

- Lines of occupation: fences, walls, hedges, yards, and natural elements

1.2 AIM AND OBJECTIVES

1.2.1 AIM

The aim of this project is to produce a perimeter/detail plan of part of Institute of Finance and Management Studies, Kwara State Polytechnic, Ilorin, Moro Local Government Area, Kwara State.

1.2.2. OBJECTIVES

`The following objectives are considered in order to accomplish the above aim:

- Reconnaissance operation i.e office and field.
- Data acquisition
- Data processing and computations
- Data presentation i.e plan production.
- Report writing

1.3 PROJECT SPECIFICATIONS

The following are the specification to be ascertained in the project.

i. A third order total station traverse must be carried out.
ii. The control checks must be thoroughly done.
iii. The length of each traverse line must not be greater than 250metres.
iv. The liners accuracy should not be less than 1:5000
v. Angular misclosure should not exceed ±30;; √n where n is the number of station traversed.
vi. the carved out area must cover the entire land of the study area
vii. The horizontal distance should be given in 3 decimal places.
viii. The consecutive station must be inter visible and should be established where it would not be disturbed.

1.4. SCOPE OF THE PROJECT

The scope of this project covers

- Perimeter traversing
- Detailing
- Data downloading, editing and processing
- Computation
- Area computation
- Information presentation
- Report writing

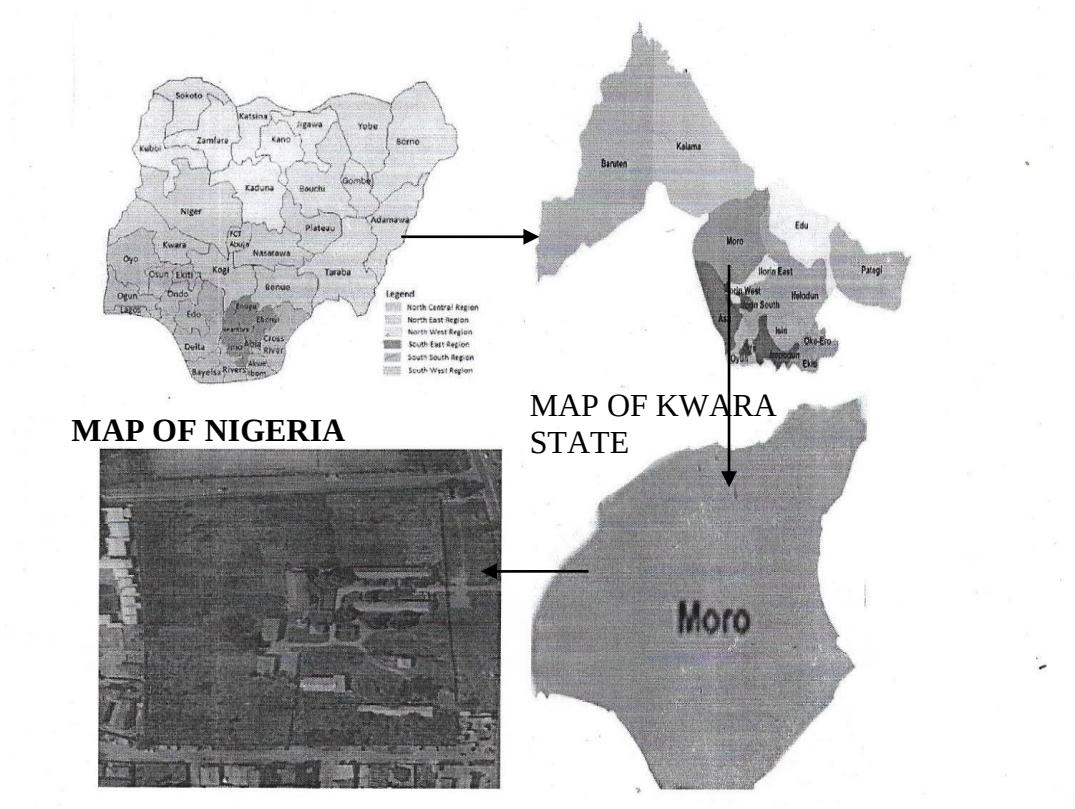
1.5 PERSONNEL INVOLVED

For easy and proper execution of this project (6) six members were engages in the operations. The roles were interchanged among the members in the group for the benefit for everyone to participate all the operations. The below table shows the name and matric number of the group members.

S/N	NAME	MATRIC NO	ROLE PLAYED
1	Oluwamotito Deborah Ayomide	ND/23/SGI/PT/0009	**AUTHOR**
2	Samuel Kehinde Boluwatife	ND/23/SGI/PT/0008	Member
3	Abdulganeey Sulaiman Olamilekan	ND/23/SGI/PT/0015	Member
4	Alabi Robiu Ayomide	ND/23/SGI/PT/0013	Member
5	Sanni Idris Damilola	ND/23/SGI/PT/0010	Member
6	Opatola Tawakalit Titilope	ND/23/SGI/PT/0011	Member

1.6 STUDY AREA

The area to be covered by this project is part of Institute of Environmental Studies, Kwara state Polytechnic, Ilorin. Moro local government, which falls on the longitude and latitude 08 30 09.8 Latitude. 04^0 35 00’ around latitude 08 30 00, longitude 04 34 00.



MAP OF NIGERIA

MAP OF KWARA STATE

Google earth imagery of project site

MAP OF MORO L.G.A

CHAPTER TWO

2.0 LITERATURE REVIEW

Encyclopaedia Britannica (1973-1974) commented that bench mark or marked points on the surface of the earth, connected to the elevation of bench marks are given in terms of their height above a selected level surface called datum which is limited to horizontal and vertical control only because it is the only two types. Noting that these controls used are in a particular order depending on the specification given for their establishment ranging from first order and second order and third order respectively. The network of first and second order triangulations and traversing can be used to establish more controls when the need arises to provide enough or sufficient controls.

Dashe (1987) saw a perimeter and detail survey produced to provide the following:-

- To determine the extent of an individual holding to avoid conflict over the land.
- To provide vital information, which must be preserved for future management, maintenance, modification and monitoring of both natural and artificial features.
- To locate portions of land on the physical surface of earth together with detail on it by means of survey beacons and showing that survey on a plan.
- To determine the extent, size, value, ownership and transfer of land.
- To define the boundaries of a particular area of land showing them on a plan for further development of the area.

Perimeter and detail survey are applicable in the following ways:-

- The survey plan can be used to supply information for the assessing and developing of construction works in the survey area.
- They can be used for updating existing plan of an area.

- Perimeter and detail survey plan aids cadastral surveyors in relocating existing property by relating them to existing details on the ground.

Also, a perimeter and detail survey is useful in the field of agriculture for the study of soil types and aids in soil conservation.

Perimeter / Boundary Surveys are carried out for the purpose of delineating the boundary of a parcel of land, determining its area and preparation of survey plan. The survey plan is usually the end product of a boundary survey. The survey plan shows ownership and describes the land. It is a document required by law during processing of any land title. We will help you prepare your survey plan and lodge the record (red) copy in the Office of the Surveyor General of the state.

It is very important to request for a Perimeter and detail Survey before acquisition of land in Lagos. Perimeter and detail Survey are usually carried out for other purposes such as:

- Settling a land dispute
- Determining encroachment
- Subdivision of land
- Re-establishing missing beacons

The word ‘features’ here means both natural and man-made structures on a piece of land – such as vegetation, types of soil, buildings, land utilities, fences and boundaries, roads, land marks and so on. This kind of survey is usually confined to the boundaries of the parcel of land. The survey will often include data such as the elevation of the land, that is, how high the land is above an arbitrary datum (level). A commonly used arbitrary level is the Mean Sea Level which is taken as zero metres high. The Easting and Northing coordinates of the land (exact position in relation

to the earth's surface) may have to be taken too. They are generally carried out using survey equipment such as total stations and theodolites. The data is then carried to the office for analysis and preparation of detail maps known as Digital Terrain Models, which provide the details that have been collected in the form of a map.

These maps are useful for engineers and architects who use them in their designs and plans. The survey should be carried out by a qualified land surveyor who may be assisted by a chainman. Perimeter and detail survey are carried out

- When you are planning to construct or extend a building on your land
- When you need to locate and record all land features and structures

When you want to present information about your land for purposes of land valuation, surveying consist of many different operation and techniques but underlying them all are some basic principles which provide unity and discipline to subject. These principles are few and they provide the economic and effective basis for conducting surveys.

Perimeter surveying may be described as the type of surveys made purposely for producing plans showing property boundaries or plan on which area necessary for the assessment of property or land taxes may be computed, it is also referred to as legal surveying because such survey forms the basis of a statutory registration of ownership and other rights land (dashe, 1987.

Perimeter can be define as the boarder or outer boundary of a two dimensional figure. I can also refer to a strip or boundary usually protecting a military position. A perimeter is also a path that surround a two dimensional shape. The word comes from a geek word "peri" mean around and "meter"

mean measure. The term may be used either for the path or is length. Perimeter survey is a type of survey that measured the distance along the boundary line of an area of land. A perimeter survey is important to find out the exact location of your property line and you can also discover if there is any encroachment on your property. Although it can serve like a simple survey where you just need to measured the length of your boundary.

Perimeter survey in reality includes mean other assumptions and calculation in the use of this approach, they have to analyse, calculate and measured a wide range of factors which includes but not limits to:

i. Boundary monumentation
ii. Boundary encroachments
iii. Unresolved conflicts with exiting property deeds and maps
iv. Lines occupation, fences, walls, hedges, yards, and natural elements.

Boundary of perimeter survey defines the perimeter or whole property (rather than say a subdivision which might subdivide out one or two house plots from a 50 to 10 acre property. Perimeter and detail Survey and detailing is about mapping and determining the geometry of a property. It's a direct and reliable way of determining if there's an encroachment. Surveyors might use a combination of methods such as GPS to accomplish this. Aside from determining the geometry, Perimeter and detail Surveying is also valuable in documenting boundary locations with respect to existing features near the property lines. This is useful in working with the deed restrictions when it comes to new construction projects. The difference is that Perimeter and detail Survey usually cover large parcels of land. In addition, Perimeter and detail Surveying is a much more accurate way of setting boundaries. Fences still serve as visual reminders. However, where they stand might not be consistent with the true boundaries of the property. As mentioned earlier, a Perimeter and detail Survey is also valuable in

resolving conflicts with regards to deed restrictions. On the survey you'll see the existing features within 5 metres of the perimeter line. You can see the driveways, swimming pools, bodies of water and other natural and man-made features existing nearby. For the property owner or developer, this is valuable information for construction planning. Property developers could accurately assess the potential of a land. In addition, they can also build fences or walls that are positioned more accurately to better protect their property. The survey is also valuable for future references. After the survey, the team of surveyors will install monuments to serve as markings of boundary corners. These will serve as visual reminders for the owners, developers and neighbours.

This clearly involves surveying the entire perimeter of the property to determine the exact geometry and acreage where the legal access to the property is from any easements that might be registered over the property benefiting an adjoining property. A perimeter or boundary survey is normally carried out on a property that is still define as per the cadastral registration to create a survey plan that defines the boundaries. This is beneficial because:

i. It determine your boundaries more accurately
ii. Determines the acreage accurately
iii. Boundary marks are placed at all turning on the property
iv. Legal survey plan is drawing and authenticated by the chief surveyor when registered at the land registry then defines yours property.

Some techniques and tools are used in perimeter survey that includes both conventional and modern technologies. However, most of the surveyors prefer to use conventional surveying tools and techniques that include bearing and distance or compass and tape. Although they are considered primitive tools, they still remain an important asset to a land surveyor. Although there are some minor adjustments and improvements in the compass and tape, they

still follow the same age-old concept and technique. In addition to them, surveyors will use GPS technology in a perimeter survey which is one of the greatest advancements in the surveying industry.

Both of these two techniques, if carried out by professional, can result to detail analysis of your property with a small margin or error. Typically one will prefer to use bearing and distance technique when working over a small distance and use GPS technology on larger distances. A detail survey is about defining the location and height of variety of feature on the property in question, A contour plan along with the physical feature located, are show on a plan. This plan can be viewed electronically or on a large format plot. This type of survey is regularly used when designing for roads, buildings, extensions and infrastructures.

a. Traversing
b. Detailing

Traversing is the process of connecting the series of line with known bearing and distance. Subdividing into first order of precise measurement and second order control for the establishment of secondary controls while the third order for survey of tertiary controls and topographical features. ALIMENTAL (1968) defined traverse as an orderly sequence of measurement of length and directions of lines between points on earth's surfaces to determine the position of points.

CHAPTER THREE

3.0 METHODOLOGY

This chapter basically describes the methods and principles adopted in carrying out the project work. The execution of this project was based on the following basic principles of survey.

- The principle of working from whole to part.
- The principle of choosing the method of survey that is most appropriate to get the desired result.
- The principle of provision of adequate checks to meet the required accuracy.

The processes adopted include:

- Reconnaissance
- Test of instrument
- Control check
- Traversing (perimeter)
- Linear measurement & detailing by radiation method)

For this project, the ground survey method was adopted with the use of total station and its accessories for data acquisition in order to identify the physical features and to determine The XY coordinates (i.e Northing, Easting).

3.1 RECONNAISSANCE

Reconnaissance which is the first stage and vital aspect of any survey work Carried out is as well the preliminary stage of this project.
This also is the initial operation or preliminary investigation undertaken by the surveyor in order to have a thorough overview of the site before the commencement of the actual survey ,it can also be abbreviated as “recci’’

as the project was concerned the reconnaissance was carried out in two ways.

- Field reconnaissance
- Office reconnaissance

3.1.0 Field Reconnaissance

This involves the actual [physical] visit to the site and was carried out before the actual operation. This project site was visited by the group in order to have a prior knowledge as well as true picture of the site and to ascertain the information collected during the office planning. The boundaries were marked with wooden peg driven into the ground to avoid disturbance or removal, taking into consideration the following factors.

- Inter-visibility of the selected traverse station.
- Safety of the selected station for future reference.
- Accessibility of the stations.

3.1.1 Office Reconnaissance

This involves knowing the type of instrument, purpose and accuracy required for the survey to be carried out. Information related to the given project was collected from various sources such as project supervisor. The specification/ instructions and coordinates of the control stations were collected from the department of surveying and geo-informatics Kwara State Polytechnic.

3.2 INSTRUMENT TEST

HORIZONTAL COLLIMATION TEST

The aim of this test was to be sure that the line of sight is perpendicular to the trunion axis.

Procedure:

The Total Station instrument was set over a point and all necessary temporary adjustments (centering, leveling and focusing) performed. Then

the configuration menu of the total station was accessed by pressing down the menu key for about two seconds and the calibration sub-menu and consequently the horizontal collimation test was chosen. This test was done by sighting and bisecting a well-defined vertical target about 100m away and taking the horizontal readings on face left and face right. From the analysis of the results, the total station was in good adjustment.

VERTICAL INDEX ERROR TEST

This adjustment ensures that the vertical circle reading is exactly 90° when the line of sight is horizontal. Any deviation from this figure is termed vertical index error.

Procedure:

The instrument was set over a point and necessary temporary adjustments (centering, leveling and focusing) performed. The vertical index error test was carried out by sighting a target at a distance of about 120m on face left. The vertical circle reading was recorded and on face right the target was sighted and bisected again and the vertical circle reading recorded.

3.2.1 IN-SITU CHECK FOR CONTROL

In-situ checks observations (angular and linear) were executed for the purpose of verifying the integrity of the existing controls. The following observational schedules were executed:

The instrument was set on KWT3001 and angular observations were made to targets on KWT3002 as back station and KWT3003 as forward station.

The results of the observations as shown below confirm that the controls were still in their original positions and therefore suitable for use.

TABLE 2 IN-SITU CHECK DATA ANALYSIS (control pillars).

STATION	**COORDINATE (m)**	**KNOWN VALUES (m)**	**MEASURED VALUES (m)**	**DIFFERENCE (m)**
KWT3001	**NORTHING** **EASTING**	946478.324 678540.211	946478.322 678540.208	0.002 0.003
KWT3002	**NORTHING** **EASTING**	946448.336 678500.342	946448.330 678500.346	+0.006 -0.004
KWT3003	**NORTHING** **EASTING**	946321.452 678612.394	946321.457 678612.397	-0.005 -0.003

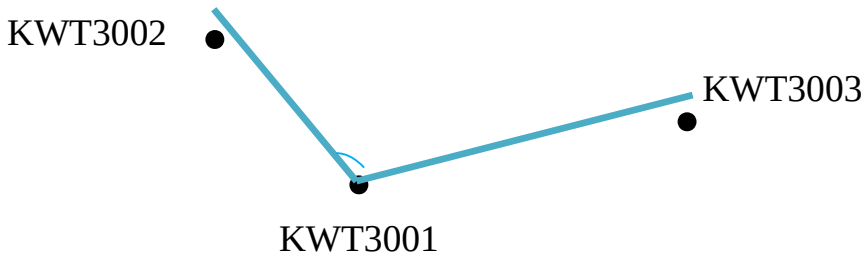


FIGURE 3.2.1 *Diagram Showing Control Used*

3.2.2 DATA ACQUISITION

This involves the processes in acquiring the data needed for the project. This involves the actual making of measurements and recording of observed data on the field. There are different methods of acquiring data in the site with different instrument such as Total station, Theodolite, Compass, Level Instrument etc.

3.2.3 Geometric Data Acquisition.

These are positional data, that is, they are data having the [X, Y] coordinates which is possible to locate their position on the surface of the earth.

3.2.4 Attribute Data Acquisition.

These data are acquired by social survey, these are data used for defining the purpose of features located on the earth surface.

3.2.5 EQUIPMENT USED/SYSTEM SELECTION AND SOFTWARE

This comprises of two components, namely: the hardware components and software components.

HARDWARE COMPONENT: These are the physical equipment used for the execution of the project and they are:

1. Total station and its accessories
2. Steel tape
3. Nails and bottle corks
4. Field book and pen
5. Personal computer
6. pegs

SOFTWARE USED FOR DATA PROCESSING

1. AutoCAD 2017 for plotting the boundary and detailing
2. Note Pad, and Microsoft Excel (for Script preparation, editing and restructuring of data and report writing).

3.2.6 SETTING OUT OF PERIMETER BOUNDARY

Based on the office planning and field reconnaissance conducted, the instrument was first set on Control Pillar KWT3001 being the closest control and all temporary adjustment performed. The coordinate of the control point KWT3001 was key into the instrument.KWT3002 was sighted as back sight.

The coordinates of the station KWT3002 was key-in the instrument via the keyboard. The instrument then computed the bearing between the two stations for orientation. Then coordinates of points to be set out were

entered into the total station and the setting out program of the instrument was used to get the angle to turn in order to face the direction of the point after orientation, the instrument was rotated until horizontal angle read 0° 00’ 01”, reflector was held along the direction and distance between the instrument and the reflector was measured. The instrument displayed the remaining of the point to be fixed distance as either positive or negative. Positive distance means that the reflector should move away from the instrument by that amount while negative distance means that the reflector should move towards the instrument. When the horizontal angle read 0°00’ 01” and measured distance displayed 0.000m this marked the exact position to be set out.

3.3 MONUMENTATION

The beacons measuring 18cm by 18cm by 75 cm were molded in-situ with a mixture of 1:2:3 of cement, sand and gravel respectively. A 12mm diameter Iron rod defines the center of the beacon was placed. The perimeter boundary line was cleared to ensure inter-visibility between the beacons. The numbering of the beacons was carried out after molding in a clockwise pattern with an arrow pointing to the succeeding station.

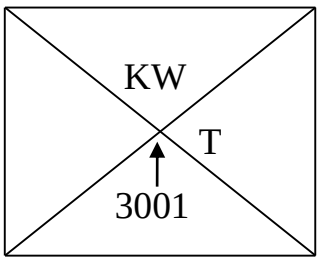


FIGURE 3.2: PLAN VIEW

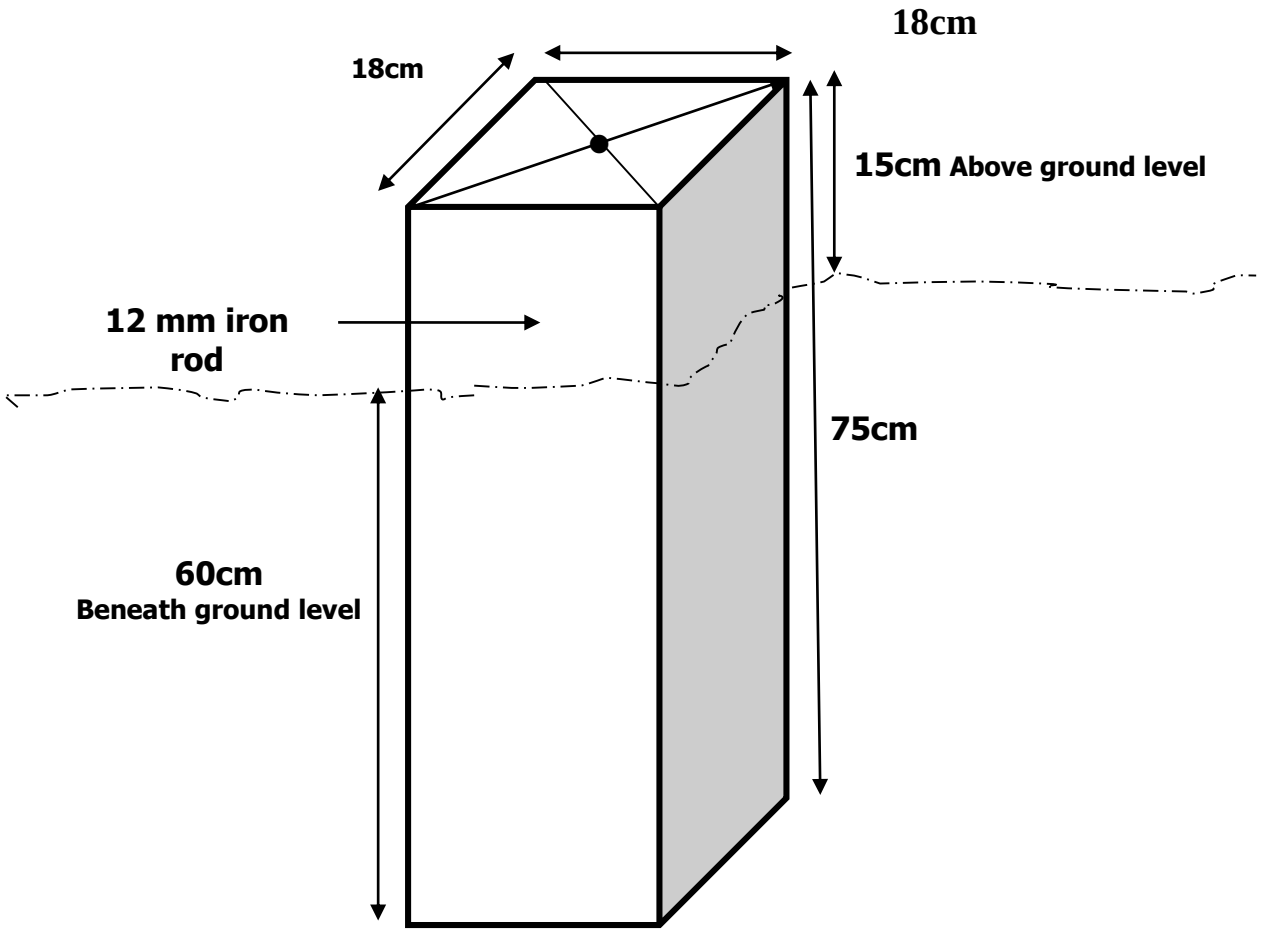


FIGURE 3.2: PROPERTY BEACON

3.4 PERIMETER TRAVERSING

After the demarcation, capping and numbering of the beacons, the actual data acquisition using the total station commenced. The traverse started from KWT3001 with KWT3002 as reference point. The total station was set up over control KWT3001, centered, leveled and telescope focused to eliminate parallax. The parameters of the instrument station i.e. station name, height of instrument over the station mark, and the XYZ coordinates of the station were keyed in. The reference control point was then bisected and the station name KWT3002, height of target over the station mark, and the XYZ coordinates of the station were key in. Though the total station was set in coordinate mode it actually measured and

recorded horizontal readings, vertical readings and distances automatically into the internal memory of the instrument on both faces which it used to compute and display coordinates. At every set up of the total station, the temporary adjustment was carried out and the following parameters measured:

- Height of instrument
- Height of the back target
- Height of the fore target
- Distance to back and fore station

This is the determination of bearing and distance of series of connected lines from known coordinated point so as to obtain coordinate of the newly established station.

This include the following with formula

- Linear measurement : the difference between the coordinates were first derived using (ΔE=E2-E1, E3-E2) etc. and the distance of end traverse leg was obtained using the formula: distance =√(ΔE)^2 +(ΔN)^2
- Angular measurement: to calculated the bearing after the difference in coordinates has been derived, the formula is Bearing=Tan-1 ΔE/ΔN.

3.4.1. COORDINATES OF THE BOUNDARY

TABLE 3: The coordinates are as follows

S/n	Easting	Northing
1	678567.030	946551.942
2	678692.242	946546.081
3	678840.570	946538.912
4	678837.737	946354.577
5	678835.596	946251.888
6	678560.478	946251.018

Source: Author 2025

3.5 DETAIL SURVEY

Detailing of all features (both natural and man-made) within the site was made by shooting ray to fixing with the instrument.

The instrument was set up on station KWT3001,switched on and adjustments were carried out. Then, “Job” and “Station Name” were set in the instrument so as to recall the coordinates of the boundary point from the instrument’s memory. Also, heights of instrument above the instrument station and heights of reflectors were measured with steel tape and stored in the instrument’s memory. A reflector placed on beacon KWT3002 was bisected for orientation. The Total station was instructed to compute the bearing between the two stations after input of the orientation station name KWT3003. One of the site assistant placed a reflector at the edge of a building , the reflector’s cross hair was bisected with that of the telescope of the total station and “DIST” key was pressed for measurement, display and recording. Then the width of the scream was measured with a 50meter steel tape. The same procedure was adopted in detailing the express way by setting on a boundary beacon KWT3002and orienting KWT3003.In this case, all the edges of the carriage way and some buildings were picked.

CHAPTER FOUR

4.0 DATA PROCESSING

As the instrument downloading cable is faulty, Microsoft Excel 2007 Software was used to type the final coordinates of all points except the unwanted part of the data like the temporary controls which were later transported to Note pad and AutoCAD software 2017.

4.1 RESULT ANALYSIS

The data was analyzed and found to meet with the departmental standards and this is the main traverse result extracted from field, then it was arranged accordingly as the observation was held in the field. The results are as follows.

4.2 COMPUTATION

Table 4: Back Computation

FROM PIL	**Bearing**	**Distance**	**∆E**	**∆N**	**Coordinates**		**TO PIL**
					E	**N**	
					678567.030	946551.942	PIL 1
PIL 1	92^0 40’ 48”	125.349	125.212	-5.861	678692.242	946546.081	PIL 2
PIL 2	92^0 40’ 01”	148.501	148.328	-7.169	678840.570	946538.912	PIL 3
PIL 3	180^0 5’ 30”	184.357	-2.833	-184.335	678564.737	946354.577	PIL 4
PIL 4	181^0 10’ 18”	104.711	-2.141	-104.689	678291.596	946249.888	PIL 5
PIL 5	270^0 14’ 07”	275.120	-277.118	01.130	678573.583	946251.018	PIL 6
PIL 6	01^0 14’ 50”	300.995	06.552	300.924	678567.030	946551.942	PIL 1

DOUBLE LATITUDE METHOD

$-5.861\,X + 125.21. = -733867532$

-5.861

-11.722

-7.169

-18.891 x 148.328= - 2802.064248

-7.169

-26.060

-184.335

-210.395 x -2.833= 596.049035

-184.335

-394.730

-104.689

-499.419 x -2.141 = 1069.356079

-104.689

-604.108

+01.130

-602.978 x -277.118= 167096.0574

+01.130

-601.848

+300.924

-300.924 x + 06552 = - 1971.654048

+300.924

+ 000.000

163253.876

2

Area= 81626.938sqm

= 8.1626 Hectares

4.3 COMPUTE FOR TOTAL AREA USING DOUBLE LATITUDE AND DEPARTURE

Table 6

FROM PIL	ΔE	ΔN	Easting	Northing	TO PIL
			678567.030	946551.942	PIL 1
PIL 1	125.212	-5.861	678692.242	946546.081	PIL 2
PIL 2	148.328	-7.169	678840.510	946546.912	PIL 3
PIL 3	-2.833	-184.335	678837.737	946354.577	PIL 4
PIL 4	-2.141	-104.689	678835.596	946249.888	PIL 5
PIL 5	-277.118	01.130	678560.478	946251.018	PIL 6
PIL 6	06.552	300.924	678567.030	946551.942	PIL 1

Source: Author Survey, 2025

4.4 GRAPHIC PLOTTING

This simply refers to the graphically representation i.e. plotting of plan. It was plotted using AutoCAD and other software in a computer system and a suitable scale was used to for the hard copy format. Presented information include boundary details and beg, conventional sign and symbol were also used in the plan.

The digital plan was produced using AutoCAD software and these are procedures followed.

- Switch on the computer and allow it to boost
- Select notepad, from notepad, a script file for the coordinate p-line easting, northing was structured.
- File was saved with extension. SCR
- AutoCAD was launched.
- Format was clicked and set the unit then press “OK”

- Press “Tool” and select Run script to pick your saved file then press escape and press zoom, extent and the image was displayed.

The boundary line was changed to Red and necessary editing was done.

CHAPTER FIVE

SUMMARY, PROBLEM ENCOUNTERED, RECOMMENDATIONS AND CONCLUSION

5.1 SUMMARY

The main aim of the project is to carry out perimeter and detailing survey of part of Institute of Finance and Management Studies, Kwara State Polytechnic, Ilorin. It was done in accordance with the survey rule and regulation and department instruction. A digital ground survey method was basically use for data acquisition.

A data base was created to house of all the relevant data collected on the field. AutoCAD, Microsoft word, Microsoft excel and note pad were combine to carry out data processing. Manipulation, analysis and retriever the final presentation of information was produced in form of digital map both in hard copy.

5.1 PROBLEM ENCOUNTERED

1. Indivisibility problem:- Due to the structure of the building in the project area, it is not possible to pick the most the details from the station point, hence we have to set in numerous points in order to detail the structure effectively.
2. Pedestrian movement:- the study area been abuse area, at every point in time. People are moving around it obstruct/delay the measurement process of the total station. This problem was resolves by waiting for more time in such occasion.

5.3 RECOMMENDATIONS

1. The project can be used as bedrock for further detail survey of the area.

2. The exposure to digital surveying with the use of digital equipment without any doubt, it enhanced any practical experience in surveying
3. The perimeter and detailing survey of the area enhanced the use of various survey software's such as AutoCAD, suffer etc. and the preparation of plan. Hence it is highly recommended for further studies.

5.4 CONCLUSION

The aims of the project were achieved as the expected accuracy and the obtained result conformed to the required accuracy of a third order job, also the great task actually exposed and broadened my knowledge on the scope, concepts, and skills involved in perimeter and detailing survey, more so the project has been successfully executed as adequate data were acquired processed and presented in plans

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APPENDIX

ID	EASTINGS	NORTHINGS
PT1	680146.6	946572.7
PT2	680349.3	946569.9
PT3	680345.6	946440.4
PT4	680145.2	946447
B1	680152.4	946552.1
B2	680201.3	946550.7
B3	680200.5	946541.6
B4	680152.4	946544
B5	680151	946532.8
B6	680201.3	946531.8
B7	680200.5	946519.9
B8	680151.3	946520.7
B9	680151	946512.4
B10	680200.5	946512.4
B11	680200	946500.8
B12	680151.3	946503.2
B13	680150.8	946492.9
B14	680199.2	946492.1
B15	680198.9	946481
B16	680150.8	946481.8
B17	680238.6	946469.5
B18	680289.6	946468.5
B19	680289.6	946456.3
B20	680238.6	946456.9
B21	680212.8	946460.6
B22	680226.1	946460.2

B23	680227.1	946506.5
B24	680214.8	946505.2
B25	680213.2	946560.5
B26	680308.1	946558.5
B27	680309.1	946485.7
B28	680297.5	946485.1
B29	680299.5	946545.6
B30	680228	946548.9
B31	680239.3	946517.8
B32	680283.9	946517.5
B33	680284.9	946505.2
B34	680239	946505.2
R1	680350.3	946629.8
R2	680353.2	946593.6
R3	680354	946521.3
R4	680351	946442.2
R5	680348.3	946384
R6	680358.3	946383
R7	680360.6	946441.2
R8	680361.9	946565
R9	680361.9	946594.8
R10	680360.2	946630.5
TR1	680319.7	946498.1
TR2	680313.1	946481.2
TR3	680312.8	946460.1
TR4	680293.9	946442.1
TR5	680347.6	946510
TR6	680324	946546.4

TR7	680286.3	946564.2
TR8	680267.1	946566.2
TR9	680267.1	946558.6
TR10	680257.6	946533.2
TR11	680287.3	946535.1
TR12	680241.4	946479.9
TR13	680231.4	946539.4
TR14	680167.6	946513.3
TR15	680182.5	946450.8
TR16	680211.3	946450.8