

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,
KUMASI

COLLEGE OF ARCHITECTURE AND PLANNING
FACULTY OF ARCHITECTURE AND BUILDING TECHNOLOGY
DEPARTMENT OF ARCHITECTURE,

KNUST

DESIGN THESIS:

COMMERCIAL HUB OF SUAME (SHOWROOM FACILITY),
KUMASI.

A DESIGN THESIS REPORT SUBMITTED TO THE DEPARTMENT OF ARCHITECTURE
OF THE KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,
KUMASI, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
POSTGRADUATE DIPLOMA IN ARCHITECTURE.

AUTHOR:

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August 2009

DECLARATION

I hereby declare that this thesis report has been undertaken solely by me and is an original and not a duplicate or plagiarised work. It has resulted from thorough research and logical analysis and synthesis under department staff supervision.

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Essie Quansah

18th Sept. 2009

Date

I hereby declare that this work is an original research undertaken by my student and has been done under my supervision



Mr. C. Essel

18th Sept. 2009

Date

I declare that the student undertook this study under supervision

Prof. G. W. K. Intsiful

Date

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KUMASI-GHANA

DEDICATION

To my parents, Prof. C. Quansah and Ms. Regina Sagoe, this is the fruit of your labour. I will always remember the efforts you tirelessly put into seeing me through my education.

I am forever grateful to you. God bless you.

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ACKNOWLEDEMENT

"Now to the King eternal, immortal, invisible, the only God, be honour and glory forever and ever..." No amount of words can express how grateful I am for how far you have helped me.

My sincere gratitude goes to my supervisor, Mr. C. Essel, Senior Lecturer in the department of Architecture. Without you, this thesis would not have been a reality. Thank you very much for your guidance, support, time and patience.

I thank my academic tutor, Mr. B. Odame and Mr. C. Koranteng of the Department of Architecture, for their guidance and support and to all lecturers of the Faculty of Architecture, I would not have gotten this far without their help. God bless you.

Also, I am very grateful to the entire Quansah family especially for their love, care, advice and support, God bless, protect and keep every member of this family. May you never want.

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ABSTRACT

Suame magazine redevelopment is a major project to attempt reorganizing the industrial site and give practical proposals to serve as a general base map for future development. This is to rectify the problem of developing without well constructed basis. Suame is a suburb in Kumasi, which can be located in Ashanti region in Ghana. This industrial site is well known for its garages, workshops, tool shacks, machine mini-marts, outdoor laboratories, contaminated land (source-spillage of oil) and its ability to have solution to any automobile problems.

The role of commercial activities in Suame magazine can be linked to the days of caveman where exchange of goods for goods or services was done. Over the years commerce has evolved into a complex phenomenon which is to take care of mans basic needs. This basic trading activity is not a comfortable phenomenon in Suame Magazine due to the haphazard way of development.

A conscious effort to find possible solutions to the above was proposed. Below is some listed objective;

- To design and plan facilities that will take care of the mix used activities in Suame magazine industrial village.
- To promote free movement of people from one point to another and providing easy methods of identifying areas of interest to users and customer.
- Creating a layout and facility that seeks to address the parking needs, vehicular and pedestrian conflicts and off loading of goods.

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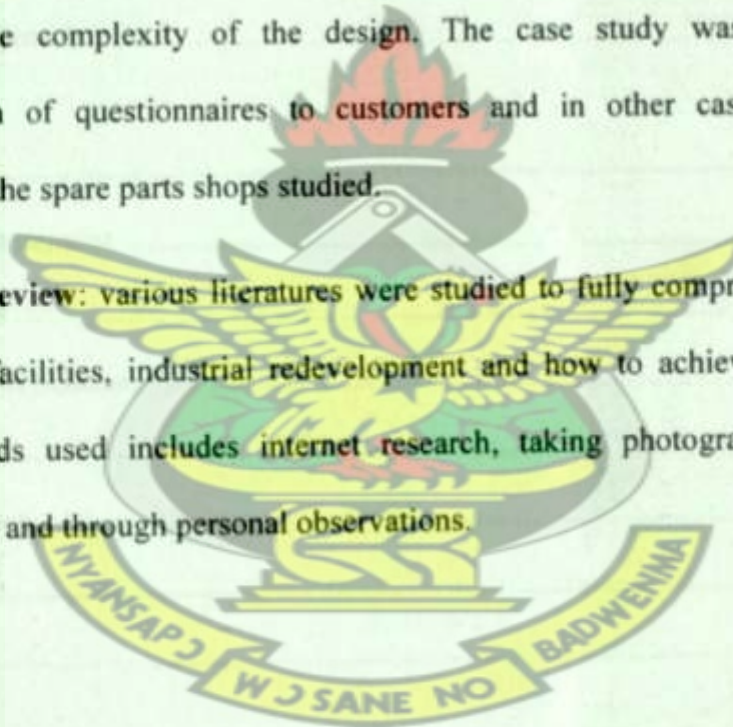
- Create a facility to display goods to enhance its beauty.

METHODOLOGY

In other that this research be successful, the following methods were employed:

Case study: Studying a case similar to the one proposed, with this in mind, Japan motors and Vodi Technik Motors LTD were studied. Technical issues were studied to give an insight to the complexity of the design. The case study was achieved through administration of questionnaires to customers and in other cases interviews were conducted at the spare parts shops studied.

Literature review: various literatures were studied to fully comprehend the history of commercial facilities, industrial redevelopment and how to achieve a successful one. Other methods used includes internet research, taking photographs, collecting and collating data and through personal observations.



Chapter Two

2.1 Documentation of Existing Situation in New Market

2.1.1 Social Culture

2.1.2 Population

2.1.3 Area of Study

2.1.4 Historical Background

2.1.5 Educational Levels

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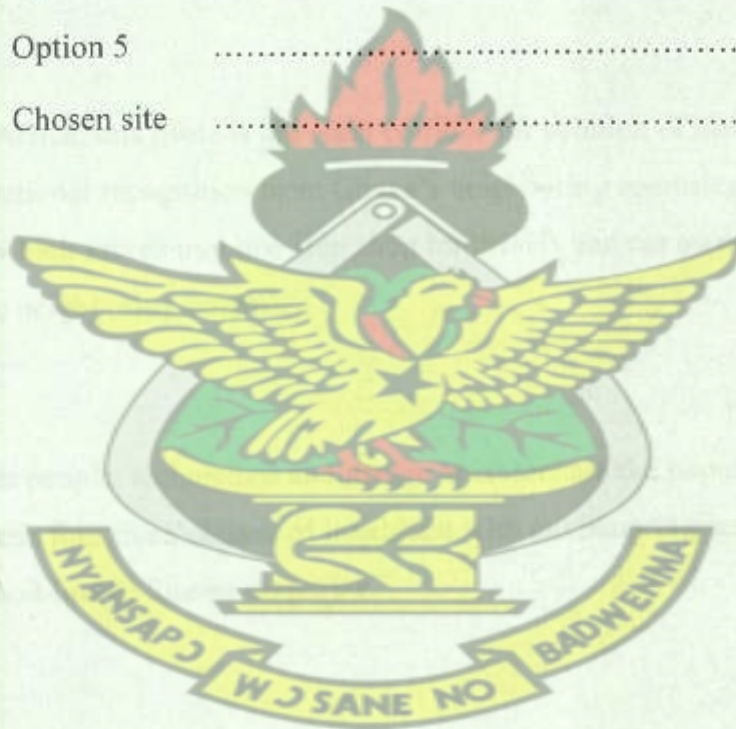
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CHAPER ONE

INTRODUCTION

1.0 INTRODUCTION

Suame is a major suburb in Kumasi, which can be located in Ashanti region in Ghana. Suame magazine is somewhat centrally located in Kumasi. This industrial site is well known for its garages, workshops, tool shacks, machine mini-marts, outdoor laboratories, contaminated land (source-spillage of oil) and its ability to have solution to any automobile problems.

Taking it from West Africa, this place is the **main corridor** for solution of their cars and trucks especially with international recognition from Ghana's neighboring countries. It is an urban industrial settlement **which** serves us a one stop shop for drivers and car owners from all over Ghana and immediate neighboring countries.

200,000 artisans, sales people, technicians and **garage operators** are the population estimate of Suame magazine. These **four** main classes of inhabitant with auxiliary classes of habitant like the hawkers make the blood line of Suame magazine.

Their contribution to the growth of the country's economy is very appreciable. This industry is already into producing most of Ghana made metal goods which is striving very well in the local market.

Unfortunately, successive governments and municipal administrations have not paid much attention to its development. Suame magazine has enjoyed a steady growth over the years even though the growth is organic and unplanned.

Associations have been formed over the years to champion the self interest of members in this urban industrial setting and find efficient governance systems to preserve the harmony there. The main administrative hierarchy system is the master craftsman and the apprentices.

The role of commercial activities in Suame magazine can be linked to the era of caveman where exchange of goods for goods or services was done. Over the years commerce has evolved into a complex phenomenon which is to take care of man's basic needs.

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Developed countries have greatly advanced in this area, hence buying and selling becomes comfortable and delightful for its citizens. However, contrary to the conditions in most developing countries, an example being Ghana and to be specific Suame magazine. Commercial chaos is what exists and seems accepted in Suame magazine.

It's been established that one of the greatest errors in West Africa urban centers – central business districts is that the centers plan us and not us planning the centers. If attention is paid on Suame magazine development, the country will gain more foreign exchange to help increase the economic status.

In this regard it's become mandatory for architects and planners to come together to find solutions and make sure that this canker is not repeated in future. With this analysis, this topic is very essential and relevant to our Ghanaian community.

1.1 PROBLEM STATEMENT

Lack of well planned commercial hub of Suame Magazine creates a great deal of difficulty in the business transactions.

The need for this redevelopment will alleviate the stress of people looking for where to find what.

Planning and creating some basic needs in the industrial village will reduce the overwhelming demand on the CBD in Adum.

1.2 OBJECTIVES

- To design and plan facilities that will take care of the mix used activities in Suame magazine industrial village.
- To promote free movement of people from one point to another and providing easy methods of identifying areas of interest to users and customer.
- Creating a layout and facility that seeks to address the parking needs, vehicular and pedestrian conflicts and off loading of goods.
- Create a facility to display goods to enhance its beauty.
- Designing a facility that will respond to tropical climate and its immediate environment.
- Creates open spaces for other community activities like funerals or outdoor functions
- A facility that is friendly to able and disabled customers.

1.3 DEFINITION OF SCHEME

The scheme is in two folds:

1. Documentation of existing situation at Suame magazine. That is, understanding their way of life in terms of social culture, economy and their physical infrastructure.
2. The coming out of a proposal that can best solve the problems at Suame magazine.
3. Picking and designing the commercial aspect of the proposal called the COMMERCIAL HUB OF SUAME MAGAZINE to improve their commercial activities at Suame magazine and its environment.

1.4 JUSTIFICATION

The major factor that controls the growth of a nation is its economy hence commercial activities. Kumasi Suame Magazine being among the biggest industrial site in the country and West Africa, a commercial facility will help facilitate its activities.

Retail and wholesale, services form 30% of economic activities in Suame magazine which is the second highest activity after auto mechanics.

1.5 TARGET GROUP

- Corporate Bodies
- Individuals

1.6 CLIENT

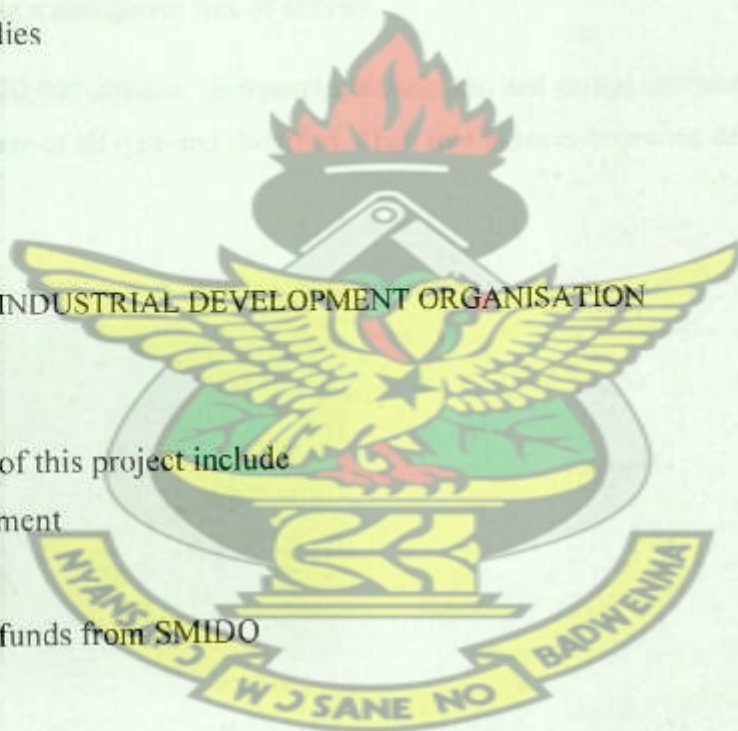
SUAME MAGAZINE INDUSTRIAL DEVELOPMENT ORGANISATION

1.7 FUNDING

The major financiers of this project include

1. The Ghana government
2. KMA
3. Internal generated funds from SMIDO

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CHAPTER TWO

2.0 DOCUMENTATION OF EXISTING SITUATION AT SUAME MAGAZINE

2.1 SOCIAL CULTURE

Introduction

Suame is a major suburb in Kumasi. "suame magazine" (sm) is a huge sprawl of industrial activities in a district of Kumasi. Suame Magazine is full of labyrinth of garages, workshops, tool shacks, machine mini-marts, outdoor laboratories, greasy foundries, and assorted furnaces-on-wheels. It is a place awash with urban myth, and steeped in a changeless flux of activity.

Suame Magazine hosts 20,000 artisans, salespeople, technicians, and garage operators – consisting of industrial workers, artisan of all type and classified. Their role in socio-economic development in Ghana is magnificent.



Fig. 2.1: Aerial view of Suame magazine

2.1.1 Justification

- The problem of Suame Magazine is that it grew without planning. It is just like urban slum.
- Although technically is an industrial slum it will need a face lift if the country's expectations in terms of their contribution to the national economy will be realized.
- the activities at Suame Magazine ranges from mechanisation, fabrication, services, retail, car accessories, spraying and decoration, banking, insurance, medical case etc.

2.1.2 Area of study

- Historical development
- population dynamics
- religious activities
- educational levels
- leisure and entertainment

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2.1.3 Historical development

- Origin of suame magazine

the term 'magazine' is a historical reference to military armories (or magazines) that were located in the area during colonialsuame magazine originally emerged in the 1930s and experienced significant population growth in the 1950s and 1960s as a result of the removal of businesses from the city centre of Kumasi. Growth of the magazine was spurned again in the mid-1970s when restrictions were imposed on importation of new vehicles and parts. While some large enterprises suffered, the small enterprises of suame magazine filled the gap that the policy created by crafting spare parts that were originally imported

- The transition

In 1983, under the guidance of the world bank and international monetary fund, the government of Ghana launched the economic recovery programme as an effort to reduce ghana's debt and improve trading practices. As part of this initiative, the restriction on importation of vehicles and parts were removed. Some large enterprises were able to re-establish themselves but now competed against the small enterprises in Suame magazine which had developed expertise.

- Suame magazine today.

Today, Suame magazine has a working population of over 200,000 and approximately 12,000 shop-owning .Suame magazine is an artisanal engineering cluster spanning 20 square miles located in Kumasi, Ghana.



Fig.2.1.4: Pictorial view of Suame magazine

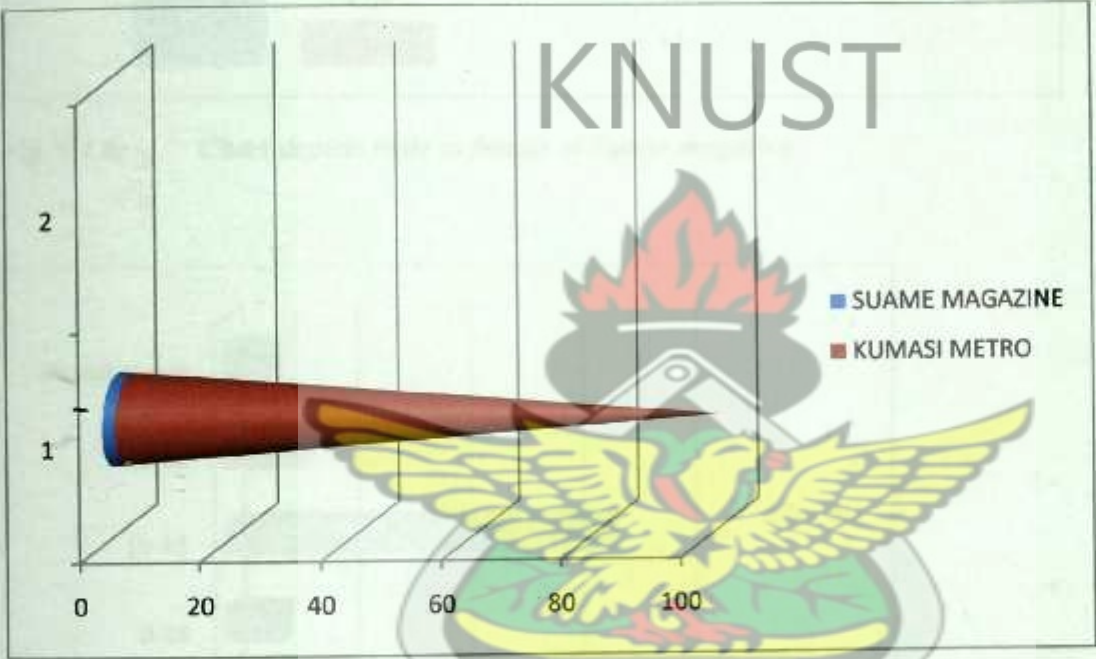


Fig. 2.1.5: Chart showing population of Kumasi metro to population of Suame magazine

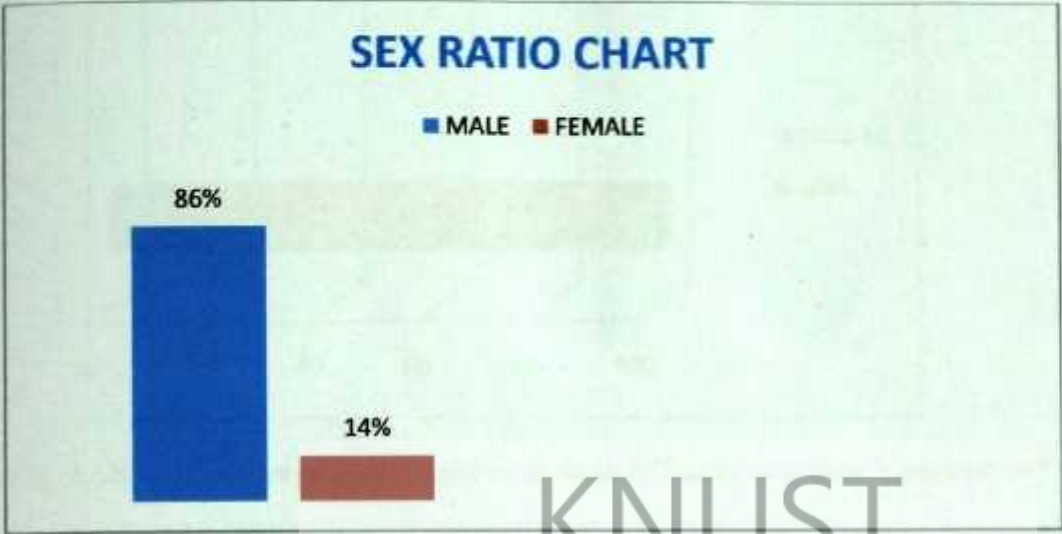


Fig. 2.1.6: Chart depicts male to female at Suame magazine

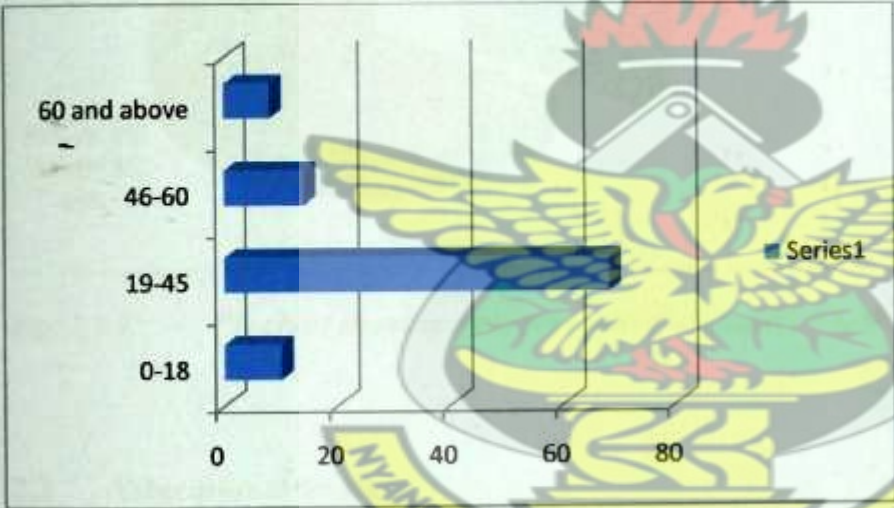


Fig. 2.1.7: Bar chart showing age distribution of the population at suame magazine

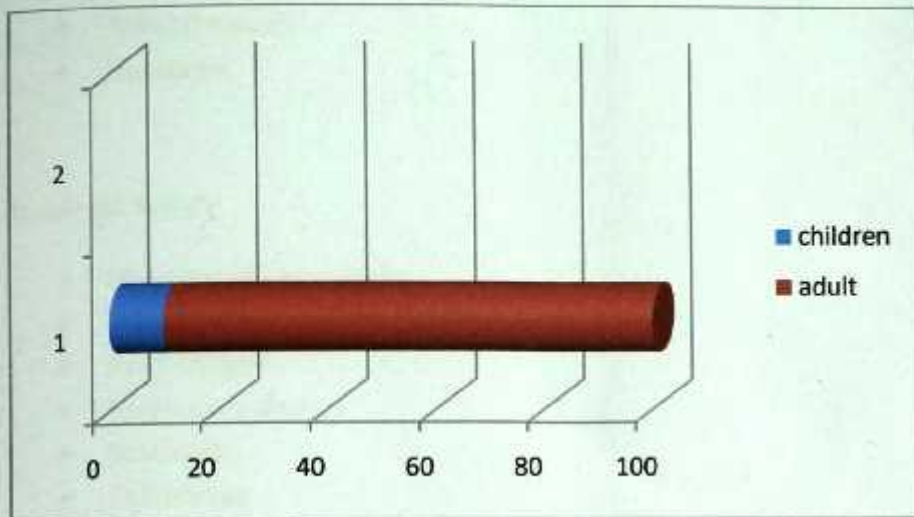


Fig. 2.1.8: Chart showing children to adult of Suame magazine's population

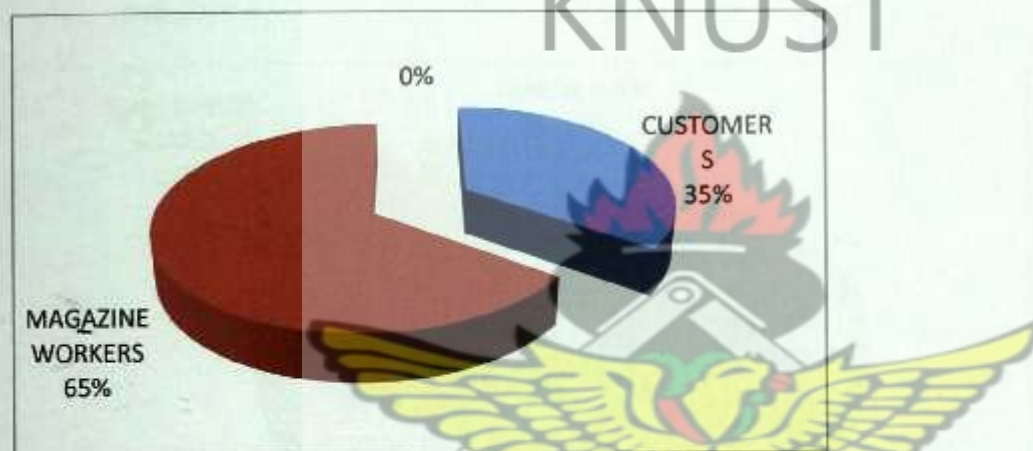


Fig. 2.1.9: Pie chart showing customers who visit magazine to workers at the magazine

2.2 Educational levels

It is estimated today that between 70%-75% of the labour force are employed in the informal sector in Ghana. Suame magazine's educational level is not different.

2.2.1 Categories of labour force

Formal sector

- Bankers
- Health workers

- Administrators
- Engineers

Informal Sector

- Shop owners attendants
- Whole sellers
- Petty traders
- Spare parts dealers
- Mechanics
- Fabricators
- Hawkers
- Food sellers
- Artisans

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Fig. 2 2.1a: Pie chart showing educational levels in the formal sector

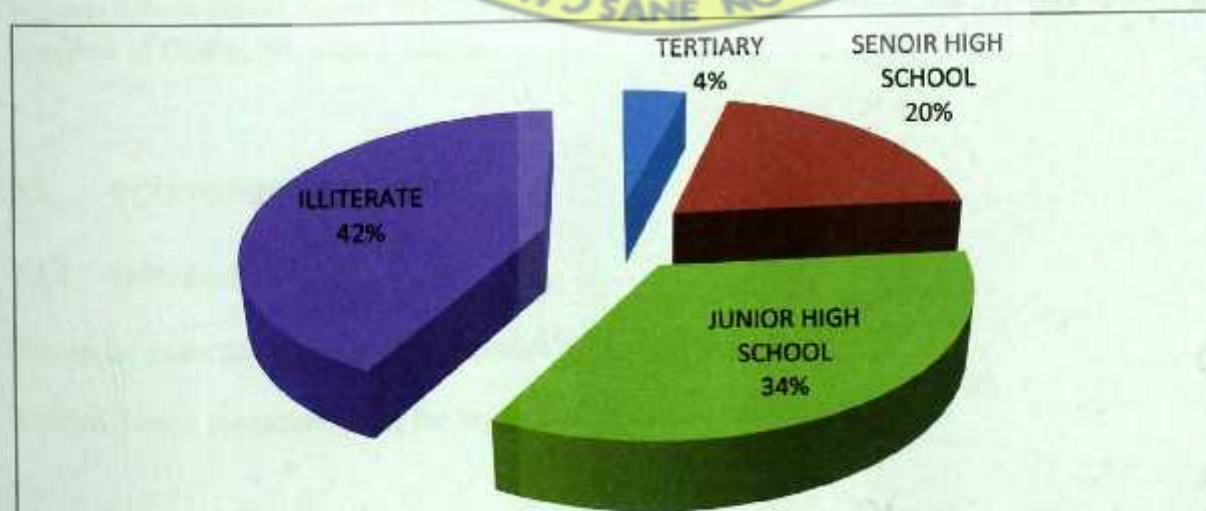


Fig. 2.2.1b: Pie chart showing educational levels in the informal sector

The national vocational training institute is a vocational center operated by the government of Ghana with the sole aim of equipping the youth with technical knowledge. Some of the courses offered are

1. Auto mechanics
2. Auto electrician
3. Basic printing
4. Auto body works

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Fig. 2.2.1c: Photograph showing NVTI training school

The Suame magazine industrial development organization (SMIDO) has the vision of moving the magazine from the ancient way to the modern way of repairs. This vision led them to the establishment of training School called Suame Magazine Automatics Training Center. It was recently opened by the vice president of Ghana, HE John Mahama.

2.3 ECONOMIC ACTIVITIES

2.3.1 Introduction

The major control to the growth of a nation is its economy.

Kumasi Suame magazine being the biggest of its kind in the country

and West Africa as a whole facilitates this activity.

the Ashanti regional capital which houses the Suame magazine

lies in the middle of the country and support and link both the

southern and northern sectors of the country.

The main activities that go on at Suame magazine is categorized under the following

- Retail/wholesale
- Fabrication
- Auto mechanics
- Services

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2.3.2 PERCENTAGES OF ECONOMIC ACTIVITIES

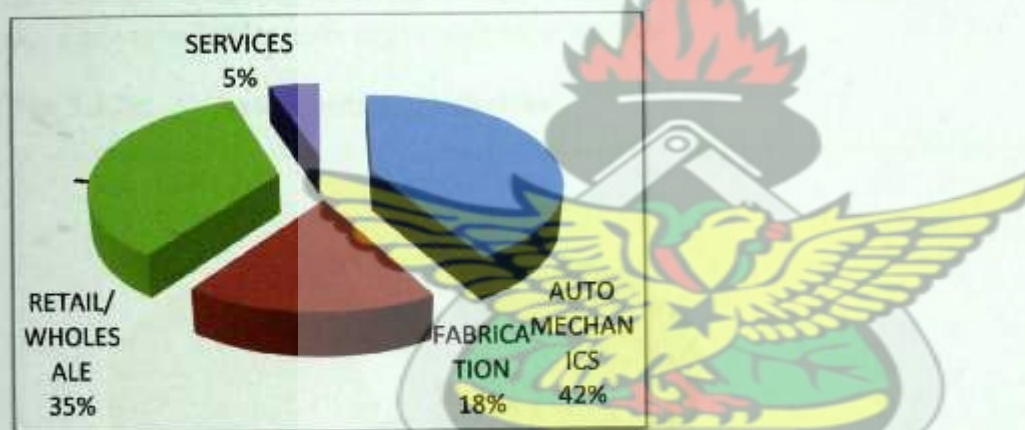
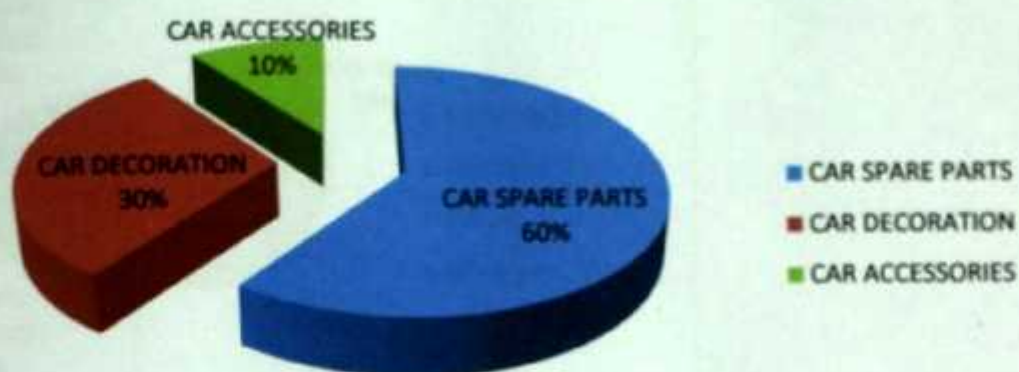


Fig. 2.3.2a: Percentage of economic activities

Retail/Wholesale activities include:

1. Car spares parts. e.g. doors, finders, absorbers etc
2. Car decoration. eg 4x4 front guard, sit covers etc
3. Car accessories e.g. engine oil, brake oil, grease, electrical parts etc.

Fig. 2.3.2b: Retail/Wholesale activities



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Auto mechanics activities include:

1. Car electrical parts. e.g. car lights, control boards, ignition etc
2. Car aircondition.eg detecting faults, air-conditioners, gas filling etc
3. Car engine/under parts .e.g. repairing of engine

Fig. 2.3.2c: Auto mechanics activities



Fig. 2.3.2d: Services activities

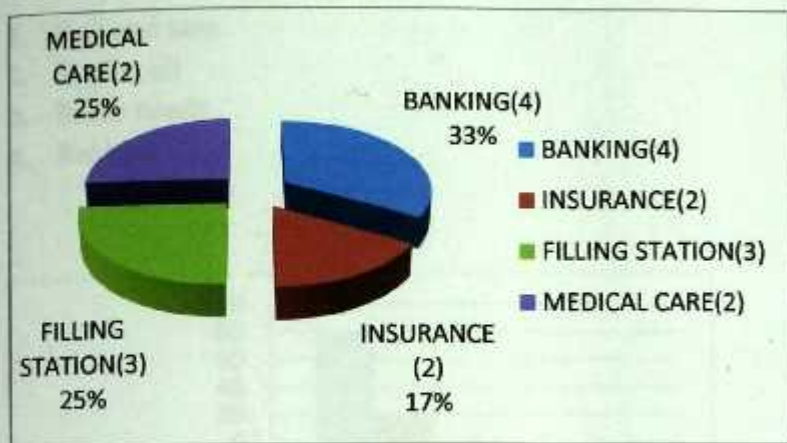
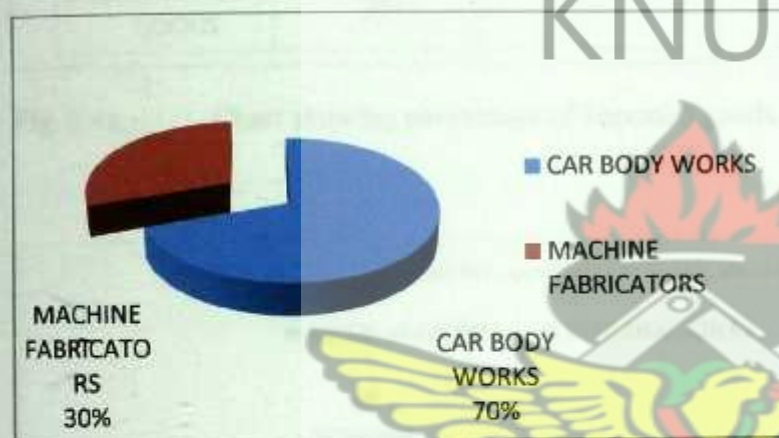


Fig. 2.3.2e: Fabrication activities



2.4 Sources of Goods

Goods sold at Suame magazine can be grouped under two:

- Imported goods
- Locally manufactured goods

Goods brought to Suame magazine from outside the country amount to 95% of total goods. They normally come from Korea, United Kingdom, China, Dubai, France, Germany, and Spain. Goods imported include:

1. Car parts
2. Engines
3. Brand new cars
4. Used cars
5. Car tyres

Locally manufactured goods amount to 5% of the total goods. They include:

1. Bolt and nuts
2. Engine oil
3. Brake bands
4. Rubbers

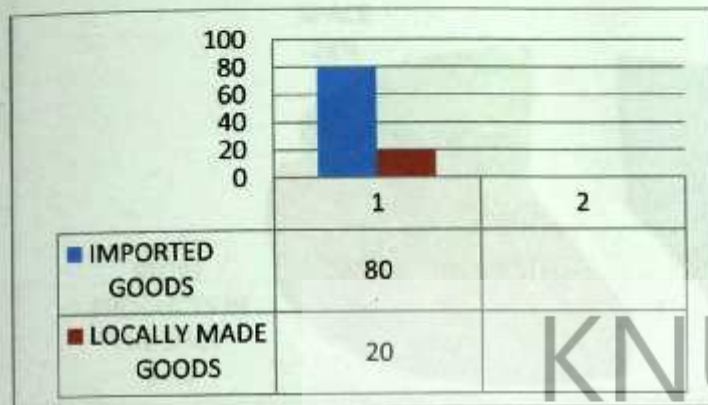
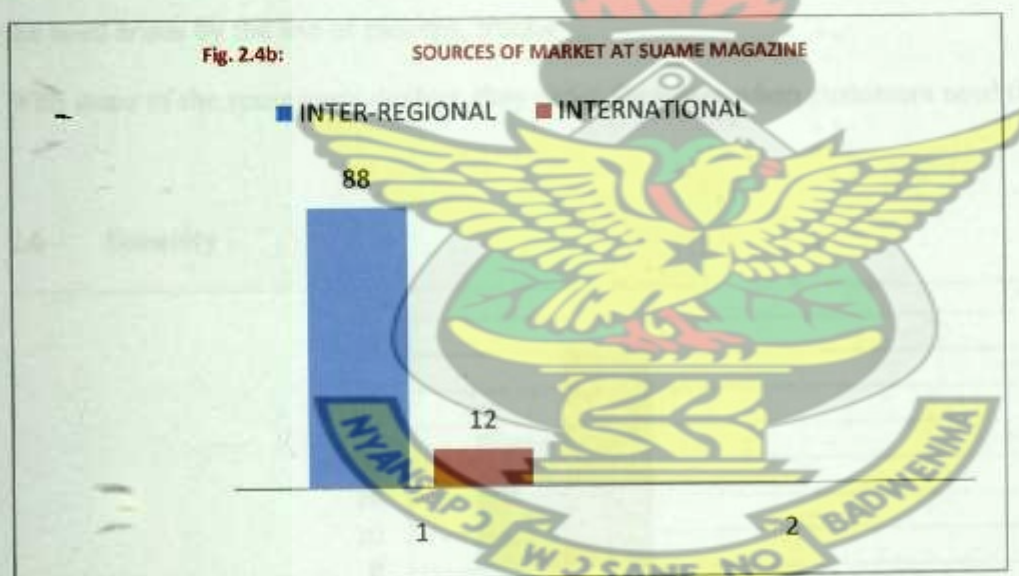


Fig. 2.4a: Chart showing percentage of imported goods to locally manufactured goods



From the above chart, 88% of the market is inter-regional and 12% is international. The international markets include Mali, Burkina-Faso, Togo etc.

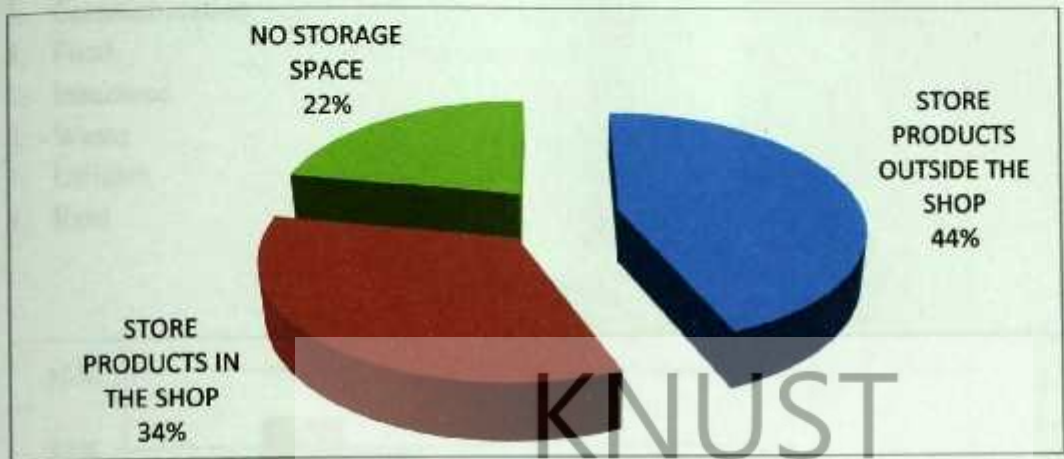
2.5 Storage of Goods

Large quantities of goods are brought to the Suame magazine and therefore the need for storage spaces. Under the study area, it was found out that, two types of storage exist.

1. Storage within shops

2. Storage in front of shops along the street.

Fig. 2.5a: Storage availability chart



The chart above depicts about 24% of shops without storage spaces. Some of the shop owners own storage spaces in their Homes. They transport them into the shops when the need arises by the use of pickups, trucks. With some of the spare parts dealers, they order for wares when customers need them.

2.6 Security

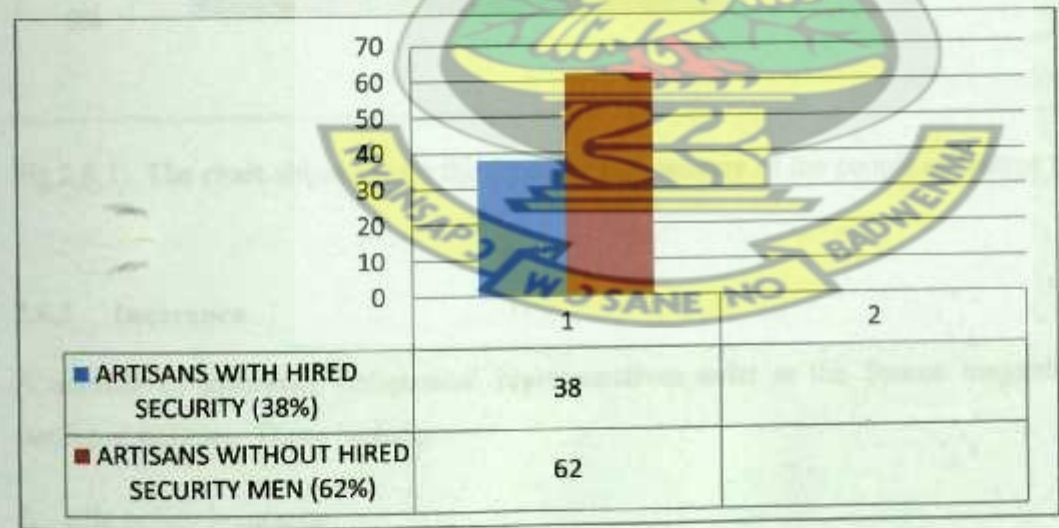


Fig. 2.6a: The chart above shows the number of shops with hired security to those without security.

2.6.1 Expenditure

There are several expenses that are incurred in the daily running of businesses. The businesses in the study area make expenses on the following:

1. Transportation
2. Taxes
3. Communication
4. Food
5. Insurance
6. Waste
7. Utilities
8. Rent

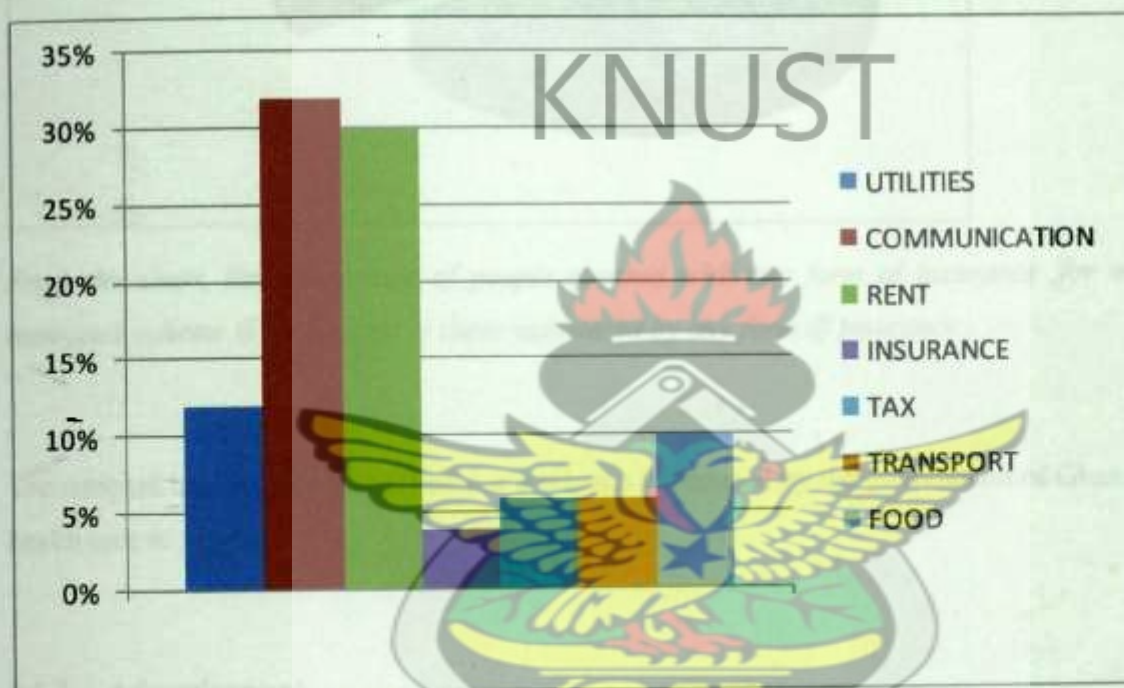


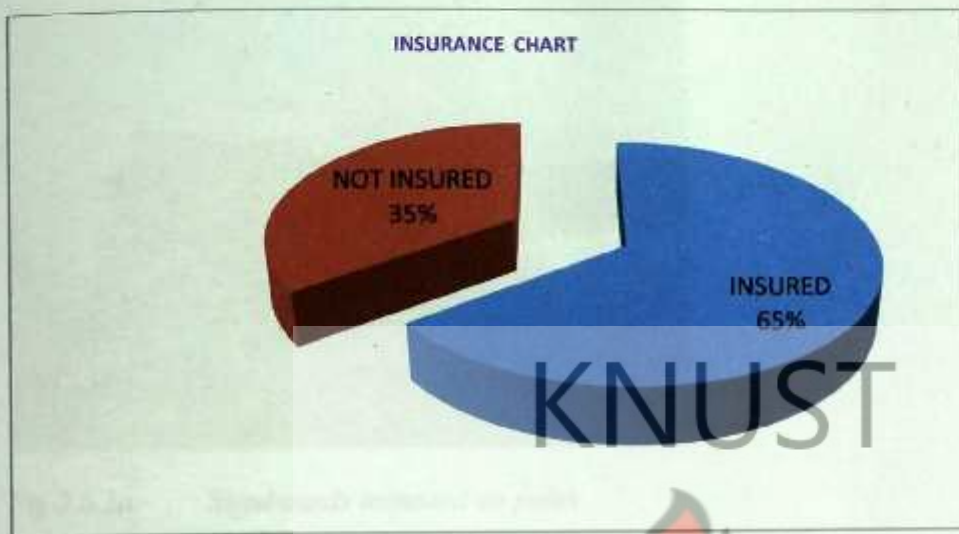
Fig 2.6.1: The chart above shows the forms of expenditure of the people of Suame magazine.

2.6.2 Insurance

A number of insurance companies' representatives exist at the Suame magazine to provide diverse insurance policies. These include:

1. Life policy insurance
2. Motor insurance
3. Burglary
4. Child education
5. Retirement policies

6. Funeral policy
7. General business
8. National health insurance



From the chart, the percentage of people covered with any form of insurance for which the health insurance scheme is the biggest to those uncovered by any form of insurance.

The national health insurance scheme is a scheme introduced by the government of Ghana to provide free health care to people.

2.6.3 Advertisement

The various shops and workstations at the Suame magazine employ various means to sell their products and render services to customers by the means of the following:

- a) Media: radio stations, news papers, television stations, the internet etc
- b) Bill boards and sign boards
- c) Banners

Types of billboards and sign boards

1. Signage mounted directly on buildings
2. Sign boards mounted from metal supports
3. Adverts painted on walls of buildings

4. Banners tied to supports

5. Sign boards mounted on poles



Fig 2.6.3a: Signboards mounted on poles

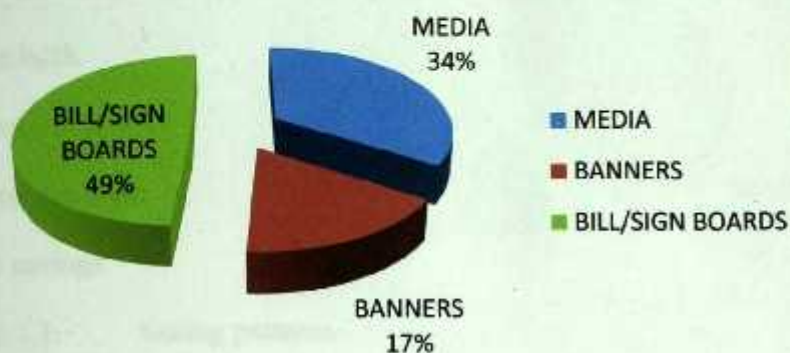


Fig 2.6.3b: Adverts on walls



Fig 2.6.3c: Adverts mounted in front of shops

Fig. 2.6.3d: FORMS OF ADVERTS



The chart above shows the percentages of various forms of adverts at the Suame magazine.

2.7 Daily and monthly sales

Business in the Suame magazine records various sale during the hours of work.

Sales made can be categorized into:

1. Low range between 0-GH50
2. Medium range between GH50-GH1000
3. High range from GH1000 and above.

Fig 2.7: Monthly sales



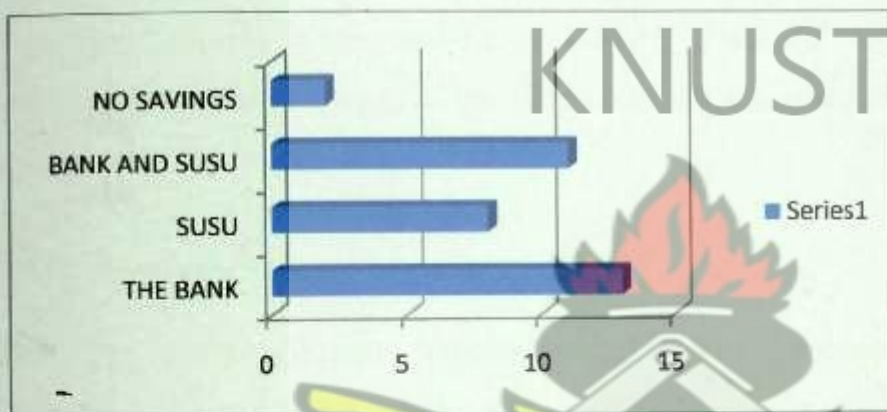
The chart above shows the monthly sales of three categories of sellers.

2.7.1 Savings pattern

There are various means by which people at Suame magazine save. The following are the main ways.

1. The bank
2. Susu
3. Susu and bank
4. No savings

Fig. 2.7.1: Saving patterns



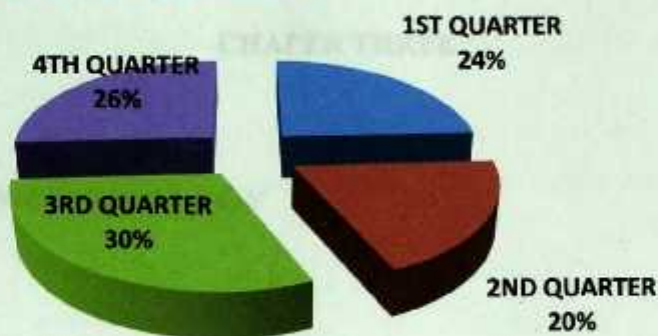
The bar chart above shows the savings pattern at Suame magazine.

2.7.2 Peak seasons

The peak seasons can be grouped under four main groups. Namely:

- 1.1st quarter
- 2.2nd quarter
- 3.3rd quarter
- 4.4th quarter

Fig. 2.7.2: PEAK SEASONS



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CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Overview

This deals with the methodology and the instruments used for the study. The chapter is organized under such topics as research design, library research, and population, sampling techniques and sample instrumentation, validity, reliability, administration of questionnaire, primary and secondary sources of data, data collecting procedures and data analysis plan.

3.1.1 Research Design

Best J.W. (1981) examines Qualitative Descriptive Research as a method, which uses quantitative methods to describe the data. It is also used in describing, recording,

Analyzing and interpreting conditions that is already in use. It involves some types of comparison or contrast and attempts to discover relationship between existing non manipulated variables. Quantitative Data analysis was used to describe the results of the study.

The descriptive research allowed the researcher in the collection of data and the analysis of the Data using quantitative data analysis. The method enabled the researcher to produce a descriptive and Analytical report that can be interpreted and put into good use. This Qualitative Descriptive Research was used to design the questionnaire in a structured and semi-structured questionnaire to collect data.

3.1.2 University and departmental libraries

The Researcher will visit the following Libraries to find information on the study; The KNUST Main Library, The College of Architecture Library, The Department of Architecture Library,

(KNUST), Department of Planning library and Institute of housing and settlement studies library will be visited for the research.

In all the libraries, great efforts will be made to collect the secondary data. The information will help me review the related literature.

3.1.3 Population

The target population for the study comprises all the retail and whole sale stores and their correspondent occupants of Suame Magazine. Out of the many retail and wholesale stores, those at the stores will be selected for the study.

- (A) Sales personnel at the Suame Magazine.
- (B) Business owners in the area.

1. Category A	-	Sale personnel	(40)
2. Category B	-	Business owners	(60)
Total		=	100	Respondents

The total population for this research will therefore be One hundred (100) respondents.

3.1.4 Sample and Sampling Technique

The sample of the study would be collected from three different sectors such as repair, whole sale and retail, out of a target population of about two thousand (2000) people, one hundred (100) would be selected for the study.

The sampling techniques used would be simple random and stratified random sampling to select participants for the study. On the selection of students, papers on which “yes” were written to the required number with a few “no” would be folded and put in a basket. This would be well shuffled for technicians to pick.

3.1.5 Instrumentation

The set of questionnaire would be designed by the researcher to collect data from retail and whole sale sector.

The questionnaire designed for the retail and whole sale sector will seek information concerning their educational level, business transaction

3.1.6 Validation

The items chosen would be vetted by the supervisor and those found to be irrelevant would be rejected and others modified. The items in each questionnaire would be carefully chosen to establish both face and content validity. After screening and vetting by mates and other people concerned, the supervisor would finally approve the instrument.

3.1.7 Internet sourcing

I will employ the use of internet to get some of the primary data .I will use search engines such as Google.com and others.

3.2 Organization of the rest of the text

The project is in five chapters .Chapter one is Introduction to the study .It deals with the Background of the Study, the Statement of the Problem under study, Objectives, Justification, Target group, Funding, methodology and Importance of Study.

Chapter Two focuses on documentation of existing situation of Suame magazine. Chapter Three comprises of research methodology, case study and precedent studies.

Chapter Four is on site inventory and analysis, Chapter five concerns commercial facility proposal under phase one and also focuses on design philosophy and concept, conceptual site planning, services and costing.

3.3 PRECEDENT STUDIES

3.3.1 MERITS OF THESE DESIGNS

- Outdoor exhibits easily attracts customers to the main exhibition
- The blend of an indoor working and showroom space allows interactions between customers and staff.
- Using the structure as part of the exhibition gives an aesthetic identity to structure.
- Using sharp contrasting colours to bring out the product on display.
- Economic use of space in terms of ways of exhibit and storage.
- The structure has been used as a form of advertising board that is the walls.

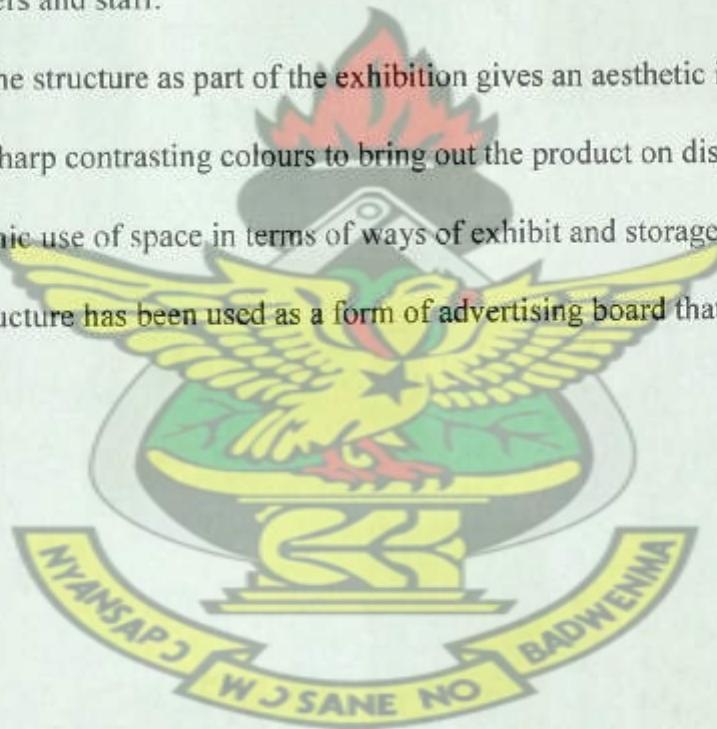
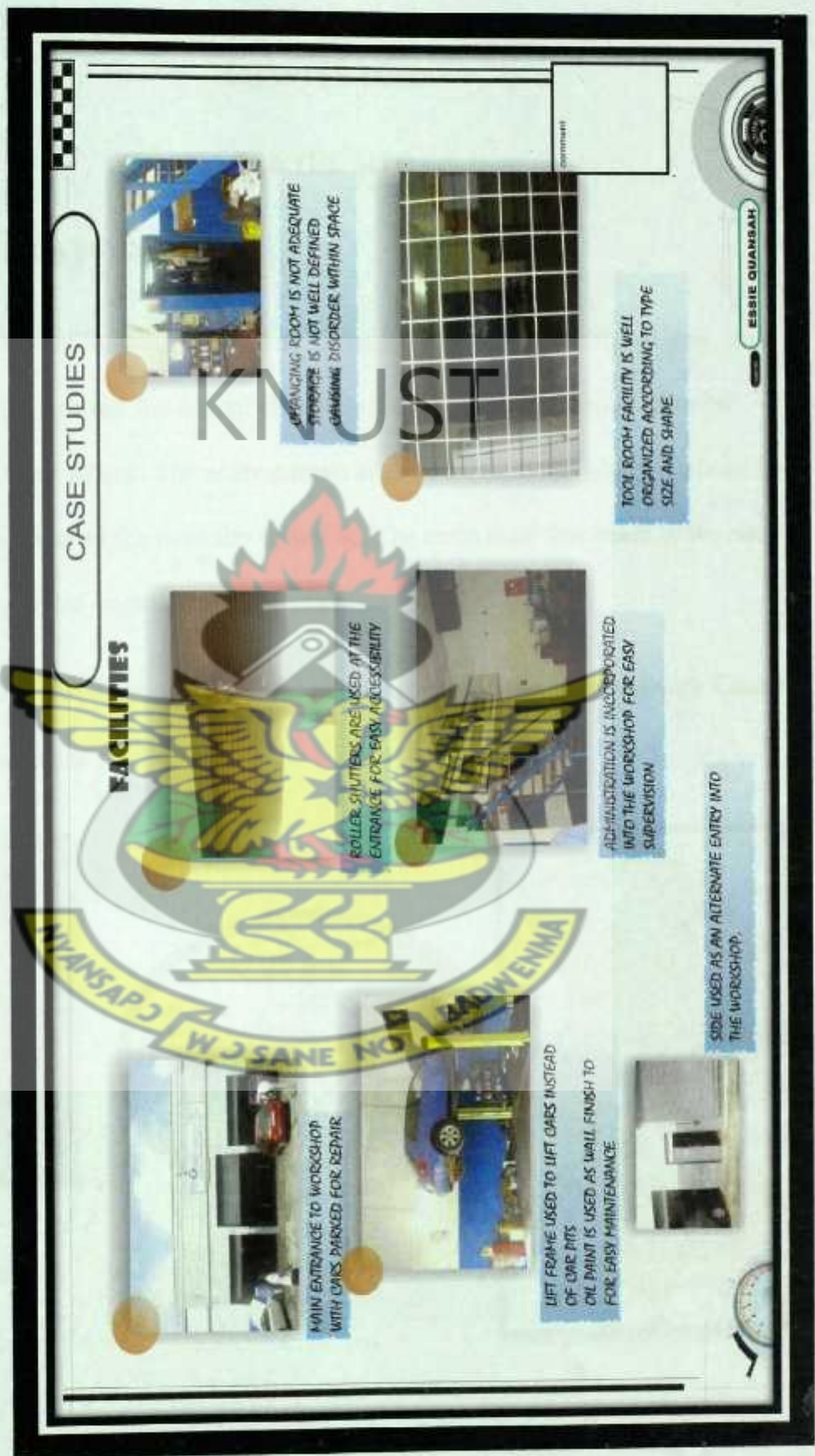




Fig. 3.3.1a: Display of cars

Fig. 3.3.1c: Case Study at Vodi Technik



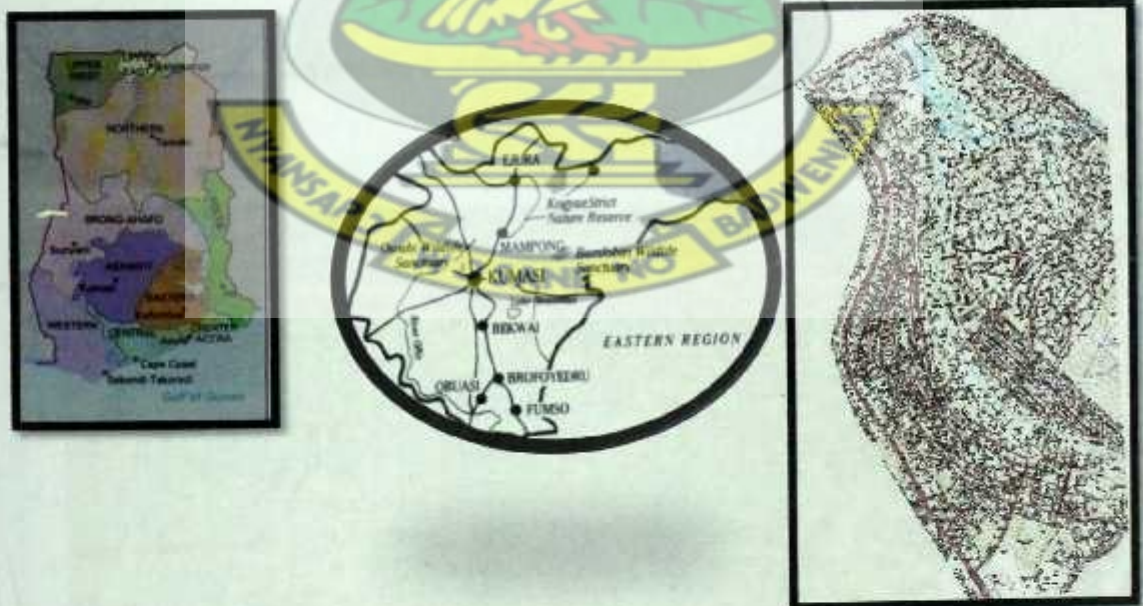
CHAPTER FOUR

4.0 THE SITE

4.1 SITE LOCATION

The site is located at Suame, a suburb in Kumasi found in the Ashanti region. It is oriented north of Kumasi the capital city of Ashanti region; it is about 15 to 20 minutes drive from Adum. The nearest town after Suame is Tafo which is about 20 minutes or more due to the intensity of traffic. The main road that leads to the site is Suame New road and undefined traffic routes.

Fig.4.1a: Location of existing Suame magazine from map of Ghana through Kumasi, a city in Ashanti tribe



The proposed site is bounded by proposed earth-moving machines to the east and light auto mobile industrial to the south and to the west, a proposed commercial facility.

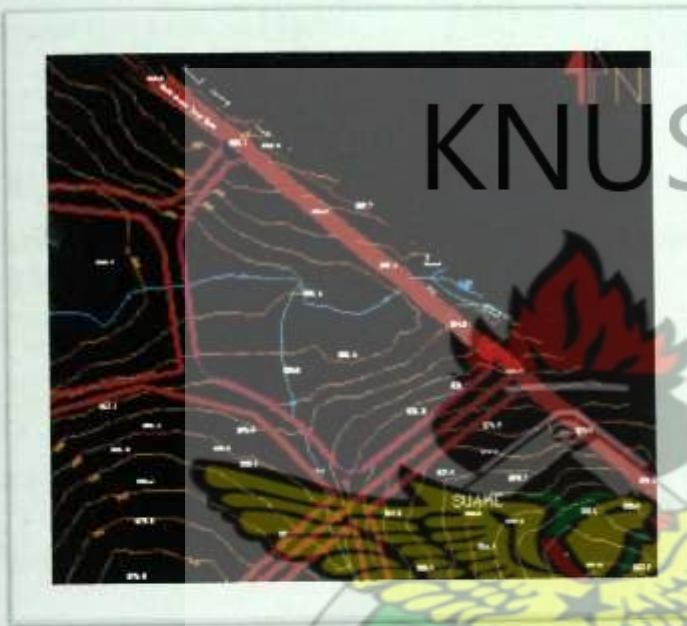


Fig. 4.1b: Proposed layout for a commercial facility

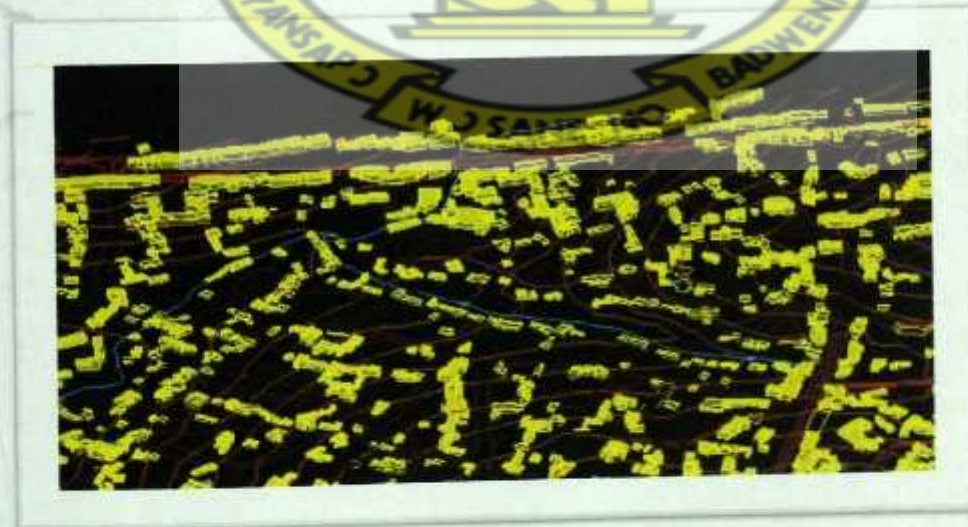


Fig. 4.1c: Existing 3D map of proposed site for a commercial facility.

4.2.0 SITE SELECTION CRITERIA AND JUSTIFICATION

As an overall urban solution, the author proposes that commercial centres be located at prime location along and beyond the Suame major road, thereby making business transaction easy and fast.

4.2.1 SITE JUSTIFICATION

1. Position of site along road makes easy to show case products to a wider range of the general public.
2. Close to the propose automobile light industrial area to enable the workshop get easy access to the various spare parts and also showcase what can be produced at Suame Magazine.
3. Good views on to the site will aid its activities.
4. Location of site facilitates easy access. All sides of site is bounded by propose roads
5. Due to the sloping nature of site channelling of drains comes easy with the design.

4.3 EXISTING SITE CONDITIONS AND INVENTORY

Fig. 4.3a:



The site occupies an area of 75,300meter square or 118.35 acres; the facilities found occupy about 80% of the site. The facilities found on the site include the following;

- Auto mobile workshops
- Retail and wholesale spare parts shops
- Slum development
- Chop bar
- Vegetation along stream
- Uncompleted structures

Fig. 4.3b:Vegetation found along the stream.



Fig. 4.3c: Uncompleted structures found on site



Fig. 4.3d:

Picture depicting condition of structures



Fig. 4.3e:

Path way of stream and its dirty environment



Fig. 4.3f:

Existing car scrap on site.



Fig. 4.3g:

Slum development found on site.

4.4 SITE ANALYSIS

- **CLIMATE**

Macroclimate: Generally, the climate of the region is warm and humid with prevailing winds from the south - west to the north - east direction.

Microclimate: Generally, the observation and experience on the site is a cool weather with an increment of temperature towards the southern section of the site.

- **VEGETATION**

The site is generally bare with trees scattered on site due to land contamination. Green vegetation can be located along the stream and the marshy area.

- **GEOLOGY**

By inspection, the general soil type observed on the site is laterite with oil contamination.

- **RAINFALL**

Averagely there is rainfall about half the year with an average depth of 151mm.

- **TEMPERATURE**

Annual mean maximum is 31.6°C; Annual mean minimum is 22.2°C.

- **SUNSHINE DURATION**

The sun is up on the average of about 8 hours daily throughout the year.

• TOPOGRAPHY

The site slopes generally in three different directions, the first; from north of the site to south. The second slopes in the opposite direction of the first, i.e. from south to north. And the third slopes the east to west. The average contour height is 600mm with gradient of 0.005.

• SERVICES

The site has access to all the utility services including water, electricity and telecommunication. Storm drains available at the base of slope.

• TRAFFIC AND NOISE

It was also observed that there was a high traffic level along the dual carriage between the hours of 7am-9am in the morning and 5pm -7pm, generating a lot of noise into the site. There is a proposal to expand the road into dual carriage road, interchange at the Suame round about and also to bring in traffic light at the junction. It is hoped that with the implementation of these proposals the pressure from traffic will reduce drastically.

4.5 SITE PERIPHERAL STUDIES AND ARCHITECTURAL CHARACTER

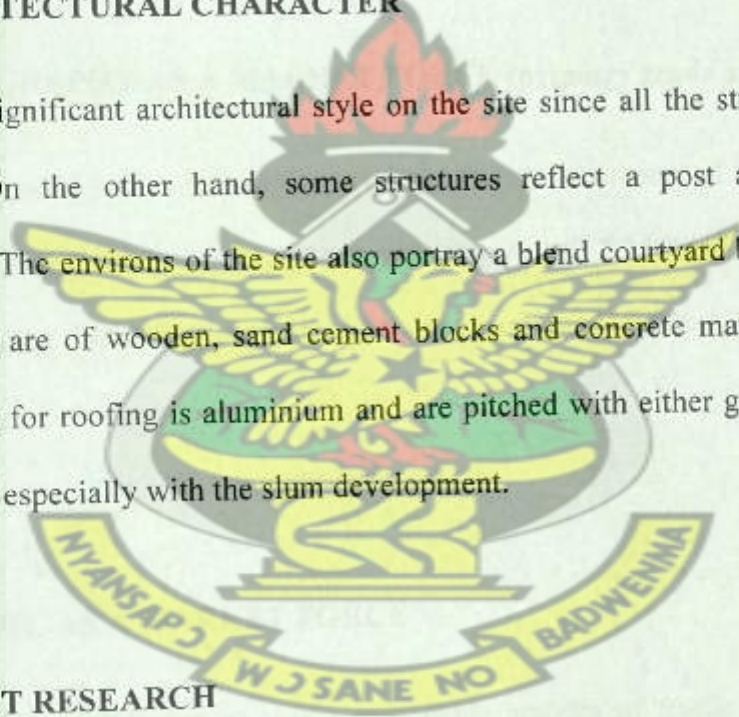
4.5.1 Peripheral Land use

To the north, south, east and west of the site one sees a vibrant mixed use of commercial and industrial activities

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4.5.2 ARCHITECTURAL CHARACTER

There is no significant architectural style on the site since all the structures on site are temporary. On the other hand, some structures reflect a post and beam type of construction. The environs of the site also portray a blend courtyard building. Generally, the buildings are of wooden, sand cement blocks and concrete materials. The general material used for roofing is aluminium and are pitched with either gable or hipped ends or flat roofed especially with the slum development.



4.6 MARKET RESEARCH

To establish the economic viability of the project, certain studies were undertaken to establish the population within reach and the market potential of the catchment area.

4.6.1 TRADE AREA

The trade area is the catchment area of the project. It is made up of three levels; primary, secondary and tertiary. For the purpose of this work, economic and market analysis will be concentrated within all the trade areas.

4.6.2 DEMOGRAPHY AS A MARKET FORCE (primary trade area)

The trade area need to be sufficiently populated to ensure success of the facility. The total population of Kumasi, as of 2004, was approximately 1,017,246 with growth rate of 36% per annum. Apart from this, the industrial site population is about 200,000 artisans and sales personnel.

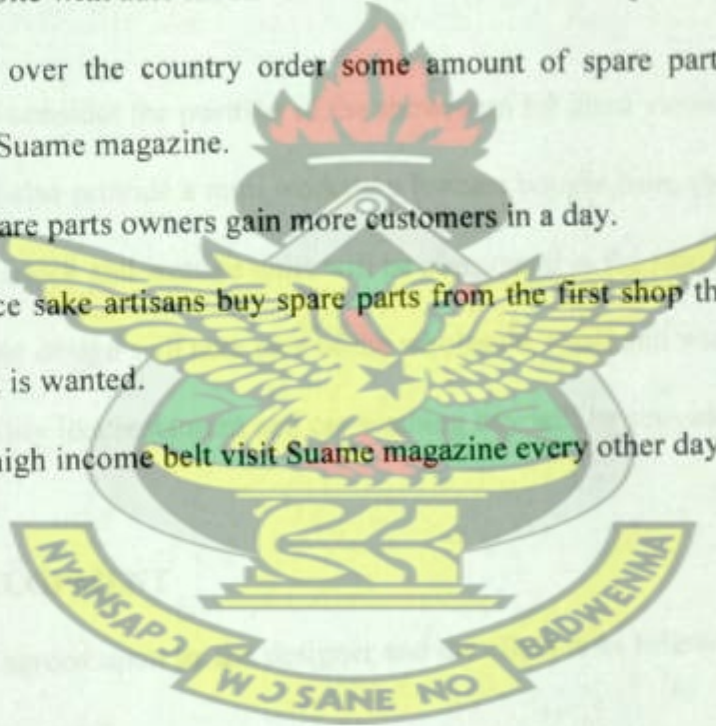
4.6.4 TRAFFIC AS A MARKET FORCE

It was also observed that there was a reasonable amount of traffic level on the Suame New road which indicates the constant use of commuters on this road in the mornings and evenings.

4.6.5 PURCHASING PATTERNS

According to response to interviews, administered on site, it was deduced that

- Artisans purchase spare parts everyday depending on what car problem is being solved at the moment.
- The general public with auto mobile interest also come and shop.
- Companies all over the country order some amount of spare parts in bulk from the wholesalers in Suame magazine.
- Well known spare parts owners gain more customers in a day.
- For convenience sake artisans buy spare parts from the first shop that has the particular spare parts that is wanted.
- Low, middle, high income belt visit Suame magazine every other day.



CHAPTER FIVE

5.0 DESIGN EVOLUTION

5.0.1 PROPOSED COMMERCIAL FACILITY UNDER PHASE ONE OF SUAME REDEVELOPMENT.

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5.1 SCOPE

- The design will consider the position of the showroom for good views.
- The design will also provide a mini workshop for cars bought from showroom.
- Administration block and welfare units will be considered in the said design.
- A general lay out design will take care of the wholesale, retail and warehouse facility.
- Supporting facility like restaurant and car washing bay will be provided.

5.2 BRIEF DEVELOPMENT

The final brief agreed upon by the designer and the client is as followings;

- Retail/wholesale shops
- Showroom facility
- Eating and drinking places
- Hiring services
- Car washing bay
- Workshop

- Let able office space
- Warehouse facility
- Sanitary/ changing room
- Computer laboratory
- Library
- Customer and staff car parking

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Table 1: ACCOMMODATION SCHEDULE

SPACE	UNITS	QUANTITY	TOTAL
Showroom	90m x 20m	1	1800m ²
Warehouse	70m x 55m	1	1300m ²
Workshop	30m x 50m	1	800m ²
Cars accessories shop	10m x 10m 5m x 10m 10m x 25m	1	400m ²
Open floor space	8m x 15m	5	600m ²
Manager's office	3m x 5m 4m x 4m	5 2	107m ²
Sales manager's office	3m x 3m	2	18m ²
Meeting room	5.5m x 10m	1	55m ²
Common room	8m x 10m	1	80m ²
First aid	5m x 5.5m	1	25.5m ²
Library/computer room	4.5m x 5.5m	1	24.75m ²
Storage facility	10m x 10m 5m x 10m 2.5m x 5m	1 1 1	162.5m ²
Check point	3m x 4.5m	1	13.5m ²

Changing room	5m x 7m	1	111m ²
	4m x 3m	1	
	3m x 3m	1	
	3m x 5m	1	
	8m x 5m	1	
Washing bay	3m x 5m	3	45m ²
Semi open eating area	24m x 16m	1	384m ²
Enclose eating area	13m x 16m	1	208m ²
Customer car parking	2.5m x 5m	70	1275m ²
Staff car parking	2.5m x 5m	31	387.5m ²

5.3 CONCEPTS AND PHILOSOPHY OF DESIGN

5.3.1 PHILOSOPHY AND CONCEPT

The philosophical reasoning backing this research topic is to change Suame magazine into a modern industrial city. This is to help create an all round one stop commercial hub, in the industrial city to facilitate spare part shopping and services rendering facilities. With the fast changing rate of the economy in the country it becomes mandatory to develop the transportation industry through Suame magazine because of its involvement of the said industry.

• DESIGN CONCEPT

To achieve this philosophy, an architectural style is adopted. International modernism will bring out the philosophy for the industrial site. An architectural style that is minimalist in concept, devoid of regional characteristics, stresses functionalism, and rejects all nonessential decorative elements; it emphasizes the horizontal aspects of a building; developed during the 1920s and 1930s, in Western Europe principally in the Bauhaus school, and also in America. Buildings in this style are usually characterized by simple geometric forms, often rectilinear, making use of reinforced concrete and steel construction with a nonstructural skin; occasionally, cylindrical surfaces; unadorned, smooth wall surfaces, typically of glass, steel, or stucco painted white; a complete absence of ornamentation and decoration; often, an entire blank wall; often a cantilevered upper floor or balcony; open interior spaces; a flat roof without a ledge; eaves that terminate at the plane of the wall; large areas of floor-to-ceiling glass or curtain walls of glass; metal window frames set flush with the exterior walls, often in horizontal bands; casement windows; sliding windows; glass-to-glass joints at the corners, without framing; plain doors that conspicuously lack decorative detailing. Houses are commonly asymmetric; in contrast, commercial buildings in this style are not only symmetric, but appear as a series of repetitive elements.



Fig. 5.3.1a: The Glass Palace, a celebration of transparency, in Heerlen, The Netherlands 1935



Fig. 5.3.1b: Villa Savoye, by Le Corbusier

5.3.2 CONCEPTUAL SITE PLANNING

To achieve the said design, alternative conceptual site planning processes were considered. Main factors that influenced the planning process are;

- The land use pattern of the overall proposal
- The topography of the site.
- Peripheral activities and structures.
- Orientation
- Socialization
- Easy accessibility
- Lighting and ventilation
- Services

- **OPTION TWO**

It is a follow up on the design bubble above. This seek to put define building forms.

NOTE: the road network is to form a loop that brings cars back to where they started from. The structures are disjointed and they seem to be irregular throughout.

Fig. 5.3.3b: Option 2



- **OPTION THREE**

With this option, the road network is changed to have a central round about with the proposed road linking to the main roads.

NOTE: the buildings are put together to form mini courtyards. The peripheral buildings take the form of the boundary of the site. By positioning of commercial facility along the road will enable good view into the facility.

Fig. 5.3.3c: Option 3



• OPTION FOUR

This is an improvement upon the above options. The facilities have been aligned to the road with areas for soft and hard landscaping indicated. Instead of round about a triangle is adopted due to the turning angle of some trucks and cars.

NOTE: The road network is not at 90° and some of the angles of the building forms are not balancing the design. The contours on the site have not been well considered at this stage. The shadow shows almost equal building height in this option therefore making the design boring and bulky.

Fig. 5.3.3d: Option 4



• OPTION FIVE

It is developed from option option four since it was a systematic approach to get the final site layout. This somehow detailed, to show the main entrance into the facility and the various parking spaces.

NOTE: washing bay is positioned near the stream to access underground water easily.

The main facility is oriented north east with extensive laybys to ease traffic on the main Suame New Road.

Fig. 5.3.3e: Option 5



Site planning (chosen site): after going through all these design morphology, this chosen site is the outcome. The courtyard system has been achieved to serve the purpose of parking, bulk breaking, ventilation, services and breaking of bulk density of building blocks. The turning angles of trucks up to 13m in length have been highly considered. Ramps and stairs are incorporated into the design due to the sloping nature of site.

Fig. 5.3.3f: Chosen site



NOTE: All design elements such as showroom, workshop, shops for spare parts, out door exhibition, parking, services have been relatively catered for. All these elements have been oriented north east- south west with its essential shading devices due to the attempt to design along the major roads of Suame Magazine.

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5.3.4 DESCRIPTION OF DESIGN ESSENTIALS

For a commercial facility to thrive, its main dependance is on the whims of its customers. Their main concern is easy availability of goods, easy accessibility to the facility and quick customer services. This design consequently considers strategies and design solutions to these whims in order to attract the customer that is the general public and artisans to the facilities.

The following design solutions are employed; car showroom with an outdoor exhibit area, semi open and enclosed eating area, workshop area, sales point to order new parts, the use of car lifts and alternatively car ramps to continue business transaction in any eventualities like power outages, turning angles at junctions and finally, given open spaces for off loading spare parts.

5.3.5 COLUMN SPACING

A 10mx10m and in other cases 8mx8m column grid are basically employed.

5.3.6 TENANT MIX

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The showroom and shop occupy double volumes and due to the slope nature of the site the sub-basement is utilized as a workshop and warehouse. The showroom and shop are designed to take advantage of dominant locations with good display. Openings to the outside are therefore used as display windows and shading devices carry the advertising boards.

For convenience in viewing, they are located at the same level as the road. The drive down from Suame New road to the 900mm drop from the first floor level expose the shopper a varying sequence of different car models before reaching the parking lot level. Consequently, the showroom, offices, workshop and warehouse are designed and properly located in relation to each other. The positioning of light spare parts at the upper floor served as an anchor shop to pull customers through the car showroom. The restaurant is positioned to take care of the workers and customers of the main facility and also the general public. The washing bay is an auxillary facility located at the outskirts of the design due to its dirty and wet appearance. The restaurant view onto the washing bay, main facility and neighbouring structures and landscape.

5.3.7 FLEXIBILITY

Providing passage from one space into another brings linkage and flexibility. The facility with its semi open spaces flows into each other and forms a large space for parking and offloading of goods. The open spaces created give flexibility of interior arrangement for special effects. Changing spaces to embrace new trends of business is easily achievable due to the open floor concept and the widely spaced column centres.

Interior design utilizes the tools of the computer age to constantly provide a changing interior environment in the form of interactive multimedia advertisement.

Circulation space have been designed to embrace large numbers and also to achieve unlimited flexibility to regularly alter its appearance and amenities to satisfy the ever changing technological advancement. Floor finish, furniture arrangement, wall finish and ceiling finish will be used to stir up customers interest in terms of their texture and colour.

5.3.8 MERCHANDISING

In promoting products, strategies for packaging, displaying and publicizing are highly needed. All these can be achieved by the spatial disposition concept that will in turn emphasize the product in display. The materials used for structure will enhance the product rather than draw attention to itself.

5.3.9 LIGHTING

Lighting is needed for viewing. Using natural lighting alone is not enough so artificial lighting is used as supplement. Lighting is a critical design tool to highlight a product in exhibit or display. Diffuse light make product appear common even if it is sophisticated. High- intensity lighting is effective in high lightening a product. Spot lighting will be used to draw attention to some special products.

5.4 SERVICES AND CONSTRUCTION TECHNOLOGY

5.4.1 SERVICES

5.4.2 Electricity

With the transformer located near the site, supply to the development will be adequately catered for. Underground cable supply to the various blocks from the transformer shall be along access roads and shall terminate in the switch rooms from which point power will be distributed throughout the facility.

5.4.3 Lighting and ventilation

- **Ventilation**

As a measure of having good sense in dealing with practical matters in a developing country, the showroom facility has been primarily designed around architectural principles which will enable a full operation on natural ventilation. Principles employed include; orienting the facility north east –south west, creating high roof volumes and strategically positioning open able windows with exaggerated heights. However, central air conditioning systems are used for the main facility. The offices and enclosed restaurant require central air conditioning system. The facades are designed to conceal all ac systems especially the height of the parapet.

Zonal system is suitable for commercial facility where there are a number of rooms or floors to be served. The building is divided into zones with similar conditions as possible. Units receive an air supply condition to an average temperature and humidity from central plant. Each zone is supplied with its own local refrigeration fan and booster cooler system in such a system each floor may form an independent zone. Other modes of mechanical ventilation are employed in areas which do not necessary need air conditioning example the workshop area and washing bay. Sanitary areas and storerooms have extractor fans that will draw out odour and introduce fresh air. Extractor systems are installed at the sub basement-workshop and warehouse. Some accommodations within the sub basement however use windows for natural ventilation.

• Lighting

Natural lighting is used during the day for open-air areas, the showroom, offices and service bays. However, some levels of artificial lighting will be required to supplement day lighting in some specific areas like the sub basement and goods display.

For overall artificial lighting, fluorescent lights will be used. Intensity of lights will be graded increasing towards the entrances and exits and courtyards. General lighting is design with a flexible switching system controlled from various points. Some of the lights will have automatic control system. There will be duplicate control buttons at the security control department. Lighting intensities will be graded as follows:

- car parking areas 100lux
- showroom facility and pedestrian walkways- varied between 40 and 500lux
- offices – 100lux
- other circulation spaces- 200lux

Special effects lighting will be used for advertising and signage. It will be also used for interior decor and interactive multimedia purposes.

Security lighting will be designed by arranging the switching of the light such that certain patterns of light can be left on during non trading hours and be operated by separate and automatic time switches and circuit breakers.

Emergency lights within the showroom will be provided by separate battery operated system and positioned at specific locations in accordance with fire regulations. The battery room is located on the external wall and provided with natural ventilation as well as extractor to take out fumes. Lighting here is surface mounted galvanized conduit with fluorescent fittings.

5.4.4 Information systems

A central information centre is located within the facility for customer service and general information. The information centre will operate audio and visual information system. The system will be used as a public address and advertising. The security control room will also be installed with an emergency public address system.

5.4.5 Security control

Two forms of security are taken care of in the facility. These are petty theft, shoplifting and vandalism during the day as well as burglary during the night. During the shutdown times and at night, major entrances will be locked and wired with alarm system. During trading hours, closed circuit television is used for monitoring. CCTV also enables

management to be aware of incidents such as sickness, accidents and vandalism within the mall. It can also be used as a crowd control device.

A central security department comprising of an administration headed by a security manager is located outside the facility. The security control room is specially designed with pedestal desks, incorporating night service switch boards, fire alarm detector panels connected to fire alarm sensors in the facility and public address system. They are responsible for the monitoring of the security equipment. Security check points have been provided at major exit and entrance points to check movement of people and vehicles. Night patrol in and around the facility will be in place.

5.4.6 Fire

- **Protection and Prevention**

Fire controls systems such as smoke detectors and fire alarms systems are controlled from a central control board located at the security office. The electrical system where the building has been sectioned into independent load centers act as fire protection. Here, electrically induced fire outbreak can be prevented from one area to other.

Sprinkler heads and Hose reels supplied by mains are placed at strategic location within the facility as a fire fighting measure. Automatic fire alarm systems are installed. These operate on the principle of heat sensing and smoke detection. It consists of fire alarm initiators, indication panels and bells. Smoke detectors are located at vantage points as well as all let-able office space and the sub basement. Fire extinguishers also located at strategic intervals within the facility is an additional source of fire control. Fire hydrants are located strategically on site to aid fire service when the need arises.

- **Fire and smoke detection**

Automatic sprinkler and standpipe water flow indicators. Area smoke detectors will be provided in all electrical and telecommunication equipment rooms and elevator machine rooms. Duct smoke detectors will be provided in recirculation air systems as required by code. In addition to activating alarm signals, activation of the smoke detectors will cause shut down of related fan systems. Smoke detectors will be provided in all elevator lobbies. Activation of this detector will initiate automatic elevator recall to the designated floor. Manual fire alarm stations will be located at entry to exit door and exit stairs.

5.4.7 Water supply

To facilitate continuous supply in times of repairs, the loop system of supply has been adopted. Underground water (well) is linked by a booster pump into overhead water storage at the highest point of the various facilities. The objective is to provide the following:

- Over 48 hours reserve of water supply
- Buffer for mains against excessive demand in some areas resulting in low pressure

5.4.8 Telecommunication

With the newly expanded Kumasi telecommunication network under the digital system and its connections to the facility, the former is expected to be easily catered for underground cable supplies that are to end in a telephone switchboard within the block from where internal connections are to be made.

5.4.9 Sewage

Surface drains will take care of storm water. A network of covered and open drains along the slope will discharge into storm drains. Soil and waste are to be discharged by underground pipe work into a septic tank and filtration bed within the site.

5.5 CONSTRUCTION TECHNOLOGY

5.5.1 Structural system

Generally, the facility is planned on a modular grid module of 10m x 10m and other areas 8m x 8m. The post and beam system of construction will mostly be employed. Where ambitious spans are required, waffle slabs, steel lattice roofs and trusses will be employed.

5.5.2 Materials and finishes

- **WALLS**

Stone and concrete masonry as well as brickwork finishes are employed on retaining walls as part of external landscaping. Wall cladding makes use of combination of concrete masonry units.

- **CEILINGS**

Sub basement ceiling are exposed concrete with post-applied. Plastic T&G panels will be used in the showroom, offices, spare parts shop and restaurant.

- **FLOORS**

Asphalt finishes and pavement blocks are used in varied ways for driveways and car parks. Pavement materials such as concrete blocks, stone finishes are employed. Materials used for steps, ramps and retaining wall definition are consistent with general hard landscape finishes. Sub basement floors are exposed concrete at the warehouse area.

Quartz- based garage floor tile will be used at the workshop area. Suspended porcelain floor tile will be used at the office spaces. Epoxy finish with vinyl mats will be used at the showroom.

- **ROOFING**

Shingle roof covering material is employed over steel trusses.

- **WINDOWS**

- **Glazed curtain walling**

Even though conscious effort was made to use glass curtain wall only on north and south facades of the structure, control of solar ingress into the facility remains critical. Both vertical and horizontal shading devices have been used on the facades of the facility taking into consideration the calculated shadow angles of these facades. The material for the curtain walling is Zinc coated Aluminum oxide heat reflecting glass, which reflects about 70% of the solar radiation incident on it and converts the remaining 30% into a red bias light. The red bias light is very good for computer fitted rooms since it does not create glare. The glass panels are supported using planer bolts on a four-node connector. The cast-steel brackets resist horizontal wind loads.

- **DOORS**

Laminated glass in aluminium frames and rolling grilles. Roller shutters are also employed at the workshop and washing area. Wooden panel doors are used at sanitary and changing rooms as well as store rooms.

- **SIGNAGE**

The major advertising band that runs through the design is mounted on hooks imbedded in the aligned vertical shading device. Central located columns will be a background for both manual and digital advertisement. Directional signs are all made of green background and wordings in stainless steel.

5.6 LANDSCAPING

An important aspect of any good design is the conscious introduction of architectural landscaping elements. This important aspect was given careful thought and consideration. Architectural landscaping elements are in two folds: hard landscape and soft landscape.

5.6.1 HARD LANDSCAPE

Parking: all the parking areas of the facility are treated with asphalt, because of its high resistance to wear and depression.

Pedestrian walk ways: the walk ways are treated with high grade concrete pavement blocks.

Garden: the flower garden in the facility has especially well kept lawns for seating in events of launching of cars.

5.6.2 SOFT LANDSCAPING

Pedestrian walk ways: For comfort ability and environmental protection sake shading trees are planted along the walk way to provide shade.

Parking: Rextonia regia (the royal palm tree) are planted the parking area to enhance the elegance of the facility as well as provide an unobstructing view to the showcasing area. Other areas of the parking have the following plants beautifully blended; Bunfelsia americana (lady_of the night), Moraya exotica (Moraya) and Duranta yellow (Duranta).

Cover grass: Paspalum conjugatum is used as ground cover because of its tolerance to shade, ability to control erosion, thrives in the dry season and is a quick growing plant.

Courtyard; the courtyard has 90% of hard landscaping and the rest being cover grass as mentioned above.

5.7 COSTING

This cost of the facility is an estimation to give the client a fair idea on the financial investment of the project.

The cost per square meter of construction is GH¢325.5.

Table 2: The estimated cost involved

PLACE	AMOUNT
Sub-Basement	$2475.1\text{m}^2 \times \text{GH}\text{c}325.5 = \text{GH}\text{c}805,645.00$
Lower ground floor	$2475.1\text{m}^2 \times \text{GH}\text{c}325.5 = \text{GH}\text{c}805,645.00$
Upper ground floor	$2475.1\text{m}^2 \times \text{GH}\text{c}325.5 = \text{GH}\text{c}805,645.00$
First floor	$2475.1\text{m}^2 \times \text{GH}\text{c}325.5 = \text{GH}\text{c}805,645.00$
Second floor	$2475.1\text{m}^2 \times \text{GH}\text{c}325.5 = \text{GH}\text{c}805,645.00$
Third Floor	$316.1\text{m}^2 \times \text{GH}\text{c}325.5 = \text{GH}\text{c}102,890.55$
Seventh Floor	$316.1\text{m}^2 \times \text{GH}\text{c}325.5 = \text{GH}\text{c}102,890.55$
Restaurant	$2587.2\text{m}^2 \times \text{GH}\text{c}325.5 = \text{GH}\text{c}842,133.6$
Grand Total	GHc5,384,808 .6

5.8 CONCLUSION

In conclusion, customers and retail and wholesale owners are the main users of the facility, their comfort and safety is a priority. For this reason their well being has been well considered and catered for in the facility.

Secondly, shopping for spare parts will be enjoyable and exciting. If this proposal is executed, Suame magazine will become a well planned industrial village in Ghana.

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APPENDIX

DRAWING

The design, Commercial Hub of Suame (Showroom Facility) went through several processes such as documentation of facts gathered from case study and technical study, concept and philosophy, conceptual site planning, evolution of design through systematic processes and finally, the documentation (design drafting) of the design arrived at and presentation.

The documentation of case studies, technical study, concept and philosophy, conceptual site planning have already been discussed in chapter five (5).

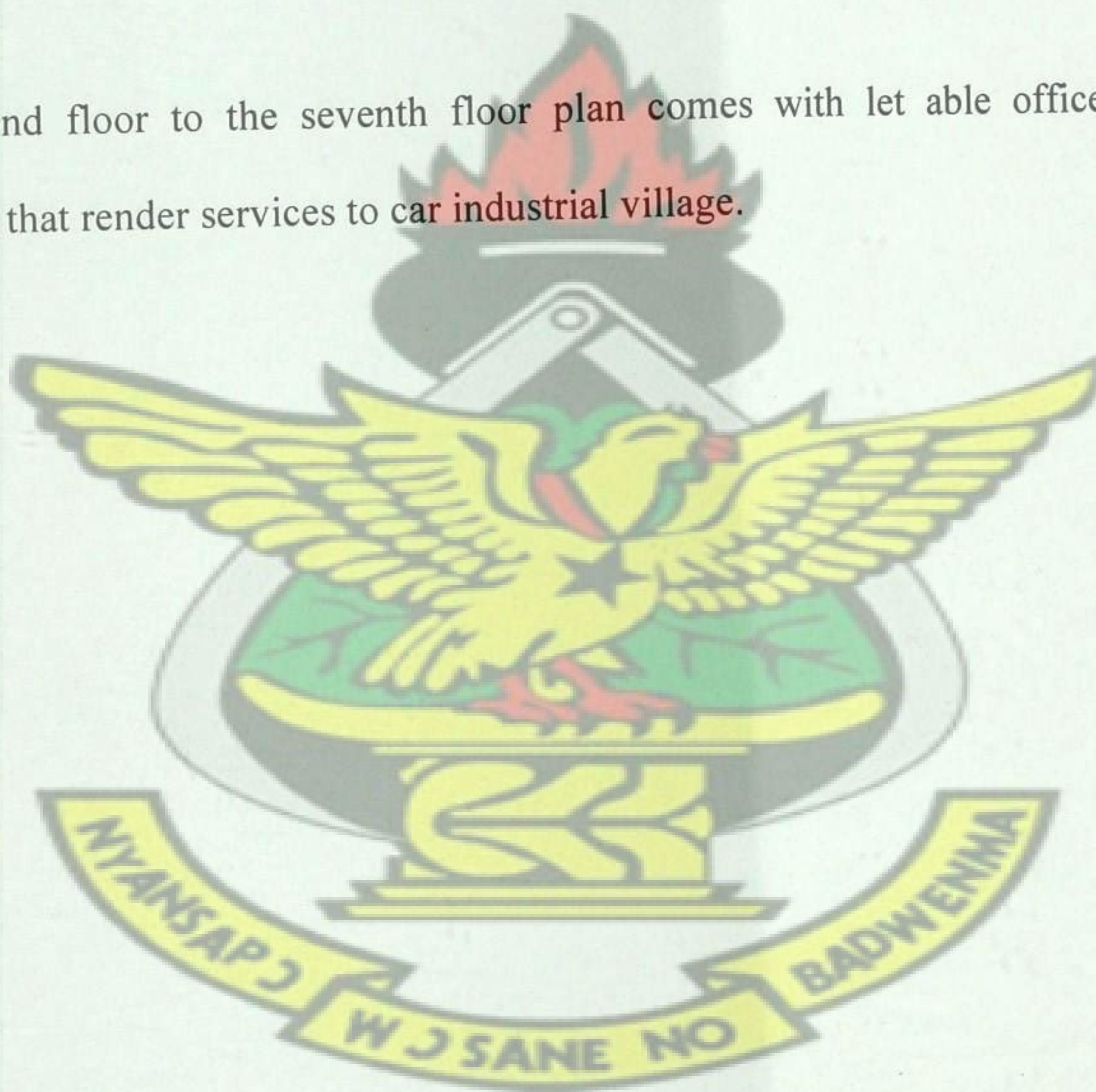
The design, Commercial Hub of Suame (Showroom Facility) is of seven levels: the sub-basement, Lower Ground floor, Upper Ground floor, first floor up to the seventh floor.

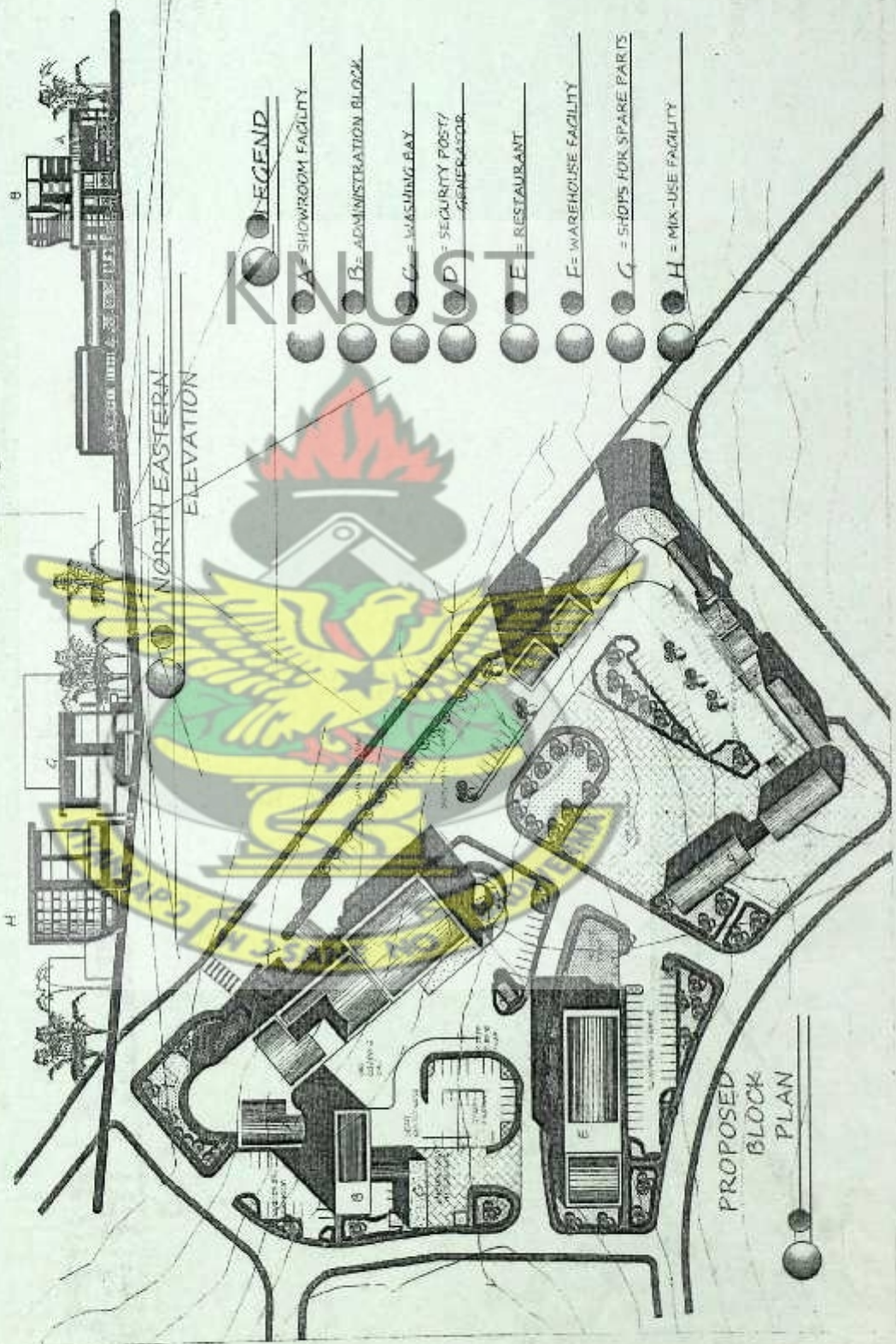
A closer look into the lower ground floor plan reveals the following spaces: ware house, security check point, offices, workshop welfare unit, washing bay and restaurant. Along the facility is about 200 capacity car park to cater to the parking need of shopper. To the east are proposed retail facility and ware housing facility.

The upper ground floor plan shows the following spaces: showroom, outdoor exhibition, offices, conference room and an IT center.

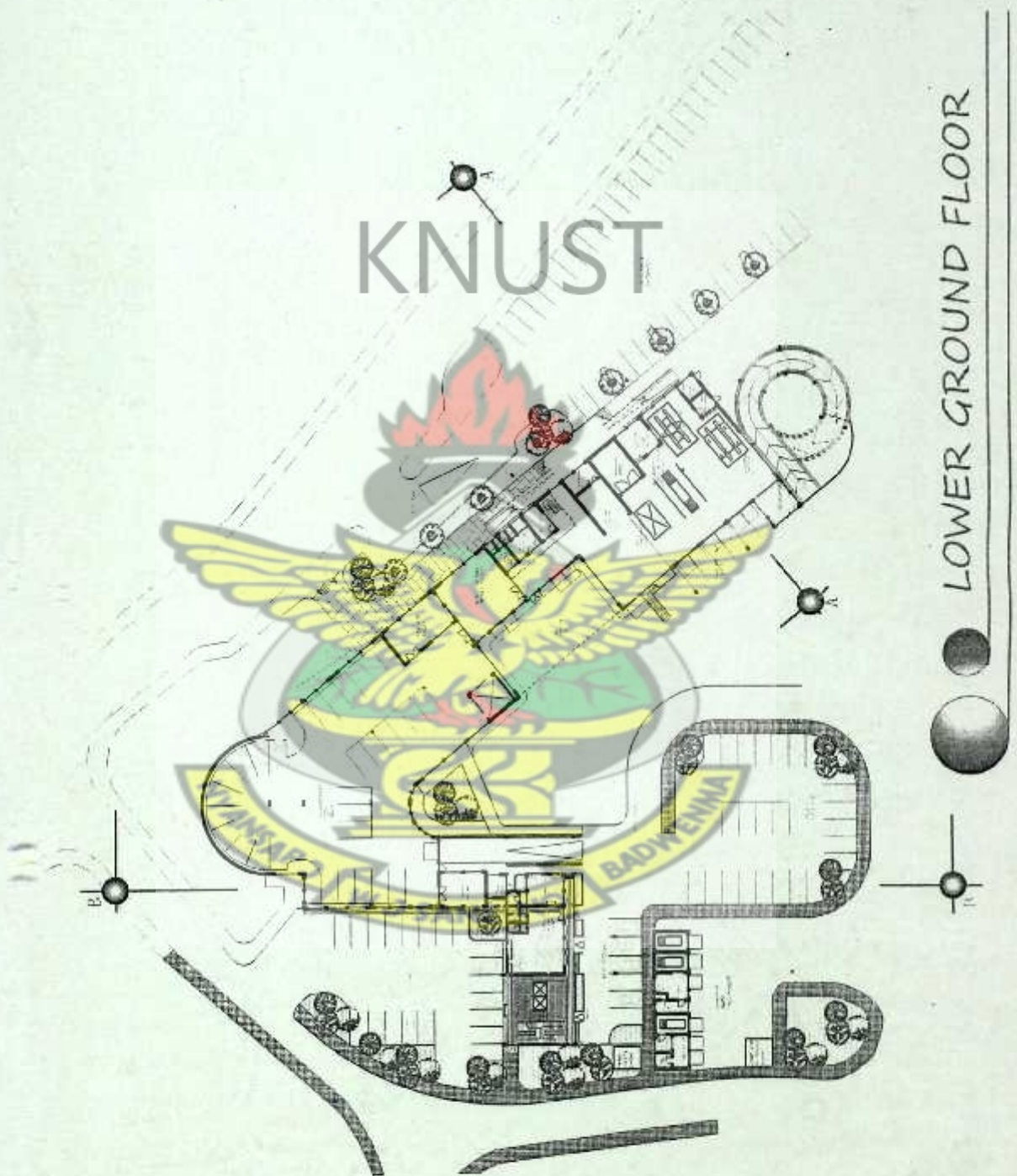
First floor plan consist of the following spaces: light spare parts and car decoration boutique, and offices.

From second floor to the seventh floor plan comes with let able office spaces for companies that render services to car industrial village.

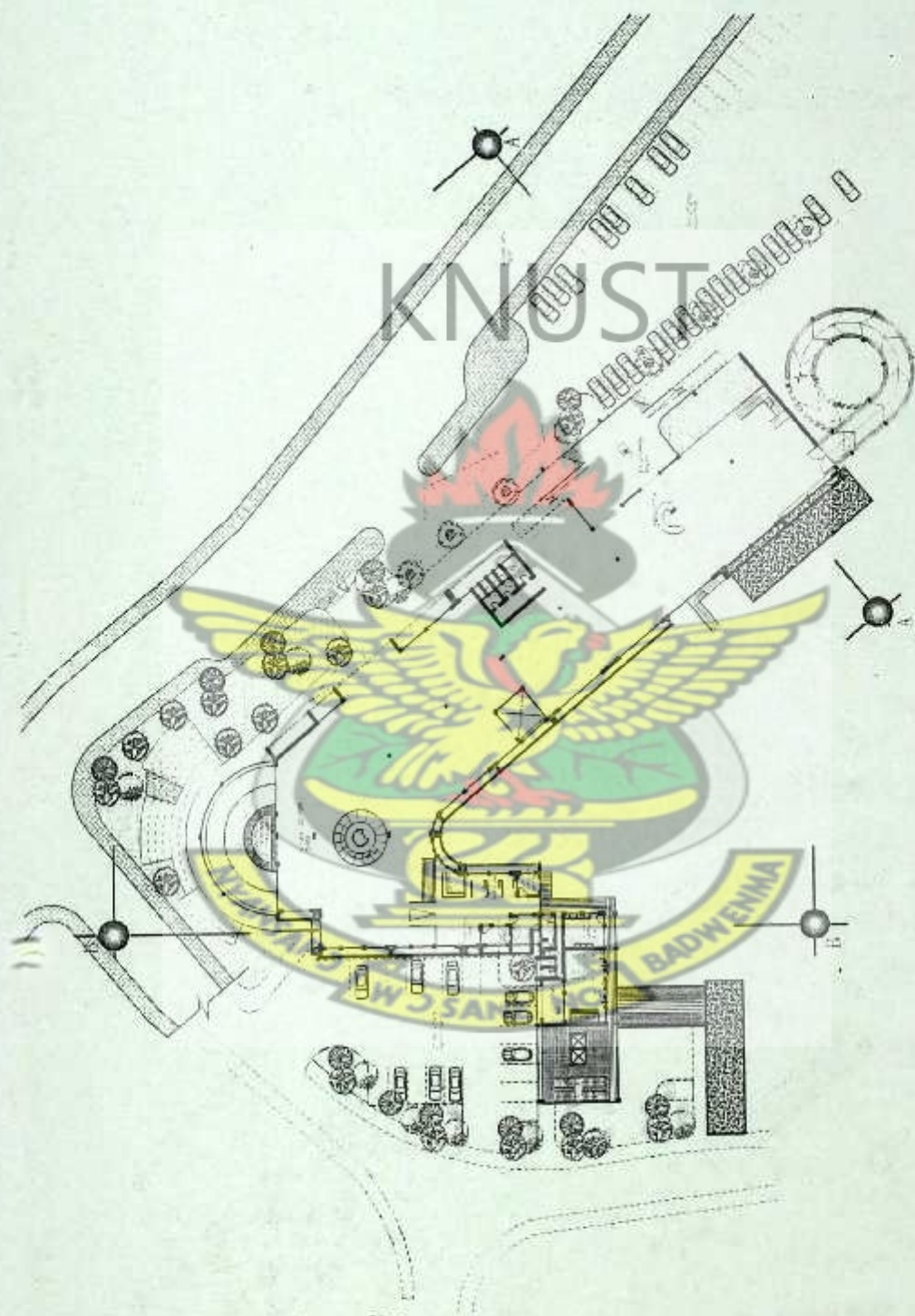




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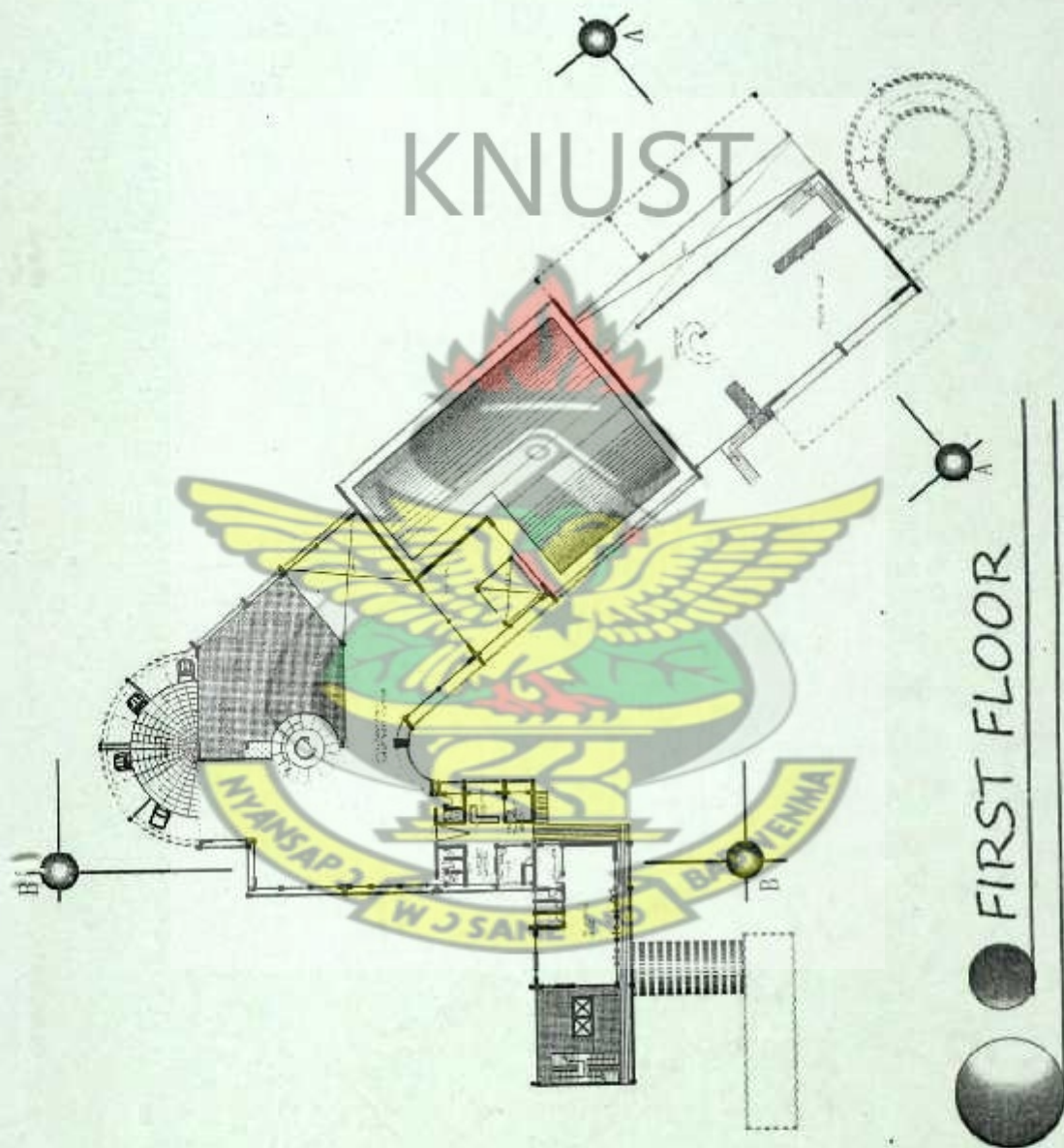


LOWER GROUND FLOOR

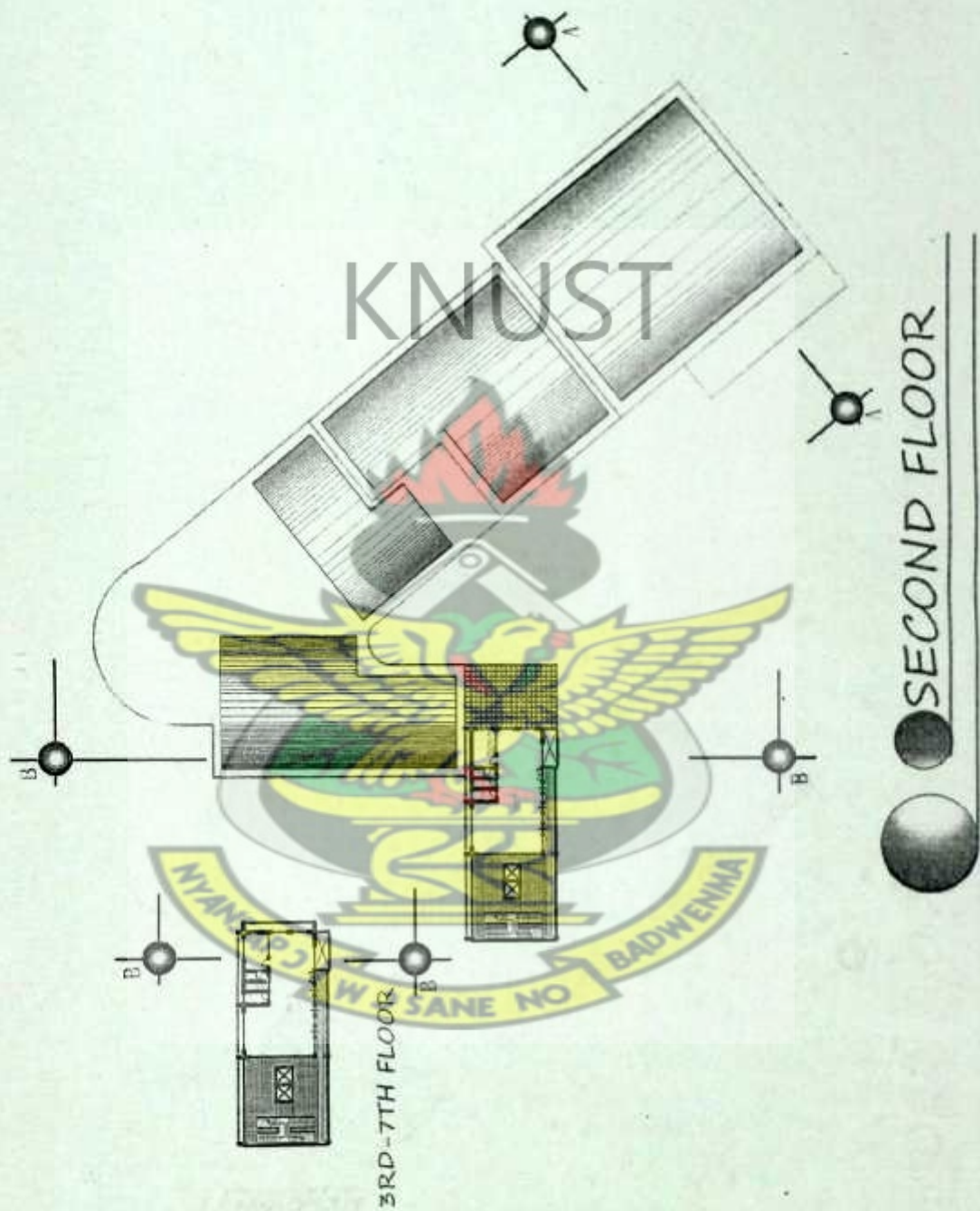


UPPER GROUND FLOOR

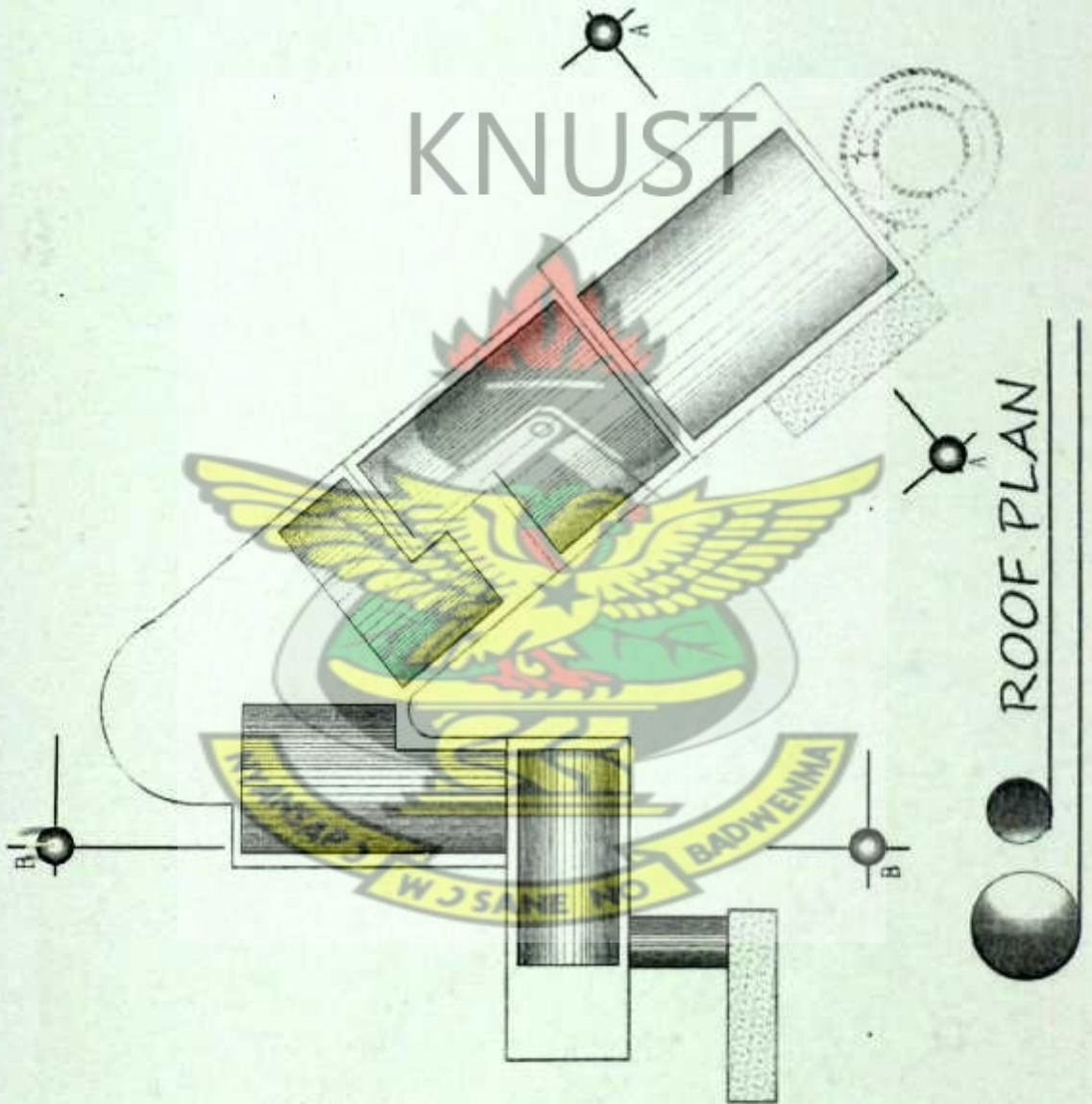
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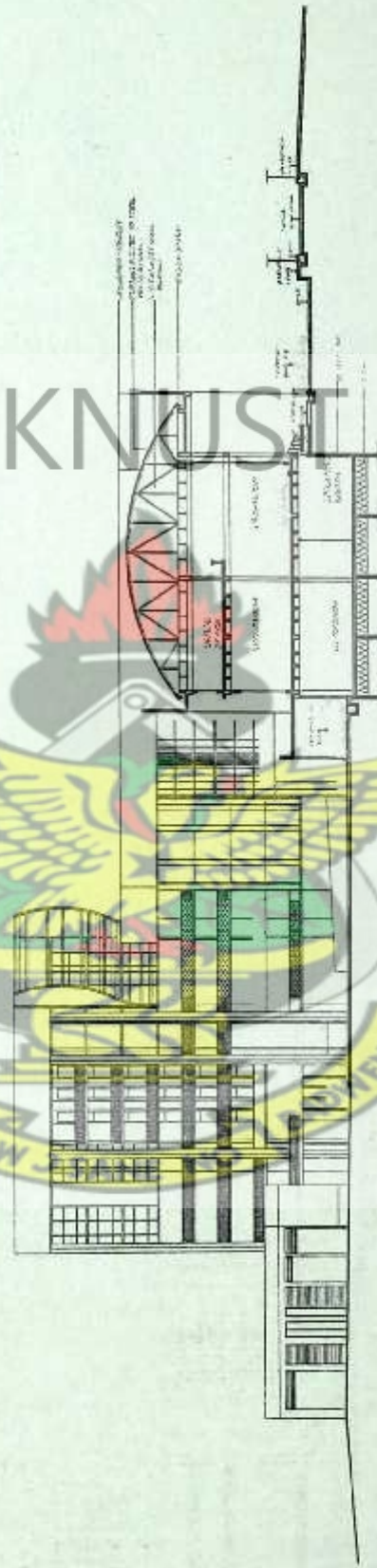
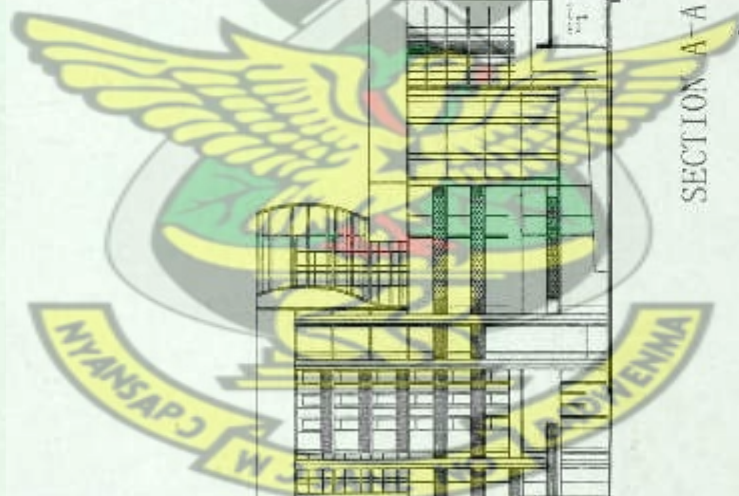


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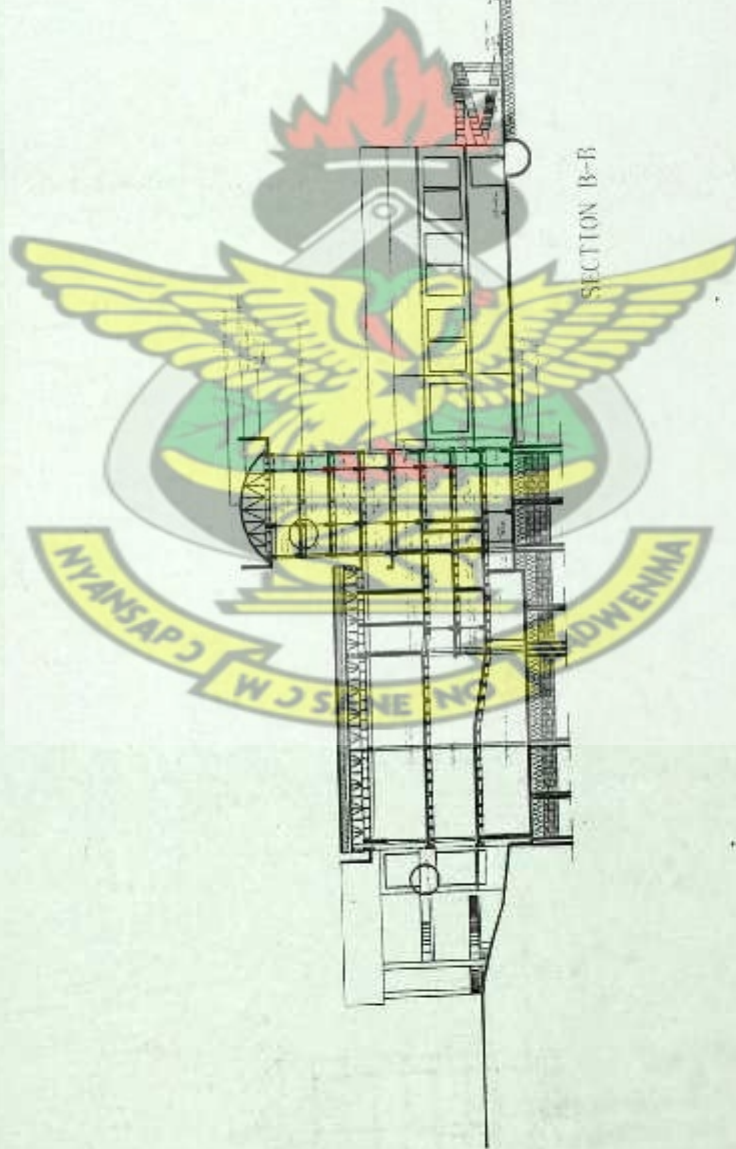
ROOF PLAN

KNUSU

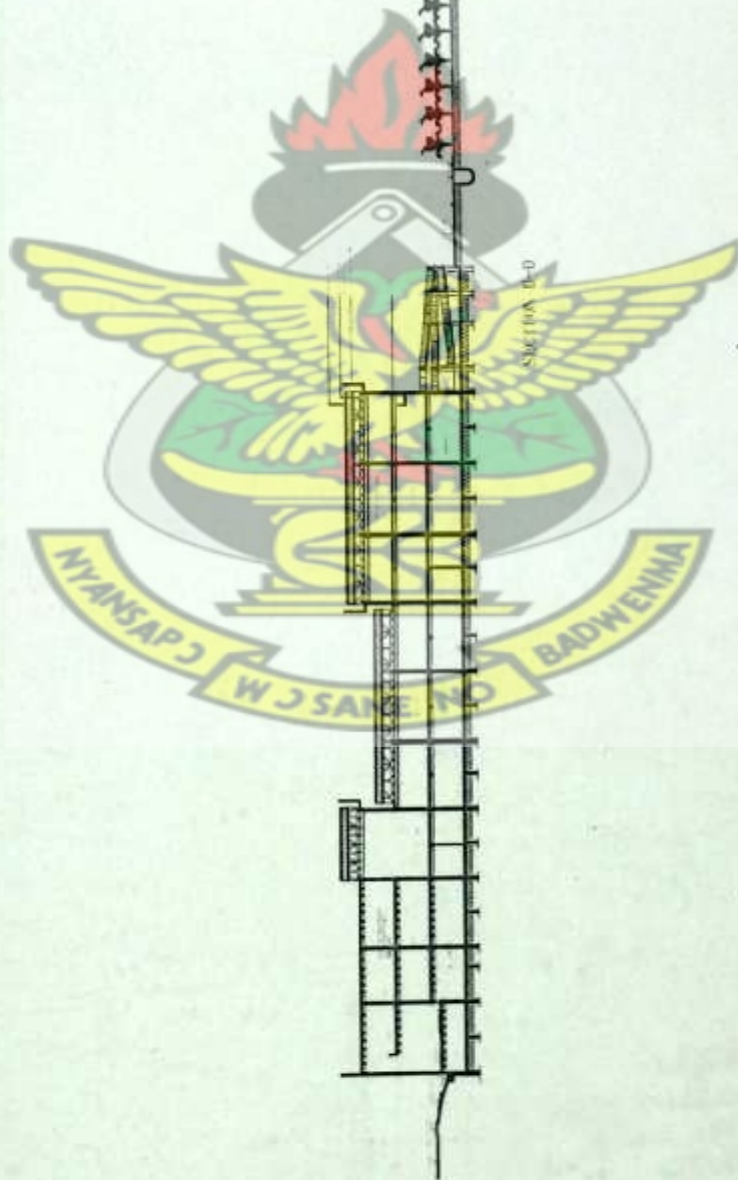


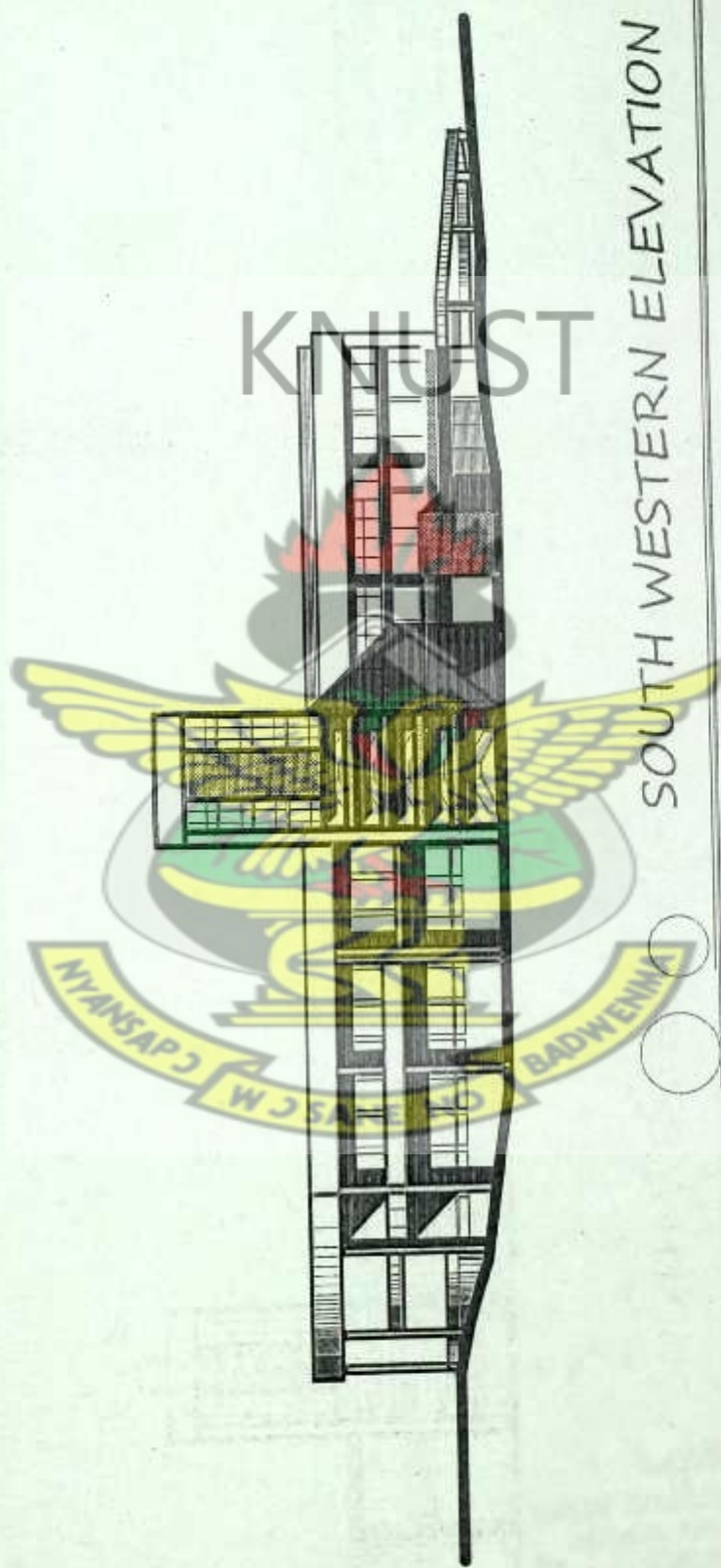
SECTION A-A

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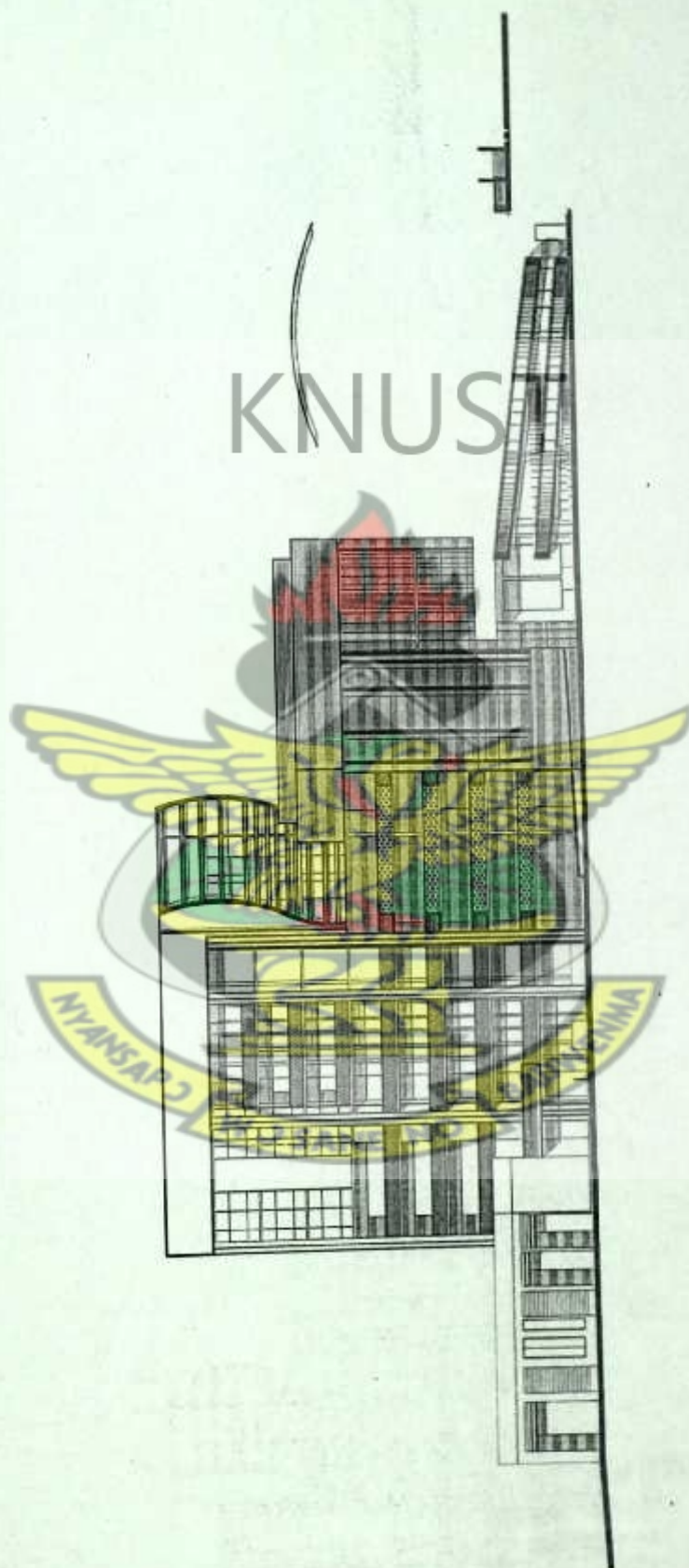


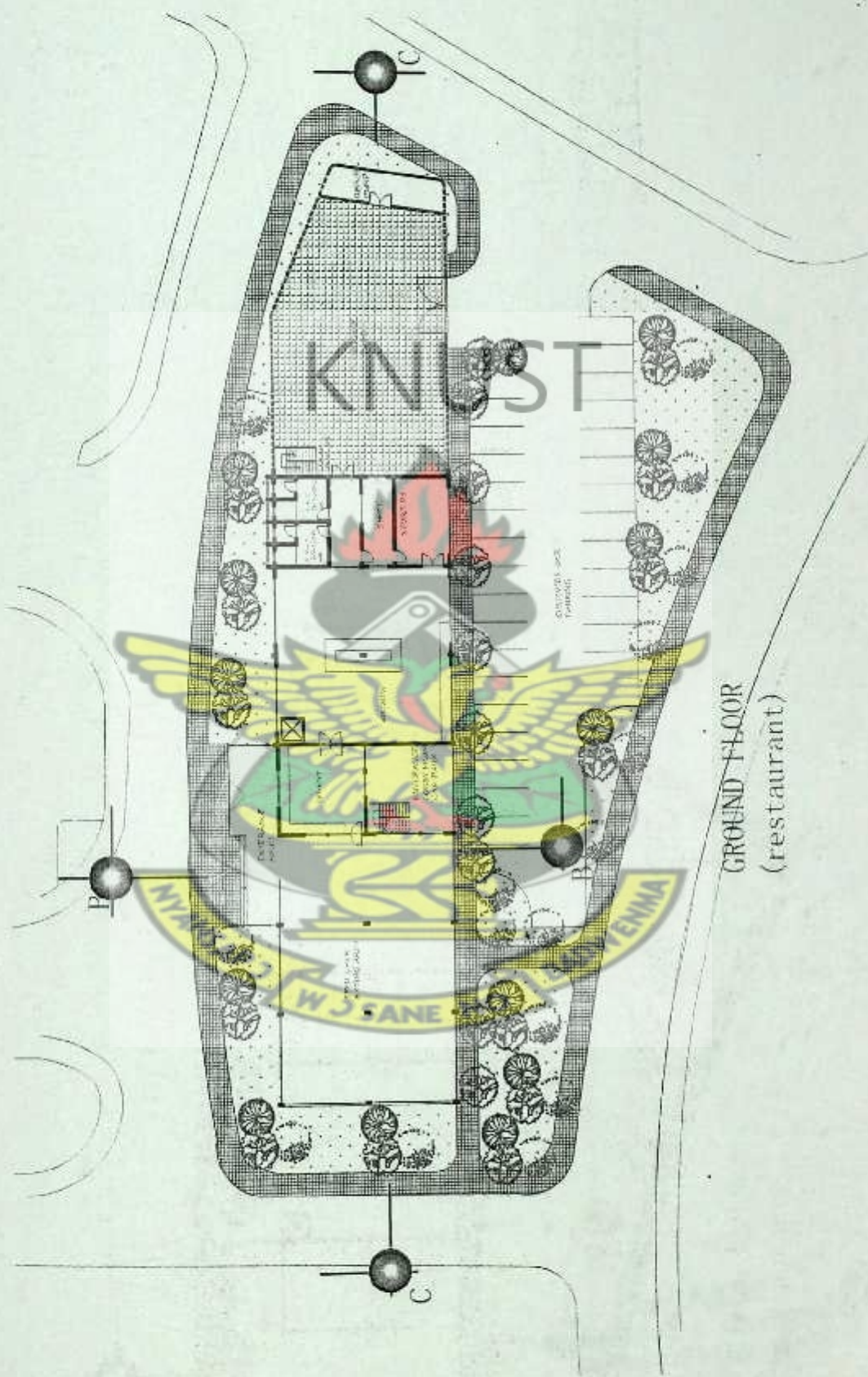


SOUTH WESTERN ELEVATION

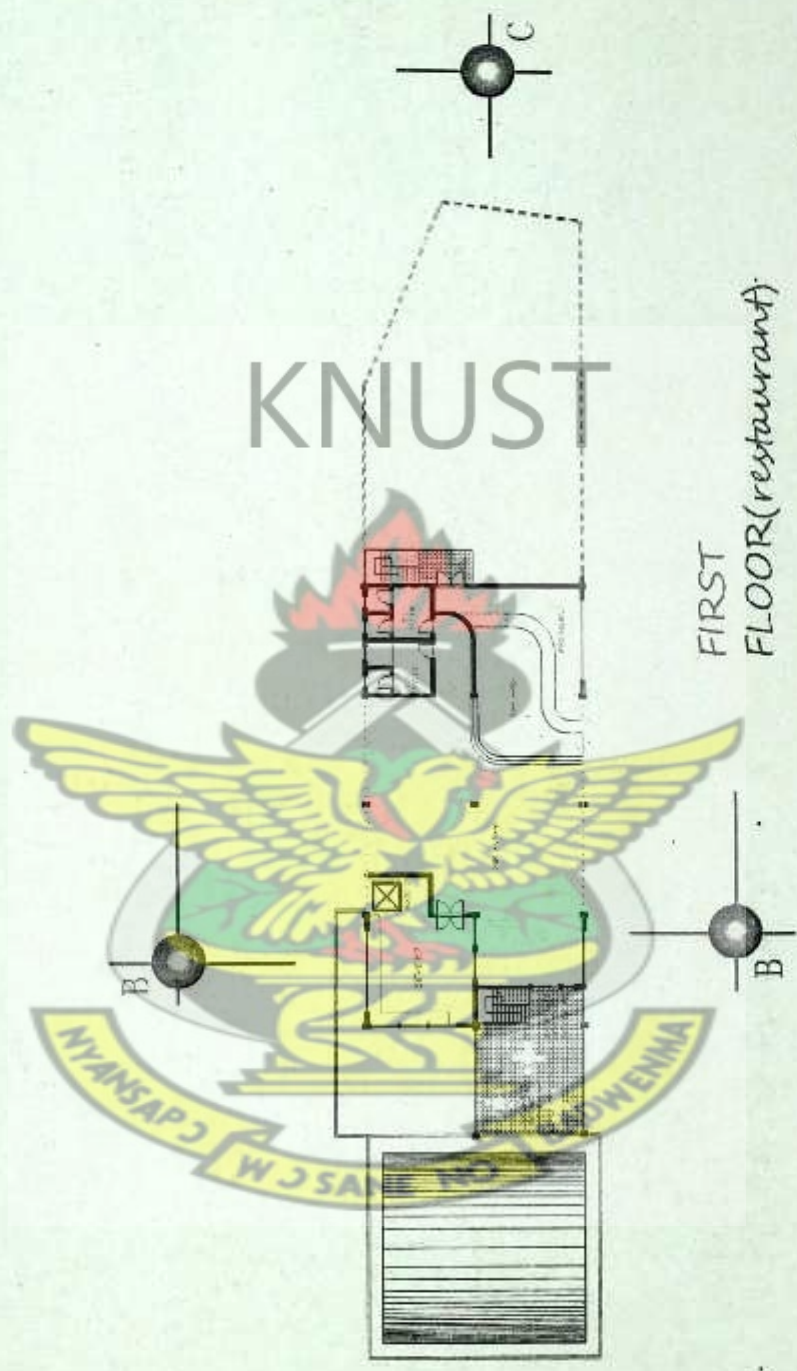


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GROUND FLOOR
(restaurant)



KNUST

FIRST
FLOOR (restaurant)

KNUST

ROOF
PLAN (restaurant)



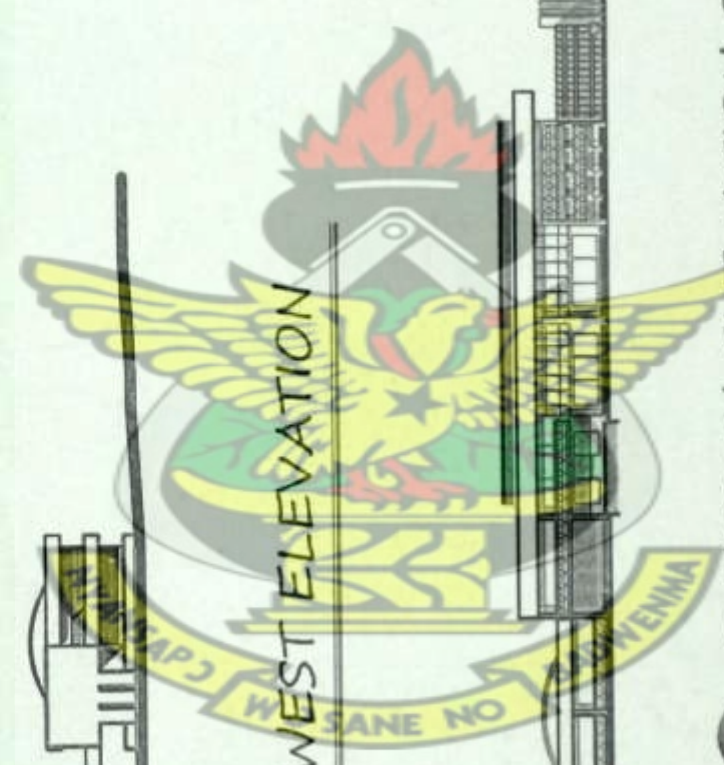


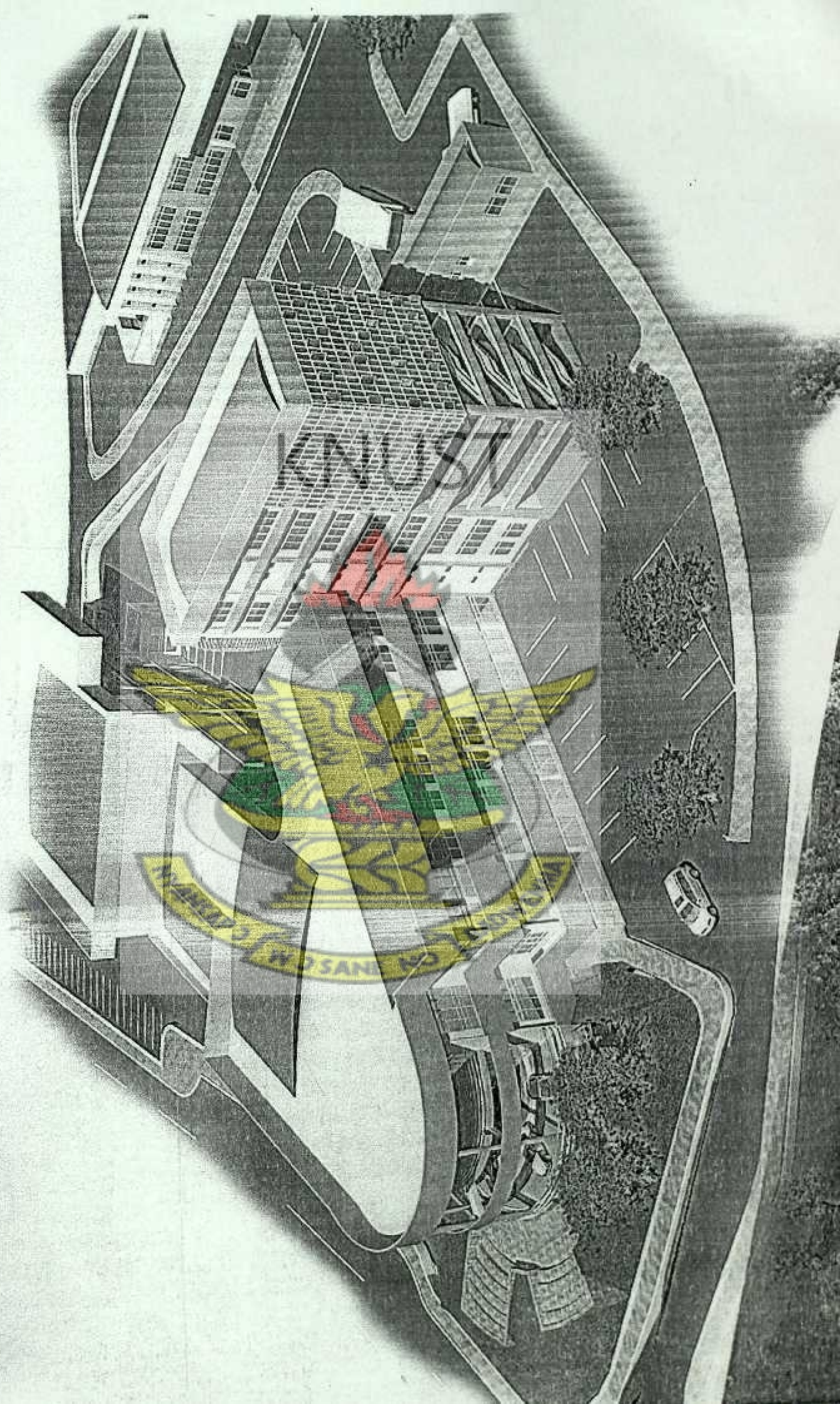
● ● WEST ELEVATION

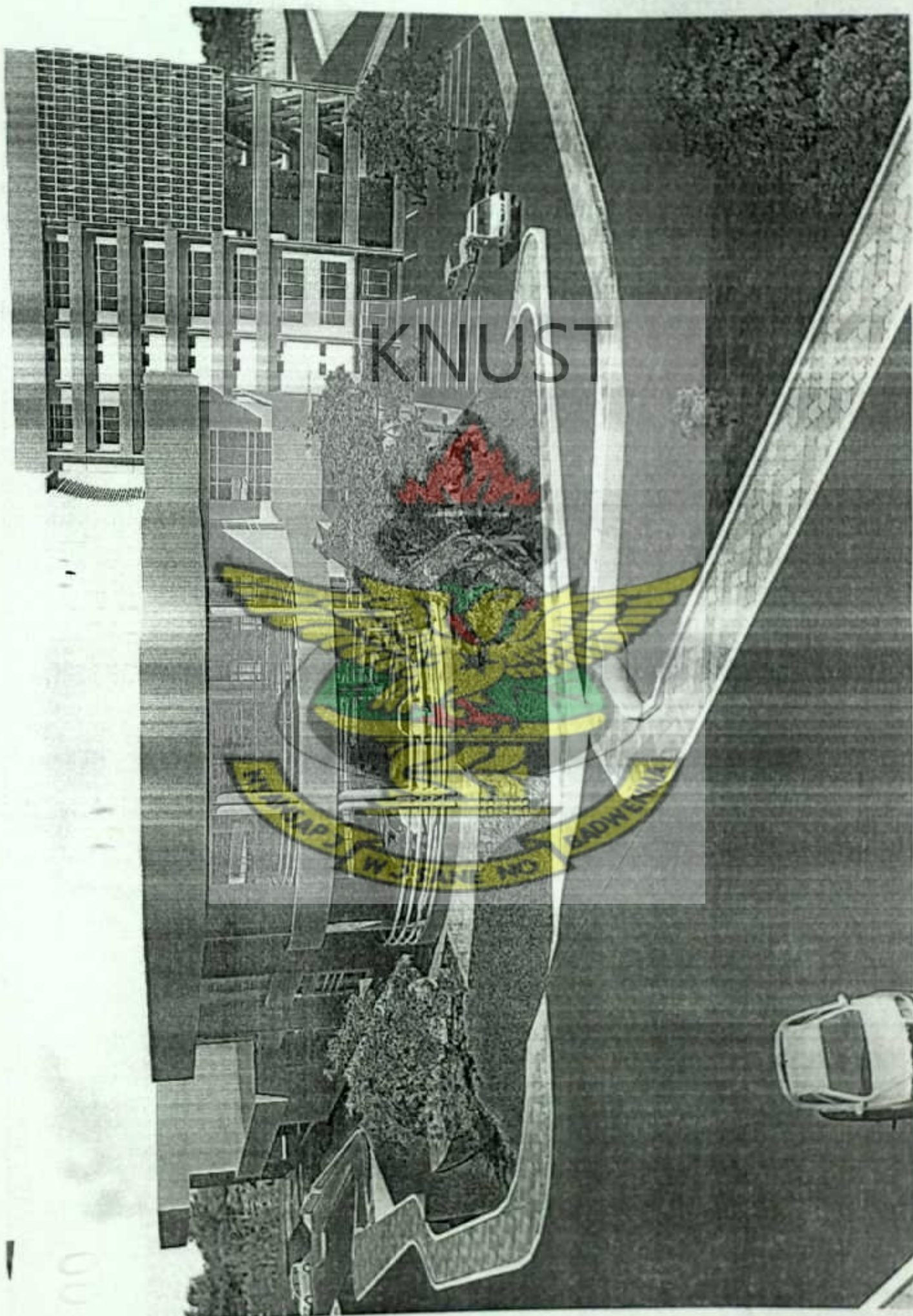


● ● NORTH ELEVATION OF RESTAURANT

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