MUSEUM OF ISLAMIC ARTS AND CULTURE, SOKOTO

(AN ARCHITECTURAL ENVIRONMENT FOR PRESERVATION OF LEGACIES OF SOKOTO CALIPHATE)

A THESIS SUBMITTED TO POST-GRADUATE SCHOOL OF AHMADU BELLO UNIVERSITY, ZARIA IN PARTIAL FULFILMENT OF REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTER OF SCIENCE IN ARCHITECTURE.,

i

by

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DEDICATION

This work is dedicated to my Late Parents Muhammad El-Bello and Fatimatu El-Bello Whose love and Care I lost at Very Tender age; and Alhaji M.A. Umar for his immense supports in times of despair.

DECLARATION

I, Agigi, Ibrahim Mohammed Declare that this Thesis is the outcome of Research work conducted by me. All sources of information have been acknowledged.

Signed:.....

CERTIFICATION

This Thesis entitled Museum of Islamic Arts and Culture, Sokoto" by Agigi, Ibrahim Mohammed, Meets the requirement Governing the Award of the Degree of Master of Science (Architecture) of Ahmadu Bello University, Zaria. And is approved for its contribution to knowledge and Literary presentation.

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ABSTRACT

The rationale, for museum of Islamic arts and culture are studied in chapter One . The main reason is the need to preserve the relics of the Sokoto caliphate. Islamic arts should be studied in social, religious and economic content. It is observed in chapter two that Islamics arts are non-figurative ^geometric in pattern and utilitarian in function. Islamic arts in broad terms means arts for and of muslimso

History of early museums is a history of private collections of artifacts and antiquities. In chapter three, historical developement and social roles of museums are studied,,

Provision of conducive environment for museums activities has occupied the minds of many architects and their patrons. Factors that influence location of museum are examined in chapter four. Design and planning principles are also examined. A study of museums in Nigeria shows poor attendance to the museum. Factors responsible for this are examined in chapter five. Chapter six discusses design report of the thesis. This include site analysis, concept) brief and space requirements. Chapter seven is the summary and conclusion of the previous chapters.

PREFACE

Museum is a social institution which aims at preserving man's material and non-material archievements. Islamic societies have made appreciable contribution to the growth of human civilization. Some of their contributions are in the area of arts and architecture

Islamic arts symbolise muslims' attitudes toward secular and sacred affairs of their societies. The roles played by museums in the society are numerous and ever increasing.

Most museum buildings, the world over, were not designed for the purpose of exhibition. However, with time museum architecture was evolved. The design of museum should incorporated local architectural forms and design principles. This is to my the building should reflect its contents.

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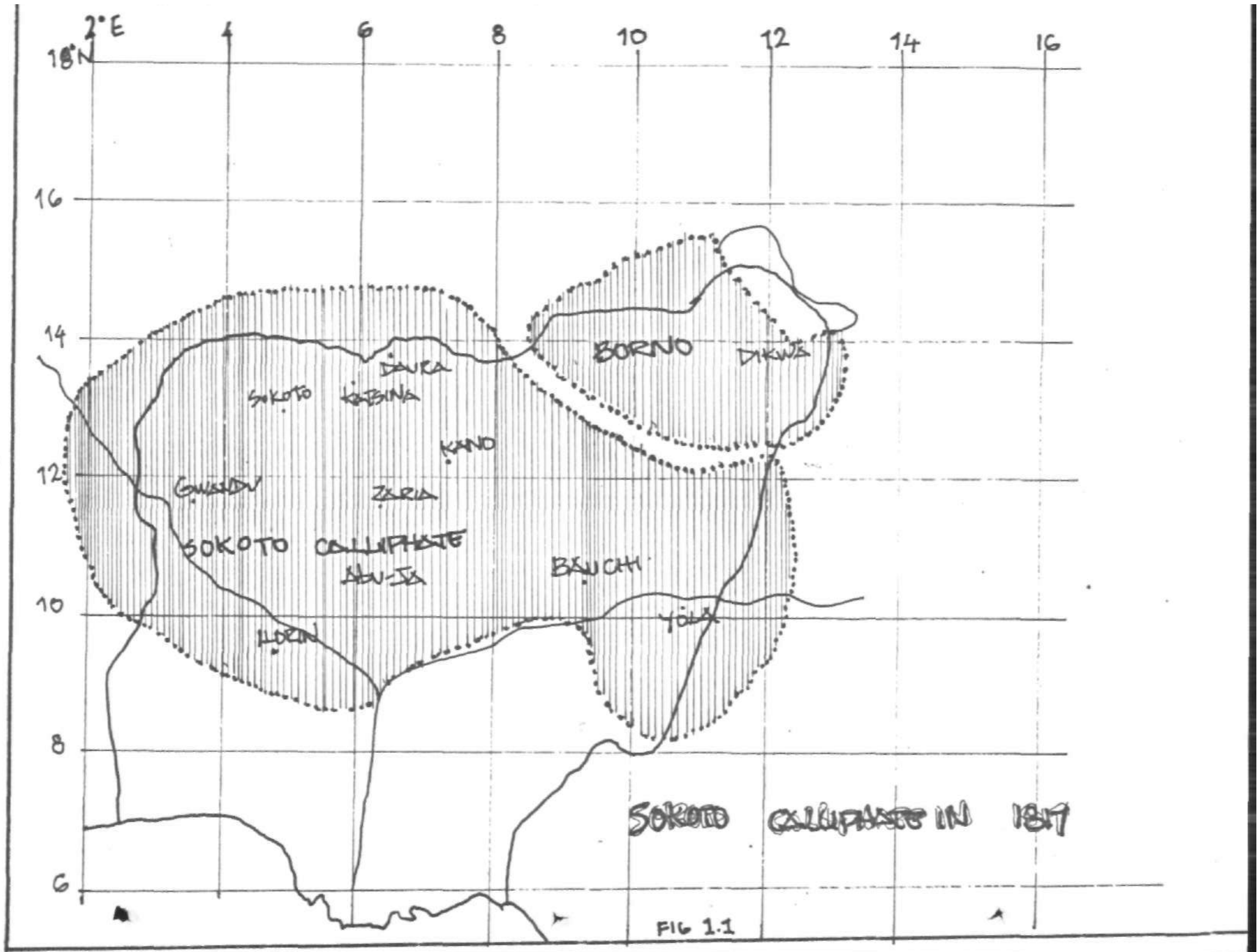
CHAPTER ONE

INTRODUCTION

Since Islam is a complete way of life, arts and culture of muslims at any given period are very important to the present and future generations to daaw examples from man, in attempts to preserve his cultural heritage, built edifices to glorify his achievements. Museums are among such edifices. Museum as an institution, studies preserves, interprete and exhibits man's achievements through objects. and antiquites.

1.10 Rational For Study

Muslims contributed to the artistic and intellectual development of Hausaland during nineteenth century. [illegible] Shehu Danfodio and his descendants wrote many books but only few are known to the public. There is a growing awareness among the muslims especially the youths. The relics of Sokoto caliphate have been lost to the colonial invaders and others are deteriorating due to neglect. Islamic arts and architecture flourished in Hausaland, Kano, Daura, Sokoto, Zaria and Katsina were important centres of trade, arts, crafts and scholarship .



SOKOTO CALLIPHATE IN 1817

FIG 1.1

Museum is the most suitable institution that will perform the functions of preservation, exhibition and study of the arts of the callphate. The proposed museum's objectives include:-

(a) to explain the values, aims and history of few muslims;

(b) to show the spiritual, social cultural and political contributions of Islam in Hausaland;

(c) to enhance tourism potentialities of the state and

(d) to generate some revenue for the government.

The functions of the museum will include publications, exhibition, education, seminars, conferences, research, preservation and restoration. The museum is divided into five main parts namely:-

i Administration

ii Library

iii Workshops and

iv Recreation and

v Galleries

1.20 Brief History of Sokoto

Sokoto was founded in about 1804 A.D. by Muhammad Bello, the son of Shehu Danfodio. This was a military camp (Hisket, M. 1973 :40). It became the capital of Sokoto caliphate in 1817A.D. Sokoto refers all areas influenced by Shehu Danfodio. These areas include: Abuja, Kontagora on the west, Adamawa, Bauchi, Gombe, Kano, Katsina and Daura (Benna, 1983: 32).

1.30 Climate And Vegetation

Sokoto is located in the savannah region of Nigeria in the North-West corner of Nigeria. It has maximum and minimum average daily temperature of 40% and 15°C respectively. Low relative humidity of ten percent in February and ninety-three persent in August. Rain falls between June and September with average annual total of 703.5mm Harmattan winds (dusty and sometimes stormy) are experienced from October to February. These influence the design of buildings interms of planning, use of courtyards, shading devices, use of water as a cooling agent and high peripherial walls (Fathy; 1984: 10).

Most parts of Sokoto are covered by weakly developed soils, mainly fadama soils around Rima Valley East of the city. The vegetation is mainly of trees, shrubs and grass.

1.40 Population

The population of Sokoto is said to be 249,470 in 1983, with growth rate of 59%. There is an upsurge in population of Sokoto due to the establishment of the University of Sokoto, Army Barracks, and other institutions. Fourty-three percent of the population is between the ages of fifteen and thirty, while twenty percent is between one and fifteen years.

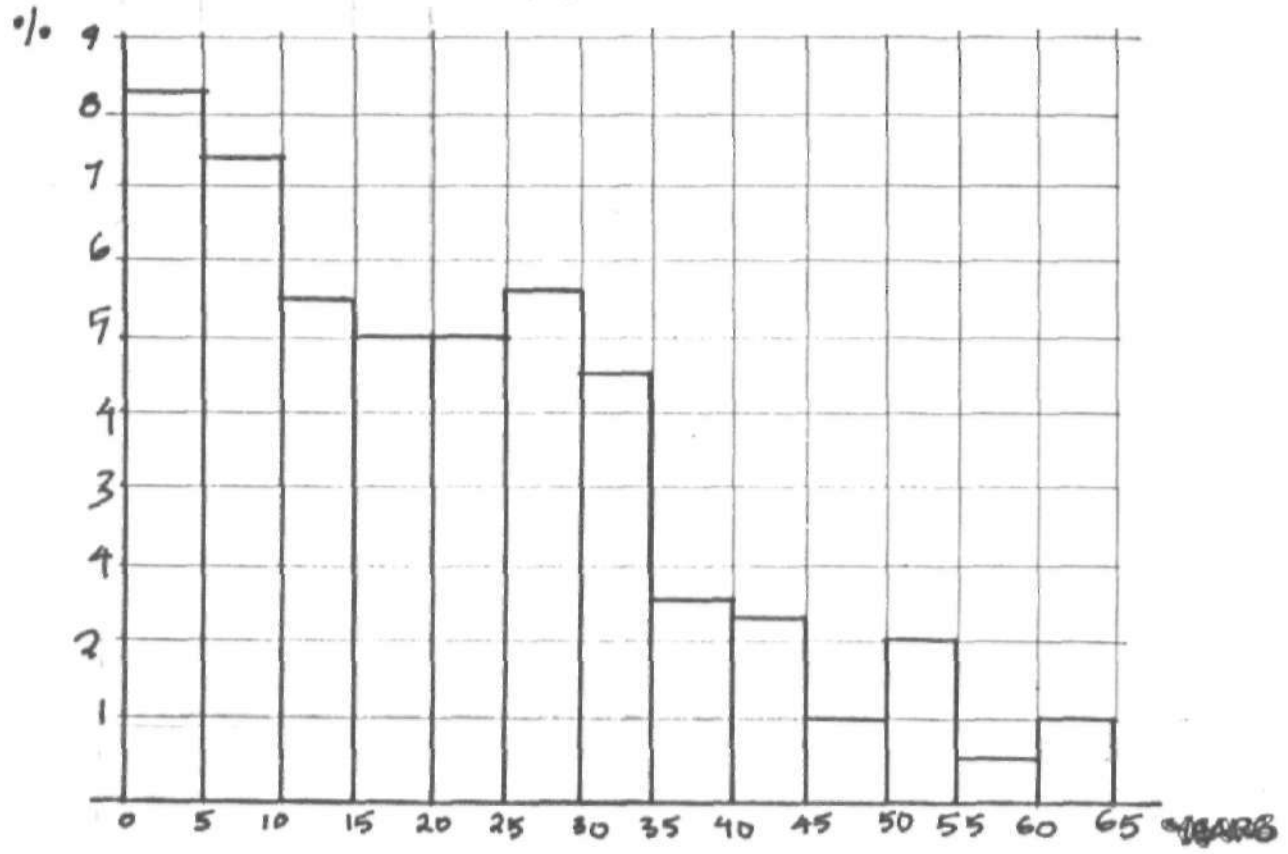


FIG.1.4 AGE STRUCTURE OF SOKOTO TOWN

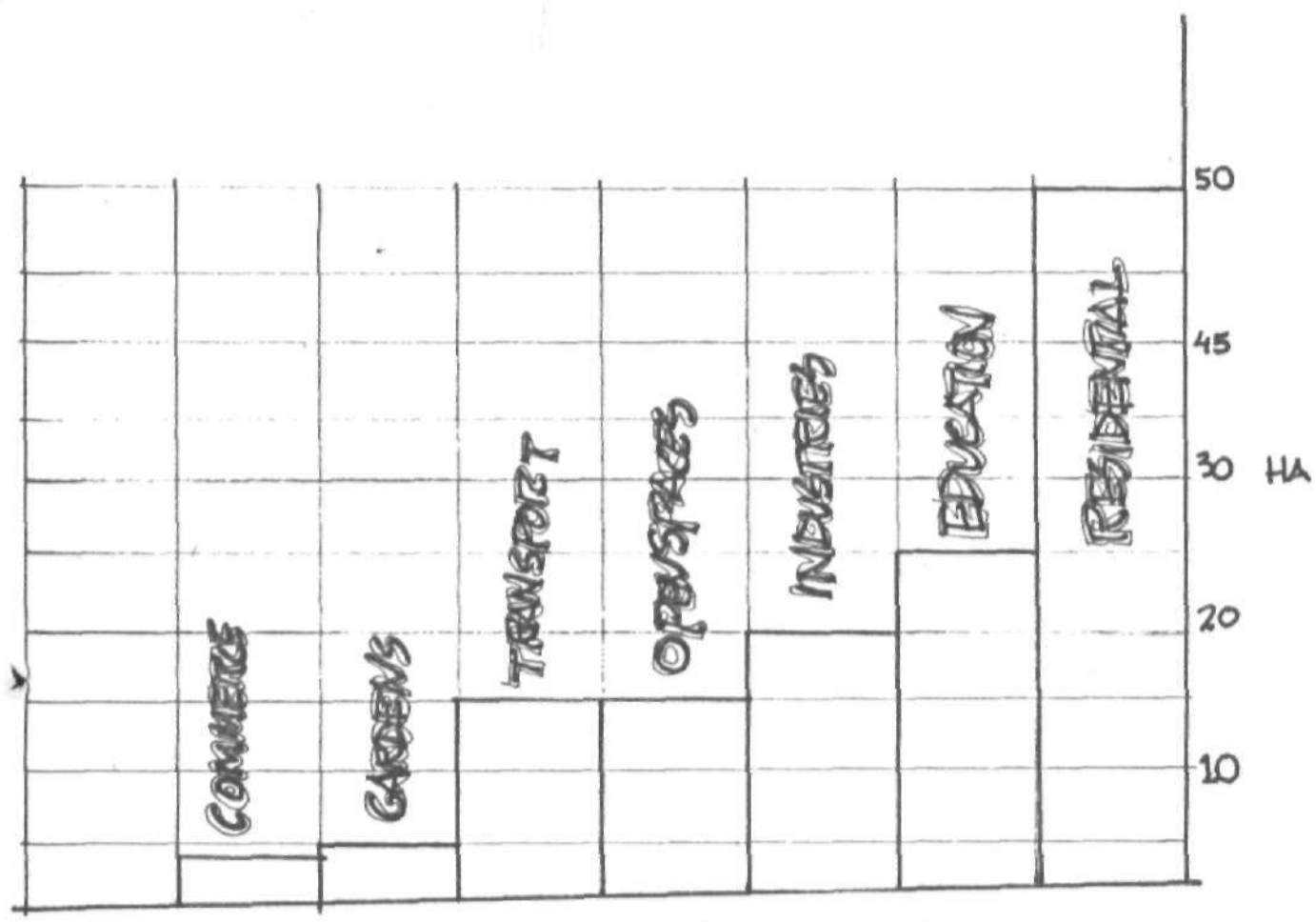


FIG.1.5 LAND USE FOR SOKOTO TOWN

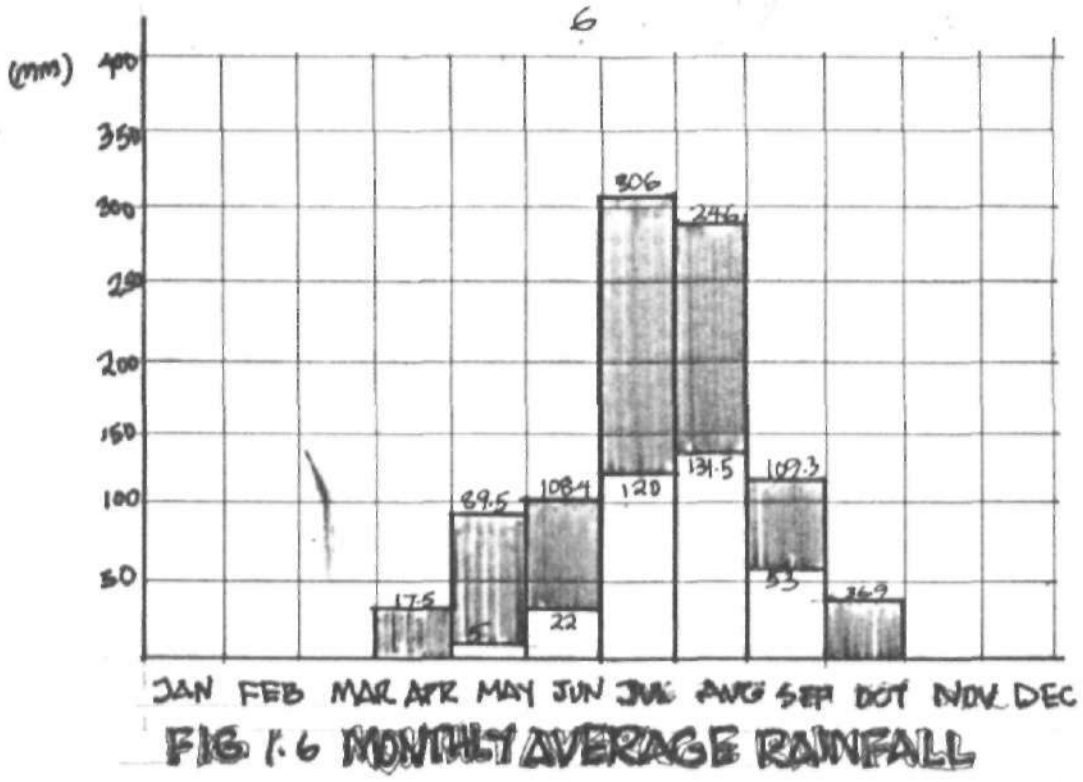


FIG 1.6 MONTHLY AVERAGE RAINFALL

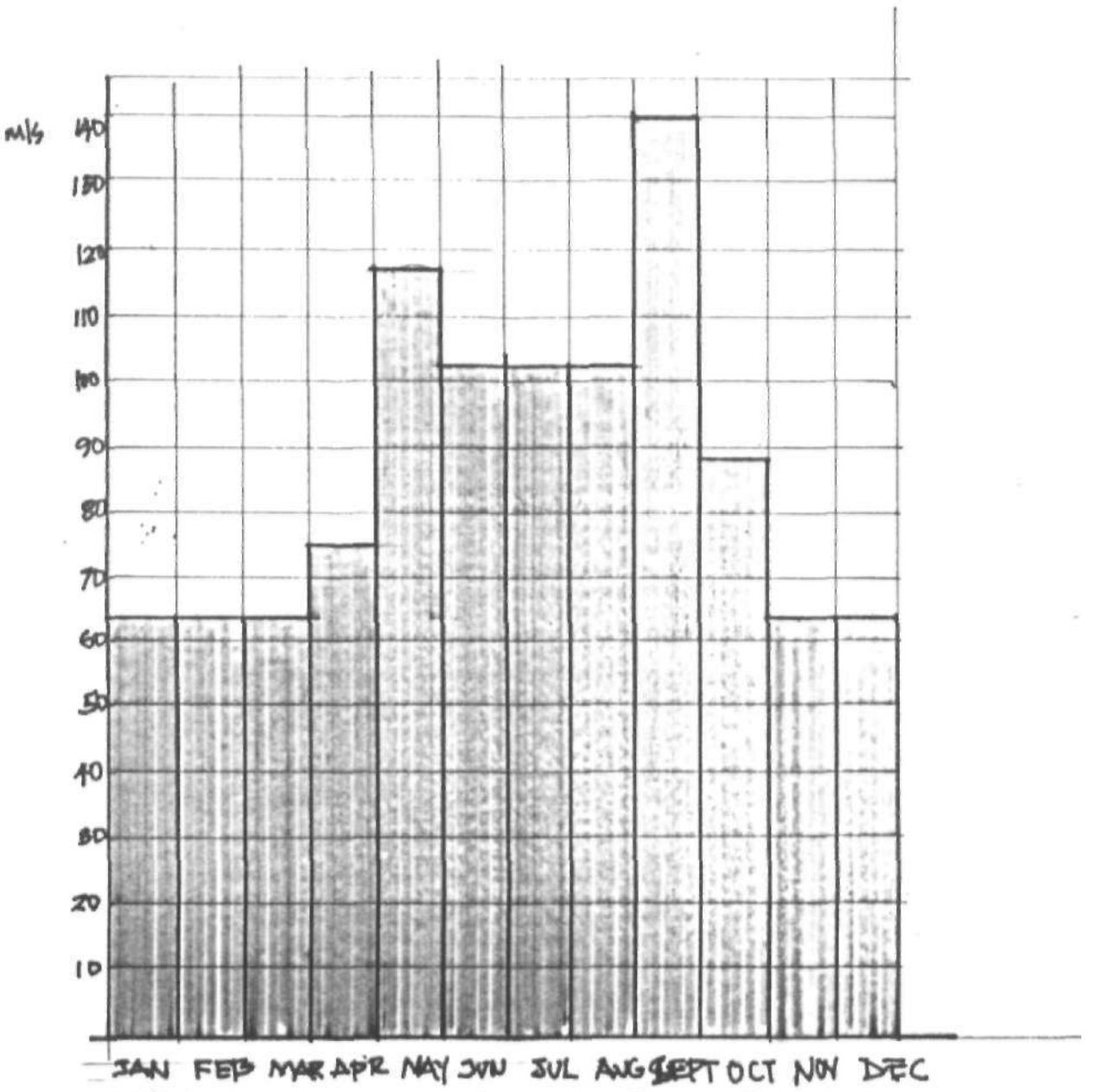


FIG 1.7 MONTHLY WIND VELOCITY

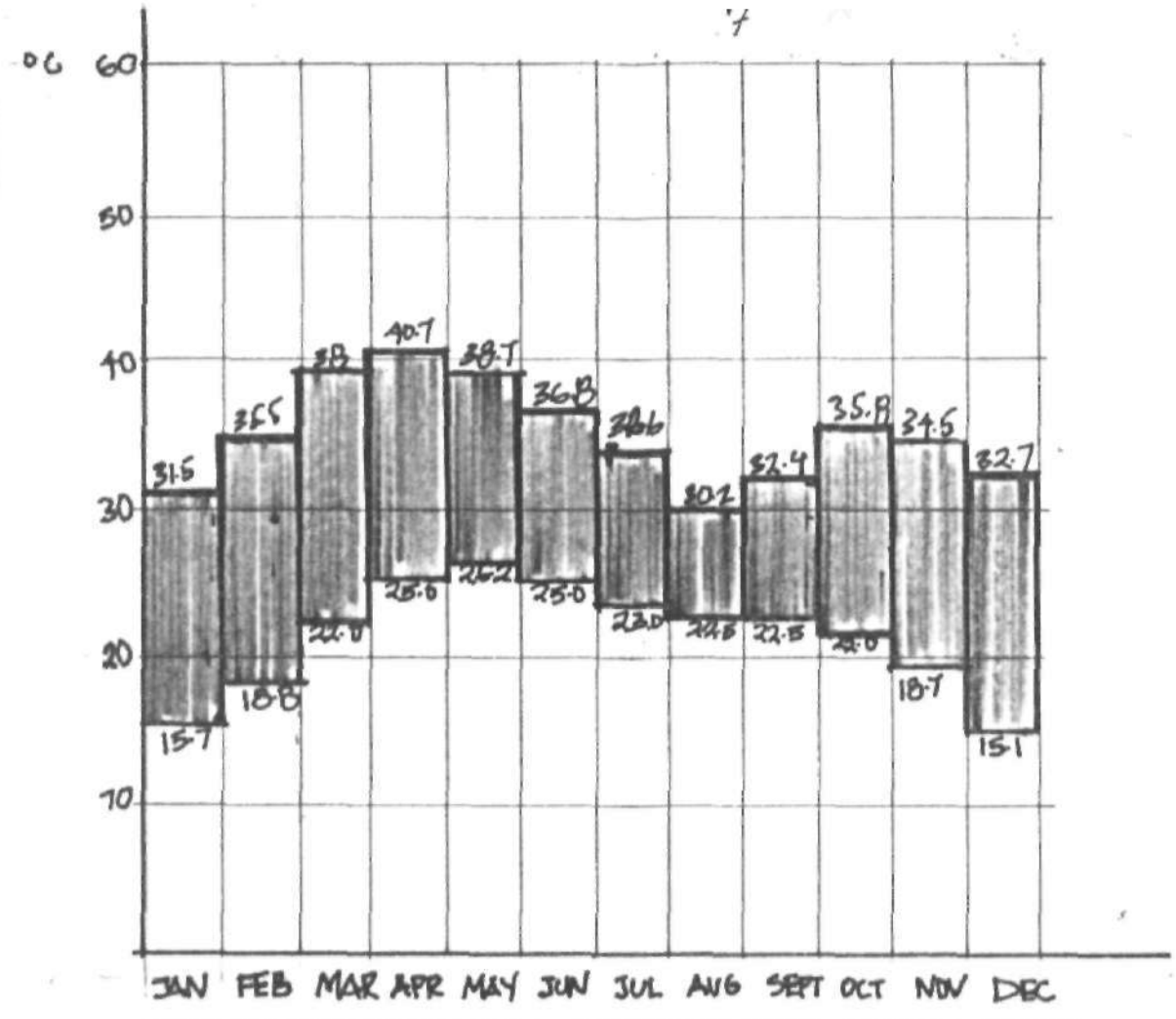


FIG 1.1 AVERAGE MONTHLY TEMP. (MAX + MIN)

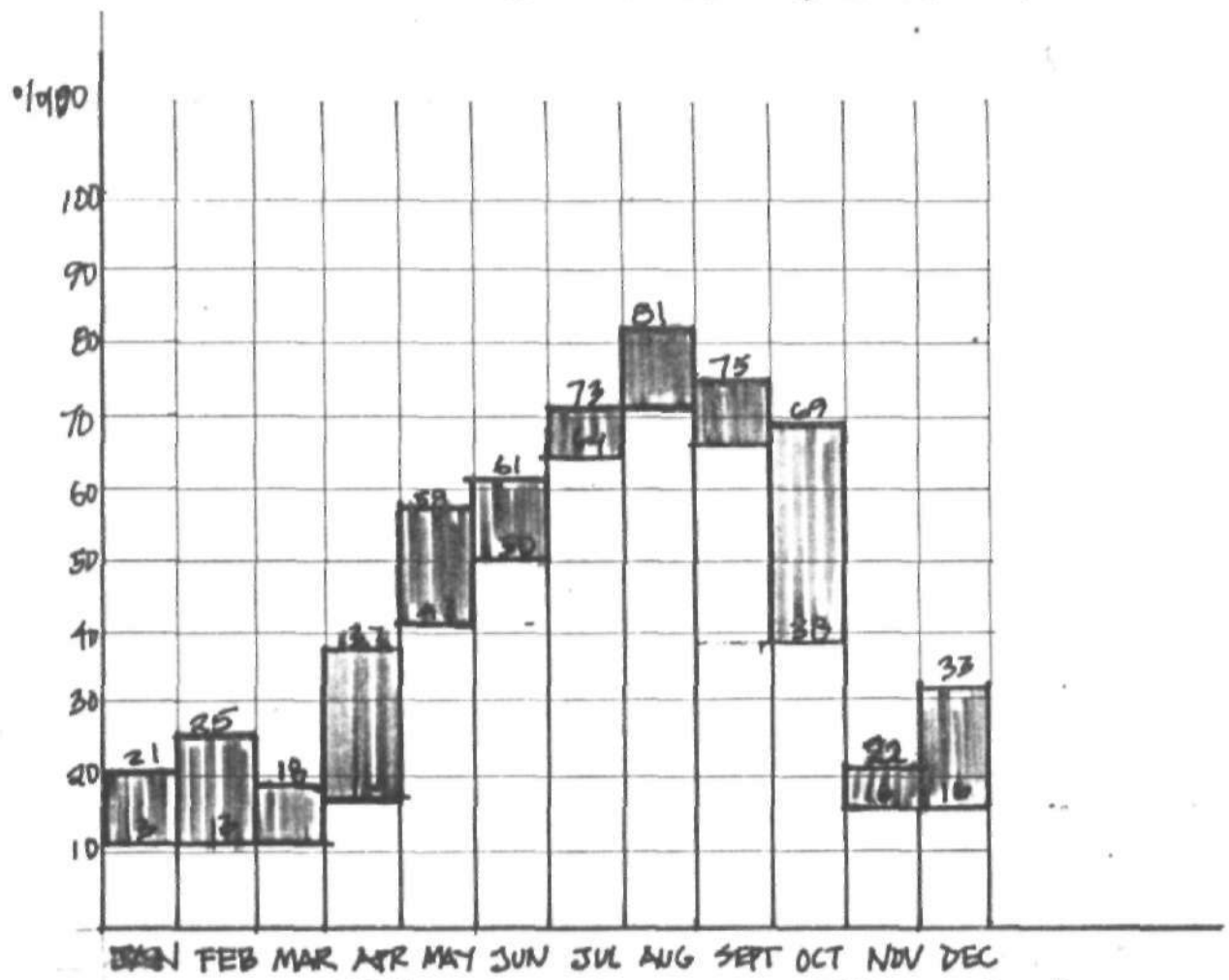


FIG. 1.3 RELATIVE HUMIDITY (MAX + MIN)

This means that sixty-three.percent of the inhabitants are under thirty years (Benna, 1983:63).

1.50 Cultural Religious and Political Importance Of Sokoto

Sokoto is a predominantly Hausa/Fulani and muslim town. There are three important religious sites in the city namely: the Shehu mosque, Bello mosque and the tomb of Shehu Danfodio. The traditional rulership of the city is centred around the palace of the Sultan and the Dandali (the Square).

After the fall of Sokoto caliphate the town became the capital of North-west state in 1967, and subsequently that of Sokoto in 1976.

About eighty percent of the inhabitants can either read roman or arabic scripts. This makes museum more meaningful and relevant to the growth of the society. There are twenty-five primary schools ten secondary school and four tertiary institutions. However, tourism and entertainment facilities are lacking in the city. Attempts are being made to develop the cultural spine of the city.

1.60 Islamic Influences On Sokoto

Islam theinfluenced the arts and architecture of Hausaland. Calligraphy, embroidery, leather works, matal works, dying , mat making, Basketry and pottery, flourished under the patronage of sultans.

The arts exhibit geometric pattern which is a basic character of Islamic arts. The influence on architecture is mainly on decoration, use of forms materials and space hierarchy.

There are three distinct architectural forms in Sokoto. These are rectangular and round-hut mud and thatch buildings. The vernacular buildings such as the palace of the sultan and modern buildings. This is in with the islamic respect for local social economic and technological conditions.

Islam is said to have come to Hausaland as far back as 947 A.D. It became official religion only in 1450AD. (Kani, 1984:41; Hisket, 1973: 38). Islam became strongly entrenched in urban Hausa people as result of continous contact with muslim traders from North Africa. Islamic arts were introduced and blended with local arts and materials (Vansima, 1984: 41). The arts and crafts of the Hausa are still flourishing.

The continuity of arts and culture is very important for any society. Museums are built to ensure that, by preserving, studying, displaying and interpreting the achievements of man through objects.

CHAPTER TWO

ISLAMIC ARTS

2.10 Brief History of Islam

Islam started in Saudi Arabia and spread to India, Persia, Bukhara, Afghanistan, Turkey, North Africa, East-Coast of Africa, Spain and West Africa. Islam met many cultures and arts in place it reached. Many of these cultures survived and many were absorbed into main stream of islamic civilization depending on their compatibility with islamic doctrines. (Ezzati, 1979: 5). Islamic arts have their origin from the Qur'an, Sunnah (sayings and deeds of the Prophet) concensus of the Ulama (learned) and logical deductions (Qiyas) (Gulzar, 1987: 35).

Islamic arts refers to the visual and literary expressions and symbols in a society where the majority are muslims or at least the ruling class are muslims. Islamic arts is defined as "the modes of visual and literary expression which transformed geographical and local traditions or the arts that creates aparentiar symbolism between the local and pan-Islamic modes of artistic expression and behaviour" - (Burkhardt, 1976:21).

2.20 Symbolic Meaning of Islamic Arts

The development of Islamic arts is not uniform throughout the Islamic world. There are two major schools of thoughts in Islamic mamely: the shiite and Sunni.

The Sh ites are found in Iran, Iraq and some parts of Afghanistan. The shuite school tolerates image to acertain degree. It however, forbids images of divinity, messengers of God and prophets and the saints (awliya) Persian Islamic arts is therefore to a certain degree representational and figurative.

In Sunni Islam, figures and images are totally condemned. Because of this restriction, muslim artist developed abstract geometric arts and arabesque. Islamic arts could be divided into sacred and secular arts. Secular arts is the one that expresses worldly activities of muslims. Sacred arts is the one that expresses or symbolises the arts of worship. Like any other arts, Islamic arts could be divided into literary, visual and architecture. Literary arts of a people is basically their literature, norms and values. Islamic visual arts include abstract geometry, calligraphy, carpentry, embroidery, woodcarving, leather work and metal work Islamic architecture is a major contribution of Islam to civilization. Muslims architects and their patrons concentrated on building public monuments such as the mosques, madrasahs (schools) Caravansesai (pilgrims stopovers), Bazaar markets, tombs and palaces.

Islamic arts is a product of combination of geometric forms such as circle, triangle, square and

polygons. Each of these has a symbolic meaning circle represents justice equality and eternity as it has no beginning or end. It also represents centre, pheripherility and territoriality of man. The circle is the parent of polygons. In Islamic cosmology, triangle is considered as the first polygon which is translated as the knower, the known and art of seeking knowledge. The square represents the materiality of the heavens and the earth, (GRABAR, 1980: 30).

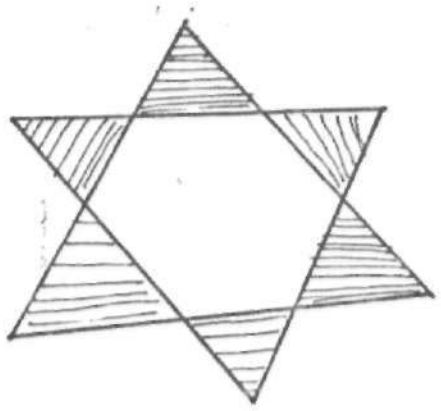
Islamic arts in whatever form or medium is acombination of basic geometric forms (See Fig; 2A (1) is a combination of triangle to give polygons. (ii) Two squares are combined while in (iii) polygons and triangles. (iv) and (v) are combinations of circles and triangles. There are numerous ways of combining these forms. It depends on the creativity of the artists.

Circles, triangles and squares are widely used in Islamic architecture. The dome and arch represent plane circle in three dimensional view. The dome used in mosques symbolised the infinity and unity of devine orders; and unity of the muslims. However, there are variations in the methods of adoptions of the forms. This depends on the economy, materials and technology.

2.30 Characteristics of Islamic Arts

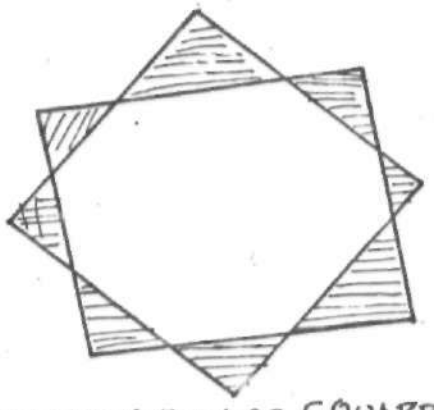
Islamic arts are non-figurative and non-representational It is a combination of geometric forms.

i)



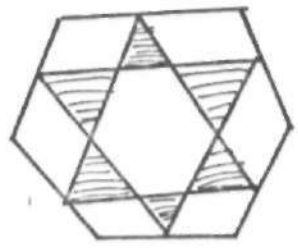
* COMBINATION OF TRIANGLES TO GIVE TRIANGLES AND POLYGONS

(ii)



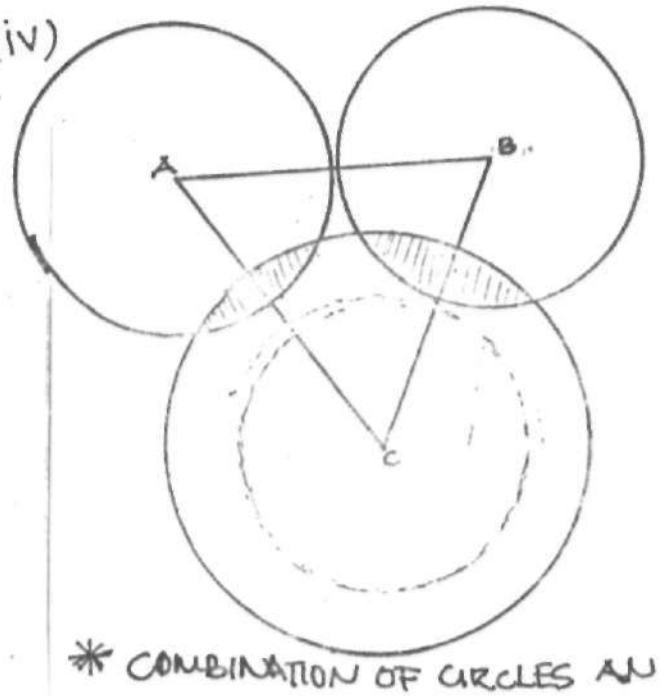
* COMBINATION OF SQUARES TO GIVE TRIANGLES AND POLYGONS

(iii)



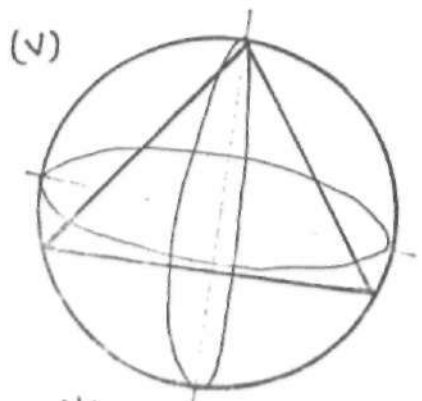
*COMBINATION OF TRIANGLES AND POLYGONS

(iv)



* COMBINATION OF CIRCLES AN TRIANGLES

(v)



* CIRCLES AND TRIANGLES.

GEOMETRIC FORMS IN ISLAMIC ARTS

FIG 2.1a

Islamic arts is rhythmic, proportionate, harmonic and simple. It achieves beauty, equality and unity of expression. Arabic language has been the medium of expression. Calligraphy is the earliest form of Islamic arts. It is used in palaces, mosques, private homes, and more numerous others. Arabesque is ornamentation in stylized plants forms and in strict interlacing geometric forms. This is Arabic in origin; and popularly used in mosques, palaces such as the Dome of Rock, Mshata, and Umayyad mosques in Syria. Image are used in Iran to illustrate popular stories and events and comtemplative visions. The arts of carpentry was developed in persia and the Middle East.

In west Africa, Islamic arts flourished. This is inform of embroidery, textiles, baskets, mats, calligraphy, wood carving, pottery, glass work, calabash decoration metal work , and architecture.

2.40 Islamic Architecture and Decoration

Architecture is neither solely an art nor solely a science, but synthesis of all aspects of human knowledge. Architecture expressed man's wishes and aspirations in physical forms. Architecture is subservient to man and his environment. There are philosophical contexts of architecture in Islam.

Domes, arches, minaretes, mihrab, minbar, gardens, and water were only solution to engineering, and

architectural problems, but have become predominant features of Islamic architecture. There is diversity in the use of these elements throughout the muslims world. But there are common denominators. Nasr (1980;40). state that:

> "Islamic architecture is a bold engineering and architectural solution, adoption of geometry, symmetry, axial planning, close integration of building with the environment, use of water, for malplanting of trees, gardens, treatment of various levels and terraces. Adoption of arches domes, pendentives, and squinches for purely function reasons"

This enumerates basic features of Islamic architecture the world over. Islam evolved perculiar methods of wall and interior decorations which are devoid of images or representation of human beings

Islamic murals and decorations are in form of "enamelled tiles, geometric forms, arabesque painting coloured marbles, calligraphic inscriptions, geometric relief work and arrangement of minors" (Burkhardt, 1976: 30). This is actually the main forms of Islamic decorations no matter the location, economy, materials and technology. However, regional expressions of decorations abid to conform with the norms and values, the dictates of climates, availability local craftsmanship, ingenuity are some variable factors that influence Islamic arts and decoration.

Islamic architecture in Hausaland exhibits a similar trend. The basic materials, mud and azara have produced an architecture known as earth or adobe. architecture.

2.50 Arts And Literary Contributions of Sokoto Jihad

Sokoto Jihad is one of the remarkable events in the history of West Africa (Hausaland in particular). It made far reaching impacts in arts and education.

Schools were established throughout the Sokoto caliphate. Agriculture and local arts and crafts were encouraged. For the first time formal contact was made between Hausaland and North Africa, and middle East. Calligraphy in Kufic scripts and geometric designs were developed. There were applied in embroidery, caps, calabash decorations and wall Murals

Metal work also flourished especially in making arms and farm implements. It is reported that the first caliph of Sokoto caliphate was a mat weaver. Contacts with other parts of the world greatly influenced the arts and architecture of Hausaland.

2.60 Future of Islamic Arts

Since the fall of Sokoto caliphate and the introduction of Western arts and technology, arts of the Hausaland have been on the decline.

This is due to cheaper factory made goods and neglect. Efforts should be made to arrest the situation. Suggestions have been put forward as to what to do. It is believed that there is need to introduce new methods quite detached from the past as Islam is for all generations. Hence clinging to out moded traditions is mere retrogression. But others suggest that we should entire go back to the traditional arts and crafts, while others believe that muslims should adopt middle course that is blending the old and new to achieve a unique islamic architecture (NASR, 1980:50).

However, what is important, in the opinion of the author, is that Islamic arts should be in spirit of Islam. It should cater for his spiritual and secular needs. Islamic arts should reflect changing spirit of the muslim. It should be applicable and adaptable to all situations and eras. It should be in spirit rather than in substance.

CHAPTER THREE

GENERAL REVIEW OF MUSEUMS

3.10 Brief History of Museums

The word "Museum" is derived from Greek word "Musé" which means santuary of methology. Man has peculiar desire to collect and accumulate properties and artifacts. His gathering habits started from pre-historic times, in form of food implements, stones.

As human race advanced in arts and science, man began to discriminate in his collection. As his collection accumulated, he had to find a place to save and preserve his collections.
The places were inform of rooms, in places of the kings the princes, the nobles and the merchants. Initially the artifacts were meant for the pleasures of the owners only. However, this changed over time. The artifacts were opened to the general public. This necessited the use of bigger spaces to accomodate the visitors. This marked the beginning of museums as public institutions.

The first known museum was a house of antiquities in Alexandria in about the year 300BC (Witthna, 1970;30). Medieval churches were used as storage places of antiquities such as the santuary of Delhi, Athenian aeropolis and the christian pilgrims camps and churches (Outhwane, L. 1967: 13).

Hellinistic and Roman period promoted the emergence of private collections and research for antiquities collections were mainly in the hands of the kings, nobles, merchants and princes, until the beginning of the fourteenth century. The advent of demodracy in Europe facilitated the establishment of public museums. Early public museums in Europe include Cesarini and Ufizi in Italy, Farnese museum in France and Molena Oxford in Britain. After the industrial revolutions in 1950 more museums established such as the Quirinal palce in Madrid Spain, Lovre (France) and the Montafhi Honle in Britain (Hudson, K. 1978:45).

Idea of formally organised museum in Nigeria was initiated by K.C. Murray. The colonial Government set up Nigerian Antiquities Services Board in 1943. The board was entrusted with collections of art pieces in Nigeria. Two year later, 1945, museum was opened. Jos museum came much later in 1952 (A.O., Afolabi 1985: 15, Daiyabu, M.K. 1987: 20). Almost all states of Nigeria have at least a museum. There are University museums at Zaria, Nsukka, Ibadan, and Ife. There are two types of museums in Nigeria, the arts and science museums. There are war museums at A Zaria, Nsukka, and Umuahia.

3.20 Type of Museums

Museums can be broadly divided into two main types namely, the art and science museums. Art museums include fine arts, folklore, history, ethnographic and culture museums. The science museums include natural history, physical and natural science, technolgy and industry. However, there is no hard and fact rule to this categorisations.

Review of museum shows to began as private collections to public places of gathering and then to very important educational institutions. However, the evolution of definition of museum has point of debates in international bodies such as UNESCO and Internal Council of museums (ICOM). The elementary meaning of museum is "house of antiquities" (Alma, W. 1970; 50-51). Standard definition of museum depends on the statutory legislation on museum in any country. United Nations, Educational Scientific and Cultural Organisation

UNESCO defines museums as "permanent establishment administered in the general interest of the public for perpose of preserving, studying and exhibitions by various means and in particular exhibiting to the public for the delectations and instructions" (Hudson, K. 1978:41). The words in this definitions are permanent, establishment public, study and exhibitions show nature and functions of museums.

But the International Council of Museums (ICOM) defines museum as "non-profit making permanent organisation in the service of society and its developments open to the public, acquires, conserves, researches and communicates for purpose of study, education, of material evidence of man and his environment" (UNESCO, 1975: 25) From these definitions it is clear that museums house antiqacts and antiquities for purpose of exhibitions, research, conservation restorations, education and comminication . Hence museum can be simply define as an institution which preserves studies and displays man's achievements through objects or antiquities.

3.30 Functions of Museums

Collections of artifacts is an important function of museum. Usually museums have designated areas or catchment areas of collection. In the case of the proposed museum the area is the whole of the former Sokoto caliphate. The items collected should be relevant, educating and should reflect culture of the area they are collected from. These are then identified, recorded and Codéd . Analysis of the physical and chemical composition of the objects to ascertain the exhibition and preservation methods to employ.

After collection and analysis the objects that should be restored are identified.

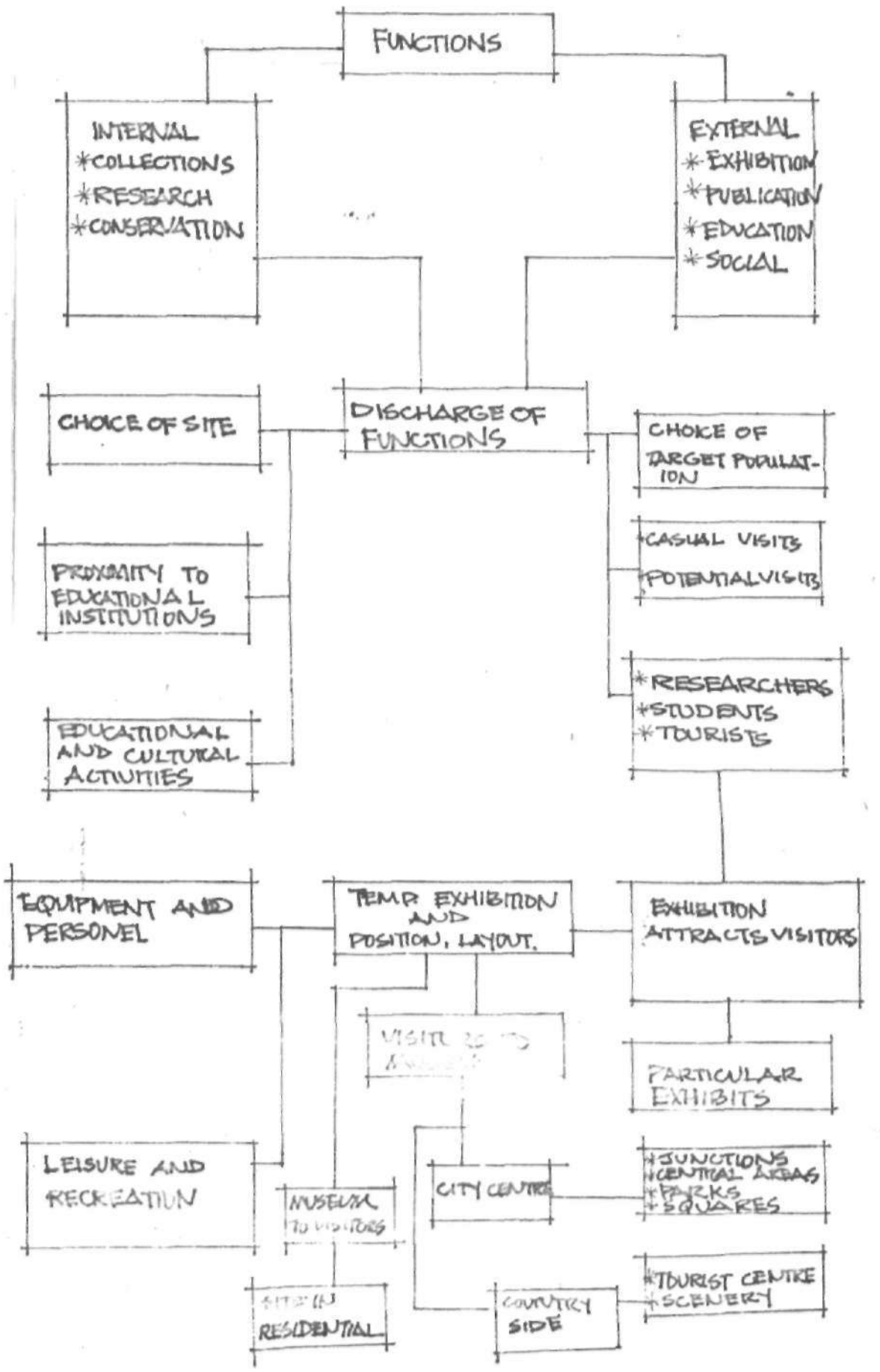


FIG. 3.3a FUNCTIONS OF MUSEUMS

Restoration is "putting objects of artistic, historic, cultural or scientific values into their original shape, form, sizes, texture and setting" (UNESCO 1975:29) Restoration requires special environment and techniques. Objects are desplayed or exhibited and/or preserved.

Preservation in one of the main functions of museum. Objects are preserved for future references and studies. This call for properly designed environment or enclosed spaces. Major problems of preservation are insects humidity, temperature, radiation and dampness.

In small museums, exhibition is the main function Exhibition is display with full explanations. There are two types of exhibition namely, permanent and temporary. The sizes and shapes of exhibition halls depend on the lighting, colour scheme and display methods employed.

Research activities are essential for the continuous relevance of museums to the society. Research is "Critical and exhaustive investigation with view to discovery of new facts, correct interpretation and revisions of accepted laws, views and conclusions theories and laws" (DURKHEIM, 1960:6). The proposed museum aims to provide environment which will be conducive for research into the activities of the Ulama and artisans of the Sokoto caliphate.

Two types of research are conducted namely, applied and academic researches. Field of research in museum include, "history, archaeology, arts, natural sciences palaenthology, anthropolory, technology and industry" (Hudson, H K. 1980: 40).

The research findings are published in journal newspapers and magazine. The research staff might be permanent or temporary. Research and study collection.

Education is the ultimate aim of any musuem. Modern museums have added responsibilities of translating, interpreting their artifacts and effective communication with the general public. The aim is to "stimulate thoughts, questions, discussions" (Alma, W. 1960:67). Educational facilities include the whole museum complex; libraries, galleries, demonstration rooms, class room theatres, recreational amenities audiovisual and cinema facilities of aids.

Attitudes and psychology of visitor should be ascertained to an extent. Various means are employed to attract visitors. These include campaigns through the media, schools, colleges, universities, cultural centres and provision of facilities such as restaurant open air theatres, crafts units et al (Brawne, W.1967:50).

3.40 Museum Administration

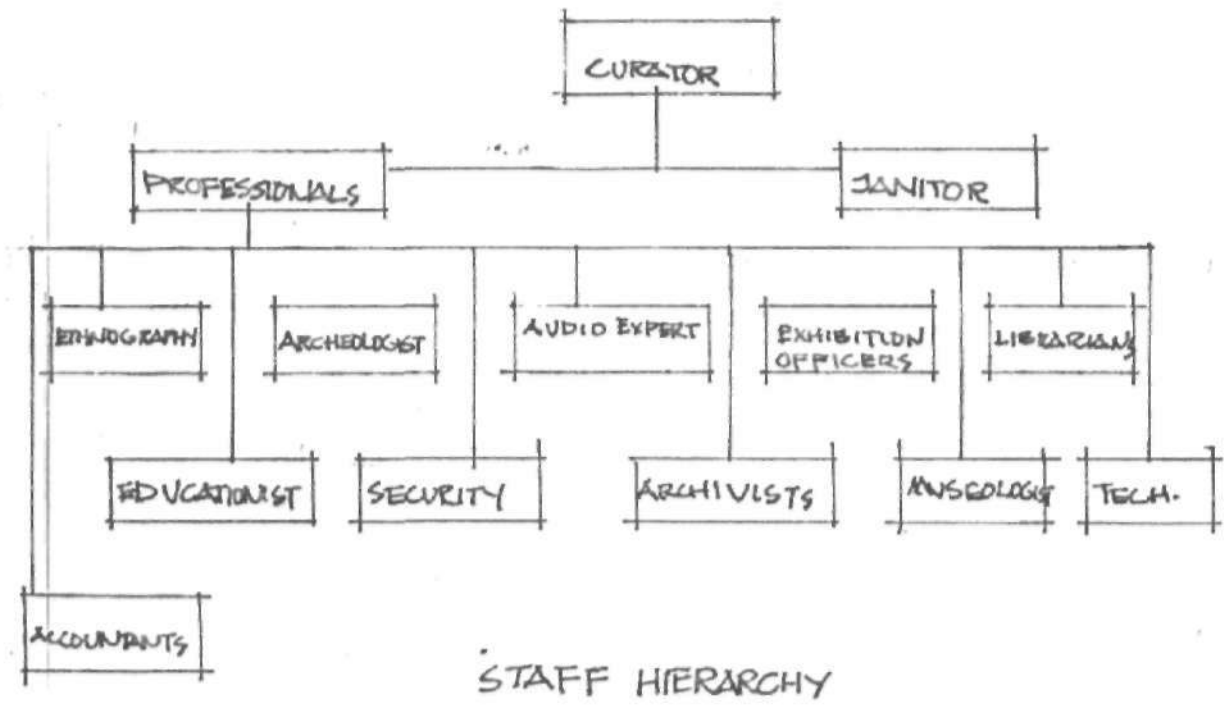
Museum is headed by a qualified staff called director or curator.

He over sees the general administrative, technical and recreational aspects of the museums. Depending on complexity or the size of the museum the curator may be the sole professional or has several specialists under him. The curator is answerable to the Board of Trustees which is appointed by the owner. state. There are two groups of staff under the curator, namely the janitor and other professionals. Fig. 3a shows the hierarchy of staff in a large museum.

There is no hard and fast rule as to the di·isions and specialisations. If all depends on the types and size of the museum.

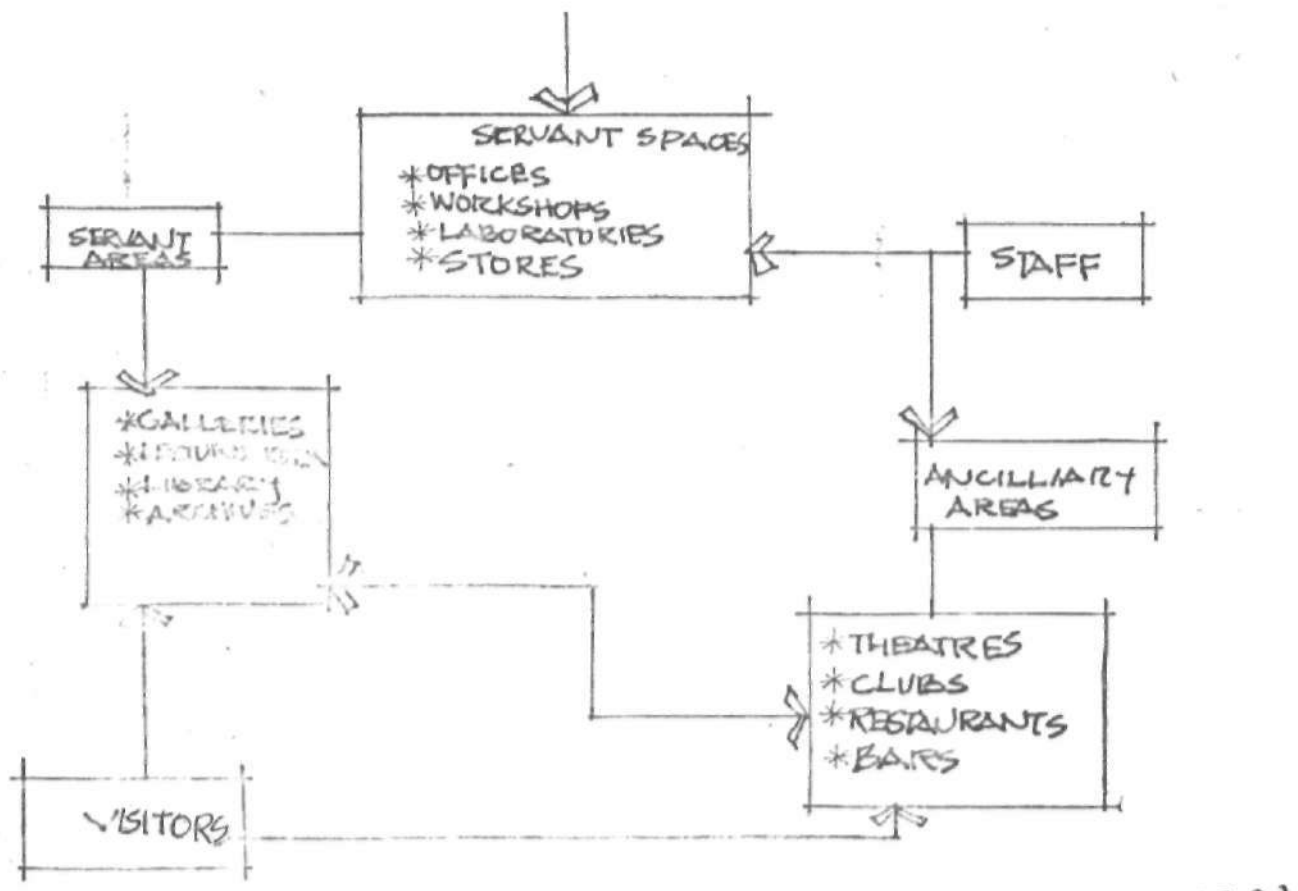
3.50 Spatial Sections

Museums sections can be broadly divided into: (a) served spaces, (b) servant spaces and (c) ancillary spaces. Served spaces are those areas which are very vital to the visitors such as the exhibition galleries, while the servant spaces are the areas essential to the smooth operations of the museums e.g offices the ancillary are additional incentives such as recreation (LEHBRUCK, M. 1980: 47)



STAFF HIERARCHY

FIG 3.49



SPACES IN MUSEUM (SOURCE: AFOLABI, A.O 1985:24)

FIG 3.50

3.60 Museum Visitors/Users

Museum Users are divided into (a) Visitors and (b) non-v' itors. The visitors include researchers educational visitors tourists and casual visitors while the non-visitors are the staff of the museum.

Spatial requirements of each group of users vary from the others. The space requirement therefore, depend on the functions or facilities to be provided for such group of users.

3.70 Conclusion

The viability and survival of any museum depend on their functions or activities. Therefore, collections, analysis, restorations of artifacts are of paramount importance to the museum. Education through antiquities and artifacts is very fast and reliable way of diseminating information. Museums are seen as cultural centres, hence the active rôle they have been playing in the preservation and promotion of culture. Exhibition of artifacts enables the visitor to see various stages of human transition from old to new and the future. Museums also introduce new ideas and concepts.

The administration of museum depends on the size and the number of visitors attending the museums.

CHAPTER FOUR

MUSEUM ARCHITECTURE

Most museums buildings were not purpose designed. Museum functional requirements have changedover time. Light, ventilation, safety, security and exhibitions in musuems have changed from conventional type of rigid walls to flexible and moveble partitioned open halls. This led to the evolution of museum architecture to cater for flexible nature of modern exhibition, temperature, humidity dampness and expansion.

4.10 Factors For Location of Museums

Two factor are considered when siting a museum. These factors are regional and local. The regional factors are those that concern the museum over its areas of influence or the catchment areas. The local factors are those that affect the site and its immediate surroundings.

Availability of artifacts, exhibits and antiquities is important. facts Artifacts should be readily available within the specified distance. Good transportation network is necessary to convey artifacts with minimum cost and change accessible by all modes transportation from the catchment areas and beyond. Many a time cultural historical importance of the site are considered when locating museum.

The site has to be culturally and historically significant to attract visitors to the museum. However, this depends on the aims and objectives of the museum.

Technical conditions have to be conducive for the functions of the museum. The age and population structure of the area of location are important. This is because there is tendency to find more potential visitors among age groups. A population with large proportion as youths will likely patronise the museum. Educational level of the population determined the level of awareness of the population. Hence should be determined or ascertained. Number of educational institutions is essential in terms of getting personnel and equipment on part time basis such as archaelogist, engineers, education officers and professionals. Cultural facilities in the area or town to an extent determines the facilities that should be available in the museum such as theatres, arena film houses et al.

Economy and financial resources are important for the cost of runing and maintaining the museum. This has to be properly assessed and analysed based on the existing economic and revenue channels. Administrative decisions as regards to the operational modalities fashioned out by the owner should be properly assessed.

The climate of the region should be taken into cognisance in terms of temperature, radiation, rainfall, wind, damp and humidity. Loacl or micro-factors to be considered include the topography of the site environmental and noise pollution, accessibility of circulation of staff, visitors and artifacts should be properly worked. Micro climate and historical improtance should also be considered.

The proximity to cultural and religious organisation/ places such as mosques tombs and shrines. existing planning laws as it affects cultural facilities should be carefully studied.

4.20 Planning

The process of designing a museum could be in two stages. namely, the museum in relation to the immediate environments and the museum sections in relation to each other. Since museum is a public building, traffic both pedestrians and vehicular must be identified and directed accordingly. Trees are used as buffer zones betwwen the museum and sources of noise, such as roads, industries and even residential areas. There is used to seperate artifacts movements from the visitors areas. This is necessary to avoid damage and interference by the visitors.

The activities of museum are independent of other functions in the vicinity of the site. They should not interfere with activities in other buildings. Museum could be divided into served servant and ancilliary areas (Afolabi, S.A. 1986: 56).

Served areas are the galleries, libraries, lecture room, theatres, conference halls. All these are devoted to informing the public. Amphitheatre, restaurants cloak rooms and open gardens are the ancilliary spaces in the museum.

The servant spaces include office, workshops, laboratories, storage and craftshops. Hence zoning these functions facilitates efficient runing of the museum. However, it is the opinion of the author that museum spaces could be divided into five distinct spaces namely, the administration, library, the galleries, workshops. Circulation is very important factor in museum design. there must be viewing sequence in any musuems. Viewiing or exhibition should start right at the reception hall to the main galleries. A visitor should be able to go to any parts of the musuem without interfering with the activities of other parts.

Direct link should be maintained among servant, served and ancilliary spaces is a musuem (see Fig. 4c) (Lehmruck, 1975: 152).

There are a basically two types of circulation routes, namely close circuit routes and linear routes. Close circuit is one in which the circulation begins and ends at the same point. That is to say the entrance and exit are at the same point. This has the advantage of reducing pilfering since one has to come through the same points. And reduces number of guards employed.

However, this has disadvantage of having incoming and outgoing visitors crowded one hall. Hence, seperate exits and inlets are more ideal. Linear route as the name suggests is in straight line with inlet and outlets at the opposite ends.

But this has some significant disadvantages namely, Security risk at the exits, hence more guards to be employed to man the gates. This is a financial burden on museum management (see Fig. 4d). Close circuit and linear routes are of various types depending on the design scheme and the contents of the museum. (see Fig. 4d).

There are two other movements in museum, artifacts and staff movements. These must be properly articulated in the design of museum. They should be seperated to ascertain degree as shown in (Fig.4a). Felxible design are the current trends in museum architecture. These contrast with the old rigid and fixed wall designs.

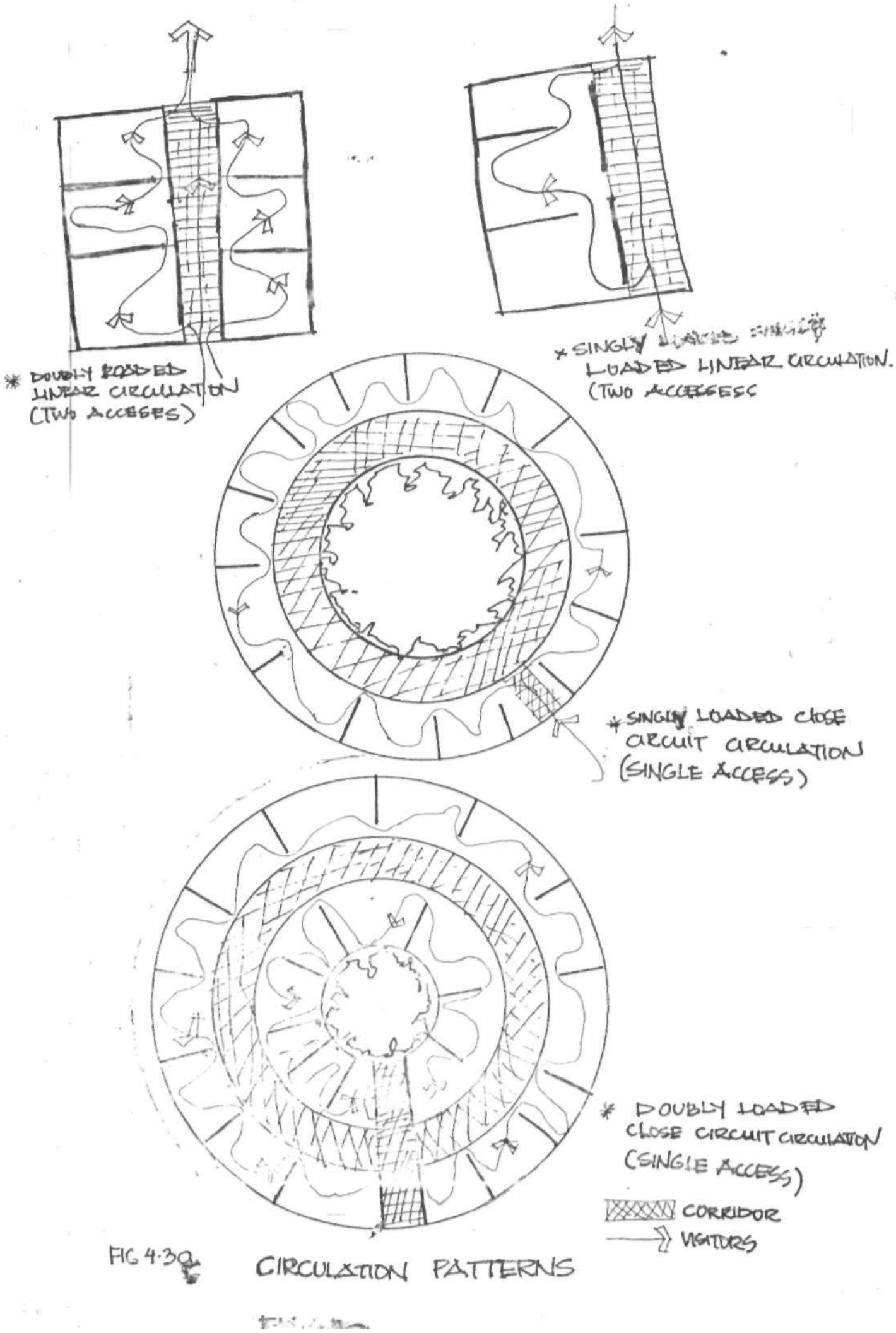


FIG 4.30 CIRCULATION PATTERNS

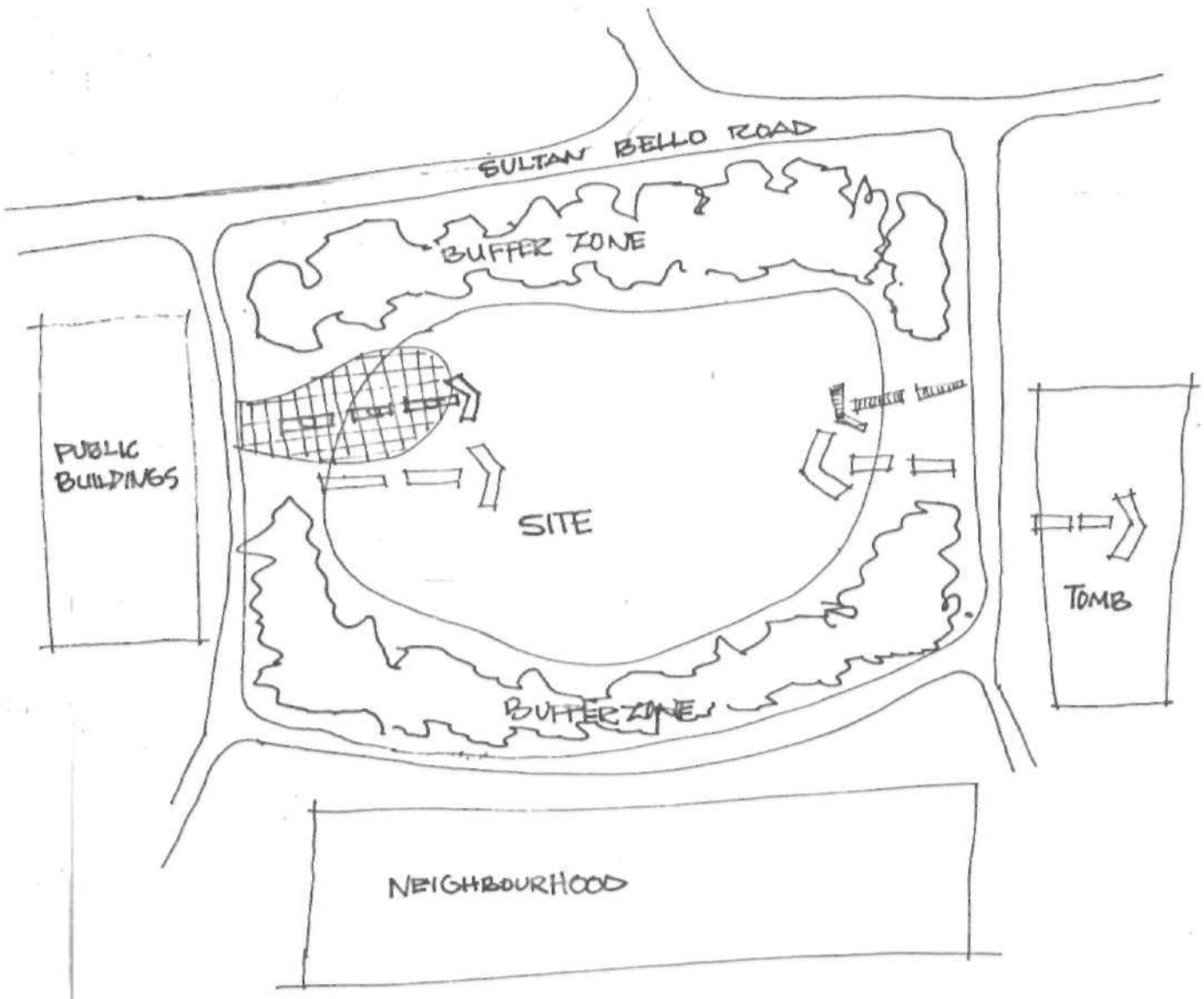
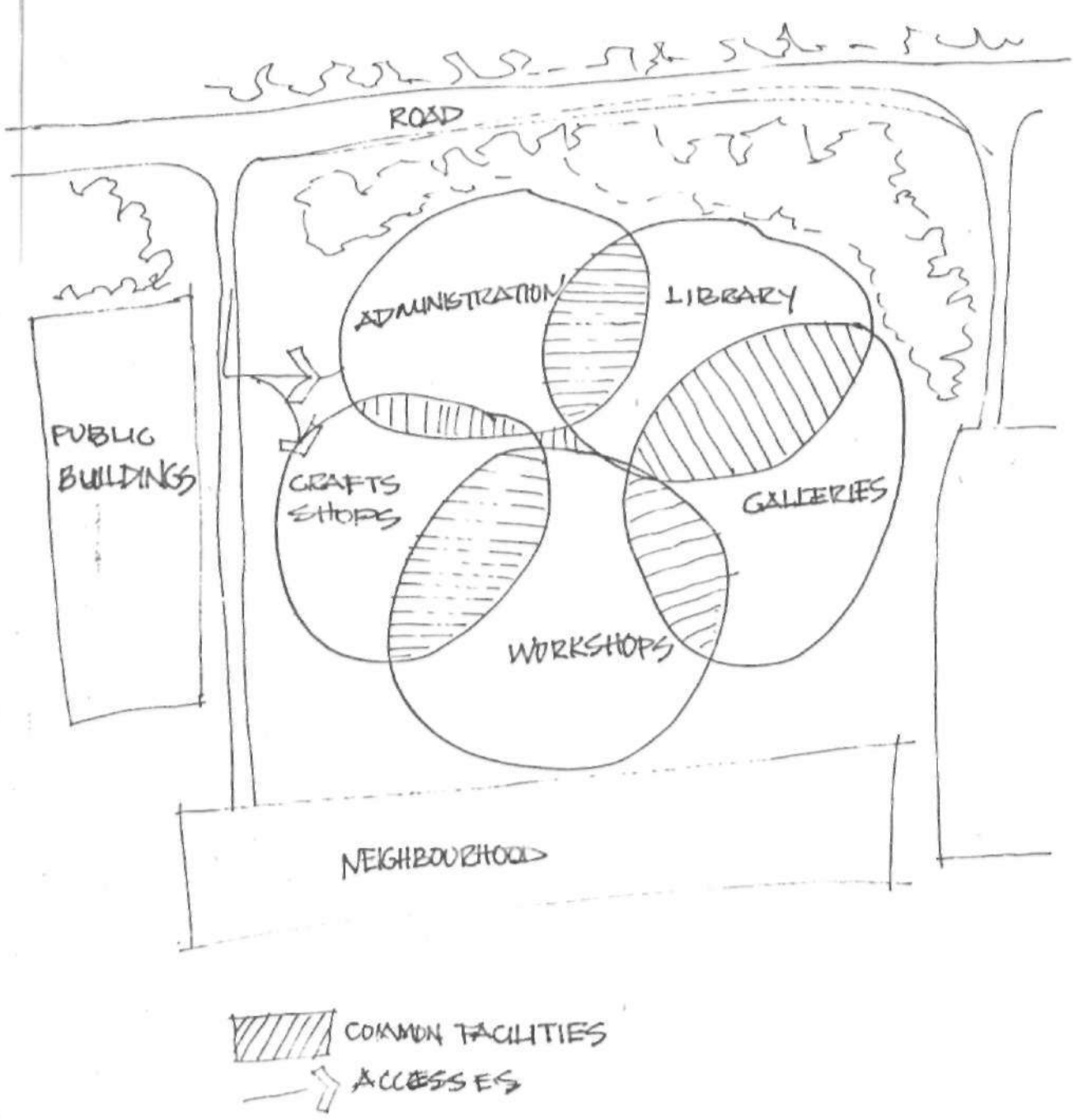
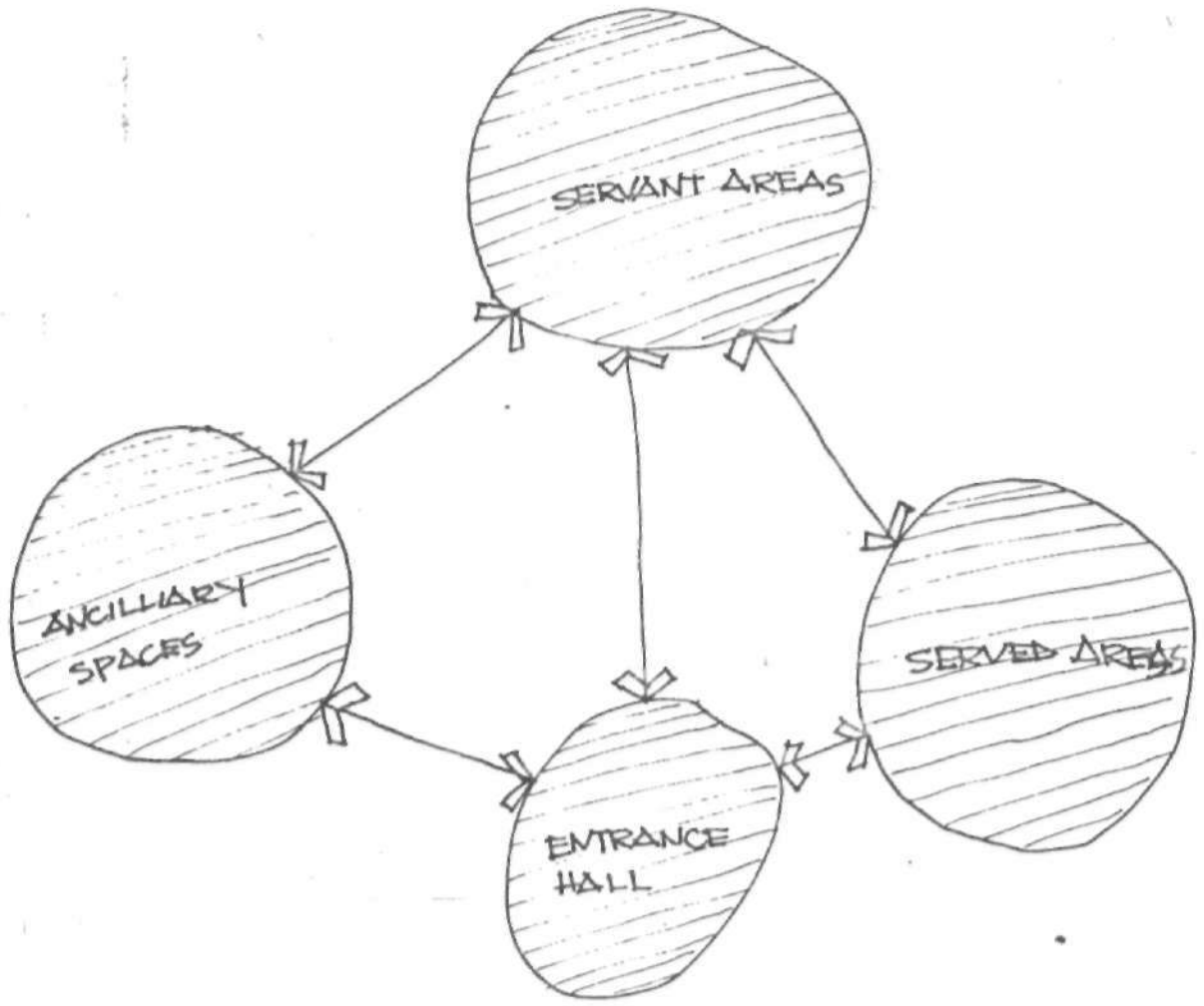


FIG 4.b STAFF ... ACCESSES



MUSEUM DIVISIONS

FIG 4.3C



- RELATIONSHIP BETWEEN VARIOUS AREAS

FIG 4.3 d

This does not allow for flexible arrangement of in internal spaces of the museum when the need arises. With the advancement in arts and culture, more and more artifacts and antiquities are collected. Hence the need for flexible spaces. But with scarcity of land, not all museum managements can afford to put up new buildings. This results to the evolution of flexible design in forms of large open halls partitioned with moveable or demountable partitions. This is done in such a way to suit a particular exhibition being mounted.

Provision for expansion is prerequisite for museum design since museum caters for the cultural and scientific needs of the society, it must expand to accomodate b new arts pieces and artifacts. The expansion may horizontal and/or vertical. Horizontal expansions consume land. In some developed countries provision for vertical expansion is made.

Noise should also be taken care of. This calls for proper accoustic treatments of the floors in the galleries to reduce impect noise. Activities are zoned according to their relationship with each other. Sound absorbing materials are used to line the walls in order to reduce reverberation time due to talking, dropping of items on the floor, coughing and closing of doors.

Lighting in museum is very fundamental for viewing of objects and artigacts. There are two methods of lighting the museum, namely, natural and artificial. Both of these could be damaging to the artifacts depending on their intensity. Hence use of indirect light is encouragedto reduce the risk of fading of colours.

Natural lighting is more viable than artificial lighting. There are basically two methods of natural lighting namely, Top and lateral lighting. The choice of lighting system depends on the design programme of the museum.

Side (lateral) lighting has the advantages of assessibility, low cost of maintenance, low radiation, museum dirts and dust accumulation. It also gives good ventilation, allows for outside viewing and multi-level exhibition.

However, leteral lighting has some disadvantages such as less wall surfaces for exhibition, safety and security lack of uniform light distribution and higher headroom.

Lateral lighting is more ideal for places like Sokoto because it reduces intensive solar radiation, maintenance cost, natural ventilation and accessibility.

Top lighting is the second method of natural lighting in museum. It has advantages of maximum use of wall surface for exhibition, amount of light coming in is regulated. Less shadow on the exibits. There is no need for courtyards and building is safe and secure.

The disadvantages of this lighting include excessive radiation, dirts and dust accumulation and inaccessibility. Other drawn backs are rain penetration cost of maintenance, and high and technology. These clearly show that top lighting is not suitable for places like Sokoto because of hot and dry climate, dust and haze.

It is the opinion of the author that the lateral light is the most ideal. Artificial lighting is used where natural light is not desired. There is no rational for uniform lighting in museum, because it is rather a financial burden. Hence artificial light is used only where necessary and will be concentrated on particular objects of interest. This will be change from time as required by the exhibition. To avoid fading of colours filters are used between the objects and source of light.

Security in museums is very important for the safety of artifacts. Security against theft, vandalism and fire should be given a serious attention.

Security in museums could be divided into space and perimeter controls. Space control is that which deals with the interior of the building. Some devices such as ultrasonic detectors capacitance, alarms audio detector, microwave detectors, and photo electric cells. Perimeter centrols deal with opening in buildings such as door, windows and skylights. Perimeter guards such as pressive matts, foils, magnetic locks and push-buttons (Mason, D. 1979: 15 - 44). Security guard forces are also to man gates. This is less expensive and is affordable by most museums such as the one proposed.

Measure taken against fire outbreak include zoning of activities at design stage. This means activities that may cause outbreak of fire should seperated from galleries. Smoking should be discouraged in galleries. From design point of view, fire resistant materials for doors, windows skylights, walls, roofs and ceiling should be used.

Doors leading to outside museum should be few as possible. Escape routes must be provided not more than thirty (30) metres from the point of accident.

4.40 Construction

Museum building deserves alot of attention for durability and safety of the museum and its contents.

The museum building is designed to withstand vibrations due to noise form industries, automobiles from the adjoining roads. Damp rising from the ground is damaging to the artifacts. Fire resistant building materials must be used, such as in windows skylights doors, walls floors, ceilings and roofs. Foundation should be adequately designed, based on thorough soil analysis to avoid differential settlements. Choice of materials should also ensure less noise. Hard wear, slip resistant materials are used in galleries.

Provision for temperature and humidity extremes should be made, such as cooling by artificial or natural means; such as use of water in courtyards in places like Sokoto. Humidity extremes could be controled by use of courtyards and humidifying instruments and devices.

Ceiling used depend on the lighting systems services in the buildings and the construction systems suspended ceiling and ordinary ceiling are commonly used. Windows and doors must strong and secure for the safety of the building and its contents. If glass is used, it must be bright, colourless and has expledity to diffuse incident light such as thermolux, and thermopane. External shading devices fixed or movable Exhibitions usually connected by door ways. Colours light absorbing and non-reflective and refractive.

Floors in museums are darker than walls when less than 3%. Refraction that impair visibility should be discouraged. The floors should be durable and less expenssive to maintain. Concrete floors are often used even though, are hard, noisy and unattractive and not suitable for exhibition halls.

Marble floors are quieter and durable. Low cost of maintenance. However, marbles are not always available and are expensive. Tiles are made of different sizes and shapes. They are more economical, absorb any colour applied, less nosiy collect no dust and are durable.

In some countries, such as Japan, wood flooring is widely used. They are resonant, expensive to maintained slippery, but warm and comfortable to walk on. Cork flooring is soft, silent, elastic but easily get stained.

4.50 Conclusion

From the forgone analysis of museums architecture, designing a museum involves considerations for many factors. Location for any museum is important for it successfull operation, general planning, principles should be considered. There are other design considerations such as circulation, lighting flexibility, expansion and secuirity systems. Construction or structure of the building is another important factor that must be considered.

CHAPTER FIVE

CASE STUDIES

A case study of existing museum is very essential. This is an insight of the general design principles of museums. Each museum has peculiar programme and hence content of design also is peculiar. For the purpose of this study six museums are studied. These include Kaduna, Jos, Lagos and Sokoto museums in Nigeria, the Solomon Guggenheim Museum in United States and the National museum of Qatar in Doha.

5.10 Kaduna Museum

The national museum Kaduna was opened in 1975. It is located along Ali Akilu Road in a building donated by the defunct North Central state. The premises of the museum was expanded to include the crafts village. it occupies a total area of 2120m^2.

Collections include archaeological of stone age materials and sculpture from Nok, Yelwa, Ibo, Ikwi, Ife and Benin ethnographic materials such as masks, currencies, musical instruments and textiles crafts, pottery, leather work, calabash carvings, crafts work such as weavers, potters, smith mood carvers and hair dressers.

Facilities: archaeological galleries (63m2) ethnopoaphy (17.64m^2) modern arts galleries (67.2m^2), stores (42m^2), Photolaboratory (8m^2), office (50m^2)

Antique store ($24m^2$), laboratory ($24m^2$), library ($32m^2$) Toilets ($5.2m^2$) craft shop ($30m^2$), Restaurants ($56m^2$) and craft village ($156m^2$).

Attendance to museums depend on several factors which influence attitudes towards museums. These factors include, facilities and programme of the museum, Location (accessibility), historical significance of the sites collections frequency of exchange and organisation of exhibitions. From statistical data obtained for the period from 1975 to 1984 (Fig. 5.1a) In 1975 large number of visitors was recorded while in 1979 least was recorded. Attendance to the museum fluctuates depending on the programme. Looking at the average monthly attandence to the museum (Fig.5.1b) one observes the same fluctuating trend throughout the year. The peak periods April (Easter holidays) July and August (Long vacation) and December (Xmas), correspond to with public holidays and school holidays.

As mentioned earlier, the building was not designed for museum functions, hence no attention was given to the planning of the premises. The site is too close to the main road, which causes accoustic problems. There are › inadequate parking spaces.

Lighting, both natural and artificial are employed However, both are inadequate. Ventilation is not properly taken care of, circulation in the museum is not coordinated which is not good for sequence of viewing of objects.

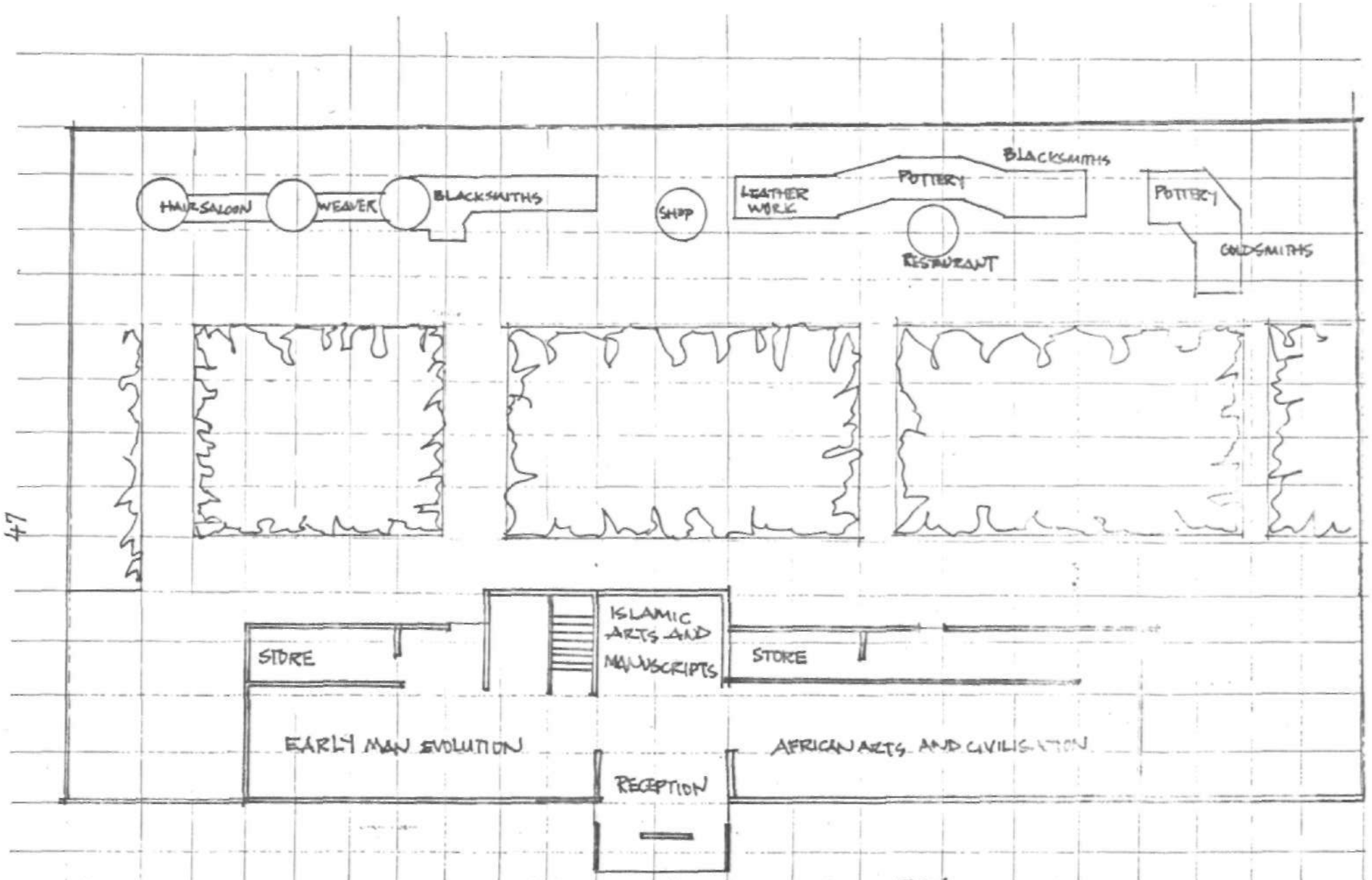
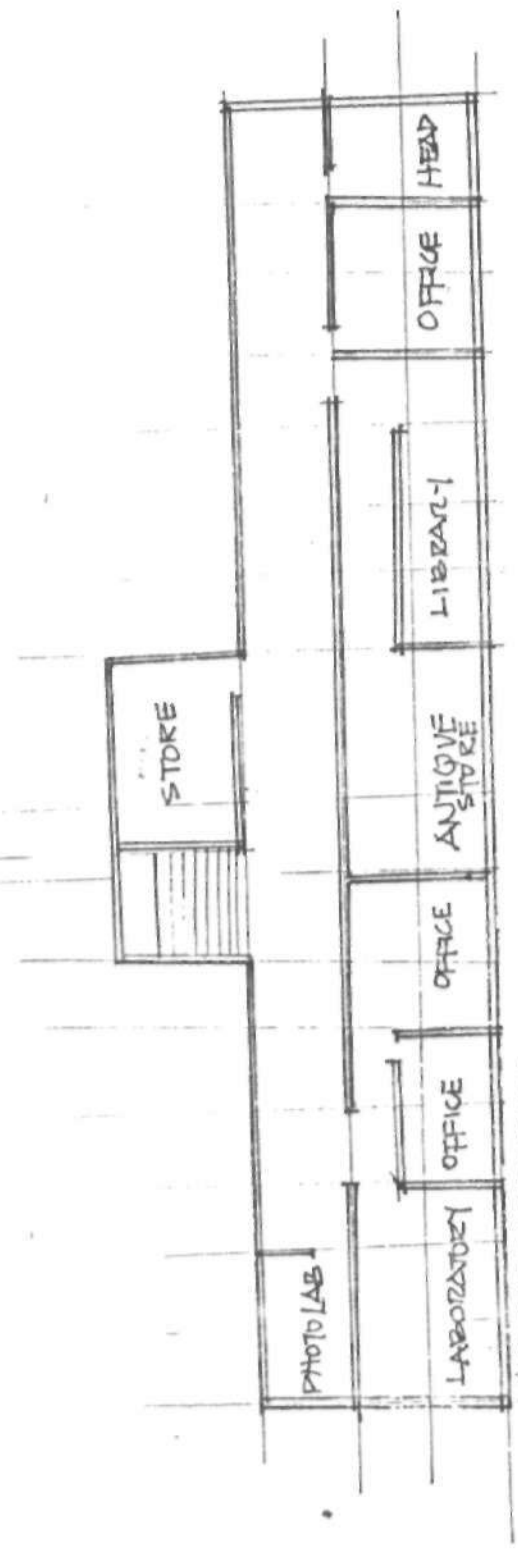


FIG 5.10 NATIONAL MUSEUM, KADUNA – GROUND FLOOR PLAN





*NATIONAL MUSEUM KADUNA.

FIG 5.16

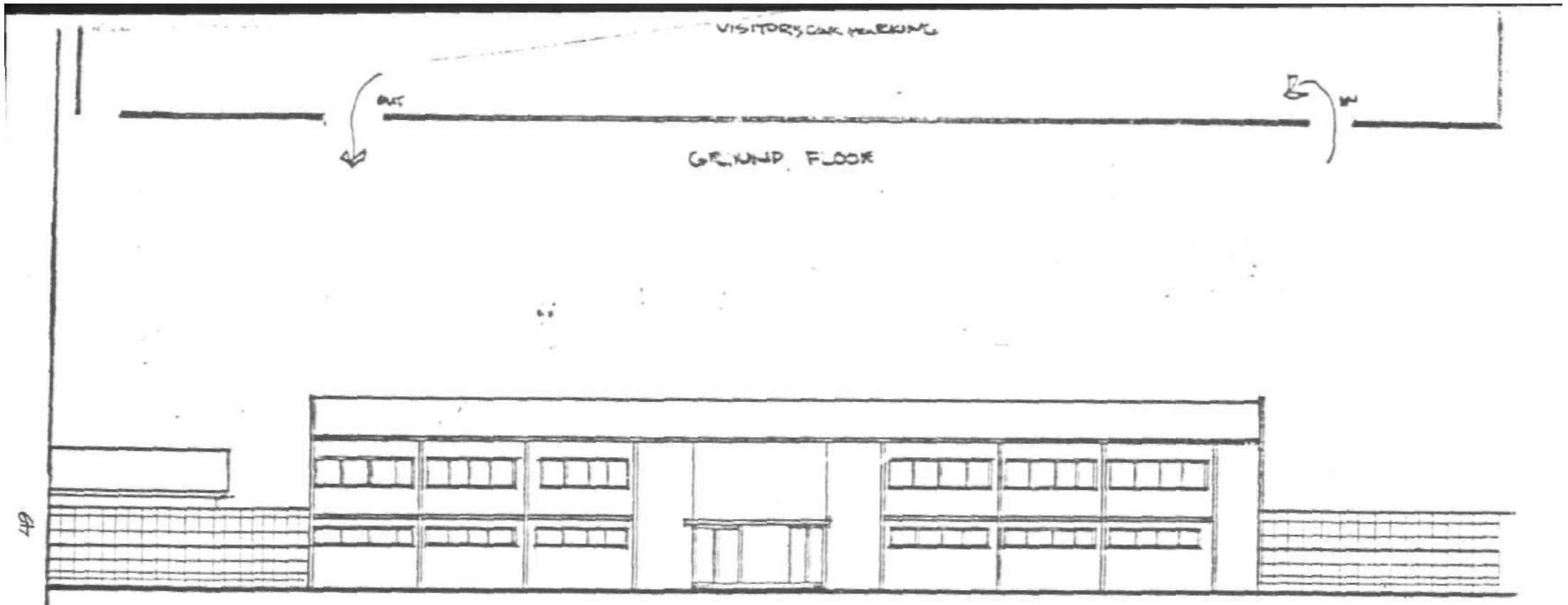


FIG 5.1C NATIONAL MUSEUM KADUNA

MUSEUM OF ISL

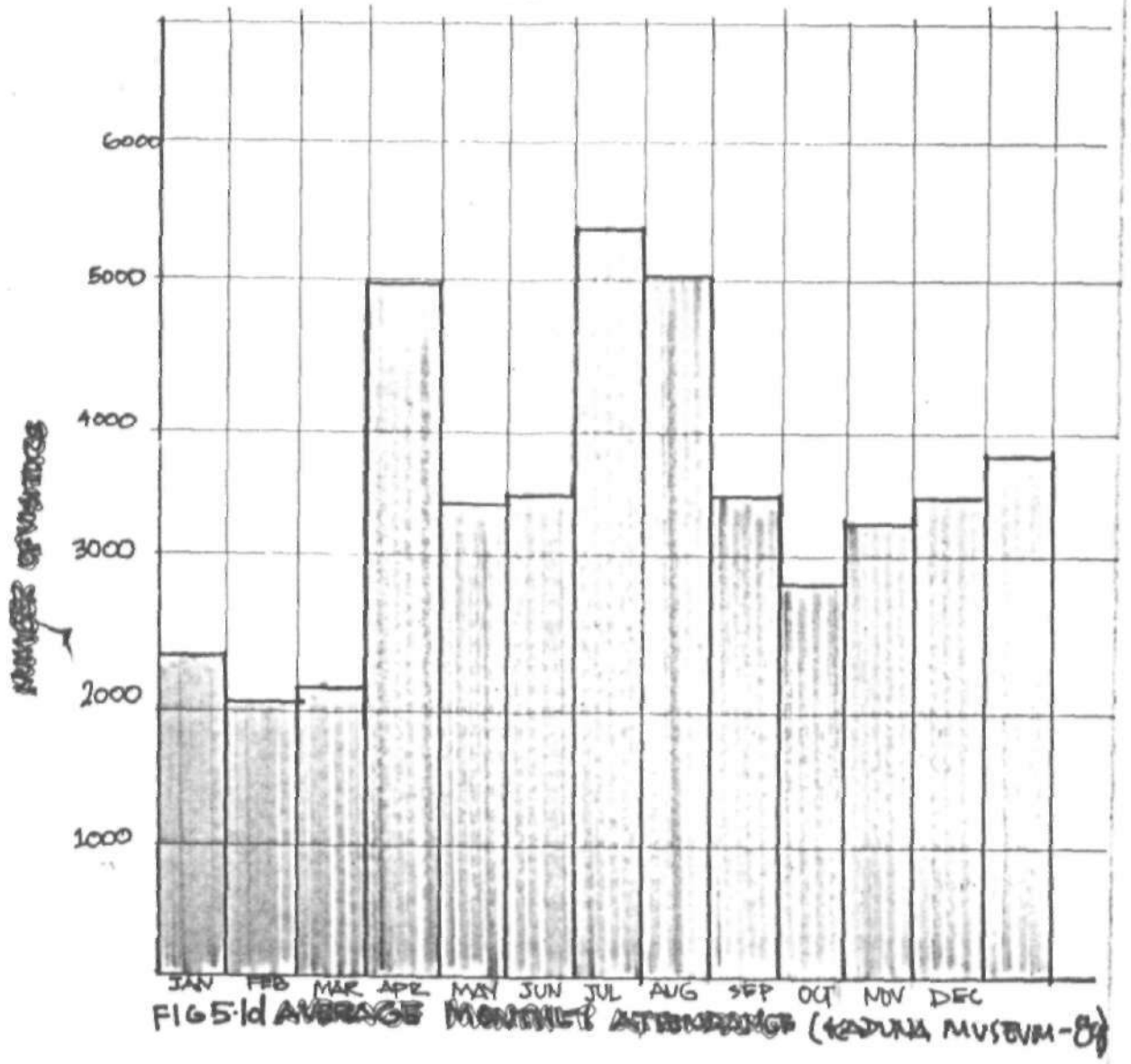
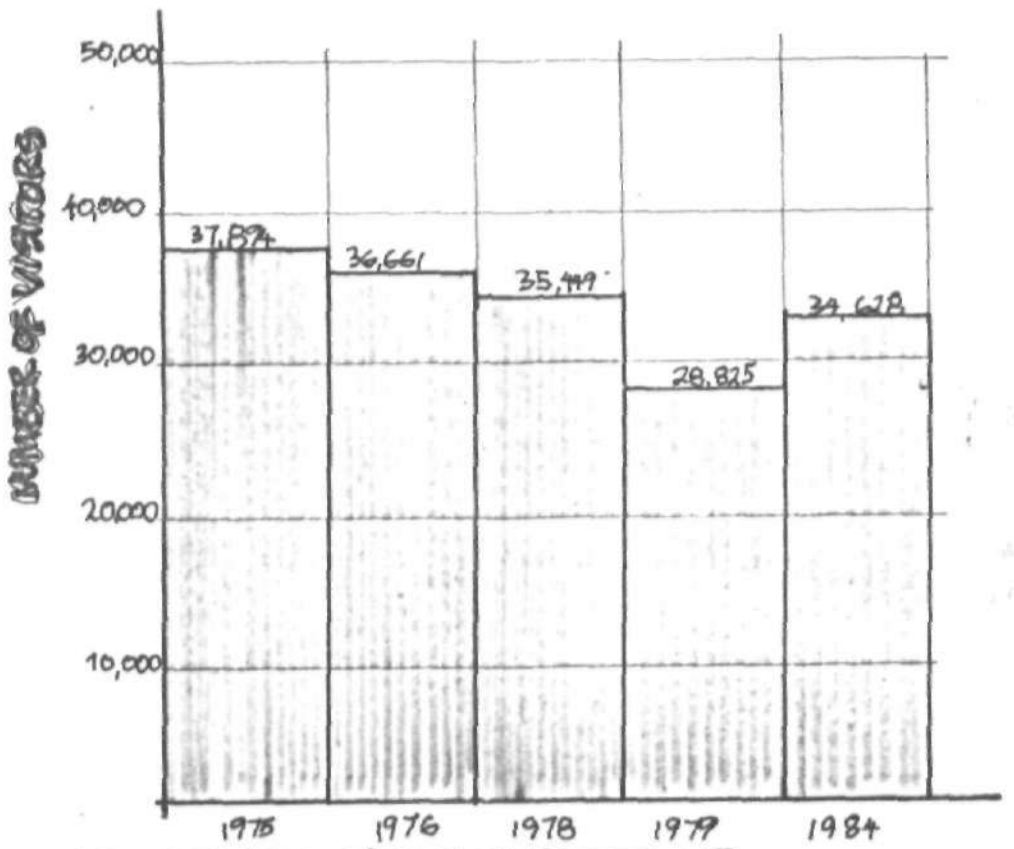


FIG 5·1d AVERAGE MONTHLY ATTENDANCE (KADUNA MUSEUM-8)



Floor: Terrazo, this is very slippery and hence not suitable for large crowd in museums. Walls are of concrete blocks with stone facings. Windows and doors are of ordinary glass which transmit heat. However, due to East-West orientations the museum does not experience intense heat radiation into the building.

Roof: ordinary timber trusses and zinc roofing sheets The structural system is that of post and beam.

5.20 Lagos Museum

The National museum Lagos was opened in 1956. It is the Headquarters of Department of Antiquities. From inception to date, the museum has grown in size and functions. It is the second largest museum in Nigeria.

Facilities: Temporary and permanent exhibition hall, library, audiovisual rooms, export permit unit, restaurant, craft village.

Collections: Wide range of artifacts. Number of visitors per hour and day for 1956 and 1978 shows peak hours in a day and peak days in a week in 1976 more visitors came to the museum between 9.00 a.m and 12.00 noon. These are mostly researchers and students. Casual visitors usually came from 12.00 noon to 1.00p.m (Fig. 5.2a). Researchers and students visited the museum from Monday through Thursdays (Fig. 5.2b). On Fridays, Saturdays and Sundays, Visitors come to the

Museum for various activities such as wedding reception, fund raising etc.

There is a marked changed in pattern of attendance for 1978 with highest hourly attendance between 9.00 a.m to 10.00 a.m. for researchers, and 6.00 p.m to 7.00 p.m for casual visitors (Fig. 5.2c). The daily attendance for the same year (1978) from Mondays through Thursdays (Fig. 5.2d). Even though more visitors came to the museum in 1978 compared to 1976, least number is recorded during weekends than in week days.

The National museum, Lagos is located along Awolowo road. The site has limitation for expansion.

Problems:

- lack of expansion in size
- poor lighting and ventilation
- unco-ordinated circulation
- concentrated artificial lighting
- temperature and humidity controls
- the building lacks a definite architectural character.

However, it has the advantage of being located within public institutions. Recreation facilities such as bars, restaurant, craft villages, theatres and audiovisual rooms are available.

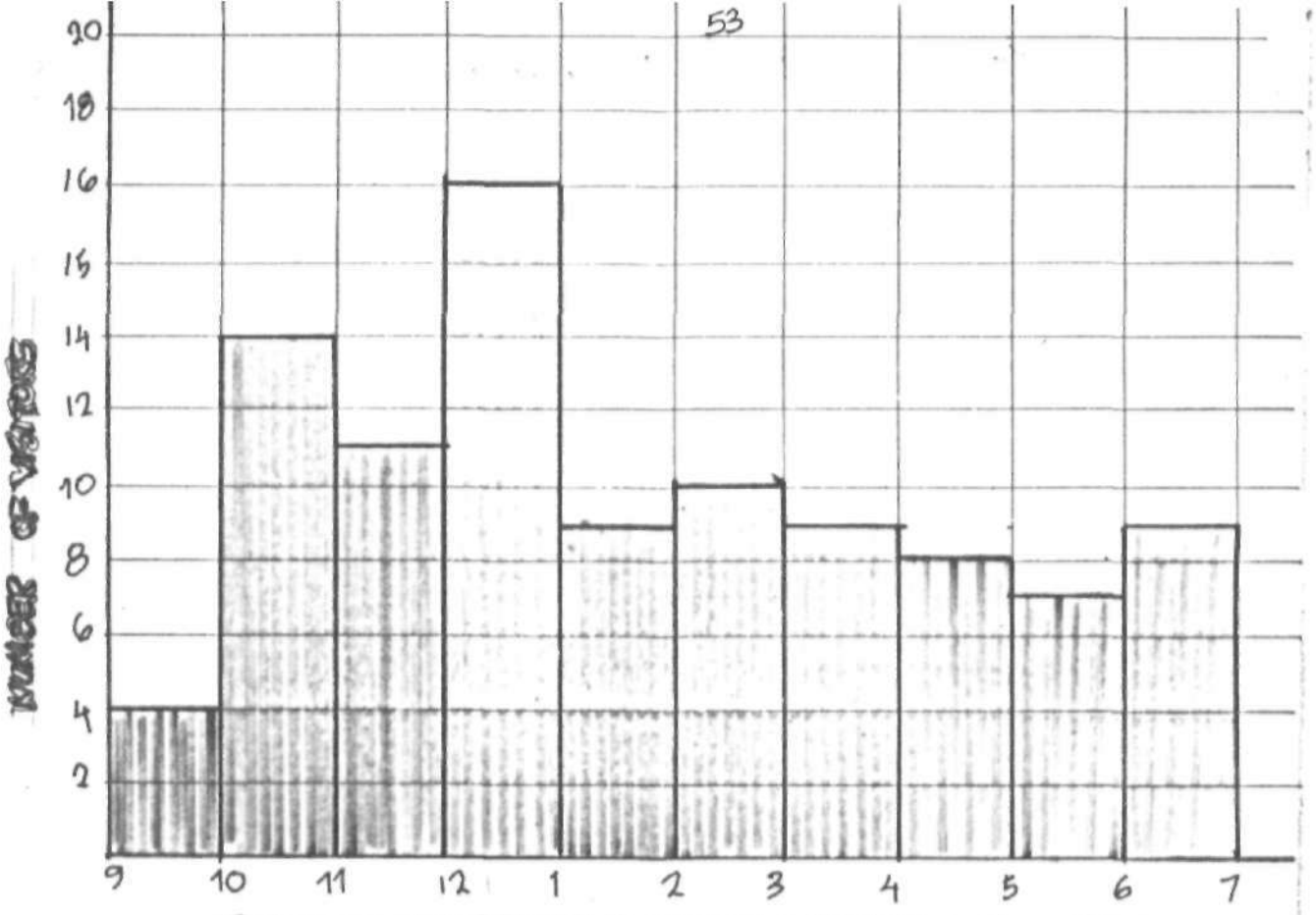


FIG 5·20 AVERAGE HOURLY ATTENDANCE — 1976

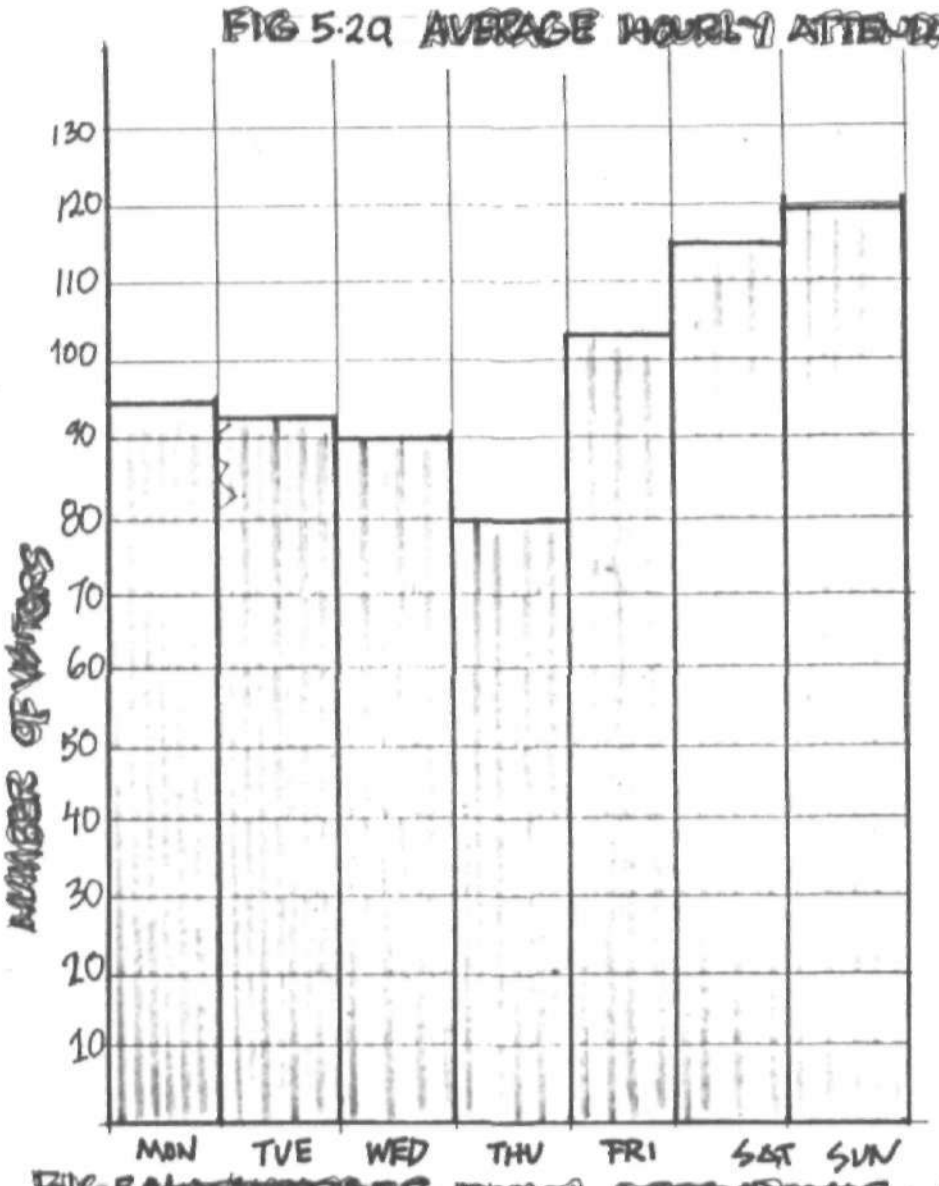


FIG 5·21 AVERAGE DAILY ATTENDANCE — 1976

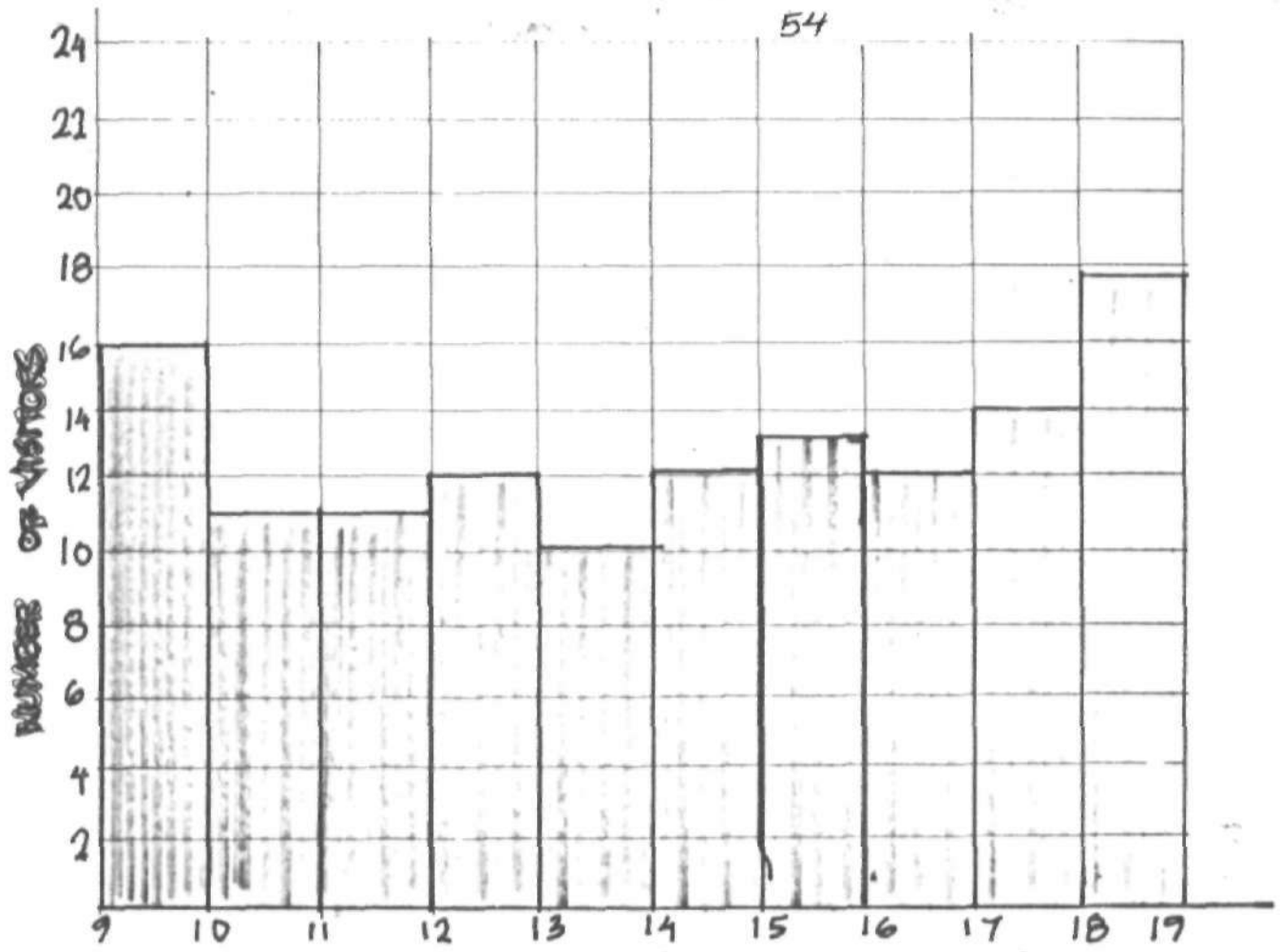


FIG 5.2c AVERAGE HOURLY ATTENDANCE - 1978

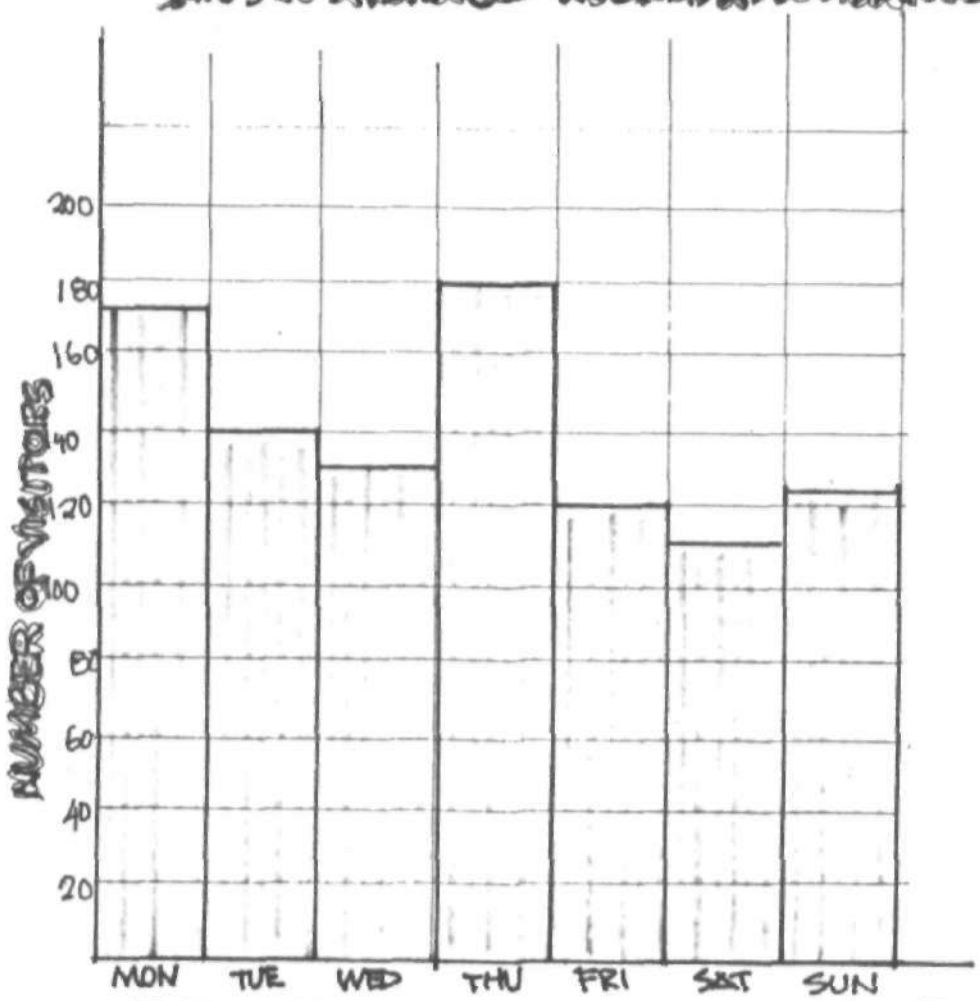


FIG 5.2d AVERAGE DAILY ATTENDANCE - 1978

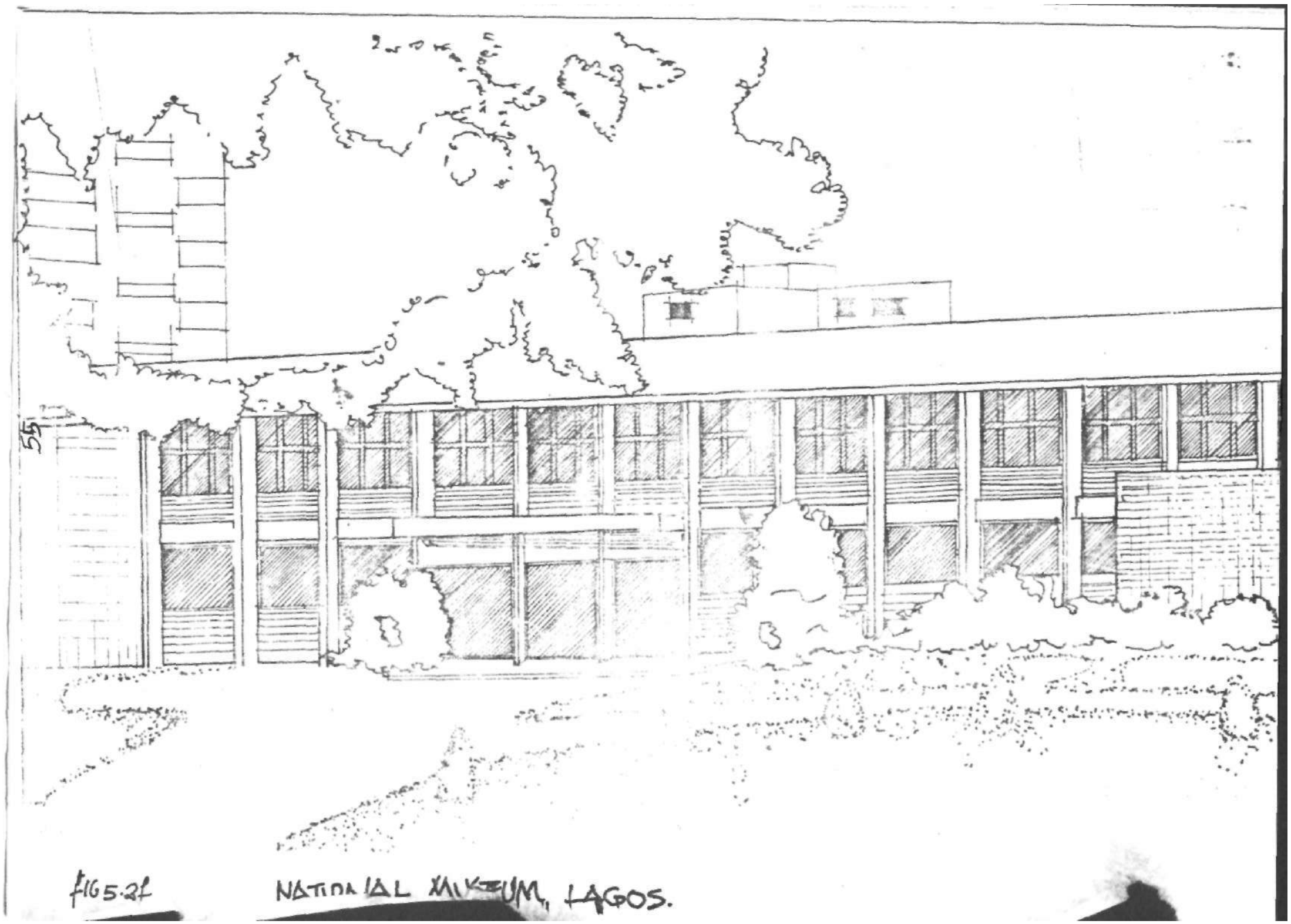


FIG 5.2f NATIONAL MUSEUM, LAGOS.

Materials: Concrete walls, terrazo floor, timber roof trusses, zinc roofing

5.30 Jos Museum

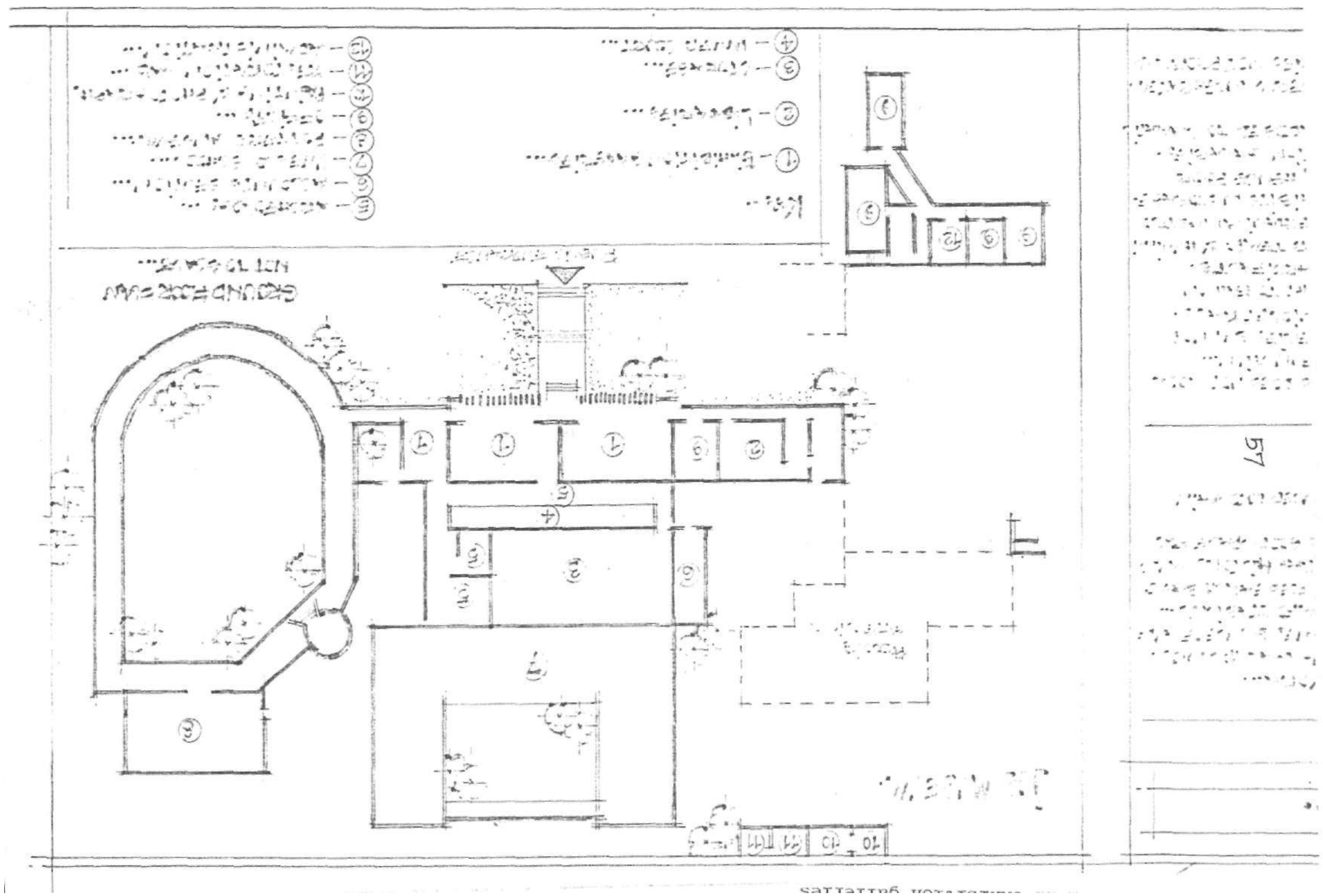
Jos museum was establish in 1952. It was initially the headquarters of Department i of Antiquities. It is the first purpose designed museum in Nigeria.

Collections: archaeology, ethnography, pottery, arts and crafts, manuscripts and architecture and animals species.

Facilities: Galleries, auditorium, library, offices shops, Zoo, Buachi light Railway, MOTNA, tin ore, exhibits, children's museum, UNESCO bilingnal school, craft village, accomodation and restaurant. No records of attendance was made available to the author.

The Jos Museum in the most comprehensive and standard in Nigeria. Museum of traditional Nigerian Architecture has a collection of Nigerian regional building types. They are erected in positions to represent their geographical locations in Nigeria (Fig. 5.3a).

The museum has good security network and wide range of art pieces and animal species. High level- windows allows for wall display and reduce risk of theft and vandalism. Natural lighting in pottery galleries. The site is amenable to museum activities.



- small exhibition galleries

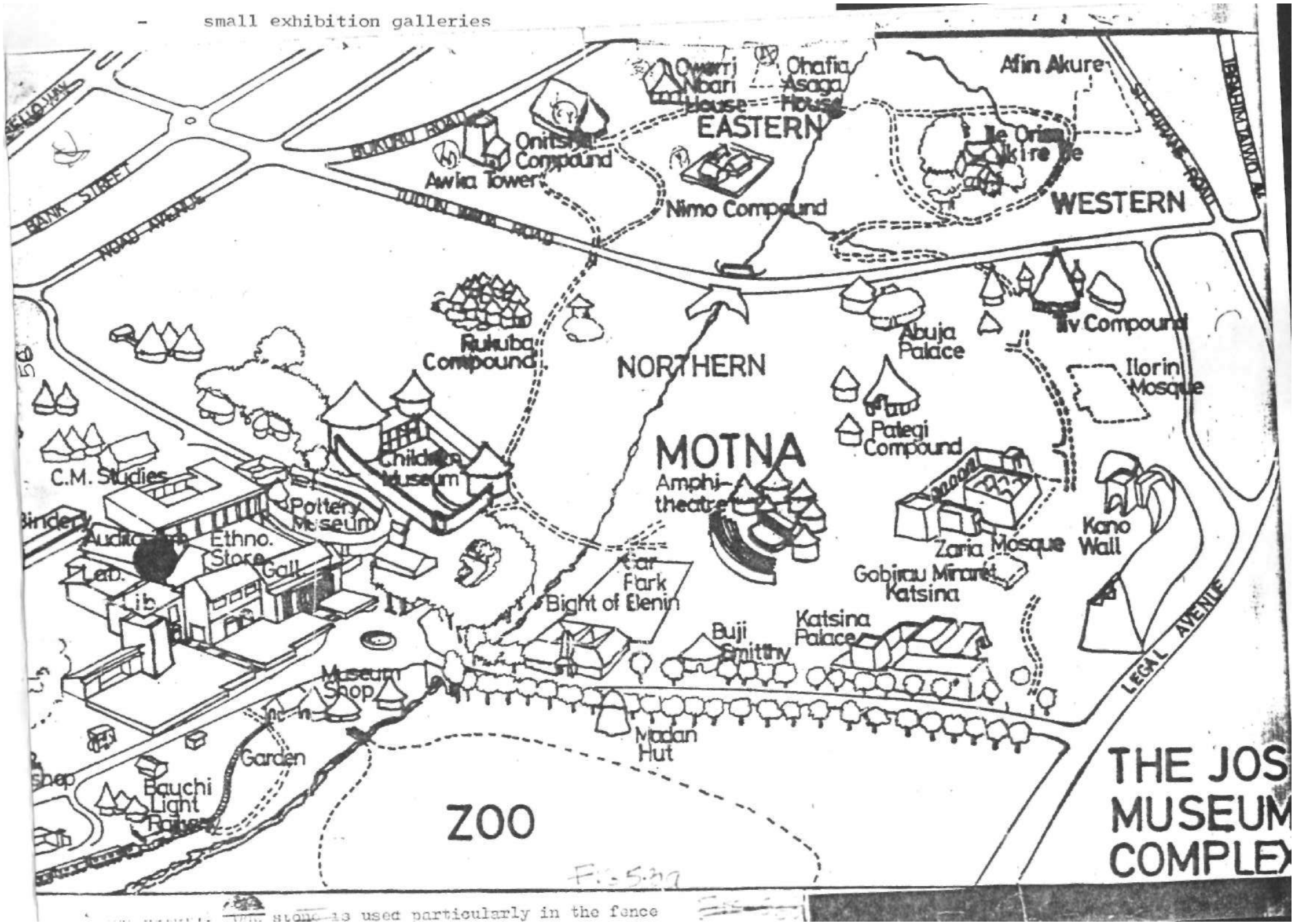


Fig. 5.39

stone is used particularly in the fence

Problems

- small exhibition galleries
- poor lighting and ventilation
- no temperature and humidity controls
- bad circulation
- very poor lighting in the temporary exhibition such as Zaria mosque, and Katsina palace
- bad planning
- the building lacks character.

Materials of Construction: Concrete block walls with stone facing, glass doors and windows, timber roof trusses, Zinc roofing sheets. MOTNA: mud, azara, thatch and stones.

5.40 Sokoto museum

The idea of preserving the cultural materials relating to the sokoto Jihad was conceived by the Waziri of Sokoto, Sheikh Junaid. The museum started in his house. It was taken over by the local aauthority, and located in an abandened building directly opposite the central prisons. The museum was later on taken over by Sokoto History Bureau (1975).

Collections: Maps of sokoto caliphate, European exploiration, manuscripts of diplomatic correspondence, ajami and arabic manuscripts, hunting implements and weapons used during the jihad.

Facilities: 3 exhibition rooms, store, lab., two offices and two W.Cs.

Attendance: As in other museums, attendance is not encouraging at all. Satsistic (Fig. 5.4a) shows that from the inception of the museum in 1965, number of visitors fluctuate with highest in 1986 (464 visitors) and least in 1965 was (36). peak periods are recorded in April and May of 1984 (Fig. 5.4b).

From 1980 attendance to the museum improved due to acquisition of new artifacts, new display spaces occasional temporary exhibitions. In 1987 large number of visitors came to the museum (Fig. 5.4b) (2,520).

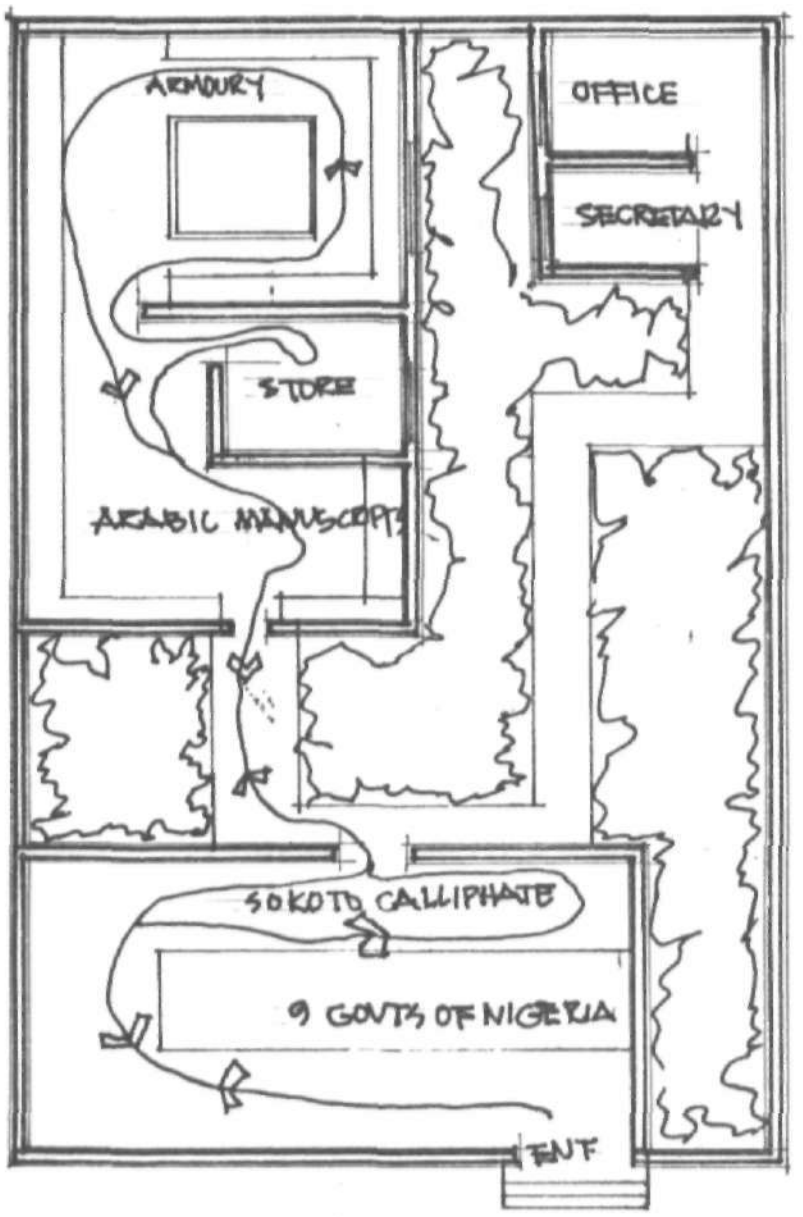
Problems

- bad location
- safety and security of artifacts
- poor lighting and ventilation
- lack of recreational facilities
- restoration, preservation and conservation facilities
- too permanent and humidity controls
- lack of architectural character

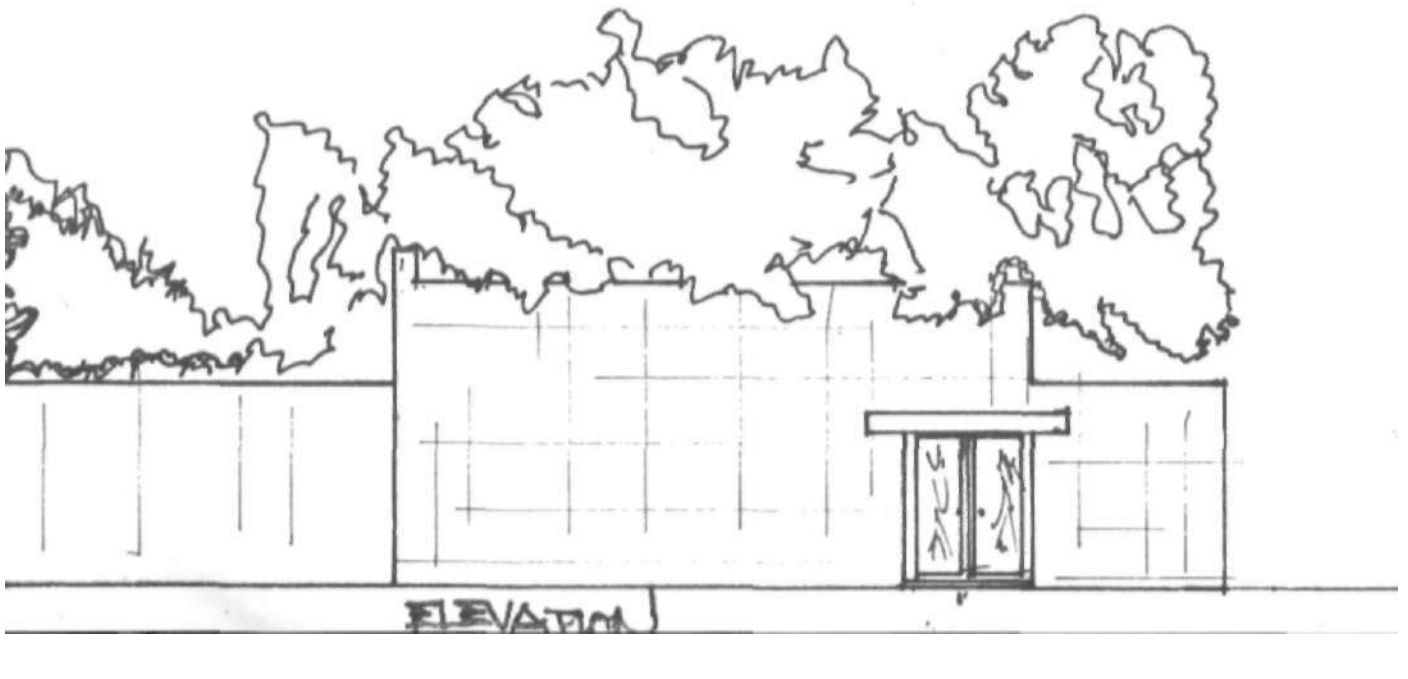
Materials of Construction

Sandscrete block walls, wooden doors and windows sandscrete floor, timber roof trusses and Zinc roofing sheets.

FIG 549 SOKOTO MUSEUM



PLAN 1:100



ELEVATION

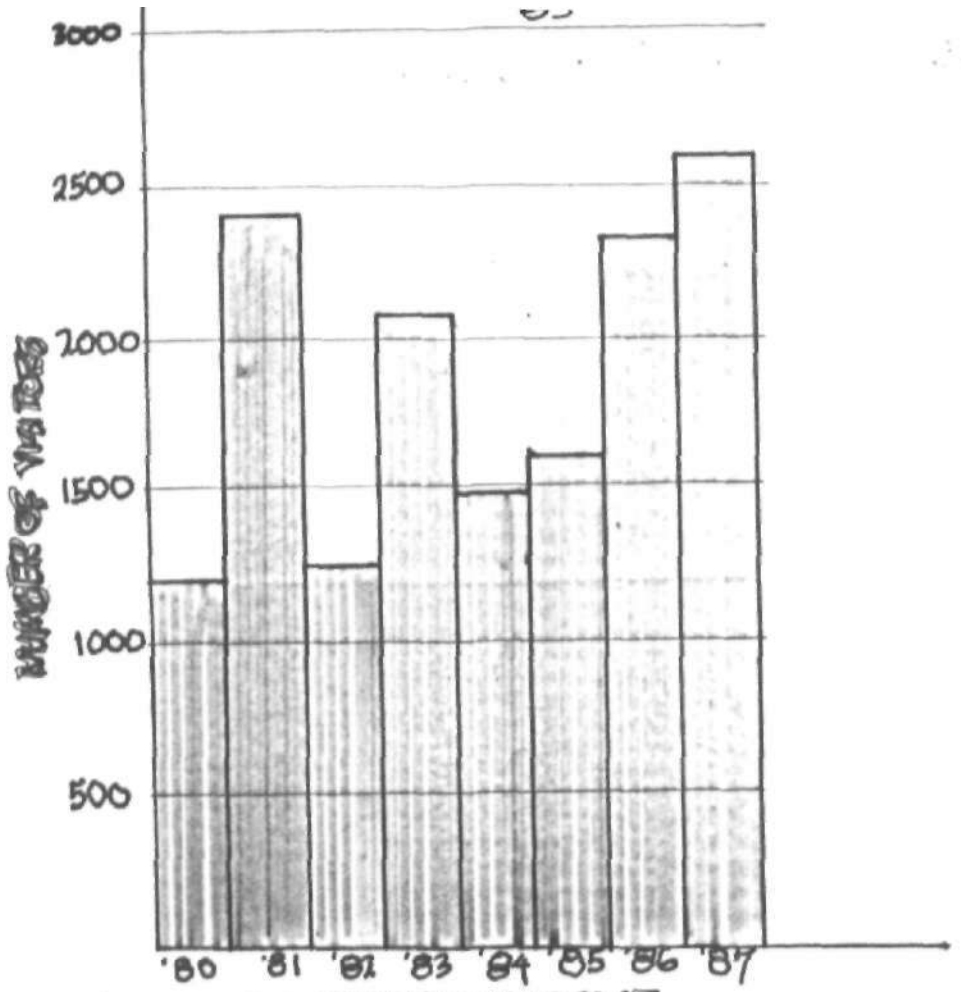


FIG 5-4 YEARLY AVERAGE

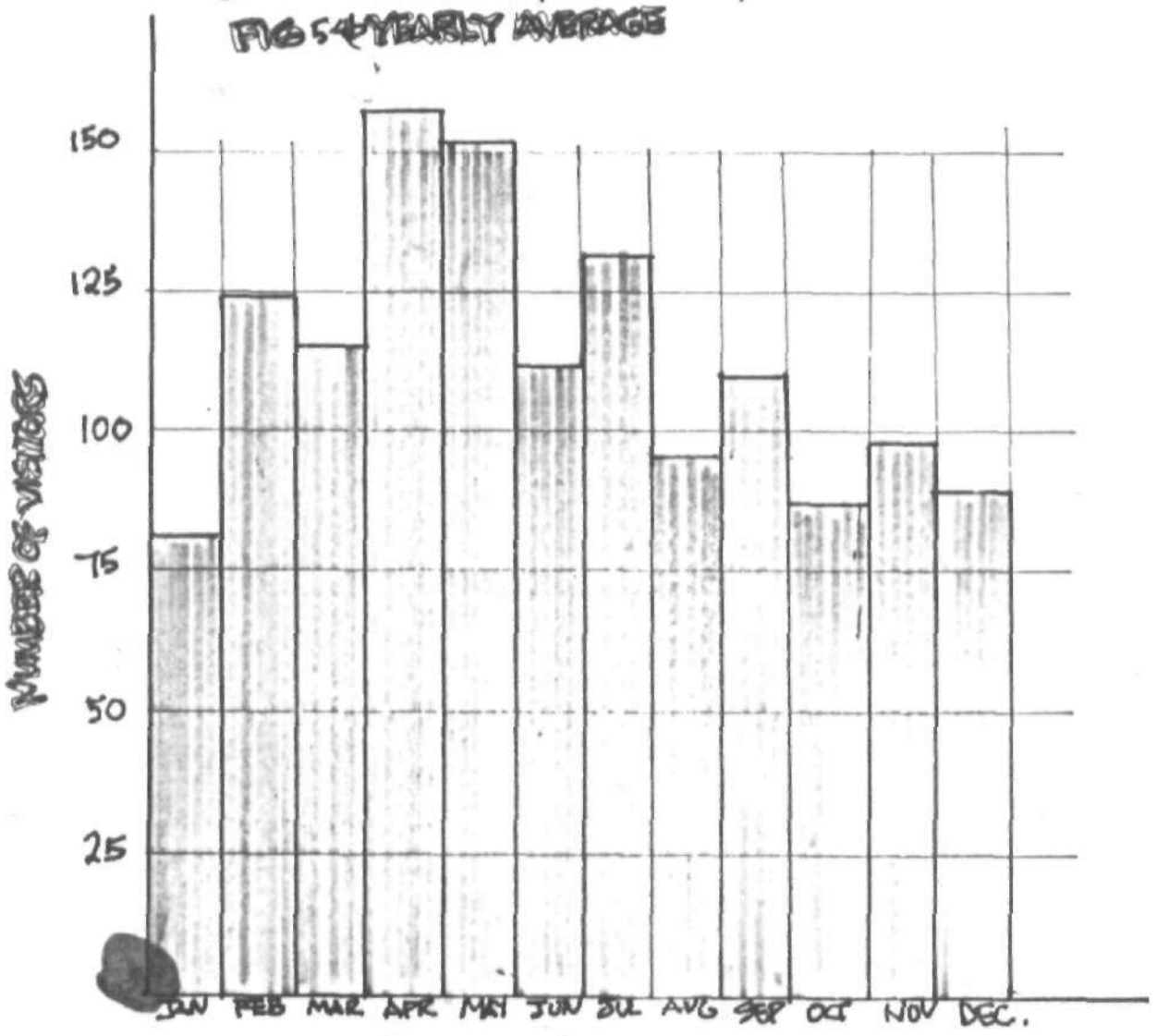


FIG 5-4 C MONTHLY AVERAGE (SOKOTO MUSEUM, 1984)

5.5 National Museum of Qatar Doha

The museum is located in the old palace of the Ameer of Qatar. The old building was restored and left to function as symbol of original palace of the first ameer. The museum comprised the old palaces exhibition galleries, lagoon, marine museum and aquarium

The objectives of the museum.

(a) to educate the Qataris about the past
(b) raise their consciousness and
(c) to convey the history of the Qataris through artifacts to progress.

Collection: archaeology, environmental and historical artifacts, geomorrphology, ways of live, modern state, marine, acquiria[illegible]

Facilities: (see plan) auditorium for 100 people library, study rooms, laboratories, archieve, photo-laboratories, coffee rooms, and women quarters scribes rooms and reception.

Advantages:- This is one storey building with basement.

- historical site
- comprehensive in context of Qatari society
- use of local materials for buidlings
- characteristics of Islamic architecture
- simple but mommental

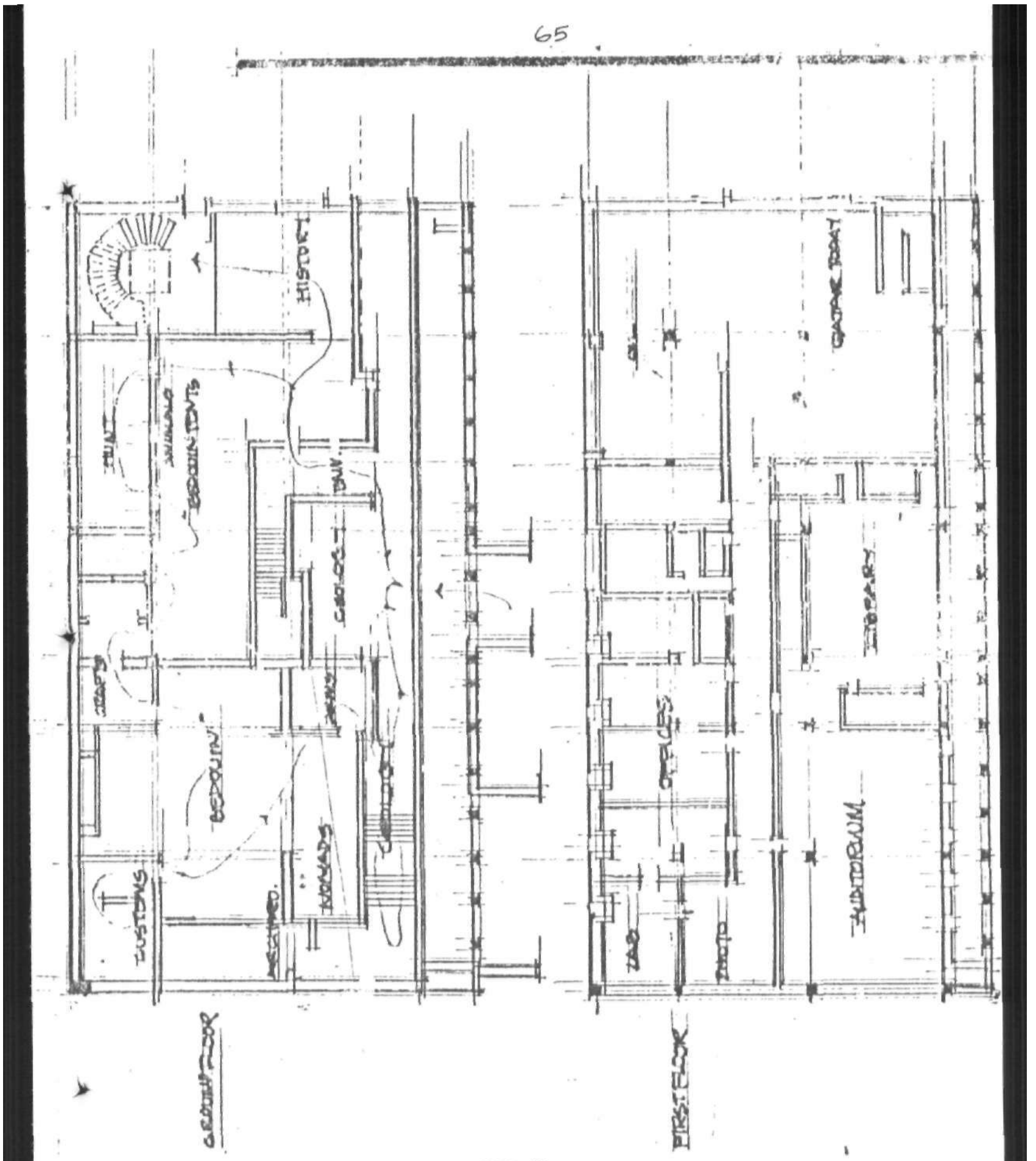
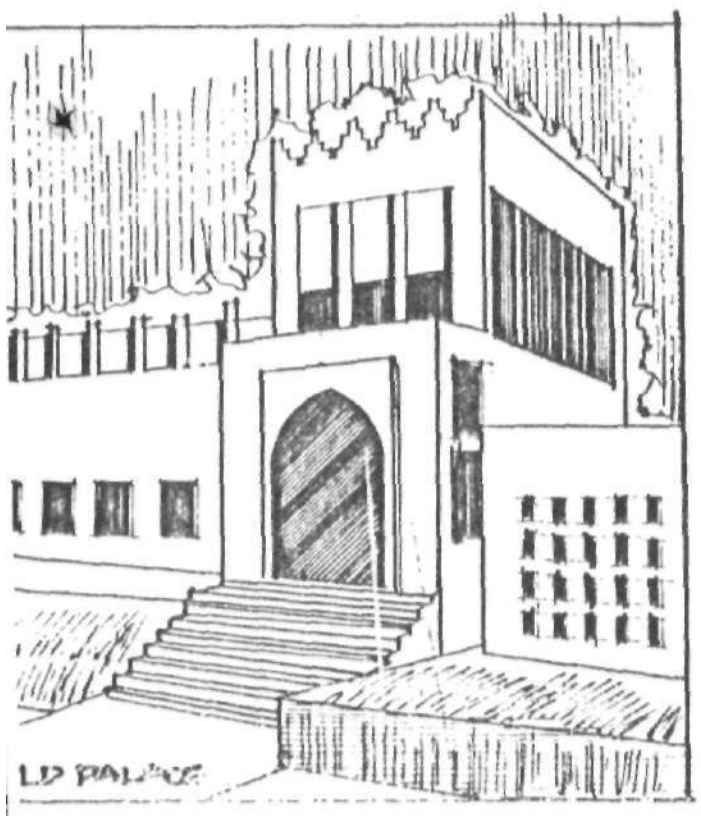
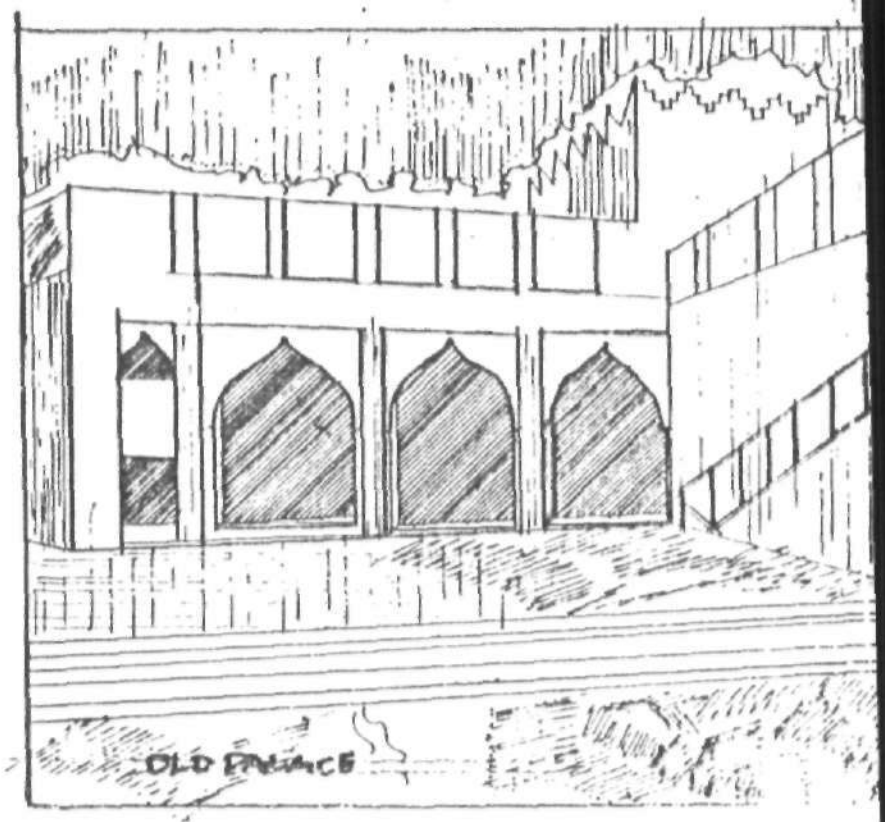


FIG 5.58 NATIONAL MUSEUM OF QATAR, DOHA - PLANS





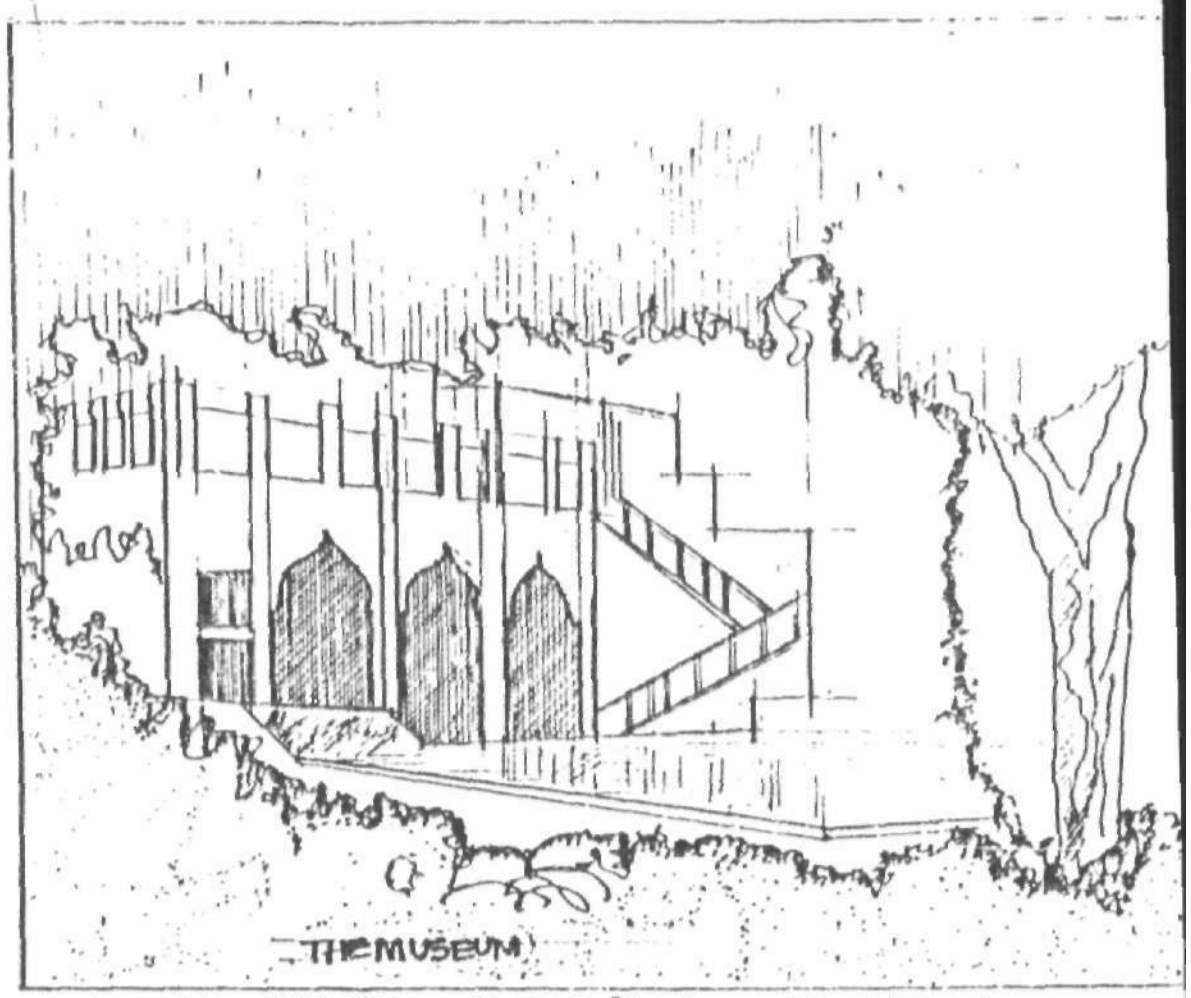
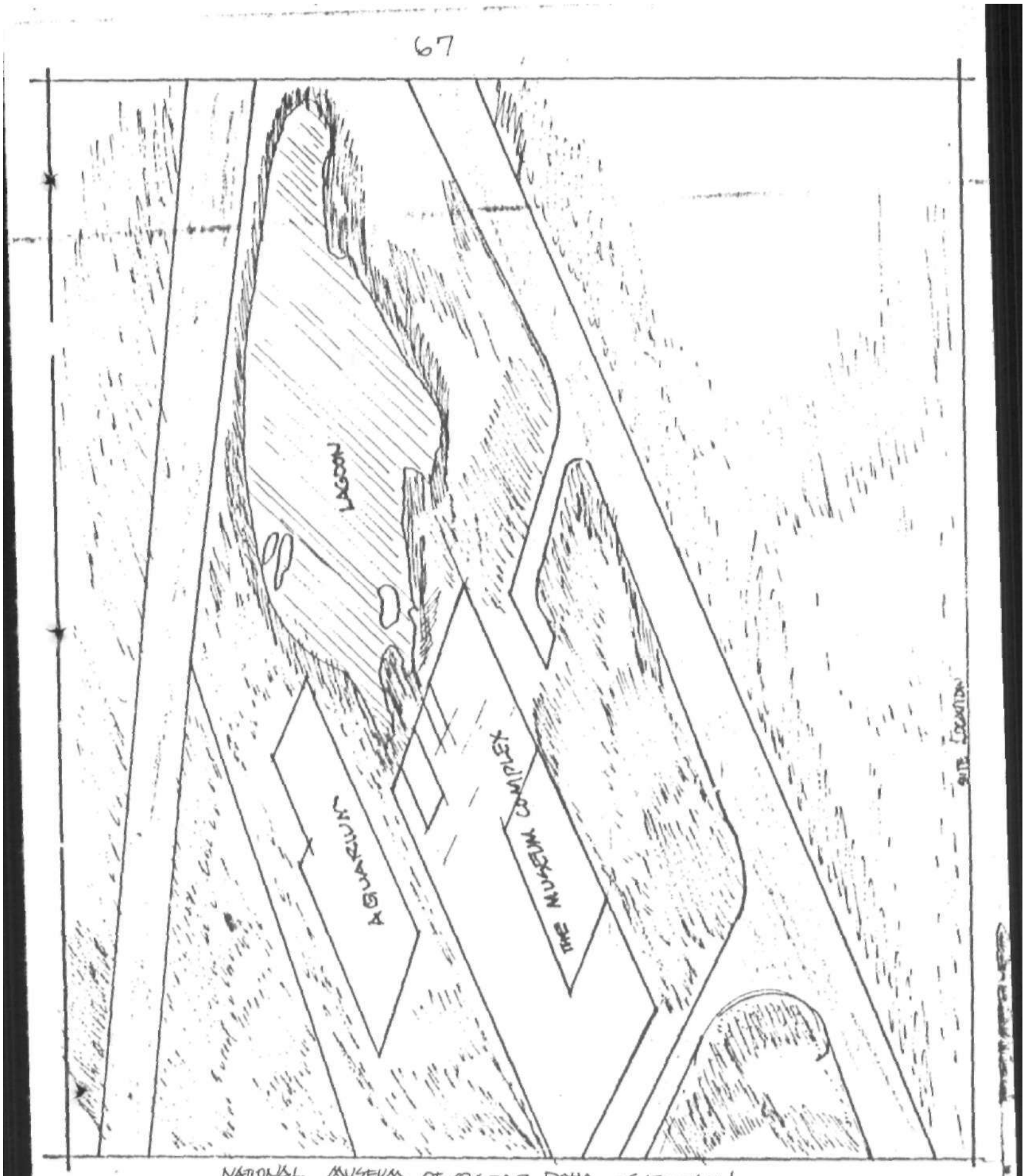


FIG 5.56 NATIONAL MUSEUM OF QATAR, DOHA — PERSPECTIVE



NATIONAL MUSEUM OF QATAR, DOHA - SITE PLAN

FIG 5.5C

Problems

- poor natural lighting and ventilation
- circulation not f good enough
- small exhibition halls.
- high cost of maintenance

Materials: Concrete and sandscrete blocks, glass doors and windows. Dome and flat concrete roofs.

5.6 Guggenham Museum

The museum was designed to show the entire art collection as one continuous era. The design philosophy of the museum is that the American artist had high goals to attain, the fast changing society and the structure of the building is to show the advancement in technology.

Advantages

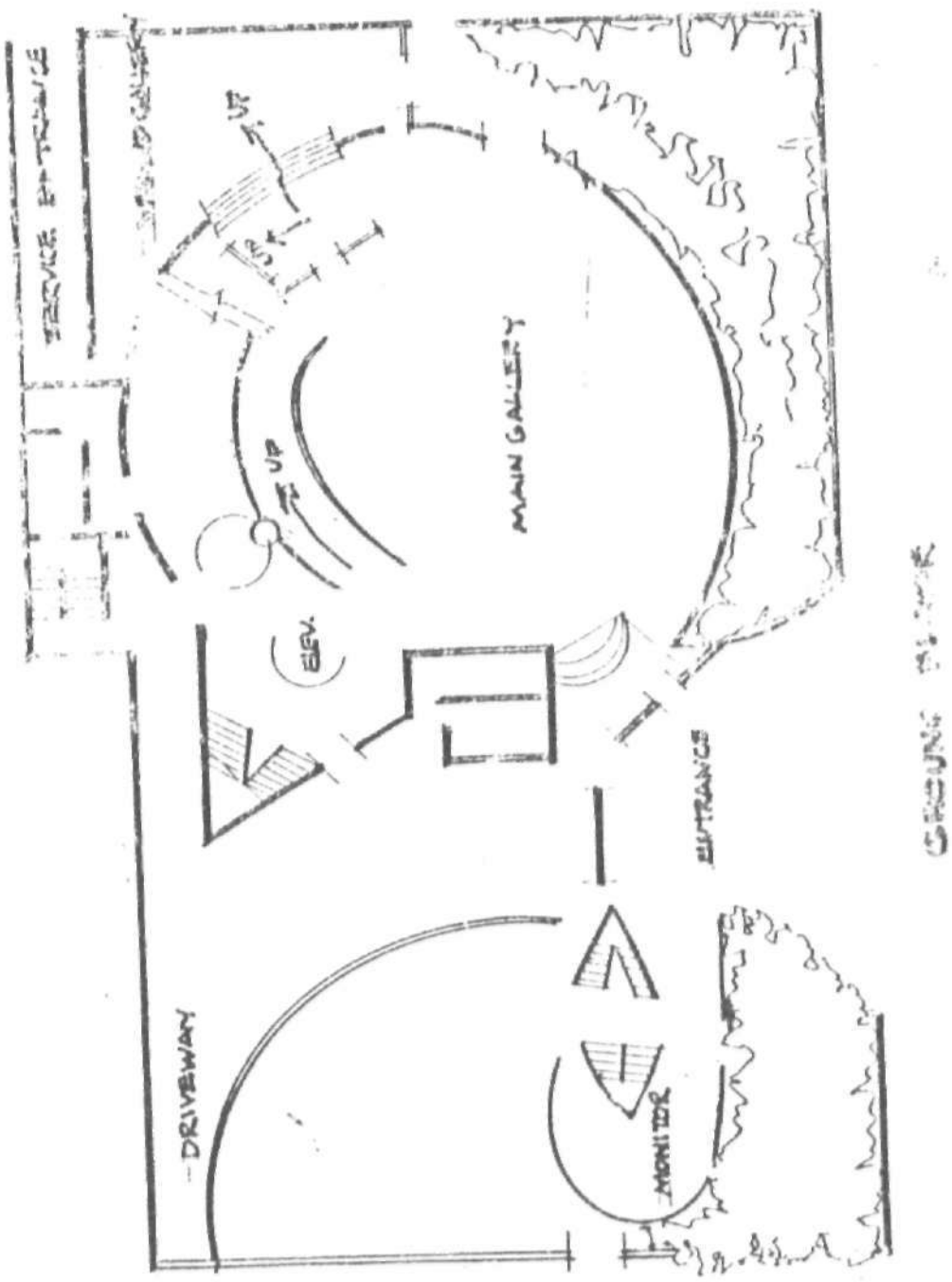
- open plan
- spiral Ramps facilitate continuous vision
- top lighting
- wall display

Problems

cost of maintenance of domelights

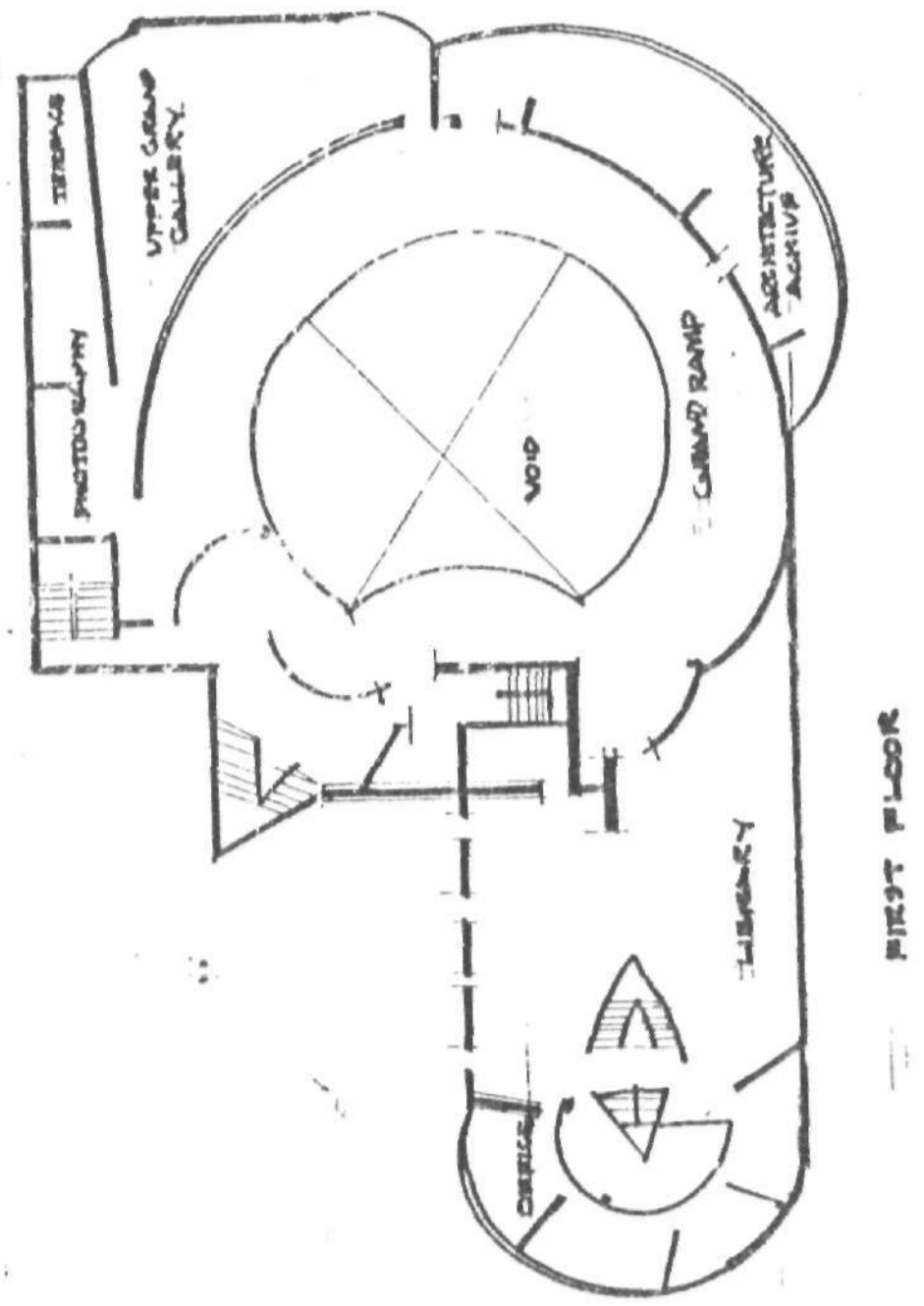
- Glare
- Pschological discomforts
- No properly defined entrance
- lack of conveniences

GUGGENHEIM MUSEUM — Architect: F.L. WRIGHT



GUGGENHEIM MUSEUM

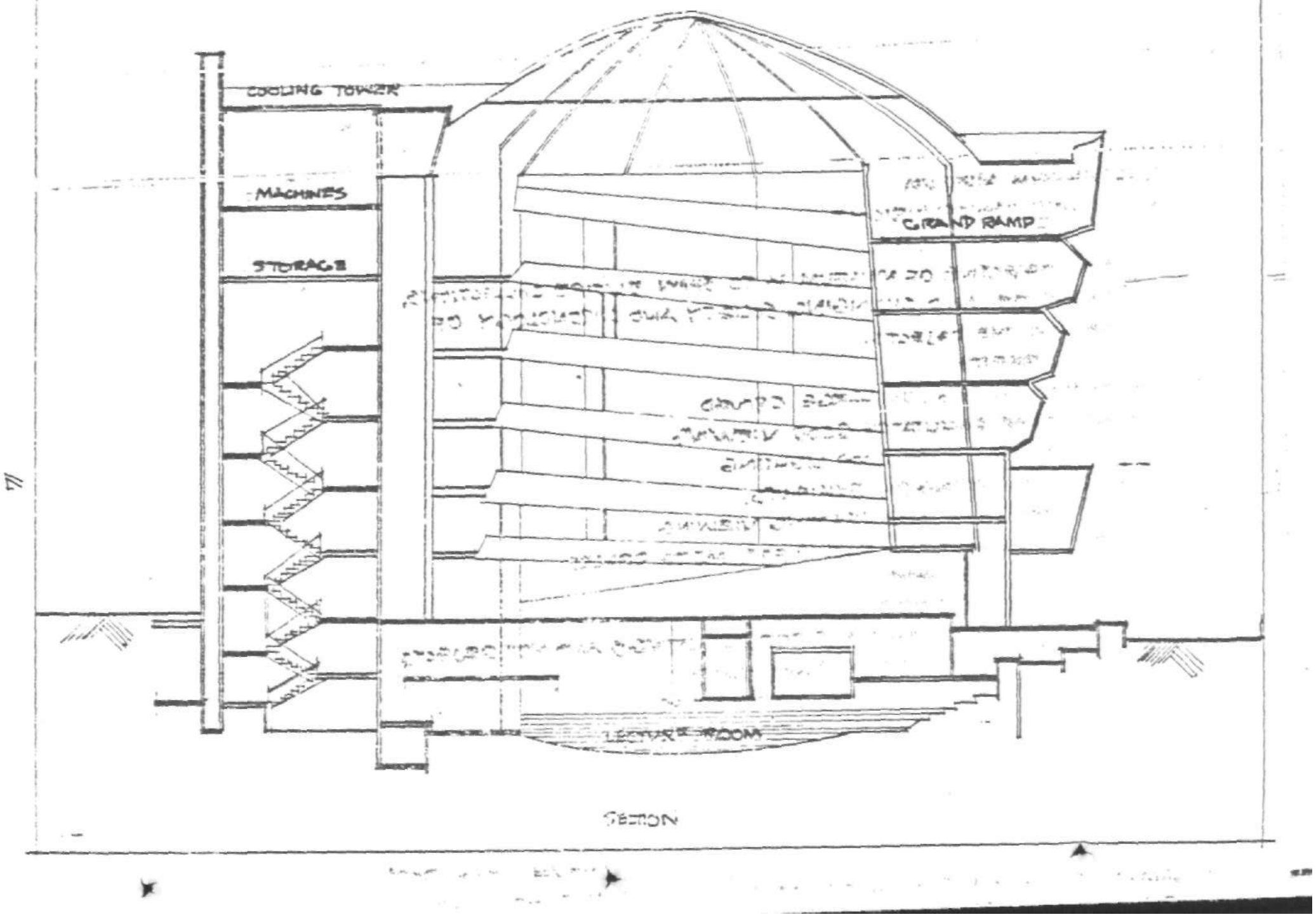
FIG 5.6a



~~NATIONAL~~ GUGGENHEIM MUSEUM

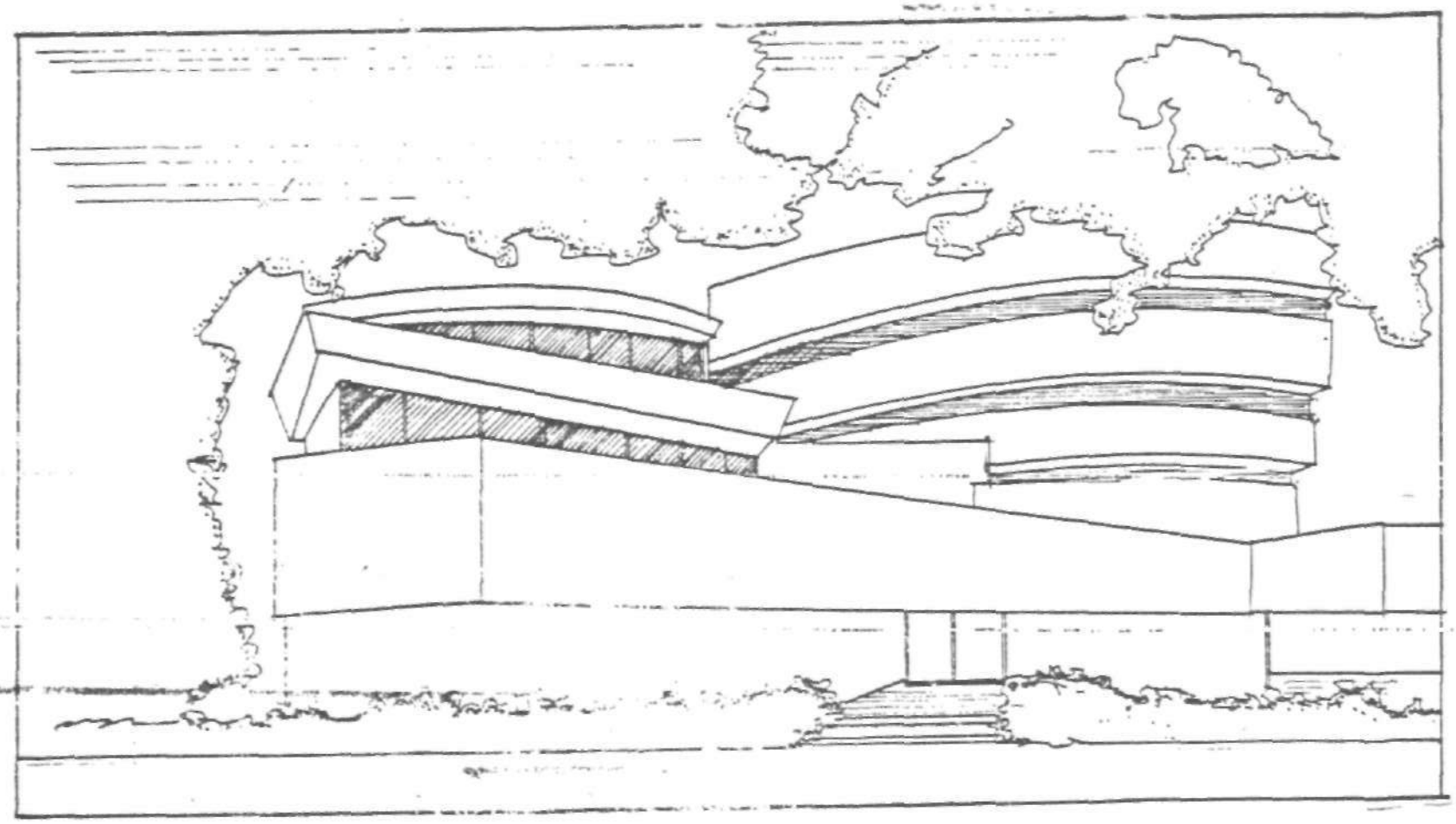
FIG 5-66

GUGGENHEIM MUSEUM



SECTION

GUGGENHEIM MUSEUM



7/a

The Guggenham is among the best museum in the world for its simplicity and mommentability and it properly blends with the site, efficient circulation. Materials: Terrazo floors, concrete walls, concrete and dome lights and glass doors and windows. (See plan, section eleveations).

General Conclusion

From the case studies it is evident that the four museums studied have similar if not the same problems, of attendance fluctuations, poor lighting and ventilation, permanent exhibitions, bad location, planning problems and lack of facilities. However, there are differences in number of visitors depending on the facilities available (Fig. 5.4c) for example in 1984, Jos recorded (108, 960 visitor), Kaduna 34,688, Lagos 53,921 while Sokoto museum recorded only 1,403 visitors.

A number of people come to museum during holidays such as school and public holidays. This information has architectural implications, namely, provision of accomodation, display areas (spaces, recreations, lecture rooms, auditorium, restaurants, temporary exhibition, laboratories, libraries, audiovisual rooms and offices.

The provision of the above mentioned depends on the size of the museum. The proposed museum will have all the mentioned facilities and more. (Fig. 5.4d) shows facilities available in the four museums studied and number of visitor for the same period.

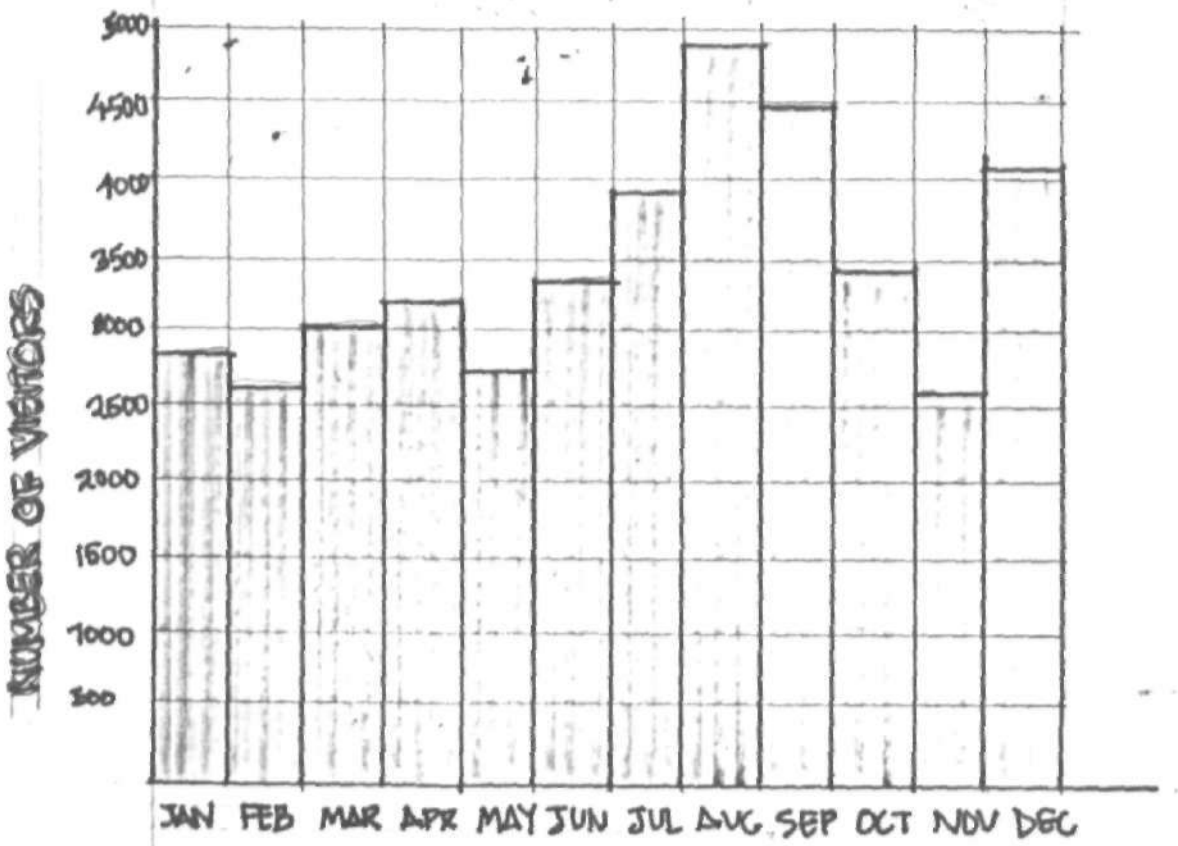


FIG54c AVERAGE MONTHLY ATTENDANCE FOR NIGERIAN MUSEUMS — 1989 (LAGOS, KADUNA, JOS, BENIN, SOKOTO, ORON)

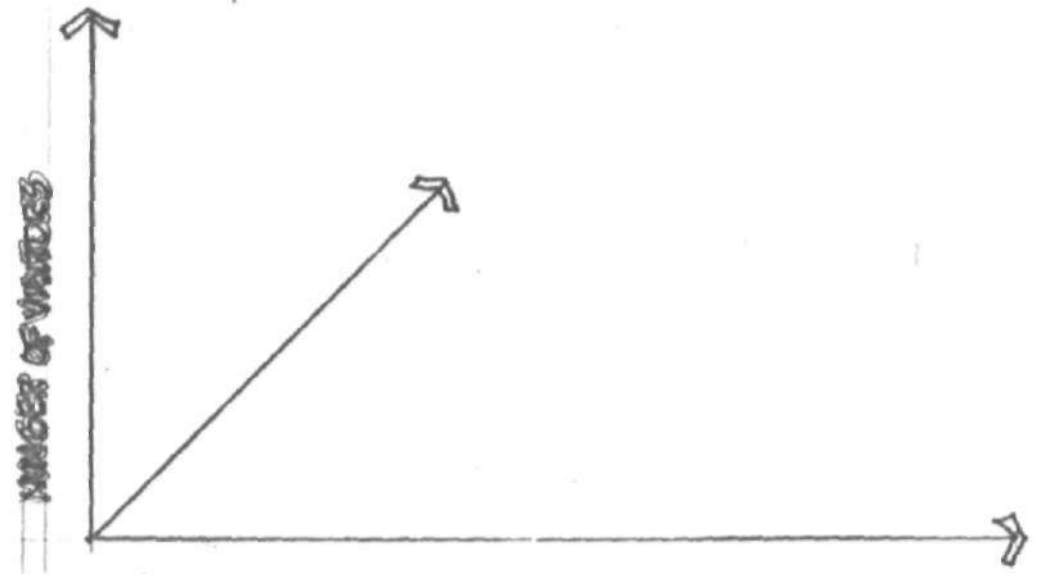


FIG54d FACILITIES PROVIDED

FROM THE PREVIOUS TABLES AND THE THE ABOVE FIGURE, NUMBERS OF VISITORS INCREASES WITH NUMBER OF FACILITIES.

FIG 4C

MUSEUM	TEMP EXH.	PERM. EXH.	CRAFTS	THEATRE	RESTAURANT	PARKING	SHOPS	ADMIN.	TRAINING	RECREATION	ZOO	TOTAL NO. OF VISITORS
JOS	+	+	+	+	+	+	+	+	+	+	+	108,968
KADUNA	−	+	+	−	+	+	+	+	−	−	−	34,638
LAGOS	+	+	+	+	+	+	+	+	−	+	−	53,921
SOKOTO	−	+	−	−	−	−	−	+	−	−	−	1,403

*FACILITY-VISITOR RELATIONSHIP:- (SOURCE: NATIONAL MUSEUM KADUNA, 1984)

MUSEUM	LOCATION	ACCESSIBILITY	SAFETY	SECURITY	HISTORICAL IMPORTANCE	SITE	BUILDING
JOS	GOOD	GOOD	SAFE	NOT QUITE SECURED	HISTORICAL SITE		
KADUNA	BAD	GOOD	SAFE	INSECURED	HISTORICAL SITE		
LAGOS	GOOD	GOOD	UNSAFE	INSECURED	NOT HISTORICAL		
SOKOTO	BAD	BAD	UNSAFE	INSECURED	HISTORICAL		

*PHYSICAL CHARACTERISTICS OF MUSEUMS AND THEIR INFLUENCES ON NUMBER OF VISITORS.

Design Implications of The Data

From the studies of Nigerian museums, it could be concluded that, other vairables being constant, number of visitors is influenced by the facilities provided. Since the proposed museum will have all the facilities mentioned earlier on, the expected number of visitors should be found per year. From interpolation the expected number is between fourty thousand and fifty thousand.

But the possible maximum number per year is between fifty and sixty thousand. For the purpose of this museum the maximum is taken as fifty-five thousand (55,000), and assuming Lagos museum as an ideal museum, then the number of visitors is calculated as follows:

53, 921 ----- 5945 (max - see Fig. 5.4d)

55,000 ----- ?

$\frac{5945}{53921} \times 55{,}000 = 6064$ visitors in a peak month.

Average for thirty days $= \frac{6064}{30} = 202.$

But the tomb of Danfodio records an average of 30 visitor daily. Then the total is 232 visitors per day. However, the Sokoto master plan recommends ten percent allowance for growth of the regular visitors:-

$$232 + 232 \times 0.1 = 255.2.$$

Therefore a total of 255 visitors is expected per day in peak periods. This figure is used in the design for the provisions of all public facilities. This is shown in the design (See Sketch design at the end of the book).

CHAPTER SIX

DESIGN REPORT

6.00 Criteria For Choice Of Site

There are three alternative sites for the proposed museum. The first alternative:

(A) Is located along the Sokoto Bye pass directly opposite Sokoto five star hotel.

(B) Is located along Ibrahim Dasuki Road near the Minanata Round about.

(c) Is located along Sultan Bello Road directly opposite the Sokoto old market, between the Shehu Mosque and the Tomb of Shehu Danfodio.

A set of criteria is used to evaluate the suitability of each site. These criteria are accessibility history security, safety noise and industrial pollution, public buildings, centrality and expansion.

Each of these sites will be evaluated based on these criteria. The table below shows comparison of the three sites.

CRITERIA	C	B	C
Accessibility	Remote	Accessible	Accessible
History	Not Historical	Not Historical	Historical
Public Buildings	None	None	Tomb and Mosques
Security Safety	Remote, Unsafe	Safe, not Secure	Safe and Secure
Centrality	Not Central	A bit Central	Central
Expansion	Can Expand	Can Expand	Can' Expand

CRITERIA	C	B	C
Noise and Industrial Pollution	Noise, Industrial Pollution	Environmental Noise Pollution	Vehicular Noise Pedestrian Interference

From the above, it is clear that, only the third site (c) satisfies the conditions for locating a museum. Hence Site (c) is chosen as the most appropriate one for the project.

6.10 Site Analysis

Site analysis or site investigation is a thorough appraisal of the site. Site investigation is an important aspect of site analysis. The soil on the site is sandy with a sandstones outcrops, with bearing capacity of up to 20Kn/m.

The site is fairly flat with gradient of about $(\frac{1}{80})$ there are few trees on site as shown on the site analysis sheet.

The microclimate of the site is greatly enhanced by the neighbouring buildings. The Shehu Mosque and other buildings, west of the site, shield the site against excessive solar radiation. The buildings on the south-west end of the site, however, block the south west winds which are desirable for ventilation. On the north-east end of the site, neighbouring buildings shield the north-east winds which is not dry and dusty On the whole; the micro-climate of the site is better than the other two alternatives.

There are basically two circulation pattern on the site namely; pedestrian, (across the site) and vehicular along the site boundaries.

Services lines on the site include overhead power cables and telephone lines along Sultan Bello Road. The site slopes towards the main road. There is a primary drainage gutter along the main road, and tertairy drainage along the west boundary of the site There are three accesses to the site along the Shehu Mosque and Tomb of Shehu. The other is at middle of the site from Sultan Bello Road.

Sultan Bello Road is the only persistent source of noise around the site. Trees are used to reduce the effects of noise on the museum activities.

6.30 Site Concepts

Site concept is a schematic utilization of every part of as site. This broadly speaking is the zoning of a site for various functions as spelt out by the architect's brief or programme. For the purpose of this design, three site concept have been evolved. Each of these is evaluated based on certain criteria These include economy of site utilization, compatibility of functions, circulation of staff, artifacts and visitors, security and safety of building and artifacts, lighting and ventilation, adequate parking space and impact noise. Site; A,B, and C are compared below;

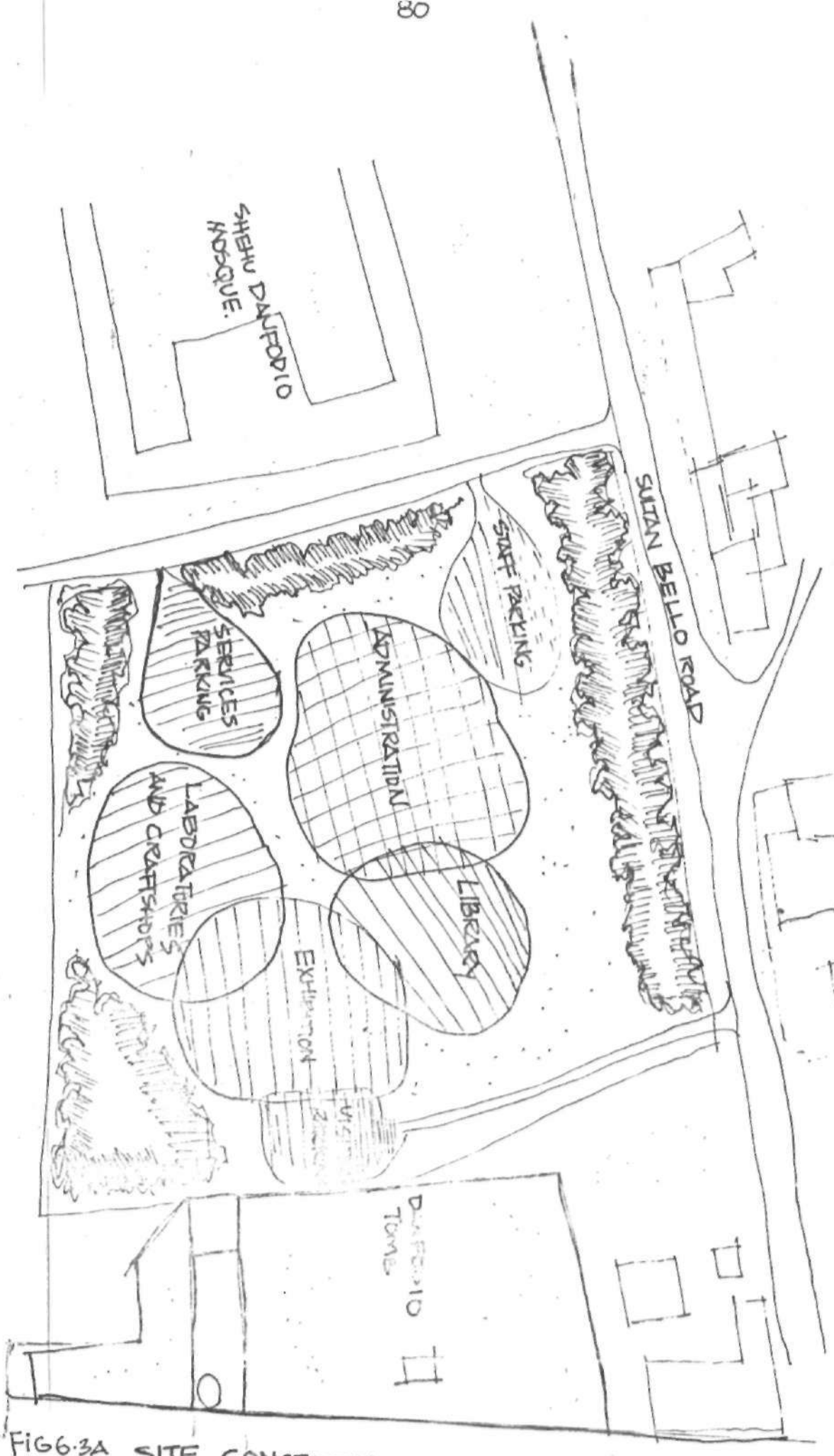


FIG 6.3A SITE CONCEPT (A)

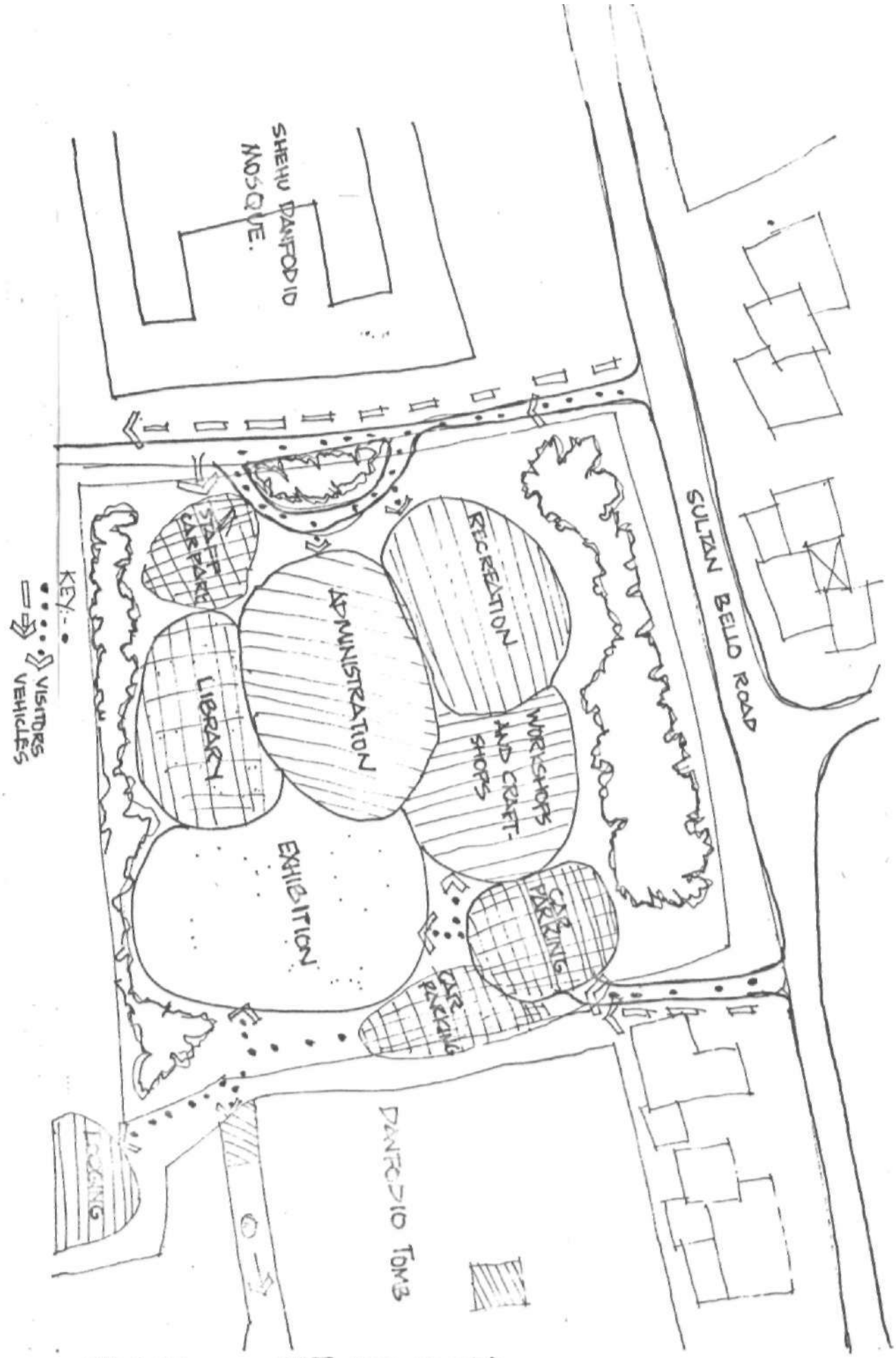


FIG 6.3B SITE CONCEPT(B)

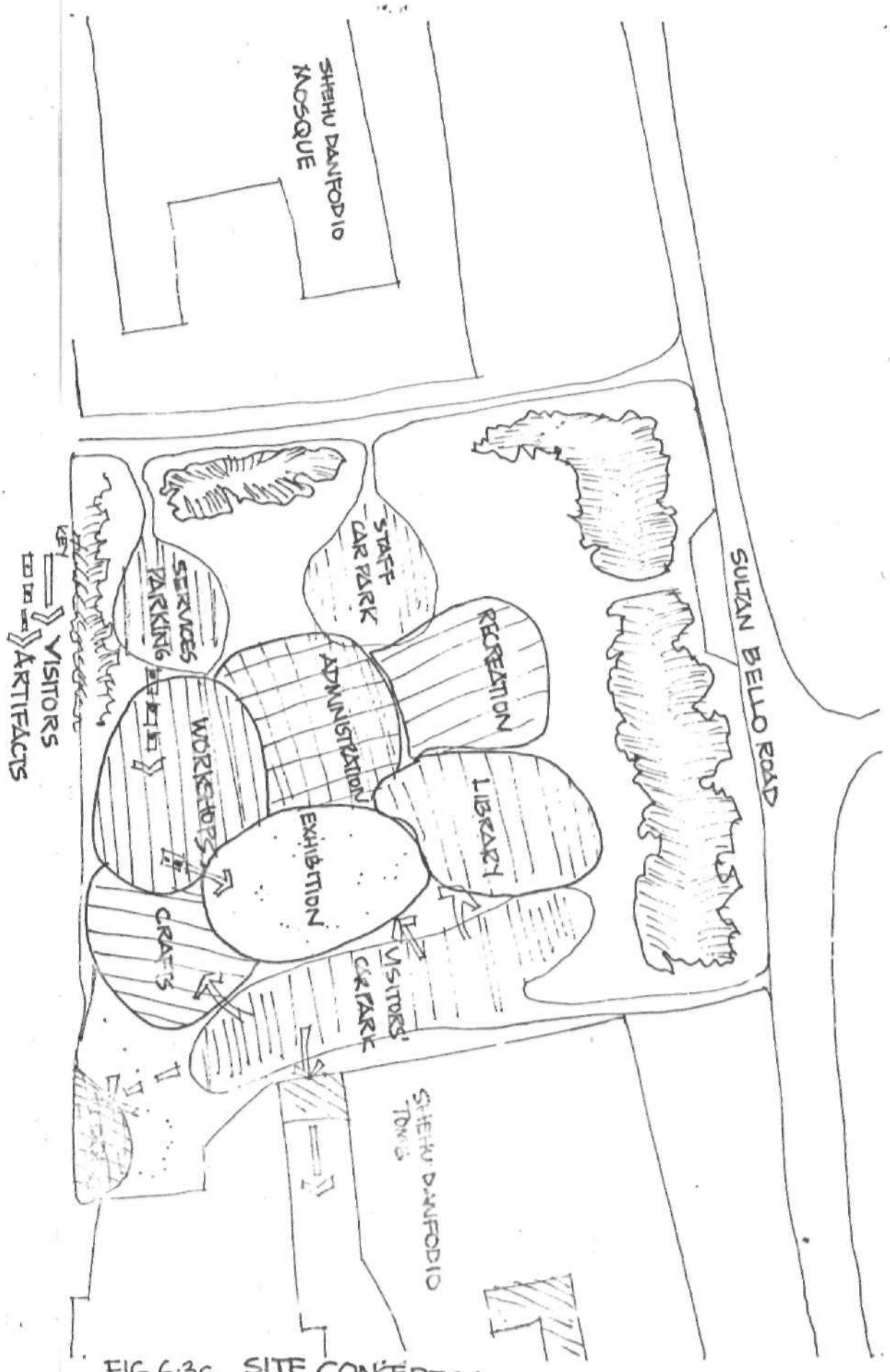


FIG 6·3c SITE CONCEPT(c)

CRITERIA	A	B	C
Site Utilization	Efficient	Efficient	Efficient
Compatibility of Functions	Good	Very Good	Very Good
Circulation	Unsatis-factory	Fair	Satisfactory
Ventilation	Satisfactory	Not Satis-Factory	Satisfactory
Lighting	Poor	Fair	Good
Security and Safety	Not Satis-factory	Satisfactory	Adequate and satisfactory
Parking Spaces	Not Related	Not Adequate	Adequate and satisfactoty
Noise	Noisy	Noisy	Not so Noisy

From the table the third alternative (c) is the most suitable site concept. Hence it is the adopted

6.40 Brief And Space Requirements

Brief is a list or schedule of facilities to be provided in an architectural programme. Brief is based on what client(s) required . To arrive at an acceptable brief, one should look at the context of the project. The social contexts of museum are awakening awareness, feeling of oneness among people of common identity such as Sokoto; and three dimensional appreciation of man's material culture through artifacts and antiquities. These culiminate to self realization, self representation and overall consciousness. Man's most activities are done within interiors.

To achieve the above mentioned, the museum organisation has to publicise its programmes, inform the public and involve the people in its daily activities. It should also provide spaces for contemplation, evaluation and criticism; and interpretation.

Publicity facilities include, administration offices, exhibition rooms, audiovisual rooms, theatres, graphic studio and photo studio. A visitor requires exhibi theatres library and audiovidual rooms to contemplate. For community to participate actively in the activities of the museum, recreational facilities such as craftshops theatres, restaurant should be provided, provision of library, workshops, lecture halls and theatres in a museum, anables visitors to evaluate and criticise the activities of the museum. There facilities are grouped into administration; library, workshops, recreation and craft village.

Spaces are derived based on:

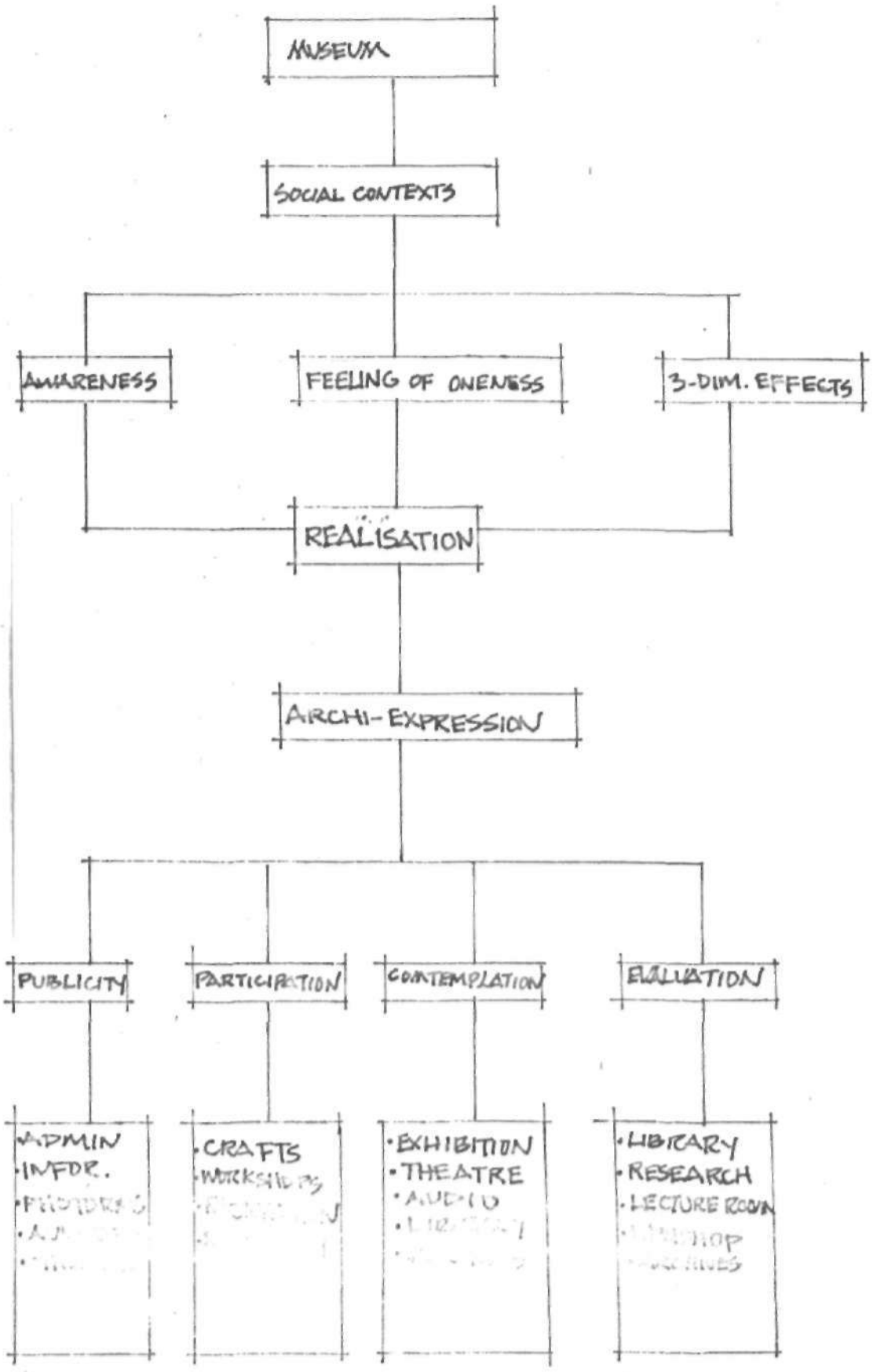
(a) Sizes of furniture

(b) Lighting requirements

(c) Standards as provided in architectural graphic standards.

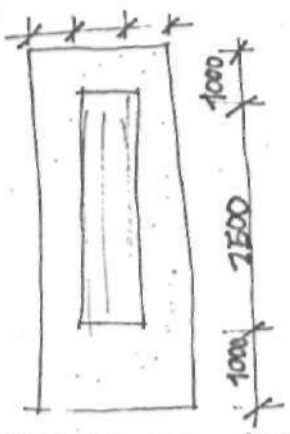
Each of these is applied where relevant. The following calculations show how the spaces are derived.

According to the author's investigation, about one hundred visitors lodge in the old guest house. There are twenty rooms with four visitors per room at peak periods.

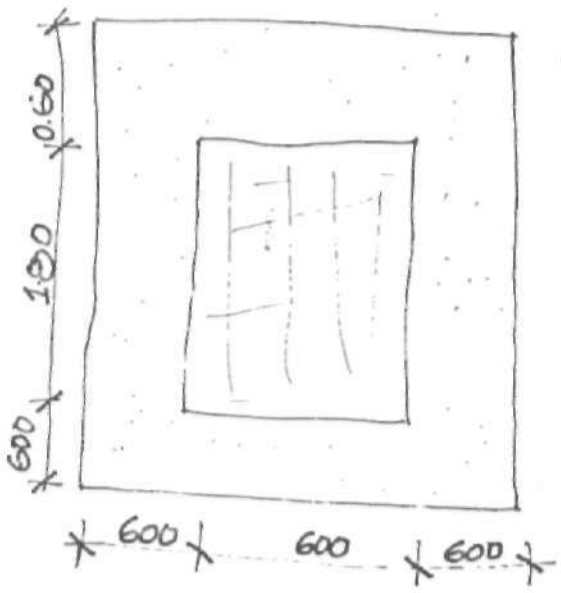


SOCIAL CONTEXTS OF MUSEUM..

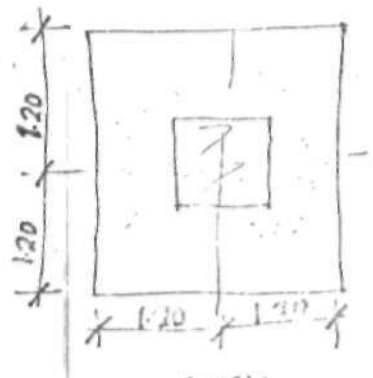
FIG.6.4a



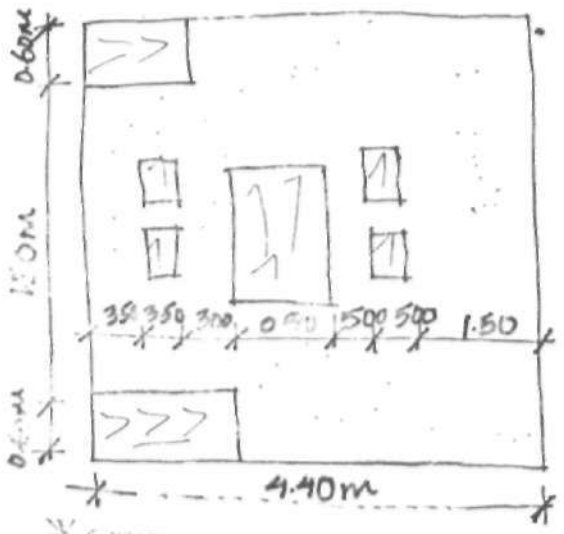
*SHELVES, AREA = 1.60x4.50
= 7.20m²
FOR 10 = 72m²
50% EXPANSION
= 36m²
TOTAL = 108m²



*ARCHIVES AND DOCUMENTS
AREA = 24x24
= 576m²
AREA = 1.80x5.40
= 9.70m²



*READING DESK.
AREA = 2.40x2.10
= 5.[illegible]m²
FOR 200 [illegible]
= 200/4 x 7.76m²
= 240m²



*OFFICE SPACES
AREA = 4.40x5.10
= 23.00m²

FIG 6.4b SPACES COMPOTATION ... FURNITURE SIZES

FIG. 6.4b

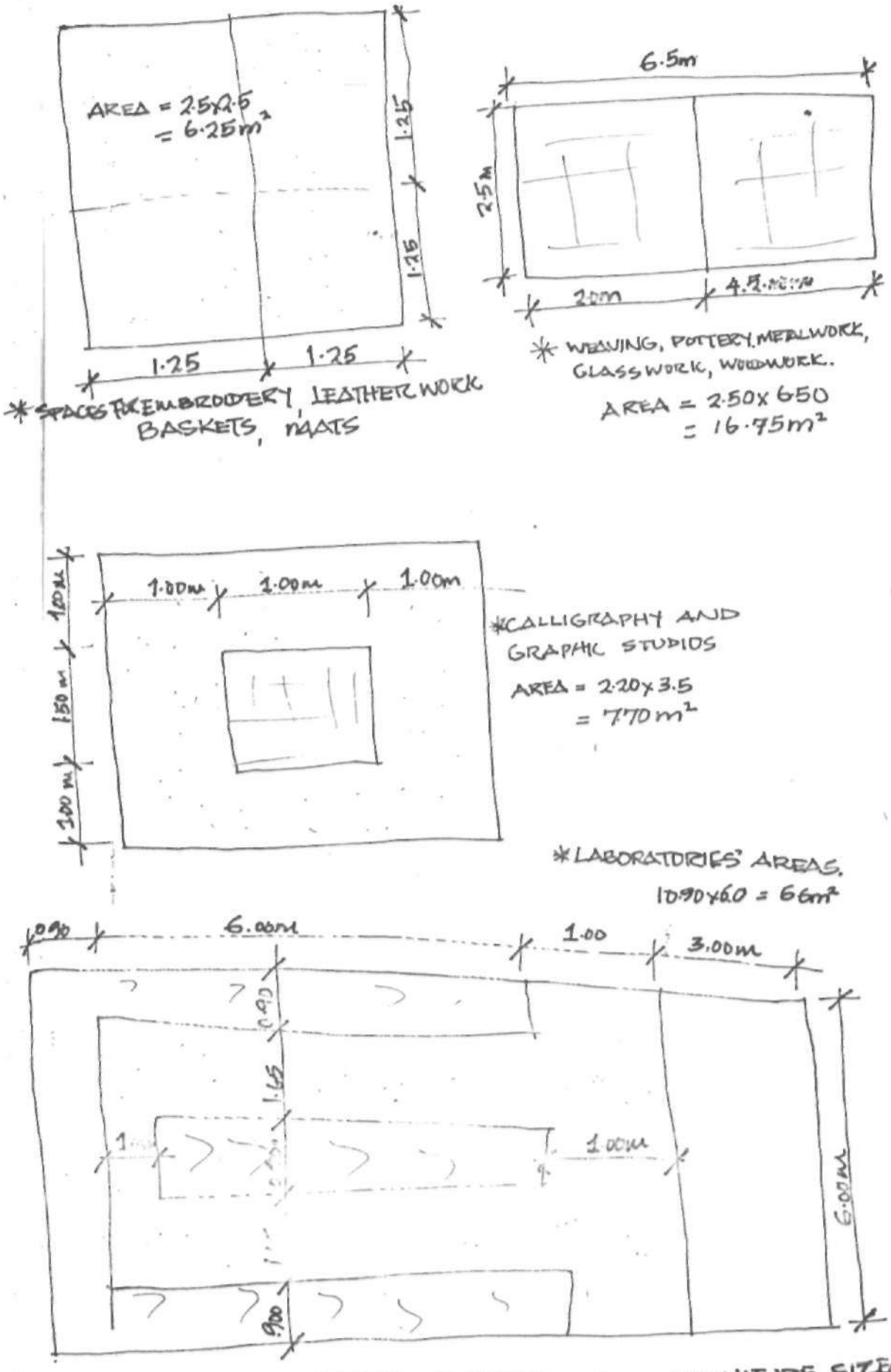
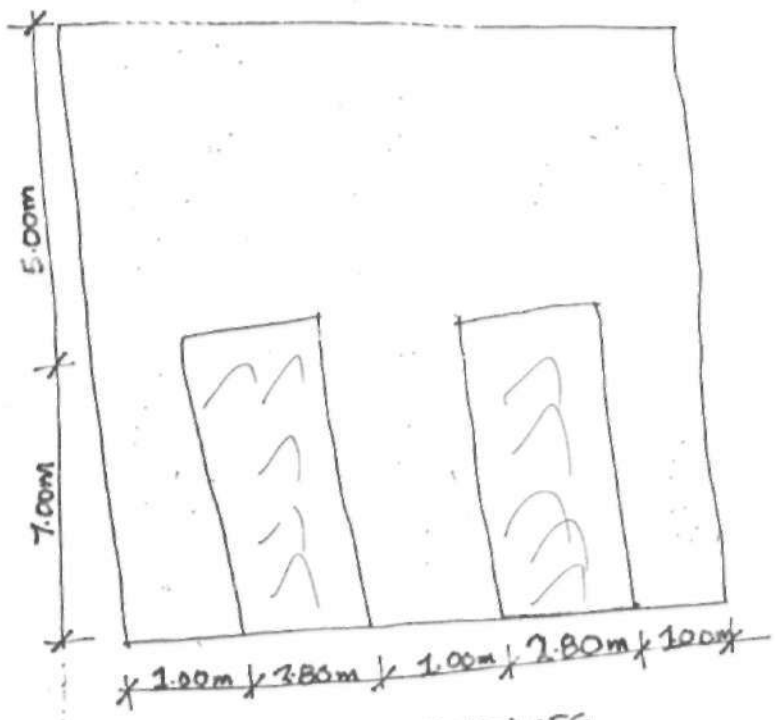
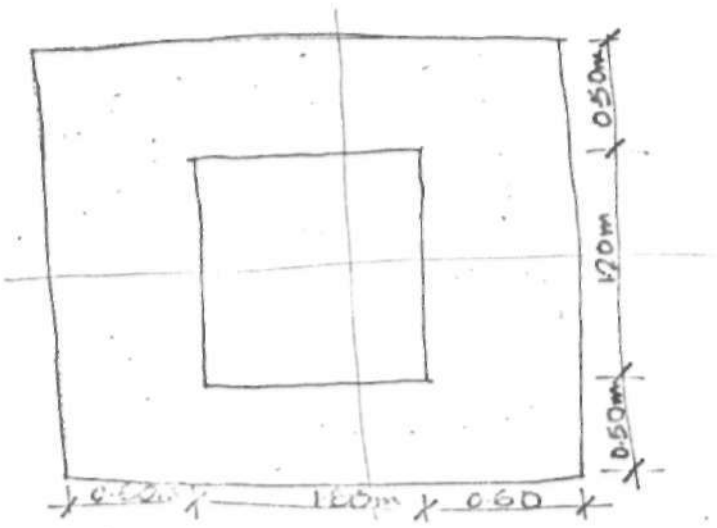


FIG. 6.4C SPACES COMPUTATION.... FURNITURE SIZES



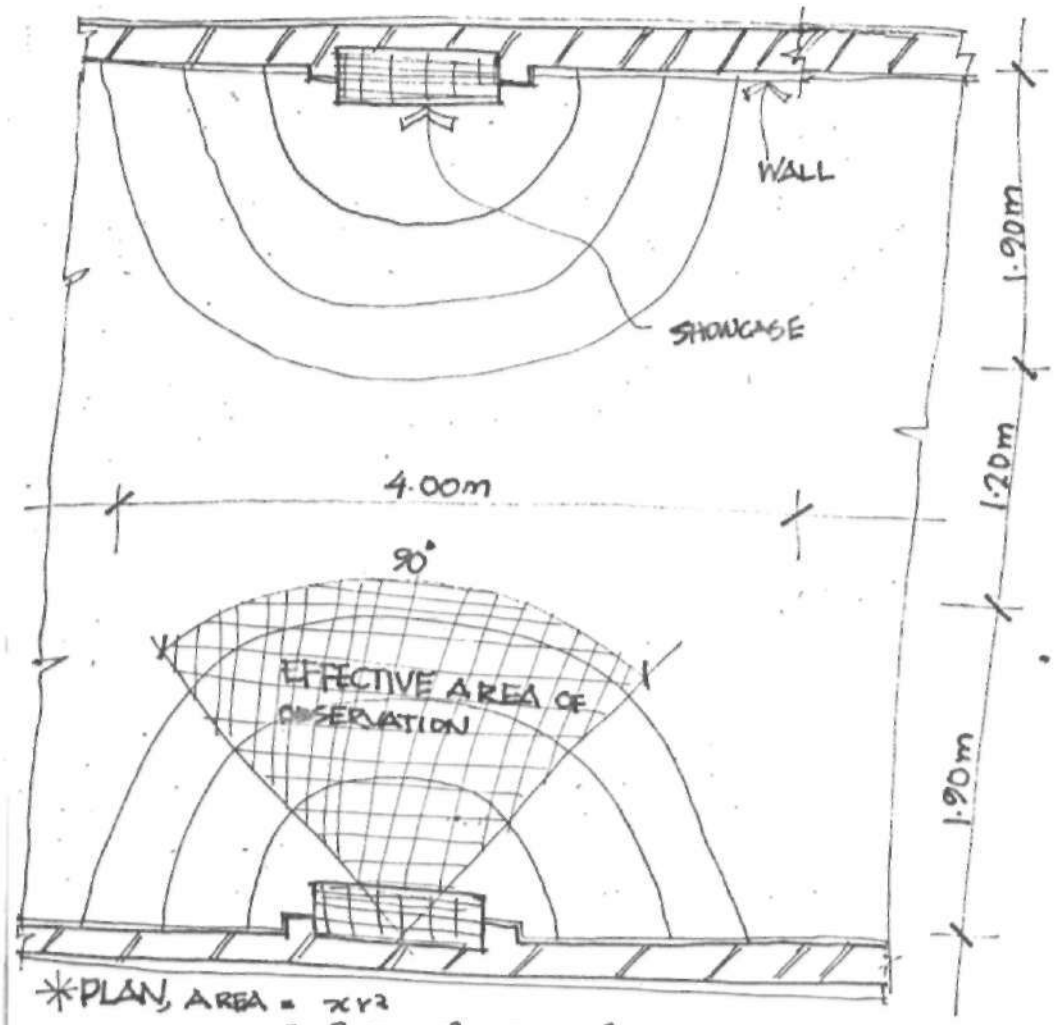
AUDIOVISUAL/THEATRE SPACES
AREA = 12.00x 8.60
= 103.20m²
FOR 30 PEOPLE (ACCORDING TO STANDARDS)
AREA = 88m² (INCLUDING CIRCULATION)

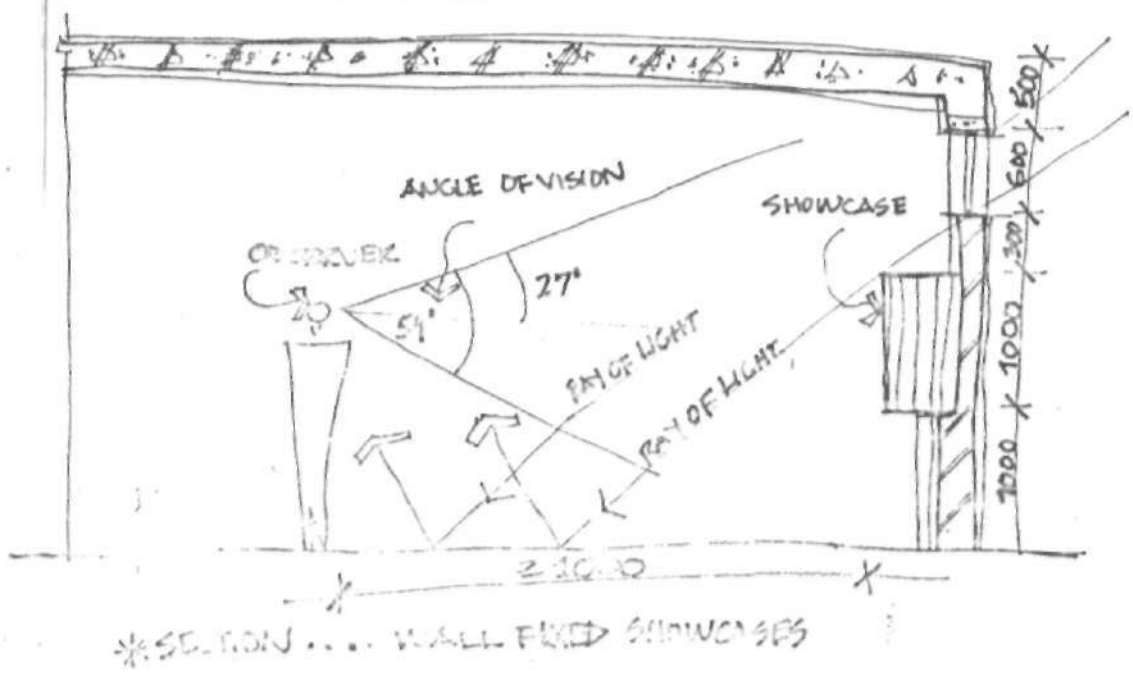


RESTAURANT SEATS.
AREA = 3.00 x 2.20
= 6 [illegible] FOR FOUR PEOPLE.
[illegible] 32 PEOPLE = 6.60 x 2/4
= 52.80m²
[illegible] = 27.50m²
TOTAL = [illegible]m²

SPACES COMPUTATION.... FURNITURE'S SIZES

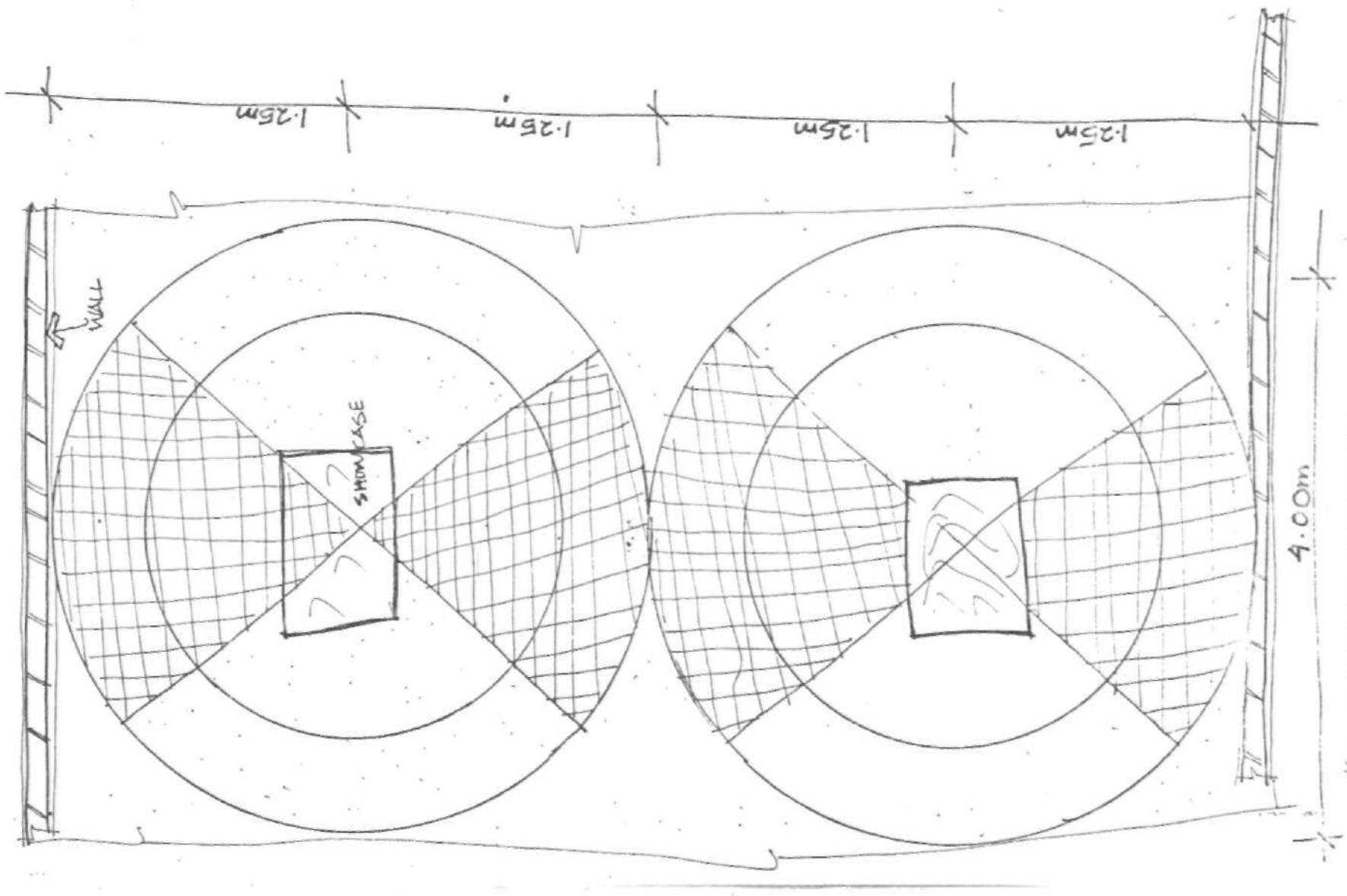
FIG.6.4d





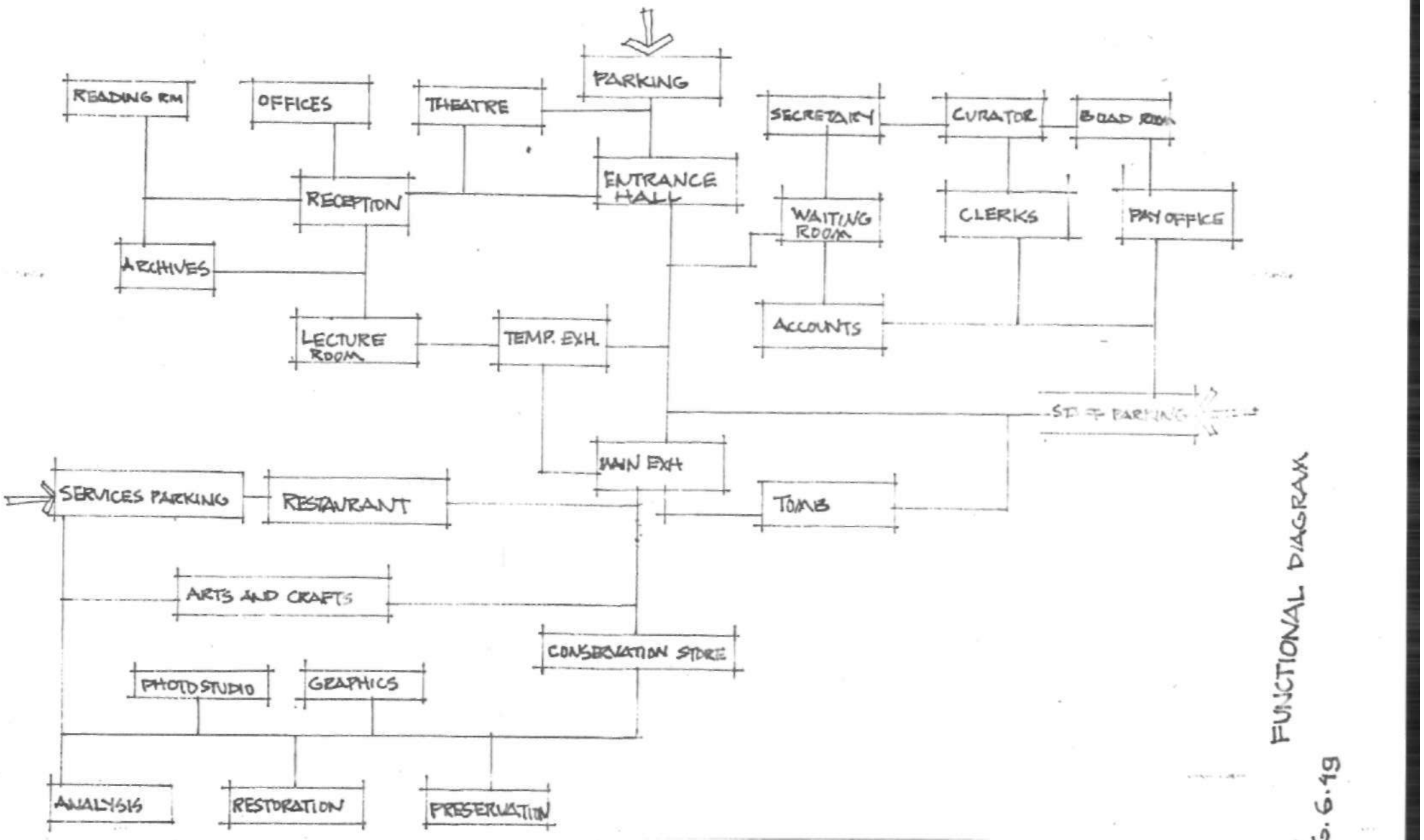
SPACES COMPUTATION ... LIGHTING REQUIREMENTS

FIG. 6.4e



SPACES COMPUTATION... LIGHTING REQUIREMENTS

FIG. 6.48



FUNCTIONAL DIAGRAM

FIG. 6.19

This is inadequate because the rooms are small in size, lack privacy and is far away from the tomb. There is need to provide one near the tomb to reduce problems of long distance and cases of accidents along the Sultan Bello Road. (See site plan). A new guest house is proposed to accomodate 156 visitors.

52 rooms	=	52 x 20	= 1040m²
2 toilets	=	20m²	
2 bathrooms	=	20m²	
2 Kitchens	=	30m²	
2 loundries	=	60m²	
2 common rooms	=	80m²	

Spaces Requirements

Administration

- Curator	=	20m2
- Secretary	=	15m²
- Waiting	=	20m²
- 4 Clerks' Office	=	30m²
- Board room	=	40m²
- Accountant	=	15m²
- 2 Finance Clerks	=	30m²
- Pay Office	=	20m²
- Two toilets	=	10.56m²

Recreation

Restaurant	=	$18m^2$
- Kitchen	=	$18m^2$
- Dinning	=	$78m^2$
- Store	=	$9m^2$
- Snacks bar	=	$25m^2$
- Cloak room		$25m^2$

Crafts and Arts

- Calligraph	=	$42m^2$
- Embroidery		$16m^2$
- Leather	=	$16m^2$
- Basketsy	=	$16m^2$
- Weaving	=	$325m^2$
- Metal work	=	$16.48m^2$
Amphitheatre	=	$180m^2$
- Changing room	=	$25m^2$
- Store	=	$25m^2$
- Toilets	=	$12.3m^2$

Exhibition

- History Gallery	=	$46m^2$
- of Islam	=	$46.40m^2$
- Pre-Jihad	=	$50.24m^2$
- Store	=	$37.12m^2$
- Armoury	=	$52.00m^2$
- Ulama	=	$40.40m^2$
- Early	=	$46.40m^2$
- Colliphate (1817 -1903)	=	$50.24m^2$
- Nigeria Since 1960	=	$46.24m^2$

Library

- Librarian = 20m^2
- 2 Education Office = 30m^2
- 2 Research officers = 30m^2
- Archives and Documents = 180m^2
- 2 Reading Rooms = 306m^2
- Audiovisual Room = 54m^2
- Reception = 9m^2
- Theatre = 192m^2
- Ethnographer = 15m^2

Workshops

- Supritendent = 20m^2
- Security Office = 15m^2
- 1 Plumber = 15m^2
- Electrician = 15m^2
- Cleaners Room = 15m^2
- Archaeologist = 15m^2
- Laboratories:
  - Conservation = 72m^2
  - Analysis = 72m^2
  - Restoration = 72m^2
- Photo Studio = 30m^2
- Darkroom 20m^2
- Graphics Studio = 30m^2
- 6 Toilets = 28m^2

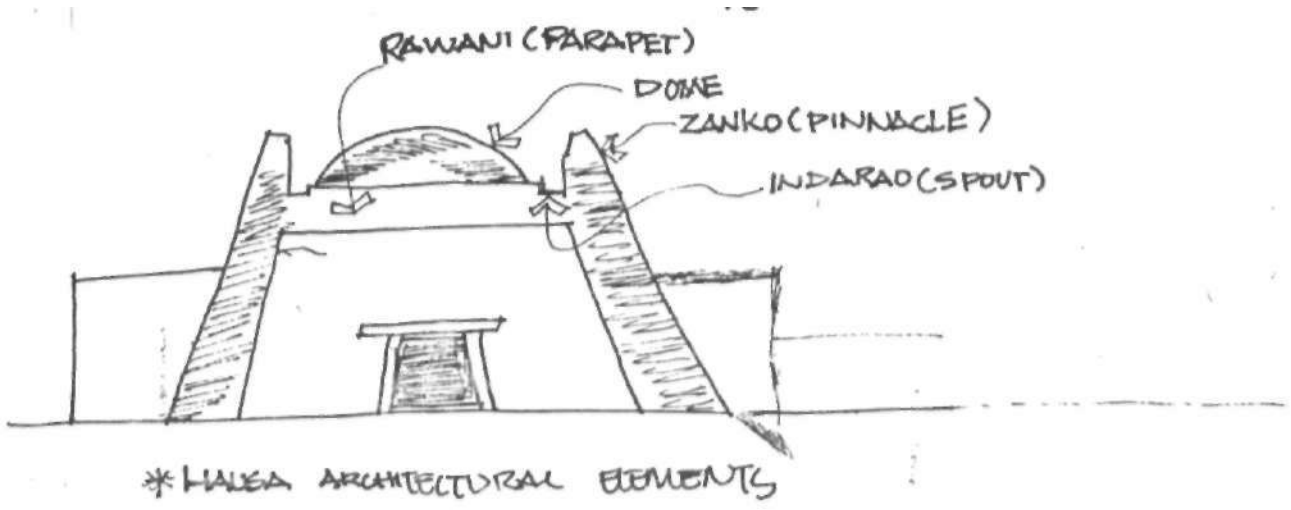
Arts and Crafts

- Calligraphy, Embroidery, Textile = 51.20m²
- Leather, Mats, Baskets = 51.20m²
- Metal works = 20m²
- Entrance Hall = 50.0m²
- Craftshops = 30m²
- Temporary Exhibition = 100.48m²

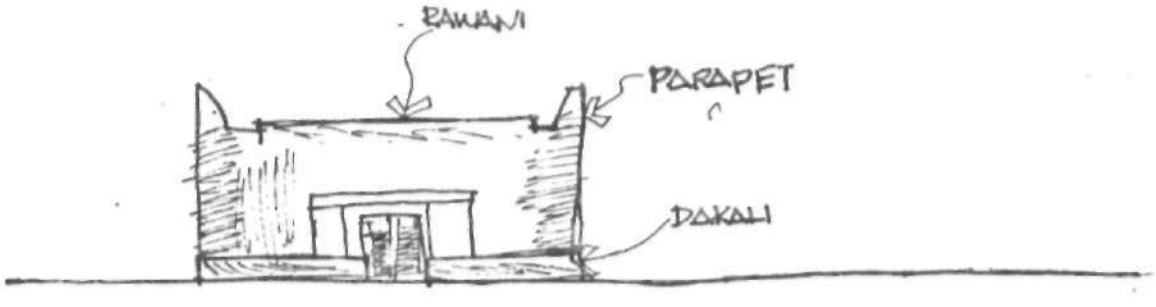
6.50 Concepts of Islamic Architecture

Islamic architecture is distinct, it is unique and diverse in its use of materials and forms. Fundamentally, it tends to extold bold approach to engineering and architectural solutions, placement of building in relation to each other, class integration with landscape, use of water as an aesthetic and cooling element. Plants and garden, scale and proportion of buildings are very important in Islamic architecture. Islamic architecture has evolved interesting structural forms namely; domes arches, pendentive minarets fountains, skylights, squiches and courtyards.

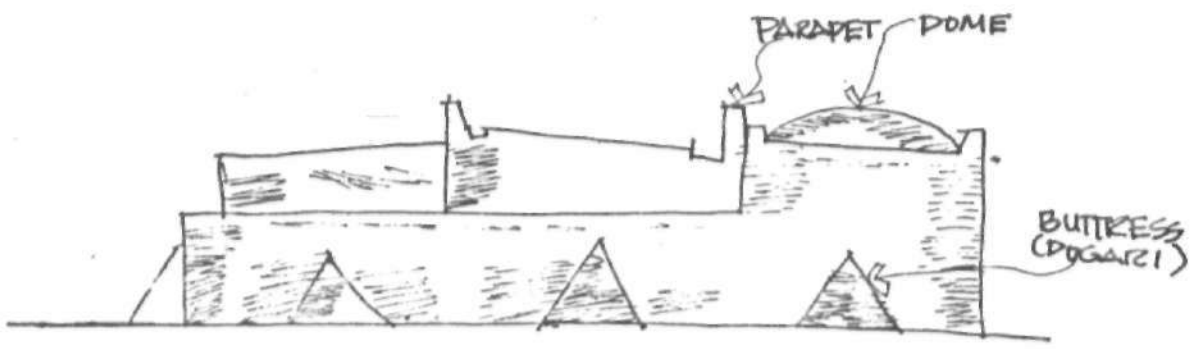
Islamic architecture adopt materials and technology of the local environment. The objectives of the thesis are evolve a design which represents the spirits of Islamic arts and technology in Hausaland, provision of conducive internal environment for viewing objects and artifacts. Contemplation, eveluation and criticism of artwork.



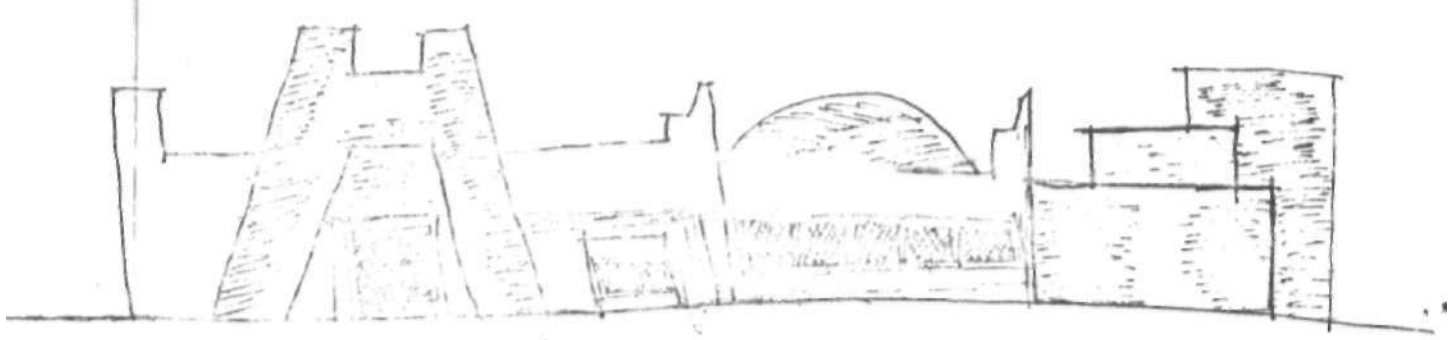
* HAUSA ARCHITECTURAL ELEMENTS



* HAUSA ELEMENTS (CONTD)

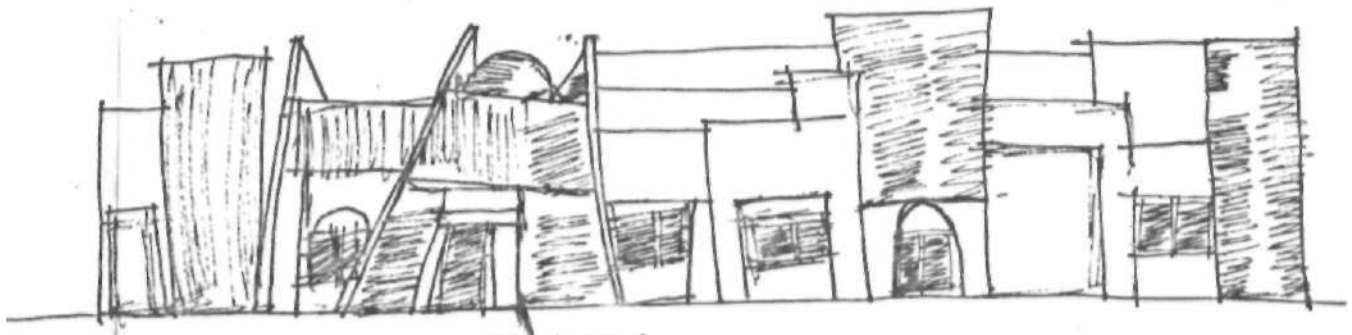


* BACK ELEVATION



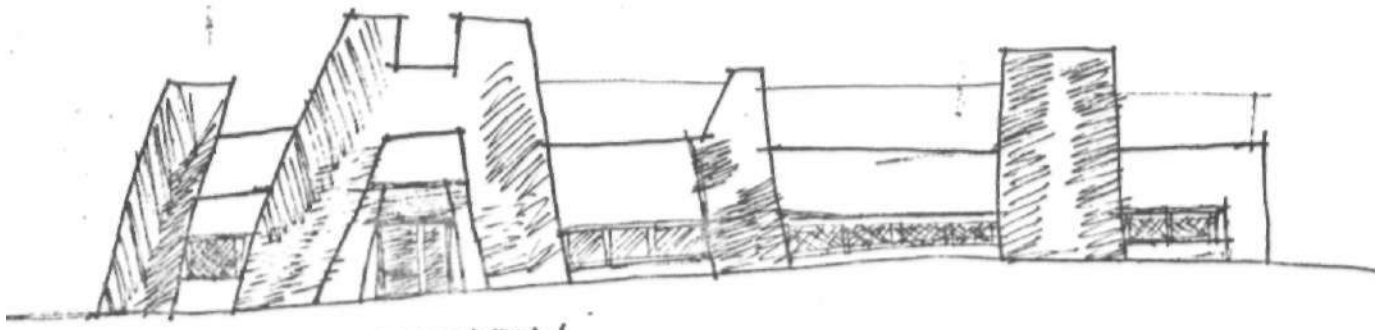
* INTERPLAY OF ARCHITECTURAL ELEMENTS

FIG 6.5a HAUSA ARCHITECTURAL ELEMENTS



ELEVATION

*INTERPLAY OF ARCHITECTURAL ELEMENTS :- ZANKO(PINACLES) ARCHES, BUTTRESSES(DOGARAI) RECCESSED WINDOWS AND BLANK WALLS



ELEVATION

*INTERPLAY OF ELEMENTS (CONTD)

HAVELI ARCHITECTURAL FORMS

FIG 6.56

6.60 Design Concepts

Activities in museum could be grouped into public such as temporary exhibition halls, exhibition halls theatre, lecture hall and library (b) Semi public spaces include research and library and (c) the privnte internal spaces activities such as administration workshops and stores.

Visitors, artifacts and staff circulation are seperated for efficiency safety and security of the artifacts. The design enables various parts of the museum to function without interfereing with the activities of other parts. This enables the visitor to see what he wants to see. It also considers flexibility of expansion circulation, economy of space beauty and relationship of one function with another. There are two main design concepts:

(a) streak

(b) Compact

streak system is one that seperate activities according to their relationship with each other. This has the advantages of systemization and fesibility of programme. Visitors see what they want to see. Optimum conditions for enjoying the artifacts and manuscripts could be achieved by providing seperate entrances for the staff, visitor and artifacts.

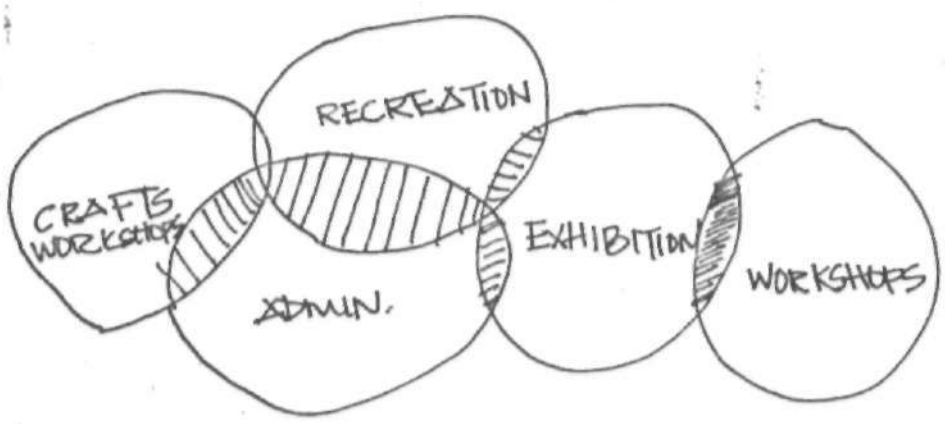
Design of exhibition of galleries takes into consideration circulation, ventilation, security and safety. Circulation forms are used in exhibition halls, workshops and recreation with connecting rectangular administration block. The accomodation for visitors is also a rectangular form.

Various design concepts are considered (see Fig.6.6a) Design concept (B) is considered suitable for the proposed museum. The forms complement each other Activities are seperated close circuit circulation is achieved. Two accesses to the galleries are provided.

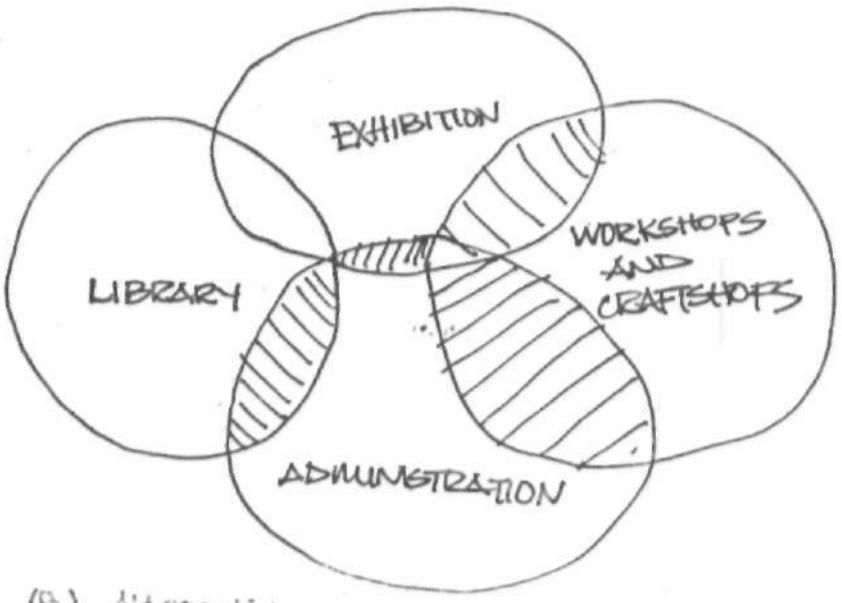
Natural lighting is used with complementing artificial lighting where necessary. Hausa architectural forms are used as shown in the sketches, and in the design.

The design of the exhibition galleries is based on the "open plan system". Hence modular system is adopted for maximum flexibility. Demountable partitions are used in the arrangements of interior spaces.

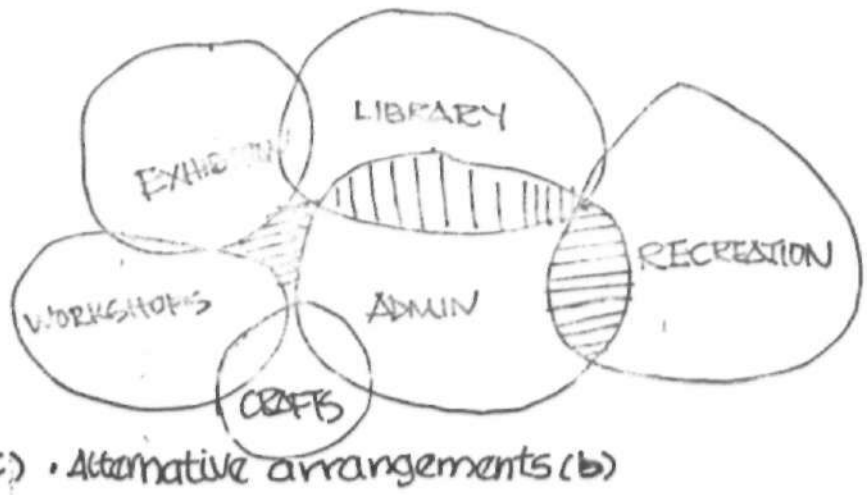
Free standing and wall fixed show cases would be used for maximum utilization of the interior spaces. The conservation area is depressed below ground level to avoid direct sunlight and air. This is much cheaper than the artificial methods of conservation; use of air conditioners, this also reduces vibrations as a result impact noise generated in the galleries and its surroundings.



(A) .Arrangements of museum's sections

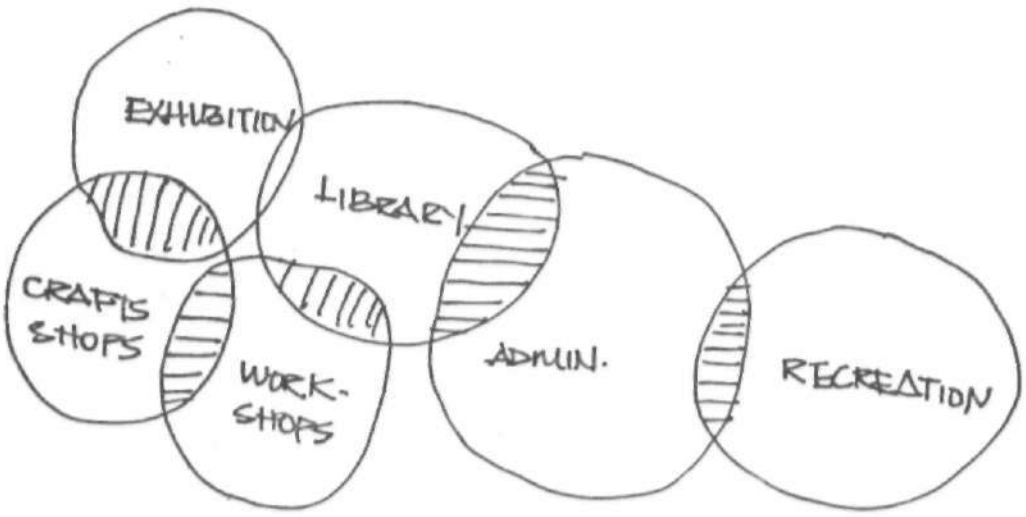


(B). Alternative arrangements (a)

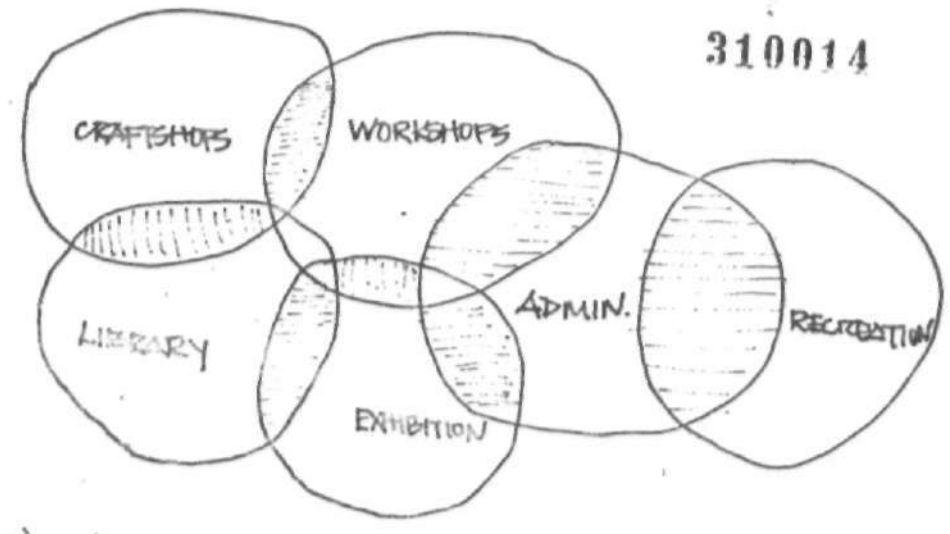


(C) . Alternative arrangements (b)

FIG 6.6a — DESIGN CONCEPTS



(D). Arrangements of museum's sections (contd)



E) Arrangements of Museum's Sections (contd)

310014

DESIGN CONCEPTS

FIG 6.6b

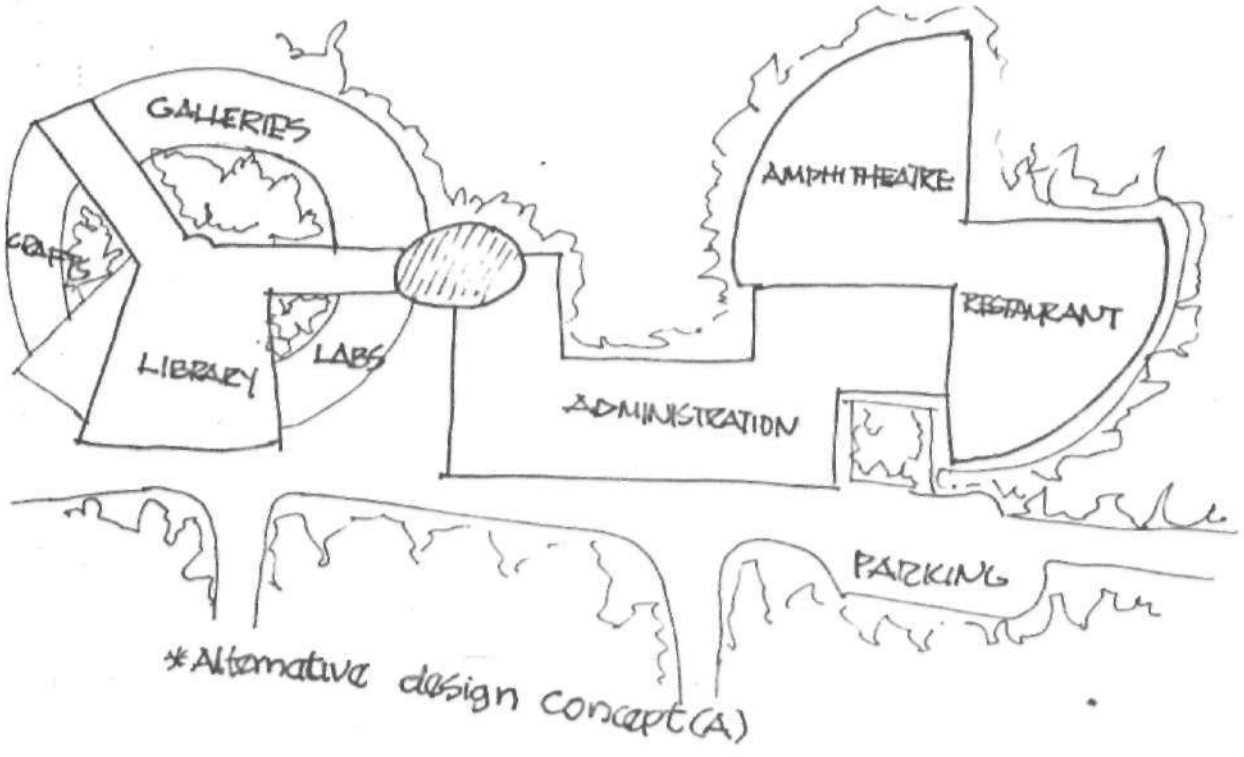

GALLERIES
CRAFTS
LIBRARY
LABS
AMPHITHEATRE
RESTAURANT
ADMINISTRATION
PARKING
*Alternative design concept (A)
GALLERIES
CRAFTS
AMPHITHEATRE
RESTAURANT
PARKING

FIG 6.6C

Cold water and power supply are from the mains along Sultan Bello Road. Storm water disposal waste water and solid wastes disposals are shown on the services drawings.

CHAPTER SEVEN

7.10 SUMMARY

The thesis looks at museums as a social institutions which is a very important medium for cultural rivival and preservation. Islamic arts are unique in the world of arts. They are non-figurative and non-representational. This was as a result of Islamic injunctions against images. Museums stareted as store-houses of antiquities. They were initially the exclusive preserve of the merchants and the ruling class. After insdustrial revolution they were open to the public . Most museums are housed in old public buildings such as palaces, mosques and churches.

Visits to museums are greatly influenced by the facilities available, location and historical importance of the museum site. Security and safety largely depend on the circulation, materials of construction, nature of designs and activities of museum.

Islamic architecture adopts local materials and techniques of construction. Hence divessity of architectural styles in Islamic world. Hausa peoples developed a unique architecture, with available materials and technology.

This has some prominent architectural elements namely, Zanko (pinacle) Dogarai (Buttress) Rawani (parapet). courtyards are used to creat good micro-climate.

7.20. Conclusion

Museums is an institution which stores preserves, conserves the material and non-material culture of Sokoto calliphate. Museum architecture is a specialised architecture which takes many factors into consideration. Ventilation and circulation are very important where volume of traffic is expected especially in museums.

Islamic architecture symbolises unity of many different elements, mundane and sacred. Museum is expressive and understood by all, it shows sense of economy of architectural means. Museum architecture should be energy conserving, climatically sensible, technologically appropriate and decoratively symbolic. It is characterised by simplicity of structures, flexibility and adaptability for different activities, continuity of use, equality of patronage and active community particupation inducing facilities. Museum design in and lands makes use of courtyards water and leaf. insulating materials to create a conducive micro-climate.

BIBLIOGRAPHY

1. ABDU-ESH, I.M. (1970) Design Concepts of Islamic Architecture (Daral Arabiyah, Beirut

2. AFOLABI, S.A. (1986) Museum of Arts and Culture. Unpublished M.Sc.Architecture Thesis. ABU Zaria.

3. AHMED, M.K. (1984) The Intellectual Origin Sokoto Jihad (Iman, Ibadan).

4. DAIYABU, M.K. (1987) "Katsina Gobirau Museum" Unpublished M.Sc. Architecture Thesis, ABU Zaria.

5. BENNA, ASSCOC Sokoto Master Plan (1983- (Suda , Sokoto)

6. DOI, A.R. (1984) Islam in Nigeria (Islamic Publications Bureau Lagos).

7. EZZATI, A. (1979) Spread of Islam (Islamic Publications Bureau, Lagos).

8. GULZAR, HAIDER (1987) Towards an Islamic Environment. A paper presented at Conference on future of Ummah; July, Kuala Lumpur Malaysia

9. HASSAN, FATHY (1986) Natural Energy And Vernacular Architecture. The University of Chicago press, Chicago).

10. HEAM COTE D, (1976) Arts of the Hausa (ABU Press Zaria)

11. HISKET, M. (1973) The Sword of Truth (Oxford University Press London)

12. ISMAEL, A.B.B. (1975) The Life and Works of Danfodio (Islamic Pub. Bureau Lagos).

13. JEAN CLAUDE (1965) The Museums Volume XVII No.1 (UNESCO Press, Paris)

14. KENNETH, HUDSON (1977) Museums for the 1980s: A survey of World Trends (Butter and Tanner Ltd London)

15. LABSON, L, (1964) Lighting and its Design (Whitney Publications Inc. New York).

16. LUHMCBRUCH, M (1980) Museum Architecture (UNESCO Press, Paris)

17. RODULF, A. (1970) Dynamics of Architectural Forms. University of California Press Berkeley).

18. SAAGARI, S. (1970) Usman Dandodio (Islamic Pub. Bureau, Lagos.)

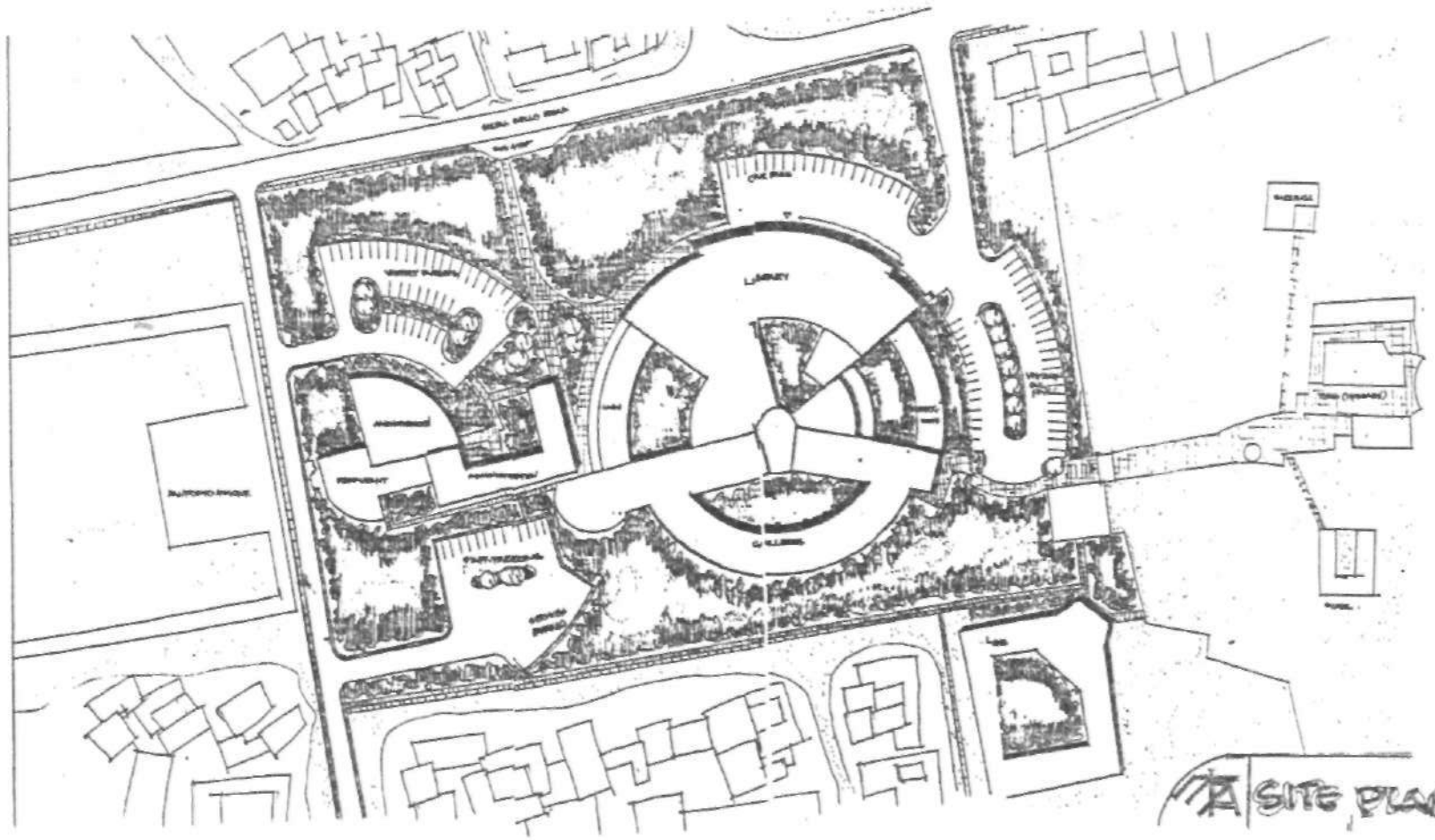
19. SOKOTO STATE HISTORY BUREAU (1984) Tahiri Vol. 2 No 2. (Government Press, Sokoto)

20. BURCHARDT, T. (1976) The Arts of Islam (Oxford University Press London)

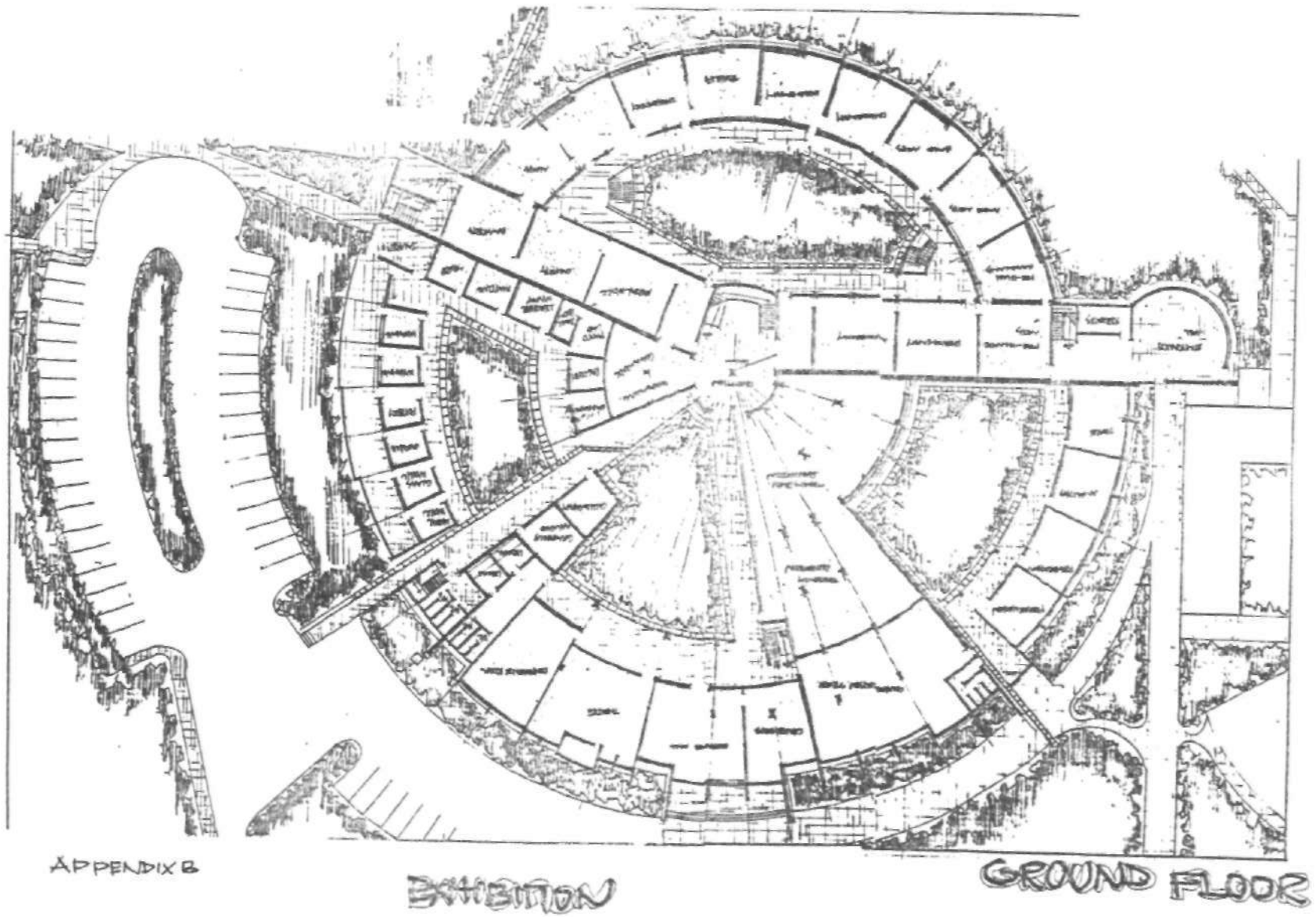
21. UNESCO (1982) Museum Management and Curatorshi Vol. 1. No 2. (UNESCO Prees, Paris)

23. UNESCO (1974) Museum Organisation (UNESCO Press, Paris)

24. VANSINA, J. (1984) Art History in Nigeria (Longman Inc. New York).

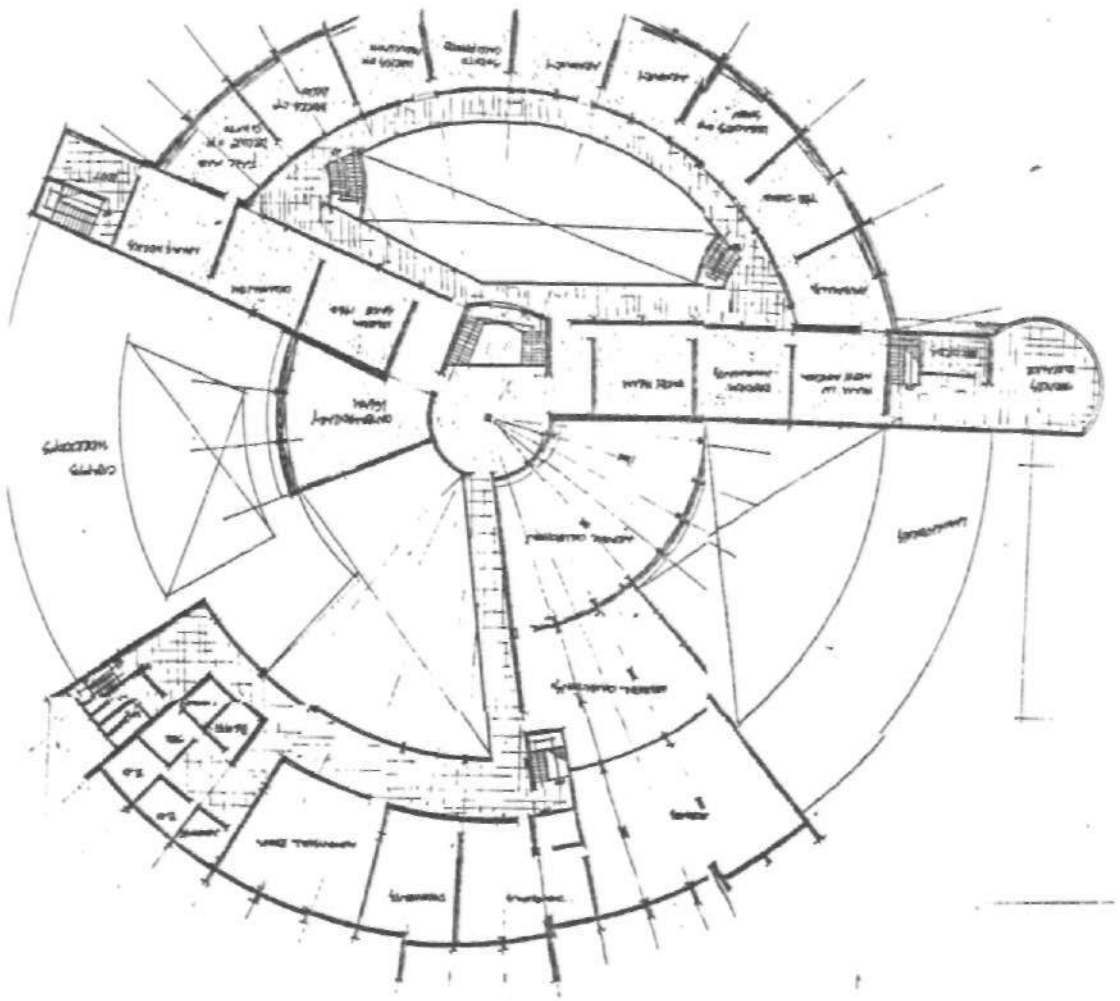


APPENDIX A



APPENDIX B

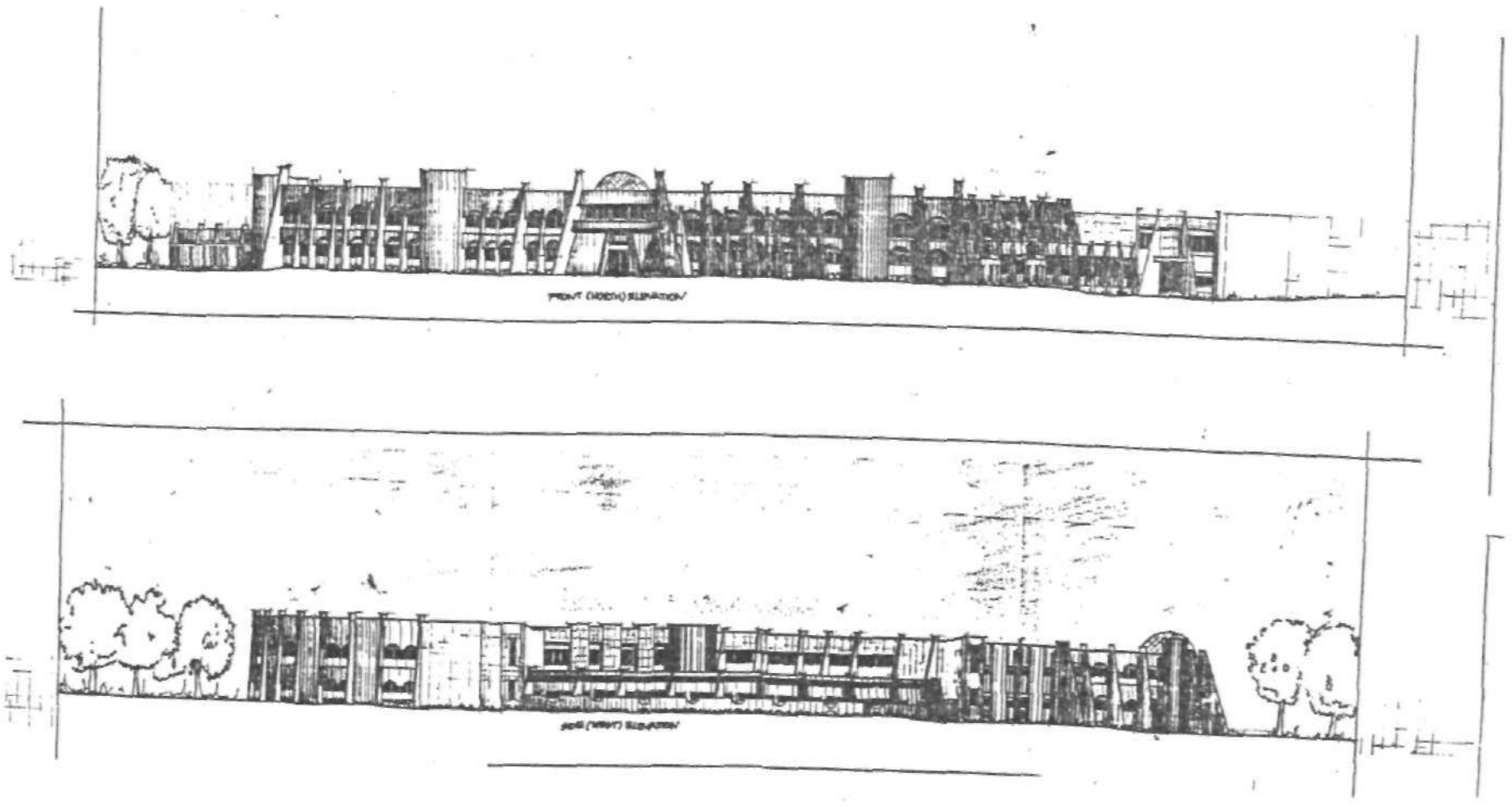
EXHIBITION GROUND FLOOR



EXHIBITION

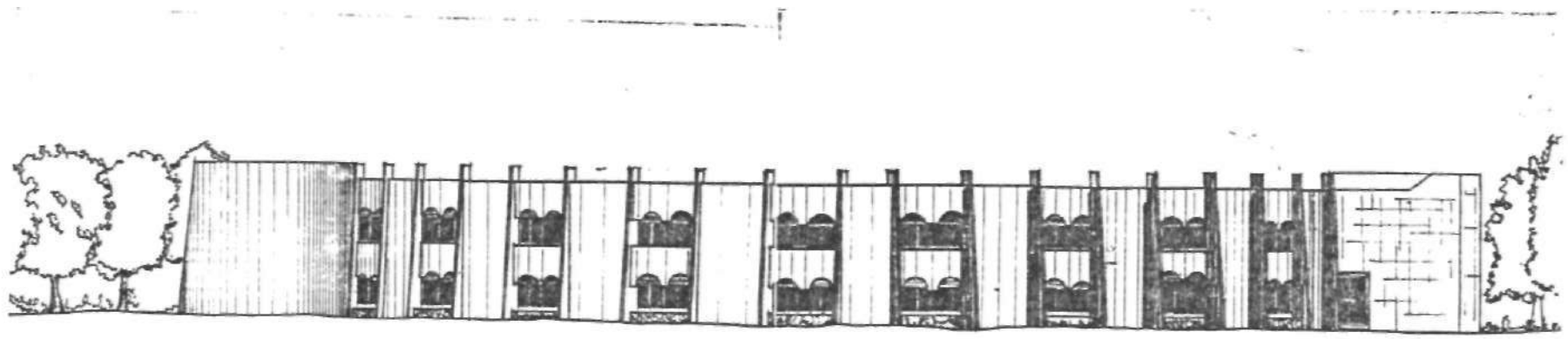
FIRST FLOOR

APPENDIX C

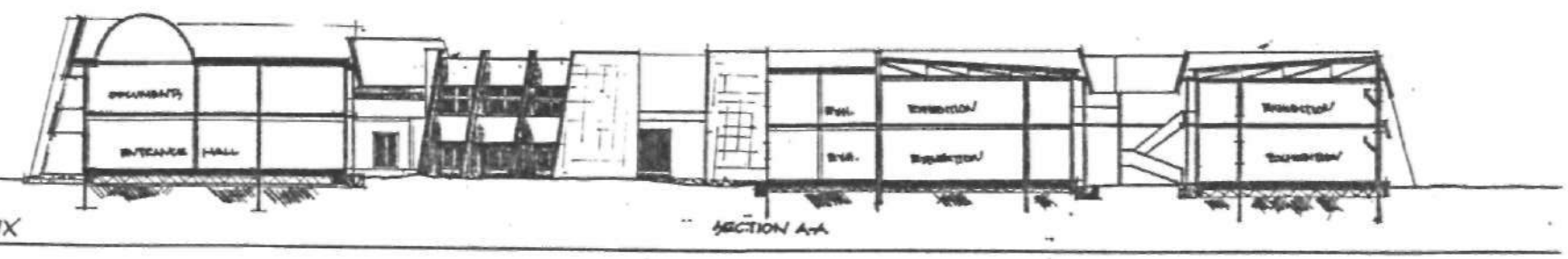


APPENDIX D

EXHIBITION



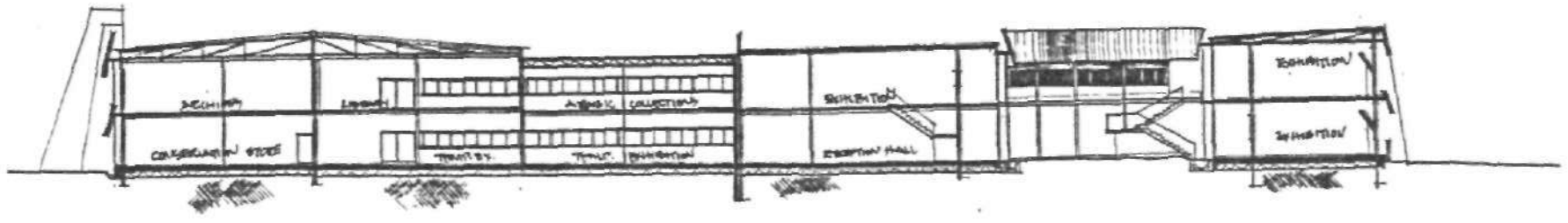
SIDE (SOUTH) ELEVATION



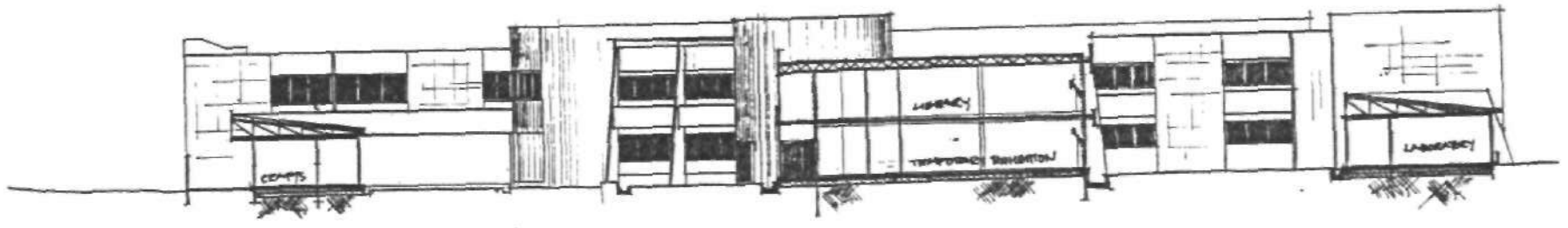
SECTION A-A

APPENDIX

EXHIBITION



SECTION B-B

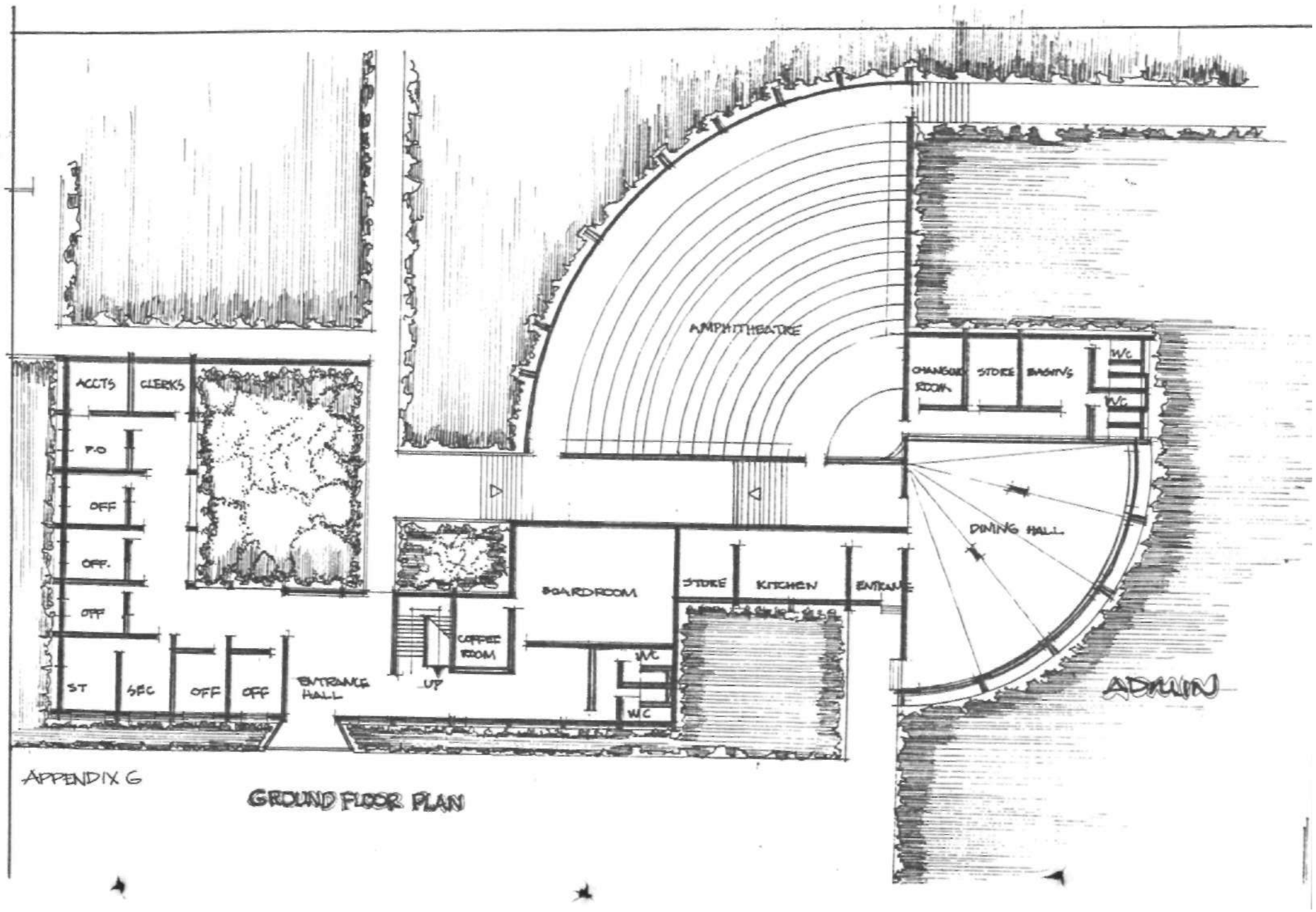


SECTION C-C

APPENDIX F

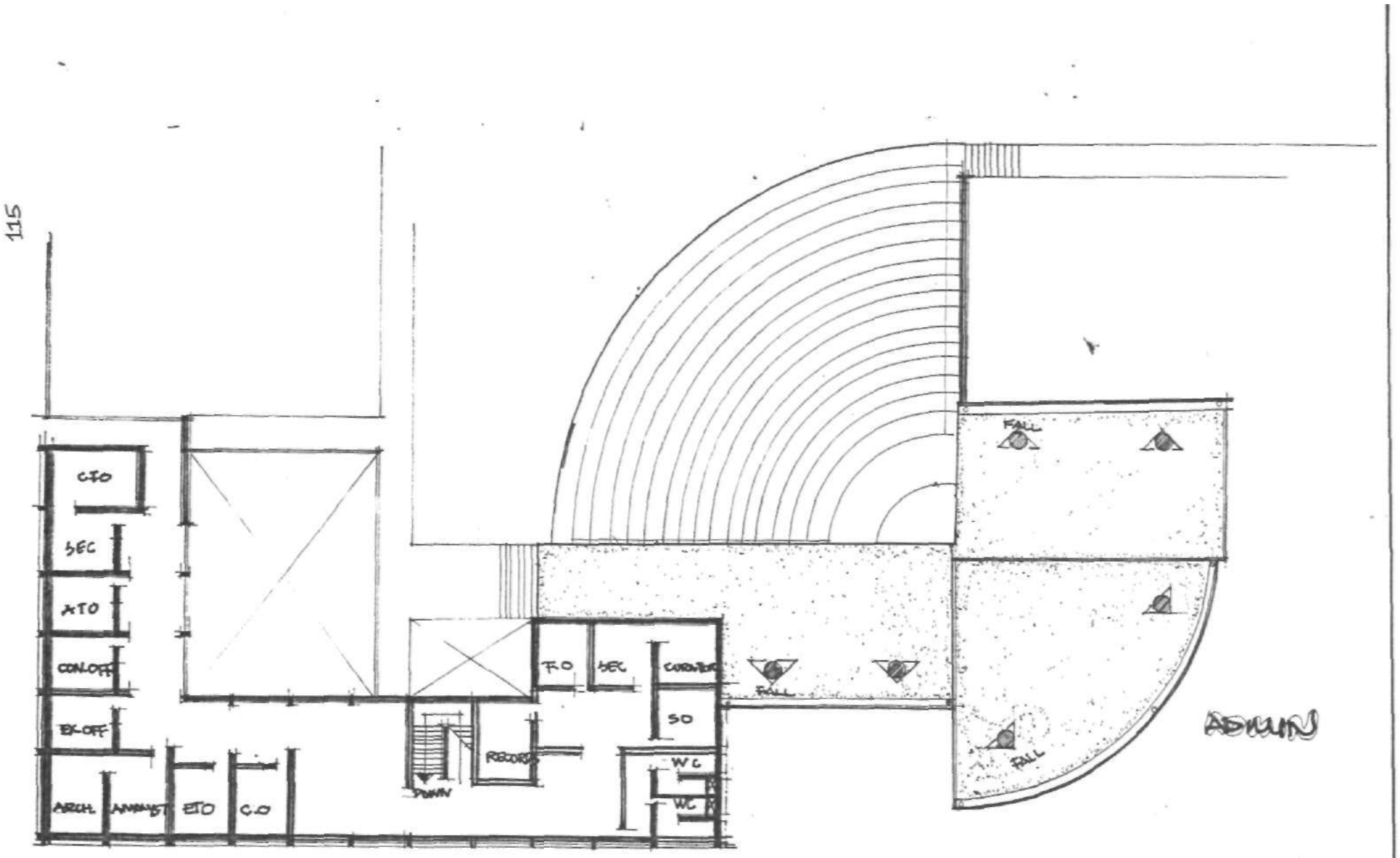
EXHIBITION





APPENDIX G

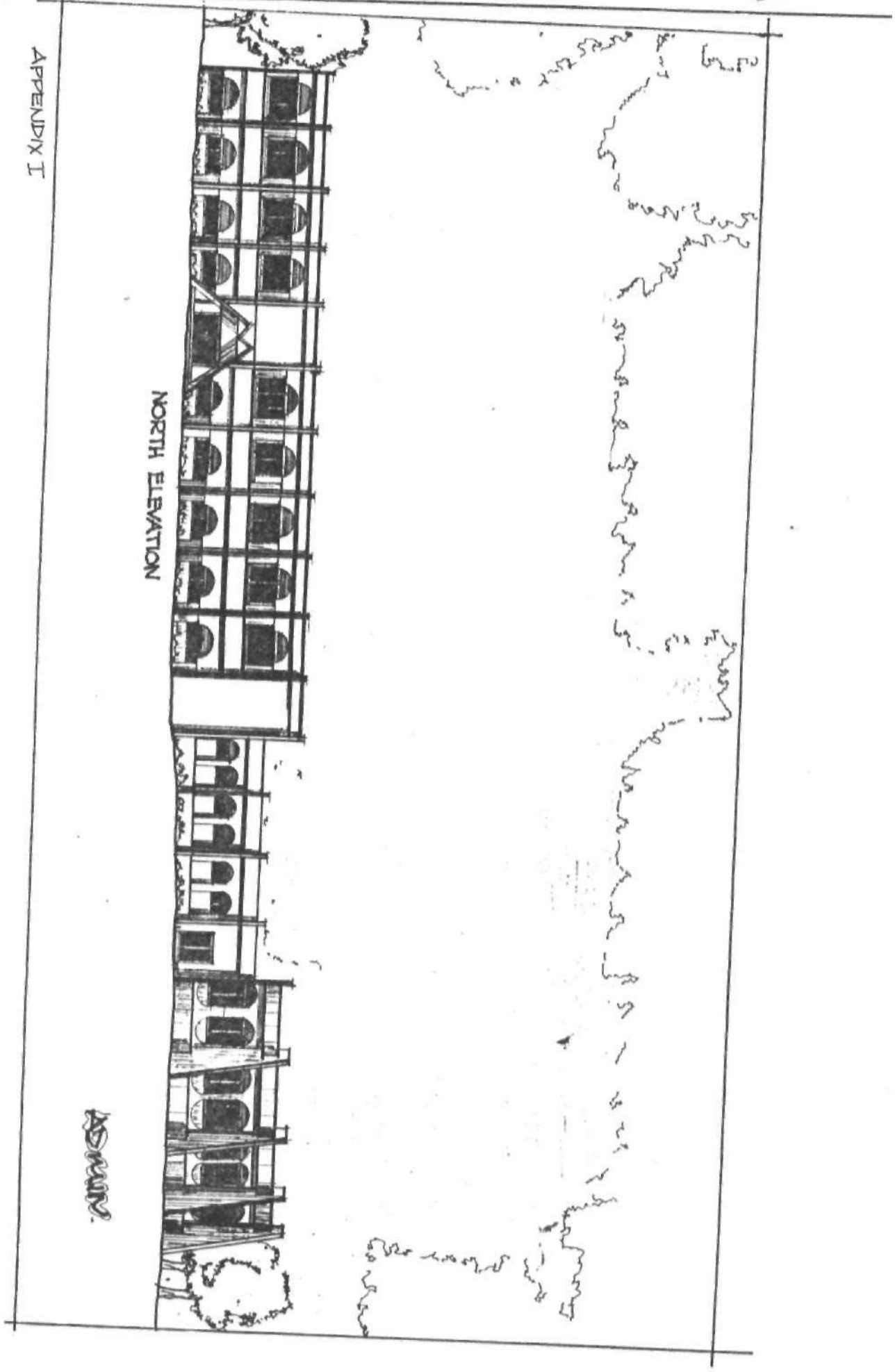
GROUND FLOOR PLAN



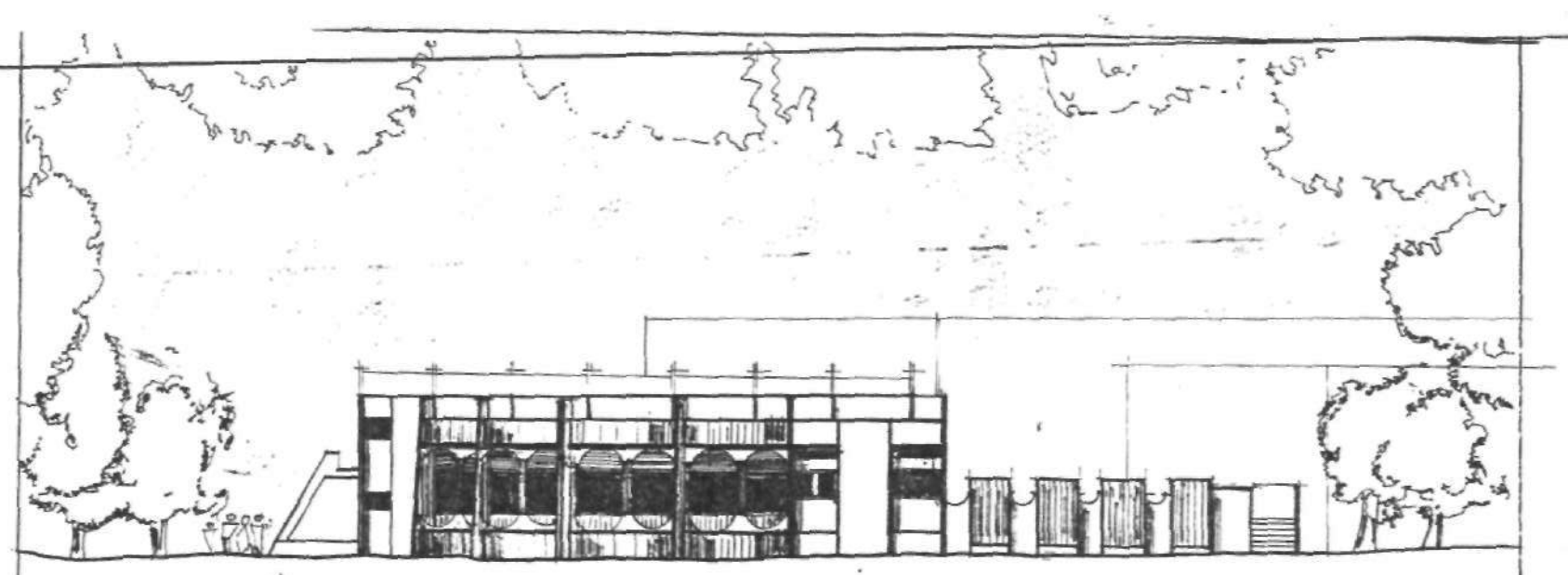
APPENDIX H

FIRST FLOOR PLAN

APPENDIX I



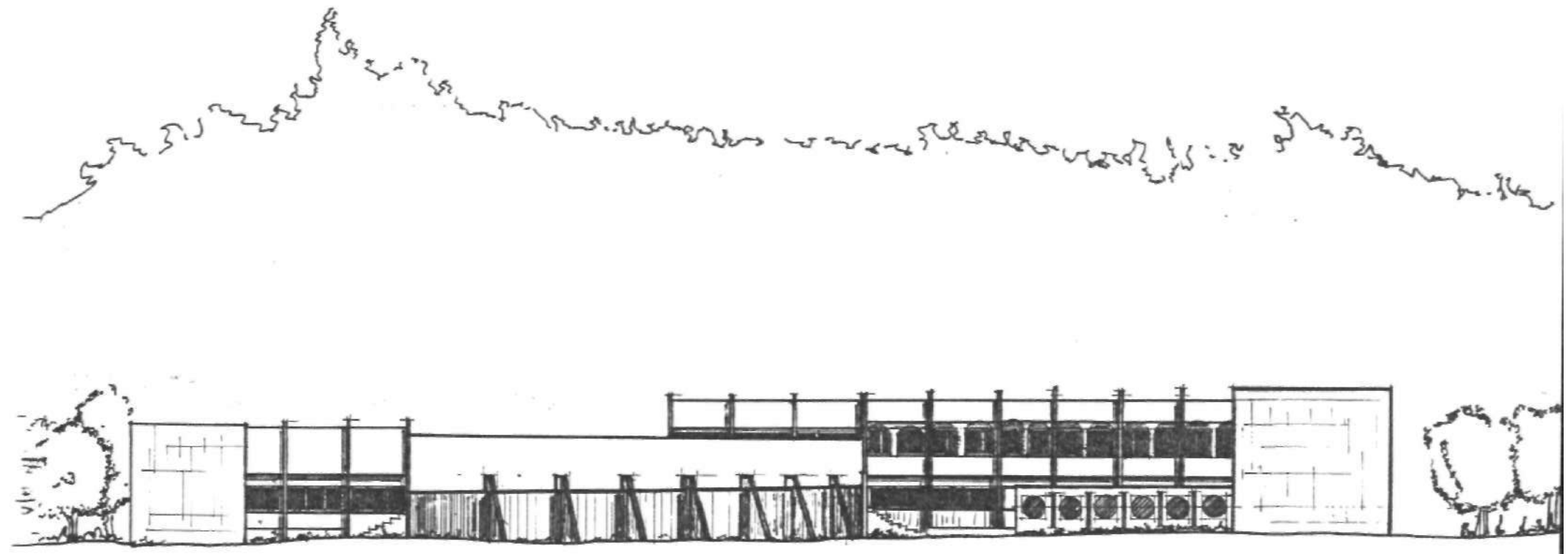
NORTH ELEVATION



WEST ELEVATION

APPENDIX 5

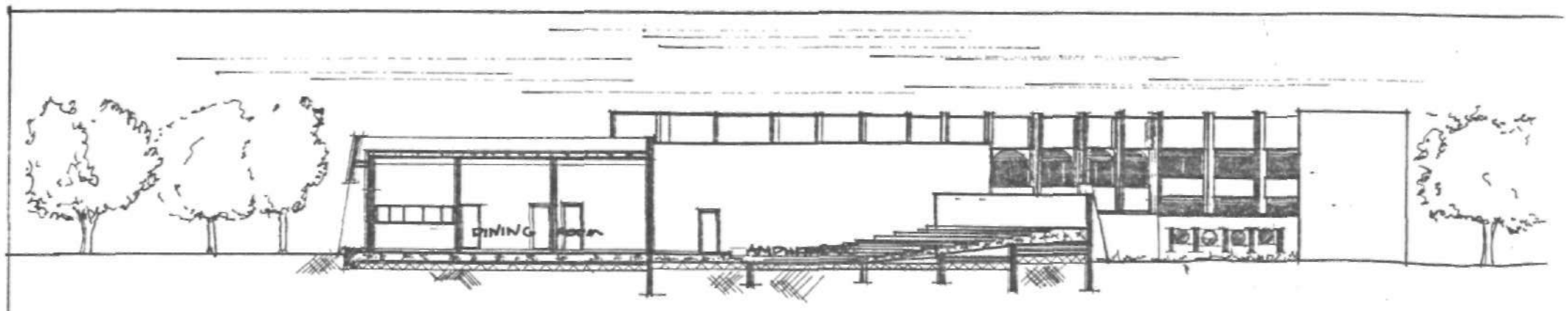
ADMIN

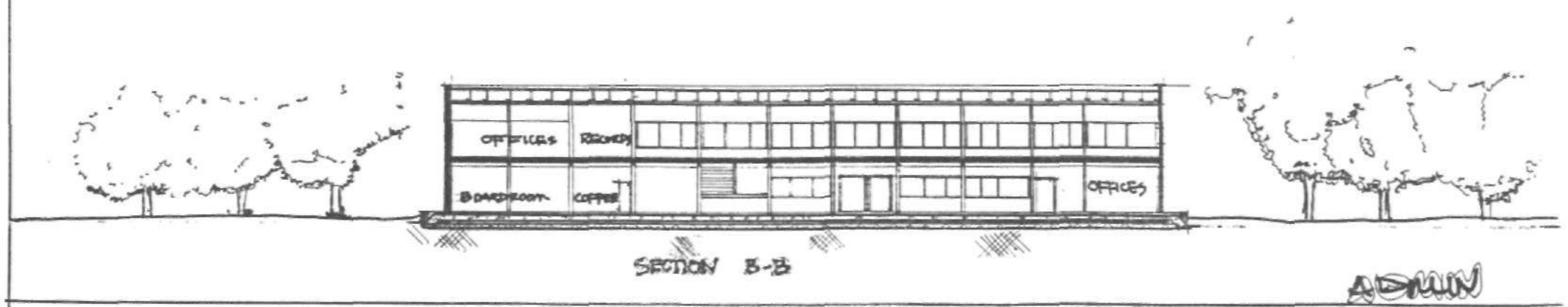


EAST ELEVATION

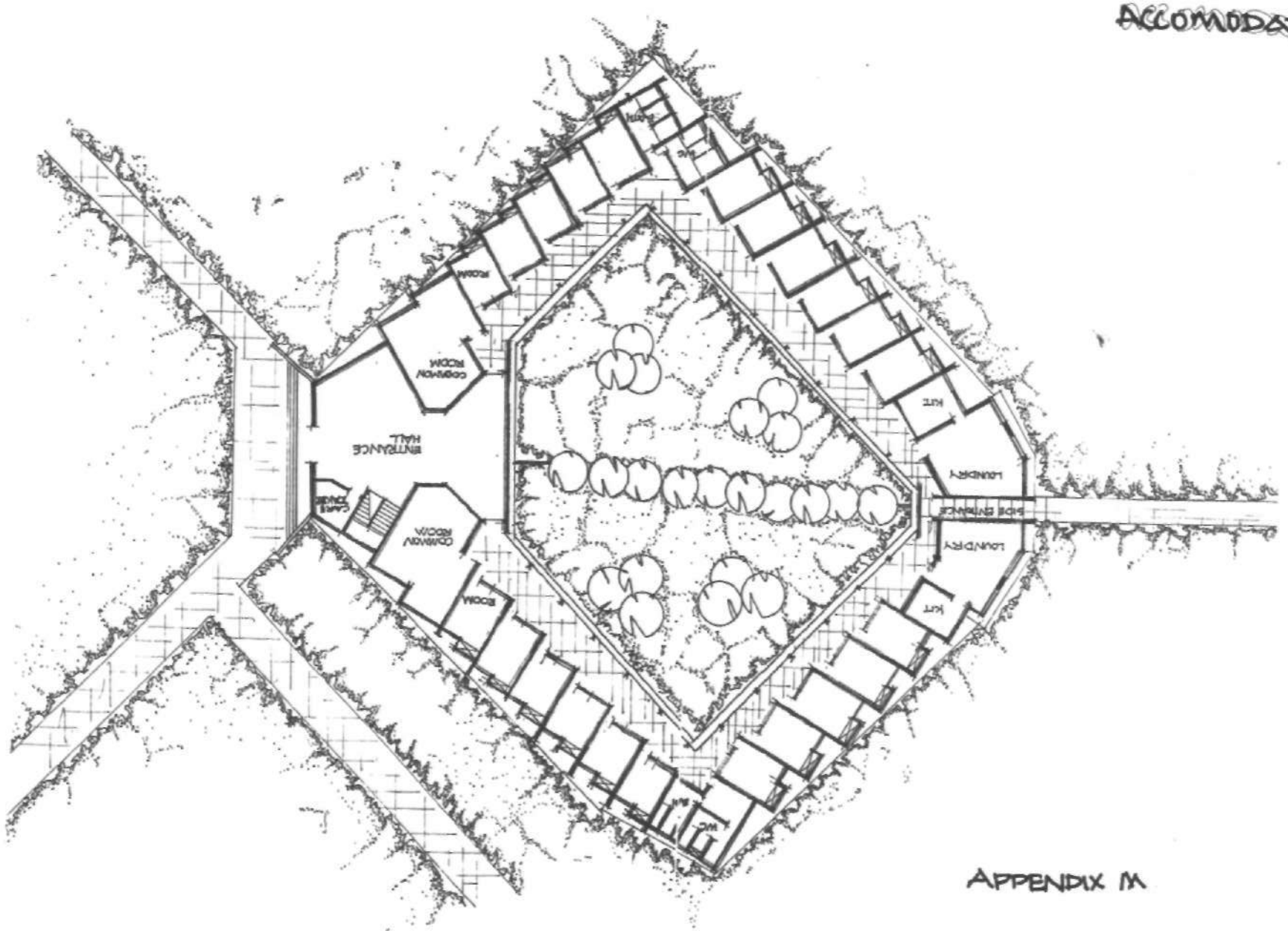
APPENDIX K

ADMIN.


DINING
SECTION A-A

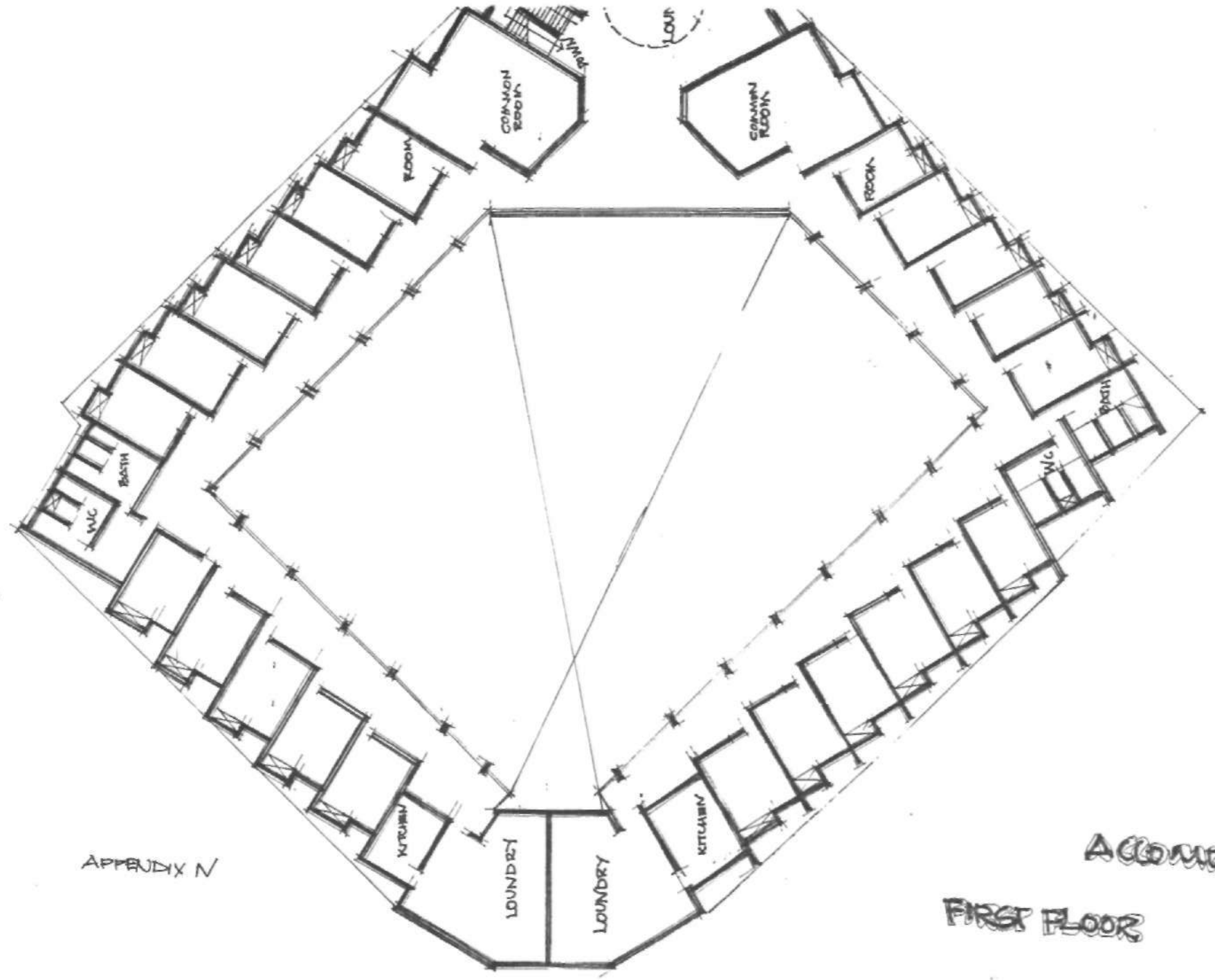

OFFICES
RECORDS
BOARDROOM
COFFEE
OFFICES
SECTION B-B
ADMIN

ACCOMODATION



APPENDIX M

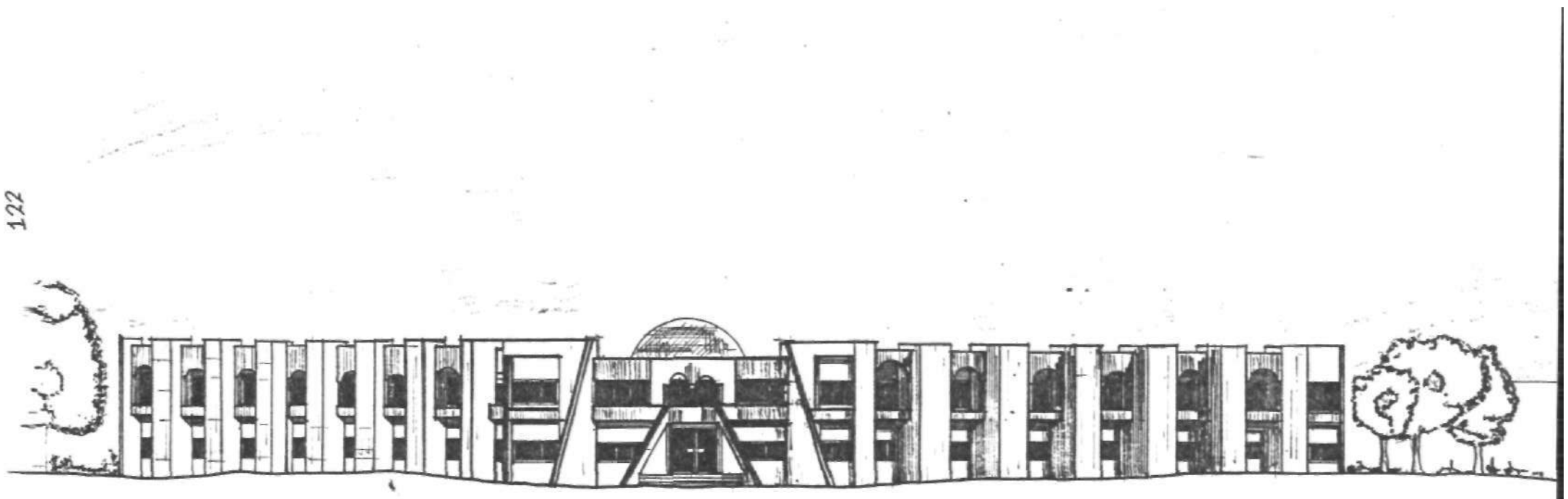
ACCOMODATION



APPENDIX N

ACCOMODATION.

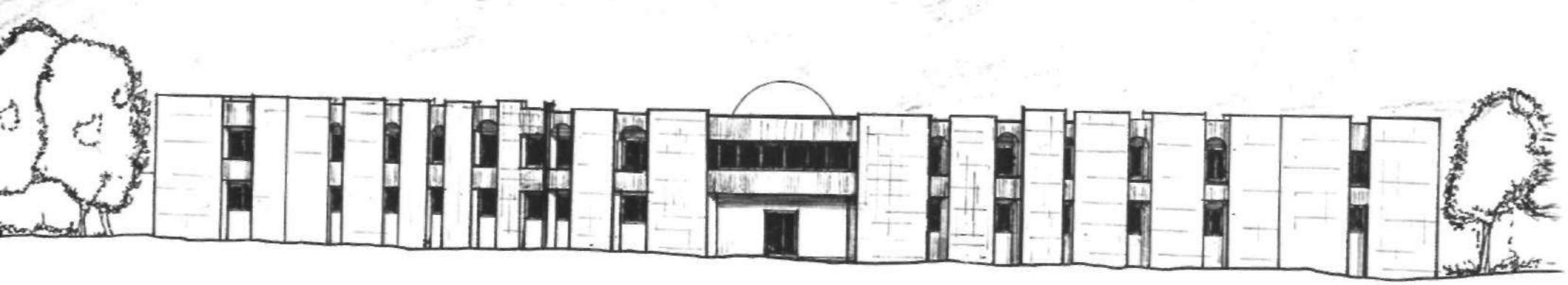
FIRST FLOOR



FRONT ELEVATION

APPENDIX 'O'

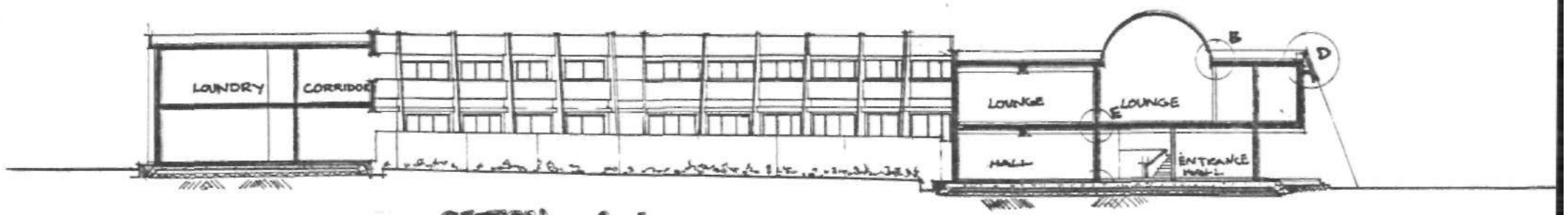
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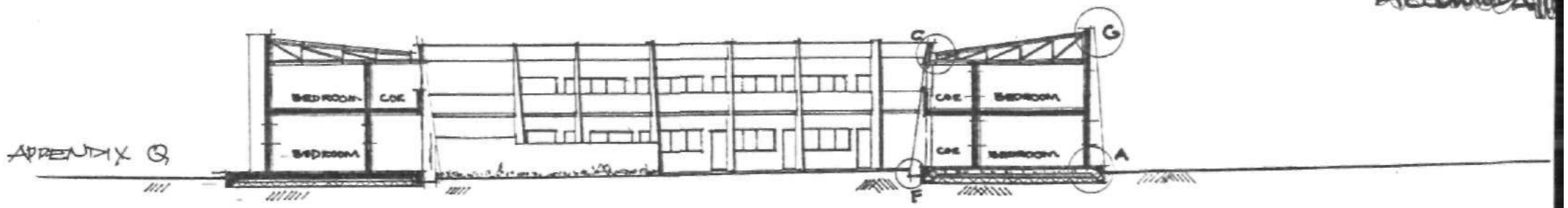
REAR ELEVATION

APPENDIX P

ACCOMODATION



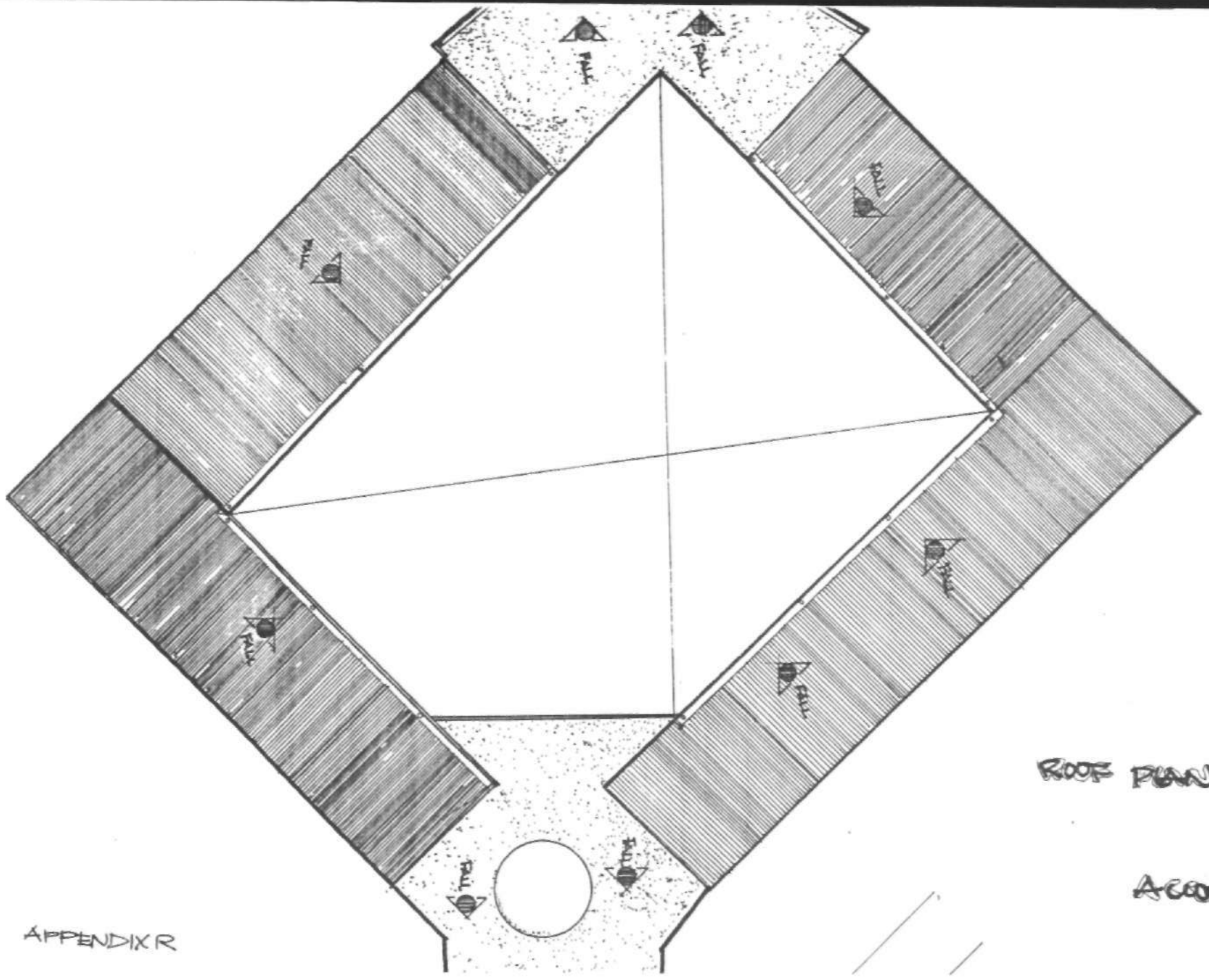
SECTION A-A



SECTION B-B

APPENDIX Q

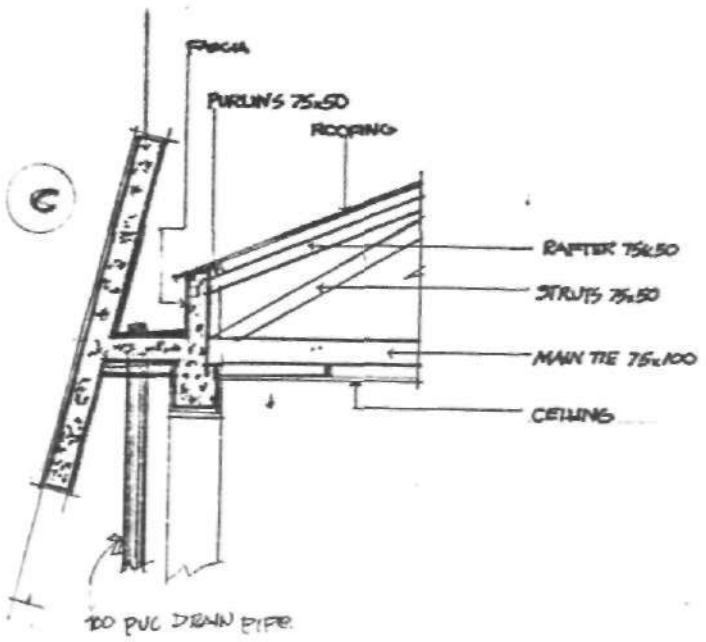
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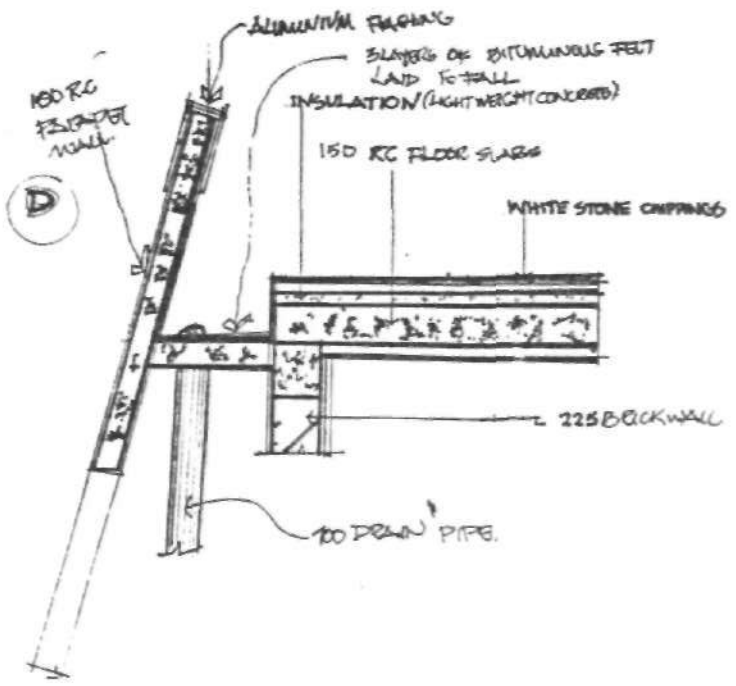
ROOF PLAN :-

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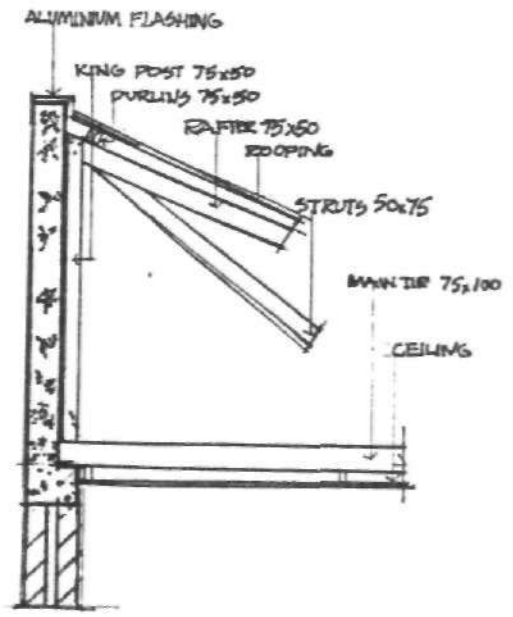
APPENDIX R



C

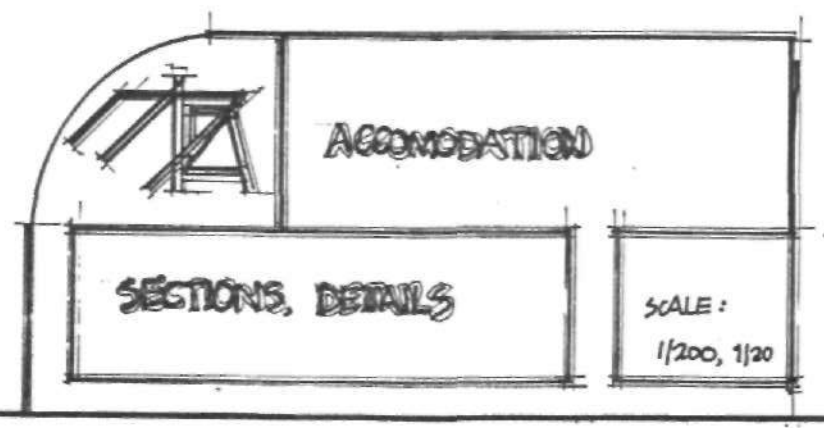


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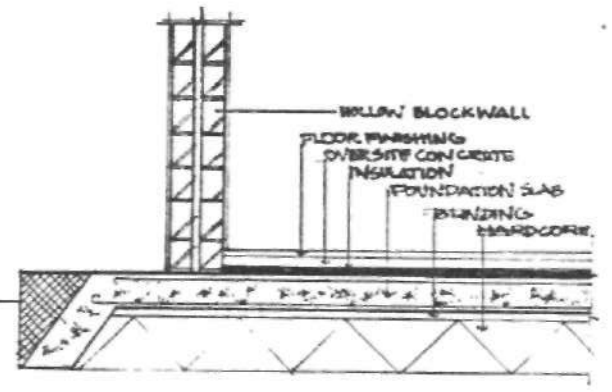


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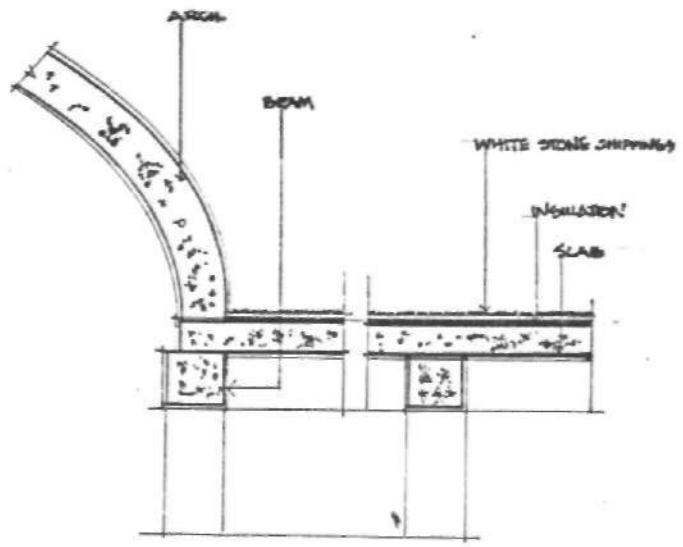
APPENDIX 5



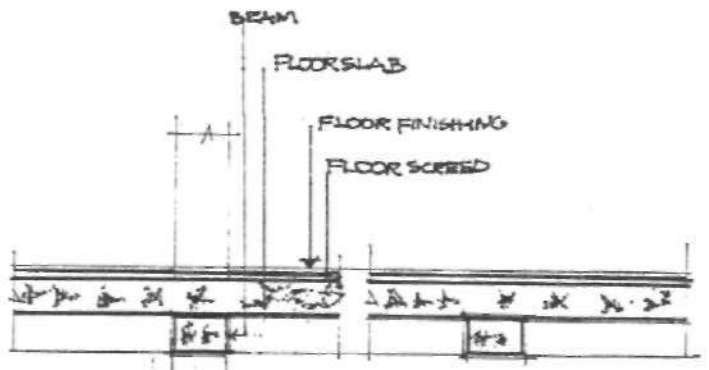
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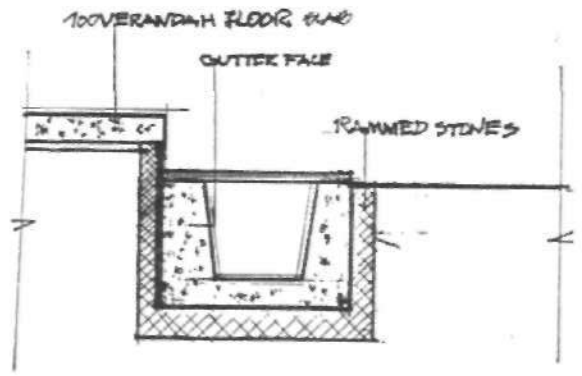
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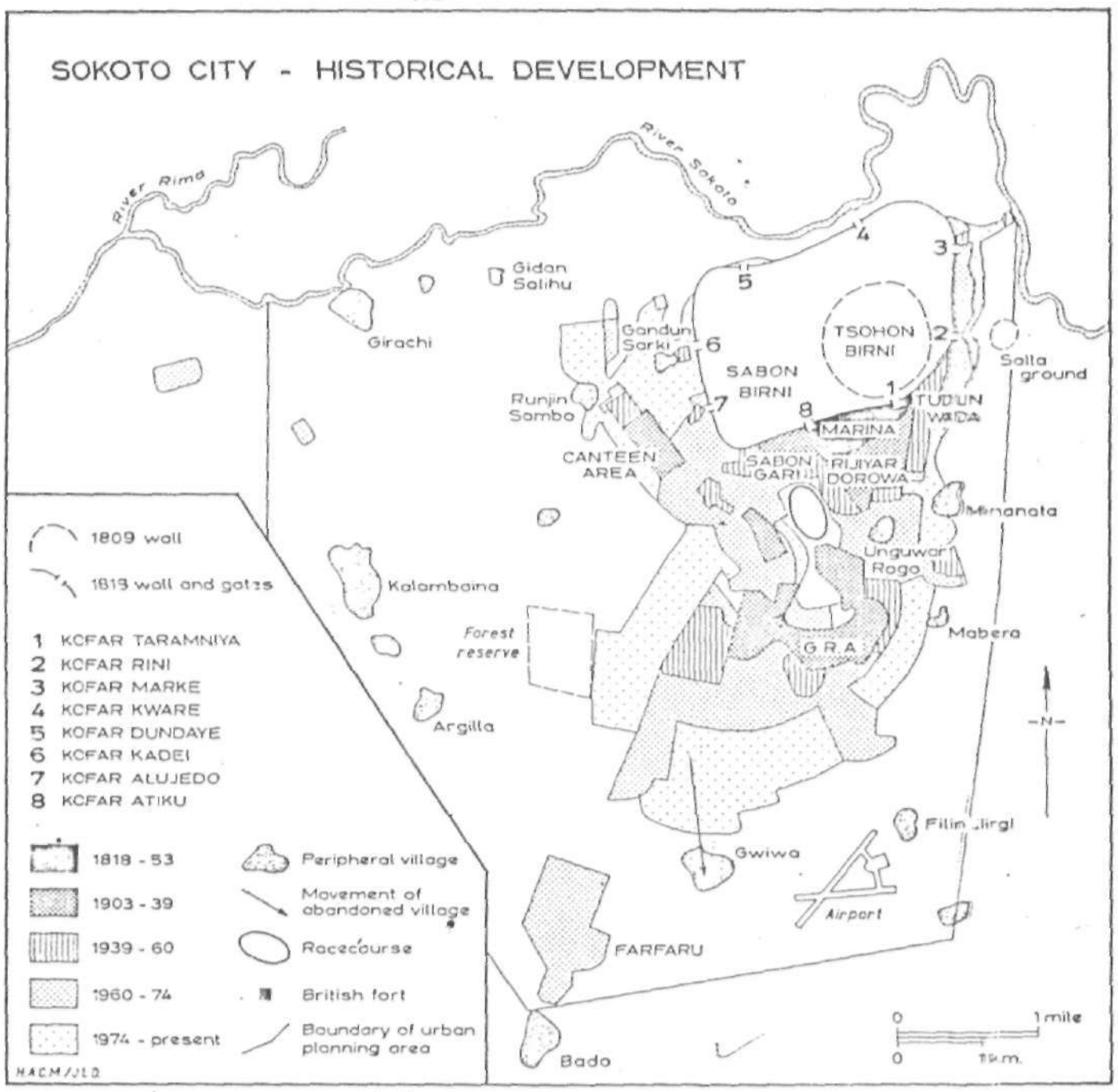
E



F



APPENDIX T



Post-independence

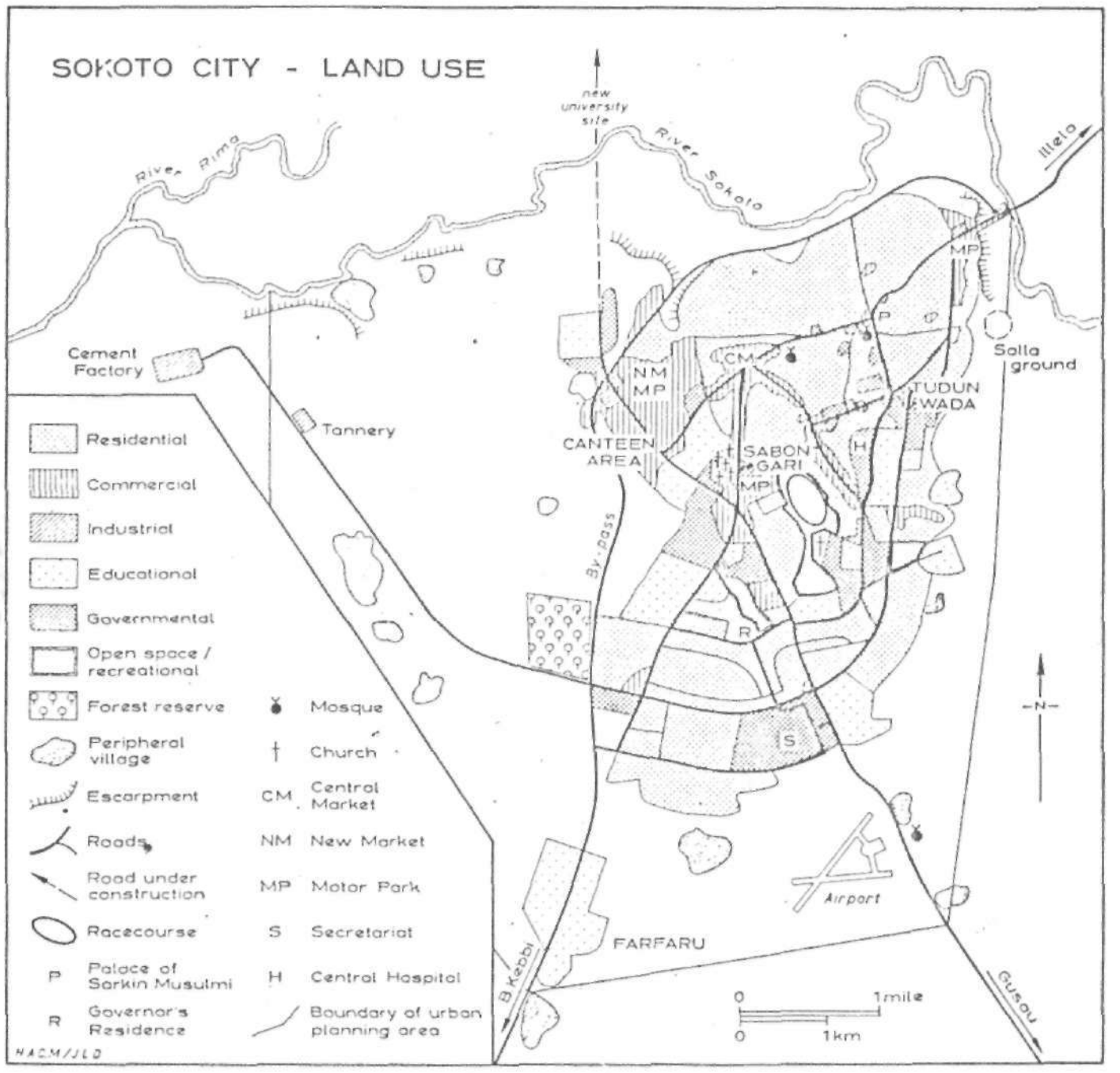
APPENDIX U

Sokoto's modern development has entailed expansion from all of these nodes, but especially from the G.R.A. Sokoto's role as state capital has necessitated the construction of numerous government ministry buildings. At first these grew in a piecemeal fashion around Sabon Gari and to the south-east of the Racecourse. [illegible] the new Secretariat complex site beyond the G.R.A. The rapid growth of numbers involved in construction, commerce, education, and administration has generated a demand for housing that is being met in three main ways: the settlement of more people in existing accommodation, particularly in the compounds of the birni; the extension of the urban area through planned housing development, especially in the southward growth towards Farfaru; and unplanned, or spontaneous development of housing, as in the suburb that grew between the By-pass – after its construction in 1974 – and Kofar Kadri.

Of the many recent developments, two are noteworthy, the market and the University. The central market was [illegible] by Kofar Alujedo in 1980. The [illegible] housed since its opening in 1977 in former ministry buildings south-east of the racecourse, is now being constructed on a site near Dundaye village. The relocation of the University will probably have the more fundamental effect on the future physical development of Sokoto city: perhaps it will form the nucleus of a sizeable suburb.

H. A. C. Main

SOKOTO CITY: LAND USE



APPENDIX V