

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF ARCHITECTURE AND PLANNING

FACULTY OF ARCHITECTURE AND BUILDING TECHNOLOGY

DEPARTMENT OF ARCHITECTURE

CENTRE FOR AFRICAN HISTORY AND ARTS, KUNSU, BRONG AHAFO REGION

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THE AWARD OF THE POSTGRADUATE DIPLOMA IN ARCHITECTURE

BY

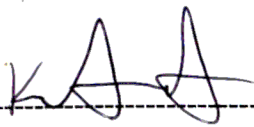
KWADWO ASARE ANIM
(POST GRADUATE DIPLOMA)

AUGUST,2009

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DECLARATION

I declare that this report, which is in partial fulfilment of the requirement for the award of postgraduate diploma in Architecture, has been wholly undertaken by me and duly supervised.

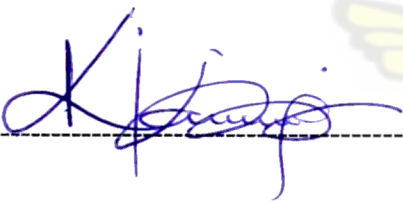


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I declare that this report which is in partial fulfilment of the requirement for the award of postgraduate diploma in Architecture has been duly supervised and I am satisfied that it has been wholly undertaken by the student.



22ND SEPT, 2009.

MR. SAMUEL AMOS- ABANYIE
(SUPERVISOR)

DATE

PROF. G. W. K INSTIFUL
(HEAD OF DEPARTMENT)

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DEDICATION

dedicate the design thesis to my loving mother, Miss Elizabeth Longdon and sister, Afua Asare Anim
for their immense love and care, and for their contribution to my education and general upbringing.

KNUST



ACKNOWLEDGEMENT

To God be the glory, great things he has done. My immeasurable gratitude goes to God Almighty for having preserved my life to see the accomplishment of this project. I also thank my mother and sister, and all my relatives for their love and support. And to my supervisor, Mr. Ebenezer Abayitey, I extend my sincere gratitude for his time and patience. My gratitude is also extended to the lecturers of our Department and the supporting staff .I say thank you for your various contributions towards my academic work. May the good LORD bless you all.



ABSTRACT

The Centre for African History and Art is a design proposal which will house exhibits of African artworks and reminiscences of African history. This proposal will be sited in Kunsu, Ghana, and would be a monument for African identity. The design of this facility shall satisfy most of the architectural design requirements for tropical climate. The materials and architectural features used would produce an outstanding tropical and African architecture which will be aesthetically pleasing.

The history and arts of Africans have got an impact on the type of architecture practiced in Africa. The forms, spaces, materials and architectural features of buildings in Africa can portray the culture, history and art of Africans. The transition in the cultures and arts of Africans over the years has also reflected in their architecture. The construction technology and finishes used for buildings can be related to the works of arts and crafts of Africans.

Tropical architecture is the type of architecture adapted in the Tropics in order to solve the problems imposed on building design by the harsh tropical weather conditions. The materials, finishes and architectural design features employed in vernacular and contemporary tropical architecture would be evaluated in this dissertation.

The Centre for African History and Art will collect and exhibit art from throughout Africa. The collection, which dates from antiquity to the present, would include traditional masks and figures, textiles, costumes and jewellery, furniture, household objects and architectural elements, as well as modern sculpture, paintings, prints and ceramics. This facility will be very beneficial to all Africans in the world.



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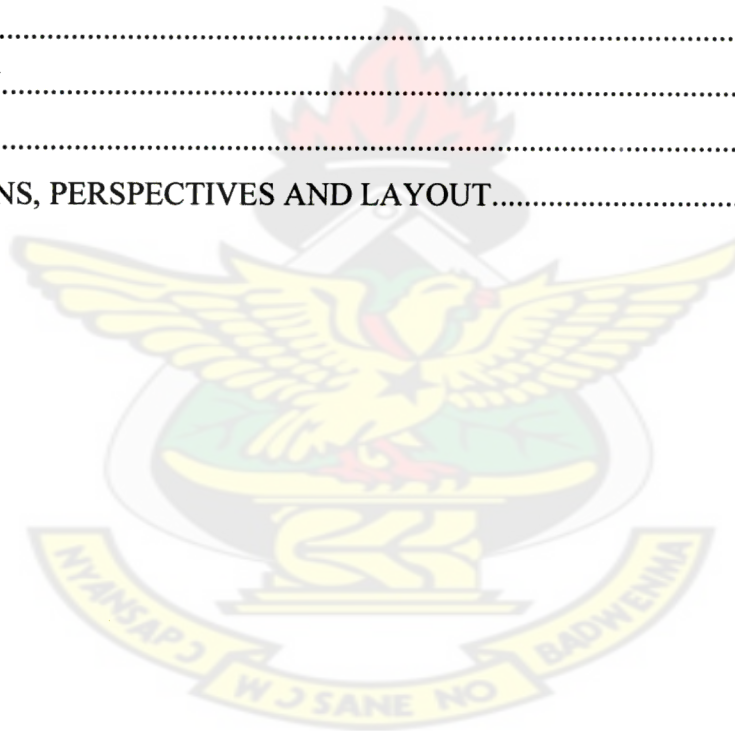
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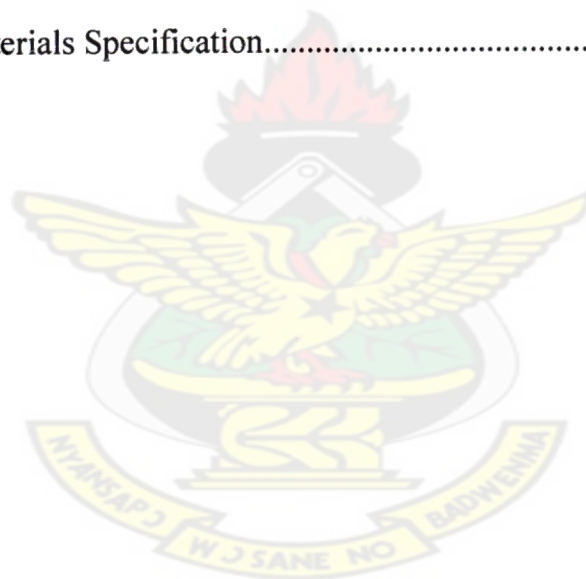
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CHAPTER ONE

1.1 INTRODUCTION

Africa is the world's second-largest and second most-populous continent, after Asia. With an area of 30,221,532 km² (11,668,545 sq mi) including adjacent islands, it covers 6% of the Earth's total surface area, and 20.4% of the total land area. With more than 900,000,000 people (as of 2005) in 61 territories, it accounts for about 14% of the world's human population. The continent is surrounded by the Mediterranean Sea to the north, the Suez Canal and the Red Sea to the northeast, the Indian Ocean to the southeast, and the Atlantic Ocean to the west. There are 46 countries excluding all the island groups but including Madagascar, and 53 including all the island groups.

Africa, particularly Central Eastern Africa, is widely regarded within the scientific community to be the origin of humans and the Hominidae tree, as evidenced by the discovery of the earliest hominids.

In the late nineteenth century, the European imperial powers engaged in a major territorial scramble and occupied most of the continent. During that period in African civilization most of the continent's priceless culture was lost and taken over by those of their colonial masters. To this day, most of the post colonial generations have little or no knowledge about their indigenous culture. This has thus necessitated the need for the establishment of institutions where these lost history, art, moral values, etc could be taught.

This voice has been echoed by the fact that the western world since the late eighties to recent years, has made various attempts to define and display the ambiguous cultural phenomenon known as 'Contemporary African History and Art'. The first of these attempts dates back to 1989, at the Pompidou Centre, Paris, with the exhibition *Agiciens de la Terre*— whose curator Jean-Hubert Martin was part of the curatorial team for this exhibition. That event marked the rather controversial début of Contemporary African Art, in a Western context, defining it from a particular European perspective.

For Africa to reclaim its glory she is now set with the quest to showcase and promote her history via art, education and social activities and events for individuals of all ages and cultural backgrounds.

"We all belong to Africa. It is the birthplace of humanity, where we learned to walk, to talk, to play. As other continents drifted to their present positions, the Equator's tropical warmth helped to make Africa the hothouse of evolution. Africa is the home to the greatest numbers of animals in the world. Her landscapes and wildlife are fascinating, but our closest affinity is with her people. Born in Africa millions of years ago, our shared heritage provides us with

a universal sense of humanity. That history conspired to keep Africans and non-Africans apart for so long is a tragedy. Africa has been persistently misunderstood and misused by the rest of the world".

(Emil Igwenagu, founder, Worcester African Cultural Centre (WACC), 2001)

1.2 PROBLEM STATEMENT

"Let's face it -- think of Africa, and the first images that come to mind are of war, poverty, famine and flies. How many of us really know anything at all about the truly great ancient African civilizations, which in their day were just as splendid and glorious as any on the face of the earth?"

(Henry Louis Gates, Jr., Wonders of the African World, 1999)

The world has for a long time seen Africa as a continent of poverty, war and famine; as presented by the media. The reality is rarely outdoor. Africa's precious cultural heritage, its hospitable people, rich natural or manmade resources are hardly forecasted. This problem coupled with the fact that the present generation has lost the sense of belief in the African culture, mainly due to the influence of western culture has necessitated the need to set up special institutions where the present and future generations can visit and learn more about their history and culture.

It is in this light that the proposal for a centre for African history and art has been championed to help curb the problem of cultural ignorance on the part of the present generation.

1.3 JUSTIFICATION

"There is no better way of helping people come to grips with cultural diversity in a meaningful and practical way than through a programme that makes the best in the cultural traditions of humanity accessible to all. I am particularly gratified by this opportunity for communities to share their cultural treasures with the wider world as they find ways of sustaining them not only for themselves but for the benefit of humanity."

(J.H. Kwabena Nketia, President of the Africa Section of the International Council of Music UNESCO, 1997)

Considering the present state of African culture, there is no gainsaying that this meaningful and practical way proposed in the above statement will result in an immense contribution to cultural diversity.

This practically means bringing the African culture to the doorstep of the people by setting up institutions and other such facilities in various vicinities to enhance cultural diversity. Ghana can proudly boast of places like the Kwame Nkrumah Museum and the Manhyia Palace as examples of such facilities where history and culture can be seen and appreciated. However, these places have little or no information on other African countries. The proposed centre for African History and Arts (the thesis) will therefore be one of its kinds in the country.

An opportunity would thus be provided for Brong Ahafo region and Ghana as a whole to promote cultural unity between all African countries. It will also affirm the quest of Ghana to be the gate way to Africa and serve as a boost to the tourism industry; thereby providing a source of foreign exchange earnings in the country.

1.4 SCOPE OF STUDY

The thesis will involve the detailed architectural design of a group of facilities which will exude the form of African traditional architecture. These facilities will include

- Museums/Library/Art gallery
- Auditorium/Theatre
- African restaurant
- sculpture gardens

1.5 AIMS AND OBJECTIVES

To design a facility that will be a one stop point for African art and history. The facility will therefore be equipped to

- act as a vital educational resource on African history and art in Brong Ahafo region, its surrounding communities, the rest of the country and the whole West African sub region.
- attract audiences of diverse backgrounds, and to expose them to various aspects of African culture.
- provide a forum for cross-cultural exchange for various organizations
- provide a context in which to understand regional African history and culture, via the provision of information and interactive experiences, about the global history of Africa and its impact around the world.

- offer another rich and varied cultural resource to Kumasi and the Ashanti region in general.
- provide varied social services that directly addresses the needs of the African population.

1.6 TARGET GROUP

- The people of Kintampo especially Kunsu
- Historians
- Students
- Tourists – local and foreign

1.7 CLIENT

The client is the Kintampo north district assembly.

1.8 CLIENT'S BRIEF

This is in accordance with the basic requirements of the client with respect to the desired spaces and features. This includes:

Auditorium/ theatre

Outdoor spaces

- sculpture garden
- Workshops(open air)
- amphitheatre

Restaurant

Museum

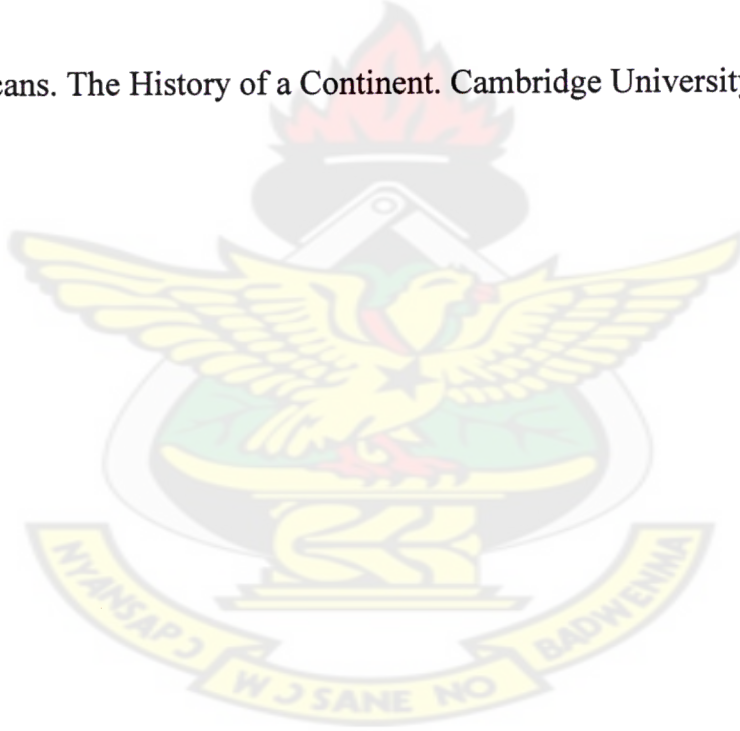
Parking – public and private

1.9 SOURCES OF FUNDING

- Ghana Tourist Board
- World Heritage Resources, U.N
- Kintampo north district assembly
- Donor/development partners of the area e.g. GTZ/Local Governance – Poverty Reduction Support Programme, DANIDA, NKUM Associates etc
- Department of feeder roads (Ministry of roads and transport).

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CHAPTER 2

2.0 LITERATURE REVIEW

2.1 AFRICAN HISTORY

2.1.1 AFRICA'S PREHISTORIC PAST

The African continent has an extremely lengthy period of human prehistory. Over one hundred years ago Charles Darwin hypothesized, on the basis of the limited evidence available at that time that Africa would prove to be the centre of origin of human species. Archaeological and paleontological research in the last sixty years has frequently and emphatically proven Darwin's position. It has been documented that early forms of humans were making and using stone tools in eastern Africa as early as two million years ago.

2.1.2 EARLY AFRICAN HISTORY

One of the earliest forms of literacy in the world, the hieroglyphic writing of ancient Egypt, was invented in Africa by Africans by about 3000 B.C. These ancient accounts give a vivid and intimate picture of this great African civilization during the nearly three millennia of its existence. Other Literate traditions were brought into Africa by outsiders. Literacy in Arabic penetrated to the western Sudanic belt, where important centres of learning such as Timbuktu and Jenne, existed during the fifteenth and sixteenth centuries. Later, with the arrival of the Europeans along the coast of sub-Saharan Africa in the fifteenth century, came the written accounts of Portuguese, Dutch, English, French and other visitors.

2.1.3 PRE-COLONIAL AFRICAN HISTORY

In Africa, the movement of human beings from one place to another has greatly facilitated the spread of ideas and technology, and has contributed to the development of new societies. Unlike Europe or Asia, Many parts of Africa were under populated until recent times. There were always new regions into which a pioneering society could move. This led, in turn, to an African concept of territoriality sharply dissimilar from that of other world civilizations.

Migrations and the formation of African societies also shed light upon other aspects of the African historical heritage. While a hallmark of African civilizations is their stunning cultural pluralism and tremendous diversity, there is also a basic traditional continuity that provides a surprising degree of similarity between even widely separated African societies.

2.1.4 THE ERA OF THE SLAVE TRADE

The seventeenth century was a watershed in African relations with Europeans. Portugal's commercial domination was supplanted by rival European states in West and Central Africa, and in East Africa by the reassertion of Swahili and Arab trading interests. At the same time, there was an enormous growth in slave trading; principally across the Atlantic but also across the Sahara and in the Indian Ocean.² Holland, England, France and several lesser European states established plantations in the Americas and looked to Africa for adequate labour supply. Portugal's commercial networks in Africa were quickly destroyed. By the mid-seventeenth century, France dominated European commerce on the Senegal River and England that of the Gambia River. England and Holland were the chief rivals for the trade of the Gold Coast. Recent studies of the transatlantic trade have established that some 10 million Africans were shipped across the Atlantic from the fifteenth to the nineteenth centuries.

2.1.5 CHANGING RELATIONSHIPS BETWEEN EUROPE AND AFRICA

The beginning of the nineteenth century marked an important transitional phase in relations between Europe and Africa. Changes were notable in three spheres of interaction. First, the suppression of the slave trade in the Atlantic and Indian oceans began and there was a gradual transition to "legitimate", non-slave commerce. Second, there was a rapid growth in European scientific interest in Africa. Third, there was a remarkable growth of interest in Christian missionary endeavour. All three were interconnected, since members of the scientific community and missionaries shared merchants' interests in commercial prospects and potential areas of mineral wealth. These three spheres of interest revolutionized European - African relations during the first three-quarters of the nineteenth century.

The colonial period of Africa lasted from the date of the Berlin Conference in 1884 to the start of Africa's independence movement.

2.2 TRADITIONAL AFRICAN ART

African art is the label usually given to the visual and plastic arts of the people south of the Sahara, especially those of western and central Africa. Not only have students of African art limited themselves to a portion of the continent but, they have been primarily concerned with the aesthetic appeal of sculpture and a description of the uses and functions of the objects in an ethnographic context. Northern Africa, almost half of the continent size has been excluded

from those studies because its arts clearly belong to widely flung traditions centred on the Mediterranean and worlds of Christianity and Islam.

Art deals with form and expresses images or metaphors (Layton; 1981). These exist everywhere a need for the formal expression of values by metaphorical means, an appeal to the senses of sight and touch. The visual and plastic arts are means through which this need can be satisfied. Art historians examine iconography, the meanings and characteristics of pictorial renderings or of symbols whose arrangements and specific location, affect the form of the art or, conversely the form affects the iconography.

African art does not constitute a single tradition since Africa is an enormous continent with hundreds of cultures that have their own languages, religious beliefs and political systems. Each culture produces its own distinctive art and architecture, with variations in materials, intensions and results. Whereas some cultures excel in wood carving, others are also known for casting objects in metal. In one culture, a decorated pot might be used for cooling drinking water, while a similar pot is used for ritual ceremonies in another culture.

2.2.1 ADDITIVE SCULPTURE; METALWORKING, CLAYS

Metals have been used for jewellery and larger sculpture over most of the African continent. The main metals were iron, copper and alloys of copper, gold and silver. Metallurgy requires complex expertise for the reduction of the ores and the preparation of alloys. The metal is worked either by heating and hammering into shape or by heating it beyond the melting point and pouring it into a mould; that is, by casting.

Clay allows the greatest versatility of expression of all the media used in sculpture. Ceramics could achieve intricate curved volumes as well as blocked angular ones and could provide the finest detail. Mud sculpture requires little technical skill beyond the shaping of the volumes on an armature. It is less versatile than ceramics because it is more fragile and has to be protected from humidity.

2.2.2 SUBTRACTIVE SCULPTURE; WOOD, STONE

Techniques for carving wood and the tools used are simple but require great skill. A block is hewn out of a tree trunk, a branch or root. After carving, details are worked out and finally polished with sandpaper-like substances. The carver has to choose his block with great care, visualizing the finished form in the block.

Stones for sculpture in the round relief or architectural sculpturing such as on capitals had been used to perfection in North Africa, where perhaps the highest technical achievements date from predynastic Egypt with its sculptures. Working with most stone was a matter of chiselling first, polishing later, except for soft stones such as soapstone.

2.2.3 PAINTING AND DRAWING

Since the graphic arts are two-dimensional, they require the feigning of greater illusion than is required for three-dimensional arts. Basically, the technology required first the making or preparation of a surface to carry the design; rock, wood, plastered, wall, paper, leather and even the skin of the human body⁴. The degree of absorption and the way in which pigments or stains lay on the grain are crucial factors. The lines, paint or dots can be applied with reed, pen, brush or finger. The techniques of graphic art are more varied than is usual in sculpture because of the special constraints of two- dimensionality.

2.3 AFRICAN ART

2.3.1 WESTERN AFRICA

Western Africa is rich in archaeological finds. Metalworking and ceramics appeared in this area about two thousand years ago. Iron facilitated the carving of sculpture in wood. Clay working led to the efficient storage and cooking vessels and allowed for the development of ceramic statuary. Many sculptural traditions in wood (a medium that does not survive archaeologically) developed in western Africa. Some were associated with leadership: the royal arts of the Akan of Ghana, the kingdoms and chieftaincies of the grasslands in Cameroon, and the richly diverse artistic traditions of the Yoruba of Nigeria. Works of art were produced to celebrate chiefly prestige, to decorate shrines, for divination, and to control supernatural forces.



Fig.2.1 Example of some artefacts from West Africa. (Maiden Mask, Igbo, Nigeria, Wood)

2.3.2 CENTRAL AFRICA

Central Africa has seen the rise of many kingdoms, mostly in the period before European contact. Some, such as the Chokwe and Kongo kingdoms, seem not to have lasted long after the arrival of Europeans. Others, such as the Luba, Kuba, and Lunda, also pre-colonial in origin, have lasted well into this century. All developed royal arts related to the political and religious sources of leadership. Among many groups, rites of passage became a significant focus for the arts. Masking was associated with an intensive period during which boys were initiated into the knowledge and responsibilities of adulthood. Analogous ceremonies existed for girls, although the use of sculpture was far rarer in their case. Among some groups, special induction ceremonies were held for healers, diviners, ritual experts, blacksmiths, sculptors, singers, and dancers. Belief in the efficacy of spirit ancestors to aid the living gave rise to sculptures of various types, ranging from portraits to figures that protected the relics of the dead.

2.3.3 ANCIENT EGYPT

Egypt's part of the Nile Valley was far more fertile for agriculture; moreover, its location at the northeast corner of Africa gave it access, in addition to contacts with the south, to the rest of northern Africa and the Near East, and to goods and ideas that helped to stimulate its rise as one of the earliest great civilizations. By about 4500 B.C., the inhabitants of that part of the Nile Valley had begun to develop, by continuous and gradually accelerating stages, a

complex society based on the efficient management of land and other resources, sophisticated technical skills, and the beginnings of hieroglyphic writing. Shortly before 3000 B.C., this process culminated in the unification of the entire land under a single ruler, an event that the Egyptians considered the beginning of their dynastic history. For the next three thousand years, Egypt was to remain a major cultural-and often military-power. Today, we are still impressed by the rich legacy of this extraordinary civilization: huge structures, extensive written records, diverse artistic achievements, such as portraits carved in stone, and spectacular gold work.

2.3.4 EASTERN AFRICA

In 1884 at the Berlin Conference, Africa was partitioned among the European powers. The colonial period ended in the mid-twentieth century with the independence of most states not only in eastern Africa but throughout the continent. This complex past is reflected in the arts of eastern Africa. These include the manuscripts and processional crosses of Ethiopian Christianity, as well as objects associated with Islam. Farther south, along the coast, are architectural forms influenced by Arabic sources via the Indian Ocean trade and adapted for local uses; the unique blend of art forms and ideas that resulted is called Swahili. In southern Sudan, in Kenya, and as far south as the island of Madagascar are found memorial statues dedicated to the distinguished dead, ranging in style from extremely abstract renditions of the human body to detailed tomb sculptures. Many works relate to changes of status, from initiation into adulthood for young women and men to induction into leadership roles.

2.3.5 SAHEL AND SAVANNAH

Between the Sahara desert and the rain forests near the western African coast lie the Sahel and the Savannah. The term Sahel is Arabic for "shore"-it is the southern boundary of the Sahara desert, which was likened to a sea. The term Savannah refers to a treeless or sparsely forested plain. However, the desert was not an impermeable barrier. A number of trade routes crossed it from early times, giving impetus to many empires, including those of ancient Ghana, medieval Mali, and Songhai. The Niger River flows from west to east through much of the area, turning south through Nigeria to empty by way of a large delta into the Gulf of Guinea. In Mali, the river separates into a number of streams that later reunite in an area called the inland delta. Here, an early civilization flourished, named Djenné after a nearby city renowned as a centre of commerce and learning. A host of brilliant terra-cottas and metal

sculptures known from this area have for the most part been illicitly excavated. Masks and figures associated with initiation and funerary practices are widespread among these groups, although the impact of both Islam and Christianity has been felt.

2.3.6 SOUTHERN AFRICA

The best-known arts of southern Africa are the rock paintings and engravings that were produced by the San peoples and are found mostly in the eastern mountainous regions. With the exception of rock painting and engraving, the arts of southern Africa have tended to be underrated and underreported outside the area. The region's impressive stone ruins, especially those of Great Zimbabwe, were long attributed to outsiders on the assumption that Africans were incapable of producing such imposing architecture. The relative absence in southern Africa of the practice of using masks and the rarity of figurative sculpture of the sort prized by Europeans led to the region's many rich utilitarian arts being neglected by outsiders.



Fig.2.2 Example of some artefacts from South Africa.

2.4 TOURISM

Tourism is regarded as merely travelling and sightseeing. While this may be true to some extent, tourism is a more serious industry. Tourism, in other words, is defined as a broad socio- economic sector that includes all activities, attractions, facilities, services and infrastructure related to people travelling away from their homes on long day trips or on overnight stays.

Such trips may be ordinary holidays and recreation, meetings and conferences, business and official assignments. Tourism is categorized into two, international and domestic (involves people travelling within their country).

Tourism is one positive sector where Africa's share of the market has been growing relatively bigger and bigger. Tourism, indeed, has been described as the sector to rely on for economic revival and regeneration. It is expected to be the largest industry in the world and hottest item of international trade.

Tourism is always the forerunner of investment. This is because every potential investor first comes to explore the country and what it holds for him or her. It is only when he or she is attracted to and excited about the beauty and prevailing conditions that he or she would decide to invest in the country. Therefore by promoting tourism, a country would be marketing itself as the place to live in and invest.

The arrival of foreign investors over the past decade due to the economic and political stability in the country has influenced the government of Ghana to draw a development plan for the tourism sector in order to meet the demands of this diverse and sophisticated clientele. The plan aimed at providing international standard guest accommodations, entertainment and business facilities.

For the development of such facilities, the performance of the tourism industry has to be assessed to know the type and number of tourists and foreign investors who come into the country. Additionally, data on hotels in Ghana has to be collated and analyzed to define the scope of the project.

2.4.1 TOURISM IN GHANA

Ghana has all it takes to be the centre of tourism in Africa. She can boast of rich natural settings such as forests, grasslands, lakes, rivers, lagoons, sea, mountain and valleys to promote its eco-tourism. The diverse cultural heritage (historic sites, forts and castles) in the country also has the potential to attract tourists.

The number of tourist arrivals however varies. It is dependent on the importance attached to the tourist sites and the attention paid to their development by the government. Currently, the sector attracts large numbers of people into the country and also contributes more revenue to the economy aside its importance in the provision of jobs for the people in the country.

Tourism is a veritable tool for the creation of job avenues and income-generating opportunities for serious and talented youths in the country. Tourism helps in not just the

development of an economy but it makes an important contribution to sustainable development in Ghana.

2.4.2 IMPACT OF TOURISM ON THE NATIONAL ECONOMY

- 1. Contribution to Gross Domestic Product (GDP) = 4.9% IN 2004
- 2. Gross Foreign Exchange Earnings = US\$ 603 M in 2003
- 3. Net Foreign Exchange Earning = US \$ 483 M in 2003
- 4. Multiplier Effect on Employment = 3.5
- 5. Multiplier Effect on Income = 3.4
- 6. Direct Employment = 46,502 in 2004
- 7. Indirect And Induced Employment = 155,015 in 2004

The performance of the Tourism Sector between 2000 and 2003 has revealed that employment in the sector increased to 127,645 in 2003 from 90,000 in 2000 in 2000 and Ghana earned \$800 million from 650,000 tourists who visited the country in 2005. In addition, about 180, 000 jobs were created within the formal and informal sectors.

Some 760,000 tourists are expected to visit the country by the end of the year 2006, with an expected revenue generation of \$1 billion and the creation of 220,000 jobs. It is obvious that the tourism industry is becoming the second foreign exchange earner for the country due to its immense contribution to the country. The registration and license fees charged by the Ghana Tourist Board increased from 467.031 million cedis to 840 419 million cedis (80% increase) and Revenue from hotels and restaurants costumers' tax also increased by 173 per cent from 24 billion cedis in 200 to 65.3 billion cedis in 2003.

2.4.3 INTERNATIONAL MARKET TARGETS FOR GHANA (1995-2010).

Types of tourists	1995	%	2000	2005	2010	%
Business	139,000	48.6	177,000	237,000	303,000	22.4
VFR	109,000	38.1	139,000	177,000	226,000	21,3
Holiday	38,000	13,3	83,000	224,000	584,000	50.3
Total	286,000	100%	399,000	399,000	1,62,000	100%

Table 2.1 International Market Targets. Source: National Tourism Development Plan 1996 – 2020

If tourism could generate \$1.5 billion revenue and 300,000 jobs in 2007 as outlined in the Tourism Strategy Document, particular attention has to be given to the development of infrastructure and lodging, and recreational facilities.

The promise that tourism holds for Ghana as the engine of growth for development is reality. The effective promotion of tourism would not only enable Ghanaians to explore and enjoy the beauty of their country, but also to open up the culture and values of ethnic groups for others to acknowledge study and appreciate.

2.5 RESEARCH FINDINGS

2.5.1CASE STUDY

2.5.1.1 THE ROYAL MUSEUM FOR CENTRAL AFRICA (RMCA)



Fig.2.3 The main entrance Royal Museum for Central Africa (RMCA)

The Royal Museum for Central Africa (RMCA) is one of ten federal scientific establishments (FSE) in Belgium. As a scientific research institute dedicated to Africa, it occupies an important position on the international scene; as a cultural centre, it is one of the most visited museums in the country.

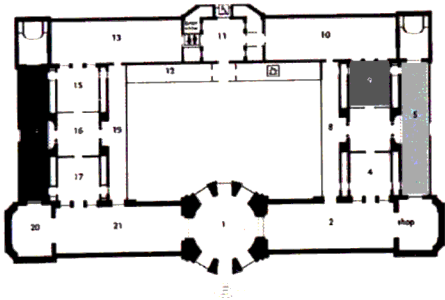


Fig.2.4 Ground floor plan

1. The Rotunda

The prestigious rotunda on the park side of the Museum offers a magnificent view of the French garden and its pools. It is characterised by an imposing entrance hall, allegorical figures in niches, and a star and royal crown which is the emblem of the Congo Free State central.

2. Central African Ethnography

In this gallery are various aspects of the artistic and material production of Central Africa. The objects are thematically arranged on the basis of cultural, ethnic or geographic criteria, mostly from the Democratic Republic of the Congo, the Republic of the Congo, northern Angola, Rwanda and Burundi.

3. Museum shop

The shop offers the public a wide range of African objects, often selected for you on site: contemporary works of art, local crafts, very decorative traditional or modern jewellery and textiles.

4. The Art Room

The art room reopened in January 2006. The sculptures exhibited here were selected purely for their aesthetic qualities. Most of them come from the Democratic Republic of the Congo.

5. Temporary exhibition *Knock on Wood*

From 5 October 2007 to 31 August 2008 the Museum is holding a multidisciplinary exhibition on wood and forests in Central Africa.

6. Temporary exhibitions gallery

The temporary exhibitions correspond to the general objectives and policy of the museum. They aim to stimulate greater interest in an understanding of past and present Africa and to reinforce cultural dialogue. The collections that are not presented in the permanent exhibition are emphasized and are placed in relation to other collections. Scientific research is also valorised.

8. The Memorial Gallery

The Memorial Gallery offers a survey of the diverse activities of Belgians in Africa during the reign of Leopold II (1865-1909).

9. Congo. The Colonial Era

Following the exhibition Memory of Congo. The Colonial Era, the RMCA aimed to continue reflection and debate on the colonization of the Congo by Belgium, a highly controversial period in history.

10. Agriculture & Forest Economy

This gallery showcases some of the important agricultural products of tropical Africa.

11. Hall

Malachite, the green gold the name 'malachite' is derived from the Greek malackē, which refers to the malve or mallow plant. The mineral acquired this 'plant name' because its typical green colour is reminiscent of the mallow leaf. The stone is easily identifiable by its characteristic concentric layers of alternating light and dark green bands.

13. Zoological Dioramas 1

In the dioramas in the middle of the gallery are mammals of the main Central African biotopes. Here you can also get an idea of the problems involved with environmental conservation.

15. Birds

In the middle of the gallery you can see the typical birds of four specific biotopes. In the showcases along the wall, African birds are systematically classified.

16. Fish, Amphibians and Reptiles

This gallery has remained virtually unchanged since the Museum opened in 1910. The murals above the showcases represent Congolese landscapes

17. Insects and Invertebrates

In the gallery with the giraffe in the middle, insects share the antique vitrines with invertebrates such as millipedes, spiders, crustaceans and molluscs. They show the enormous diversity of shape in the animal kingdom.

19. Prehistory and Archaeology

The Archaeology Gallery presents a detailed survey of material cultures from the Palaeolithic period to the 18th century.

20. Zoological Dioramas 2

This section exhibits The okapi which is a giraffe-like ruminant of the dense and humid Ituri forest.

21. Comparative Ethnography

In the showcases on the park side of the gallery are everyday objects – pottery, metalwork and things used for navigation, hunting and fishing. The showcases on the other side are

reserved for musical instruments and for socio-religious and political themes.

2.6 The National Museum, Ghana Museums And Monuments Board

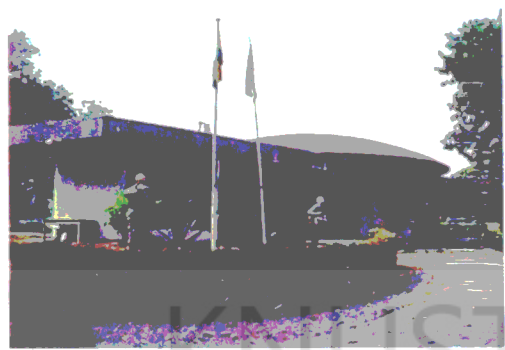


Fig.2.5 View of Ghana museums and monuments



Fig.2.6 Layout of Ghana museum and monuments board

2.6.1 FACILITATION OF ACTIVITIES

The layout of the museum comprises of the main gallery, administration block, education block, sculpture garden, Edvy restaurant and car park. The temporary art gallery links the main gallery to the administration block. The main gallery has an entrance foyer, exhibition spaces, upper gallery and a gift shop. Vertical circulation is mainly by staircases.

2.6.2 MODIFICATION OF CLIMATE

2.6.2.1 LIGHTING

Natural lighting is achieved through glazed windows, fully glazed entrance façade of the main gallery, and skylights. The windows are shaded to prevent direct sunlight. Artificial lighting is basically by incandescent lights which are focused on the exhibitions.

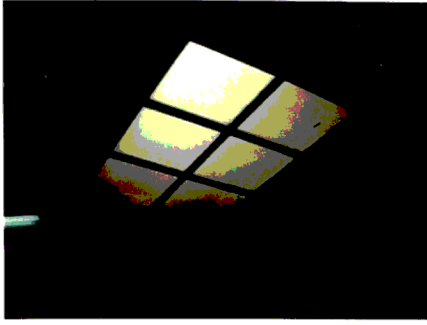


Fig.2.7 Various modes of light used in the museum

2.6.2.2 VENTILATION

Natural ventilation is admitted into the interior spaces through louvered windows, jalousie windows, and casement windows. The ventilation processes are cross ventilation and stack ventilation. Split air condition wall units are used for artificial ventilation in the conference hall.

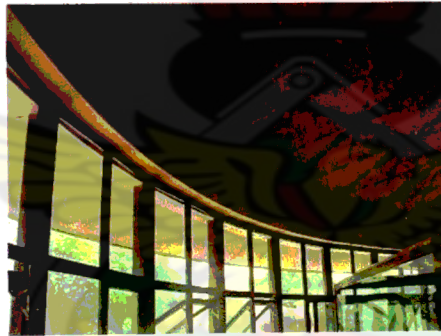


Fig.2.8 Wide windows used around the rotunda

2.6.2.3 UTILIZATION OF RESOURCES

The dome roof of the rotunda is made up of precast reinforced concrete units. The exhibition hall is partitioned into cubicles by the use of wood. Perspex used for the skylights. The floor finishes are polished terrazzo tiles for the exhibition hall, vinyl tiles for the upper gallery, and porcelain tiles for the conference hall

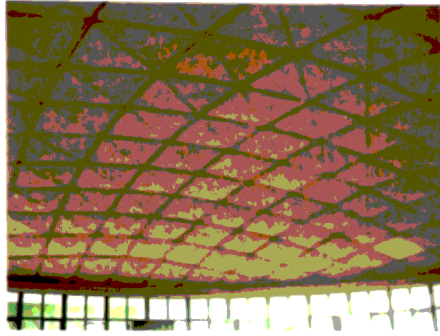


Fig.2.9 The dome roof of the rotunda

2.7.0 CENTRE FOR NATIONAL CULTURE, ACCRA ART CENTRE



Fig.2.10 Main entrance: Centre for National Culture

2.7.1 FACILITATION OF ACTIVITIES

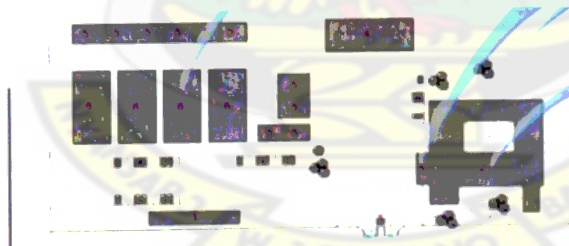


Fig.2.11 The layout of the Centre for national culture

The layout of the Centre for national culture consists of the main art gallery, shops, African arts market, mini post office, cafeteria and parking lot. The main art gallery has a central courtyard, art gallery/shop, National Gallery of Art, auditorium, and offices for administrative work.

2.7.2 MODIFICATION OF CLIMATE

2.7.2.1 LIGHTING

Daylight is admitted into the interior spaces through the glazed fenestration. The corridors are basically lit by daylight. Fluorescent lights are used to supplement the natural lighting in the offices and circulation areas. Spotlights used to illuminate the exhibitions.

2.7.2.2 VENTILATION

The central courtyard aids in the ventilation of the interior spaces. The open able glazed fenestration admits adequate natural ventilation into the facility.

2.7.2.3 UTILIZATION OF RESOURCES

Corrugated roofing sheets were used as the main roofing material for the building. Wooden T & G used as wall cladding for corridors and also for the vaulted ceiling of the auditorium. Vinyl tiles as floor finish for circulation areas, porcelain tiles for the offices and art gallery and plank hardwood flooring for the auditorium.

2.8 TECHNICAL STUDY

2.8.1 LIGHTING IN MUSEUMS

Lighting in Museums and Art Galleries has a unique set of priorities; those of conservation and effective display. In many ways these two requirements conflict as there is a necessity to restrain lighting levels to promote the former whilst the latter requires sufficient light of a high quality to provide optimum viewing conditions.

The first light source to consider is daylight. Although in terms of its excellent colour rendering it is ideal, the naturally large variation in level and the high ultraviolet (UV) content make it difficult and expensive to control.

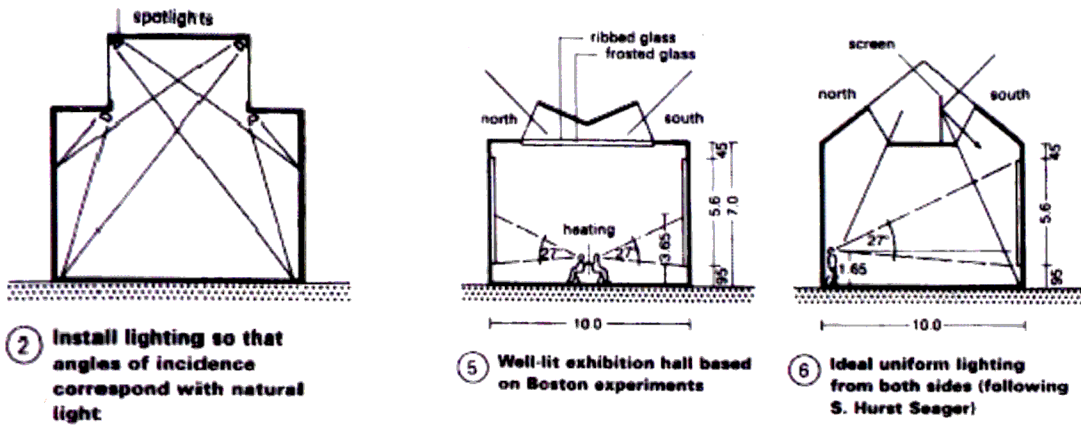


Fig. 2.12 Natural and artificial lighting in exhibition halls.

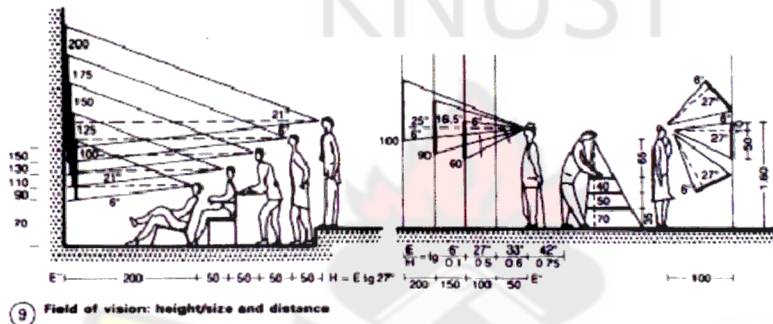


Fig. 2.13 Field of vision for exhibits.

2.9 AUDITORIUM DESIGN

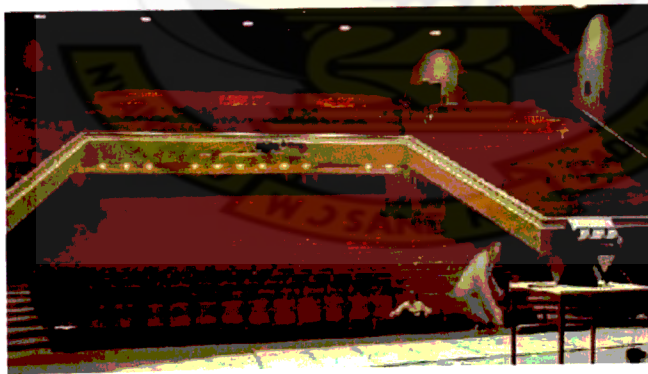


Fig.2.14 Interior view of an auditorium

Many auditoriums are visually beautiful, but reverberant nightmares. Auditoriums and Concert halls evolved before electronic sound re-enforcement was available. Historically, reverberation was used to increase sound level to the audience. But the cost of increasing sound level by reverberation is at the loss of intelligibility. However, a small amount of

short path-length reverberation can beautifully enhance a performance. There is no one single path-length of reverberation to suit all sounds. The larger the concert hall, the longer the acoustic path-lengths (echoes) and the slower the sound has to be, to retain intelligibility.

2.9.1 CRITICAL DISTANCE

This is where the direct and reverberant sound energies are equal. Critical Distance is different at all frequencies. The more reverberant a room, the closer is Critical Distance. The more absorbent a room, the further is Critical Distance.



Fig.2.15 Critical Distance

For good acoustic design the Critical Distance should be as far as possible from the sound source, and the resultant reverberation minimal and even at all frequencies. The more reverberant the room is the closer the Critical Distance.

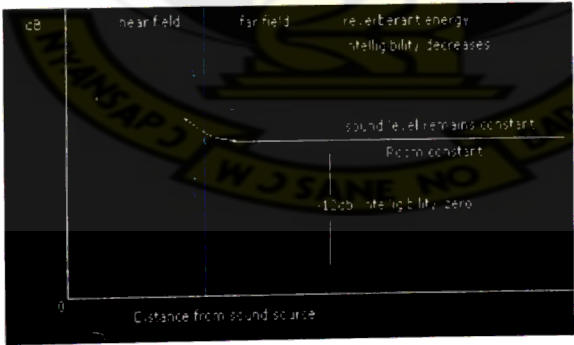


Fig.2.16 Reverberant Test

2.9.2 ACOUSTICAL ABSORPTION

Acoustical absorption of furnishing and curtain fabrics against walls, readily absorbs high frequencies, but has limited absorption at low frequencies. The further curtain fabrics are placed away from walls, the better the absorption is to include lower frequencies. The amount of sound energy absorbed depends on type of material, weight and pleating width. For example, rock wool (fibreglass) has the highest absorption capacity, converting molecular air movement to heat (at molecular level).

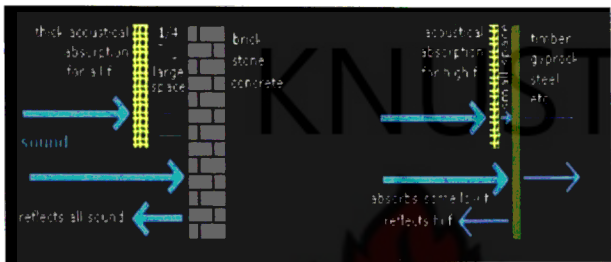


Fig.2.17 Brick, stone, concrete, reflect all sound. Source: www.kettering.edu

2.9.3 ARCHITECTURAL ACOUSTICS

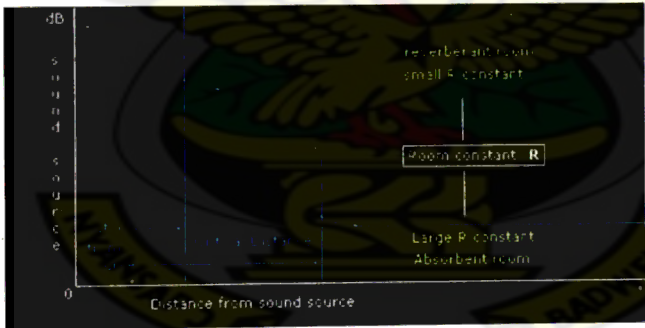


Fig.2.18 Architectural Acoustics Test

In designing, the basic things to consider are:

- **Stopping sound:** The only way to stop all sound from entering or escaping a room, is to construct double brick walls, double sealed ceilings, double sealed doors, etc..

- **Absorbing sound:** Absorbing sound that has been created inside the room, limits reverberation, therefore reducing overall sound energy. Absorbing the majority of sound before it strikes the first wall, reduces sound reflected to other walls.
- **Understanding decibel for sound absorption:**
- **Reverberation path**
- **Room Constant R:** This is a modified ratio number representing direct to reverberant sound. The R number is academic and has no significance on its own, but is used for making further calculations.

2.10 THE SYDNEY OPERA HOUSE

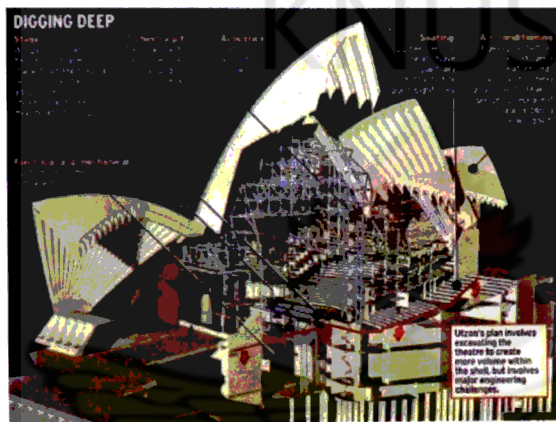


Fig 2.19 The sydney opera house

The Sydney opera house is without doubt one of the world's worst example of an acoustical environment that had been only conceived from a visual design. This resulted from the initial conditions locked in by visual design, 'form following function' in the wrong order. As a visual tourist attraction it is successful, but as an entertainment venue it is government subsidised.

2.11 RESTAURANTS

The space requirements for server and diner, table arrangements, functional layouts for restaurants and kitchens were taken into consideration during the study.

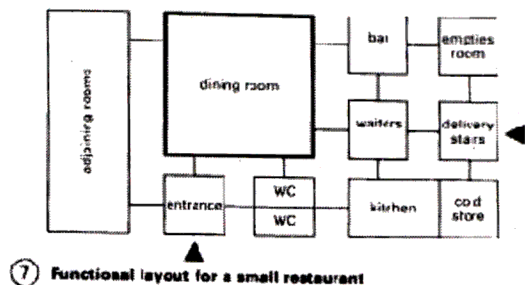


Fig. 2.20 Functional layout for a restaurant.

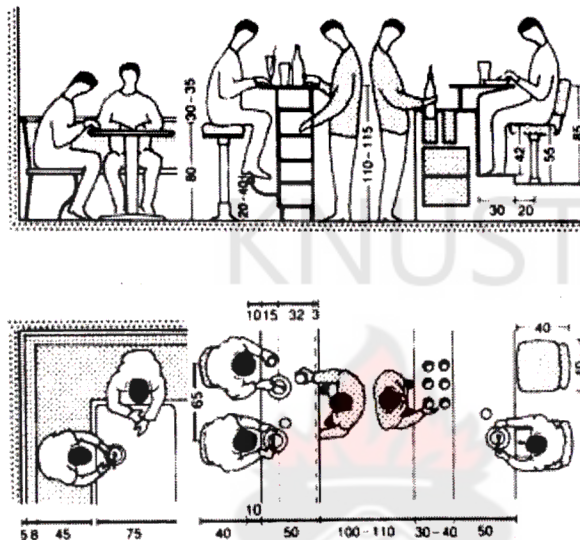


Fig. 2.21 Space requirements for server and diner.

2.12 SERVICES

Electrical, water, drainage and air conditioning services were also considered under the technical study.

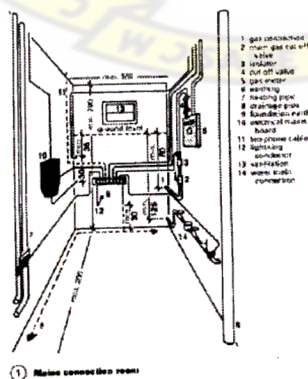


Fig. 2.22 Mains connection room for electrical services

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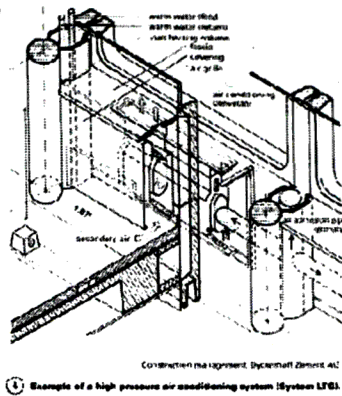


Fig. 2.23 High pressure air conditioning system.

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CHAPTER 3

3.1 RESEARCH METHODOLOGY

The method that will be adopted in carrying out this study would include personal observation and interviews (with general and official sources) supported by questionnaire and related documents, and research on the internet in the area of study.

3.1.1 INTERVIEWS

Interviews will be conducted with the general public and officials on all aspects of the research and design of the facility. That is, the selection of site, materials for construction, etc.

3.1.2 PERSONAL OBSERVATIONS

Personal observations will also be made and utilised. This will include observations on the various construction technologies, materials, finishes and styles of architecture in some of these African Cultural centres.

3.1.3 PHOTOGRAPHS

Photographs will be taken of the site, case studies (both foreign and local), precedence studies, etc. This will give an overview of what exists, and offer ideas for improvement where necessary.

3.1.4 CASE STUDIES

These are similar facilities, both local and foreign which exhibit the African culture and heritage.

3.1.5 BIBLIOGRAPHY

List of reports and books written about the history of Africa by other authors. These will serve as references for the discovery of further knowledge on Africa as a whole and hence, provide an aid to the design of the centre.

3.1.6 SITE VISIT

This will give information of the site showing the topography, land extent, climate, etc. The design will thus be done in accordance with this information to enhance functionalism.

3.1.7 RESEARCH ON THE INTERNET

Various related internet site would be visited to aid in both case studies and literature review.

3.1.8 USE OF MAPS

This will aid in the location of the site location and its extent.

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CHAPTER 4

4.0 RESEARCH FINDINGS AND DISCUSSIONS

4.1 LOCATION

The site is location at Kunsu in the North Kintampo District in the Brong Ahafo region of Ghana. Kunsu is located between latitudes 8°45’N and 7°45’N and Longitudes 1°20’W and 2°1’E. The site measures about 74250 square metres.

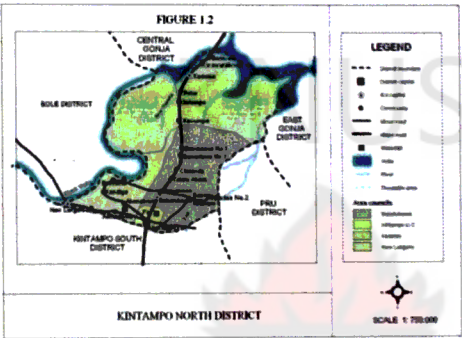


Fig.3.1 Kintampo north district map showing the location of the site.

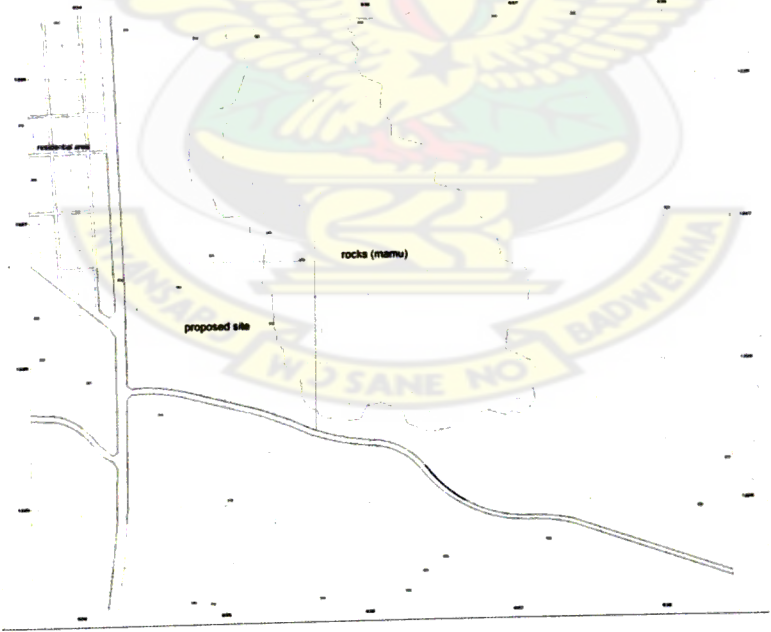


Fig.3.2 Site map of a section of Kunsu showing the selected site marked in red.

4.2 CHOICE AND JUSTIFICATION OF SITE

The site was selected base on a number of principles. These are

- Whether the facility is to serve as an educational facility, tourist facility or both.
- The site to be used should be of some significance either heritage wise or community wise.
- Where the facility is for tourism or both education and tourism, the site chosen must have an all year round patronage by the set group.
- The community in the locality of the site must always be the secondary benefactor of the facility.

The site was selected based on the following attribute of the area which satisfies the fact that the facility should serve both as an educational facility and a tourist attraction.

The Kintampo archaeological site in Ghana dates back to 2500-1400 BC and is one of the earliest known sites for the cultivation of the cowpea. Evidence of polished stone axes, stone beads, buildings of stone, domestic pots, ceramic sculptures of humans and animals indicate that Kintampo was established by practitioners of both pastoralism and horticulture.

The district is unique in primary tourist attractions and plays a central role in the Brong Ahafo Region's tourism industry.

4.2.1 NATURAL ATTRACTIONS

The main natural attractions are the Pumpum River which falls 70m down some beautiful rocky steps to form the Kintampo Water Falls which continues its journey towards the Black Volta at Buipe and the Fuller falls 7km west of Kintampo which provides a cool swim in a pool with stool- like carved rocks serving as stools.

4.2.2 HISTORICAL HERITAGE

Another classification of the tourist attractions in the Kintampo North District is the historical heritage which includes the geographical centre of Ghana located at the district capital, Kintampo; the Slave market, Caves and night lamp at Kunsu; and the European cemetery where eight of the "Gold Coast Regiment" were buried.

Kunsu was chosen because it has a historic heritage which has a bearing on what the design is to be. That is, create a link between the centre and an existing heritage; hence the choice of the caves and night lamps at Kunsu.

4.3 SITE INVENTORY

4.3.1 TOPOLOGY AND DRAINAGE

Kunsu, which falls within the Voltaian Basin and the Southern Plateau physiographic regions, is a plain with rolling and undulating land surface with a general elevation between 60-150m above sea level. The southern Voltaian plateau occupying the southern part of the district is characterized by series of escarpments. The district which falls within the Voltaian basin is endowed with a lot of water resources. In terms of relief and drainage, the vast expanse of flat land especially in the northern part makes it suitable for road construction and making other activities relatively cheap.

4.3.2 CLIMATE

Kunsu experiences the Tropical Continental or interior Savannah type of climate, which is a modified form of the tropical continental or the Wet-semi equatorial type of climate. This is due largely to the fact that the district is in the transitional Zone between the two major climatic regions in Ghana. The mean annual rainfall is between 1,400mm-1,800mm and occurs in two seasons; from May to July and from September to October with the minor season (May – July) sometimes being obscured. However, because of the transitional nature of the area, the distinction between the two peaks is often not so marked. The mean monthly temperature ranging from 30°C in March to 24°C in August with mean annual temperatures between 26.5°C and 27.2°C. These conditions give rise to sunny conditions for most parts of the year. Relative humidity is light varying from 90%-95% in the rainy season to 75% - 80% in the dry season. The climate of the district has the tendency to change and be inclined more to the drier tropical continental conditions or to the wet semi-equatorial conditions.

4.3.3 VEGETATION

Kunsu comes under the interior wooded savannah or tree savannah. However, owing to its transitional nature, the area does not totally exhibit typical savannah conditions. Thus the savannah here is heavily wooded, though most of the trees are not as tall and gigantic as those in the most deciduous forest. It is believed that the transitional Zone was once forested and that the savannah conditions currently prevailing have been the result of man's activities. Only trees such as the Mahogany, Wawa, Odum, Onyina, Boabab, Dawadawa, Acacia, and the Sheanut trees, which have adapted to this environment are found in the vegetation zone.

4.3.4 GEOLOGY

The rock formation and type forms the geology of an area. The rocks underlying the Kintampo North District form part of the "Voltaian formation" which covers about two – fifths (2/5) of the surface area of Ghana and about 80% of the District's land surface. Rocks belonging to this formation are mainly sedimentary and exhibit horizontal alignments. Sand stone, shale, mudstone and limestone are the principal examples of these rocks. The geology of the district is a potential resource for development. As already mentioned, deposits of clay, sand, limestone, stone/gravel and a few reported traces of gold at Kunsu, Sogboi, Bankamba and Dwere could be a stepping stone in the development of the entire district. For instance, the abundant clay deposits at Benkrom, Bewele and Dwere could be used for glazed pottery and manufacture of burnt bricks and roofing tiles.

4.3.5 SOILS

Soils in the District belong to two main groups; the ground water lateral soils" which cover nearly three fifths of the district in particular and the interior wooded savannah zone in general. The other soil group, covering the rest of the two-fifths of the District is the savannah ochrosols occurring in the south and south- western parts of the district. These soils are formed mainly over Voltain shale and granites.

4.4 SITE ANALYSIS

The central location of the site lends good views to the slave caves, the Kunsu village, the vast undulating green lands adjacent to the site as well as the Ntanfo-Kunsu road. As much as possible, this would be maintained. Most of the trees on the periphery the site would be maintained. The Boabab and Dawadawa trees at the middle shall be removed. A screen of plants shall be introduced at the north-west and south-west end to keep out noise from the village and road. As a restricted area, secure fencing would be introduced all round the site for security and to keep out intruders. Entry to the site shall be from the west and exist on the south corner respectively. The dusty roads that border the site shall be developed as part of the project to enhance the image and accessibility of the facility. Refer to the diagram below for site analysis in relation to the site.

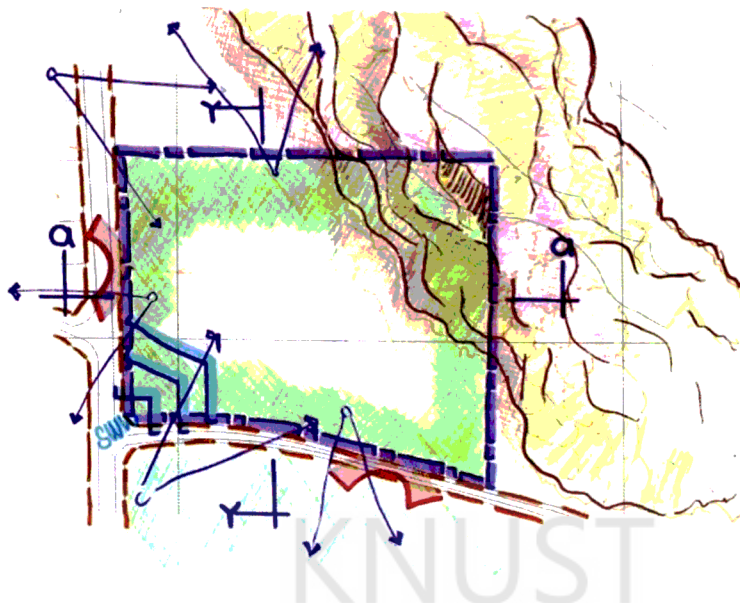


Fig.3.3 Site analysis

4.5 SITE PERIPHERAL STUDY

The adjoining Kunsu village stand to benefit a lot from the facilities been provided at the centre. The Kunsu primary and junior secondary school will benefit a lot from the library and the internet facilities. The village folk's also tend to benefit in terms of employment both in building and running the facility. The ongoing construction of the nanfo-kunsu road will help give fast and easy access to the people who will be visiting the facility. Electricity services that run along the site peripheries shall be tapped into the site.



Fig.3.4 the ntamkro-kunsu road been rehabilitated by DANIDA



Fig. 3.5 a view of the first set to rocks close to the site



Fig. 3.6 A view of the second and biggest of the rock formation



Fig.3.7 The natural courtyard formed by the rocks

CHAPTER 5

5.0 CONCLUSION AND RECOMMENDATION

5.1 PHILOSOPHY AND CONCEPT

The centre for African history and art is to be designed to be a master piece incorporating the philosophy, 'Awakening the past for an inspired tomorrow'.

Reminiscent of the saying that "it is only a fool who does not change over time" implying that change is inevitable, it is quite evident that Ghana's culture has undergone a lot changes over time. There is no gainsaying however that a revisit to the past for certain aspects of this rich culture is very necessary for a more positive development of the country.

Again, in the event where the nation's history is the nation's measuring tape, it brings the history of the nation to light, so that the past may be compared with the present to see if there has been progress or retrogression.

A revisit to the past would also serve as a mode of comparison between Ghana and other nations so that information can be gathered for our future guidance.

Hence, the onus is on us to create a new history and reconstruct the history of African and of the people of African Origin.

To achieve the philosophy in my design I chose the concept of Sankofa which is a concept derived from the Akans of West Africa.

Transliterated in the Akan language as "se wo were fi na wosan kofa a, yenkyi;" sankofa literally translated as "it is not a taboo to go back and fetch what one has forgotten".

Sankofa is used today across the pan-African world to promote the idea that Africans must go back to their roots in order to move forward. Visually and symbolically, "Sankofa" is expressed as a mythic bird that flies forward while looking backward with an egg (symbolizing the future) in its mouth.

Thus the centre shall illustrate regionalism in totality: use of onsite or locally available materials and harmony with the surrounding landscape.

5.2 DESIGN BRIEF

The consultative process, together with a study of similar and existing facilities as well as a careful consideration of the clients and target group needs resulted in a developed brief. This brief consists of an AUDITORIUM, ART AND CRAFT SHOPS, RESTAURANT and MUSEUM. The above can be further detailed as follows;

5.2.1 AUDITORIUM

- Entrance foyer
- Ticket booth
- Bar
- Main hall
- Stage
- Sanitary (backstage and main hall)
- Changing room(male and female)
- Storage room/ equipment room
- Monitoring room
- Offices
- Audio visual room

5.2.1 RESTAURANT

- Kitchen
- Sanitary/changing room
- Eating area
- Bar
- Storage (dry and wet)

5.2.2 MUSEUM

- Entrance foyer
- reception
- Various exhibition spaces
- Sanitary
- Security post
- Offices
- Photography studio
- Arrival and labelling
- Storage rooms
- Staff lounge
- Conservation laboratory
- Registration
- Vault

5.2.3 ART AND CRAFT CENTRE SHOPS

- 6 shops

KNUST



5.3 SCHEDULE OF ACCOMMODATION

5.3.1 AUDITORIUM

SPACE	DIMENSIONS	TOTAL AREA
Entrance foyer		160m ²
Ticket booth	6m x 2m	12m ²
Bar	2.5m x 3.5m	8.75m ²
Main hall and balcony	45m ² x 500	225m ²
Stage		18m ²
Sanitary (backstage and main hall)		35.1m ²
Changing room(male and female)		120m ²
Storage room/ equipment room		64m ²
Monitoring room		16m ²
Offices		48m ²
Rehearsal room / space		56m ²

Table 4.1 schedule of accommodation auditorium

5.3.2 RESTAURANT

SPACE	DIMENSIONS	TOTAL AREA
Kitchen		84m ²
Sanitary/changing room		42.8m ²
Eating area	6.75m ² x 60	405m ²

Bar		8.75m ²
Storage (dry and wet)		24m ²

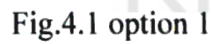
Table 4.2 schedule of accommodation restaurant

5.3.3 MUSEUM

SPACE	DIMENSIONS	TOTAL AREA
Entrance foyer	6m x 8m	48m ²
Various exhibition spaces	60m ² x 5	300m ²
Shop	4m x 4m	16
Reception	2m x 2m	4 m ²
Sanitary	2.7m x 7	18m ²
Photography studio	5m x 7m	35m ²
Offices	16m ² x 3	48m ²
Arrival and labelling	5m x 6m	30m ²
Security post	2m x 2m	4m ²
Vault	4m x 5m	20m ²
Registration	4m x 5m	20m ²
Conservation laboratory	6m x 8m	48m ²
Staff lounge	4m x 6m	24m ²
Storage rooms	48m ² x 3	144m ²

Table 4.3 schedule of museum

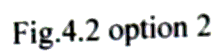
OPTION 1



- centralize circulation will facilitate interactions between participants and easy location of all the facilities on the site.
- The museum is located next to the rock thus making a perfect facility to link the facility to the existing tourist attraction.
- The parking lot is big enough to accommodate more cars.

- Separate administration for both the museum and the auditorium may inconvenience the running of the facility.

OPTION 2



5.4.3 MERITS

- Separate entry and exit points for smooth vehicular circulation; well defined parking lots; covered walkways to all three facilities; open courtyard used as sculpture garden; smooth circulation is achieved on site.
- Amphitheatre and museum both having a physical link to the rock enforces the sankofa concept.
- Big parking lot with parking slots for saloon cars, mini vans and buses
- Centralize circulation will facilitate interactions between participants and easy location of all the facilities on the site.

OPTION 3

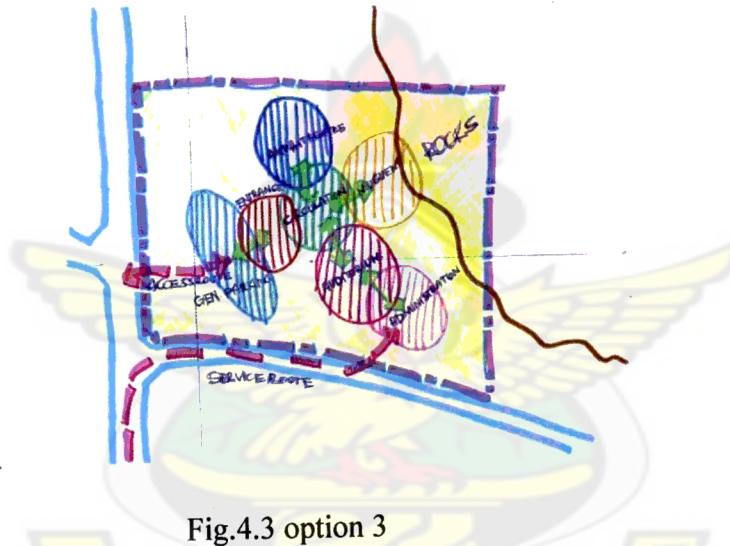


Fig.4.3 option 3

5.4.4 MERITS

- Maximum circulation for both vehicular and pedestrian traffic.
- More open lawns for social gatherings outdoor exhibitions.
- Maximum parking for both service and users of the facility.
- Administration joined to auditorium so both facilities can share the office space.

5.4.5 DEMERITS

- Layout does not conform to the general concept of my design (sankofa) where the rocks are the focal point.
- The location of the amphitheatre won't make use of the valley thus increasing the cost of construction because of excavation.

5.5 THE DESIGN

The design is a typical planning scheme, which required the consideration of planning regulations and parameters as well as the maximization of the use of controls. The design scheme is expected to incorporate more African design elements and materials. The layout of the design comes from a chain which is bolted to the rock forming the back drop of the facility. The various sections of the facility are worked into the loops of the chain according to the clients brief provided.

5.6 THE MASTER PLAN

The master plan design was started by conducting a zoning exercise. The site was divided into two main zones, namely the noisy and the quite areas. These zonings are generally advocated by most planners in the building of such facilities. The reason is that the act of zoning helps both architects and planners to become conversant with the various attributes of the site in order to locate the various facilities within designated spaces to achieve a sustainable design.

5.7 DESIGN OF THE FACILITY

The design of the faculty in general had to satisfy some basic design requirements and conditions throughout the design stage until it was completed. These include health and safety, convenience, density and economic conditions

5.7.1 HEALTH AND SAFETY

Health and safety played an important role in the initial design stages of the facility. This factor is important due to the fact that the dwellers of the designated spaces should feel safe within the facility in terms of security and in any case of emergency. There are therefore fire and emergency exits as well as assembling points at vantage places in case of a fire outbreak.

5.7.2 CONVENIENCE

The design of the facility was made to satisfy the factor of convenience such that, there would be no hustling in locating the various spaces, as well as in moving from one space to the other. Accordingly, all the spaces are designed to be visible and well inter-related according to a careful analysis of their functional relationships.

5.7.3 DENSITY

This refers to the number of occupants present within the various spaces of the facility at various times. The facility should be able to take at least 60 people at each level. In view of this, density requirement such as, circulation spaces have been widened enormously. For example, corridors are as wide as 8 meters.

5.7.4 ECONOMIC

The building is expected to be very economic because of the materials proposed to be used in its construction. There is also an economic advantage in locating the facility close to the rocks thus making it easy for it to be used as a material for the construction of the facility.

5.8 THE BLOCK PLAN



Fig.5.1 block plan of the facility

5.8.1 PLANS

The plans and layout were designed to solve problems as well as satisfy various architectural conditions viz.

- i. Modification of climate
- ii. Meaning and delight
- iii. Facilitation of activities
- iv. Utilization of resources

i. Modification of climate

Due considerations were made during the design stages to improve the climatic condition within the facility. The facility was located to have the major windows on the north and south facades. The corridors (linkages) are open to bring in air and sunlight.

Furthermore, shading devices have been provided at required areas to filter the intensity of the sun on the spaces provided.

ii. Meaning and delight

Meaning and delight is evident in the general design of the facility and is based on the concept of Sankofa.

The concept was incorporated into the development of the form of the facility by the use and general positioning of basic shapes (rectangles) to signify the various component of a chain to symbolize the chain used in the slave trade era.

iii. Utilization of resources

The design of the facility was considered and developed in relation to the available resources. The facility will be constructed mainly in cement masonry, burnt clay bricks, rubbles and wood which are readily available in the vicinity.

iv. Facilitation of activities

Spaces have been strategically positioned and other provisions made; such as the provision of signage to facilitate activity. Facilitation of activity however goes beyond the interior to the exterior where it is evident in the location of the amphitheatre, museum and other such elements as the car park.

5.9 STRUCTURE AND FORM

5.9.1 STRUCTURAL SYSTEM

Finding a suitable structural system for the building was guided by the following considerations:

- Structural integrity: The need for the building to minimize horizontal deformations due to the action of horizontal forces was considered critically. Due consideration was also given to vertical loads by the use of lightweight materials.

- Economic efficiency: The need to optimize the usable floor areas as well as minimize costs by the choice of materials, appropriate design and efficient structural methods was also taken into account.

Subsequently, a combination of portal frames, and post and beam structural system has been adopted, with heavy masonry construction at the substructure. Special attention was given to the foundation through the provision of appropriate damp proofing so as to create watertight conditions. Concrete frames and beams clad with lightweight concrete supporting pre-stressed concrete flooring was used for the subsequent floors. To ensure greater flexibility in the use of the floor areas, the structural grid used has different variations depending on the nature of the spaces. This can easily be spanned by the pre-stressed concrete floors and lightweight beam and frames. The use of these systems lends some parts of the facility to prefabrication which can considerably reduce the period of construction.

The internal wall partitions are of light frame partitions which would reduce dead loads that would impinge vertically on the structure, with the exception of the service core which is of masonry construction.

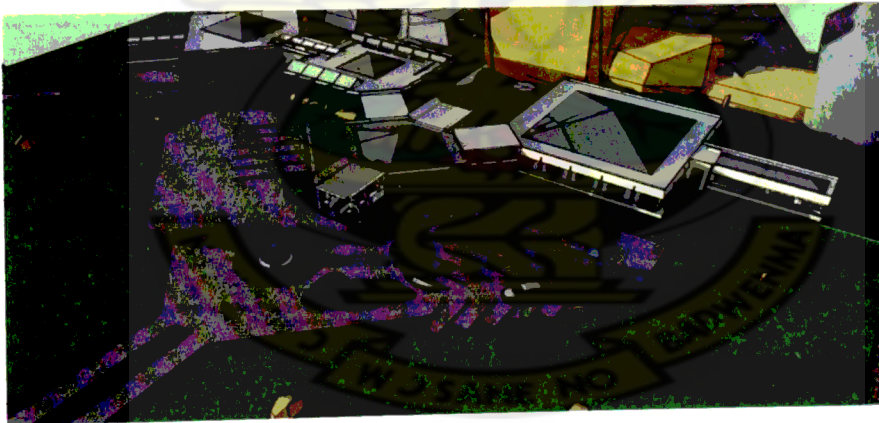


Fig.5.2 Perspective views of the facility

5.10 ELEVATIONS

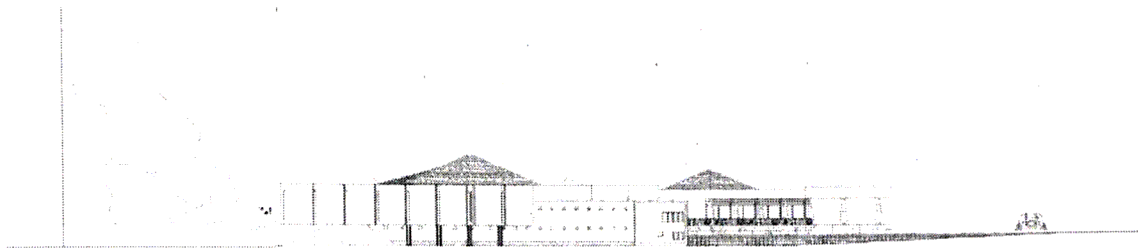


Fig. 5.3 West elevation



Fig.5.4 South elevation



Fig.5.5 North elevation



Fig.5.6 East elevation

5.11 MATERIALS

The main construction materials are reinforced concrete and sandcrete block walls for the structural system. Low-emission frosted and ribbed glass, wooden framed doors and windows

Below is a table showing Materials specification for the various spaces within the facility.

SPACE	SPECIFICATIONS
<div>ADMINISTRATION</div> <div><ul style="list-style-type: none">FloorColumnsCeiling</div>	<div>Marble</div> <div>Proprietary cladding and textured finish</div> <div>Proprietary ceiling</div>
<div>AUDITORIUM</div> <div><ul style="list-style-type: none">FloorWallsCeiling</div>	<div>Non-slip terrazzo <i>ff</i> overlaid with carpets</div> <div>Proprietary acoustic wall panels</div> <div>POP Acoustic clouds</div>
<div>RESTAURANT</div> <div><ul style="list-style-type: none">FloorWallsCeiling</div>	<div>Marble</div> <div>Cement screed finish</div> <div>PVC board ceiling</div>
<div>MUSEUM</div> <div><ul style="list-style-type: none">FloorWallsCeiling</div>	<div>Floor carpet and wooden t&g floor board</div> <div>BAD panels</div> <div>POP acoustic suspended ceiling</div>
<div>ART AND CRAFT CENTRE</div> <div><ul style="list-style-type: none">FloorWall</div>	<div>Wooden floor</div> <div>Cement plaster finish with paint</div>

Table 5.1 Table showing Materials Specification

5.12 SERVICES

Services provided include electricity, water and telecommunication. There is also adequate provision for lighting, ventilation, fire prevention and emergency exit as well as waste disposal.

5.12.1 ELECTRICITY

The main electrical power source is obtained from the Electricity Corporation (E.C.G.) substation in the Kunsu area. This is transmitted to the power plant room where a step- down transformer converts the voltage to 240V required by appliances. As a precautionary measure, standby generators and a solar station are provided in the event of power outages. Power distribution within the building is through insulated cables drawn through service ducts.

5.12.2 WATER SUPPLY

Water is to be provided from the Ghana water company (G.W.C) water mains along the Nkonso road to Kunsu. However, due to the unreliability of the G.W.C water supply system the entire facility would have supplementary water supply from underground water cisterns and boreholes.

5.12.3 TELECOMMUNICATION

Telephone services are supplied from the underground cables of Ghana Telecom along the Nkonso road. Microwave, audio and data transmission facilities are also provided by telecommunication masts situated on the site.

5.12.4 LIGHTING

Natural lighting is made use of by orienting the building along the southwest-northeast axis so as to achieve the ingress of as much daylight as possible for all the spaces, especially for the circulation areas and the central courtyard. This is however augmented by energy-efficient artificial light fixtures and fittings. Optic lighting is used for the reception, exhibition and display room areas. Peripheral neon lights are employed during the evenings to make the building a point of attraction and visual interest.

5.12.5 VENTILATION

Ventilation of the facility is fortified through the courtyard systems and the use of the passive system. Natural ventilation is also encouraged by the positioning of the windows.

However, artificial ventilation remains optional and mainly provided by split air conditioning system and channelled to the required spaces. The conditioned air is supplied to the spaces via ducts in the ceiling. Fan coil units are placed in individual spaces including the IT centre, laboratories, the computer rooms, the libraries and other spaces that require air conditioning to check or control the level of air conditioning.. Mechanical extractor fans are used for the workshops and sanitary facilities.

5.12.6 FIRE PREVENTION AND EMERGENCY EXITS

Fire prevention is catered for by both active and passive measures. Passive measures include the use of fire resistant materials for the doors, windows and walls. The building is divided into fire compartments each enclosed by fire resistant walls. Emergency fire exits and stairs with smoke outlets, vents and self-closing fire resistant doors are provided.

Active measures include sprinkler systems for the ground floors, and hose reels, fire extinguishers, dry and wet risers on all floors fed by dedicated water tanks. Smoke detectors and fire alarms as well as gas and chemical-based sprinkler systems are provided at vantage points. Fire hydrants fed from the mains are provided for the fire service.

5.12.7 WASTE DISPOSAL

Both soil and liquid waste are disposed through the underground central sewage system that runs to the facility's central sewage recycling plant for recycling. Refuse within the building is disposed into a refuse incinerator for onward disposal by the metropolitan authorities.

5.13 LANDSCAPING

Landscape of the facility consists of both soft and hard landscaping. The entrance of the facility will be treated with planted Bahamas grass and patches of ornamental plants at specific distances.

The car park will be finished with tarmac and bounded with brick-constructed pavement stones to create a hard landscape. The courtyards will have flowers to beautify and maximize the aesthetic qualities of the facility.

The test garden is also a landscape element that can be found in the design. The garden was designed and placed at a convenient location and has been fused into the landscape that prevails on the site.

5.14 COSTING

The cost of the facility was highly dependent on the proposed materials that would be used for its construction. The cost per floor area of construction in Ghana is currently ranging from a price tag of one million to two million cedis for high quality finishes. Thus all the spaces within the facility were assigned medium to high cost value depending upon the use of the space. Below is the summary of costs.

FACILITY	COST OF SPACE (CEDI)
AUDITORIUM	8, 000,000,000.00
RESTAURANT	782,970,000.008
MUSEUM.....	15, 000,000,000.00
ART AND CRAFT SHOP.....	1, 782,970,000.008
TOTAL COST	<u>24,782,970,000.00</u>

Breakdown of Contingencies and Other Costs (in cedis)

- Peculiar design features (3%) of cost projections = 743,489,100.00
- Possible 10% increase of cost projections over time =743,489,100.00
- Professional fees of 10% of cost projections = 2,478,297,000
- Preliminary site treatment and landscaping 10% of cost= 2,478,297,000

The sum in cedi is = 6,443,572,200

Adding the contingencies sum together with the total sum of the spaces will be
24,782,970,000. + 6,443,572,200 = 31,122,654,220
Thus the estimated cost of the faculty of building technology and material research is =
31,122,654,220.

5.15 CONCLUSION

The entire developmental process of this thesis can be described to have been very successful and practical. The knowledge that architecture involves critical analysis and a lot of thinking for a design to be complete was emphasized.
With the main aim of designing a facility that will be a one stop point for African art and history, the research methodology was through interviews, personal observations,

photographs, case studies, bibliography, site visit, research on the internet and the use of maps.

All ideas and elements acquired at the previous studying levels played an important role in the development of the design: Buildings of similar purposes were studied, building materials such as clay were reviewed, and lighting systems and acoustic designs were well investigated. The trend of tourism in Ghana was also tackled.

Funded by the Ghana Tourist Board, World Heritage Resources, U.N, Kintampo north district assembly, Donor/development partners of the area e.g. GTZ/Local Governance, Poverty Reduction Support Programme, DANIDA, NKUM Associates etc and the Department of feeder roads (Ministry of roads and transport) to be designed for the Kintampo north district and with the people of Kintampo as the target group, the brief developed included the following spaces: Administration, Auditorium, Outdoor spaces, Restaurant, Museum, Art and craft shops and Parking.

The facility is located at Kunsu is in the North Kintampo District in the Brong Ahafo region of Ghana and was designed with careful consideration of the following: natural attractions, historical heritage of the people, site inventory and analysis such as topology & drainage, climate , vegetation, geology, soils and site periphery.

Drawings produced include plans, elevations, sections, block plans, details, models and services.

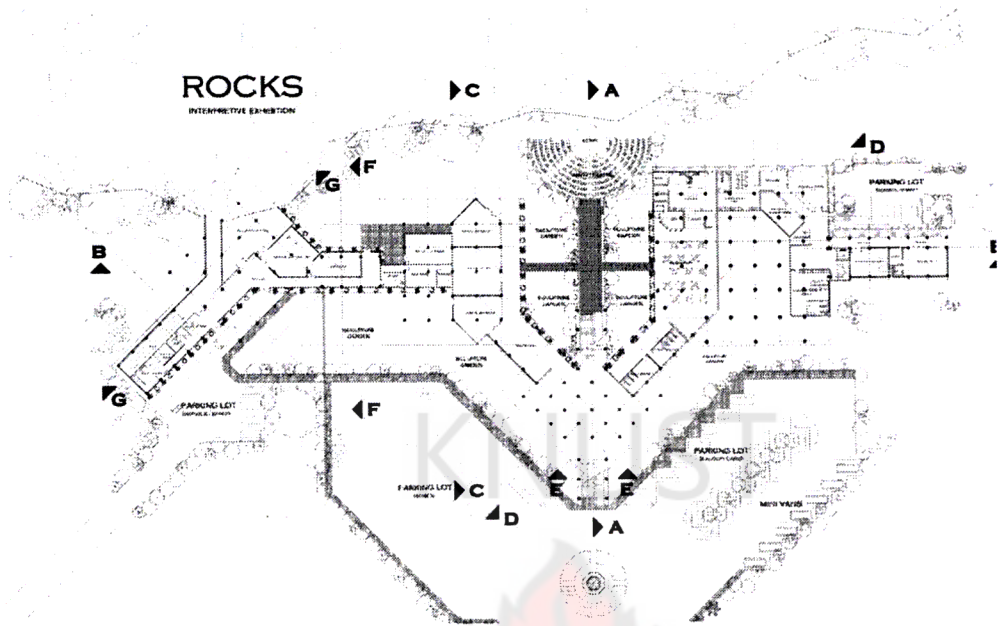


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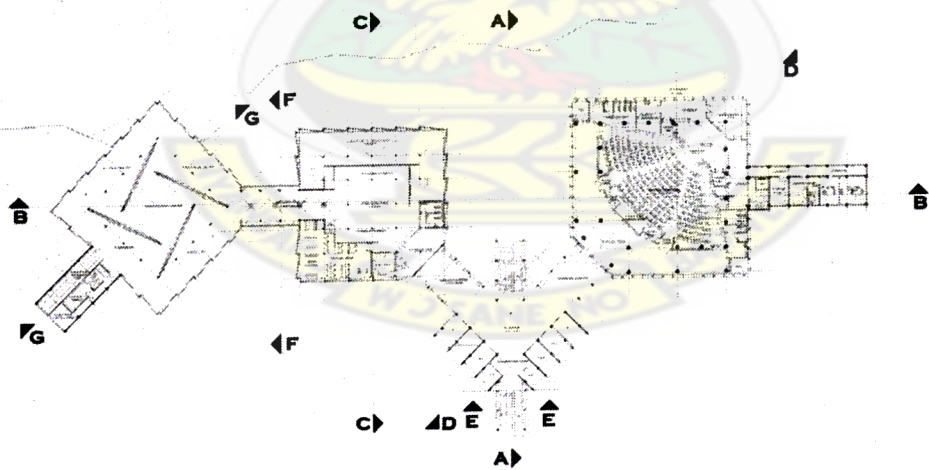
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APPENDICES

PLANS, PERSPECTIVES AND LAYOUT

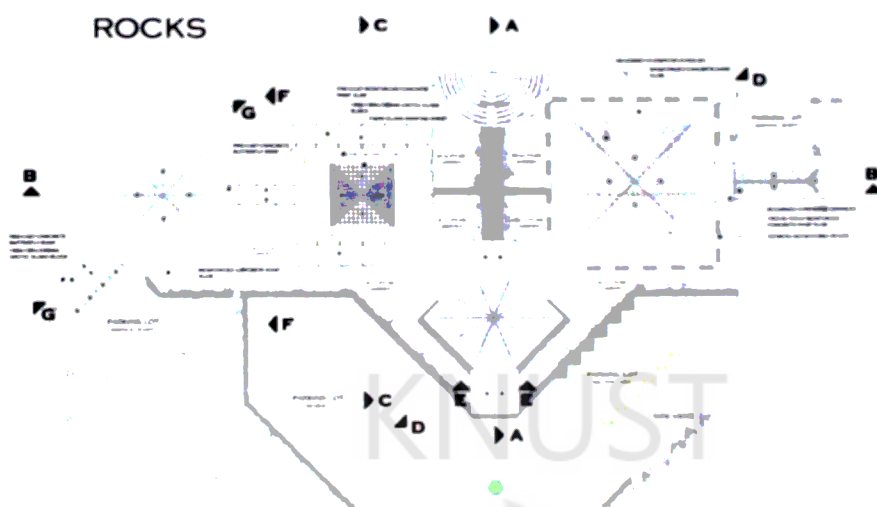


Ground floor plan



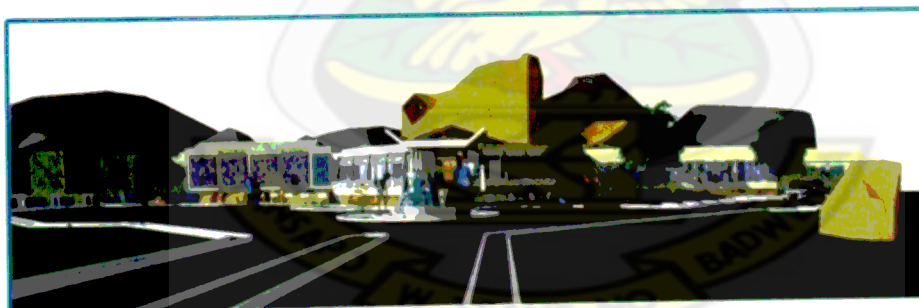
First floor plan

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Roof plan

PERSPECTIVES



A view of the main entrance to the facility



A view of the museum



A view of the auditorium



A view of the courtyard

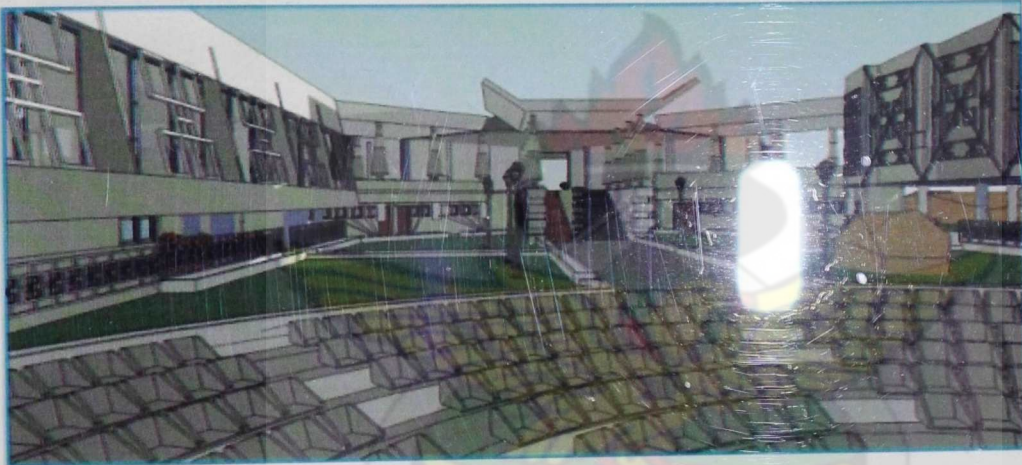
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A closer shot of the main entrance to the facility

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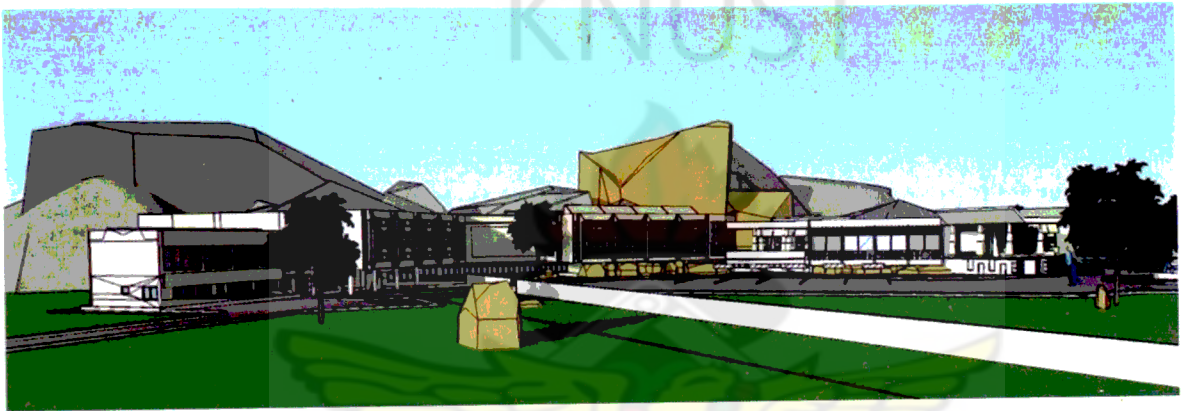
A view of the courtyard from the amphitheatre



A view of the administration block and the auditorium



A view of the main entrance, the shops and auditorium



A view of the musuem from the service access