

**COMMUNITY CENTER, OFFA**

**B. TECH. (ARCHITECTURE) THESIS**

**BY**

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**REG. NO 90/1474**

**A THESIS SUBMITTED TO THE  
DEPARTMENT OF ARCHITECTURE,**

**SCHOOL OF ENVIRONMENTAL TECHNOLOGY,**

**FEDERAL UNIVERSITY OF TECHNOLOGY  
MINNA, NIGER STATE**

**IN PARTIAL FULFILLMENT OF THE AWARD  
OF B.TECH (ARCH)**

**FEBRUARY 1997**

**CERTIFICATION**

I certify that this project was carried out by Olatunde Habib Olanrewaju of the Department of Architecture of the federal University of Technology, Minna, Niger state under my supervision

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Project supervisor

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Date

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Date

## DEDICATION

To my late mother, Bola N. Olatunde for her benevolence and love.

## ACKNOWLEDGMENT

In the name of Allah, the beneficent, the merciful. All thanks are due to Him for making all these possible. For His guidance and infinite mercy, praise, honour and glory goes to Him.

My profound gratitude goes to my parent Alhaji Wale Olatunde for his spiritual, moral and financial support, for his patience, sacrifices, advice and for being a great motivator.

To my brothers and sister Kunle, Ronke and Jide Olatunde, I express my profound gratitude for their care, love and encouragement which has been a great source of energy that keep me going.

To my Aunty Jumoke Olasebikan and her family, I say a big thank you for her motherly role.

To my admirable god father Professor Suleiman Adeyemi for the role he has played in my academic career.

My appreciation goes to my mentor and supervisor Prof. S.O. Solanke for his devotion attention, relentless encouragement and the painstaking supervision of this project.

My appreciation also goes to my former Head of Department Dr. G.C. Nsude, the academic and non academic staff of the Department of Architecture as well as the entire staff of the School of Environmental Technology.

To my friends, Banji Oladipo, Taiye Olarinoye, Ibrahim Abdullahi, Dere Rasheed and Yusuf Omeiza who have been more of a brother to me.

To my classmates and colleagues of the studio finale, Abu Ango, Bola, Bunmi, Kemi Irene, Rotimi, Cosmos, Abubakar, John, Moses, Yinka, Kayode, Ahmad, Okey, Paul, Shaaba, Wanuola Rotty.

And to all who has offered one encouraging word or the other or have rendered some form of help or the other and whose names may have omitted above say a big thank you and may the blessing of Almighty Allah be with you.

I cannot end this piece without mentioning two friends who gave it all but could not finish the struggle Jide and Bolade may their soul rest in peace.

## ABSTRACT

This center is going to be a bonding force in the life of Offa people. Or set of people in the community.

A community is defined as a group of people living in a particular place in harmony and share common interest, while a community center is a place that is specially provide for the people, groups and organisation in a particular area, where they can go in order to meet and do thing of common interest. A community center should therefore posses the element of civilization of the people it is being designed for. The local architecture is therefore supposed to be of paramount importance in the design consideration.

However, this is not the case in Nigeria as many modern community center of foreign orientation are commonly seen. The research methodology of case studies taken show the above mentioned facts. Many environmental considerations have been ignored, leading to use of artificial resources in all instances which fall short of desired goals due to the low maintenance culture in the country.

In the light of this, the first chapter introduces the present trend of problems of community facilities. And the aims and objectives of this thesis work together with the theme of the project. The need of embarking on the project is equally highlighted with the basic motivation. The second chapter is a research into the physical and socio-cultural setting of the people, with their architecture forming one of the design themes. All aimed at arriving at a functional community center which will be harmonized in to the architecture of the area.

Also with a design philosophy and concept in mind, the culture and local architecture of Offa people is propagated.

In chapter five, materials and the construction technique have equally be given due consideration. Services which form part of maintenance work are not left out in the design considerations. Especially in the auditorium, and the amphi-theatre and also the shops that is the commercial section.

The main theme of this design is the architectural imagery of the people. However, attempts have been made as regards marring creativity and technology in cultural context. It is in the process of emphasizing this architectural imagery that the general appraisal of the center have been projected.

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## CHAPTER ONE

### 1.0 INTRODUCTION

The chambers dictionary defines community as "a group of people living in a particular place in harmony and sharing common interest; and community center as "a place that is specially provided for the people, group and organization in a particular area, where they can go in order to meet one another and do things".

Offa is located 56 kilometers south-west of Ilorin, Kwara state capital in the Kukuru hill. Its location is 8°15'N and longitude 4°45'E. The town is located in a more accessible position with transport network. It has a major road along Ajase-Ipo-Osogbo Osun state capital.

The town has a population of 120,000 with the largest railway service in the state and it lies near southern boundary of Kwara and Osun states.

The occupational structure of the people living in the town changed over the years due to some processes of urbanization. The economic activities of people was formerly dominated by one degree occupation which only involve exploiting, farming etc. During this period, there was no capability by man to translate the natural resources into necessary goods for human's use. The economy later transformed into secondary form of occupation, with the advent of gold smiting, cloth weaving, pot molding mat weaving e.t.c. As the town continues to urbanize it increased cultural integration and this later transformed the economy into more advance status hence tertiary and quaternary forms of occupation. These occupations includes buying and selling, legal services, guiding and counseling as well as increase in number of professionals in central and local government service.

Since urbanization increases population rate, most of the building which were meant for residential use are now been converted either partially or fully commercial use. The business centre in the town have taken a new dimension of only sophisticated commercial activities. Urbanization has no doubt affected the standard of living in the town. Moreso fare of all livelihood has increased tremendously, which in turn affects the socio-cultural background of the people of Offa.

#### 1.1 COMMUNITY FACILITIES IN OFFA PRESENT TREND

Presently in the community, there are no facilities to sustain all the cultural, social and educational activities which takes place in the community.

On the whole, there are numerous socio-cultural and educational activities that takes place during the year, which is due to the social nature of the people. These activities, when they take place, they are done in school halls and class rooms which capacities are not adequate to support the activities.

Moreso, there is very active student union body in the community, which headquarters is in the building rented for that purpose. The union execute a lot of programmes which needs to be housed, such programmes include educational summer classes for both primary and secondary school student.

Apart from the mini stadium which is located far away from the people that will be using it, there are no facilities for indoor games which the people of Offa seems to enjoy so much.

The only facility which was provided for "*ayo*" game no longer exist. The building has been converted to cooperative organization. There are many more of such organization that needs a place for their meetings which are held monthly.

### 1.1.2 PROBLEM FACING THE PRESENT TREND

There are no suitable places to accommodate all the different social, cultural, educational, commercial and sporting activities which takes place throughout the year. People tend to stay back and do whatever social function they may have in the town where they reside. Because of the fact that venues which exist are not adequate to support such kind of big functions.

There are no facilities for indoor games and outdoor games and where they are found, you have to be a club member before you can make use of such facility.

### 1.1.3 PROBLEM IDENTIFICATION

This includes lack of venues for the different kind of socio-cultural educational activities that takes place in the community.

\_\_\_ No impact of modern architectural design.

\_\_\_ There is nothing like youth campaigning place, student centre and game centre.

\_\_\_ There are no real social facilities like shopping arcade, Restaurant, snacks bar.

### 1.1.4 PROBLEM DEFINITION

Based on these facts that has been mentioned, the facilities in question, when they are provided, they were adequate for the population of the community at that time for what they are provided for.

At present the population has outgrown the facilities which were provided for schools in the 1940's which can not support the present socio-cultural functions of the community and moroso Offa was elevated to a local council status in 1991 which make the population to keep growing.

### **1.1.5 PROPOSED SOLUTION**

After all problems has been mentioned, I proposed to design a community center which will take care or redress the problems being encountered by the people of Offa in the area of cultural, social, educational and sporting activities.

To correct these problems, below are listed solution:-

- (1) The siting of all community facilities in one site for a well co-ordinated programme.
- (2) The provision for a well defined facilities such as Amphi-theatre, conference hall, Auditorium, shopping arcade and indoor sport hall (Gymnasium) separating them to allow for good control of activities and circulation of people
- (3) Provision for future expansion consideration.
- (4) Put in place commercial ventures that will generate funds for the center in order to be self-sustaining such as rentable spaces, shops and restaurants, snacks bar.

### **1.2 DESIGN AIMS AND OBJECTIVE**

#### **1.2.1 AIMS OF DESIGN**

The design intensions and or purpose, apart from those listed under the problem solution includes:-

- (1) The improvement of the present state of the community facilities in Offa and in the country through the adoption of the design as the model for other community centres across the country.
- (2) To provide such facilities which are hitherto none existence in the community i.e. indoor sport hall, conference hall, amphi-theatre auditorium and commercial facilities.

(3) To make the centre self-sufficient in revenues generation through the provision of commercial ventures such as restaurant, snacks bar, shops and rentable spaces.

### **1.2.2 OBJECTIVE OF DESIGN**

The objective of which is the enhancement of socio-cultural, educational and sporting activities. The restoration of confidence and sense of belonging in the people and to restore socio-cultural, educational and sporting values of the people and to provide an all self-sustaining community centre.

### **1.3 RESEARCH METHODOLOGY**

The methodology of the research adopted for this academic exercise will be based on various information sources mostly documented ones.

**i Case studies:-**Existing cases of community centre in various cities were examined outlining their various design considerations and lapses associated with such.

Also Foreign case studies were not left out in order to give the best impetus of design principle as a strong base for this project.

Case studies were also taken of the present situation of community facilities in Offa, to give an insight of the architecture already existing (Architectural elements) which shall be used to harmonized the centre and the community at large.

**ii Libraries:-** A literature review of materials such as journals, textbook , reference materials and past but similar project. The provided information covering the specialized and technical aspect of the design like acoustics, lighting architectural materials and safety.

iii The assessment of the problem affecting the present trend of community centre in the country with a view of correcting them in the proposed design.

iv Site visitation to the chosen site to monitor types of activities present in and around it to ascertain what role such activities might play in the future of the community centre.

#### **1.4 RESEARCH SCOPE AND LIMITATION**

The scope of the "community centre" design will cover the aspect of a well suited auditorium, amphi-theatre, conference hall, indoor sport hall. Other supporting facilities like classes, guest accommodation, restaurant, snack bar, shops, kiosks and computer games rooms will be designed for. For this aspect the research work will look into acoustics and lighting within the auditorium and the sitting arrangement best suited for both the auditorium and amphi-theatre.

Another importance research area is the aspect of the safety design especially as this centre involves a large public audience. For the supporting facilities like the shopping area the research work will dwell mostly on circulation, functionality and use of construction material to achieve aesthetics and in relaxed atmosphere for the entire centre. The purpose for this scope is hinged on the fact that the place must be attractive and stimulating to patrons.

## CHAPTER TWO

### 2.0 PHYSICAL AND SOCIO-CULTURAL BACKGROUND

#### 2.1 HISTORICAL BACKGROUND

Offa is located 56 kilometres south-west of Ilorin, Kwara state capital. In the Kukuru hill. It's location is 8°15'N and longitude 4°45'E. The town is located in a more accessible position with transport network. It has a major road along Ajase-Ipo, Osogbo, Osun state.

At present Offa has a population of about 100,000 making it the second largest town in Kwara state after ILORIN, it has the largest railway service in the state and it lies near the southern boundary of Kwara and Osun state.

The town was founded by a hunter called Olofa Ganga, who was a descendant of Oduduwa. He hailed from Oyo, and first settled at a river called Maika. With a handful of followers he later left for Ofa-Ore. War forced them to change sites until They reached the present site. Olofagangan died at one of these sites called Offa Esun. The name Offa is coined from the name Olofagangan, whose own name was derived from his hunting weapons which were bow and arrow, called "Offa" in Yoruba language. Any Olofa, the traditional ruler of the town, must be a descendant of Olofagangan.

The occupational structure of the people living in the town changed over the years due to some processes of urbanization. The economic activities of the people was formerly dominated by one degree occupation which only involve exploiting directly from the nature for man's use e.g. hunting, fishing, farming e.t.c. During this period, there was no capability by man to translate the natural resources into necessary goods for human use. The economy later transformed into secondary form.

of occupation, with the advent of goldsmithing, cloth weaving, pot moulding, mat making e.t.c. As the town continued to urbanize, it increased cultural integration and this later transformed the economy into a more advance status hence tertiary and quaternary forms of occupations. These occupations include buying and selling, legal services, guiding and counseling an increase in the number of the professionals, central and local government service.

Since urbanization increase population-rate, most of the buildings which were meant for residential use are now been converted either partially or fully into commercial use. The business centre in the town have taken a new dimension of only sophisticated commercial activities. Urbanization has no doubt affected the standard of living of the people, for it has increased the cost of living in the town. Moreso transport fares has increased tremendously and agricultural products can no more meet the demand of the teaming population which in turn affects the socio-cultural base of the people of Offa.

## **2.1 FESTIVAL IN OFFA**

Among the prominent festival in Offa is Onimoka otherwise called Moremi festival. Moremi, a very beautiful woman, was one of the wives of Oranmiyan, one of the ground children of Oduduwa, the grand Yoruba progenitor.

Moremi was believed to be a princess of Offa married to king Oranmiyan, one time Ooni of Ife reported to be the cradle of Yoruba race. History has it that after the death of king Oranmiyan, Ife town suffered constant attacks from Igbo invaders, these invaders who usually came in form of masquerades dressed in raffia always choose the market days to launch their attacks and thus made away with the traders wares and some times the people themselves as slaves.

These incessant attacks reached its apex at a time when Queen Moremi trader made her the "Iyaloja" (the head of market women). Moremi witnessed one of these Igbo raids on Ife market one day and resolve to find lasting solution to the ugly situation. She went to the reigning Ooni Alayemire for what she intended to do on the issue. When she could not get any encouraging words from Ooni, she resolved to fight for her people's freedom from the Igbo.

Moremi was believed to have risked her life and painfully sacrificed her only child, Ela Olurogbo to a river goddess in fulfillment of her vow made to enhance the liberation of Ife people from incessant raids.

Realizing the extent of what Moremi had done for them, she had saved them from the hands of their enemy (Igbo) by risking her life and sacrificing her only child. She was regarded as a heroine and yearly celebrations in remembrance of her immeasurable contribution and sacrifice.

There are three major activities during Moremi festival. One of these is the traditional splitting of yam into two equal halves. It was recorded that women both farmers once went to harvest yam in their respective farms; on their way home as was practice in those days they stopped at a nearby fast flowing stream to wash off the dirt of their yams and have a cold shower before going home. Each six tubers of yam after washing of the yams and bathing they discovered a yam being carried away by the stream. Both argued that it was the other's yam being carried away, they fought for long by the stream side before they were brought before Olofa whose wise counsel prevailed by splitting the disputed yam into two asking them after splitting - "*Mo laare abi nko laare*" meaning am i just in my division of the yam?"

and people will shout and say it together "*olaar*" meaning you are just, since then it has become an annual event.

Next to this event is the sacrifice of an "Enla" to Moremi. This sacrifice is believed to neutralize all the evils in the community and effect good luck into the town. So it is a common sight to see people jubulating and requesting things from Moremi ranging from children, wealth, health, wives and long life.

After this, comes the final major events which is the traditional wrestling contest "*Ijakadi Loro Offa*" between Olofa and his second in command-the Essa. The wrestling is synonymous with earlier related story of the two farmers at the stream side. Infact it was a relief of their fight over the disputed yam, and wrestling process between Oloofa and Essa ended by the former flooring the later, who in turn gives flimsy excuses of having lost to the slippery ground and maize cobs.

## **2.2 SOCIO-ECONOMIC IMPORTANCE OF FESTIVAL TO OFFA**

The contribution of festivals to Offa can not be qualified, it is a universally acknowledged fact, that any form of social or economic growth can only flourished where there is peace and harmony. It is then worthy to mention that Onimoka festival creates a peaceful atmosphere and unity for the people of Offa. The festival also bring people from all works of life together all for once in a year. It is regarded as local Christmas and the new year is not completed without the celebration of the Onimoka festival by the people of Offa.

Importantly, the convergence of large number of people at Offa for the festival annually has necessitated the construction of more township-roads, the tarring of the existing ones and opening up of linking roads with the neighboring towns by the local councils.

The festival, has greatly contributed to the expansion of trade, it has succeeded in making Owode market an important and one of the few well established markets in Kwara state. According to chief J.S. Olawoyin, it was the tradition of the people of the Ibolu District to bring their articles of trade to Offa realizing its advantaged position and suitability of the town as a modern town and an administrative headquarters.

The festival provides opportunity for the remembrance of the past heroes and heroines and accord the living illustrious sons and daughters, befitting honours are bestowed on them. This serves as inspiration to others and encourages more people to be identified with the progress of the town.

Youths are able to relate experience even in emergence of various social organization like Offa student's union at national and local chapters of tertiary institutions, club 80 Offa, Offa Descendant union, Okin club and so on which partake in the development of the town. To a large extent, the festival forges the spirit of togetherness among the rank and files required for the progress of the town.

### **2.3 ECONOMIC BASE OF OFFA**

The economy of people of Offa local government is based on agriculture, trade and services. It has a population of about 76, 996 of males and females and 4.9 percent of the whole population of Kwara state. (Federal Republic of Nigeria 1991 provisional results). Offa local government area has a higher number of social and educational facilities as well as network of public facilities. Accordingly, Offa town is the focal point of the economic growth in terms of commerce and industry to its environment. On the other hand it lies almost half way between Ilorin and Osogbo

both exerting strong attractions evidenced by out migration from Offa to these towns.

Offa attracts a sizable numbers of traders and shoppers from the rest of the local Governments in the state especially overlapped Oyun local government area. There are three permanent markets in Offa town the main one is the daily "Owode" market and the other is "Oja-Oba" night market, and the third is the Oyun divisional market along Erin-Ile road. There is also traditional periodic market which operate every five days and is located at "Owode" market.

The area produces a variety of food and cash crops. The area around Offa local government is the most intensively cultivated. Oyun division was the main exporter of cocoa in Kwara state after Kabba division, coffee constitutes the second main export crops, palm kernel and sheanuts are also exported in negligible quantities. The food crops includes cassava, sweet potatoes, yams, millets and guinea corn.

Offa local government also has good industrial prospects with the presence of some manufacturing industries of various scales such as Kwara breweries in Ijagbo-Offa, Okin biscuit limited in Offa, Ayoola carpet industry in Offa, Amukude Technical company limited Offa, Okin malt industry in Offa and Okin foam industry limited in Offa among others.

Also there are some health care facilities in Offa local government area of which General Hospital Offa (Public health care), Olalomi hospital in Offa, Afolabi Hospital Offa, Emiola memorial hospital Offa, and host of other private clinics and pharmaceutical shops within the area.

## **2.4 HISTORICAL GROWTH AND DEVELOPMENT**

The name "Offa" is derived from the Yoruba word for "bow" and the traditional titles of rulers the "Olofa" means the "owner of the bow". The empiral lackies to Olofa are Essa, Ojomu, Balogun and Shawo who assist in the governance of the wards named after their offices and are subject to Olofa. There is no exact information regarding the age of the town. It is also commonly believed that the original settlers were Yoruba from either Ile-Ife or Oyo.

The area is divided into five major wards known as Essa, Ojomu, Shawo, Balogun and of recent Igbodun wards. Historical areas includes the "Olofffa's" palace, Idi-Ogun and Moremi square.

The growth and development of Offa local government area can be understood by following the trend in the locational changes of the town centre and new development areas, the focus of the new development was on the northern part and north-west of Offa town towards Ijagbo and Ojoku respectively. The oldest centre is cultural and political in structure, comprising of oba's palace, central square, Moremi square and the night market centre.

However, due to the increase in the development of transportation, social and commercial services, there is a gradual shift from the old centre towards another part of the town. Due to good road network, trade centre of "Owode" market and industrial concentration. The location of the railway station between the old centre and Ijagbo contributed to the creation of a new centre nearby. The new development areas extends further north to Ijagbo towards Ajase-Ipo boundary and also few areas to the south-east and south-west of Offa town. The second centre thus comprises of

railway station, Police station, Banks, Post office, "Owode" market and motor garage, General hospital road.

Because of these important social and economic structure the areas still dominates the other part of the town in terms of volumes of daily economic and social activities.

The growth of the town in early stages was in the direction of the main roads and south-wards. Only schools were found located in the western and north-western part of the town. South-wards from Erin-Ile is the newly commissioned Federal polytechnic Offa. However, the effects of land ownership constrains reduced greatly the growth of the town along the main Osogbo-Ilorin road, especially south-wards going to Erin-Ile. This affects the expansion of residential units than industrial establishments. Thus there is a change in the spatial direction of growth towards north-west and western parts of the town. This has been helped by development of intra-urban roads. The area now recorded the highest number of roads, streets and modern residential structures, institutions, local government secretariat, traditional council secretariat, Government offices are also located in this area. This was resulted into a change in new development centre from the main Osogbo-Ilorin road towards the north-western parts of the town after the Orita-Merin junction and after General Hospital Offa; west-ward. However on north-east is the location of Government reservation area (G.R.A) of recent, closer to "Afelele" river by ultra modern structures along Ipee road.

## 2.5 RAINFALL

Offa clearly falls within the little dry season zone, with its double probability peaks, one in June (12%) the other in October(12%). August displays a troughling of

the isolines with values ranging from 4-8%. Although the raining season extends from march to November. The probability values are generally not very high.

Rainfall is definitely more likely within two hours before and after sunset, than at any other time. This illustrates a location that depends predominantly on local thunderstorm development than on line squalls. Its fair proximity to the range of kukuru hill which are believed to be source of region for travelling storms affecting the south-western corner of the country may however, account for the higher probability values occurring after sunset in nearly all the months of the raining seasons except august.

The dry season falls between mid-November and the end of February. The mean annual rainfall for Offa in the period 1911-1970 was 1235mm.

JAN.	FEB.	MAR	APR	MAY	JUNE
10.90	21.30	87.00	131.80	156.90	187.90
JULY	AUG.	SEP	OCT.	NOV.	DEC
160.00	88.10	178.50	166.60	47.20	7.10

TABLE: AVERAGE RAINFALL (MM)

### **HUMIDITY**

The monthly variation of mean relative humidity at 10.00 and 16.00 hours have been derived from reading of dry bulb and wet bulb thermometers exposed in Stevenson screen or from the records of Hair Hygroscreens or from the records of Hygrographs also exposed in Stevenson screen.

Throughout the year the relative humidity have their highest values along the coast decreasing gradually north-wards. The highest values of 80%-90% occurs

around August and the lowest values 60-80% from November to March. The humidity pattern of Offa is as reflected in figure above.

### **TEMPERATURE**

The mean temperature for a day is half the sum of the maximum and minimum temperature for that day. The values are generally between 38°F (26°C) - 82°F (28°C)

### **WIND PRESSURE**

The wind records are read either from the Dives pressure tube Anemometer. The most prevalent wind is the south, southwest and west wind which are of the south-westerly winds. The frequencies are generally between 20%-40%

### **SOLAR DATA**

The sun as the major source of radiant energy, provides about 99.97% of the energy required for physical activity taking place in the earth atmosphere system. This radiant energy is emitted as electromagnetic waves. .

Each minute the sun radiates approximately  $56 \times 10^{26}$  cal. of energy. In terms of energy per unit area, this value is equivalent to approximately 1.94 cal/cm<sup>2</sup>/min. this is the **SOLAR CONSTANT**.

### **MEAN ANNUAL SUNSHINE HOURS**

The general pattern shows that the number of sunshine hours is lowest in the coastal area and increases, although not uniformly, to the highest values in the extreme north east of the country.

The generally lower amount of sunshine hours in Offa is due to the greater amount of cloudiness and rainfall characteristics of the southern part of the country.

Table below shows the mean (monthly) hours of sunshine between 1961-1970

JAN	FEB	MAR	APR	MAY	JUNE
211.9	211.6	214.2	188.4	201.0	1172.5
JULY	AUG	SEP	OCT	NOV	DEC
109.9	76.6	103.8	175.1	220.3	226.4

**MEAN/ANNUAL = 2115**

## **2.6 SOILS AND VEGETATION**

Four distinct areas have been identified

### **AREAS OF EXPOSED METAMORPHIC IGNEOUS ROCK.**

Erosion which is partly due to the general lack of vegetation is very active in these areas, preventing the accumulation of soils and exposing the fresh rock surface to weathering. The area of exposed rocks are suitable for construction and grazing.

### **SOIL OF THE FOREST:-**

These areas are small and isolated and are generally found in low lying plains. They are easily accessible like those of the thickly vegetated slopes of sedimentary rocks formation. The forest could be exploited for wood production and would be suitable for cultivation if trees were fall in certain areas.

### **SOILS OF THE VALLEYS**

These fine transported soil that have been deposited in the valleys. In some places, vegetation is due to the abundant ground water supplies. The soil of the

valleys are suitable mostly for agriculture but care should be taken to prevent flooding during raining season.

### **SOIL OF THE FLOODING PLAIN**

The soils are cummulation of clay, fine-to-coarse-grained transported sediments and are liable to frequent inundation. Some of the higher lying areas are cultivated and water supply is abundant. These soils could be used as raw materials for construction purposes. The areas lies in the savanna wood lands and is covered with scattered trees.

## CHAPTER THREE

### **3.0 CASE STUDIES**

#### **3.1 OBJECTIVE OF CASE STUDIES**

In the choice of the case to be studied, effort was made to genuinely look at some schemes in the country and those that exist in other countries. The objectives of carrying out this case study are as follows:-

- i To establish a basis for comparison.
- ii To establish a base for development on the already existing cases studied.
- iii To identify problem areas existing on the cases studied and correct them.
- iv To identify the areas of deficiency on the cases studied and make corrections.
- v To profer professional suggestions based on the effects and cases of problems identified.

The summary of the finding is employed in the new work to achieve a design that is adaptive to the site chosen and meet the requirements set out.

#### **FOREIGN CASE STUDY**

**3.2 AUDITORIUM BUILDING:** A structure in Chicago that is one of the early landmarks of modern architecture in the United states. It was designed by Louis Henrl Sultivan who at the time was a member of the firm of Adder and Sullivan. He partners, Dankmar Adder, was responsible for the technical aspects of the building including the early perfect acoustics of the theater.

Built in 1887-1889, the structure was intended primarily to provide a permanent auditorium for the city with hotel rooms and offices added to bring additional revenue. Sullivan handled this problem by designing the theater within a

shell at hotel room, with the offices in a lower over the theater entrance the exterior design of the building is in the Tomanesque revival style popularized by Henry Hobson Richardson.

It is remarkable chiefly for the sensitive massing of the arcaded facade, which rise a three-story base of heavily rusticated granite.

Sullivan's originality is most evident in the interior, especially in the careful proportions and rich ornamentation of the theatre, the bar and the staircase.

## LOCAL CASE STUDY

### 3.4 U. K. BELLO ART THEATRE MINNA.

(1) Acoustic appraisal :- Design and constructed by Julius Berger, Nig. ltd. the U.K Bello arts theatre was commissioned in 1991 by the ex-president Ibrahim Bbabangida. It is located along the old art council road otherwise known as the hill top. The theatre is a well conceived place with the best acoustic standards in its design.

(a) Walls:- Tanished with acoustic paneling of polished wood and placed at a reflective angle on the curvilinear wall.

(b) Floor: this is raked and carpeted for noise absorption caused by feet. Floor nature gives the auditorium good sight lines.

(c) Ceiling: Finished in acoustics ceiling boards with suspended near reflector boards for sound reflection at the rear.

(d) Others: the stage is designed for a movable screen. Projector room is on centre sight line the interior is marbled and wood finished giving a cool and comfortable interior. Lighting is purely artificial except when doors are opened.

### 3.5 CENTRE FOR WOMEN DEVELOPMENT ABUJA AUDITORIUM

(i) Introduction:- The centre for women development, is located in Abuja, the capital of the Federal Republic of Nigeria. Abuja is one and half hour by road from Minna, its nearest neighbour and almost three hour drive from Kaduna another neighbouring town.

(ii) Auditorium: A modern auditorium with a seating capacity of 1,200 with a modern built lingual translation system. The basic concepts of auditorium design are well treated. The floors, walls and ceilings are rendered with acoustic finishes.

Sound reproduction and lighting are ideal and comfortable. Seating arrangements is a raked type giving good, sight -lines.

The auditorium is ideal for seminars, film shows, workshops, weddings and various other social gathering. The basic faculties are:-

Stage

Projector room and control

Seating area and gallery

Services: toilets and changing room

## CHAPTER FOUR

### 4.0 THE DESIGN

#### 4.1 CRITERIA FOR SITE SELECTION.

The selection of a site in "A TAN OBA" district in Offa headquarters of Offa local government is hinged on the following factors:-

i Location:- the community centre requires that it be located in a district centre where the necessary audience would be maintained to sustain it, without the necessary linkage to other sector.

ii Environment:- The environment chosen in this district is earmarked for a town hall/theatre as such surrounded by the basic supporting amenities like OBA'S PALACE, schools, mosque and market. Also, this environment is best suited because of its position of both residential and public services.

iii Sound transmission:- Being in the district centre, one aspects that the sound transmission to the site would be great but this would be solved architecturally by planting trees and shrubs as sound breakers and creating a buffer zone by the zoning on site of the facilities.

iv Utilities:- Each sector is linked with transport line servicing each district, along which runs such utilities as water, electricity and telephone lines. The site is located along a feeder route as such the utilities would be well utilized by linking them to site.

Site space:- The site is large enough, and therefore adequate parking space would be designed for. Also the community centre requires a lot of circulation space because of the number of people that will be using the centre, this would be solved using well designed walk-ways to link the complex from intermediary routes.

#### **4.1.2 SITE SELECTION AND LOCATION ANALYSIS**

The chosen site is in the cultural district of Offa, the cultural district is situated along the Olofa road and spread to the back of Olofa's palace.

Based on the criteria for site selection earlier discussed, sites 1 and 2 were obtained. But site 1 was finally chosen because of the following reasons over site 2.

Site two is located at the back of Offa Grammar school which is far from the palace of the Oba, and it is being bounded on two sides by two major routes this would affect pedestrian circulation accessing the site from outside.

Site one is chosen because it is centrally placed, being surrounded by all socio-cultural amenities including the palace, police post, Moremi shrine, market and mosque. This creates the conducive atmosphere for the entertainment, cultural, educational, sporting and commercial activities planned for.

Lastly, the chosen site is along a feeder road, making pedestrian accessless dangerous and linked directly to other facilities, moreover the necessary utilities can be easily tapped from their route to feed the site.

#### **4.1.3 LOCATION**

The site one chosen is located in the cultural district of Offa, headquarters of Offa local government area. The district contains the Oba's palace, the market, mosque and Moremi shrine. The main junction being popular "popo" junction linking the site and off Oloofa road.

#### **4.2 PROPOSED SITE ANALYSIS**

The project site is situated in a neighbourhood district centre with existing facilities as clinics, Oba's palace, market, mosque and fire unit. The site itself was earmarked for town hall/theatre and mostly recreational facilities. For purpose of

this design the entire site is divided into two, one to contain the community centre while the other part for earlier planned recreational activities such as outdoor games and children's play ground.

The site is bounded in front by an access road on the west, on the west boundary, pedestrian walkways link to the site with other parts of the neighbourhood leading from the residential area on the east to the west of the site.

On the site, the building is oriented, taking into consideration the sunrise and sunset. The orientation is such that the auditorium and student wing of the centre faces the sunrise and sunset that is East-west directly. This is to reduce or eliminate the effect of sunshine in the building during daytime. The amphi-theatre orientation of the amphi-theatre is such that, the seating area and stage are oriented away from the sunrise and sunset, that is, East-west direction. This is to make the audience comfortable by not facing the sun when rising and setting.

As for the administration, shops, restaurant and snack bar their orientation is along the east-west direction. The sunset that falls on the building is treated with fins on the elevations to reduce the intensity of sunshine that will be penetrating into the building. Which is, direct radiation of sun would be eliminated giving a satisfactory sunshine penetration into the shopping area.

Basically, the various climatic problems that may be arises on site, such as wind flow, radiation and the effect of various trade winds are treated using the trees as shades, breakers and filters. In the case of humidity, the windows are design to be large and cross ventilation is of very high priority. Drainage of storm water is directed towards the slope which is west wards into the main drains provided along the access road in front of the site.

A summary of the site analysis can be seen from the figure:-

#### **4.3 / DESIGN PHILOSOPHY**

The design philosophy of this project shall be culture + creativity + technology. The design will be approached in a way to meet the above listed criterias:

Culture which means the civilization: that is the community centre will be design to meet the civilization of the people of Offa and its environs.

Creativity, in this context mean to design in line with the frame of the topic, to show some kind of aesthetics which is original to the project on it own.

Technology:- To design the building to meet the required performance standard. The structure will take care of its acoustic problems design.

#### **4.4 DESIGN APPROACH**

The design shall be done in a way that when entering the centre, the first place of approach is the facilities provide to sustain the community centre. The next place of contact are the auditorium, amphi-theatre and indoor sport hall which shall be situated in a place where they are easily sighted.

#### **4.5 DESIGN/BRIEF DEVELOPMENT**

A Community centre is a place that is specially provided for the people, groups and organizations in a particular area, where they can go in order to meet one another and do things.

As Offa is the location of this proposal, because of the fact that the town Offa has come a long way and still lacking in the basic community facilities. That is there are no facilities to sustain all the cultural and social activities which takes place in the community.

These activities, when they take place, are done in school halls and classroom in order case open-area which are not adequate for the modern day Offa elite which makes the greater part of the community.

There is a very strong and active student union body in Offa. which has its headquarters in a rented building. This body is responsible with enlightening the Offa youth. As such as programme like educational health, drug abuse e.t.c.

Apart from the mini-stadium which is located along Irra road which only has a football pitch, there is no any other facilities for game; especially in area of indoor game which is of more interest in Offa.

It has been identified that its lack of venues for the different kinds of socio-cultural activities that takes place in Offa and that there is no impact of architectural design

More so there is nothing like camping facilities, for the camping of student during summer school and visitor during all other activities.

After all problems have been mentioned, the purpose of this design is to cater for the populace in Offa. The community centre is to stand in as a main centre for community activities.

The community centre is to function every day, running a morning to evening session. It could be open to functions in the night, while the commercial section would run a complimentary service within the same period. The design would take into consideration the various facilities for the centre to perform within the period efficiently.

The audience, the central target would constitute people of different social categories and would include children and for this reason, special consideration would be made to service various categories and class of audience, old age, Elite, businessmen, leisure-seeker, day to day shoppers, tourists and youths.

The audience would be generated within the community of location and its environs of up to 3500 - 5000 people. A maximum of 6000 would be designed for all the same.

#### **4.6 FUNCTIONAL REQUIREMENTS**

From the outlined brief, the architectural goal of the proposed community centre would be translated into the following activities:-

#### **4.6.1 ADMINISTRATION**

Administration hierarchy would be headed by a manager down to the support staffs such as cleaners and workmen. The aim here is to provide services rendered under close supervision and maintain patron satisfaction in all respect. Moreover, the fund generated would be better managed and translated to better goals in terms of newer trends. Unlike in the past where we have seen the damaging effect of mismanagement. The administrative block are divided into two categories which are the management units and the students' units and would consist of the following

- i General Manager
- ii Deputy General Manager
- iii Secretary
- iv Commercial Manager
- v Personal Manager
- vi Service Controller
- vii Auditor
- viii Accountant
- ix P. R. O
- x Toilet Provisions, male and Female

#### **4.6.2 STUDENT UNIT**

This will basically house the students executives whom the to run day to day activities of the student headquarters and would consist of the following

- i President
- ii vice-president I & II
- iii Secretary

- iv P. R. O
- v Treasurer
- vi Financial Secretary
- vii Welfare Officer
- viii Classes
- ix Guest Accommodation

#### **4.6.3 CONFERENCE HALL**

This is the unit of the centre which shall take care of meeting places of the people. Such as clubs, co-operative meetings. It could also be used for festivals, wedding reception as there are usually large number of wedding in Offa.

The capacity of this unit shall be between 350 - 500 and shall be provided with free space around it so that when there is a large audience , the space could be connected into usable space for seating purpose.

#### **4.6.4 AUDITORIUM**

This will cater for cultural activities, music, concert, the design of this unit is flexible, so that it could be used for other purposes. The auditorium consist of the following

- Seat (padded)
- Aisles for circulation
- Emergency exit
- Rehearsal room
- Dressing
- Back stage
- Main stage

Chairs

Reception

Special acoustic walls, floor and ceiling

#### **4.6.5 AMPHI-THEATRE**

This will be design to cater for open-air activities such as seminal, lecture, musical concerts, drama which require large number of people. The could also be meets of political parties and their members. The amphi-theatre consist of the following

Stage

Back stage

Sealing

Changing room

Office

Stone

Toilets provisions, male and female

#### **4.6.6 GYMNASIUM**

This shall take care of all indoor games as in board/table game which the greater part of the people enjoys. Provision will be made for 'Ayo' snuckers, table tennis.

#### **4.6.7 GUEST ACCOMMODATION**

This will cater for camping of male and female guest, which will be provided for the purpose of camping of sportsmen, students. It could also be rented out be those that comes around for seminars and festivals, and will consist the following

Male unit

Female unit

Common room

Toilet Provisions, male and female

#### **4.6.8 CLASS ROOMS**

This shall cater for the summer school programme, which normally comes up during the long vacation. The class shall also be used for commercial extra moral class in the evening session. The facilities to be provided are

Classes

Toilet provision for male and female

#### **4.6.9 RESTAURANT**

This shall provide by meal service and shall comprise the following component.

Eating area

kitchen

Choak room

Cold room

Dry store

Pantry

Office

#### **4.6.10 SNACK BAR**

This will cater for light meal service and fast food, it shall comprise the following;

Kitchenette

Wash-up area

Storage

Servicing counter

Perishable store

Drink storage

#### **4.6.11 SHOPS**

As earlier, mentioned, this remains the attraction elements for the various categories of patrons. It is intended that fifteen shops would provide the following functions.

Saloons

Business centre

Games and video games room

Bar/Restaurant

#### **4.7 SPACE DERIVATION**

The criteria for the space derivation is thus as follows

(1) Furniture utility space

(2) Circulation space

(3) Furniture operational space

#### **SITE AND SPACE**

The site would be designed to be perfectly secured, independent of the outside environment. A secured main gate, with a gate house shall be provided at the entrance to the site which shall be by the road side.

Provisions shall be made for enough parking space which will be located a little after the gate house.

site fencing

secure main gate

Gate house + toilet:-  $3 \times 2 + 3 \times 1.5 = 6 + 4.5 = 10.5\text{m}^2$

Car parks:-  $5 \times 2.5 \times 150 = 1875\text{m}^2$

Total  $= 1885.5\text{m}^2$

### ADMINISTRATION

This is where the managerial staffs shall be housed as this is going to be located in a place where the staff will have access to all the units in the community centre.

Office spaces shall also be provided for student union executives.

The office spaces shall be provided for the following staff using the above criteria.

**Reception**:- This is the first point of call in the administrative unit. This is like a general waiting place for visitors before they could see whoever they might want to see.

Receptionist desk

waiting area

$$5 \times 5 = 25\text{m}^2$$

circulation space

### General manager's office

This is the office of the chief executive of the community centre. The person at the helm of affairs of the centre. This officer will have in his office

Administrative desk

private area

carbinet space  $6 \times 5 = 30\text{m}^2$   
toilet  
waiting area  $3 \times 4 = 12\text{m}^2$   
 $42\text{m}^2$

### **Deputy Manager**

This is an office which deals directly with the general manager. The following office facilities will be provided

Administrative desk  
Private area  $6 \times 5 = 30\text{m}^2$   
Carbinet space  
Toilet

### **Secretary**

This is an office which deals with the administration of the community centre., and he also keep and take minutes in meeting.

Private area  
Administrative desk  
Carbinet space  $5 \times 5 \text{m} = 25\text{m}^2$   
Circulation space

### **Commercial Manager**

This is the office of the person who makes business for the community centre. He is the image maker of the centre. The following office facilities will be provided:

Administrative desk  
Private area

Carbinet space  $6 \times 5 = 30\text{m}^2$   
Circulation space  
Waiting area

### **Account office**

This is an office where records of money spent and income of the centre are kept and he also receives visitors in the office. The following are needed in his office

Office desk  
Private area  
Office carbinet space  $5 \times 5 = 25\text{m}^2$   
Circulation space

### **Auditor**

This is an office where all records of account has to be cross checked and all the finances has to be put in place.

Office desk  
Private area  $4 \times 3 = 12\text{m}^2$   
Office carbinet space  
Circulation space

### **Personnel Manager**

This office takes care of the staffs and their welfare. The following are needed in this office

Office desk  
Private area  $4 \times 4 = 16\text{m}^2$   
Office carbinet space  
Circulation space

### Shop/Rentable space

These are lockable shops that are for money generation for the up-keep of the community centre. The following will be provided

Selling area -	$3 \times 3 = 9$
Store	$2 \times 3 = 6$
Total	$15\text{m}^2$

### CONFERENCE HALL

This is an open hall which shall be used for meeting, wedding receptions

### Student Wing

**President:-** This is the chief executive of the student union body. The following office facilities shall be needed

Office desk	
Private area	$4 \times 4 = 16\text{m}^2$
Office carbinet space	
Circulation	

**Vice-President I and Vice-President II:-** These are the offices of both the vice-president.

Office desk	
Private area	
Office carbinet space	$4 \times 3 = 12 \times 2 = 124$
Circulation space	

### Secretary

This is the person who takes care of the administration of the student body.  
He take care of the minutes of meetings.

Office desk

Private area

Office carbinet space  $4 \times 3 = 12$

Circulation space

### FINANCIAL SECRETARY

This person keeps the records of money generated and the money spent. He makes the account of the student body. The following will be provided in this office

Office desk

Private area

Office carbinet space  $4 \times 3 = 12m^2$

Circulation space

### TREASURER

This person keeps money for the student body, take care of the account and keep some money with him in case of emergency. The following will be provided in this office

Office desk

Private area  $4 \times 3 m^2$

Office carbinet space

Circulation

### P. R. O

This person makes the image of the student body. He is the person who is designated to disseminate information

Office desk

Private area  $4 \times 3 \text{m}^2$

Office cabinet space

Circulation

### Guest accommodation

This is going to Carter for the camping of student during summer and sportsman. The hostel shall house two person each room and 20 room shall be provided.

Room-  $3.6 \times 3.6 \times 20 = 259.20 \text{m}^2$

Bathroom - 1.2 + 1

Toilet - 12x1

Common room -  $5 \times 6 = 30 \text{m}^2$

### DIRECTOR OF SOCIAL

This person takes care of the social activities of the body. He organizes and co-ordinates all social functions. His office will be provided with the following spaces

Office desk

Private area

Office cabinet space  $4 \times 3 = 12 \text{m}^2$

Circulation space

## WELFARE OFFICER

He take cares of the welfare of the other executive officers. He take charge of the purchase of stationaries and other necessities.

Office desk

Private area  $4 \times 3 = 12\text{m}^2$

Office carbinet space

Circulation

Store  $4 \times 2 = 8\text{m}^2$

$20\text{m}^2$

## CLASSES

This is going to serve as lecture classes for summer school. Provision shall be provided for the following space

Classroom desk

Circulation space  $5 \times 10 = 50\text{m}^2$

Desk operational space

6 classes will be provided:-  $6 \times 50 = 300\text{m}^2$

## Auditorium

Seating area  $110\text{m}^2$

Rehearsal  $32\text{m}^2$

Reception  $28\text{m}^2$

Stage  $64\text{m}^2$

Dressing  $32\text{m}^2$

Back stage  $32\text{m}^2$

Toilet

Control room

6m<sup>2</sup>

**Amphi-theatre**

Seating area

Back stage

Stage

Dressing

Toilet

**4.8 THE DESIGN CONCEPT**

The design concept for the community centre was got from the design. In achieving the concept, the facilities to be provided in the community centre was first listed down with the various components of these facilities. The functional relationship of these various components in each facility was established using the triangle of function which indicated the relationship each components has with the other by the use of coloured dots with each colour representing the level of relationship. Red dot was used to indicate a hot relationship, yellow dots for warm relations and blue dot for cold relationship.

After the establishment of the components, relationship with each other, a functional flow diagram was constructed from the triangle of functions. This procedure is carried for all facilities that were provided in the proposed centre.

An integrated triangle of function comprising all the various components to be provided in the community centre (i.e. a combination of all the components of each facility) is constructed using the method of from. This integrated triangle of function and integrated functional flow diagram was made comprising all the components of each facility.

Space was then allocated to each component. The components were then boxed subjectively into each box containing components of two or more facilities after boxing. The boxes were lettered depending on the number of boxes obtained from the subjective boxing.

The space allocation within each box was added up together to get the total space allocation for each box. Using the total space allocation, the boxes were reduced using a scale of 1:500 to get a much smaller set of boxes. The boxes now forming the design form, is then rearranged putting into consideration environmental conditions such as ventilation airflow, lighting, circulation and cost.

This rearrangement is however done without altering the functional relationship each box has with the other, this rearrangement will be repeated over and over until a functional design form is obtained. This thus represent the plan form concept.

### **ELEVATION CONCEPT**

The most imposing elevation is the approach elevation; which shows all the facilities provided for at a glance. In arriving at this elevation I took a study of the cultural area where the community centre is to be sited and in my finding, I noticed that the Oba's palace, the mosque and Moremi's shrine all have vertical elements in there elevation.

Since the proposed community centre is alien in the culture of the people of Offa, to harmonize the community centre to the environment, vertical element which were observed in the cultural area were introduced to all the elevation of the community centre.

## CHAPTER FIVE

### 5.0 CONSTRUCTION AND SERVICE

The importance of the building materials industry in development and economy is enormous as its output governs both the rate and quality of construction work. This study chapter is intended to outline the constructional materials and services applicable to this project. Today, sophisticated, processes of building construction based on high degree of mechanisation are now being employed in developed countries. These generally require a high capital outlay and can be introduced gradually into developing countries such as our Nigeria today. In the next decade, rapid improvements in building construction in the developed countries must be accomplished by the adoption of techniques that will produce large increments in productivity for relatively modest capital outlay. One of such technique is the application of precast components to masonry building construction. However, this project will utilize basically the traditional building materials and therefore will engage only the traditional building techniques.

The wide span of service conditions of building and installation required in this project require a great diversity of production processes producing and utilizing the variety of building materials. This call for knowledge of their properties, strength at normal and high temperature; water resistance, resistance to various salts, acids and alkalis, resistance to slog of particular importance in metallurgy.

A material with universal properties is as yet a challenge the future. Material involved in engineering and construction work differs in source and technique used to achieve them. The chief property of building materials predetermine their

applications. Only a deep comprehensive knowledge of the properties of materials allows a rational - both from the engineering and economic standpoint-choice of materials for specific service conditions.

## 5.1 MATERIALS

The basic material required for this project could be the usual traditional materials such as concrete, blockwork mortar/cement and timber. The properties of such are classified generally as physical, chemical and mechanical. The choice of the basic traditional materials stem from the basic traditional materials stem from their tested characteristic properties, availability and workability. This break down the construction process to a simple and less tedious operation in that the materials can be sourced locally. The economic viability of this project lies very seriously on the factor and remain a design goal.

(i) CONCRETE: Concrete is an artificial stone resulting from the hardening of a rationally chosen mixture of building materials, water, sand and sand/stone aggregate. The mixture of these materials before it hardens is called concrete mix. When cement pastes harden on mixture with other aggregate, it become concrete and reinforced concrete when mixed with steel.

High quality concrete mixture can only be produced with a deep knowledge of:-

- \_\_\_ Manufacturing procedures
- \_\_\_ Proper choice of quality constituents and optimum ratio.
- \_\_\_ Suitable preparation procedures for mixes, placing, and computation and hardening, in order to obtain concrete structure of high durability, strength and low cost.

The choice of concrete for major building construction such as this is due to the following reasons:-

- (a) The possibilities of controlling the properties of concrete within a wide range of using appropriate ingredients and special mechanical and chemical process.
- (b) Ready mechanical working of concrete mixes due to its plasticity, into various structural shape, sizes at no considerable labour expenditure.
- (c) Possibilities of the complete mechanization of concrete preparation and placing of process.
- (d) Economic efficiency of concrete, since 80% to 90% of its volume are occupied by the aggregate from local stone materials.

Being a composite materials, we shall look briefly into the various elements that make concrete what it is, namely, cement, water, aggregate and form work used.

**Cement:** The most popularly used in this country Nigeria, is Portland cement; this project not being an exception. Portland cement is made by calcimining a slurry of clay (silica, Alumina and iron oxide) with lime stone (calcium carbonate), in a rotating furnace, up to 180m in length. The resulting clinker is mixed with a small proportion of gypsum to retard the setting of the cement and is ground to a powder, the resulting Portland cement is the less expensive and should conform with requirements of BS 12:1958.

**Water:** Water for concrete should be reasonably free from impurities such as suspended solid, organic matters and salts which may adversely affect the setting, hardening and durability of the concrete. Ideally, water fit for drinking is best for concrete.

**Aggregate:** As aggregate forms the bulk of hardened concrete, it is usually desirable to use local materials. Aggregate must be sufficiently strong, free from constituent which react with cement, be well graded and have very small or no moisture movement. The recommended aggregates are crushed natural gravels, sand and crushed stones such as granite, basalt, hard limestone and sandstones.

**Formwork:** Formwork is very important to achieve the desired shape of surface texture of concrete members and acts as support during the setting and hardening. It must be ground-tight, true in line, level, face and profile and strong enough to accept all constructional loads including the resulting from mechanical compression. Best constructed in units formwork should also be removed carefully after a certain time lapse and depends on type of cement use, temperature of the concrete and other factors.

**Concrete blocks:** In this designing the requirement of the concrete block are divided into two; loading bearing and non-loading bearing. Basically, the shopping area should utilize the concrete blocks as partition walling that is non-load bearing, whereas the auditorium section would utilize the blocks as load bearing to transfer load from the roof down to the foundation.

BS6073 (26) prescribes the requirement for present concrete blocks made from cement and one of a number of different aggregates from gravel to light-weight materials. British standards (BS) recognise three type of blocks, Solid, Hollow and cellular, with hollow being the commonest in most Nigeria construction and the solid for pre-cast concrete.

**Construction:** They are made to various sizes being 450x225mm with a wide range of thickness. The same standard stipulates a strength of not less than 7Nsqmm as compresses strength for hollow block.

Mortar, blocks and bricks are bedded and in jointed with mortar. A good mortar spreads readily, remains plastic. Mortar should not be stronger than necessary, as an excessively strong mortar concentrate the effect of and differential movement in fewer and wider cracks. For the purpose of the project, the choice of mortar type should be restricted to cement mortar, a mixture of 1:3 (cement to sand) workable and yet strong on setting. The sand should comply with BS1200 (28) and be clean and well graded. The guiding principle in mortar use is that it should contain no-more cement than is necessary to give adequate strength in the brickwork.

When mortar is use for plastering, internally and externally by covering openings or plastering in dry weather respectively.

**Timber:** The origin of a timber is from a tree. A tree consist of trunk, a crown and roots. In recent years, knowledge of the properties of timber has increased and improved techniques of timber use. Such techniques are laminating, joining and framing, seasoning and protection against fungi, insects and fire.

Timber use in this project work would be limited to such areas as furniture (partition wall) wall finishes (Acoustic panels) and external works like scaffolds and formwork. For this use, we have available in Nigeria the following timber woods: Iroko, Obeche, African Mahogany, Sapele and Guarea just to mention the commonest ones.

The timber required before use, must be observed for maximum resounding qualities in durability, decorative stability and most importantly fire resistance. The timber is either impregnated using resins, surface coated with pink lead primer (2521:1961) or sealed with two full coats of Aluminum based primer for surfaces in contact with external walls. Lastly and most importantly seasoned to eliminate moisture to level appropriate for the end use .Kiln seasoning is recommended for joinery and furniture timber while air seasoning is used for external work timber, that are used for temporary purposes only such as dormworks or scaffolds.

## 5.2 CONCLUSION

The construction of a building can be considered as the product being produced with a temporary factory, the building site being the factory in which the building contractor will make the product. To enable this activity to take place, the builder requires man, materials and plants, all of which have to be carefully controlled so that the man has the right machines in the most advantageous position. The materials stored so that they are readily available and not interfering with the general site circulation and adequate storage space and site accommodation.

There is no standard size ratio between the free site space required to construct building and the total size of the site on which the building is to be erected. For this chosen site space allocation for men materials and plants is another problem. To obtain maximum efficiency on the site, there should be a laid down layout in this project case, reference should be made to site plan, and also a correct amount of expenditure to support the proposed site layout. As the construction plan is executed, it should also be reviewed periodically to suit site needs and activities.

If this is done, the construction would not only be an easy task by progressive and profitable to all.

**(i) Site clearance**

In most cases of building construction, this project not being an exception, the builder should be in possession of the site, the site layout plan and the necessary drawings for erection of building. The operation of site possession or clearance is only completed by the following operations:

- (a) Clearing the site
- (b) Setting out the building
- (c) Establishing a datum level

**A CLEARING THE SITE**

This may involve the demolition of existing buildings as in this site none. Next, is grubbing out of bushes and trees and the removal of soil to reduce levels.

Building regulation CI "The ground to be covered by the building shall be reasonably free from vegetation matters". This is in effect to sterilise the ground since the top 300mm or so will contain plant life and decaying vegetations. This means that the top soil is easily compresses and would be unsuitable for foundation.

**B SETTING OUT THE SITE**

The first task is to establish a baseline from which the whole of the building can be set out. The position of this line must be clearly marked on site so that it can be re-established at any time. Steel tapes should be used for measuring the site 30m suitable length. Linen tapes tend to stretch.

After setting out the baseline, it should be marked and checked, before marking the lines of the building. Each corner should be marked using a start peg. A check should be made to ensure length and right-angles.

After setting out of the main building lines have been completed and checked, profile boards (150x35mm) should be set up clear of foundation stretch about 1.5m. The boards are required at all stretch and wall intersections.

### **ESTABLISHING A DATUM LEVEL**

It is important that all levels in a building area taken from a fixed point called datum. This point should now be established and must relate to an ordinance bench mark.

This is an arrow with a horizontal mark above the arrow.. The central line of the horizontal being the actuarial level indicated on an ordinance survey map. When there is none on site, a suitable permanent datum must be established.

### **SLOPING SITE**

The project site tend to slope gently towards the approach as shown on the analysis drawing and the contour line derived from the district map. Since very few sites are nearly level. The first thing to be done is leveling the site. This is referred technically to as reducing site. Three methods can be used, but for this project for the site, the cut and fill method will be the most economical over the ordinary cut or the fill methods.

### **FOUNDATION**

By definition, a foundation is the base on which a building rests and its purpose it to safely transfer the loads of a building to suitable subsoil. In residential buildings with only light loading, it is sufficient to use a mass of concrete strip

foundation. This project design is a combination of a framed building and heavy load transmitting walls, hence the choice of foundation type would be mass concrete. The plan size of a foundation is simply derived by load/Bearing capacity of subsoil

Concrete foundation would be the reinforced type to reduced cost and ease construction, but will require the services of a structural engineer to formulate an economic design. The engineer must define the area in which tension occur and specify the requirements, since concrete is a material weak in tension.

For the nature of this work, it is being recommended that reinforced deep strip foundation and isolated pat foundation at the column points be used since the soil nature is predominantly cohesive soil with a bearing capacity of 600KN/sq.m. This foundation type can successfully handle the bearing capacity of the soil type since it is reinforced and deep transferring load beyond the subsoil.

### **STRUCTURAL SYSTEMS**

The use of the two-dimensional system and the skeleton structure is clearly defined from the plan of this project. The two-dimensional system would be the massorry wall structure often call a traditional one as it belongs to the oldest methods in building activity. The mansorry wall structure can be divided into:

- (a) Perimeter bearing walls
- (b) Cellular and spine walls
- (c) Combined walls and columns

The first two options are favourable but not economical for construction such as this going up to three floors. The most desirable is a combined walls and column structural grid. The grids have a reinforced concrete beams. The auditorium is

designed to be the perimeter load bearing walls on deep strip reinforced foundation footing. This is so because of the open volume design nature utilising a space frame roof system. A choice which is solely because it is light weight and covers spans without intermediate support, which is definitely not required with the auditorium. The amphi-theatre is designed to be combined walls beams and columns on deep pad reinforced foundation footing. This is so, because of the open volume design nature utilising no roof system.

### **WALLS**

Apart from the auditorium interior requiring acoustic treatment on the walls. The walls would be constructed using traditional hollow separated standard size blocks of 450x225mm. The walls of the skeleton structural system would function mainly as partition walls. Providing sufficient thermal insulation and fire resistance. The walls materials must be durable and able to withstand soluble salts, atmospheric pollution and other adverse conditions.

In general, domestic load bearing external walls of normal materials earlier stated, that satisfy the condition of strength, stability and weather resistance will provide sufficient resistance to fire.

### **DOORS/WINDOWS**

The general principle of design of doors stipulates doors as an important joinery work and defined as the art of preparing and fixing the wood/glazing/steel finishing of the buildings. The use of standard flush doors covered with polished hard wood; Veneer or polywood. The strongest flush door should be used, thus the solid core made up of longitudinal lamination of precision-planned timber, built with resin-based adhesive under hydraulic pressure has excellent fire check

and sound reducing qualities. This door type will be used in toilets, office spaces and stores. Other door opening are intended to be of glazing. Glasses to be used and is one of the oldest materials which through modern research is now a versatile materials. Two type of glass materials are recommended the transparent glasses and the tinted or translucent glasses. The commonest and beautiful form of glazing common today is the use of aluminum frames for both the doors and windows. The advantage is that the frame can be cut to fit any opening and are generally durable and weather resistant. The need for more natural day light in office, slope and natural dwelling cannot be overemphasized. The project design is such that the opening around the shopping and the activity area is of glazing to meet the requirements of good visual discernment in these areas. In the auditorium, the glazing is purposely avoided and used internally as projection room windows.

The thickness of glass for ordinary glazing purpose is classified by weight. The weight of glass normally used in buildings are 5.5kg, 7.3kg and 9.8kg these are the average per square meters for sheet glass. The corresponding thickness of these weight are respectively approximately 2.1mm, 2.5mm. 3.2mm and 4.0mm.

### **WINDOWS**

The approved document to the building regulation show how ventilations by natural means will meet the performance standards where habitable rooms, toilet each have at least one ventilation opening with a minimum area of one-twelfth of the floor area of the room, and some part at least of the ventilation opening is a maximum of 1.75m above floor level.

Like the door openings, the window opening are to be covered using glazing discussed under doors. The combination of horizontal sliding are aluminum

fabricated from aluminum alloy extractions. The structural member being either single web or tabular section and cleared together. Top and bottom hang basement vary from 400 to 2400mm in width and 400 to 1800mm in height, whereas the horizontal sliding windows would vary from 400 to 3000mm and height from 500 to 1500mm. This type of windows require clearing but are durable and attractive.

### **ROOFS**

The general principle of roofs is to perform the functions of insulation, strength, fire resistance, weather resistance and appearance. The choice of roof in this design is somewhat limited to the use of structural steel roof system with parapet walls. The factors limiting this choice are the building shape, appearance and economics.

The administrative block, commercial area education and part of the amphitheatre would be roofed using the picking roof, with steel portions, rafter and tie beams to form the roof system. The slope of the roof is about 12 degrees. The auditorium is designed with a space frame steel kind of roof system. For this project, the choice of roof covering is restricted to long span aluminum roofing sheets, for durability, efficiency, economic span and most importantly weight (very light with a dimension of 1090mm width and 3050mm length.)

### **CEILING**

The recommended ceiling in buildings with tall story height are suspended ceiling using metal framing. This will be utilised in all sections of the design as ceiling type. In this way services can be accommodated within the ceiling especially in the auditorium requiring special vent openings, lighting electrical conduit pipes. The choice of ceiling shall be the acoustic ceiling type designed to

absorb sound. It would be made of soft mineral fibre or opened board back with glass or mineral wool.

### **5.3 SERVICES (Plumbing Electrical Mechanical)**

Most of the services that may have to be accommodated for this project will be under the paved area and will include the following:-

- (1) Sewer pipes
- (2) Electrical supply cables
- (3) Water main
- (4) Telephone cables

In planning the layout of these, there must be adequate co-ordination between the various municipal bodies in charge of these services if a logical and economic plan and installation program is to be formulated.

Sewers are not generally grouped with other services due to their lower flexibility. Hence they must be given priority. They should be laid along the paved way. The specification as to duct size, cover and access for any particular service will be determine by the board concerned.

Service grouped together, like electrical cables, water and telephone lines should be laid in a trench commencing with the laying of the lowest service and backsliding till the next service depth is reached until all services are laid. The backfilling materials must be placed 200 to 250mm well-compacted layers. All services should be kept at least 1500mm clear of tree trunks.

#### **5.3.1 ACOUSTICS**

Acoustics is the study of sound and the characteristics (of a hall) which affect the hearing of the sound in it.

Acoustic conditions depend upon auditorium shape, acoustic absorption characteristics of surfaces (including people in the auditorium), and qualities of reverberation resulting from them.

Rectangular room with rake floor and broken ceiling are ideal for auditorium, which is also ideal as regards viewing conditions.

Why are rooms acoustically bad? There are two main reasons why rooms are bad acoustically. They are too reverberant as regards sound produced internally, or they are too noisy because of the feeble resistance they offer to the penetration of noise from outside or from nearby rooms. Before discussing remedies for this situations, the effects they produce will be examined briefly.

What is the effect of reverberation on speech or music? Part of sound from the speaker passes directly to the ears of his audience, appropriately this is called the direct sound. Another part travels to the room surfaces and is reflected hither and thither, reaching the listener's ear from many dimension at close intervals. This is called reverberant sound. If there is too much of it, the listener is still receiving the reflected sounds of previous syllables. The two interfere, and speech is difficult to understand.

The amount of reverberations is usually thought of in terms of the reverberation time which is the time taken for the sound to dies away after the source has stopped. It is determined by the volume of the enclosure and its capacity for sound absorption.

Reverbration time = Volume of room/Capacity of sound absorption.

It is defined as the time taken for the sound to decay (h) by so decibels and may vary from 0.5sec in an ordinary living room to 12sec or more in a large cathedral. If this

time is one second or less, the reverberant sound will die away quickly enough not to interfere with the direct sound of the speech. If it is much longer than this, the reverberant sound will persist long enough to interfere and possibly become a nuisance. This simple picture is complicated by the fact that the interference of reverberant sound in understanding speech depends also on how far the listener is from the sound source.

So far, reverberation has been discussed mainly in relation to its effect on speech, but a further complication arises especially with multipurpose halls or rooms, because of the wider different acoustical requirements of the musical performance. In general, the quality of music is enhanced by a longer reverberation time than is ideal for speech:

Room type	small room	medium room	large room
	Reverberation time in seconds		
Multipurpose	1	1-1.29	1-1.5
Speech	3/4	3/4-1	1
Music	1.5	1.5-2	2 or more

The table shows a reasonable time in seconds, for rooms of various sizes and functions. This time refers to a sound frequency of 500 cycles per second. In rooms for music, low frequencies of rather longer time than that at 500 cycles per second seems desirable, but for speech the low frequency reverberation time should not be longer than the 500 cycles per second optimum perhaps even shorter. Hence

paneled walls and suspended ceilings, which give preferential low frequency absorption, are desirable features recommended in the auditorium.

Optimum reverberation times for auditoria versus auditorium volumes are shown below, for monophonic and stereophonic sound. The curves are drawn for 500 Hertz, that is the approximate mean frequency of the human auditory range.

Fig Optimum reverberation times

### **5.3.2 DECAY CHARACTERISTICS**

The characteristics of the decay curve for an auditorium should not be that each reflected sound wave is alternated by not less than 15dB by comparison with direct sound or the preceding reflected sound wave. Reflection path should exceed the direct path by more than 13.7m equivalent to a time interval of 40 milli seconds should be avoided unless they are alternated by not less than 15dB. These are requirements applied to auditorium irrespective of size.

### **5.3.3 LOUDNESS OF DIRECT SOUND**

Ideally the direct sound should be long enough for everyone with normal hearing to hear it, wherever their position in the room. There should be a clear view of the stage, this means raising the stage relative to the audience, raking the seats of the audience, or using a combination of these methods.

Another help is to augment direct sound with the first reflected sound, that is sound reaching a listener after a single reflection at a ceiling or surfaced placed for maximum effect. Obviously " first reflected" sound is not a direct sound, but if the reflector is suitably positioned. The two types of sound reach the listener within only a very short time interval between them and interference is at a maximum. The reflected sound merges with the reflected sound and strengthens it. The difference in path lengths for the two types of sound should not exceed 9 meters. To act as a good reflector the surface of the ceiling should be hard and smooth. A plane surface reflector is usually adequate and it can be so placed that the difference in path lengths is reduced to a minimum. It should not be too light in weight, for example, a lynch thick plaster board reflector painted on the underside would be suitable.

### **5.3.4 SPEAKER INSTALLATION**

A space at least 1.35m must be provided behind a stage to allow for speakers. In installation, the speakers are mounted on brick piers or steel framing. Brick piers have the advantage acoustically, of relatively high mass and hence freedom from sympathetic vibration at harmonic frequencies. Except in smaller installations, where wooden supporters are preferable. In the case of multi-channel and stereophonic system, additional speaker units are arranged throughout the auditorium. Either inside or rear walls are in the ceiling.

Loud speakers are usually housed behind the stage. Only one speaker is required for the monophonic sound. For multi-channel and stereophonic sound reproduction from 35mm Films, three speakers units are necessary. One centrally placed, the other equidistant from it 70mm film sound reproduction, requires five units, also symmetrically placed about a central unit. Each speaker unit comprises of one or more in a single unit with bass response, and one or more responding to higher frequencies.

### **5.3.5 INFILTRATION OF NOISE**

Apart from any acoustic imperfections the rooms speakers may have, there is the problem of external noise penetration.

Although it must be noted that noise penetration during a session would mean that the noise generated is high.

Nevertheless, the site location has an effect, solved more than the problem of noise infiltration. In any case, the difference between sound insulation and sound absorption must be grasped fully. Sound absorbent treatment are adequately designed to control the internal reflection of sounds produced inside the room. The materials used less in preventing sound transmission between rooms or to the outside.

The best attempt at preventing noise infiltration into the auditorium is the use of double glazing.

The solution of the noise infiltration can be solve by the use of expansion joints such that they are break sound transmission from the vehicle area from the in auditorium.

## 5.4 FIRE AND SECURITY

The principal aims of fire precautions are simply to safeguard life and properties and are achieved by:-

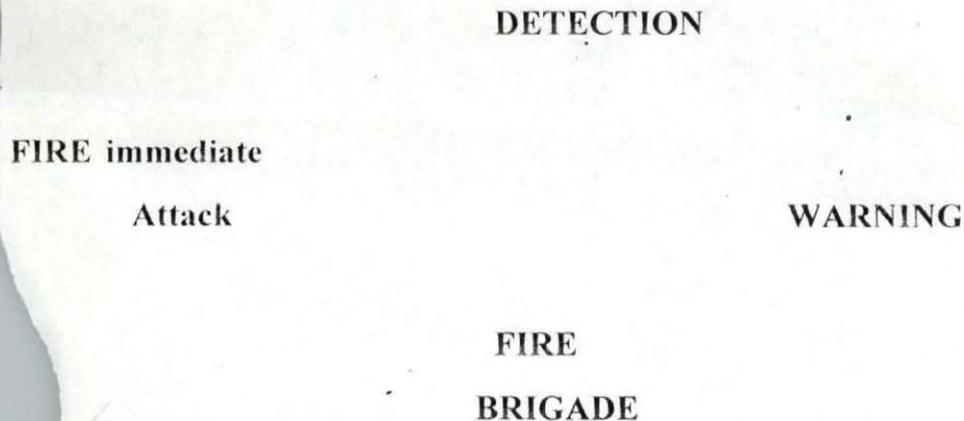
- (1) Reducing fire incidence
- (2) Controlling fire propagation and spread
- (3) Providing adequate means of escape for occupants of a building.

Fire in a building are nearly always man-made i.e. resulting from error or negligence. For the purpose of this project, fire security would be discussed under fire detection, extinguishing of fire and fire escape means.

### 5.4.1 FIRE DETECTION

The role of fire detector is not solely to detect fire, but to discriminate reliably between absence and presence of fire. The fire detectors best for use are those that are not too sensitive and give false alarms. In a public building such as these the fire detectors would be, heat detectors (point and lime types), smoke detectors and flame detectors placed.

Fig.



The mode of operation of all detectors is simply by an activating process based on the volume and the rate of either smoke, heat or flame. This activates the alarm which simultaneously triggers off automatic sprinkles (water) within the enclosure.

#### **5.4.2 EXTINGUISHING**

There exist so many methods of extinguishing fire, while the addition of diluents to the combustion/flame zone, coolant concept using water and carbon dioxide, using isolation concept (foam process) and the chemical/physical inhibitor process. For the purpose of this design, the chemical/physical inhibitor process is chosen and it works by breaking down the chain reactions essential to combustion process.

The process of chemical inhibitor is put in place using the Halon Modular system. This relies on the individual cylinders located within the area to be protected. Usually these cylinders are linked to a highly sensitive detector system such as an ionization smoke detector. The major advantage of this system is that, its installation is simple, movable, economical to maintain and mounted easily in unused spaces like ceilings. Due to toxicity of chemicals, a low toxic level factor used for Halon is Halon 1301 (BTM) or Halon 1211 (BCF) and carbon dioxide usable in public places are approved by the British standard.

## CHAPTER SIX

### 1 AESTHETICS

"Aesthetics deals with ideas and concept that are fundamental in the creation of the work. It also deals with deceptive attempts to solve visual, mental and sensual issues concerned in a work" (Anthony C. Antoniadis, 1981)

Aesthetics inquiry helps one to understand what kind of feelings are created by the design. The aesthetics of this work is to be looked at it from the following:-

- \_ The general site layout arrangement
- \_ The plans arrangement
- \_ The elevations

The site is weaved together by a belt of matured trees to give it a natural setting. An avenue of trees created to give a formal route to the main entrance and give a natural progression to the entrance.

The building and the landscape are designed to be a single architectural development of the site. Here elements of the landscape are conceived as architecture and elements of architecture as landscape.

The plan is arranged such that the administrative main entrance hall is made to be central point for the purpose of booking or inquiring for venues of programmes.

Walk ways are created to open up the design to allow for free circulation network within the community centre.

## 2 GENERAL APPRAISAL

A Community centre is a social settlement. In order to appreciate its beauty, the various aesthetics components of the interior design, external facade and landscape must be carefully planned. For this project, the use of landscaping to compliment the interior is restricted to collections of shrubs, potted plants and well demarcated lawns, interspersed with standing shrubs along the concrete trimming, a softer landscape element like flowered shrubs are laid to further define the green-soft landscape from the hard-landscape. The hard-landscape comprises mainly the pedestrian walkways which lead from the entrance area, splitting up in the three ways along the side of the auditorium, amphi-theatre and the student wing of the centre.

The building proper, goes further to express the concept of motion picture. As one approaches all the facades of the different units are seen at a glance. The taller units appearing at the back of the ones that are bungalow and all these units are in harmony with one another. An impression is that, one would think all the units are all one building, as they appear to be in a single unit in harmony with the community at large.

The first place of approach is the administrative block, where booking for halls and conference rooms are made. And to the north of the administration block is the commercial place, at the south end is the amphi-theatre. The auditorium is at the east end of the administrative block. The student wing or unit is at the eastern end of the auditorium and in between this building are the landscape. The auditorium is glazed and present a glittering glassy effect from the approach. From the approach, a continuous visual appraisal of the interior landscape is allowed. The viewers

re given the comfort of the inside and the same time appreciate the beautiful landscaped lawns and trees. The basic element in the auditorium are such that they are designed with acoustical standards, the seat will be well padded and the walls covered with a well polished wood paneling.

As one sit in the auditorium, the nature of the floor and roof would give a covering focus to the stage being that the floor is raked and the roof parallel. The stage present the ultimate focus of attention, being finished in an attractive usual white colour.

### **6.3 CONCLUSION**

The architecture that came up here is a work of synthesis in which possible solutions (elements) were put together in a way that constituted a new statement.

This effort is believed to bring quality entertainment in the life of the people of Offa through improved social settlement.

Community centre Offa on completion will serve to forester unity, development and raise the living standard of the community.

It is recommended for the Offa descendant union to show interest in this project as it will promote the people and their culture.

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