

**NATIONAL YOUTH CENTRE, ABUJA
[EFFECTIVE AIR CIRCULATION]**

M. TECH. [ARCHITECTURE] THESIS

BY

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M. TECH. [ARCH]**

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CERTIFICATION

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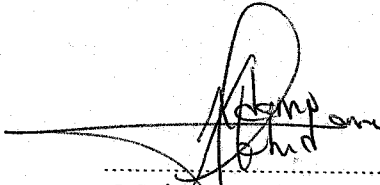
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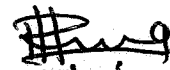
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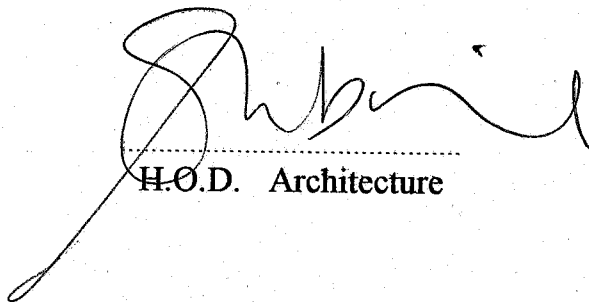
I do hereby declare that the work presented in this thesis for the award of Master's of Technology in architecture, has not been presented either partially or wholly for any other degree nor is it currently being submitted for any other degree.


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DEDICATION

I am dedicating this project to my lovely parents and indeed to the Nigerian Youths hoping that it will go a long way in making their dreams come true.

ACKNOWLEDGEMENT

It is my name that appears on the front of this thesis, but behind every page has been a group of people who've contributed unstintingly their time, talents, support and friendship. Each of these people have, in one way or another, enriched the thesis and my life. My deepest thanks goes to my lovely parents for their moral support and words of encouragement. I am also indebted to my lovely sister Hajiya Hauwa Lemu for her financial support. A big thanks to all my brothers and sisters for their words of advice and support.

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ABSTRACT

In defining Architecture, we said that, it is the art and technique of building to fulfill the practical and expressive requirement of civilized people. Therefore, one can confidently say that every settled society that possesses technique for building produces architecture.

A Youth center can therefore be defined as an environment where knowledge is imparted, skills as and technique are acquired, on youths to make them independent and self-reliant. It is also intended to be a home away from home, a retreat and recreation center. Therefore a Youth center should therefore possess all the necessary facilities that will make assimilation of learning easy that is a conducive environment. The design of this center is unique because all the facilities have been constructed to suit the needs and desires of the generality of the Nigerian Youths.

In the light of the above, the first chapter of this thesis introduces the subject matter and its aims and objectives. The need for embarking on this project was also highlighted with basic motivation. Literature review makes up the second chapter where the problems of Youths of this country were highlighted and of course a brief historical background of Nigerian Youths and their education and what is obtainable in other parts of the world. Chapter three [3] takes a cursory look at the ventilation requirements of the center which is my primary area of research. In the planning of this project, the demands of the environment, climates, use and economy were all put into consideration and harmonized into a compact design of a center for young people. This design seeks to harmonize modern and traditional, utilizing regional architectural expression to create diversity and establish relationship between the indoors and outdoors especially for the Youths which will give them that self-confidence, pride and determination to excel.

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CHAPTER ONE

1.0 INTRODUCTION

From time immemorial, Man has long been pre-occupied with his youth. In the collective life of societies, each new generation of young people has been perceived as the fragile vessel by which the best of the past is transmitted into the present. The continuity of a society is that of successive generation of young people popularly called the youths.

Today's generation of youths are coming to maturity in a fast changing complex society, a society whose future directions are covered with uncertainty and whose present hopes for stability and purposefulness are torn by disillusionment, frustration, doubt for some and tragedy for many. The youth development is influenced by certain changes such as, emotional, intellectual, physical and increasing independence from parents as well as more responsibility in schools and collages. These social changes are also reflected in peer group and indeed in the division and conflict taking place in both small and large societies.

The rapid urbanization and industrialization in a society like ours, has led to a eroding of the normative structure, resulting in a less defined behavior of the individual by the society. The authority and wisdom of the older people is being questioned by the young. There is no longer one's belief system which receive a general acknowledgement. Sociologist emphasize the contract between the adolescence in earlier societies and the present. They pointed out that earlier societies were

characterized by the following: Simplicity, smallness, agrarian, static, close-knit and kinsmen affiliation. There existed a firm normative structure, the role and behavior of individual was defined by society. Authority and power were in the hands of the older people.

Today, the moonlight plays, the dances, the festivities, kinsmen gathering are no more. The young are these days found with growing freedom but less guidance and hence more confused.

There have been different school of thoughts with regards to the problems affecting the youths or the causes of their problems which are earlier sociological, ethical or psychological. According to the modern psychologists, a large percentage of blame lies with the parents and the society which should have mould their character.

A progressive attempt is being made, by many countries, in an attempt to protect children and youths against cruelty, corruption, exploitation and neglect, to preserve them from ignorance, hunger, disease and delinquency and to the prospect of a satisfactory development and living. All these efforts are very important if one considers the child as the foundation and indeed tomorrow's leaders of any society.

The developing nations, especially African Nations have different institutions and programs advancing the welfare of young people. Some of these institutions are from traditional life and social organizations such as dance groups, formed by a particular age-set of young people to perform at local festivals. Others are hunters group or farmer's group or the contemporary modifications of traditional associations; for example city youth club based on clan relationships. Others are comparatively modern in nature and perhaps related to schools, or

religions. Some have international affiliation such as Boys scout, Boys brigade and Girls Guide etc.

The objective of these associations or groups vary but have some things in common which are:-

- a. Providing experience for youth in organizing their on activities to develop self-discipline and respect.
 - b. Fostering a sense of belonging to a group and also give a direction and purpose.
 - c. Encouraging the acquisition of occupational skills for young people.
- All these clubs for youth become imperative considering the disappearance of traditional forms of recreation and association in cities. Youth organizations have made considerable contributions to the adolescence problems particularly in cities.

In Nigeria, the government both at federal and state levels have taken giant strides to give the necessary recommendations for the emancipation of the youth in the country. This has led to the establishment of the National Youth Council of Nigeria in 1974; affiliated to the World assembly of Youths. This council forms the back-bone of all youth movements at the national level.

At the state level, the youth department of the ministry of information, youth, sports and culture handles the organization of youth activities.

However, all these attempt to improve the youth people by various governments only amount to a peripheral solution to the problems. The governments can not achieve the set objectives due to poor coordination of the government agencies and their primary target - youths. For the government to succeed, there has to be a determination

on its parts to reach out and understand the problems, of the youth, their anxiety, frustrations, fears and indeed their desires, needs and wants.

The youth of Nigeria are faced with so many problems. A brief study of the back-ground of the Nigerian youth shows that;

- a. Young people form the majority of the population. About 43% of the total population are between the ages of 13 -35 years.
- b. The greatest number of the unemployment is taken by the youth.
- c. The housing conditions of the youths are terrible.
- d. Their academic pursuit is incapacitates due to lack of funds and encouragement.
- e. The many registered youth clubs and organizations lack a central meeting place to present a formidable front.
- f. They have plenty of leisure time but lack recreational facilities to enable them expend their energies and engage in purposeful activities that will be beneficial to them and the country.

It is therefore noteworthy that all the aforementioned problems must be tackled to enable the youths achieve their goals in life and be worthy ambassadors of this country any where in the world.

The society has to understand that the youths can also be instrumental in the creation of the kind of tomorrow we all dream of having given the right environment to harness their talents. The youthful years are the years of growth, not only physically, but a time for the maturity of the mind and behavior. It is a time when the young begin to explore. But the youth's talents and knowledge are wasted, his dreams gone due to neglect from both society and government. The youths are cast into the darkest part of the society where they have

find for themselves. What then is their hope? How can be put a smile on their faces? How can they be relatively comfortable? How can they be useful to themselves and the society at large?

All these questions naturally led me to believe that a solution has to be proffered, such potentials should be realized and developed. I believe that the youths of this country have great potentials. However, for all these to be used as advantage, they have to be oriented towards purposeful and gainful activities.

If the right environment is created, it helps the youths to focus and concentrate on things that will be an advantage to them and the society at large. Therefore, in order to achieve and meet the dreams and aspirations of the youth of our society, a stimulating architectural concept and approach, hence, this project.

1.1 AIMS AND OBJECTIVES

1.1.1 AIMS

INTRODUCTION

In every human endeavor, there is always an aim for embarking on it, that is a reason. The reasons for embarking on this challenging project are;

1. To serve as advisory environment for youth to be able to direct their ideas in the right course toward achieving their desired goals.
2. Providing development and recreational programs for the youths.
3. To integrate the youths from the various regions and ethnic groups of this country that will promote the much needed unity.
4. Bringing the Nigerian youth to a point of self-realization and exposing him to the right modern concepts.

5. Broadening the outline of the youth in career exploration community service and social responsibility.
6. Creating in the youth, the capacity for learning, friendship and happy relations.
7. To attain a degree of independence in managing personal affairs.
8. Formation of healthy habits, ability to take care of self, to work skillfully and take delight in doing so; and hobbies they can enjoy with others and alone.
9. Develop a happy heart that will find beauty in learning common things of every day life and living.

1.1.2 OBJECTIVES

The objectives of National Youth Center is as follows;

1. Evolving a social and emotional balanced youth and society through public enlightenment which the center will provide through its public relation unit.
2. Instilling in youth a sense of confidence, reliability and capability by providing them skills within the center that will make them independent in the larger society.
3. The facilities that will be provided is primarily meant for the youths but it can also be used by the public and for research purpose such as Library computer center.
4. To provide a flexible built environment that will function as a stimulus to youth activities such as multi-purpose hall, games area.
5. Providing affective air circulation [ventilation] in and around the building to achieve maximum comfort requirement for the users.

1.2 MOTIVATION

The first thing that comes to mind is that we have a problem, a social problem and the next thing that comes to mind is, how do we go about solving these social menace? Knowing fully well, that the Nigerian Youth does not have any advantage or privileges to make something out of his life, unlike his counterparts in the advance countries.

If provisions are made for these young people, interesting avenue, where they can come together, interact, work, play and learn together, they will have something to look forward to and the society will be better for it. Many of our youths are bundles of potentiality. This centre will include provisions to build up their creativity, hobbies and advocate them, which will make them more responsible Their self-esteem will be build up and they will struggle to become better in school and at play, in the society and of course every where they find themselves.

Judging from what exists before and presently, especially with the presence of secrete I feel that cult in our schools the society at large has not done enough social justice to the plight of the young people in addressing their problems.

I therefore feel strongly that with this proposal, some of the obvious social problems of the youths in this country and exhibit a number of common, modern and acceptable ground to meet these needs.

1.3 RESEARCH METHODOLOGY

There are two basic methods adopted for this project which are;

1. Secondary Research Method: The collection of data from relevant information sources which includes journals, books, magazines, internet.

2. Primary Research Method: The collection of data from the young people themselves on what they want and sort their views on the proposal.

Generally, I intended to look at;

- a. The review of relevant literature concerning the young people, that is youths.
- b. The assessment of problems affecting the present trend of the youth centre in other countries with a view of connecting them to the proposal design.
- c. Site visitation to monitor types of activities present in and around it to ascertain what role such activities may play in the future of the National Youth Centre, Abuja.

1.4 SCOPE AND LIMITATION OF STUDY

The general scope of the project focuses on functional environmental morphosynthesis, that is spatial integration of functions with environment [site]. From the analysis of various functional needs, a detailed architectural design shall be made through a design process from which the final concept evolves. Though basically, there are two parts to the project;

1. The written aspect which will involve discussion on the various aspects and functions that make up the Centre in relation to one another and of course the concept used for the design.
2. The second part will be general architectural planning on site. The detail design of the centre will thus focus on skill acquisition, education, recreation and entertainment. It will also have administration,

accommodation, multi-purpose hall To achieve the desired goals, due respects shall be given to the standard and quality of the final product of this challenging project.

The theme of my research is "Effective Air Circulation [ventilation] In and Around Buildings", which will analyze the factors that determine the pattern of air flow through building to create comfort for both mind and body.

1.5 IMPORTANCE OF STUDY

A one time American president Franklin Delano Roosevelt once said that "We cannot always build the future for our youths, but we can also build our youths for the future". The importance of this study therefore is in the "building" of our youths for the future. It also intends to provide an environment that is conducive for the leadership training of our youths. It will also serve as an image centre and nucleus for the youths of this great nation.

It is imperative to point out here that, this study or project will help both the society and government eradicate the dreaded cultist amongst our youths by providing them with guidance and counseling facilities, recreational facilities and educational facilities that will enable reshape their thinking and beliefs, that will hear them up for the challenges ahead.

It is hoped that the centre will be a home away from home. It will act as refuge from the abuse and neglect of the larger society.

1.6 DEFINITION OF TERMS

- a. **NATIONAL:** Used to describe things involving or relating to the whole

- of the country or nation rather than to a part of it.
- b. **YOUTH:** Is the period of life during which adulthood graduates to adulthood.
 - c. **CENTRE:** Is a building where people have meetings or where they go to get particular help, treatment or training or take part in a particular activity.
 - d. **ADOLESCENCE:** Is the period of life in which once develop from being a child into being an adult.
 - e. **YOUTH CLUB:** Is a place where young people can go to meet each other and take in various leisure activities.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1.0 YOUTHS AND SOCIETY

The future as often said, belongs to the youths, who are today's babies, tomorrow's adults. Every society has a well ordered obligation to educate, feed, cloth, accommodate and generally prepare them within the parameters of its own ambition, to inherit the earth and carry on it great comfort and relative peace and safety, with all mighty God's blessings.

All of the world's states, local government, heads of parastatal, companies, to the lowest homes, in education, agriculture, food security, health, economy, construction are made solely for one purpose, that is to ensure a better day when that foreseeable tomorrow arrives for the youth to take over.

Today's conflict and wars whether local, international or national defined boundaries and thus a home for the youths tomorrow. It goes without saying history and indeed the youths will remember those who suffered today and also honor them in gratitude. A Nigerian leader Gen. Ibrahim Babangida once said that "we give our today for their tomorrow" referring to the Nigerian youths.

Indeed in every society, the youth represent a dream, a hope and a future, just as they represent fear and uncertainty which all depend on the sacrifices made by a particular society. In the present day Nigeria, materialism has taken over as the yard stick for measuring the social status of an individual, the country has no means of assuring

itself of its future survival, let alone realizing its ambitions. It is often said that "old sins cast long shadows". The sins of the past generations are always visited upon the present and indeed future generation. The youths on whom the future of the society they are going to inherit have no say on how it is being shaped by today's leaders. With this neglect by the society, the youths have no means of convincing the society that they are ready to carry any burden, meet any challenges, fight any battle and defeat all obstacles in enhancing their ambitions.

The society has assumed the youth as a waiting stage in human progress, a time of learning, a time of grooming for leadership but not a time for carrying out those trainings. The great gap popularly referred to as "generation gap" between the young and the old increases daily and then the society hardly observes when its old youths grow up and melt into the unknown.

A country like Nigeria cannot afford to fold its arms and watch its youth degenerate into nothingness especially at the turn of the new millennium. The situation has to be arrested now because our youths have dreams which are fast turning into frustrations and anxiety. Nigerian youths are becoming "the very epitome" of frustration.

For the youth to accomplish anything worthwhile, he must prepare himself for the future. He must know that ours is a challenging world of opportunities and that he is a viable instrument of change. The youth have to understand and know that there is enough for everyone's need but not enough for every one's greed. They should be made to understand that he has a future, a hope to be fulfilled and that what he makes of today will be the hope of tomorrow.

2.1.1 YOUTH DEFINITION

The English Dictionary defines youth as: the state or time of being young, example young men and women.

While Webster's Third New International Dictionary defines it as; the time of life when one is young: The period between childhood and maturity.

But according to Commonwealth Secretariat, the youth can be regarded as people between the ages of 12 - 30. Some have put it 15 - 35. Therefore in this sense, a youth can be somebody whose mind is fresh and malleable, receptive to new ideas and adaptable to changes, being capable of synthesizing original thoughts and analyzing information.

For the purpose of this thesis, I define youth as people between the ages of 13 - 36.

2.2.0 ADOLESCENCE: AN INSIGHT

It is that period in life in which the growing individual makes the transition from childhood to adulthood. The period is marked by what anthropologist called the rite of passage. These are ceremonies or customs at major transitions, such as birth, puberty, marriage and death. Virtually, all cultures have a way of observing adolescence. For example, Australian aborigines, the Masai' of Africa, and various South American Indian tribes put adolescence through initiation that may involve fasting and other ordeals and periods of instruction in hunting and ritual. The Australian aborigines and other African tribes circumcise adolescents, and in South America tattooing has a similar significance. Among some of the Indian tribes of South America, changes in clothing and hair

style mark the passage to adult rank.

In simple cultures the period of initiation are usually short. Young men and women are needed to do adult work, hence pubescent youths are admitted to the adult world as soon as they can began to do the work of grownups. In more complex societies, however, the period of apprenticeship between childhood and adulthood may last for years rather than months. Youths in the United States, found adult standards and demands confusing; the stresses of adolescence sometimes led to maladjustment.

The great majority of young people in complex societies grow up without becoming neurotic. Yet adolescence is a period of stress and the experiences of adolescence influence adult life. Hence, the period has been studied intensively by psychologists, sociologists and education.

2.2.1 DURATION

In complex societies, adolescence is said to last from the age 12 or 13 to 21 or 22. No precise limit can be set, however, because adolescence is measured by many factors. Physically, it begins at the onset of puberty, the time of life during which the reproductive organs becomes capable of functioning, and ends when an individual has matured sexually and has reached his full height. In term of education and work, adolescence corresponds to the years of high school and college, high school and may be military service, or high school and starting a job. An individual enters adolescence as a child, still dependent on his parents for financial support and personal and social guidance. He be can called an adult when he can earn a living for himself

and make his own decisions about work, money and social behavior. Legally, a young adolescent is an infant; at 21st a person becomes a full adult in the eyes of the law.

2.2.2 PHYSICAL CHANGES

All adolescents experience physical changes. In fact puberty is used to defined the start of adolescence. In male, it is difficult to determine the onset puberty, but roughly, this is the time when the boy begins to need an occasional shave, his voice begin to deepen, and the sex organs mature. On the average such characteristics develop in boys at about 14 1/2 years of age. However, this changes may appear over a range from about 12 years to about 18 years.

Usually, the menarche [the start of menstruation] is considered as the start of puberty in girls. On the average, the menarche occurs at 13 but the age may range from 10 - 18. Enlargement of the breasts is one of the earliest criteria of maturation in girls. In most girls, this development begins before the first menstrual period.

2.2.3 INTELLECTUAL CHANGES

Physical growth is the most obvious sign of adolescence, but intellectual development is also a major factor. Psychologist have developed various tests to measure general intellectual ability. This kind of ability, as reflected by scores on most tests continues to increase until about age 20 or slightly older. The rate of change tends to slow down as the individual approaches the close of adolescent period.

In addition to intellectual ability, the adolescent years bring changes in breath of knowledge, understanding and judgement. There is

ability not only to think in term of past but also in term of future. The adolescent becomes capable of highly complex technical process and about national and world affairs. His vocabulary increases until he can hold his own not only with his peers but also in communication with the adult.

2.2.4 EMOTIONAL CHANGES

Emotions are of course important throughout life, but during adolescence, some emotional states seems to reach a new intensity. Affection, aggression and fear are especially likely to cause problems.

Such emotions can be understood partly in term of changing body chemistry and partly in terms of social conditions. Close friendships with those of the same sex often precede, or at least are apparent before the development of the heterosexual love. Because of his feelings of uncertainty and social insecurity, the adolescence often derives a great deal of satisfaction from such friendships.

Ways of anger tends to change during adolescence. The young child may show his anger by kicking, screaming, crying and biting. However such behaviors is punished and by the time he reaches adolescence, the individual may not give such direct response to his anger.

By adolescence, fears of specific physical hazards, or of real or imagined persons, have declined and turn to worries which are a form of fear. Adolescents worries about school work, social problems, war conditions, popularity, relations with other sex, personal limitations and about preparing for and getting a job.

2.2.5 INCREASING INDEPENDENCE FROM PARENTS

As the adolescent grows and his interests expand, he normally wants and get more freedom from parental control. Psychologists used the term "emancipation" to refer to the process of outgrowing family domination. This process may be painful both for adolescent and for the parents although it need not be so. It is difficult for parents to admit that they are no longer young adults with babies and that they must now relinquish some of their loving care for their offspring. It is difficult for adolescent, with all his energy and enthusiasm, to realize that he is not completely capable of standing on his own feet. Some parent having feelings of failure because children are not up to the standard set for them.

2.2.6 INCREASING RESPONSIBILITY IN SCHOOL AND COLLEGE

As young people grow up, they some times demand and sometimes are forced to take more responsibility for their education. In the great majority of elementary schools, the children learn to play a role that is basically submissive to adult authority. In spite of that the fact that they are approaching social maturity, adolescents often find that they must continue to play the role of submissiveness in the teacher dominated high school. Real enthusiasm is limited to extra curricular activities. Adolescents who are teacher dominated throughout high school may have difficulty in adjusting to the much greater freedom they are allowed in colleges.

2.2.7 CAREER PLANNING

In some cultures, everyone, child and adult, works as hard as he

can. While in others, the work of the child is usually limited to a part-time help around the house, in the store or on the farm. Yet the adult is expected to devote a large part of his time to his job and to earn enough to keep up a proper standard of living for himself and his family. In this respect, as in many others, the adolescent have to make a transition from one pattern of life to another.

One problem in career planning is that a young person may believe he wants to enter a certain field but actually may have no more than a superficial interest in that kind of work. It is not easy to asses interest. Young people often are urged to make career plans early in their high school years so that they can pick their courses to fit their future jobs. However, many students change their plans after they have started college.

2.3.0 NIGERIAN LEADERS AND YOUTH DEVELOPMENT

Today's world is really moving fast, especially technologically, as people are preparing and looking forward to what the next millenium holds, so are children. Indeed, no society can hope to conquer the next millenium with uneducated youth.

Given the reality, what's it like to be a young person in Nigeria to day? For me and indeed my generation, the word "*YOUNG*" does not really have much meaning any more. The current trends in the industrially barren, commercially deprived and educationally background country is quite contrary to the preaching and ideals of our founding fathers that sacrificed all they had for the sake of their people.

The gloomy and shameful picture of this country would make many people wonder if she has visionary leaders at all. Do this leaders

have the youths in mind at all. This statement is pregnant with meaning. It seems they are only interested in enriching their purses, with the country's wealth. In case any aim of government has its focus on development, the youth would be a better people to start with. If the youth of today make the society of tomorrow, there is then the need for the society of today to contribute reasonably to develop youth for a better society of the future.

Nigeria is a country blessed with natural, human and physical resources. But to our generations disappointment, majority of Nigerians cannot utilize these resources at our disposal toward improving and framing our society's living standards. It therefore becomes a thing of shame on our leaders to let the international community know about our children's predicaments, despite our large number of teaming millionaires, billionaires and intellectuals who have benefited from our collective wealth, while a lot of youths still wallow in want and some even eat from garbage heaps.

Nigeria can be said to be an old country at 39 years after independence. But has Nigeria risen above child labour, hawkers, child prostitution, the Almajiri and Area boys syndrome and often illiteracy. The answer is obviously, no. Keen watchers and friends of Nigeria are baffled. How could a country be so blessed and yet remain in this state of under-development? This is indeed, unfortunate. Whatever the reasons that might be advanced, the leadership is responsible for the decay in society.

Regrettably, for a child who is from poor parental background in this country, life is more than a challenge facing the hostile society with discrimination, victimization and human right neglect are

strangling factors which moved army of youth on streets of major towns and cities in this country begging, hawking and often as child prostitutes. One would be forced to wonder how long man's inhumanity to man would continue. When would the less privileged children and youths in Nigeria be allowed, accepted and fully integrated as part and whole of a democratic society. So many innocent children are dying, joining cults and becoming rotten daily in our streets and in villages are a cynosure of all eyes.

At this juncture, it must be said loudly here and now, that true and visible development in any human society must commence with progress in education and training. Education as a process, is the means of acquiring, transmitting, preserving, developing and advancing culture with the ultimate aim of changing behavior. Education has further been described as that effort made by man or society to perpetuate and transmit the customs, belief and ideas and values of the society to a younger generation. Education can also be said to be an aggregate of all the processes by which a person develops abilities, attitudes, competence and other forms of behaviors that are of positive and meaningful value to the society in which he lives as a free citizen and human being.

Youth have a prominent role in the development of any society. Indeed the heartbeat of any society is its youth. For real development to be achieved, a program for youth development must be in place and be given top priority. Youth need to be educated functionally to be able to take part in all activities. Education and enlightenment is thus a must for any meaningful development. We should bear in mind that no meaningful achievement could be recorded without sound education

because education remains the tool for national development. This challenge is great, but not a challenge for government alone. It is challenge for all Nigerians.

Nigerian youths, need two things. Firstly, the youth should be given the opportunity to develop leadership skills, good character, societal and family values as well as viable public accountability.

Secondly, a National Youth Commission should be created under the presidency to take care of matters affecting youth in the country which include: education, health, welfare and the general and mental development of the youths.

Therefore, the challenge before Nigerian youths themselves as leaders of tomorrow, who have to take care of the adult of today in their old age; makes it mandatory for us to imbibe the spirit of patriotism, hard work and join hands in the task of building a united, prosperous and virile nation of which we can be justly proud. We need an atmosphere of friendship amongst us. I believe that our nation is to be truly great we must come together as a family to solve our common problems.

2.3.1 YOUTHS MANY LAND

In every nation, the youth constitute a large percentage of population. Depending on the area, some problems are associated with this category of persons. The universally accepted fact is that most of the problem is often arise from the understandable dissatisfaction of the present generation the establish social and economic orders. The degree of dissatisfaction however differs from country to country and the type of economic, social and political system in operation in such areas. In

realization to the fact that tomorrow belong to the youth and the future of any nation depends on the quality of its young people, various effort both at local and international level have been made over the years to keep the up bringing of these class of people.

The world today, United Nations, is at the fore-front of improving the young. In 1924, it held a conference in Geneva, popularly referred to as Geneva Declaration of 1924 which every country was a signatory on the right of the child. Some of the declarations state thus:

“A child is to enjoy special protection and be given opportunities and facilities to enable him to develop healthy and normal manner and in condition of freedom and dignity, to have name and nationality from his birth, to enjoy the benefits of security, including adequate nutrition, housing, recreation and medical services and education”.

Similarly, other movement in Britain aimed at recognizing the right of children were formed. Some of these organizations includes; “Save The Children Federation”, Church related organizations [young men and women Christian Association], Boys Scout, Boys Brigade and other voluntary organizations concerned with welfare of youths.

Others are world assembly of youth, an affiliated of United Nations. There is commonwealth association of youths. Other efforts made by these respective bodies include observation of certain day or years specially for children. An example was 1981 which was specially designated as the international year of children.

Every day of the year, there seem to be growing concern by the society, about the behaviour of the present generation of youths.

Psychologists of the present day tend to blame the plight of youths of day on the rapid changing of technological society. Another concern is that most of the behavioural patterns of the present youth result mostly due to changes of industrialization and urbanization. However, one looks at them, the fact lies that most of the problems of the present day youths centre on social factors in the adult society. Societies that have attempted to look into these problems from the social point of view have been able to achieve some appreciable results.

2.3.2 YOUTHS IN DEVELOPING NATIONS

A look at the problem confronting the youth in the developing countries shows that the problems are more pronounced than in the developed countries due to differences in social, political, cultural and economic factors. Developing nations are usually characterized by rapid population growth without a corresponding economic growth. This imbalance has for a long time now created terrible problems in these areas.

Most often, then, the available resources and skills to cope with the drastic changes are generally lacking. These deficiencies have for years created some problems ranging from social, educational, psychological to the economic problems in the society. Youth are usually mostly affected by the social and educational factors due to their close association to these factors.

The problems posed by the population increase in developing countries range from that of mass unemployment of school leavers to lack of adequate social facilities to cater for their leisure. The resultant effect of this population growth is often that of vast numbers of out-of-school youths who need jobs. The vacancies available to those

aspiring to further their education are also limited. On a general note, it often happens that the young ones miss both the employment opportunity and the admission to higher institutions of learning. Various forms of reactions often arise from such frustration, depending on the individual. Some youths on encountering such problems often result to drug addiction, cultism, vandalism, robbery, prostitution, riots and other forms of anti-social activities.

The problems of youth of developing nations, apart from general dissatisfaction of the established social and economic order of society include, the transition from traditional to a more modern and sophisticated society. The modern society which they often find themselves had not developed enough to accommodate them fully.

Recent projections by the international labour organization indicate that child labour have increase from about 230 million in 1970 to over 350 million in 1996. The increase in rural-urban drift of youths of the developing nations have added to these problems.

The situation facing must of the developing nations that whilst economic efforts have been made in recent years to expand formal education, an urgent need for the design of programs in area of formal education becomes necessary. Such training should aim at providing opportunities for absorption of youth's energy. The program could be mainly social and recreational in nature with additional facilities such as educational, cultural and vocational facilities which could be utilized at leisure. Such programs could on the long term help to provide youths opportunities which might otherwise be diverted toward delinquent acts.

2.3.3 N.Y.C.N: A BRIEF HISTORICAL BACKGROUND

The National Youth Council of Nigeria [NYCN] was inaugurated in February 1974 by the then Military head of state General Yakubu Gowon. Its main objective is to coordinate the activities of the Nigerian youth and at the same bring the different youth organizations in the country under the same umbrella so that they can form a very strong pressure group. The National Youth Council of Nigeria is a founding of the Africa Youth Council with its headquarters in Ethiopia. It is also a member of the World Assembly of Youths and that of the commonwealth Association of Youths.

The main aim and objective of NYCN include:

- a. Evolving a social and emotional balanced youth and society.
- b. Creating job opportunity for the youth in the whole country.
- c. Liasing with the international youth organisation such as World Assembly of Youths and Commonwealth Association of Youths to broaden the outlook and ideas of the Nigerian Youth.
- d. Creating in the country, the capacity of self-actualization and economic independence.
- e. To attain a degree of independence in managing both person and public affairs.

It has it first National headquarters at the Tafawa Balewa Square before it was moved down to Abuja. They are presently being housed by the National Woman Centre in Garki, though they have plans in building their own headquarters. The NYCN has its National executive comprising of:

1. The National President.

2. The 1 vice president.
3. The 2 vice president.
4. The secretary General.
5. The Assistant Secretary General.
6. Director of Finance and Supply.
7. Director of Publicity.
8. Zonal Directors.

It also has different Directorates which include;

1. Directorate of Finance and Supply.
2. Directorate of Information Services.
3. Directorate of School Services.
4. Directorate of Social Welfare.
5. Directorate of Agricultural Services.
6. Directorate of Health Services.
7. Directorate of Women Affairs.
8. Directorate of Labour and Manpower.
9. Directorate of Works.
10. Directorate of International Relations.
11. Directorate of Sports.
12. Directorate of Planning and Development.
13. Directorate of Skills acquisition.
14. Directorate of science and Technology.
15. Computer Centre.
16. Directorate of Tourism.

Among other facilities at the centre include press gallery, Business centre.

2.3.4 THE NEED FOR A YOUTH CENTRE

In our contemporary society of today, the youth centre takes the place of traditional "*Dandalli*" as the avenue for grooming young people. The nucleus for the various social, cultural and recreational activities. So the youth centre can be seen as of stimulating, maintaining and deepening a sense of community in the youths and also as a means of creating an awareness of our rich cultural heritage which also satisfy the function of mobilizing the youth.

With the passage of time, Nigerian youths have come to accept the little comforts and compensations it offered. A little money, a little food, a little laugh and drink with much misery and crying. Now they had become the components of an insufferable helplessness. Therefore, the government and indeed the society owe the youths as future leathers, to plan and spend at least sixty [60%] of their time properly. Therefore a child must be protected and ensured a good prospect for satisfactory development indirectly safeguarding the future and survival of a nation.

There is therefore the need for a centre that draw inspiration from cultural values, the beauty of architecture and make available conducive environment to contain educational and cultural activities based on their present and future needs.

It is hoped that Centre will provide an avenue where youths will map out strategies and programmes that government will implement in developmental policies for the youths of this great nation.

CHAPTER THREE

3.0 EFFECTIVE AIR CIRCULATION [VENTILATION] IN AND AROUND BUILDINGS

3.1 INTRODUCTION TO COOLING

It is imperative to create thermal comfort during the over heated period of the year [November - March], a building should be designed at three different levels.

The first level consist of heat avoidance. At this level the designer does anything he can to minimize heat gain in the building. Strategies at these level include appropriate use of shading, orientation, colour, vegetation, insulation, daylight and the control of internal sources. These and other heat avoidance strategies are describe throughout this chapter.

But since heat avoidance is not usually sufficient by itself to keep temperature low enough all summer, a second level of response called passive cooling is used. With passive cooling temperatures are lowered and not just minimized as in the case of heat avoidance. Passive cooling also involves the use of ventilation shift and comfort zone to higher temperatures.

In many climates the will be times when the combined effort of heat avoidance and passive cooling is still not sufficient to maintain thermal comfort. For the above reasons, a third level of response in the form of mechanical equipment becomes necessary.

3.1.1 HISTORY AND INDIGENOUS USE OF PASSIVE COOLING

Passive cooling is much more dependent on climate than passive heating. Thus, the passive cooling strategies for hot and dry climates are very different from those of hot and humid climates.

In hot and dry climates one usually finds buildings with few and small windows, light surface colours and massive constructions such as adobe, bricks or stone. The massive materials not only retard and delayed the progress of it through the walls but also act as a heat sink during the day. Since hot and dry climates have high diurnal temperature ranges, the nights tend to be cool. Thus, the mass cools at night and then act as a heat sink the next day. To prevent the heat sink from being overwhelmed, small windows and light colours minimize the heat gain. Close shutters further reduce the day time heat gain, while still allowing good night ventilation when they are open.

In urban settings and other places with little wind, windscoops are some used to maximize ventilation. Windscoops were already used several thousand years ago in Egypt and they are still found in the middle east today. In other where they is no prevailing wind direction, window towers with many openings are used as in Dubai on the Persian gulf. Window towers have shorter to keep out unwanted ventilation. In dry climate they also have a means of evaporating water to cool the incoming air. Some window towers have porous jugs of water and their base, while others use fountains or trickling water.

The Mashrabiya is another popular wind - catching feature in the Arabic middle east. These bay windows were comfortable places to sit and sleep since the delicate wood screens kept most of the sun out yet allowed the breeze to blow through evaporation from the porous jugs of

water placed in the Mashrabiya cooled not only drinking water but the houses as well.

3.1.2 PASSIVE COOLING SYSTEMS

The passive cooling system described here include not only the well known traditional techniques mention above but also the more sophisticated techniques that are still somewhat experimental but very promising.

Passive cooling uses as much as possible natural forces, energies and heat sinks. However, a few small fans and pumps are permissible as long as they do not require large amount of electrical energy.

Since the goal is to create a thermal comfort during the overheated period, we can either cool the building or rise the comfort zone sufficiently to include the high indoor temperature. In the first case we have to remove heat from the building by finding the heat sink for it. In the second case we increase the air velocity so that the comfort zone shifts ton higher temperatures. In the second case people will feel more comfortable even though the building is not actually being cooled.

The are five methods of passive cooling:

1- Cooling with ventilation.

A. comfort ventilation: ventilation during the day to increase evaporation from the skin and thereby increasing thermal comfort.

B. Convective cooling: ventilation at night to pre-cool the building for the next day.

2- Radiant cooling:

- A. Direct radiant cooling: a buildings roof structure cools by radiation to the night sky.
- B. Indirect radiant cooling: radiation to the night sky cools a heat transfer fluid, which then cools the building.

3- Evaporative cooling:

- A. Direct evaporation: water is sprayed into the air entering a building this lowers the cur's temperature but raises the humidity.
- B. Indirect evaporation cooling: evaporation cools the building without raising the indoor humidity.

4- Earth cooling:

- A. Direct coupling: an earth sheltered building looses heat directly to the earth.
- B. Indirect coupling: air enters the building by way of earth tubes.

5- Dehumidification with descant: removal of latent heat.

3.1.3 COMFORT VENTILATION VERSUS CONVECTIVE COOLING

Until recently has been the major cooling techniques throughout the world. It is very important to note that there are not only two very different ventilation techniques but also that they are mutually exclusive. Comfort ventilation brings in outdoor air, especially during the day time when temperatures are at their highest. The air is then passed directly over people to increase evaporative cooling on the skin. Convective cooling is quite different. With this technique cool night air is

introduced to flush out the heat of the building. While during the day very little outside air is brought indoor so that heat gain to the building can be minimized. Meanwhile the mass of the relatively cool structure acts as a heat sink for the people inside.

3.2.0 BASIC PRINCIPLES OF AIR FLOW

To design successfully for ventilation in the hot season or wind protection in the cool season [harmattan], the following principles of air flow must be understood:

- a. Reasons for the flow of air: Air flows either because of natural convection currents, cause by differences in temperatures, or because of difference in pressure. [fig. 3.1.3a].
- b. Types of air flow: There are four basic types of air flow: laminar, separated, turbulent and eddy current. Air flows changes from laminar to turbulent when it encounters sharp obstruction as circular air flows induced by laminar or turbulent air flow. [fig. 3.1.3b]
- c. Inertia: since has some mass, moving air will tend to go in a straight line. When forced to change direction air streams will follow curves and never right angles.
- d. Conservation of air: since air is neither created nor destroyed at the building site, the air approaching a building must equal the air leaving the building. Thus, lines representing air streams should be drawn as continuos.
- e. High and low pressure areas: As air hit the windward sides of the building it compresses and create a positive pressure [+]. At the same time air is socked away from the leeward side, thus, creating a negative [-]. Air deflected around the sides will generally also create a

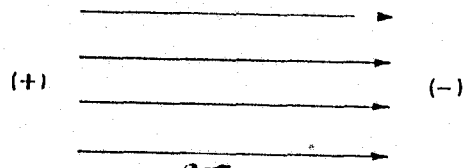
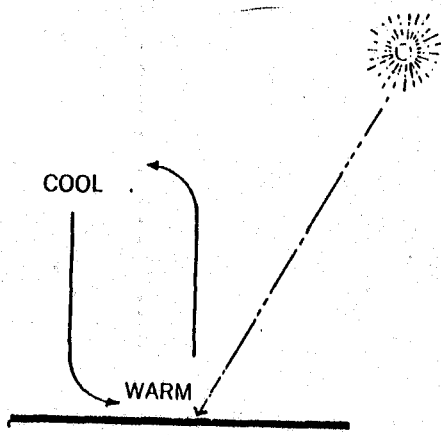


FIGURE 3-13a
 Air flows either because of natural convection or because of pressure differentials.

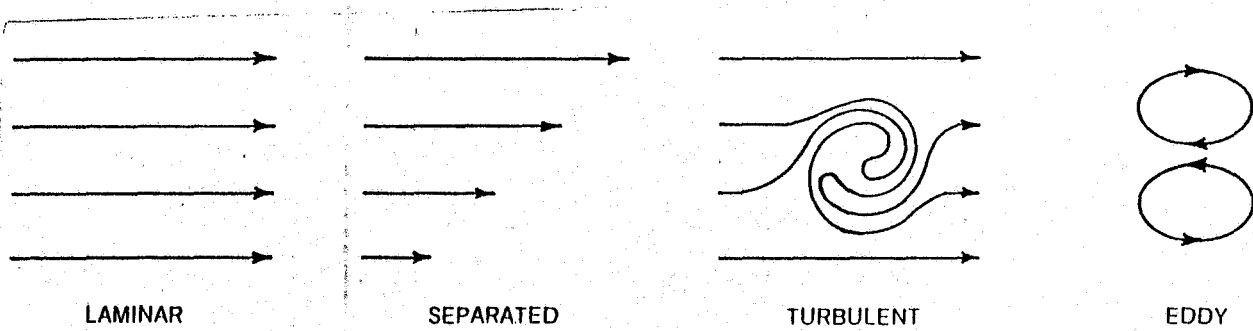


FIGURE 3-13b
 The four different kinds of air flow.

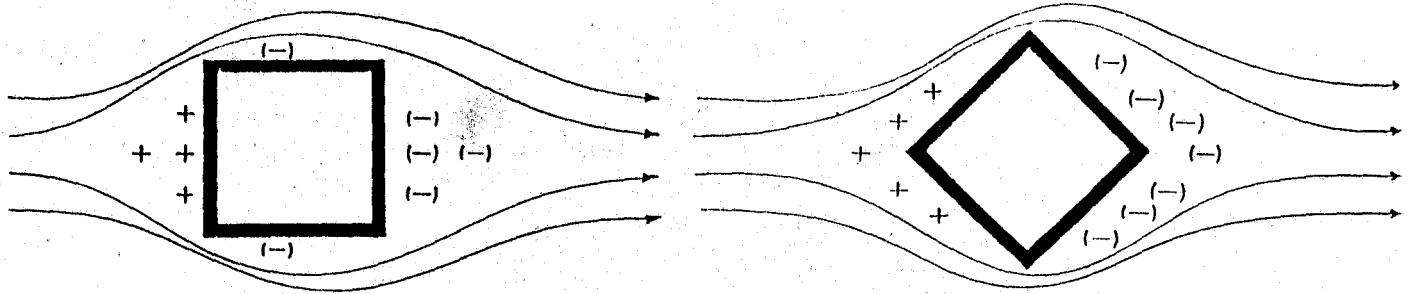
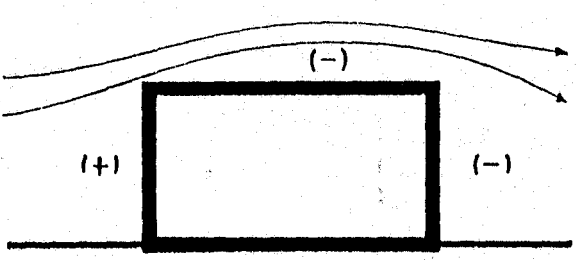
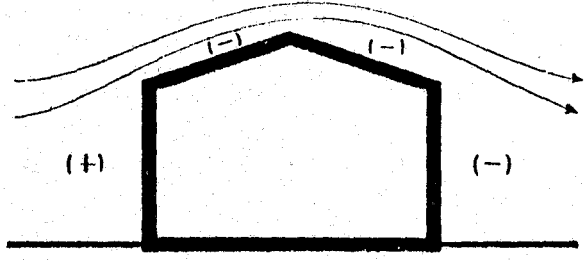


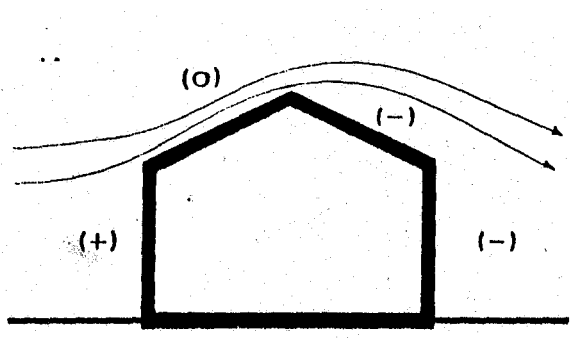
FIGURE 3-1.3c
 Air flowing around a building will cause uneven positive and negative pressure areas to develop.



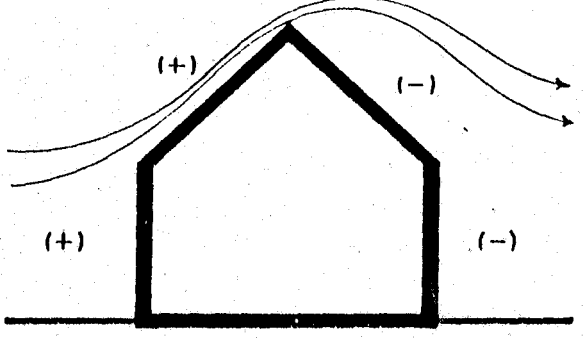
FLAT ROOF



1:4 SLOPE



1:2 SLOPE



1:1 SLOPE

FIGURE 3-1.3d
 The pressure on the leeward side of a roof is always negative (-), but on the windward side it depends on the slope of the roof.

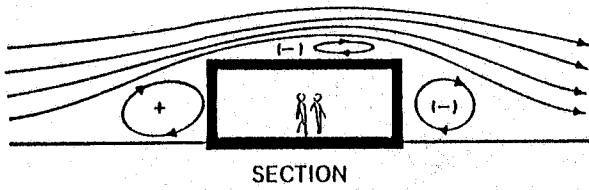
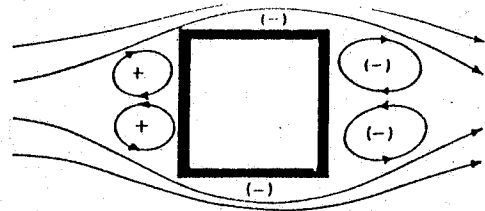
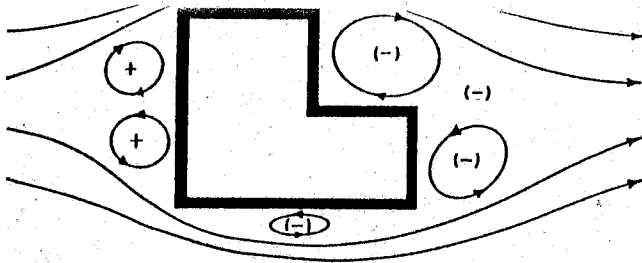


FIGURE 3-13f
Turbulence and eddy currents occur in the high- and low-pressure areas around a building.

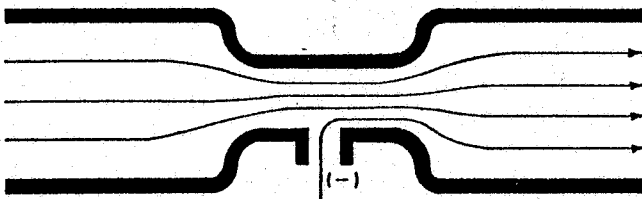


FIGURE 3-13g
The venturi tube illustrates the Bernoulli effect: as the velocity of air increases its static pressure decreases.

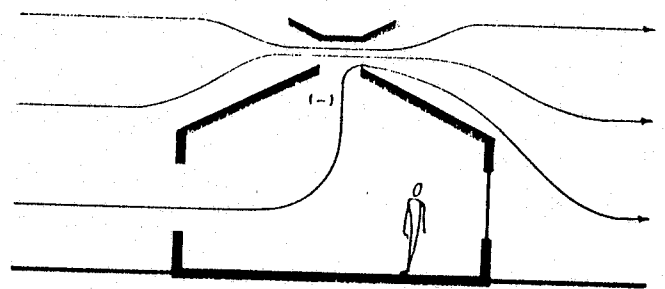


FIGURE 3-13g
A venturi tube used as a roof ventillator.

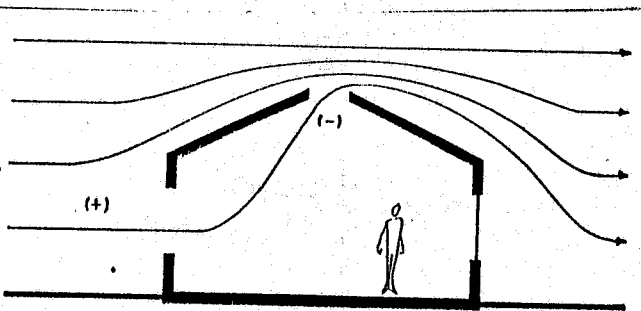


FIGURE 3-13h
Even without a curved hood the Bernoulli effect still sucks air out of a roof opening at the ridge.

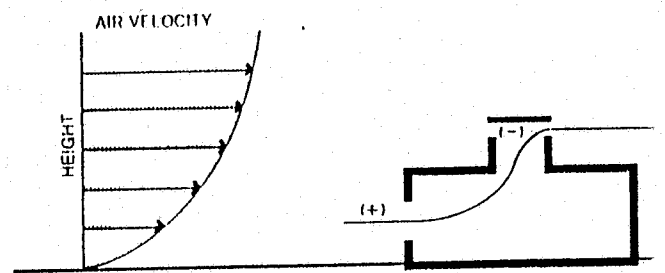


FIGURE 3-13i
Air velocity increases rapidly with height above grade.

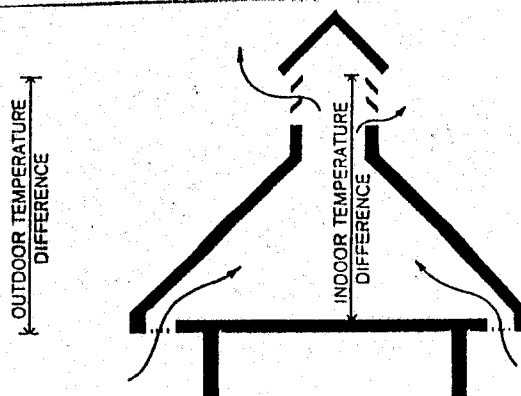


FIGURE 3-13j
The stack effect will exhaust hot air only if the indoor temperature difference is greater than the outdoor temperature difference between the vertical openings.

negative pressure. Note that these pressures are not uniformly distributed. [fig. ---3.1.3c]. The type of pressure created over the roof depends on the slope of the roof [fig. 3.1.3d]. these pressure areas around the building determined how air flows through the building.

- f. Bernoulli Effect: It stated that an increase in the velocity of a fluid decreases it static pressure. Because of this phenomenon there is a negative pressure at the constriction of a venturi tube [fig. 3.1.3e]. A cross section of an air plane is like half a venturi tube [fig. 3.1.3f].

These phenomenon can be used very effectively in buildings. A roof vent can be made in the shape of a venturi to be [fig. 3.1.3g] or even a half venturi to be [fig. 3.1.3h].

There is another phenomenon at work here. The velocity of air increases

rapidly with height above the ground. Thus, the pressure at the ridge of a roof will be lower than that at the wind owns at the ground level. Consequently even without the help of the geometry of a venturi tube, the Bernoulli effect will exhaust air through the roof openings [fig. 3.1.3i].

- g. Stack Effect: the stack effect can exhaust air from a building by the action of natural convection. The stack effect will exhaust air only if the indoor temperature differences between two vertical.

- h. Fans:

In most climate wind is not always sufficient quantity when needed, and usually, there is less wind at night then during the day. Thus, fans are usually required to augment the wind.

There are three quite different purposes for fans. The first one is to exhaust hot, humid and polluted air this is part of the heat avoidance strategy. The second is to bring in outdoor air to either cool the people [comfort ventilation] or cool the building at night [convective cooling]. The third purpose is to circulate indoor air at those times when the indoor air is cooler than the outdoor air.

Separate fans are required for each purpose. Window or whole house fans are used for comfort ventilation or convective cooling at night. Ceiling or table fans are used when ever the indoor air is cooler and or less humid than the outdoor air.

K. Partitions and Interior Planning

Since the depth of a room as a little effect on ventilation, windows placed on the short walls of a rectangular room ventilate a much larger area than the windows place on the long walls (fig. 3.2.1r) although ceiling height has little effect on air flow patterns, a high ceiling allow stratification to occur, which is beneficial in the hot seasons.

Open plans are preferable because partition increase the resist to air flow and thereby decrease total ventilation. However, the distribution of air velocities depends on the location of the partitions. In general partitions should be located the larger space is on the wind-ward side [fig. 3.2.1s]. Open connection between the rooms must remain open when required.

introduced to flush out the heat of the building. While during the day very little outside air is brought indoor so that heat gain to the building can be minimized. Meanwhile the mass of the relatively cool structure acts as a heat sink for the people inside.

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To design successfully for ventilation in the hot season or wind protection in the cool season [harmattan], the following principles of air flow must be understood:

- a. Reasons for the flow of air: Air flows either because of natural convection currents, cause by differences in temperatures, or because of difference in pressure. [fig. 3.1.3a].
- b. Types of air flow: There are four basic types of air flow: laminar, separated, turbulent and eddy current. Air flows changes from laminar to turbulent when it encounters sharp obstruction as circular air flows induced by laminar or turbulent air flow. [fig. 3.1.3b]
- c. Inertia: since has some mass, moving air will tend to go in a straight line. When forced to change direction air streams will follow curves and never right angles.
- d. Conservation of air: since air is neither created nor destroyed at the building site, the air approaching a building must equal the air leaving the building. Thus, lines representing air streams should be drawn as continuos.
- e. High and low pressure areas: As air hit the windward sides of the building it compresses and create a positive pressure [+]. At the same time air is socked away from the leeward side, thus, creating a negative [-]. Air deflected around the sides will generally also create a

3.3.0 VENTILATION

3.3.1 WHY VENTILATE?

The reasons for ventilating a space with air are:

- a. Oxygen needed for human life processes;
- b. The air acts as a dilutant, the amount of air required depends on the permissible on contaminant level for the room. The contaminant may be CO₂ from respiration, odours secreted through human skin, cigarette smoke or emission from any other process;
- c. Ventilation promotes and directs air movement in the space, this being one of environmental comfort factors;
- d. Control airborne contamination that is industrial ventilation.

In addition, the circulation of air throughout a space can remove heat or moisture as required or provide air for combustion.

3.3.2 METHODS OF VENTILATION

a. Natural Ventilation;

For natural ventilation there are two causes of air motion through the building: the wind and buoyancy forces due to the differences in density between the inside and out side air. The two forces act independently or in combination, molecular diffusion place a negligible role.

Natural ventilation can be enhanced by the use of courtyards, artificial ponds or water fountain.

b. Mechanical Ventilation.

Fans are used in mechanical ventilation systems so that more control over air movement is obtained and design conditions are not subject to the uncertainties to which natural ventilation systems are.

Where there is serious risk of deformation of a flammable concentration, mechanical ventilation becomes a necessity. In the former case, power is required to overcome the openings is greater than the outdoor temperature difference between the same two openings [fig. 3.1.3j]. To maximize this basically weak effect, the openings should be as large and as far apart vertically as possible. The air should be able to flow from the lower to the higher opening (that minimize obstructions).

The advantage of stack effect over the Bernoulli effect is that it does not depend on wind. The disadvantage is that it is a very weak force and can not move air quickly. It will, however, combine with the two Bernoulli effects mentioned above to create extra good vertical ventilation on many hot days. Fig. 8.5.1 illustrates how all three effects can be maximize.

3.2.1 AIR FLOW THROUGH BUILDINGS

The factors that determine the pattern of air flow through a building are pressure distribution around the building, direction of air entering windows, size, location, and details of windows and interior partition details. The factors are;

a. Site Conditions

Adjacent buildings, walls, and vegetation on the site will greatly affect the air flow through a building.

b. Window Orientation and Wind Direction

Wind exact maximum pressure when they are perpendicular to surface, and the pressure is reduce to about 50% when the wind is at oblique angle of about 45° . However, the indoor ventilation is often

better with oblique winds because they generate greater for balance indoors [fig. 3.2.1a]. Consequently there is a fairly larger range of wind directions that will work for most designs. In most climate, the need for excess heat call for an east-west orientation of a buildings [fig. 3.2.1b] shows the range of wind directions that works well with that orientation. Even when winds are east-west, the solar orientation usually has priority, because wind can be deflected much more easily than the sun [fig. 3.2.1c].

c. Window locations

Cross ventilation works as well because air flows from a strong positive to a strong negative pressure area indicated in opposite walls [fig. 3.2.1d] ventilation from windows on adjacent walls may be either good or bad depending on the pressure distribution, which vary with wind direction [fig. 3.2.1e].

Ventilation from windows on one side of a building can vary from fair poor depending on the location of the windows. Since the pressure is greater at the centre of the windward wall than at the edges, there is some pressure difference in the asymmetric placement of windows, well there is no pressure difference in the asymmetric scheme [fig. 3.2.1f].

d. Fin walls

Fin walls can greatly increase the ventilation through windows on the same side of a building by changing the pressure distribution [fig. 3.2.1g]. Note, however, that each window must have only a single fin. Further more, fin walls will not work if they are placed on the same side of each window [fig. 3.2.1h]. Fin walls work best for winds at 45° to the window wall and they are only slightly beneficial for

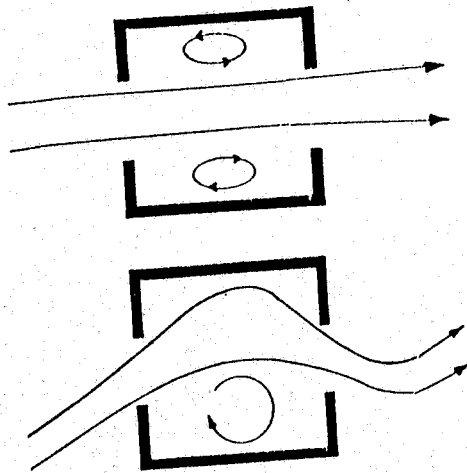


FIGURE ~~2-2-11~~ 3-2-1a
 Usually indoor ventilation is better from oblique winds than from head-on winds, because the oblique air stream covers more of the room.

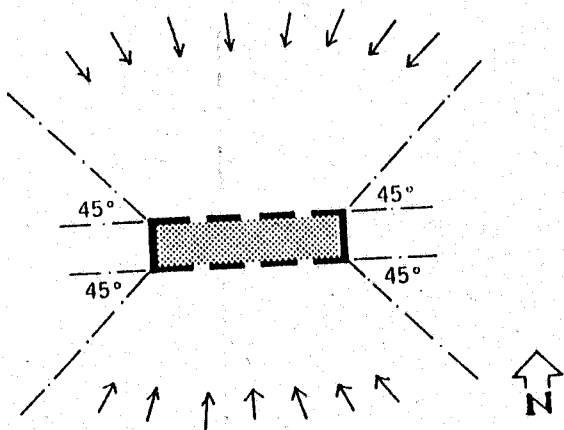


FIGURE ~~2-2-11~~ 3-2-1b
 Acceptable wind directions for the orientation that is best for summer shade and winter sun.

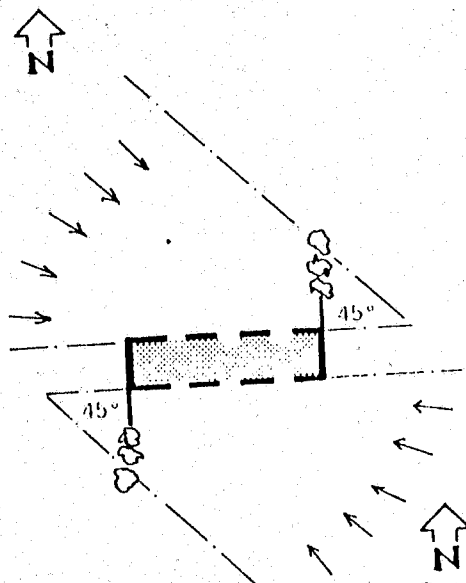


FIGURE ~~2-2-11~~ 3-2-1c
 Deflecting walls and vegetation can be used to change air flow direction so that the optimum solar orientation can be maintained.

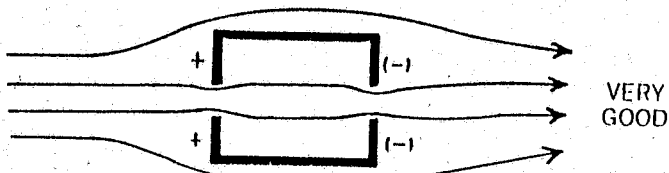
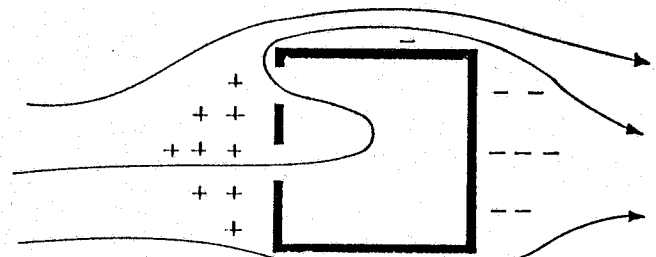
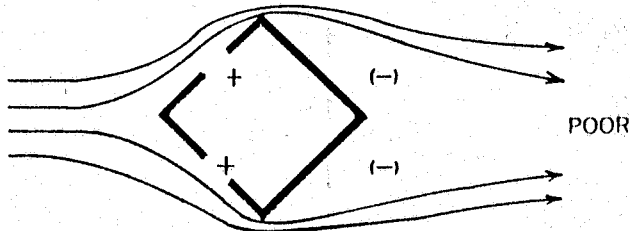


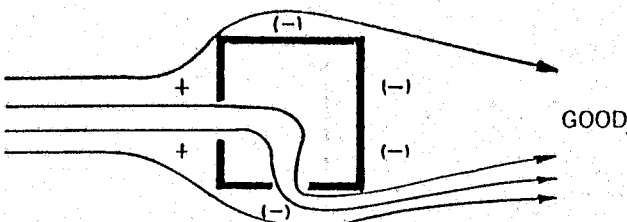
FIGURE 3-21d
 Cross-ventilation between windows on opposite walls is the ideal condition.



FAIR

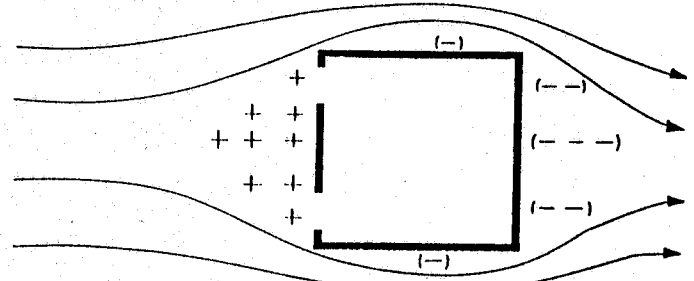


POOR



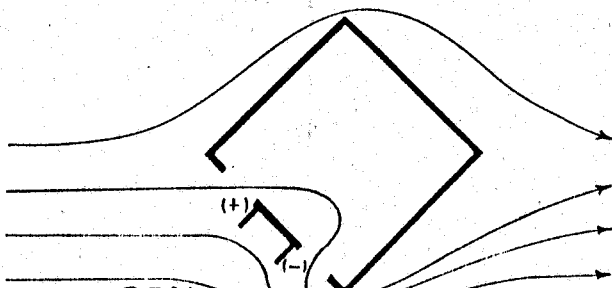
GOOD

FIGURE 3-21g
 Ventilation from adjacent windows may be poor or good depending on the wind direction.



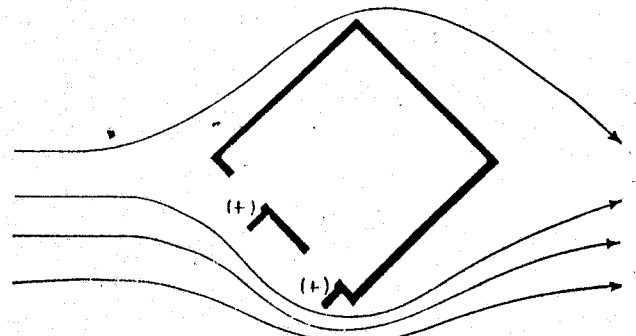
POOR

FIGURE 3-21h
 Some ventilation is possible in the asymmetric placement of windows because the relative pressure is greater at the center than at the sides of the windward wall.



FAIR

FIGURE 3-21i
 Fin walls can significantly increase ventilation through windows on the same wall.



POOR

FIGURE 3-21j
 Poor ventilation results from fin walls placed on the same side of each window or if two fins are used on each window.

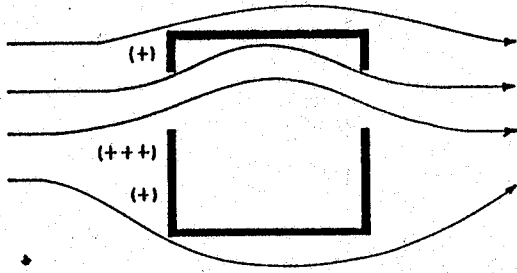


FIGURE 3-2.1i
 The greater positive pressure on one side of the window deflects the air stream in the wrong direction.

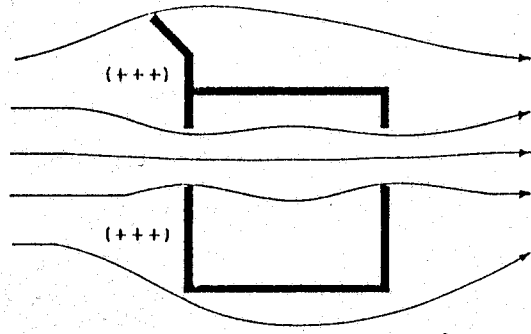


FIGURE 3-2.1j
 A fin wall can be used to direct the air stream through the center of the room.

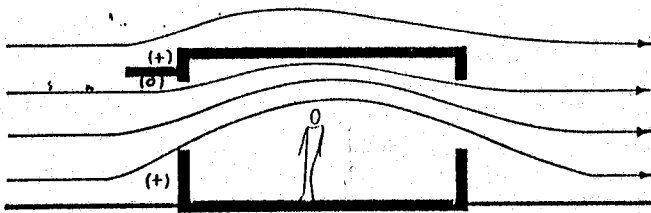


FIGURE 3-2.1k
 The solid horizontal overhang causes the air to deflect upward.

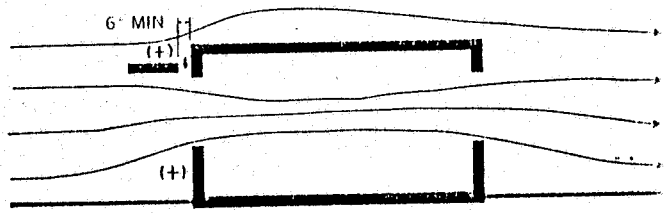


FIGURE 3-2.1l
 A gap in the horizontal overhang will allow the air stream to straighten out.

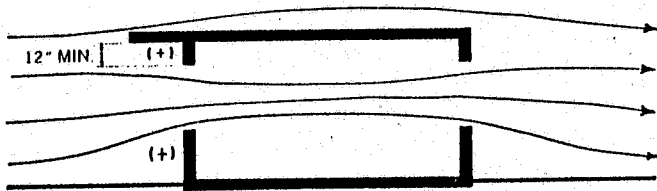


FIGURE 3-2.1m
 A solid horizontal overhang placed high above the window will also straighten out the air stream.

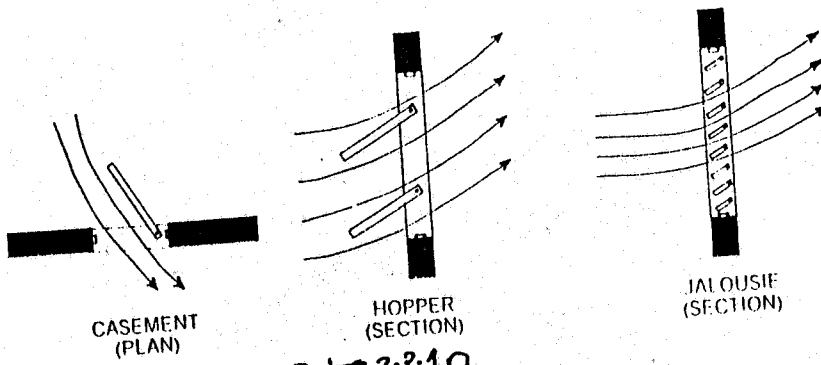


FIGURE 3-21a
 All but double hung and sliding windows have a strong effect on the direction of the air stream.

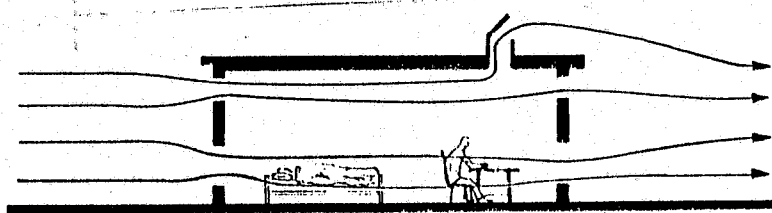


FIGURE 3-21b
 For comfort ventilation, openings should be at the level of the occupants. High openings vent the hot air collecting near the ceiling and are most useful for convective cooling.

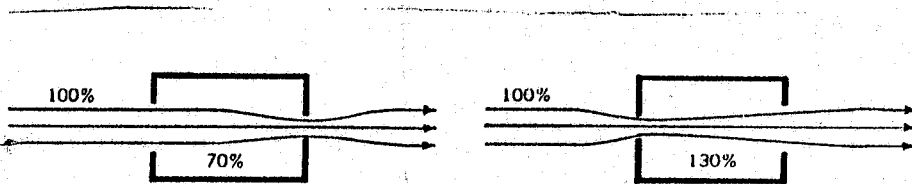


FIGURE 3-21c
 Inlets and outlets should be the same size. If they cannot be the same size, then the inlet should be smaller to maximize the velocity.

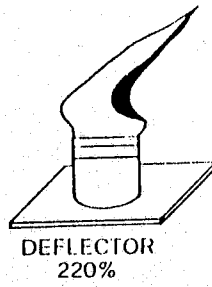
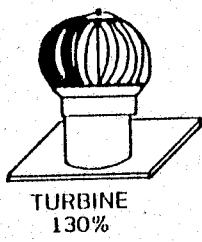
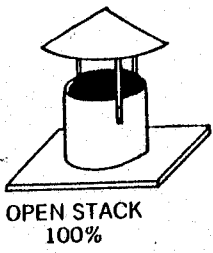


FIGURE 3-219
The design of a roof ventilator has a great effect on its performance. Percentages show relative effectiveness.

FIGURE 3-214
To maximize ventilation a rectangular room should have windows on the short walls.

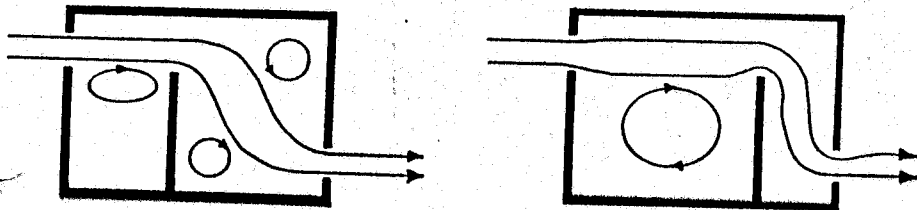
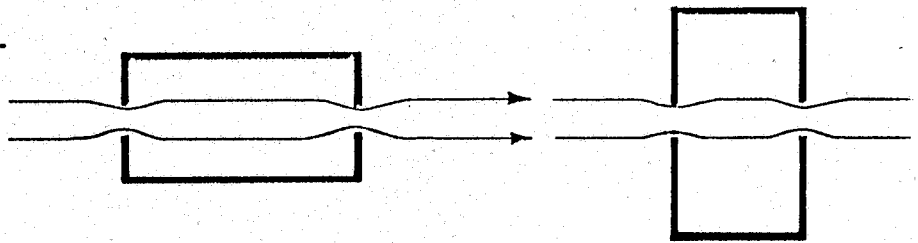


FIGURE 3-215
The best ventilation results when the larger space is on the windward side of a partition.

head-on winds.

The placement of windows on a wall not only determines the quantity but also the initial direction of the incoming air. The off centre placement of the window gives the air stream an initial deflection, because the positive pressure is greater one side of the window [fig. 3.2.1i]. To better ventilate the room the air stream should be deflected in the opposite direction. A fin wall can be used change the pressure balance and thus the direction of the air stream [fig. 3.2.1j].

e. Horizontal over hangs and air flow

A horizontal over hang just above the window will cause the air stream to deflect up to the ceiling, because the solid over hang prevents the positive pressure above it from balancing the positive pressure below the window [fig. 3.2.1k]. However, a gap of 6 in or more in the over hang will allow the positive pressure above it to affect the direction of the air flow [fig. 3.2.1L]. placement of over hang higher on the wall can also direct the air stream down to the occupant [fig. 3.2.1m].

f. Window Types

The type and design of the windows have a great effect on both the quantity and direction of the air flow. Although, double hung and sliding windows do not change the direction of the air stream they do block at least 50% of the air flow. casement windows deflect the air stream from side to side and they can act as fin walls when they swing outward. For vertical deflection of the air stream hopper or jalousie windows should be used [Fig 3.2.1n]. These type also deflect the rain while still admitting air, which is very important in hot and humid climate.

Movable opaque louvers, as frequently use in shutters, are like jalousie windows except that they also block the sun and horizontal strip or ribbon windows are often the best choice, when good ventilation is required over large areas of a room.

g. Vertical Placement of Windows

The purpose of air flow will determine the vertical placement and height of windows. For comfort ventilation the windows should be low, at the level of the people in the room. That places the window sill between 1 and 2 feet above the floor for peoples seated or reaching. A low window sill is specially important when hopper or jalousie windows are used because of their tendency or deflect air upward. Additional high windows or ceiling vents should be considered for exhausting the hot air that collect near the ceiling [fig. 3.2.1o]. High openings cooling is also important for convective cooling where air most pass over the structure of the building.

h. Inlet and outlet sizes and locations

Generally the inlet and outlet size should be about the same, since the amount of ventilation is mainly a function of the smaller opening. However, if one opening is smaller, it should usually be the inlet, because that maximizes the velocity of indoor and air stream, and it is the velocity that has the greatest effect on comfort. Although velocity higher than the wind can be achieve indoors by concentrating the air flow, the area served is of cause decrease (fig. 3.2.1p). The inlet opening not only determines the velocity, but also determines the air flow patterns in the room. The location of the outlet, on the other hand, has little effect on the air velocity and flow pattern.

i. Roof Vents:

Passive roof ventilation are typically used to lower attic temperatures. If, however, local wind are high enough the ventilator is larger enough, or higher enough on the roof, then these devices can be use to ventilate habitable spaces. The common winds turbine enhances ventilation about 30% over and open stack. Research has shown that other designs can enhance the air flow as much as 120% [fig. 3.2.1q]. The air resistance of the air conditioning equipment and filter in latter case positive control is necessary in the interest of safety.

The component of a plenum inlet ventilation system are: a fan, a filter to clean the air and a heater battery. Air is circulated through duct work and delivered through gullees or diffusers into the room. An extract system removes the air from the room it may have a fan, or in some cases the air merely passe through the low level louver openings into adjacent areas.

3.3.3 DISTINCTION BETWEEN AIR CONDITIONING & VENTILATION

Temperature moisture content and air purity each contribute toward condition the air. It is widely accepted among design Engineers that air conditioning implies some control of moisture content and will provide any necessary cooling. Ventilation strictly defines only the provision of air movement to a space, but in practice the meaning has becomes extended to include systems which supply clean and heated air to space for comfort or industrial requirement.

The Chartered Institute of Building Services has given the following definitions:

Ventilation: the provision of a supply of outdoor air to a room or

space, by natural or mechanical means, in a quantity sufficient for the needs of the occupants or process.

Air Conditioning: The provision of means for and the process of treating air so as to clean and / or purify it, to control its temperature and humidity by heating or cooling and by the humidification or dehumidification and to supply sufficient outdoor air for ventilation. The term air conditioning is not to be employed to describe any process or system which does not fulfil all these requirements.

3.3.4 COMFORT VENTILATION

Air passing over the skin creates a physiological cooling effect that can create thermal comfort when the air temperature is somewhat about the normal comfort zone. The term comfort ventilation is used for this technique of using air motion across the skin to promote thermal comfort. This passive cooling technique is useful for certain periods in most climates it is especially appropriate in hot and humid climate, where it is typical for air temperatures to be only moderately hot and ventilation is required to control the indoor humidity.

Comfort ventilation can rarely be completely passive because in most climates winds are not always sufficient to create the necessary indoor air velocities. Window or whole house fans are usually needed to supplement the wind. See table fan for the effect on comfort due to various air velocities. For comfort ventilation the air flow techniques mentioned earlier should be used to maximize the air flow across the occupants of the building.

Rules to achieve maximum comfort ventilation;

1. Use fans to supplement wind.
2. maximize the air flow across the occupants.
3. Light weight construction is appropriate only in climate that are very humid and that do not require passive solar heating.
4. Use at least a moderate amount of insulation to keep the mean radiant temperature near the air temperature.
5. Operable window area should be about 20% of the floor area split about equally between wind ward and lee ward walls.
6. Windows should be open both during day and during the night.

3.3.5

BASIC DESIGN PRINCIPLES APPLICABLE TO VENTILATION AND AIR CONDITIONING SYSTEMS

Air supplied to a space must fulfil certain conditions. This are:

- a. The air must be free from dust, odours and impurities.
- b. The air must be at a temperature and relative humidity which will satisfy the design conditions for the space.
- c. The air must contain sufficient fresh air.
- d. Supply Air Temperature

If a space is loosing a quantity of sensible heat at a rate q_s then the air must be supplied at a higher temperature than the room air. The basic law to be considered is $q_s = Mc [\theta_s - \theta_R]$.

This law describe the thermal energy content of the air. When heating of a room is required, the supply air is at a higher thermal potential than the room air, the thermal potential difference express the energy released to preserve an equilibrium state.

b. Supply Air Moisture Content:

The main source of latent heat gain [q_L] is usually due to evaporation of moisture from the body through sweating and insensible perspiration in order to preserve the design moisture content level in the room, the supply air must have a lower moisture content.

c. Useful Heat Gain Data

Heat gain through windows and other parts of the building fabric are usually calculated using a computer program the input of which is often based on the data in the CIBS guide. People and light are other important sources to be considered and approximate values for these are given in the table below:

d. Design Air Quantity

Equation given below states that the volume flow rate depends on the supply room temperature differential and the sensible heat exchange. Expressed generally, $Q_s = q_s / [\Theta_s - \Theta_R]$ one conclusion that can be drawn from the relationship is that if the air quantity supplied to the room is larger than the temperature differential is small for a given heat loss or gain. The converse case will result in a large temperature differential, making it heat distribution difficult. This difficulty can be overcome by using induction type diffusers to deliver the air into the room. Another consequence of using large air quantities is that the duct size will be larger unless high air velocities are used. The design air quantity is a compromise between these factors and the need to provide sufficient ventilation to prevent stuffy conditions in rooms. Recommended mechanical air supply rates for some types of buildings are listed in table 3.14. Note that the air supply rate to a space, in contrast to the ventilation rates, is the re-circulated and

fresh air. Care must always be taken to ensure that these rates include the recommended quantity of fresh air.

e. Room Pressurization

If only 70 - 90% of the inlet air volume is extracted, the room pressure will be higher than the adjacent areas and so exfiltration will occur. The advantages of this are that the likelihood of draughts is decreased and the ingress of dirt is prevented. In some special cases infiltration of air is required, here the extract volume is 110 - 120% of the inlet air volume. Instances of these are when radioactive or other contaminated areas are being ventilated and air streams must be confined to these areas alone.

DEDUCTIONS

From this chapter, one can confidentially say that there are two factors that control natural ventilation which are:

1. Pressure variation due to wind
2. the stack effect which results from warm air in the building rising and being displayed by cooler external air.

In low buildings with small holes, it is easy to achieve acceptable level of ventilation and to control both the wind and stack effect by means of windows with controllable opening light. Special control vents are going to be incorporated into window frames because of operations of the normal open light will give only crude control. I intend top achieve this level of ventilation in this project from basis of experience supplemented by building regulations which call for openings equivalent to some percentage of floor area [at least 10%] and to allow air movement.

Warm air inside the building tends to rise through stair wells, lift shafts, duct any services opening making the top building excessively hot. Flat building will not suffer from this problem because of the relative

effective subdivision into individual units but high rise buildings of other types have to be mechanically ventilated to overcome this problem.

The human requirements of fresh air in order to gain an adequate supply of oxygen is well known. In buildings, however, this never forms a standard of ventilation since there will be acute discomfort long before any danger. In fact ventilation standards are based on keeping various types of contamination of the air or overheating to acceptable levels.

In my proposal, the principle factors which trouble ventilation rates in various circumstances will be kept to a minimum which are air movement, fumes, smells, products of combustion, bacteria and excessive heat.

It is also important to note here that, in modern buildings there is an increase of cases where natural ventilation does not give satisfactory conditions and mechanical ventilation will be required. The main situations which call for the use of mechanical ventilation in this project are:

1. Internal rooms.
2. Large closely populated rooms where distribution by natural ventilation will be inadequate [any room occupied by more than 50 people example committee rooms].
3. The rooms where volumes per occupants is too low for efficient, natural ventilation [that is $< 3.5 \text{ m}^3$ per person].
4. Where natural ventilation is impossible that where windows can not be open because of external atmosphere pollution or noise such as computer centre or viewing centre.
5. In tall buildings where winds and stack effect will render natural ventilation impracticable.
6. Extract ventilation will be required to deal with rooms for cooking and smoking rooms.

It is believed that all these processes and procedures will be followed to achieve the effective air circulation [ventilation] in and around National Youth Centre, Abuja which will go a long way in making the user [Youths] comfortable and carry out their activities satisfactorily.

CHAPTER FOUR

4.0 CASE STUDIES

4.1.0 NEED FOR CASE STUDY

In most design processes, it is common to undertake studies on existing projects, these studies are done with a view of evaluation and analysing what have been done in previous cases. The aim of the designer is not just to copy, but to analyse the design, bringing out the good and the bad parts of the design and hence to come up with a better solution by not repeating the same mistakes made in the preceding similar projects.

Sometimes, designers study the existing similar projects to be able to see how the designer of the previous got his concept and hence see what they can do or how they can improve the concept. These improvements are made possible by the emergence of more advanced technology, new building techniques and of course better understanding of those to be affected by the design, that is the user which are in this case of youths. Before going into the field for the case studies parameters are set. It is based on these set guidelines that studies are made to include;

1. To find out to what extent the physical environment and the workplaces have been designed to aid the mental and psychological needs of the youth with a view to acknowledging the positive values or denouncing the negative ones.
2. To appreciate the existing youth centres with a view of comparing their standard to the proposed.
3. To spotlight on the physical, structural and environmental set-up of such centres with a view to determining their stability or otherwise for the purposes they serve.

4.2.0 GEN. ABDULSALAM ABUBAKAR YOUTH CENTRE - MINNA

4.2.1 THE SITE

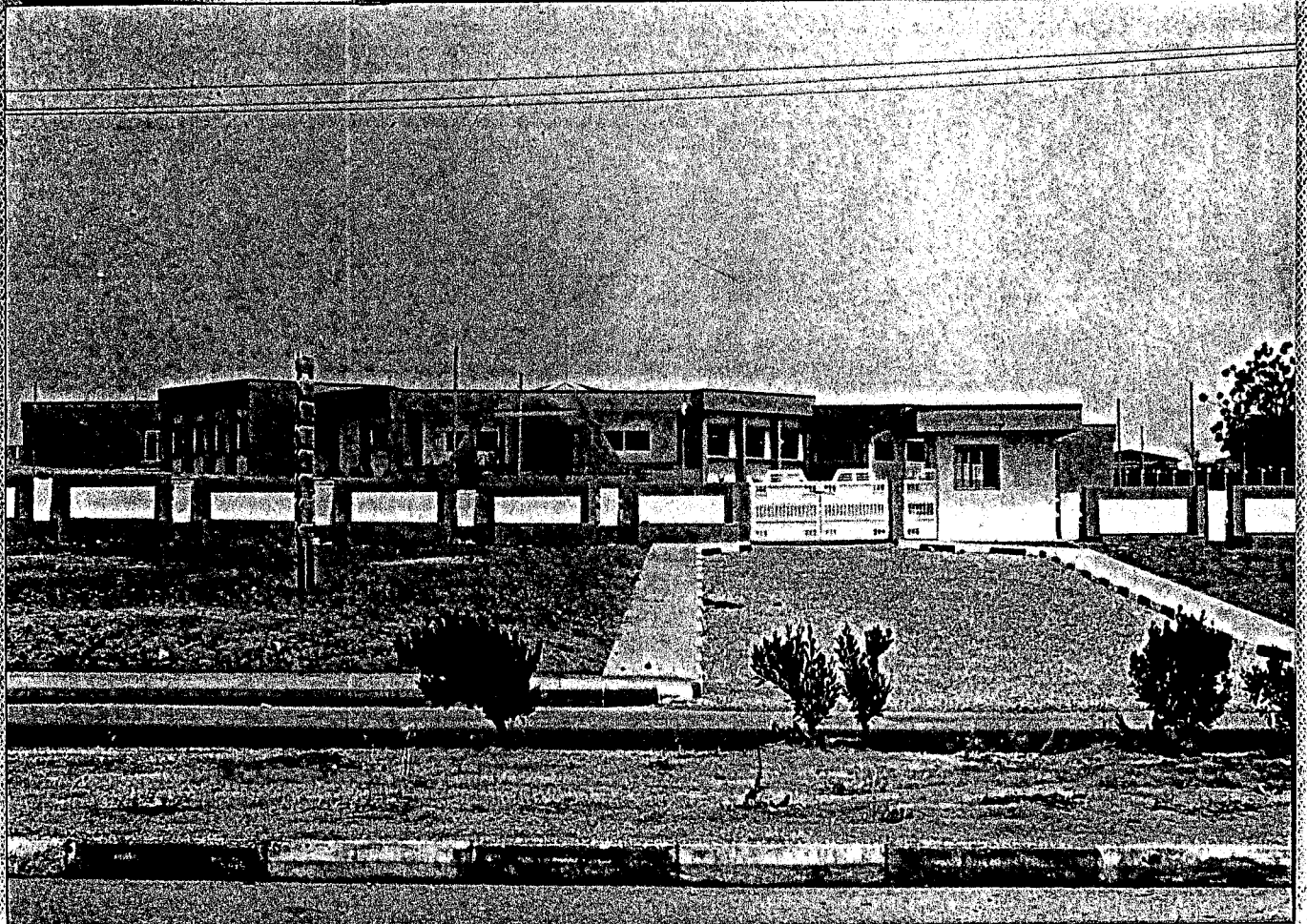
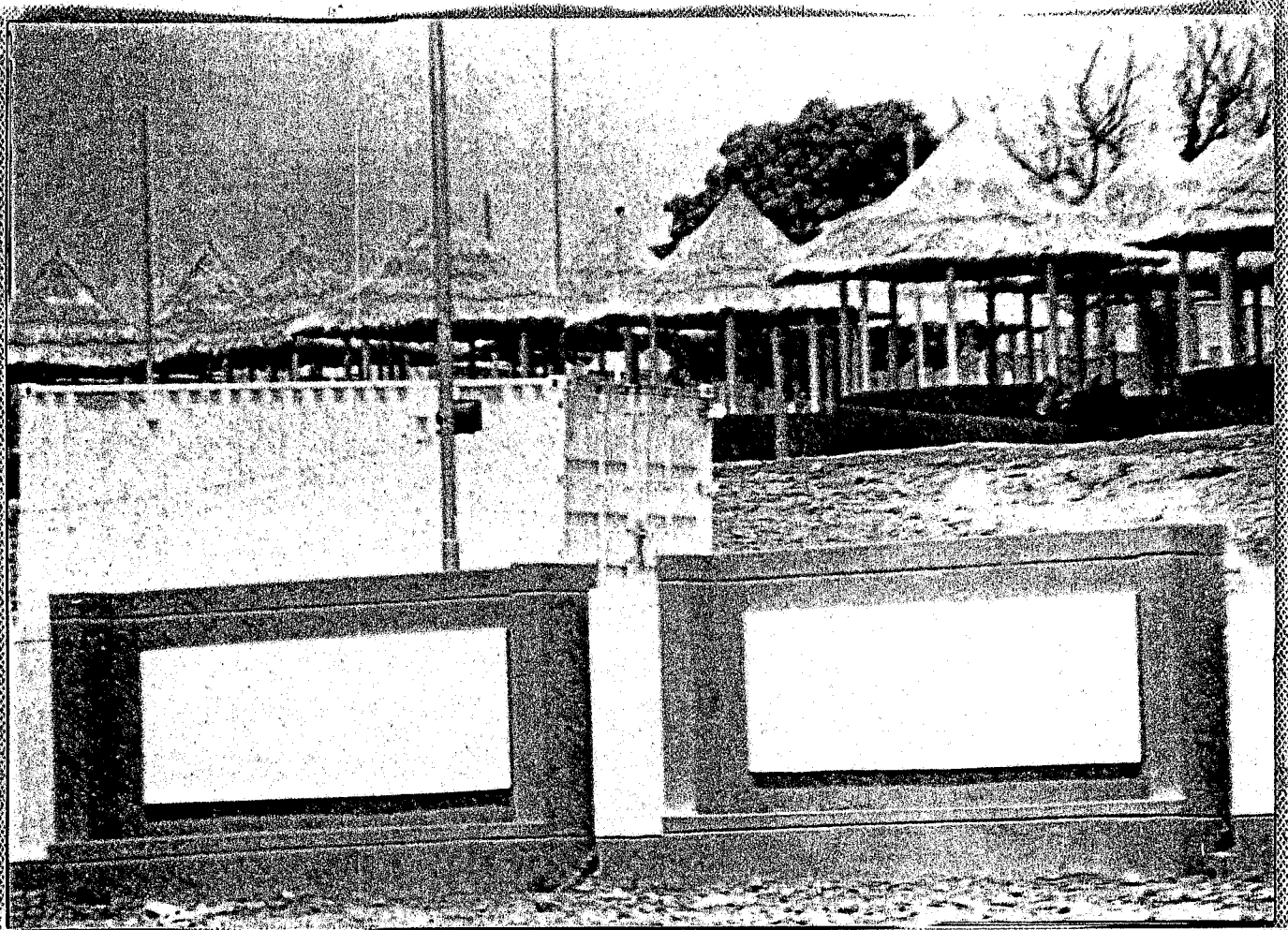
The site for this project is located on the outskirts of Minna. The project is bordered by some important public buildings. This includes the state government secretariat on the opposite side [western wing] the state house of assembly share a wall with central [southern wing] state secretariat of the Nigerian union of journalists [NUJ] [northern wing] and residence of the state legislatures directly behind it [on the eastern wing]. The central is accessible from the central point of Minna along Minna Paiko road and it can also be accessed from the eastern by-pass.

4.2.2 PLANNING CONSIDERATIONS

The foundation stone of the centre was laid by the Ghanaian president Jerry Rawlings on the 7th of May, 1999 and named after the immediate past head of state, Gen. Abdul-salam Abubakar.

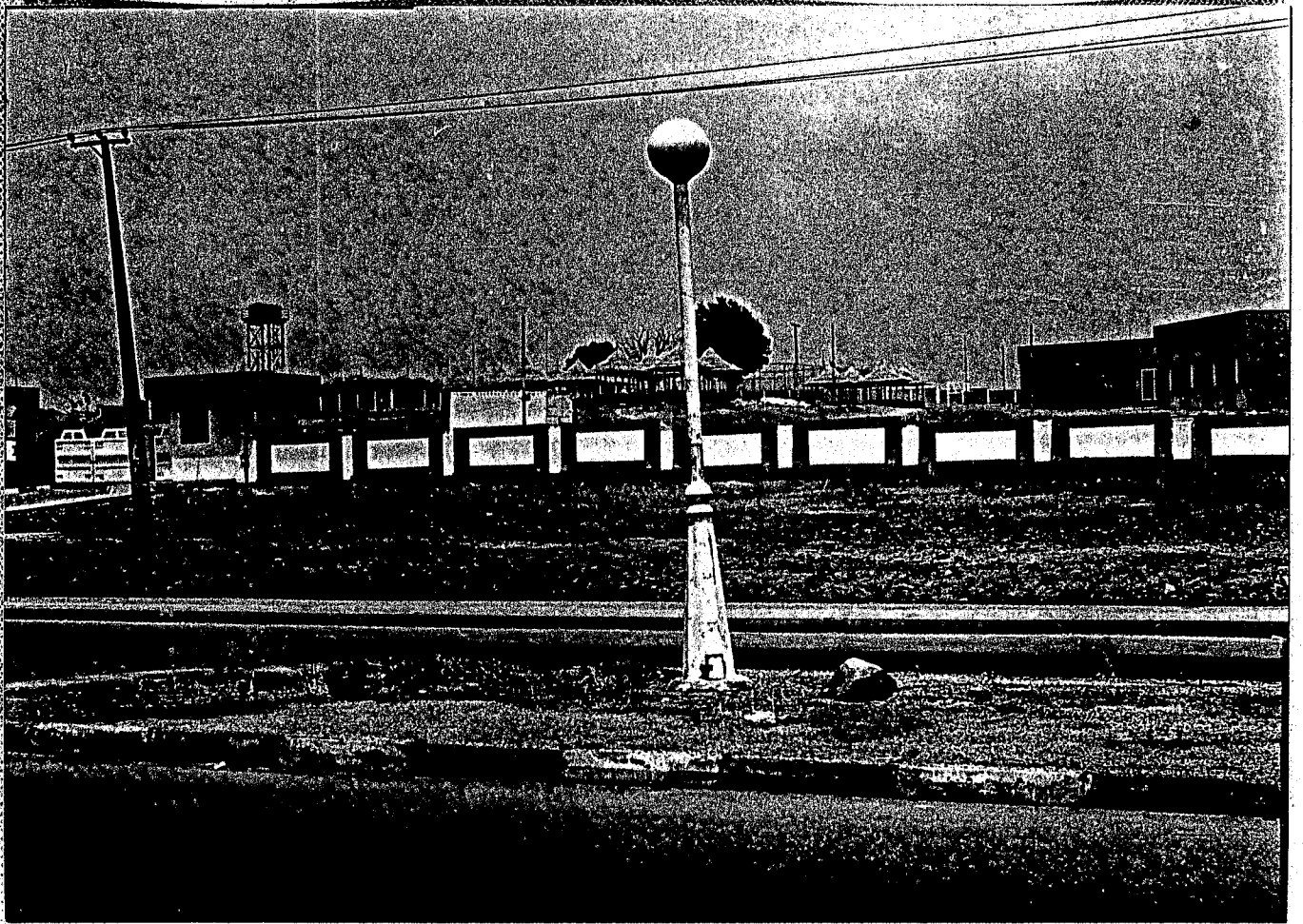
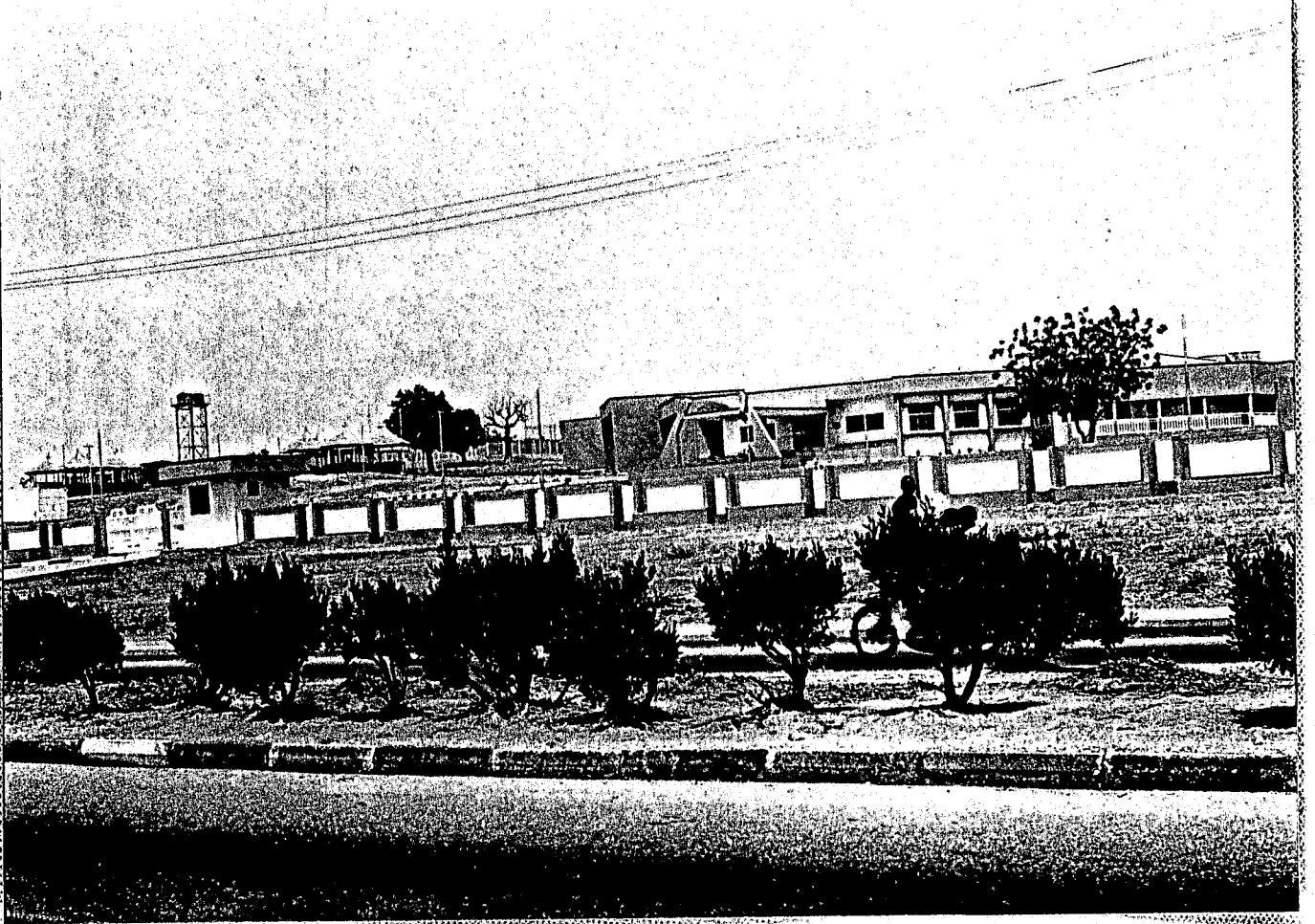
The main aim of the centre is basically a social one. The objective is to provide a focal point for the youth of this state and indeed this country to interact with each other and thereby promote the much desired unity. A variety of activities were provided. There are various facilities that make their [youths] interaction successful and easy.

In planning the centre, Niger state government who are also the client indicated that the building should be conspicuous from the access road with an elaborate entrance. This was achieved by the celebrated entrance porch of the central made of the massive columns and glazed roofing. Immediately after the entrance porch, you have a cool and welcoming reception that leads to a courtyard and other facilities. These facilities include a conference hall, lounge administrative offices, indoor game hall. Changing rooms and toilet



GEN. ABDULSALAM X BUBAKAR YOUTH CENTRE, MINNA.

APPROACH VIEW



GEN. ABDUSALAM ABUBAKAR YOUTH CENTRE, MINNA

SIDE VIEW

facilities adjoin the indoor games hall that lead backward to a swimming pool. On the left side of the building, you have the outdoor games area such as badminton, lawn-tennis and close to them are gazebos with thatched roof giving it a traditional setting. The main entrance hall and lounge leads you viewing area that shows different films and dramas and forms a focal point in this area. On entering the building the young people have immediate feelings on belonging.

4.2.3 APPRAISAL

It is important to note here that the need for a youth centre in Minna is long overdue. There are so many youth organisations in the state that lack avenue to conduct their various activities that borders to promote their individual and collective aspirations. Though Abdul-salam Abubakar Youth Centre is still under-construction [about 90% completed], all the youth are happy they now have a place they can call their own.

At Youth Centre, a purpose built construction method was used. A lot of studies was carried out before any work was done in planning of the Centre. Every thing was designed to detail which include, door, windows, fittings, sanitary facilities and special areas of the building. It has a highly sophisticated internal and external environment by the use of appealing finishes, texture and an extremely good sense of colour. This sense of design is carried out through to the furniture, fixtures and fittings and even to posters to advertise forthcoming events when completed. The advantage of this form of design will enhance the youth sense of cleanliness and bolster his self-confidence which leads to respect and admiration.

The conference hall has combination of knotty pine boarding on the walls for acoustic purpose and ceramic floor tiles for satisfactory activities to

be carried out easily. Acoustic tiled ceilings throughout reflect the importance given to suitability of internal finishes generally. Strip lighting in the recesses above level gives good background illumination when other ceiling mounted lights are switched off. All the above detailing throughout and there is hardly an element which does not offer opportunities for the development of a youth and it is this attention given to this sort of features that will appeal to the expected number of users regularly.

4.2.4 AVAILABLE FACILITIES

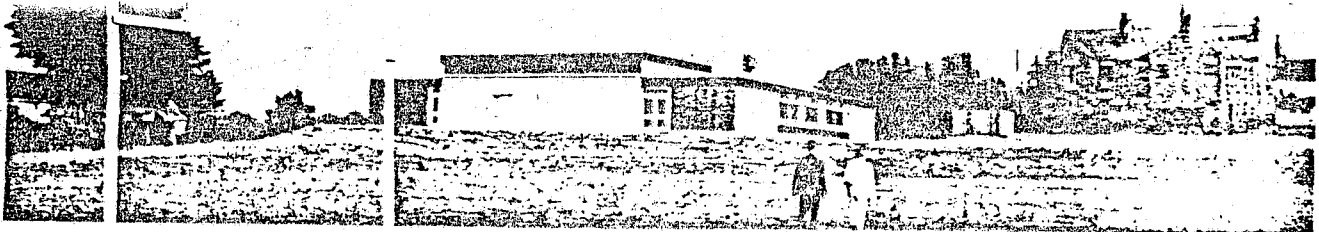
1. Administrative offices.
2. Conference halls.
3. Indoor games area.
4. Drama dance hall.
5. Restaurant.
6. Vocational facilities.
7. Gazebos.
8. Lawn tennis and Badminton court.

4.5.0 WREKIN YOUTH CENTRE - WELLINGTON

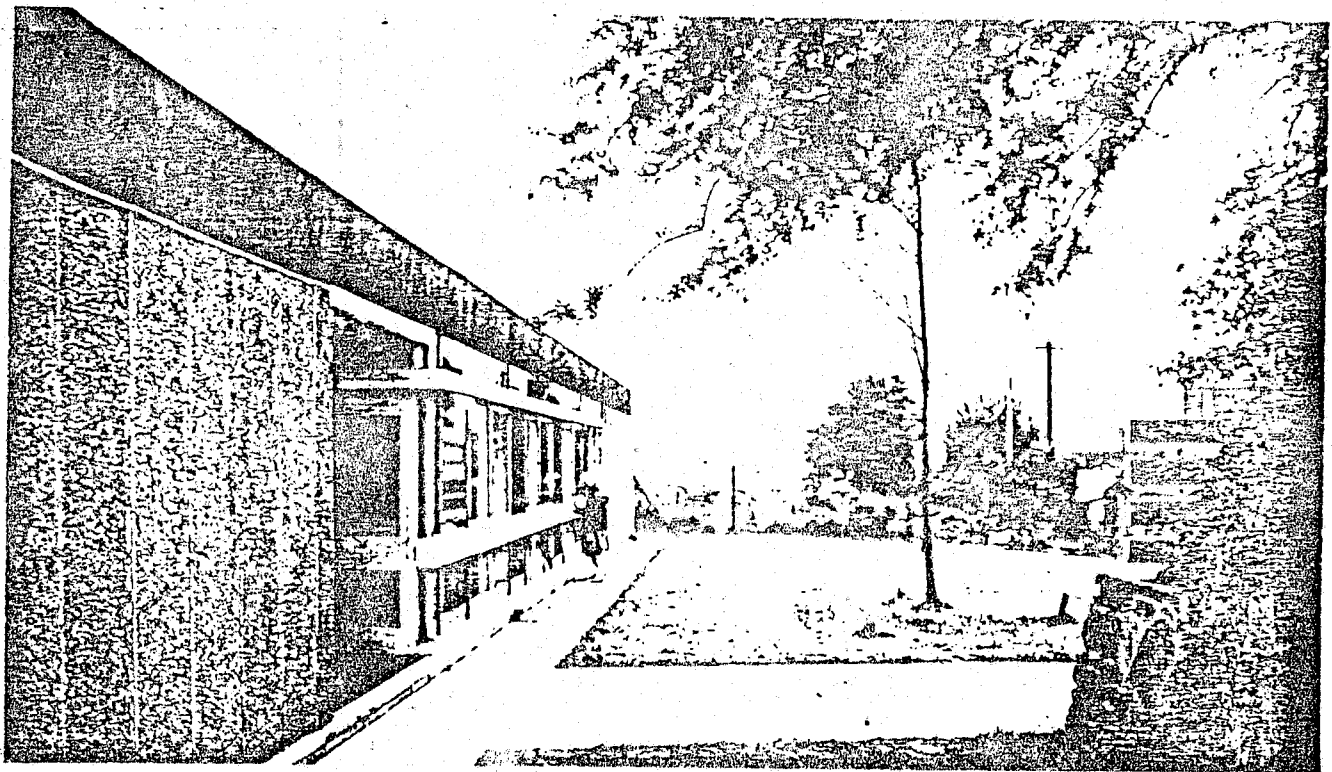
4.5.1 THE SITE

The site of youth centre has been taken from the corner of Wellington Technical college playing field at Bennelts Bank, Wellington, at the juncture of the old and new A5 road. The games area will be on the adjoining site. The complete scheme will cover an area of 1.35 acres.

Trial holes reveals 6 inches [15 cm] top soil on very firm dry clay to a depth of at least 6 ft [1.80]. In developing the site, it necessary to divert a right of way and improvements have been made to the road junction by the



1



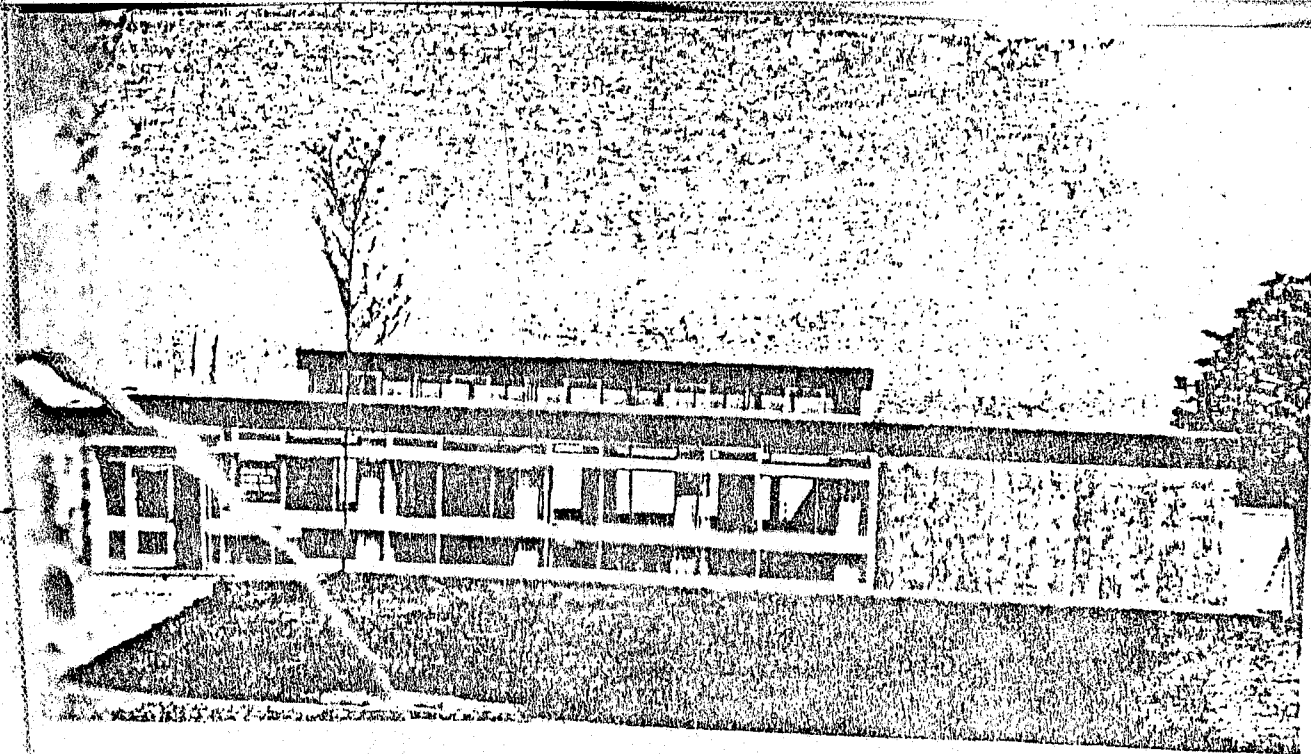
2

1 The youth centre seen across adjacent playing fields, part of Wellington College of Further Education.

Construction is in standard SCOLA components with precast concrete wall panels having an exposed aggregate

finish, timber and aluminium window wall unite, and plywood fascia with aluminium trim

2 Entrance elevation facing the A5. Social areas—glazed—offer a warm inviting interior after dark



Youth centre

WELLINGTON SALOP

local highway authority. All mains services were available but was necessary to provide on site a new sub-station for Electricity Board.

4.5.2 PLANNING CONSIDERATION

The client indicated that the building should be self evident from the access road, given lively and welcoming atmosphere. This has been attempted by introducing full height continues glazed walls to both sides of the entrance hall and lounge, giving a view through to the floodlit courtyard around which are grouped the rooms. These include a hall for a variety of activities such as drama and music, judo and table tennis. Changing rooms and showers adjoin the hall, and these will also serve the new-games court. There is also a workroom with adjoining outside covered walkway, general purpose room, boy's activity room, girl's room, office and store.

The entrance hall and lounge are divided by a two-way free standing coffee bar that serves both rooms and forms a focal point in this area. On entering the building, the young people have immediate access to their respective cloak-rooms before meeting in the main communal area. It has been found from experience that this formula breaks down the barrier that develop between the boy's and girl's entering a room together, and their splitting into self-conscious groups that move as far apart from each other as the space will allow.

The courtyard have access from lounge and has being laid out with contrasting paving, seats, grass and shrubs around the pool with fountains and stocked with fish and plants.

4.5.3 REAPPRAISAL

The need for a focal point for the over two hundred [200] youth clubs

in the area called for the provision of Youth Centre at Wrekin, Salop. Most clubs used the centre to supplement their own club resources which are normally of church halls or scout hut variety courses of instructions last on the average sixteen [16] weeks and cost five [5] dollars, which also admit the user to the refreshment and social facilities provided.

The Centre goes out to create an in-ward looking atmosphere compare to the dull surroundings. It has created a highly sophisticated internal environment by the use of pleasant finishes, textures and extremely good sense of colour. This sense of design is carried on through to the furniture, fixtures and fittings and even the literature and the posters used to advertise forthcoming events. The success of this policy can be seen by the way in which the appearance of many users has changed from the former scruffiness to something approaching respectability.

A covered games court is to be build as part of stage 2 program, together with a parking lot for 45 cars. Access is from particular busy section of A5, with poor visibility splays to the West. A narrow slip road with no turning circle.

DEMERITS

The Centre did not give consideration to the physical handicapped youths. Majority of the skills acquisition unit have not been updated such gadgets as computers, internet etc.

4.5.4 AVAILABLE FACILITIES

1. Hall for variety of activities, example; music and dancing.
2. Workroom [wood work, metal work].
3. Boys and Girls activity rooms separately.

4. Office [Administration].
5. Cloak-room.
6. Communal Room
7. Multi-purpose hall

4.40 **WITHY-WOOD YOUTH CENTRE - BRISTOL**

4.4.1 **THE SITE**

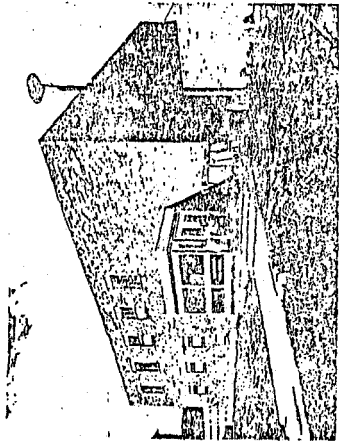
The site is along the main road running through Withy-wood, large housing estate, about five miles South-West from the centre of Bristol. The landscape is to some extent relieved by views of Dundry hills a mile or so to the south.

4.4.2 **PLANNING CONSIDERATIONS**

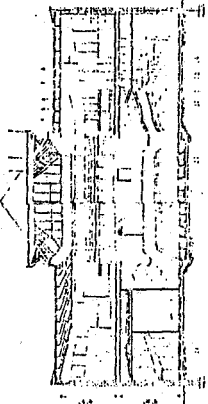
The main function is basically the a social one. The objective is to provide a meeting place where interest may arise spontaneously from the cooperative life of the group. The social group cannot operate successfully or continuously without support from the other activities. A wide range of activities should therefore be provided. All facilities are grouped for convenience under four categories; social, practical, physical and cultural. So a balance should be maintain between the four groups of activities. For a variety of reasons the plan should ensure close physical and visual relationship between activities. In general, the club should not attempt to complete either in facilities or level of activities with specialized clubs, the accentuates this problem and does nothing otherwise to fulfil good intentions behind the client, instructions to provide a building which was self-evident from the road.

The accommodation has been group around and pleasantly landscape courtyard with the entrance hall at the fulcrum of the two social areas.

CASE STUDY TWO [2]



3-DIMENSIONAL VIEW OF THE CENTRE



SECTIONAL VIEW OF THE BUILDING

MERITS
1. Use of Grand Pictorial windows
2. To reduce its noise from the music rooms.
3. The architect's approach to the design is refreshingly simple & very beautiful.
4. The design of the building is often suitable for any function.

DEMERITS
1. Absence of the building is not impressive.
2. The available floor units are difficult to clean.
3. No parking lot.
4. Poor landscaping.
5. No other activities.

AVAILABLE FACILITIES

- A. ADMINISTRATIVE BUILDING
- B. VEENING UNIT
- C. SOCIAL AND DANCE AREAS
- D. RESTAURANT AND GALLERIES
- E. MUSIC ROOM
- F. KITCHEN BAY
- G. MEDICAL UNIT

WITHWOOD YOUTH CENTRE, BRISTOL.

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 Course: ARC 221

NATIONAL SOCIETY OF ARCHITECTS
 MS. TECH. THESIS

Member: Arch. Paul Hamman
 Scale: 1:200
 Date: March 2000
 Level: 600

Although this gives good orientations to the main part of the building, it is poorly sited for most users who must make their way circuitously to the far side of the square to the changing rooms and multi-purpose hall there. The multi-purpose there has its storage room occupying most part of the Northern wing. The combination of knotty pine boarding on the walls and hard wood strips flooring made of satisfactory "*activity aesthetics*" and one which would have been repeated in the new games area.

Warm colour curtains and more pine boarding provide a lovely and entertaining interior. If the pine boarding theme appears slightly overdone when the rooms are empty, it is hardly noticeable when the rooms are fully occupied.

Acoustic tile ceilings throughout reflect the importance given to suitability of purpose of internal finishes generally. The detailing at the head of windows in the social rooms is neat and avoid dust collection ledges. Strip lighting in the recesses above levels gives good background illumination when other ceiling mounted lights are switched off. It is attention given to this sort of features that obviously appeals to the growing numbers of users regularly.

MERITS

The Centre have vocational training facilities that keeps the youth busy after their normal academic activities. The hostel accommodation has been expanded and renovated to some standard. There is a medical unit to take care of emergencies. Aims should be mainly instructive, informal rather than formal. The building should be compact and the internal spaces should be as flexible as possible, having regard to any special function they have to perform.

In purely architectural terms, it is not impressive. It lacks the intensiveness and intellectual discipline to be found in such buildings. The architect approach is however sensitive and unpretentious and they have resisted all attempt to use extravagant forms to symbolize the activities in the building. The result is a building of refreshing simplicity; a two strong building with a central well lighted from above with clerestorey windows and the sides of a beautifully simple pyramidal roof. The predominant use of the building and its bleak surrounding coupled with the need for an intimate atmosphere, would not dictate otherwise. The complete absence of complaints by neighbors indicates use of sound proved windows.

Sit in the smug with cup of coffee and some what cold words which describe the spaces on the ministry's plan immediately have meaning. "Dance" is the gramophone at full blasts with the girls twisting. "Social" is the games of table tennis. "Practical" is a game of billiards in one corner and an electric saw bowing used on the bench behind the chair store. Up stair the girls are having a hair-dressing demonstration in powder room. Game of chase is a progress on a balcony over looking the table tennis and glazed walls of the small rooms reveal on political affairs in the committee room and a guitarist in the music room. The "physical" area is being used for wrestling and fencing.

The vitality inside this building is infections. So few areas of the building have been given a definite function. A well equipped gymnasium can never be disguised as any thing else. The building can be use by members in any way they feel disposed.

Only that the removal floor units are difficult to clean. They can not be washed while in place in the centre well as water would drop through to the polished hardwood floor below. The are perhaps too many changes in floor patterns. Balustrading to the well and the main staircase are over done

owing to the caution of the local authority.

4.4.3 APPRAISALS

The Building Outside;

Externally, the building is said to have suffered from the infrequent attention of vandals and local school children. The central original metal framed glass louver windows have been replaced by centre pivot lights to avoid further breaking. The glass box entrance lobby has suffered wear and tear, mainly through the actions of eager customers awaiting opening time. The original illuminated glass panel in the lobby window was broken so often that it was even removed and replaced by a solid sheet which does not match the panel. The window acoustic ventilators have been successful in containing noise and reducing likely disturbance to neighbors.

The Building Inside

Inside the building, it is immediately evident how little the place has changed from its original appearance. The small redecoration's carried out by members year to year have been kept apparently to the architect's colour scheme. Materials were matched to joinery additions or small modifications have been made.

The nylon carpet in the snug is in holes and completely worn out and to be replaced by floor tiles. The reception counter top had to be resurfaced in brownish plastic veneer which is no ideal. The upstairs physical activities gallery area had to be partly floored and does not match the remaining rubber flooring.

MERITS

The complete absence of complaints by neighbors indicates the use of sound proofed windows. The architect's approach to the design is

refreshingly simple and beautiful. The internal spaces are as flexible as possible making the functions flexible also. The buildings can be used by members in any way they feel.

DEMERITS

In aesthetic terms, the building is not impressive. It lacks the inventiveness and intellectual discipline to be found in such buildings. The removable floor units are difficult to clean. The balustrade to the well and the stair case are over done owing to the caution of the local authority.

4.4.4 AVAILABLE FACILITIES

Administrative building.

Projection and Control room.

Social and dance areas.

First floor rooms and galleries.

Music room.

Workshop Bay.

4.3.0 GEN. SANI ABACHA YOUTH CENTRE - KANO

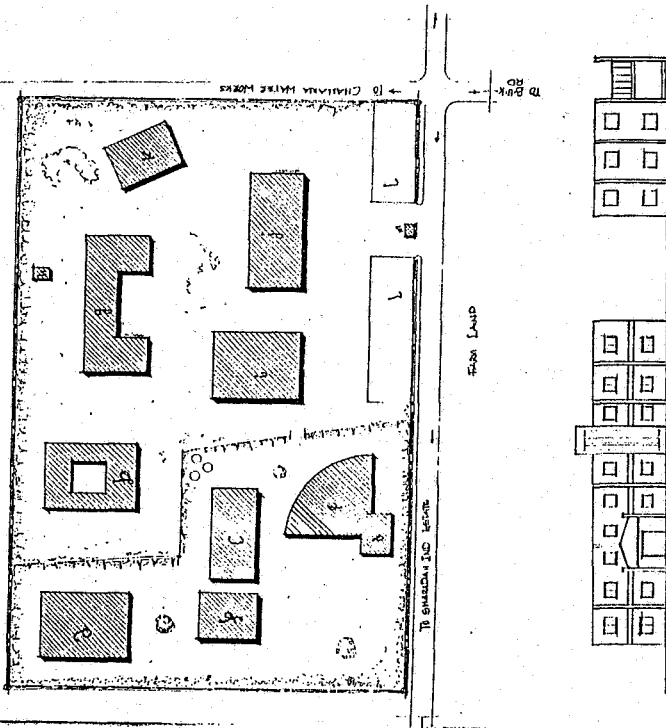
4.3.1 THE SITE

The site for this project is located on the outskirts of Kano City. The site is also accessible from four roads which include the Bayero University Kano road, Sharada Estate road, Challawa water works, and then Katsina road. It is about 3500 km square in size a 2/3 of it is for farming.

4.3.2 GENERAL OBJECTIVES

The Sani Abacha Youth Centre was established 1991 by the National Youth Council of Nigeria. The purpose of building this Centre is to;

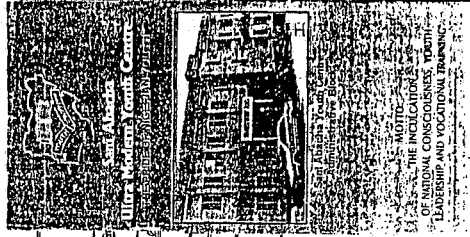
CASE STUDY ONE (1)



LEGEND	
a	Hotel Accommodation
b	Women Development Centre
c	Swimming Pool
d	Stage
e	Amphitheatre
f	Cleaning Rooms
g	Classrooms
h	Toilet
i	Multi-Purpose Hall
j	Administrative Building
k	Kitchens
l	Part-Time Lab
m	Guest House

MERITS	
1.	Enough Parking Space
2.	Most Facilities are in Place
3.	Simple Construction
4.	Each Facility Supports the Other
5.	Enough Space for Future Expansion

DEMERITS	
1.	Design is not up to standards
2.	Poor term-escaping
3.	Structures do not harmonize
4.	Heightings is too simple
5.	No defined parking space
6.	No provision for power house



GEN ABACHA YOUTH CENTRE, KANO

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 Dept: Architecture
 Course: Arc 621

NATIONAL SOCIAL SCIENCE CENTRE
 KANO, KANO STATE
 K. TECH. THESIS

Monitor: Aca. Paul Hanna
 Scale: 1:200
 Date: March 2000
 Level: 600

- a. Provide a forum for youth to exchange ideas, information and experience as well as collecting and collating materials on the youth problems and prospects.
- b. Cooperate with the development of the National Coordinating Committee and voluntary youth organizations in Nigeria.
- c. Encourage youth in their own organizations.
- d. Establish and maintain mutual working relations with government and international voluntary organizations such as World Assembly of Youths.
- e. Provide vocational training as well as organizing seminar, workshop, conferences as well as sporting activities.
- f. Inculcate a sense of direction and responsibility, national consciousness and instilling virtues of discipline, patriotism, honesty and self reliance in youth.
- g. Promote cultural norms and for a virile united Nigeria.

GENERAL PROGRAMMES

The general programme of the centre are designed to provide unique kind of training and placement services needed unemployed youth on the society. The qualities attributed to the success of the centre are as follows:

- a. Staff dedication and selfless service.
- b. Quality training.
- c. Placement of graduates in full time jobs.

The need to train the youth with total development of both attitudes and skills is a fundamental part of the Centre.

There is a classroom training which is to prepare the trainee, through instruction and motivation to secure a job in Labour Market. In accomplishing the task, the various vocational courses offer curriculum which is meaningful in terms of the selected occupational areas.

INSTITUTE OF YOUTH DEVELOPMENT

The Institute of Youth Development was established under auspices of the Centre in an attempt to make a virtue out of necessity. The intention is to supplement government efforts in its determination to arrest the National tragedy of mass youth unemployment and achieve for the Nation the goal of self-reliance through permanent programme of integrated education and training for school leavers and unschooled youths.

The objective of the Institute is:

- a. To institutionalize skills, training programmes for school leavers and unschooled youths and small scale areas.
- b. To provide remunerative skills and vocation in various trades such as wood work etc.
- c. To equipped the youths with a holistic approach to new skills and ideas so as to maximize their access to decision-making positions and enhance their economic resources.
- d. To provide Nigeria with ample youth leaders with absolute patriotism, capability and determination to handle the Nations socio-economic and political problems.

AVAILABLE COURSES

YOUTH OPPORTUNITIES PROGRAMMES [YOP]

These course offered training to both schooled and unschooled youths in technical and vocational education in the following area: Carpentry, Auto-mechanic, Electrical / Electronics, Metal work, Secretarial studies, Fashion Design, Tailoring etc which leads to the award of National Technical Certificate [NTC]. The duration of the course is one year only.

WOMEN DEVELOPMENT PROGRAMME [WDP]

The course is design to organize Women in group to identify critical

issues and problems in their daily lives and find solution to the. The group is called "*learning and Action group*" because women by their nature think and discuss problems and actually work together to solve them.

YOUTH ENTERPRENUERSHIP DEVELOPMENT PROGRAMME [YED]

This course is aimed at imparting knowledge in respect of new concept of small industries management based on current ideas and modalities peculiar to the Nigerian situation.

YOUTH LEADERSHIP PROGRAMME [YLDP]

It is design to train and orient youth in the concept of leadership and self development. The training emphasizes practical, training and holistic approach to developing the leaders of the 21 century. The curriculum and courses contents focuses primarily on three areas, which are:

- a. Personal growth.
- b. Careers.
- c. Community development.

4.3.4 AVAILABLE FACILITIES

COMMERCIAL SERVICES

The centre provides commercial services on the following;

- a. The centre offers a library services which is usually open to members from 3:30 - 6:30pm. The library is stocked with the must up-to-date books, journals and magazines. Membership fee is only N100.00 and is open to every Nigerian youth and other groups wishing to carry out research work on any field of human endeavor. Attached to the library is the audio-visual centre equipped Tv / video, slide projection and film-projector for research purposes.

THE RESTAURANT

The restaurant solely managed by the centre with experienced caterers. Both Africa and English dishes are served at reasonable prices.

OPEN AIR THEATRE

Cultural film shows and other activities are performed with a view of generating revenue for the Centre. Fees are charged when there is any concert in the theatre.

SWIMMING POOL

There is also a swimming pool for those who like swimming. The charge is also reasonable.

THE AMUSEMENT PARK

Both the open-air theatre and the swimming pool are within the premises of the amusement park. There is also within the park a children play ground and shades for relaxation, services are being rendered for those who like soft drinks or snacks all for affordable prices.

GAMES VILLAGE

There is also a sport complex and it is often to members only. Sporting facilities are also available such as Volley ball, Badminton, Basket ball, Lawn tennis and Table tennis.

RECREATION HALL

At recreational hall, there are facilities such as Chess, Monopoly, Dominoes, Ludo, Playing card etc.

MULTI-PURPOSE HALL

There is also a Multi-purpose hall which is capable of accommodating 1000 people and it is fully furnished. It is normally used for seminars, conference etc.

ACCOMMODATION

It has three hostel facilities, two for male and one for female. The hostels can conveniently accommodate over 1000 youths at a time.

MERITS

It has enough parking within the outside the premises. Effective ventilation have been achieved and the construction method applied is simple. Each facility support the other, that is inter-relationship of functions.

DEMERITS

It has no aesthetic value. Most part of the buildings are already in the site before it is converted to it present use, the design is not up to standard. The landscape is poorly done and there is no uniformity of the structures.

DEDUCTIONS

All the case study carried have one thing in common; ensuring the interest of youth are well taken care of in term of satisfying their social needs. Architecturally, the Abdulsalam Abubakar Youth Centre Minna was purposely build and has some element that will be used in the proposed design of the National Youth Centre. The Abacha Youth Centre has very beautiful amphitheater and multi-purpose hall that satisfied the outdoor functions such as rallies and also vocational activities.

The two foreign case studies are also successful but the facilities provided are not enough for the teeming number of users.

It is my intention that my proposal will take care of the aforementioned problems in the case studies.

CHAPTER FIVE

5.0 CLIMATIC CONDITIONS

5.1.0 TEMPERATURE

Temperature in this area is usually at its highest during the dry season when there is no cloud cover. For such a period, normal temperature difference of up to 17°C is recorded when the sky is clear. However, during the raining season, temperature is low due to thick cloud formation. For this period normal temperatures are also low, not exceeding 30°C in the month of July and August.

5.2 HUMIDITY

Relative humidity falls in the afternoon as low as 20% during dry seasons, this causes desiccating effects. During the wet seasons, relative humidity goes up as high as 95% causing heat-trap.

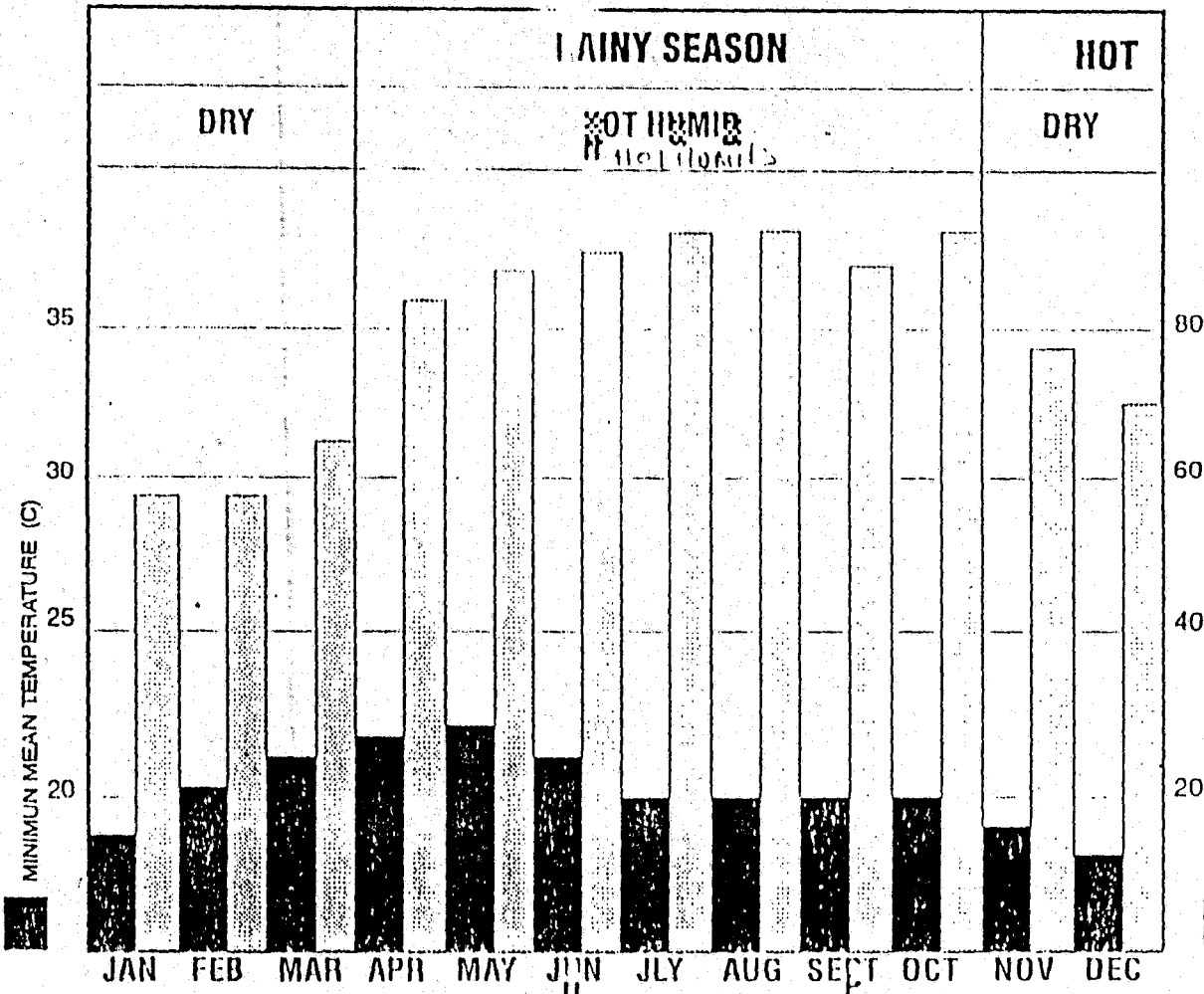
5.3 SUNSHINE

The Capital city is usually exposed to over 2000 hours of sunshine annually. This figure even rises higher in the month of November to March. In the rainy seasons, there is the usual cloud thereby reducing the sunshine hours to minimum especially in August.

5.4 GEOLOGY AND TOPOGRAPHY

The main geological formation of the site are fine to medium grain biotite granite and magnetic. The terrain is gentle with relative uniform slopes to reduce erosion to minimum. The variation between two heights is just about 50 metres, producing in the immediate surrounding short of views of less than one kilometre.

MEAN MONTHLY HUMIDITY



5.6.0 ABUJA - ORIGIN

The geopolitical entity known today as ABUJA came into existence by Decree No. 6 of February 5th 1976. Until the creation of this new Federal Capital Territory [F.C.T], Lagos had remained the capital of Nigeria. The ownership, control, governance of the land is the sole responsibility of the government.

The increase tempo of economic activities and the influx of people into Lagos were not matched with corresponding increase in the level of infra-structural development and services necessitated the movement to Abuja. In 1975, the then Federal Military Government under the Late Gen. Murtala Mohammed set up a panel to look into the issue of relocation of the Federal Capital. The panel submitted its report, recommending Abuja for its centrality with easy accessibility from other parts of the country.

The named "Abuja" was derived from two prince of the Zazzau Emirate known as Suleja and Abuja. today a satellite town known as Suleja in Niger state is an important part of the Federal Capital. Abuja was created from Niger, Kwara and plateau States with a total land area of about 8,000 square kilometres.

5.6.1 SOCIO-CULTURAL BACKGROUND

Abuja is a city whose creation was achieved by a people who longed for unity. It is owned not by individuals or groups of individual, ethnic groups or states but by all Nigerians. The various participating ethnic groups from all over the country attest to the fact that it is a cultural melting point devoid of a distinct and custom or tradition.

Culturally, one can safely say Abuja has no specific culture because it is a "no man's land". The cultural heritage of this great nation is adequately represented.

5.6.2 PEOPLE OF ABUJA

The main indigenous ethnic groups are the Gwagwa with Gade, Karo and Gwandara forming the minority. With its new status as the nation's melting point, immigrants from far and near of the country, the ethnic composition and socio-economic characteristics of Abuja have been affected tremendously. All Nigerian languages are spoken especially the three major ones [Hausa, Igbo and Yoruba] and the lingua franca English. This is why Abuja is known as the "*centre of Nigerian unity*".

5.6.3 ECONOMY AND COMMERCE

The ministry for Federal Capital Territory [MFCT] in conjunction with the federal government vigorously pursuing the commitment towards commercial and industrial development by providing necessary infrastructural facility / services and incentives. This is to promote private participation in commerce and industry and thereby enhancing the economic power of residence of Abuja.

Commercial enterprises, mainly retail outlets for manufactured goods abound in the neighborhood centres, districts and market there are also small scale industries and real estate enterprises.

5.6.4 DEMOGRAPHIC DATA

Before the creation of Abuja as the Nation's new capital city, the area was sparsely populated. As at 1963 Population Census, the number was put at 109,000 and in 1977, the number rose to 125,000 respectively but with the commencement of the physical development and movement of people began in 1982, the population as continued to rise. The International Planning Association [IPA], designers of the master plan of the city, projected the population of the territory to heat 3.1 million mark after

completion of the final development phase.

However, as at 1991 National Population Census and realized in march 1992, presently stood at 378,671 with the youth comprising 35% of the populace.

5.6.5 TRANSPORTATION AND TRAFFIC FLOW

In areas of transportation and traffic flow the MFCT has provided necessary infrastructural facilities and services to enhance convenient and efficient intra and inter city transportation services for the territory. These facilities include good road network, traffic lights and efficient mass transit bus services. Private transporters have also contributed their quota for efficient transportation system which includes the motor-cyclist popularly known as "*Kabu-Kabu*" or "*Express*".

The provision of the aforementioned facilities and services will make accessibility to and from the site or location easy as the project will be located on one of the major highways.

5.6.6 EXISTING LAND USE AND FUTURE TRENDS

The existing land use is mainly farming or farmland characterize about 60% of the site environment. The remaining 40% consists of total bush are that is probably used for grazing of cattle by herdsmen.

But the future trend according to the master plan have been embarked for institutional buildings. And the project falls into that category.

5.6.7 PLANNING REGULATIONS IN ABUJA

1. **Accessibility in terms of;**
 - a. Traffic.

- b. Parking.
 - c. Pedestrian movement.
2. Harmony of building with the site and surrounding environment
 3. Proper and effective landscaping
 4. The design project should take into consideration the existing building in the area with respect to linkage with following network.
 - a. Electricity Supply in consultation with NEPA supply grid.
 - b. Water supply in collaboration with water-board.
 - c. Drainage of rain water and waste complying with laid down rules and regulation by Abuja Environmental Protection Board [AEPB]
 5. Fire security for the area involved.
 6. Proper zoning in compliance with Federal Capital Development Authority [FCDA].
 7. Good building orientation for minimum glare and effective air circulation.
 8. The FCDA must approve of all the parameters prior to the design and construction of any project.

DEDUCTIONS

Abuja, Nigerian's brand new capital city, is at home with nature, its rolling hills, isolated highlands and other enduring and endearing features makes it a delightful scenario. One beautiful feature about Abuja which it derives from its central location is that it combines the Savannah grassland of the north and middle belt with the richness of the tropical rain forest of the south. The overall effect of this is that Abuja enjoys an equable climate that is neither too hot nor too cold all around the year.

In terms of soil and land characteristics, the Gwagwa plain have the most fertile soils and the best agricultural lands of all the plains of the FCT. such lands are also ideal for urban development such as this project [National Youth Centre] and the relatively high fertility status of the soil is of advantage to the successful landscaping and beautification of such public places, street tree planting within the built area.

Another advantage foreseen from the nature and lithological composition of the rocks and soil of FCT, is the ready availability of construction materials in the form of building stones, quartz and pisolitic gravel, building sand and earth for use as foundation materials.

CHAPTER SIX

6.0 SITE ANALYSIS

6.1 SITE SELECTION CRITERIA

The selection of site for the National Youth center, Abuja should be based on certain factors. It should be noted here that the Federal Capital Development Authority [FCDA] have allocated site to National Youth Council of Nigeria [NYCN] for their secretariat in Jabi. The factors are:

6.1.1 LOCATION

The choice of the site should be in relation to the following:

- a. ZONING: The site should be in an area exclusively reserved for such buildings, that is institutional and office accommodation buildings.
- b. TOPOGRAPHY AND GEOLOGY: The slope of site should be relatively gentle so that courtyards and fields do not significantly slope or require costly cut-off and fillings. This factor is also necessary when one considers the handicapped Youths who are expected in the center.

6.1.2 HYDROLOGY

The water table at the site should be adequate to support plants life that is landscaping. The water table should not be less than 800mm.

6.1.3 ECOLOGY

The green area should be adequate to add to the general landscape of the site. The site should have trees that will help in reducing the noise level of the site.

6.2.0 SITE APPRAISAL

The site chosen for the Youth center by the FCDA has the following advantages, all of which agrees with the basic requirements for the Youth activities.

1. It is located within the institutional area and the site is large enough to accommodate all anticipated facilities as well as enough room for future expansion.
2. The site is mainly made up of Igneous and Metamorphic rocks which can support heavy structures.
3. It is not close to any industrialize zone and therefore it is safe from environmental hazard.
4. It offers good view for leisure.
5. It is relatively quiet.

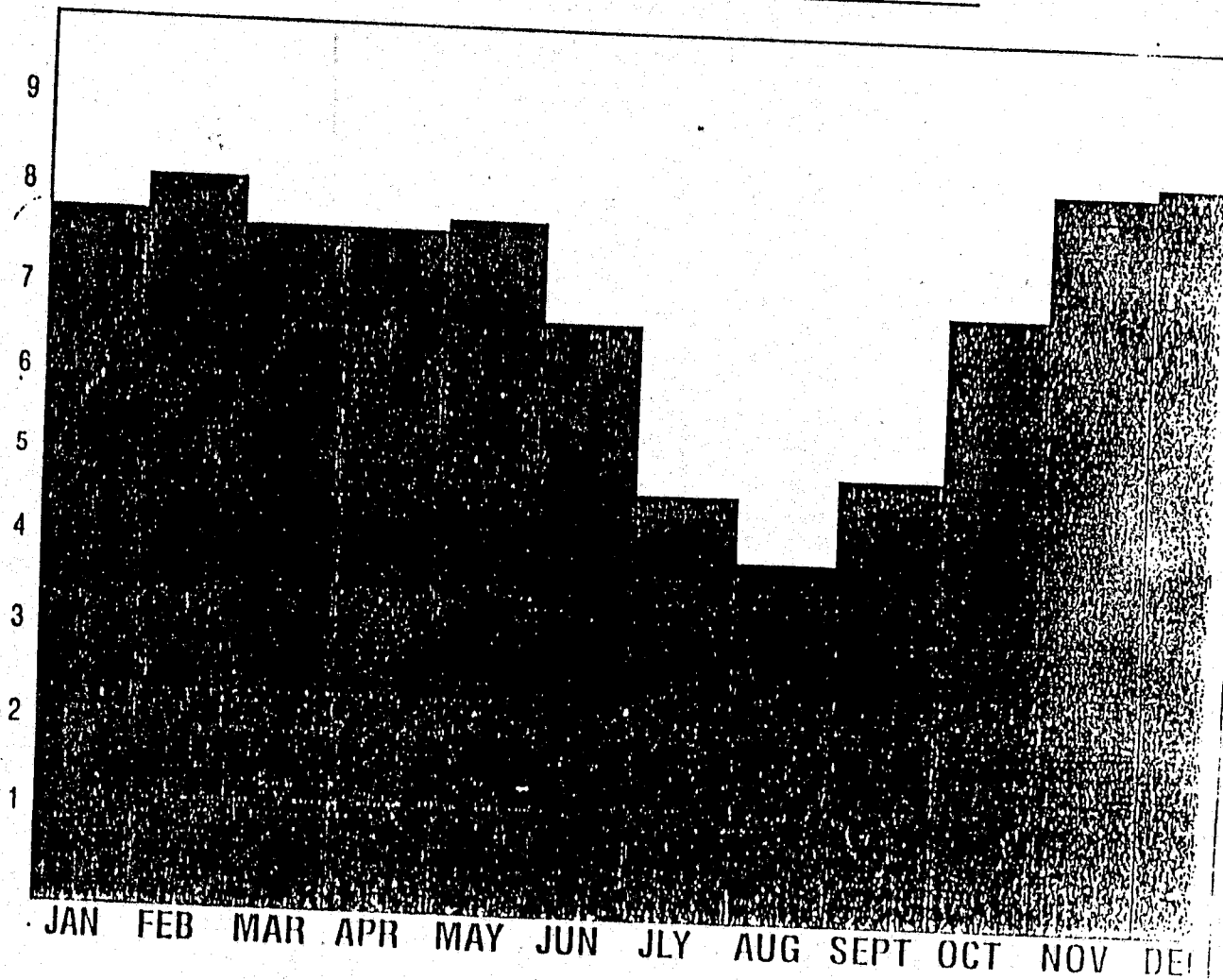
6.3.0 SITE INVENTORY

The site proposed for the National Youth center is located in Jabi district close to Jabi Dam Reservoir. The site is connected by an arterial road to northern park way. One of the main features on this northern park way is the Federal Ministry of Works office complex in Mabushi. Other prominent features beside the site are Jabi water works which is expected to supply water to the site. A primary school, a proposed hotel and other institutional buildings such as secondary school, a campus of Abuja polytechnic and a court building. On the other side of the Northern parkway Lt. Gen. Jerry Useni Housing Estate. The site is ideal for the purpose for which it is serve.

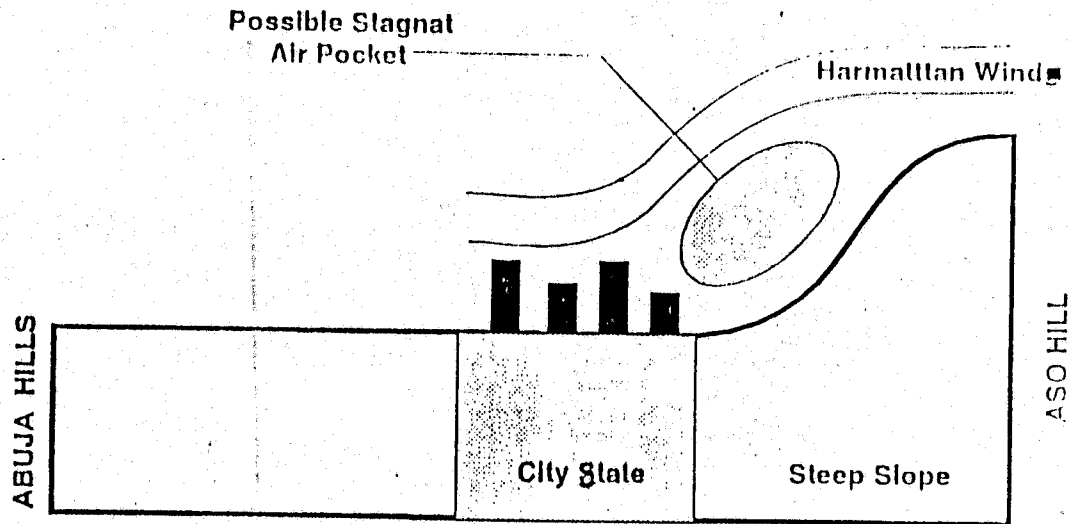
I. GEOLOGY AND TOPOGRAPHY

The main geological formations of the area are fine to medium grashed

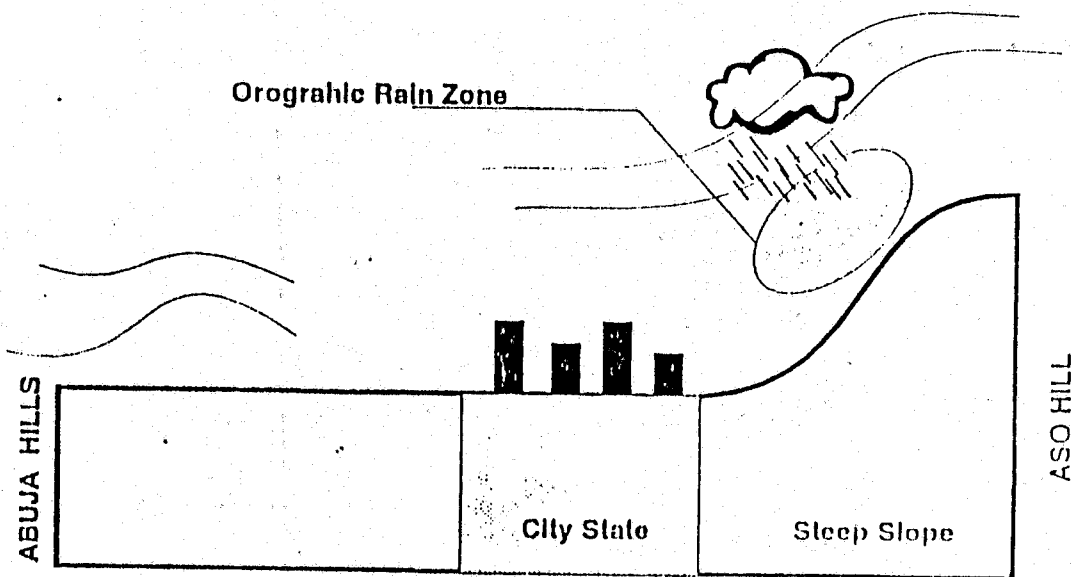
MEAN MONTHLY SUNSHINE DURATION



SEASONAL WIND PATTERN

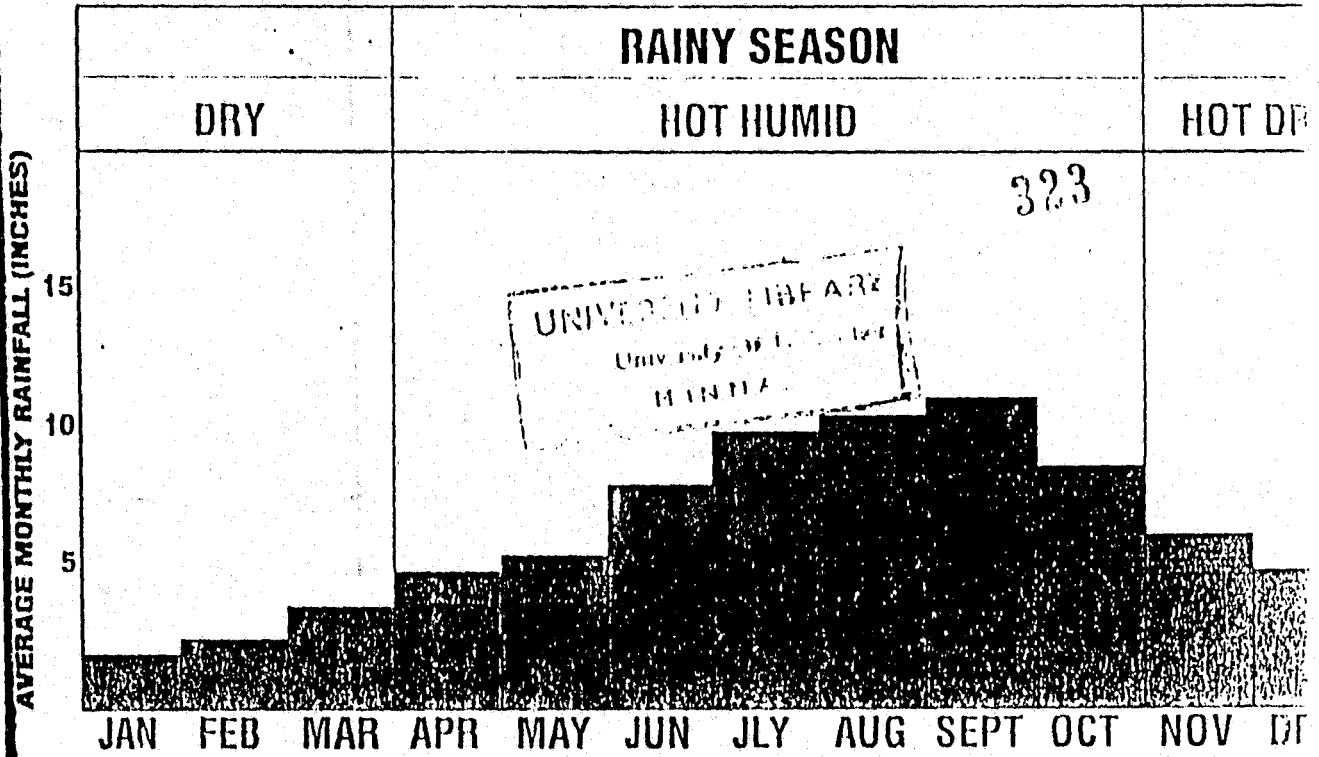


DRY SEASON 6 - 5 MONTHS



WET SEASON 6 - 7 MONTHS

MEAN MONTHLY RAINFALL



biotic granite and magmatite due to the proximity of the Jabi Dam. The terrain is gentle with relatively uniform slopes which helps to reduce erosion.

II. SOILS

Prominent soil on the whole site is the alluvial soils. This accumulate over time with rain and water washing the rocks close by. Laterite is also available on the site. That is to say the load bearing ability of the soil is satisfactory and can carry the expected load of the building of the Youth Center.

III. WIND

There are two dominant winds in this area. The South-West trade winds comes heavy with resultant rain fall. The wind creates a cooler micro-climate atmosphere compared to North-East winds. The wind is more prevalent around the months of April-October and sometimes even earlier, that is around March.

The second type is the North-East trade winds which brings dust particles which settle on building surfaces. It is prevalent more around May-January. It is the popular Harmatan and it is usually very harsh and dry.

IV. SUNSHINE

The site is usually exposed to over 2000 hours of sunshine annually, especially during the months of November to March. The sun rises as early as 6a.m from the East and sets in the West around 5:30p.m. There is usually slight variation from time to time depending on the season and weather.

V. VEGETATION COVER

The vegetation cover of the site is predominantly shrubs and trees in different proportions. The grass specie is the common andropogum grass which is scattered around the whole site.

6.3.1 ACCESSIBILITY AND CIRCULATION

The site is accessible by many roads which include arterial, collector and Northern park way. The as a collector road on its longer side which is 6m wide and the arterial road is 9m wide with a centralized lightening system dividing the road into two equal half. For the purposes of circulation, the site will be well planned in such a way that vehicular and pedestrian traffic will not bring about any accident that is the vehicular traffic will be limited to some area within the site.

6.4.0 UTILITIES

A. ELECTRICITY

An 11 Kilovolts power line passes along the arterial road that supply electricity to the proposed sites. The National Youth Center, Abuja will be supplied by the 11 Kilovolts power lines.

B. WATER SUPPLY

There is a mains of 600mm from the Jabi water works along the arterial road. Water to the center for the domestic and sanitary needs of the center.

C. DRAINAGE NETWORK

The site will be drained through the main drainage along the highway. The design pattern for the site will be divided into the following:

1. Tertiary collectors: This will make up the various units of the center.
2. Secondary collectors: This is intended to collect water from the various units which will be laid along the wards and footh-paths.
3. Primary collectors: They are intended to receive water from secondary collectors.
4. Main collectors: These are existing open channels as part of the mains.

5. SEWAGE NETWORK:

These are existing 600mm diameter mains on the highway [Jabi road]. The mains usually drain to a sewage treatment plant of daily capacity of 425,000m³.

6. TRAFFIC FLOW:

The traffic flow along the high way is the relatively high because it links so many important areas such as life-camp, Jabi water works. The noise from the traffic will be reduced to the minimal by introducing trees around the center.

7. MICRO-CLIMATIC EFFECTS

1. WINDS:

The North-East trade wind brings dust particles which settles on the building surfaces. Green belts or zone such as trees should be used to reduce the dust laden winds. While the South-West trade winds comes heavy with resultant rainfall. The winds creates a cooler micro-climate compare the hot and dusty North-East winds.

2. SUNSHINE:

It is a basic fact that the sun moves in East-Westerly direction, therefore, the longer part of the buildings should be oriented in this direction, which is intended to reduce the effect of the sun on the Youths.

3. RAINFALL:

The area experiences heavy concentration of rainfall from the months of August to September makes it imperative for good drainage pattern to check the flow of water.

4. TEMPERATURE:

The mean temperature is over 30^{0C} for the most part of the year

with maximum relative humidity at over 10% for the same period. It is therefore necessary for adequate cross-ventilation should be provided especially when you take the category of Youths we are designing for.

DEDUCTIONS

To get the maximum of the users of this centre, we have to achieve a user-friendly environment that is, we have to take advantage of the prevailing climate factors and even the natural elements that makes up the site.

CHAPTER SEVEN

7.0 DESIGN CONCEPT

7.1.0 THE DESIGN

7.2.0 ARCHITECTURAL CONSIDERATION AND IMPLICATION

When planning and designing a development centre especially for the Youths, it is imperative that the planner or designer puts into consideration certain factors at the conceptual stage so as to achieve a successful and functional project. The National Youth Centre can be categorised as a social welfare and development facility and the underlying aim of such facility, is to prepare them for self-reliance and independence in the outer world. Therefore, in the design of this centre, there is the need to understand the people you are designing for in a very broad sense, in this case, the Nigerian Youths. Basically, the design of this centre should be flexible which effects the flexibility of the Youths themselves. The following are therefore the major considerations when designing for the Youths.

1. To achieve a satisfactory level of comfort for the Youth, the proposed centre must satisfy the following conditions. It should be a place for learning, a home, a retreat and recreation centre. Above all, it must be self-determine and reliant to the user.
2. To achieve a satisfactory level of easy pedestrian and vehicular access to different units of the school through proper location of components is of paramount importance.
3. To provide for an efficiently infrastructure within the centre such that economic viability of installation and operational efficiency are achieved.
4. It is also important to understand and analyse their daily living activities which the design should assist in the acquisition of necessary self-helped daily living skills.

7.3.0 DESIGN PHILOSOPHY

To achieve the outlined objective of the project, numerous guiding principles were put into considerations. It has been observed that a clear recognition of spatial environment by Youths have a pronounced therapeutic effect. It is hoped that the design will have a relaxing and calming influence on Youths. In the case of this project, the philosophy behind it include:

1. Giving consideration to what the designers wishes to express in terms of creativity, culture, and technology through the use of materials, as well as its adaptability and usefulness for the activity it is to house. The building should be a friendly place, attractive and conducive to the Youth and should be designed for maximum use at minimum operating cost.
2. Flexibility in use, with the amount of space for single purpose is kept to the minimum whenever possible, the plan must permit flexibility so that later adoptions and modifications can be achieved without undue expense or waste.

7.4.0 CONCEPTUAL ANALYSIS

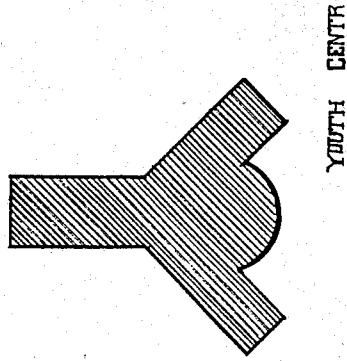
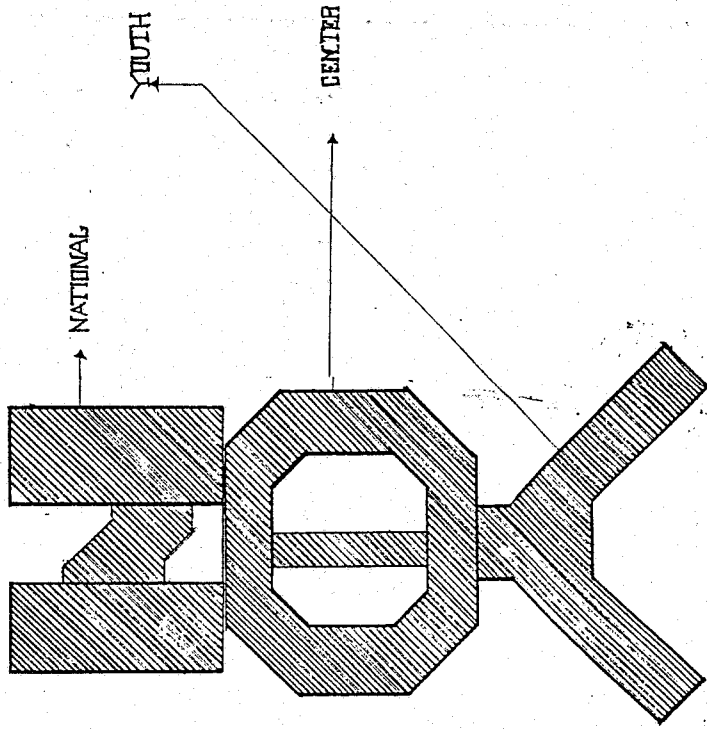
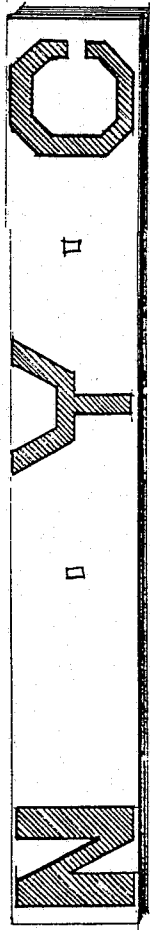
In conceptualizing this facility for the Youth, it is important to understand their needs within the centre and of course how to access these needs.

But generally, these basic concept are commonly use in planning Youth Centre.

- a. Linear concept: Where residential and academic [learning] areas run along a major road in a sheer pattern with ancillary facilities distributed amidst.
- b. Molecular concept: Where residential and learning area form two basic concentric zones with ancillary facilities interspersed within.

CONCEPTUAL ANALYSIS

National Youth Centre



Member Area

NATIONAL YOUTH CENTRE
18 PR 7171K

c. Sector concept: Mostly learning, living and recreation forms three basic inter-related sector within a Centre.

Thus the circulation network is grid and each sector is expandable. Land seems under-utilized at the on set but due expansion, it fills up with time.

7.4.1 CONCEPT FORMULATION

The form of developmental buildings such as a Youth centre are normally guided by elements of functionality because of the use of buildings. The plan concept is based on an integration of functionality and circulation. these are arranged to match the form of capitals that form National Youth Centre [NYC] which is in form of a MAZE, to create interdependent spaces. This is achieved by the adoption of simple forms. The square is known to be the simplest, most functional geometric shape, which is the most dominant. This shape allows for flexible zoning design. it creates balance, saves cost and encourages the maximization of use of space.

A MAZE in this context could be define as a game of adventure and exploration, learning of skills and perceptions for the Youth to be independent and confident in an environment.

An integration of the maze which depicts circulation and the use of accessibility that depict functionality and all it stands for, led to the evolution of a form for the plan [NYC].

This concept, emphasizes a constructive juxta position of forms that represent functional areas and spaces which create a central focus for circulation and distribution of facilities or activities, thereby achieving a compact design.

7.5.0 SITE PLANNING

Site planning in its simplest meaning involves the disposition of

space for appropriate use, the position of a structure to provide effective relationship with other [well propositioned masses with attractive outlooks and good orientation with respect to wind and sun]. it could also means the provision of both pedestrian and vehicular access to structures in an expeditious and safe manner, the design of services, walkways, streets and parking facilities and also the preservation of natural environment of the site and enhancing it by landscaping.

Zoning on site basically aims at achieving a layout that create a sensible relationship of facilities within the centre and also with the site in general. Circulation space are made more open, courtyards link and distribute the flow of circulation and functions, corridors have purpose of passive recreation, relaxation and learning. Also in order to achieve a respectful transition not only from space to space but also from function to function, it should be noted that a Youth believes in what he has perceived, experience and thought of and proved. Hence, zoning becomes an important means of achieving overall comfort in functionality and service conditions of this project.

7.6.0 ACCESSIBILITY

Youths by their very nature like moving from one place to another to decipate energy and only good access from one point to another can enhance it. Poor accessibility to different units of centre interposes between the individual Youth and his maximum functional level. Therefore accessibility and safety are important requirements which must be given due consideration in this project. Achieving easy access and safety, wide range of factors need to be considered which include.

1. Giving preference to swinging doors that swing back slowly.
2. Wide entrances into halls and some other units that call for the Youths

to move in group which they normally do.

3. Covered walkways
4. Lobbies and corridors that link one function to another with good lighting [natural and artificial].
5. Directional notices that point out the different units in the centre.

7.7.0 FUNCTIONAL COMPONENTS

In providing the facilities for National Youth Centre, Abuja, consideration was given for their [Youth] needs and taking note of the shortcomings in the case studies that was carried out in order to improve the facilities of the proposed Centre. These functional components include:

1. Administrative Building.
2. Class rooms.
3. Workshops.
4. Multi-purpose hall.
5. T.V and satellite Viewing Centre.
6. Library.
7. Computer Room.
8. Skill Acquisition Centre.
9. Restaurant.
10. Indoor Games Hall.
11. Sports Field.
12. Clinic.
13. Shopping Mall.
14. Conference Halls [Auditorium].
15. Committee Rooms.
16. Stores.

7.7.1 CLASSIFICATION OF FUNCTIONAL COMPONENTS

- A. Administrative Units.
- B. Skill Acquisition Unit.
- C. Commercial Unit.
- D. Recreational Unit.
- E. Accommodation Unit.
- F. Central Terrace.

A. ADMINISTRATIVE UNIT

This is the initial contact of the visitors to the centre and planned around courtyards and water fountains for effective air circulation to be achieved. Though it is attached to the other units. They have all the necessary offices which include:

1. The office of the president.
2. Two offices for vice presidents.
3. Office of the Secretary - General.
4. Office of the Assistant Secretary - General.
5. Offices of Directors [20].
6. Board room.
7. Committee rooms.
8. Accounts.
9. Registry.
10. Information Centre.
11. Computer room.
12. Toilet Facilities.
13. Store Facilities.

The administrative unit is to handle the day-to-day running of the centre. This offices will be house in two floors, that is ground and upper

floor. Access from here to other units of the centre is via covered walkways, suspended walkways and lobbies.

B. SKILL ACQUISITION UNIT

This is one of the most important unit in the whole centre. It is an area of integration of different skills. It will be an area of learning new skills and improving on the ones. It is expected that every Youth will benefit from this unit which will make him \ her self-reliant and economically independent. This unit is to house:

1. Computer Centre.
2. Blocks of Class rooms.
3. Typing Pool.
4. Tailoring.
5. Workshops.
6. Handcrafts.
7. Saloon.
8. Multi-Purpose hall.

The classrooms are provided for extra-moral classes, lectures, society meetings. The multi-purpose hall which serve as variety of social cultural and educational functions will also be integrated into this unit. Also to be part of this unit with the library. The courtyard in this area helps in achieving cross-ventilation and use of natural lighting. There will be provisions of concrete seats outside the library that serve as resting or relaxation zone.

C. COMMERCIAL UNIT

This another important unit of the centre. It will be strategically located in such in such a way that it will be easily accessible. This unit is going to house.

1. Restaurant & Bar
2. Hostel accommodation which can be given out for rent to Youths on

transit or to those that are stranded at subsidized rates.

3. Shopping mall.
4. Printing Press.
5. Business Centre.
6. Male \ Female Saloon.
7. Gift Shop.
8. Video Club.
9. Swimming Pool.
10. Conference halls [2].

D. RECREATIONAL UNIT

This is an integral part of any developmental \ design especially for youths because they need a place to decipate their energy. It is expected that this unit will help the Youths to be in good health, shape and spirit. The unit will house

1. Indoor games hall such as Badminton, Table Tennis, chess Draft, ludo, Cards and monopoly.
2. Outdoor games such as football, lawn tennis, Basket ball, volleyball, Javelin and track events.
3. Swimming Pool for a youth to have access to this games, you have to register with the center and pay some money that will be subsidized which will go a long way in generating more revenue for the Youth center.

E ACCOMMODATION UNIT

Living accommodation or Youth hostels: The hostels are for both male and female youths which is going to be two per room. The rooms will have bathroom and a sink attached but the toilet will be communal. The plan consist of five residential halls floors and two for female and three for male.

Also provided are halls supervisor's accommodation and lounge or common room on each floor to encourage socializing. The five residential halls is expected to accommodate 1500 - 2000 youths at peak periods.

The hostels are provided in the center to serve the following functions which include:-

Youth on training.

Visiting Youths from other organizations.

Youths on transit.

Tourist.

Youth on convention.

The hostels will also generate the much needed revenue for the center. It will occupy the quiet part of the center.

Also provided are accommodation for the administrative staff of the center like an estate.

F. THE CENTRAL TERRACE

This is expected to be an integral part of the design. It will serve different functions as socialization, relaxation and interaction.

A mini-shop is to be introduced here to attract the youths and this will enhance interaction and relaxation. It will be beautifully landscaped and provided with concrete seats and can be termed "Gazebo" and instead of being roofed with grass, it will be roofed with Polyvinyl [flexible robber].

7.7.2 SPACE REQUIREMENTS

The allocation of the right amount of space to every activity and function in a programme greatly determines the quality and efficiency of a design. This is to be accomplished by using mostly standard figures of space requirements that have been established over the years for almost every

function of concern. Also to be used in allocating these figures are influences of environmental setting.

Finally, safety standards specified in the applicable building codes are also to be considered in awarding square meter areas for entrance corridors and stair cases, as they require certain minimum dimensions to secure safe egress for number of occupants they serve.

After through observation and analysis of the aforementioned functional components, space requirements were allocated to them in the following manner:-

CHAPTER EIGHT

8.0 CONSTRUCTION AND MATERIALS

8.1.0 CONSTRUCTION TECHNIQUE

A purpose built construction technique is to be used at the National Youth Centre, Abuja. a series of studies was done before any work on the planning of the Centre. There was a detailed design of the doors, windows, fittings, sanitary facilities and all the special areas in terms of functionality and aesthetics.

All the facilities at the centre are the subject of thorough detail studies. The floor is comfortable and suited to all the movement in the centre. All these studies resulted in carefully considered and consistent detailing throughout and there is hardly a surface or component which does not offer opportunities for the development of the Youth's co-ordination and sensory powers.

The construction techniques and materials used apart from serving the functional purpose also accentuates the compactness and beauty of the centre which I believe will appeal to the expected number of users regularly.

8.1.1 FOUNDATION

A foundation is the base on which building rests and its purpose is to safety transfer the load of a building to a suitable subsoil.

Building Regulation 4 requires that all foundations of buildings shall:

1. Safety sustain and transmit to the ground, the combined dead and imposed loads so as not to cause any settlement or other movement in any part of the building or of any adjoining building or works.
2. Be of such a depth, or be so constructed, as to avoid damage by swelling, shrinkage or freezing of the sub soil.

3. Foundations should be capable of resisting attack by deleterious materials, such as sulphates, in the sub-soil.

Typical sub-soil bearing capacities

TYPE	Bearing Capacity [KN \ m ²]
Rocks, granites chalks	10,000-600
Non-cohesive soil	
Compact sands	600-100
Loose Uniform sands	
Cohesive Soils	
Hard Clays	600-0
Soft Clays and silts	
Peats and made ground	To be determined by investigation.

a. Choice of foundation types

The choice and design of foundations for domestic and small types of buildings depends mainly on two factors:

1. The total loads of the building
2. Nature and bearing capacity of the sub-soil.

The total loads of a building are taken per meter run and calculated for the worst case. The data required is:

1. Roof load on the wall - 1m wide strop from ridge to eaves.
2. Floor load on the wall - 1m wide strop from center of the floor to the wall.
3. Wall load on foundations - 1m wide strip of wall from top to foundation.
4. Total load on the foundations - Summations of 1, 2, and 3.

8.1 FLOOR AND MATERIALS

The construction of a solid ground floor can be considered under three headings:

1. Hardcore.
2. Blinding.
3. Concrete bed or slab.
4. Hardcore.

The purpose of hardcore is to fill in any small pockets which have formed during over site excavations, to provide a firm base on which to place a concrete bed and to help spread any point loads over a greater area. Hardcore is usually laid in 100-150mm layers to the required depth and it is important that each layer is well compacted, using a roller if necessary, to prevent any unacceptable settlement beneath the solid floor.

2. Blinding.

This is used to even off the surface of hardcore if a damp-proof membrane is to be placed under the concrete bed or if a reinforced concrete bed is specified. Firstly, it will prevent the damp-proof membrane from being punctured by the hardcore and, secondly, it will provide a true surface from which the reinforcement can be positioned. Blinding generally consists of a layer of fine ash or sand 25 - 50mm thick or a 50 - 75mm layer of weak concrete [1: 12 mix usually suitable] if a true surface for reinforced concrete is required.

3. Concrete Bed.

Thickness generally specified are:

1. Unreinforced or plain in situ concrete, 100 - 150mm thick.
2. Reinforced concrete, 150mm minimum.

Suitable concrete mixes are:

- a. Plain in situ concrete, 1: 3: 6 or 1: 6 'all - in'.
- b. Reinforced concrete, 1: 2: 4.

The nature and bearing capacity of the subsoil can be determined by;

1. Trial holes and subsequent investigation.
2. Bore holes and core analysis.
3. Local knowledge.

b. Types of foundations.

Having ascertained the nature and bearing capacity of the subsoil the width of the foundation can be determined by either;

1. The minimum as given the table.
2.
$$\frac{\text{Total load of building per meter}}{\text{bearing capacity of subsoil}} = \text{minimum width}$$

Foundations are usually made of either mass or reinforced and can be considered under two headings:-

Shallow Foundation: Those which transfer the loads to subsoil at a point near to the ground floor of the building such as strips and rafts.

Deep Foundations: Those which transfer the loads to a subsoil some distance below the ground floor of the building such as a pile.

Foundation is one of the most important and basic component of any building or structure. The load bearing capacity of the site is found to be about 40.0kg/m² as obtained from the Federal Capital Development Authority [FCDA]. Due to the nature of the soil and the types of foundations at the center, a combination of Pad and Raft foundation will be able to support all the structures on the site for the project. The concrete footings will be 675mm X 225mm in

dimension while the depth will be determined by the civil Engineers. The mixing ratio of the concrete is recommended to 1: 3: 6 by volume and the foundation walling is to be filled with a mix of 1: 4: 8 of floor installed. The following factors will highlight the relative merits of the various floor surfaces and it is also limited because of the great variation in the materials and workmanship and in the kind of usage and care a floor receives.

1. Appearance: Is the attractiveness of the material, its color range, texture and decorative value in the architectural sense. Examples include hardwood when properly finished, terrazzo, ceramic tile, marble.
2. Durability: It may be defined as the resistance to wear, temperature, humidity changes, decay and for floor traffic are ceramic tile, terrazzo, slate and concrete.
3. Comfort and Safety: This is determined by the shock absorbing qualities, sure-footed evenness, of surface and conductivity. A floor which is good heat conductor will always feel cold. The most comfortable floors to walk on are cork tile, cushioned Vinyl, and rubber. Wood, Vinyl plastic and asphalt tile, are satisfactory.
4. Noiselessness: Cork tile, carpet and rubber are practically noiseless; wood, vinyl plastic and asphalt tile are slightly less satisfactory but still acceptable.
5. Fire Resistance: Materials may be non-combustible but still suffer severely in case of fire. Concrete, ceramic tile and brick are probably the most fire resistant floor surfaces, but terrazzo, marble and slate are very satisfactory.

The reinforcement used in concrete beds for domestic work is usually in the form of a welded steel fabric. Sometimes a light square mesh fabric is

placed 25mm from the upper surface of the concrete bed to prevent surface crazing and limit the size of any cracking. While in large complex designs such as the National Youth Center Abuja, concrete beds is usually in the form BS4483 that is thicker welded steel and defined by the sizes of the room and it is necessary to include expansion or contraction joints in the construction of the bed.

FLOOR FINISH: The selection of a proper surface or finish is one of the most important and at the same time one of the most difficult problems in the construction of a building. The appearance, usefulness and cost of upkeep of a building are greatly affected by the type

Sanitation:

To be sanitary, a floor surface must be non absorbent and easily cleaned. Joints that are not watertight are an unsanitary feature. The most sanitary floor surfaces are terrazzo, ceramic tile marble and slate.

Maintenance:

This heading includes such items as the ease with which a flooring is cleaned, the necessity for care and surface treatment, such as waxing and painting, the necessity for repairs and the cost of such operations. Ceramic tile, marble, terrazzo, slate, vinyl plastic and rubber tile floors are easily cleaned and require little care.

The use of floor finishes in the proposed National Youth Center, Abuja will be relatively uniform, differences will only occur when the activity areas requires a special floor finish such as library, Television rooms and areas where there is the need for limited noise. The materials that will be use here include wood, Vinyl plastic and asphalt but if need be cork tile, carpet

and rubber which are practically noiseless. Ceramic floor tiles, terrazzo slate and concrete are to be used where tear and wear are expected such as walkways, corridors and lobbies. The use of these types of finish is due to their strength and of course easy many maintenance.

8.1.3 WALLS AND PARTITIONS

Wall construction is classified according to functions, positions and methods of construction. These classifications do not always meet clearly defined demarcations because some walls meet more than one classification. Walls enclose buildings, exclude weather, functionally subdivide floor areas and serve as one of the oldest architectural components - the bearing wall. As *bearing walls*, they carry vertical loads of the building; as *non bearing walls*, they support their own weight; as *shear walls*, they resist lateral load, cause by wind parallel to the axis of the wall. These loads may be transmitted to a *foundation wall* which is built below ground level, below curb level or below the floor level immediately above the ground level.

Curtain wall, sometimes called *panel walls* or *enclosure walls*, enclose the building and are supported and anchored to the structural frame. Although sometimes made of masonry, this type of wall is more frequently made of higher materials, such as glass and metals.

Similar to the curtain wall is the Solar screen made of perforated material that must be supported by a structural frame. The Solar screen functions as a visual barrier for privacy, as a sunshade and at the same time for ventilation. An area separation wall divide the floor area of a building into separate parts for fire protection, for different uses, or for restricted occupancy and can also be called a *partition wall*.

For the purpose of this project, the external walls are made of 225X225X 450mm sandcrete hollow block just as the internal walls. The wall

surfaces are finished by covering them with two or three coats of a mixture that consists of a cementing materials, an inert fine aggregate and water. This mixture known as plaster.

The cementing material for interior surfaces is gypsum plaster or hydrated lime but surfaces which are to be subjected to extreme moisture conditions or hard usage are to be plastered with Portland cement. For exterior surfaces, mixtures of Portland cement and hydrated lime are used. When used on the exterior, this mixture is frequently called Stucco. The term Mortar, however, frequently implies a plastic mixture of a cementing material, fine aggregates and water.

8.1.4 ROOFS AND CEILINGS

A roof can be defined as the upper covering of a building and in this position, it is fully exposed to the rain, wind, sun and general atmosphere, therefore, the covering to any roof structure must have good durability to meet these conditions. Other factors to be taken into account are weight, maintenance and cost.

There are different types of roofs which include *Flat roofs* [fig. 8.1A] extensively used in all kinds of building. They are sloped for 1\8 inches to 2 inches vertical to 12 inches horizontal to insure proper drainage. Roofs which slope in one direction only [B] are called *Shed roofs*. This type of roof is used on entire buildings or in connection with other types shown in [C] to form a lean-to. A *butterfly roof* slopes in two directions: two shed roofs meet at their low eaves [G]. *Gable roofs* also slope in two directions [D], two shed roofs meet to form a ridge and many more as shown in fig. 8.1.

For the purpose of these project, simple roofing method will be used such as Decking, roofs with slopes such as Gable or butterfly roofing and some form of advanced roofing [Shell roofs] in multi-purpose halls, theatre,

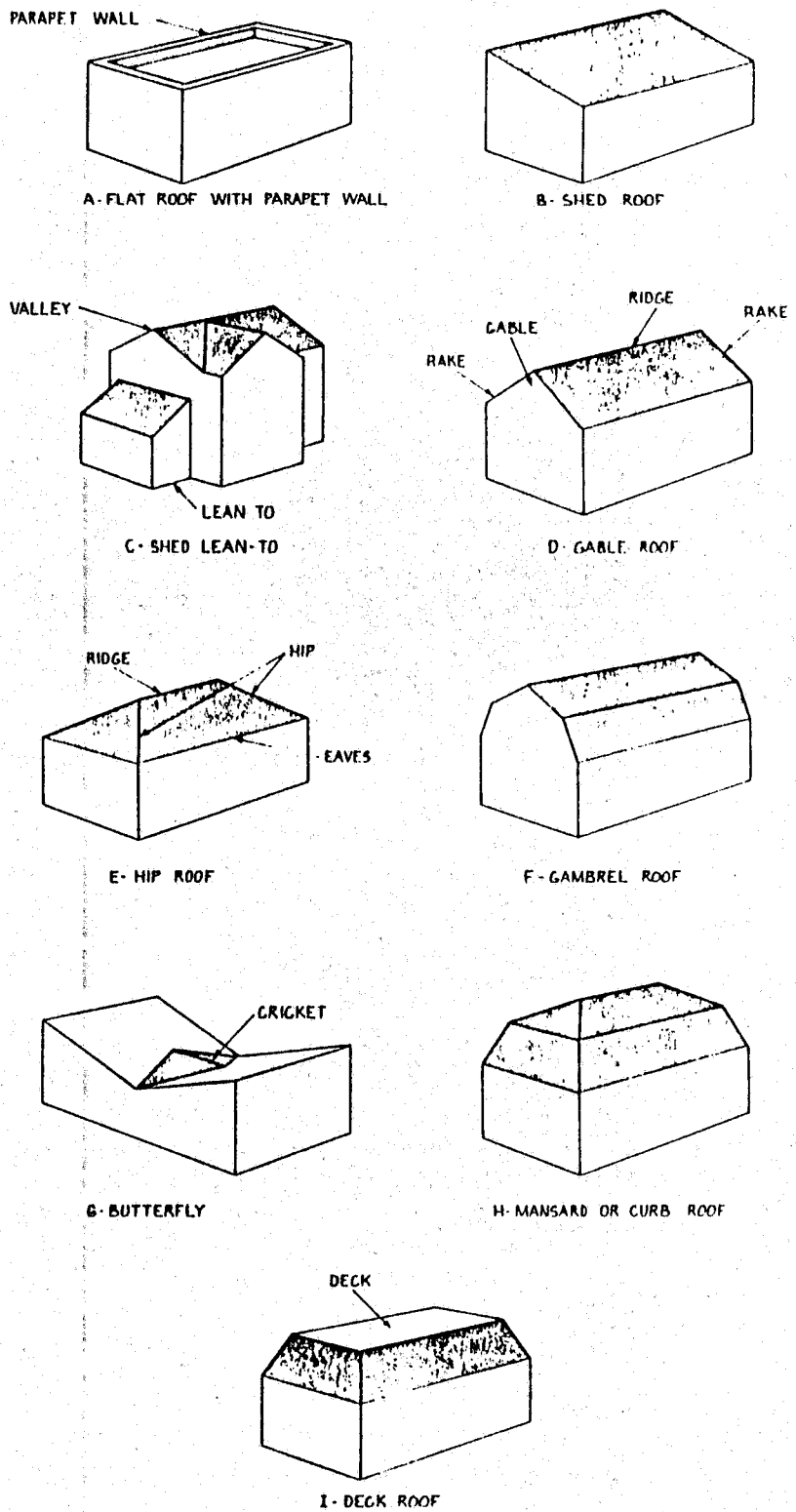


FIGURE 8.1 Types of roofs.

and indoor games hall.

There will also be the use of gutters and down spouts to ease the drawing of water from the roofs depending on the system of roofing especially decked areas. The water is carried in the gutters to vertical pipes called down spouts, conductors or leaders. Conductors or down spout will be provided with strainers at their upper ends so that debris cannot clog them. There is also the use of parapet to hide the roofs and achieve aesthetics.

CEILINGS

Ordinary wood joist, construction, slab-band construction, and ribbed concrete slabs provide flat ceilings, but plain concrete slabs supported by beams and girders and some other types of construction require suspended ceilings if flat ceilings are desired. Girders running between columns interfere with flat ceilings when ever they are present. In addition to their better appearance, flat ceilings do not interfere with the locations of partitions.

Plastered ceilings are provided by applying two coats of plaster directly to the under side of the ribbed slabs with clay, concrete or gypsum tile fillers, flat slabs provide a flat ceiling. The ceiling supported by wood joist, ribbed slabs with steel forms, and metal joists will be flat, where as the ceiling supported by heavy timber construction will probably follow around the beams. Monolithic concrete ceiling surfaces will be finished by painting directly rather than on plaster.

The National Youth Center will have flat ceiling systems except may be the multi-purpose hall and theatre where we will have slanted ceiling systems to achieve the desired sound system.

8.15 DOORS AND WINDOWS

DOORS

A door way is an opening through a building wall or partition, providing passage for persons or vehicles. The opening may be closed by a movable barrier called a door.

Ordinary doors, whose primary function is to permit the passage of persons, are classed as exterior and interior doors. Interior doors between rooms are known as communicating doors. Doors at the principal entrances are called entrance doors. Doors designed to resist passage of fire are called fire doors. A wicket door is a small door within a large door provided to permit passage without opening the large door. In addition we have sliding doors, elevator doors, garage doors, industrial and scuttle doors.

Doors usually open by swinging about a vertical axis or by sliding horizontally, but sometimes they may swing about a horizontal axis or slide vertically. The most common type of door is the swinging door shown in fig. 8.1A. Two doors hinged at opposite sides of an opening [B] are referred to as DOUBLE DOORS or a PAIR OF DOORS. Such doors will be used at the entrances of the center such as large rooms to give a more spacious effect and to provide more clear passage way. The DOUBLE - ACTING DOOR [C] is provided with special hinges that keep the door closed when it is not held open. The door can easily be pushed open in either direction which is used in committee rooms, shopping malls and large offices of the building.

The FOLDING OR ACCORDION DOOR shown in [D] and [E] are used singly or as folding partitions so that two separate rooms may be used as a single room. They are made for very wide openings such as multi-purpose hall and indoor games hall where partitioning is necessary.

Sliding doors [I] and [J] are often used for elevator doors. They are

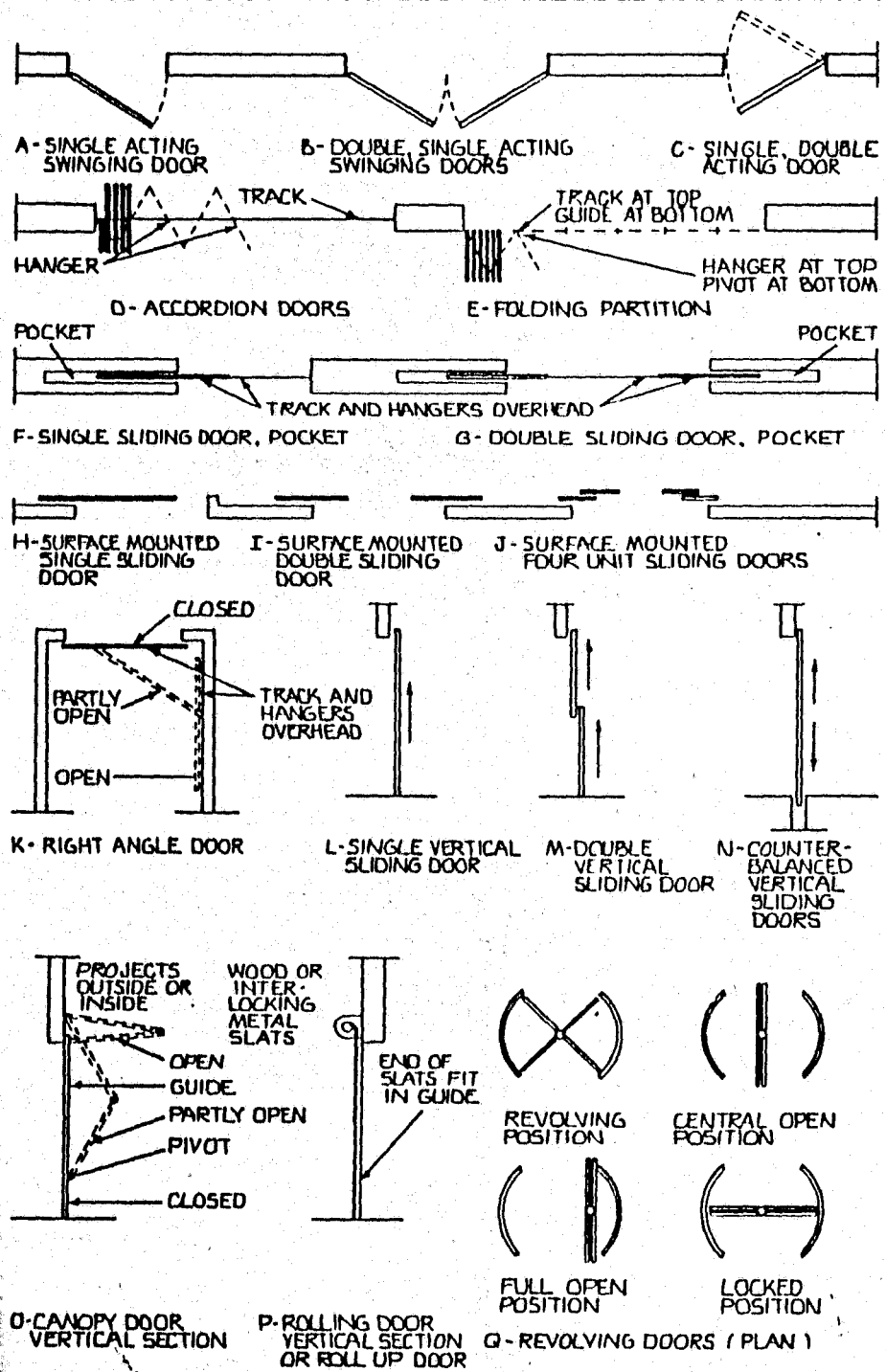


FIGURE 8.15 Operation of doors (a)

so arranged that they will all open when one is pulled back. The inner doors in [J] are arranged to move faster than the other two so that they will be completely open at the same time. These type of doors will be for the lifts and committee rooms.

The revolving door shown in [Q] is used at the entrance of certain buildings such as shopping malls, conference hall and theatres. The doors are allowable but highly restricted by codes.

Wood, aluminium, carbon steel and glass are the materials most extensively used in the manufacture of doors, but stainless steel, copper are also used, as are facing materials such as hardboard, fiber board, asbestos and plastics. For the purpose of these projects, there will be extensive use of glass [reinforced], wood and steel doors.

The sizes of ordinary stock doors whose primary function is to permit the passage of person, vary with the types and the materials used in their construction. The sizes of doors at the National Youth Center, Abuja will range from 900mm - 1800mm but the most common will be 900mm doors for offices and hostel accommodation made of quality faced plywood with a cream paint finishes for the offices and brown paint finish for the hostel accommodation respectively.

WINDOWS

In general, a window is an opening in a wall of a building to provide any or all of the following: natural light, natural ventilation and vision. The term also refers to the construction installed to provide protection against entry and the weather. To be satisfactory, windows must be durable, weathertight, reasonable in cost, readily installed, and for many uses, attractive in appearance. Windows are also used to a limited extent in partitions for vision from room to room, or for borrowed light.

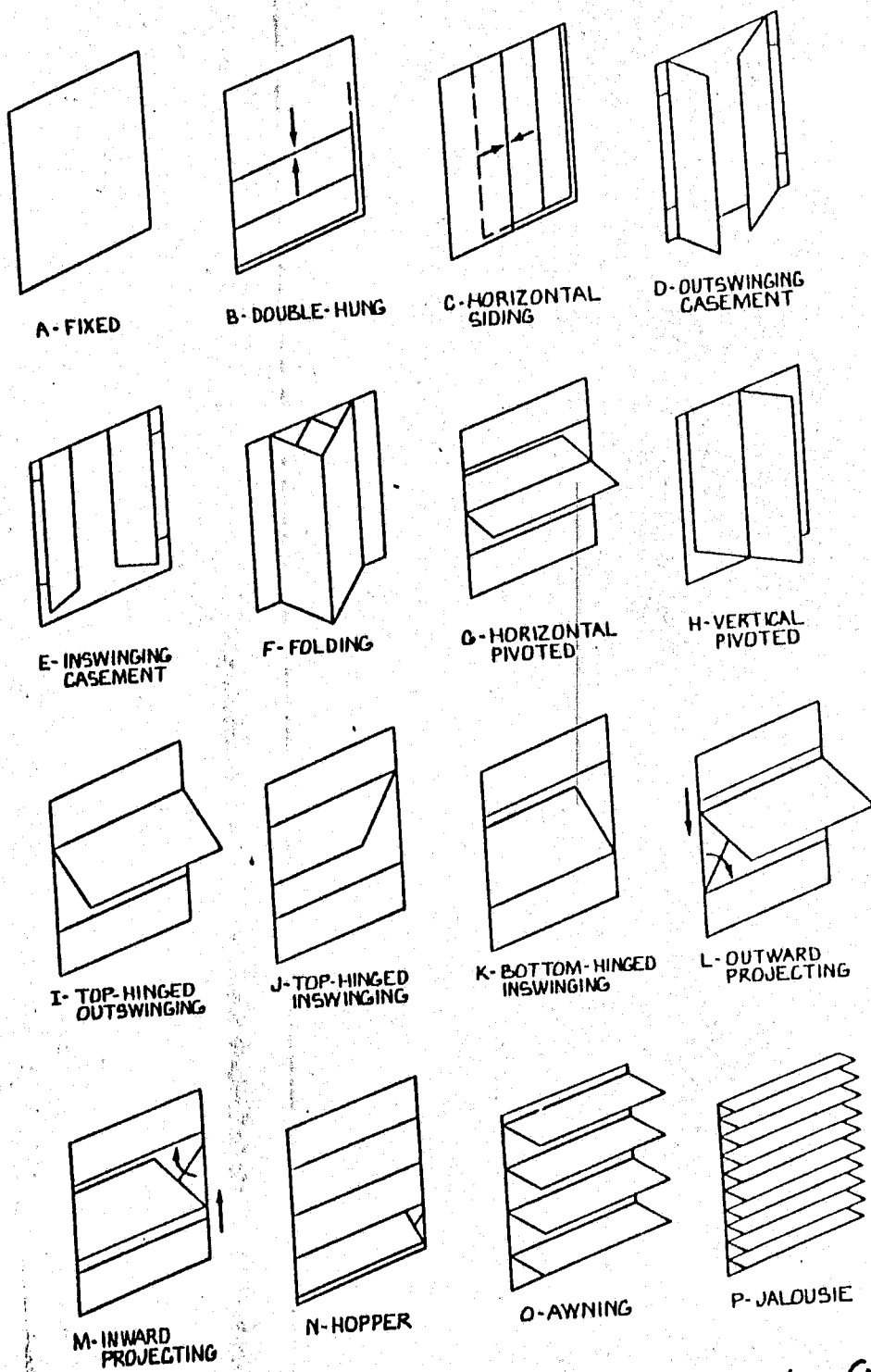


FIGURE 845 Window types—outside views for (b) open positions.

Materials mostly used for windows include glass, wood, steel, aluminium and stainless steel. They are available in a great variety of types to suit many requirements and individual differences.

The usual types of windows, regardless of the materials of which they are constructed are shown diagrammatically in figure 8.5(b). The glass areas in these examples may be subdivided in various ways some windows may only include a single pane of glass and of course subdivisions will be made to permit the inclusion of ventilating units, for convenience in cleaning, to limit glass size for safety, for architectural effect such as glazing.

A fixed window as illustrated in [A] makes no provision for natural ventilation. A double - hung window as shown in [B]. Both sash slide vertically, with the weight of each counterbalanced by sash weights, spiral spring balances. A horizontal sliding window as shown in [C]. One or both sash may be arranged to slide.

In general, any hinged window is a casement window. It may swing out or in and can be hinged at either side, the top, or the bottom, but the term is usually applied only to side - hinged windows.

Windows with ventilator sash that operate like those in [L] are called projected windows. For the achievement of the effective air circulation in the center, these will be extensive use of these types of windows Glazed sliding windows with aluminium framing should be used for effects. There will be use of Louvre in places like toilets.

8.1.6 COURTYARD

In order to bring light and air into the buildings, a system of internal courtyard was adopted. This will go a long way in enhancing the "effective air circulation in and around the buildings" virtually all the units have internal courtyards which is in line with the traditional Nigerian Architecture.

The courtyards will be well landscaped with flowers and royal palms. There will also provision for water fountains and hard concrete seats for the youths to use as sit-outs and enjoying the beautiful scenery.

8.1.7 WALKWAYS

Walkways should be hard surfaced routes. It should also be wide enough to allow for easy pedestrian movement. The climatic condition of the area, demands the use of covered walkways both outside and within the buildings. The sides were well landscaped to reduce the effect of the Solar radiation.

Scale, pattern, color and texture are form characteristics related to the design of the center. The paving pattern gives order to the overall design of the Youth Center. It also provides a sense of scale by the use of materials such as brick, concrete and stone. The slope of the paving and the way in which water run off is handled were important items that were considered.

8.1.8 FINISHES

When we say finishes, we are talking about facing applied to building components from floor, wall, door, window and other accessories, that makes its appearance more appealing to the eyes. There are different types of finishes which also depends on the choice of the client with professional input from the designer.

Though I have mentioned some of the finishes for the different elements in the previous chapter, it should be noted that there are standards or conditions that must be met by finishes before usage. The conditions include: Appearance, Durability, Comfort and Safety, Noiselessness, fire resistance, Dampness, Indentation, Maintenance and most importantly, cost.

There are other finishes that do not only satisfy aesthetic condition but

also functional one especially wood finishes on walls of theatres, gypsum finish on ceilings and soft - padded seats all improve the sound quality of the theatres. Therefore, the range of finishes used in the center is wide to satisfy both aesthetic and functional factors.

The range of finishes include:

Plywood finish for doors.

Plywood finish for theatres.

Plywood seats for the theatres.

Gypsum ceiling boards for theatres.

Poly-vinyl floor tiles for library.

Ceramic and terrazzo tiles for lobbies and corridors.

CHAPTER NINE

9.0 DESIGN SERVICES

The engineering services in a building environment with is both healthy and comfortable and which allows people to carry on their activities without physiological stress. A successful design requires first a specifications of the necessary environment, and then an engineering or design services [systems] to provide it.

Services is one of the most important aspect of whole project because it will go a long way in determining comfortability, safety, security and create an atmosphere where the youth will be in harmony with their environment. These services includes electricity, lightning, ventilation, water supply and fire protection.

9.1.0 ELECTRICITY AND LIGHTNING ELECTRICITY

A simple definition of the term electricity is not possible but it can be considered as a form of energy due to the free movement of tiny particles called electrons. If sufficient of these free or loose electrons more an electric current is produce in the material in which they are moving.

In supplying electricity into an institutional building such as the national Youth Centre, the service entrance, service equipment and interior electric distribution are very important. These are called the buildings electric power system they include service equipment, switch board, bus and heavy feeders, distribution panels, motors and their control.

The service from the main source can be over head on or underground, high voltage [primary] or low voltage [secondary] and any

power rating required.

- a. Primary Service: this is generally run underground from the utility to the main building. These runs are in rigid steel conduit or in concrete encased non metallic duct. The underground power cables runs are usually combine with underground telephone cables runs, for economy. Where the underground cables reaches the table it is connected to a transformer which change primary [high] voltage to secondary [low] voltage.
- b. Secondary Service: This is taken either underground or over head. But the system distributing electricity to the main building is similar to primary service except that the transformer will be exchanging high voltage to low voltage from the main source.

The main source of electricity supply to the centre will be from the National Electricity Power Authority [NEPA]. Where normal power fails from NEPA, an emergency services is available to supply the required power. There are many ways to supply an emergency power. If all the loads will operate on direct current [DC] as well as alternating current [AC], and the total load is very light, a generator emergency source can be used. Transfer to the emergency source can be done either manually or automatically by using either a or automatic transfer switch respectively. This latter items sense voltage loss and automatically transfers to the emergency source.

LIGHTNING

When the light is used externally and internally, it reveals the architectural beauty of the environment especially the landscape features. There is obviously more to lightning than locating a ceiling lighting outlet. So much more, in fact, that lighting design has become a specialty. When lighting designers talk about lighting they refer to two things the quantity and the quality of lighting. The first, quantity can be calculated, measured

and is fairly easy to handle. The second item, quality, is a mixture of all the items related to illumination other than quantity of light. This mixture includes brightness, brightness ratio, contrast, glare diffuseness and colour. In addition most designers include in quality items such as psychological reactions to colour and fixture patterns.

There are different types of light sources in use today these include incandescent, fluorescent, and high intensity discharge [HID] types. The use of this lights will enhance the beautification of the National Youth Centre. There will be the use of subdued lighting, diffused lighting and focused lighting depending on the function of the room or area is expected to perform. though all the light are designed to give general room illumination, for some areas general rooms illumination is insufficient.

All the light mixtures are to be controlled by wall switches. The switch will be uniformly located 1500 mm above the floor for safety, the switches controlling electrical outlet in the bathroom should be located outside.

9.2.0 HEATING, COOLING AND VENTILATION

The architectural design of a building has tremendous effect on the heating, cooling and ventilation of a building as can be seen by the following design energy related consideration: proportion of building [surface area to volume area], size and location of windows, massiveness and colour of the building materials. In fact, when the architect start the design, he will simultaneously starting the design of the heating, cooling and ventilation of buildings, we can say that these environmental concerns are form-givers in architecture.

The mechanical equipment required for heating, cooling and ventilation is often quite bulky, and because it requires access to outside air, it is

frequently visible on the exterior. Thus for several reasons, the heating, cooling and ventilation system are integrally interconnected with the architecture, and as such must be considered at the earliest stages of the design process.

People living or working in fully enclosed parts of houses or buildings will expect to be provide with comfortable conditions. Although the requirements can vary greatly depending on the occupancy, outdoor climate, the reason and geographic location, a complete system of indoor comfort control demands many desirable characteristics. These could include:

1. Maintaining a uniformly warm indoor temperature in the cold weather.
2. The uniformly cool indoor temperature during hot weather.
3. providing, in cold weather, warm interior wall surfaces that will not have a chilling effect on near by occupants.
4. Re-circulating interior air and filtering out air borne dust.
5. controlling the speed of circulated air, fast enough to provide freshness and slow enough to avoid drafts.
6. Exhausting odour laden air from rooms such as kitchens.
7. In densely occupied buildings of institutional types such as proposed projects, all of the foregoing amenities may be provided.

HEATING

The thermal transmittance [U-value] of a wall, roof or floor of a building is a measure of its ability to conduct heat out of the building, the greater the U-value, the heat loss through the building. Though there are different method or systems of heating, two major factors must be considered in arriving at a choice of a system. This factors are source of energy and method of distribution within the building. The choice of a fuel usually depends on what is available and economic factors. The main choices are

gas, oil, electricity, solar energy and waste heat recovery. Oil, coal, wood, some types of gas, and solar energy require building space for storage. Electricity is popular because of its great convenience of use. solar energy is the only renewable source in the list.

Since distribution system has a great effect on the architecture, it must be selected with care. Heat can be distributed in a building by air, water or electricity. For the purpose of this project, electricity heating system will use.

Electric Heating: Although there are many different types of electric heating devices, must use resistance heating elements to convert electricity directly into heat. The exception are "heat pump" and from the lighting system.

Figure 9.2.0a illustrates the general types of resistance heating devices that are available. A great advantage of all the devices shown is that they allow many heating zones to be easily established each room or part there of can be a separate zone.

The base board units heat by natural convection while the unit heaters have fans for force convection. Radiant heating is possible at three (3) different intensities. Because of their large areas, radiant floors and ceiling can operate rather low temperature [29 & 36^{0C} respectively]. Radiant panels on walls or ceilings must be hotter [about 45^{0C}] to compensate for their smaller areas. They will be use to increase the mean radiant temperature near large areas of glazing or other cold spots. High intensity infra-red lamps operate at over 1000^{0F} and therefore can be quite small. They look similar to fluorescent fixtures except that the linear quartz lamps glow red hot. These high intensity infra-red heaters do not heat air, only solid objects such as walls furniture and people. Since they do not heat the air, they will be used outdoors for purposes of such as keeping people warm in front of restaurants, theatres and multi-purpose hall.

Table 1 Internal surface resistance R_{si}

Building element	Surface emissivity*	Heat flow	$m^2\text{°C/W}$
Walls	High	Horizontal	0.123
	Low	Horizontal	0.304
Ceilings or roofs, flat or pitched	High	Upward	0.106
	Low	Upward	0.218
Floors	High	Downward	0.150
	Low	Downward	0.562

FIG 9.2.0a

With the aforementioned resistance heating devices, 1btu equivalent of electrical energy is converted into 1btu of heat. However, with a HEAT PUMP 1btu equivalent of electricity can yield as much as 3btu's of heat. The secret of this apparent "free lunch" is that electricity is not converted into heat, but is used instead to pump heat from outdoors into the indoors. Heat is extracted from the cold outdoor air and added to the warm indoor air. Thus in effect, the heat is pumped "uphill" which is what all refrigeration machines do. A HEAT PUMP, is a special air conditioner running in a reverse during the cold season or weather.

Although light are always a source of heat, they are no more efficient than resistance heating elements. There is a system, however, where the lightning can be efficiently used for heating. In a large office building [committee rooms] there is sizable interior zone that is lit only by electric lights and requires cooling even in Harmattan seasons. If the warm return air from the core is further heated by being returned through lighting fixtures, it will be warm enough to heat the per-metre area of the building.

COOLING

Cooling is not as intuitively clear and simple as heating. Cooling the removal of heat, can be better understood by means of water analogy. A building in a hot season is surrounded by heat trying to get in just as water tries to get into a sub-merged building. The water in the analogy is gained both through the envelope and also from internal sources. The natural tendency is for the water to flow into the building. Only by pumping it uphill can it be removed again.

In the same way, it is the natural tendency flow inward when the outdoor temperature is higher than indoor temperature. Only the machine that pumps heat, a refrigeration machine, can the heat be removed

COOLING SYSTEMS

To cool building, a refrigerating machine must pump heat from various rooms of a building into a heat sink. The heat sink is usually the outdoor air but can also be a body of water or even the ground (9.2.0b). Cooling systems vary mostly by the way heat is transferred from rooms to the refrigerating machine and from there to the heat sink [9.2.0c]. The choice of the heat transfer methods depends on the building type and size. Cooling systems are often classified by the fluids that are used to transfer the heat from the habitable spaces to the refrigeration machine. The four [4] major categories are direct refrigerant, all air, all water and combination air-water.

- a. All-Air Systems: Air is blown across the cold evaporator coil and then delivered by duct to the rooms that requires cooling [9.2.0d]. Air systems can effectively ventilate, filter and dehumidify air.
- b. All-Water Systems: The water is chilled by the evaporator coil and then delivered to fan-coil units in each space [fig. 9.2.0e]. Although the piping in the building takes very little space, the fan-coil units in each room do require some space, ventilation and dehumidification and filtering of air are possible but not as effective as with an air system.
- c. Combination Air-Water systems;- is a combination of the aforementioned systems in a and b [fig 9.2.0 f]. The bulk of the cooling is handled by the water and fan-cool units, while a small air system completes the cooling and ventilates, dehumidification and filters the air. Since most of the cooling is accomplished by the water system, the air ducts can be quite small.

To achieve the required cooling in the proposed project, the following considerations [rules] have been applied in the design and construction of the Centre,

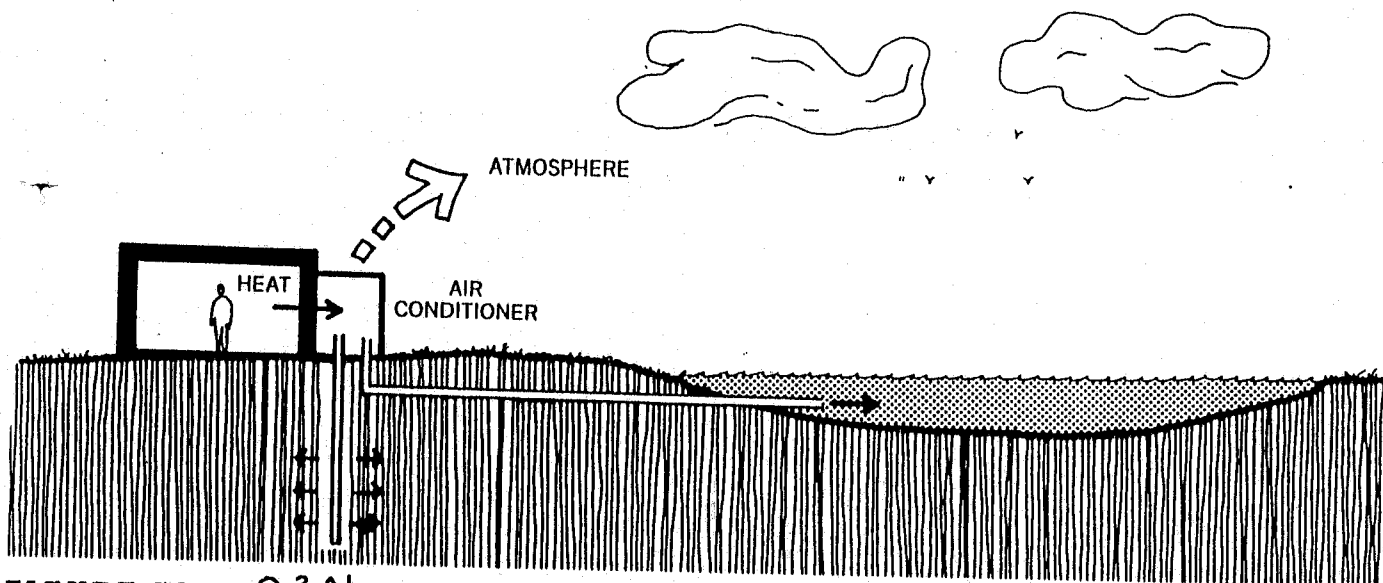


FIGURE 9-2.06
 Air, water, or the ground can act as the heat sink for a building's cooling system.

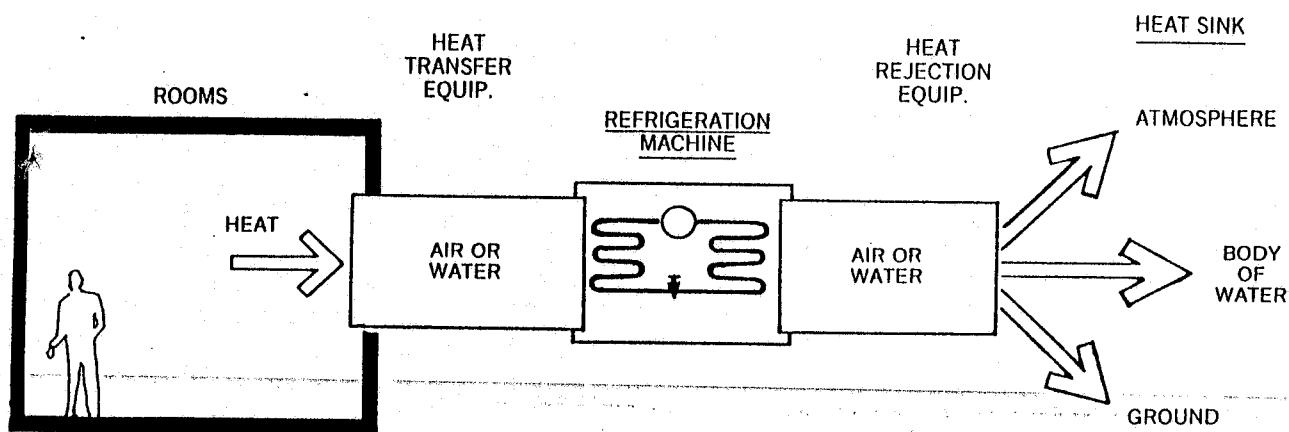


FIGURE 9-2.0C
 Cooling systems vary mainly in how heat is transferred to and from the refrigeration machine.

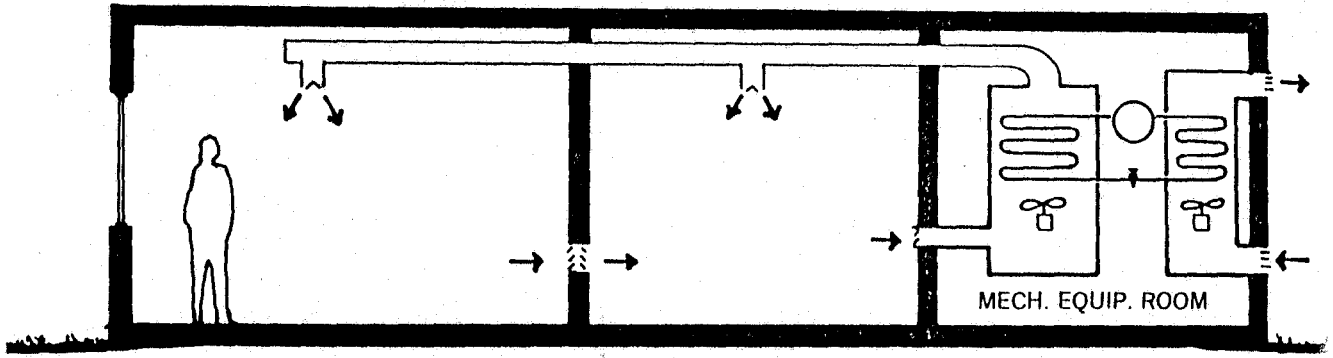


FIGURE 9.2.0d
Schematic diagram of an all-air system.

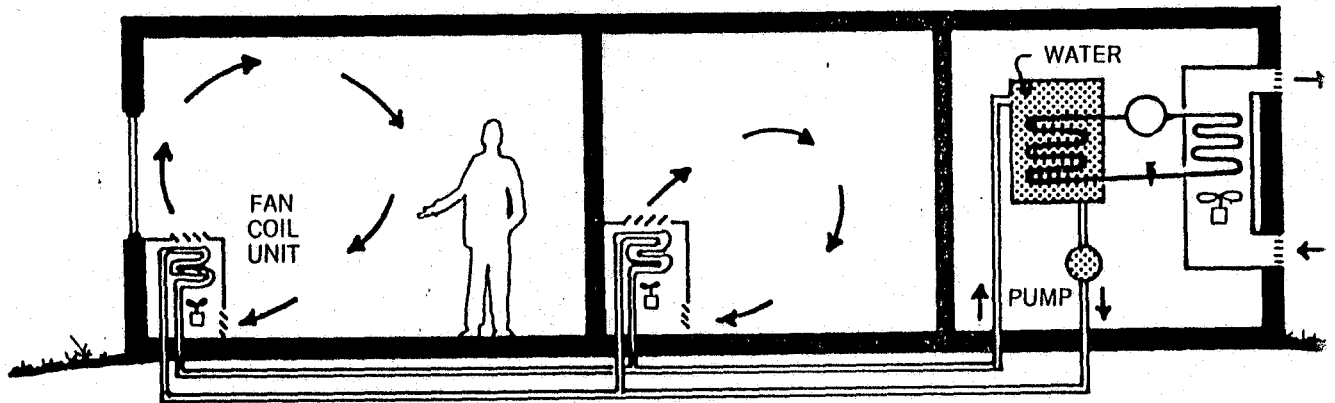


FIGURE 9.2.0e
Schematic diagram of an all-water system.

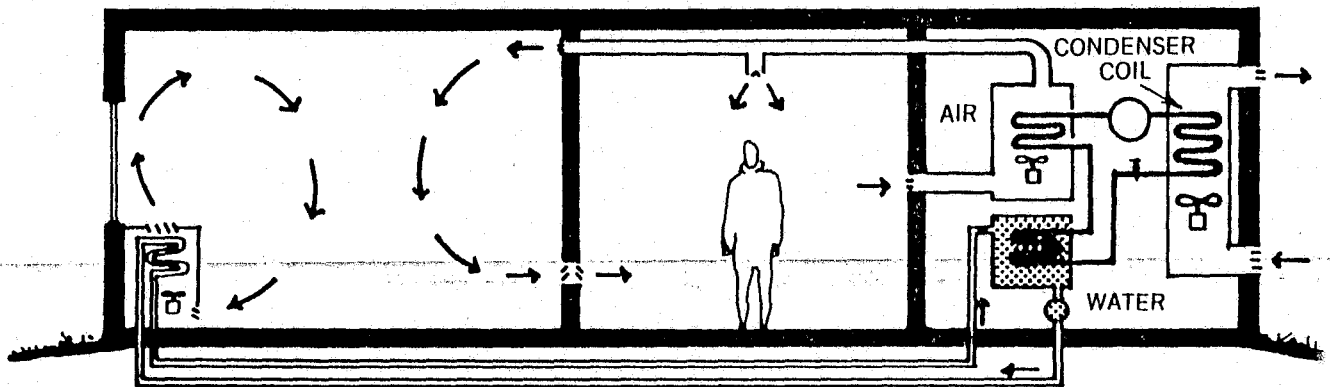


FIGURE 9.2.0f
Schematic diagram of an air-water system.

1. Windows and fans will be used ceilings or other indoor fans should be use during the day.
2. There is about 80 lb of mass for each square foot of floor area and the surface area is about twice the floor area.
3. The air flow at night most be directed over the mass to ensure good heat transfer.
4. Window area is between 10 & 15 % of the floor area.
5. To minimize heat gain, the wall and roofs should be well insulated and the outside surfaces should have light colours.

VENTILATION

The above topic have being discussed extensively in my area of research example "*effective air circulation [ventilation] in and around buildings*". We have two types of ventilation, the natural and artificial [mechanical].

Natural ventilation in buildings depends on wind pressure and stack effect or on both. But before going into details of explaining ventilation types, let us understand why we ventilate buildings.

The reason for ventilating a space with air are:

1. Oxygen needed for human life process.
2. The air act as a dilutant, the amount of air required depends on the permissible contaminant level for the room.
3. Ventilation promote and direct air movement in the space, this being one of the environmental comfort factors.
4. Control air borne contamination.

Thermal comfort is define as that condition of a mind which express satisfaction with the thermal environment. Air passing over the skin create a physiological cooling effect that can create thermal comfort when the air

temperature is some what above the normal comfort zone.

The basic human requirement for fresh air in order to gain an adequate supply of oxygen is well known. In buildings however, this never forms a standard of ventilation since there will be acute discomfort long before any danger.

The principal factors which trouble ventilation rate in various circumstances and provide criteria for the performance for ventilation systems are;

1. Air movement.
2. Body odour.
3. fumes, smells and products of combustion.
4. Bacteria.
5. Excessive heat.

In modern building there is an increase of cases where natural ventilation does not give satisfactory condition and mechanical ventilation will be required. The major situation which calls for the use of mechanical ventilation are;

1. Internal rooms.
2. Large closely populated rooms.
3. Where natural ventilation is impossible.
4. Where extraction fumes and smells is required.
5. In tall buildings where wind and stack effect will render natural ventilation ineffective.

Most large institutional buildings use highly centralized Air Conditioning equipment. The roof and basement are the usual choice for this central station systems. The basement has the advantage of easy utility

connections, noise isolation and the fact that structural loads are not a problem, therefore the purpose of this project all equipment will be placed in the basement because of the aforementioned advantages.

9.3.0 WATER SUPPLY

An adequate supply of water is a basic requirement for most buildings for reasons of personal hygiene or for activities such as cooking, washing and gardening. In most areas a pipe supply of water is available from a public water board main supply system. The water authority by a system of screening, sedimentation filtration, chlorination, aeration and fluoridation makes the water fit for human consumption before allowing it to enter the mains.

The water boards mains are laid underground at a depth where they will be unaffected by traffic movement. The layout of the system is generally a circuit with trunk mains feeding a grid subsidiary mains for distribution to specific areas or districts.

The National Youth Centre, Abuja will have its water supply from Jabi Dam which will be supplied by Abuja Water and Sanitation Board.

COLD WATER SUPPLY:

The Abuja Water and Sanitation Board will provide from their mains tapping plug cock a communication pipe to a stop valve and protection chamber just outside the boundary. The goose neck bend is included to relieve any stress likely to be exerted on the mains connection.

Care must be taken when laying a service pipe that it is not placed in a position where it can be adversely affected by heavy traffic or building loads. A minimum depth of 750mm is generally recommended for supplies to domestic properties while institutional buildings should be about 900mm.

In designing a Youth Centre it is imperative to include the provision of hot and cold water services which will go a long way in attaining a high sanitary standard of the whole centre. In the supply of the hot water system, it is convenient to consider extending it to provide hot water central heating.

Before choosing a particular type of hot water system, criteria other than the physical design and performance of the system must be considered. It is imperative to note here that the initial objective is to produce hot water, it must be known that it is intended in the future to extend the system to include space heating.

CHOICE OF SYSTEM

In a direct system [fig. 9.3.0a], hot water circulating between the boiler and the storage tank or cylinder is drawn off as required for domestic use and replaced by fresh, cold water, feed directly into the same circuit.

In an indirect system [fig. 9.3.0b], hot water also circulate between the boiler and storage vessels, but the storage vessels is so designed that the hot water in primary circuit from the boiler is used only to raise the temperature of the stored water, it does not mix with nor is it drawn off for domestic use. Hot water for domestic use is drawn from the secondary side of the system and is replaced by cold water feed into secondary circuit. Apart from replacement of water lost by expansion, the same water circulate continuously in a primary circuit.

Other alternative source of water supply in case of storage will be from the bore-hole which will powered by a pumping machine and can also be operated manually.

9.4.0 REFUSE DISPOSAL

There is a well defined chain of events in the refuse system:

Generation -storage - on site treatment - collection - intermediate processing - disposal. The design of a refuse handling system involves selecting for each of these links a solution that is compatible with the neighbouring an acceptable to the parties involve waste producer [National Youth Centre], the disposal contractor [Abuja Environmental Protection Board].

The major composition of refuse at the centre will include paper, leather, plastics, food and grass. The use of compactors will be necessary and vehicle suitable for sack and bin collections will be well equipped with auxiliary lifting devices for emptying pact containers and incinerators to burn some of unwanted refuse.

The main areas where refuse will be generated will be from the restaurant, shopping mall and business centre. The existing collection method is the use of plastic bin which will be picked by the vehicle of AEPB at weekly intervals or frequent collection by the board.

Refuse containers must be kept clean. It is recommended by the board monthly cleanly, an ideal rarely attained. Disposal containers over come this problem. Adequate access for collectors and vehicles is essential. The board recommends that collectors should not be required to carry dust bins for more than 20 m. the vehicle should have enough room to maneuver and considerable head room, this is important because the containers will be sited within the building.

9.5.0 ACOUSTICS

The acoustical environment in and around the building is influenced by numerous inter-related and interdependent factors and interdependent factors associated with the building planning-design-construction from the outset of any building development, the selection of the site, at location of building on the site, and even the arrangement of spaces within the building

can and often does, influence the extent of the acoustical problems involved. The materials and construction element that shape the finished spaces will also determine how sounds will be perceived in that space as well as how they will be transmitted to the adjacent spaces. The architect, the engineer, the building technologist and the constructor all play a part in the control of the acoustical environment.

In the proposed National Youth Centre, the need for special attention to acoustics is obvious in a concert auditorium or library towards promoting safe and comfortable working environment.

Every building acoustics consideration can be thought of as a system of sources, paths and receivers of sounds. Even from the most complex problems can be broken down into one or more sources to be studied along with the paths over which the sound will be transmitted to the eventual receptors of the sound. Naturally, the building design and technology has most influence on the transmission paths.

For the most part, effective control of the acoustical throughout the listening space without long delayed discrete reflections [echo], focused reflections, repetitive [flutter echoes], or other undesirable colouration of the original source. Here, there will be the application of absorbent materials for the surface at the rear walls. Also, the ceilings and seats should be treated absorptive materials.

In the design of the centre especially where great acoustics is required, high ceiling heights have been avoided so that delays between reflected and direct sound can also be eliminated. In the theatres, raking have been introduced, 10cm clearance of line of vision over head of people in front. For large audience such as may be expected of a youth centre one will discover that the distance from the speaker to the farthest person has become so large so there is the need for the introduction of balconies within

the room. The introduced balcony is high enough to avoid creating shadow for people at the ear.

9.6.0 FIRE SAFETY

Fire in buildings are nearly always man-made that is resulting from error or negligence. With the development habitations, attitudes to fire protection / fire precautions also developed sometimes subtly, but mostly from bitter experience.

The principle aim of fire precaution are simply to safe-guard life and property and are achieved by:

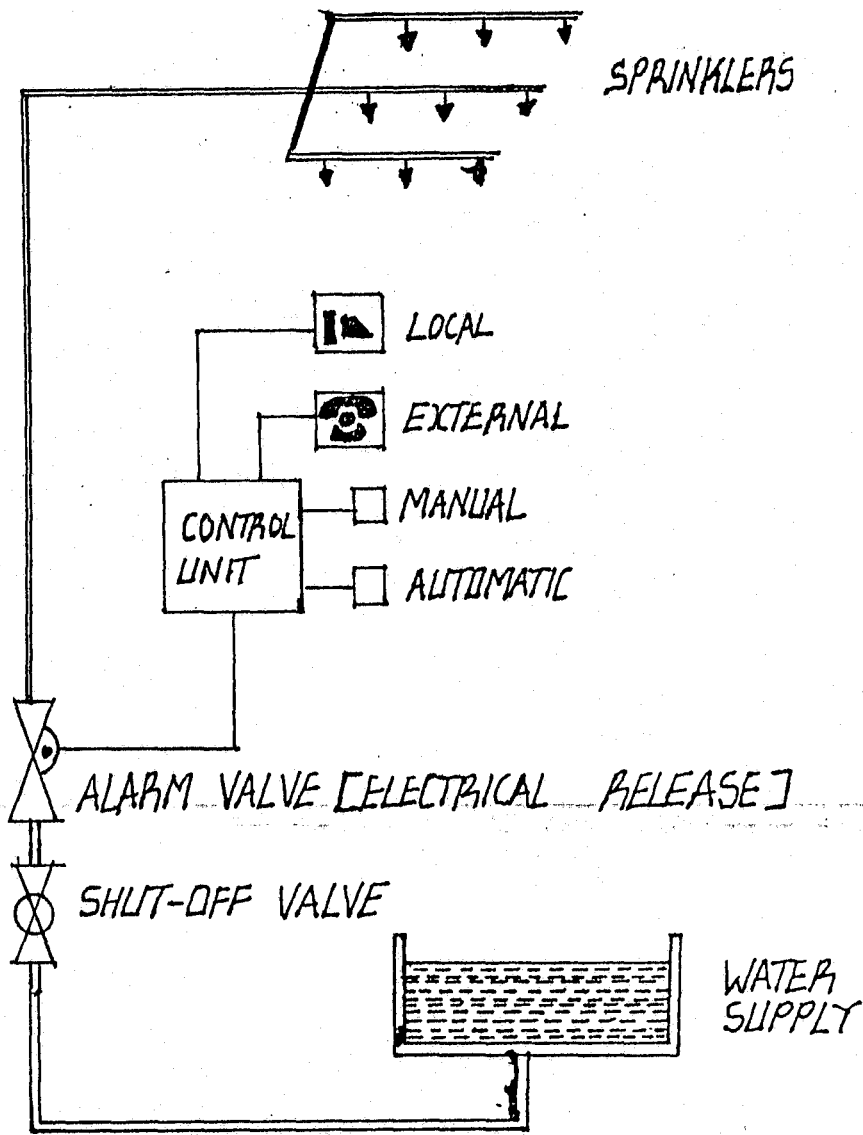
1. Reducing fire incidence.
2. Controlling fire propagation and spread
3. Providing adequate means of escape for occupants of buildings.

In any fire out break, the early detection and successful extinguishment of combustion process is highly desirable. There are many practical ways by which this can be achieved all really centered on the reduction of the flame temperature.

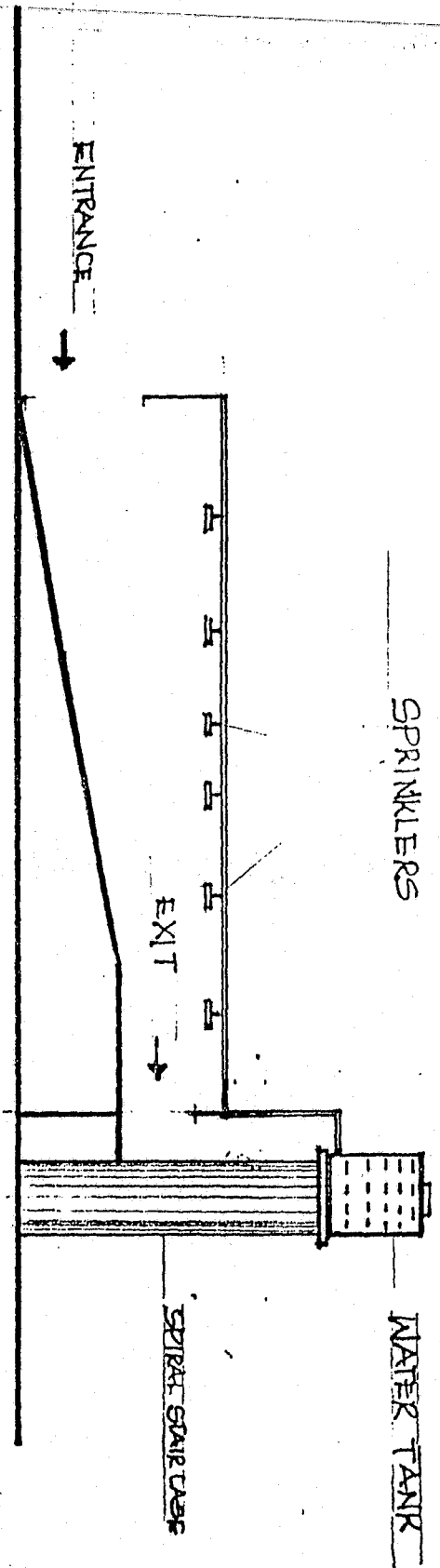
One of the most extinguishing mechanism is water. When water is spread on to the flame of a burning material the water evaporates and so extracts heat from the combustion zone [fig. 9.6.0a]. If as result of this, the temperature T falls below the lowest allowable adiabatic flame temperature the combustion will terminate. The amount or the rate of water needed to achieve this can be estimated using the fire point model [fig. 9.6.0b].

A sprinkler is usually capable of delivering at a rate of $80\text{gm}^{-2}\text{s}^{-1}$ to a fire below its head and this flow rate should be sufficient to cope with most fire situation.

Another process in extinguishing fire is by reducing the Oxygen content available within a room so that combustion can not be supported. Some



DELUGE SYSTEM.



TYPICAL THEATRE | CINEMA SHOWING WATER TANK AND SPRINKLER SYSTEM

other processes include Kalon and Powder, are based on the chemical \ physical inhibitor process which breaks the chain reactions essential to the combustion process.

In trying to protect the built up area from fire outbreak, the ideal thin to do is install fire detectors which is not solely to detect fire but to discriminate reliably between the absence and presence of a fire. The three [3] main categories of fire detectors are:

1. Heat detectors [point and line type].
2. Smoke detectors.
3. Flame detectors.

For the purpose of these project, the passive measures to protect the building against fire outbreak will be the use of fire point and detectors to help manage it which will be located at strategic points and also fire extinguishers. The rapid extinguishing of an unwanted fire is absolutely necessary in modern society. That is why the center is connected to the fire Brigade office with the aid of Computers. Man discovered fire by accident and probably at the same time discovered also a method of extinguishing it.

9.7.0 NOISE CONTROL

The reasons of studying acoustic is that one should be equipped with answers to questions as how can we make a place less noisy that is, it help us to deal with control of noise.

Noise control can be broadly divided into 3 parts that is source, sound path and receiver. Noise control should be by design because prevention is better than cure. In the design of the centre, attention has been given to the following stages;

1. Planning stage.

2. Schedule design stage.
3. Detail design and supervision.

The planning stage, the selection criteria of the site was of paramount important and a 24 hour noise pattern of the site [Jabi] was taken. The news sources also been identified which are vehicular propagated by wind.

And of course where there is need for limited noise such as library and hostel accommodation have been located away from the source.

At the scheme design stage, choice of materials was given due considerations such as sound absorbing materials, double glazing and use of sound [acoustic] proof doors where necessary. Also given consideration were mechanical devices and installations such as ventilation and lighting schemes.

At the detail design stage, external noise have been kept to the minimum by ensuring that openings are limited toward external noise. Direct access to external noise source have also been avoided.

In applying all the above principles, care has been taken to ensure that we do not have too quiet a situation.

9.8.0 SECURITY

Security is a very important aspect of any public building. We can not have peaceful environment and good social order if the security is poor. In trying to make the security in the National Youth Centre, adequate youth will be employed as security guards and the entrances and exits into the complex will be well guarded. The external lightning has to be good to avoid dark recesses at night.

In providing security to the Centre, unnecessary harassment of the youths by the guards has to be limited to avoid making it look like a Security Complex. The youth will be free to move around and do as they please as long as the security of the Centre is not put in jeopardy.

9.9.0 COMMUNITY

The dreams and aspirations of every community is to developed socially, politically and economically. The Jabu community where the Centre is situated, is a peace loving community and thereby making the Centre easy to administer. But most importantly, the community will be better for it. Because there people will be employ to carry out certain functions [skilled and unskilled] within the Centre. They can work in areas such as cleaning, maintenance, security, restaurant and even as administrative staff.

9.10.0 MAINTENANCE

A maintenance is within the Centre to handle the day today maintenance of the whole Centre. The facilities and the materials used for the Centre are such that they will be easy to maintain. They include glasses, floor tiles, tile walls and even the roofing method. Every point within the Centre has been given a detail construction to make the maintenance easy.

9.11.0 AESTHETIC AND GENERAL APPRAISAL

Basically, all architecture is concern with is the enclosure of space for human use but it requires good planning because it guide users or visitors to his destination in the structure and impress him, perhaps sub-consciously, by visibly relating the several units of the edifice. Further more, the structure must be well built, it should have such a permanence as the purpose of which it is intended demands.

It is also imperative that the structure must do more than meet the physical requirement of strength and spaces, it must also make the spirit of man [Youth] content. The building form an aesthetic unity to which the several parts contribute. Thus, the sides and rear of the building should bear sufficient correspondence to the approach to make them all related part of a

single whole. The major internal divisions too, requires some expression in the external design. A structure calls for good proportions - pleasing relationship of voids to solid of height to width, of length to breath. In essence of balance and rhythm.

The provision of extensive open spaces, fields and green lawns is to be meticulously preserve and emphasized by letting the shell reads clearly, by revealing enclosing numbers and planes by incurving, by belling out the sides, by the use of recessive colours and forms by terracing or sloping down into and up out of base, by a water basin or fountain or reflective pool and thus making the whole Centre more beautiful.

There are courtyards open to the sky, has the obvious advantage of flooding sunlight, shadow patterns, aviness sky colours and the beauty of moving clouds. The courtyard concept was employed so as not to waste the precious yard of azure blue, one glorious burst of sunshine, one puff of well come breeze that can be caught and made to animate, illuminate or aerate this outdoor volume. The above effect in National Youth Centre, I believe will have therapeutic effects on the mind of youth. An interesting beautiful view is therefore very important characteristics that such a facility should posses.

The building create an impression of openness and transparency. The organic forms and users involvement will make the Centre a social and environmentally responsive haven for learning. It provide refreshment and repose and it is lyrical adornment to its surroundings. Illuminated at night, especially the glazed approach, the ethereal quality of the structure is clear.

The design conception for these Centre emphasizes the peace, security, freedom and adventure that exist within its walls. There is similarity in the elevations with all of them having celebrated and pleasant entrances. The forms used create a sense of confidence and excitement. The design of the

Centre was hinged in its simplicity, in circulation, functionality, zoning and integration with the users.

The materials used in the construction of the building were carefully chosen for their strength, durability, cost, easy maintenance and aesthetic value. Finally, all the basic standards regarding the site, its location, layout, services and functions have being weighed and considerations given to the youths to evolve a balanced, pleasant, academic - environmental for their comfort.

GENERAL APPRAISAL

The main objective of the proposed National Youth Centre, Abuja is to provide a constructive avenue where the hopes and aspirations of Nigerian youth can be fully or partially realized. This proposal, through its concept and philosophy and in attempting to fulfil its outline goals, aims and objectives has worked at creating a Centre for the youth that will provide for them an avenue for learning new skills, handcraft and interacting. A place where they can be independent and compete favourably with their counterparts in the outside world such as Common Wealth Youth Association and World Assembly of Youths. The youth conjure up pictures and their heart desire good things of life, a conducive environment have to be created in attaining this dream.

CONCLUSION

It is believed and hoped that projects of this nature will go along way in opening new frontiers to more development services in Nigeria so that we can have not only the economic benefit, but rather because of an increasing conviction on the part of citizenry, that there is equality of opportunity to participation in the benefit and responsibilities of the nation is the inherent right of all citizens whether young, old or middle aged.

These edifice will be a place or avenue where youths will map out strategies and programmes that government will implement in developmental policies for the youths of this great nation.

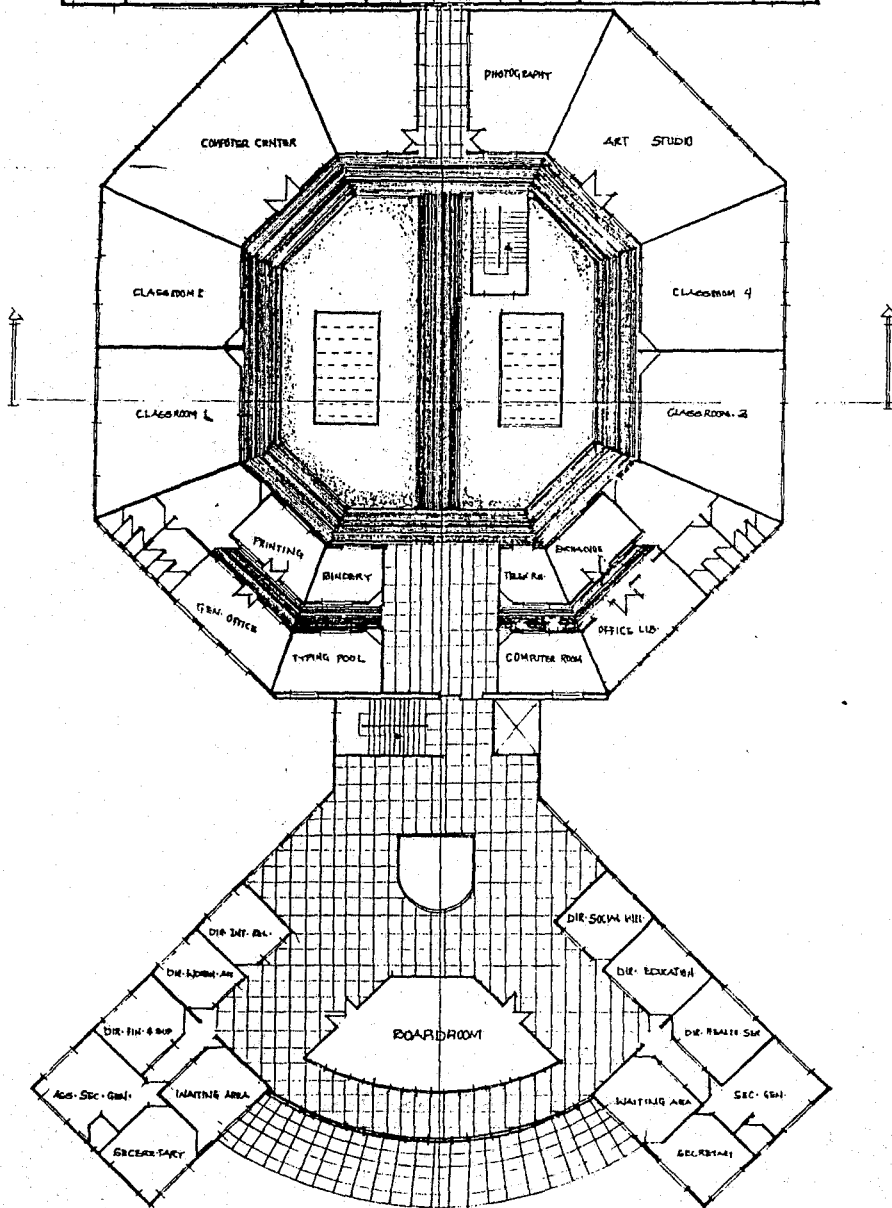
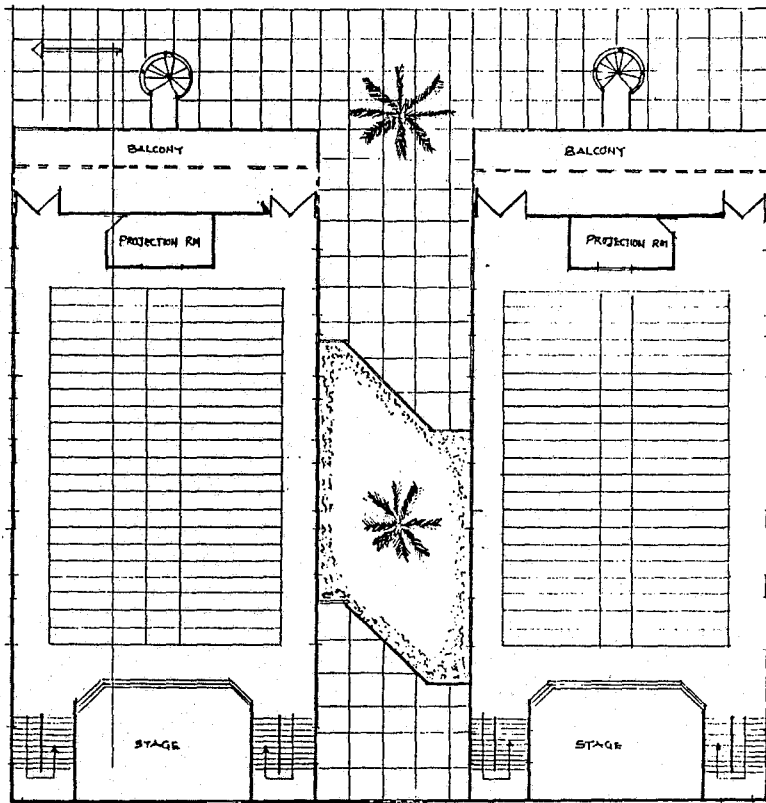
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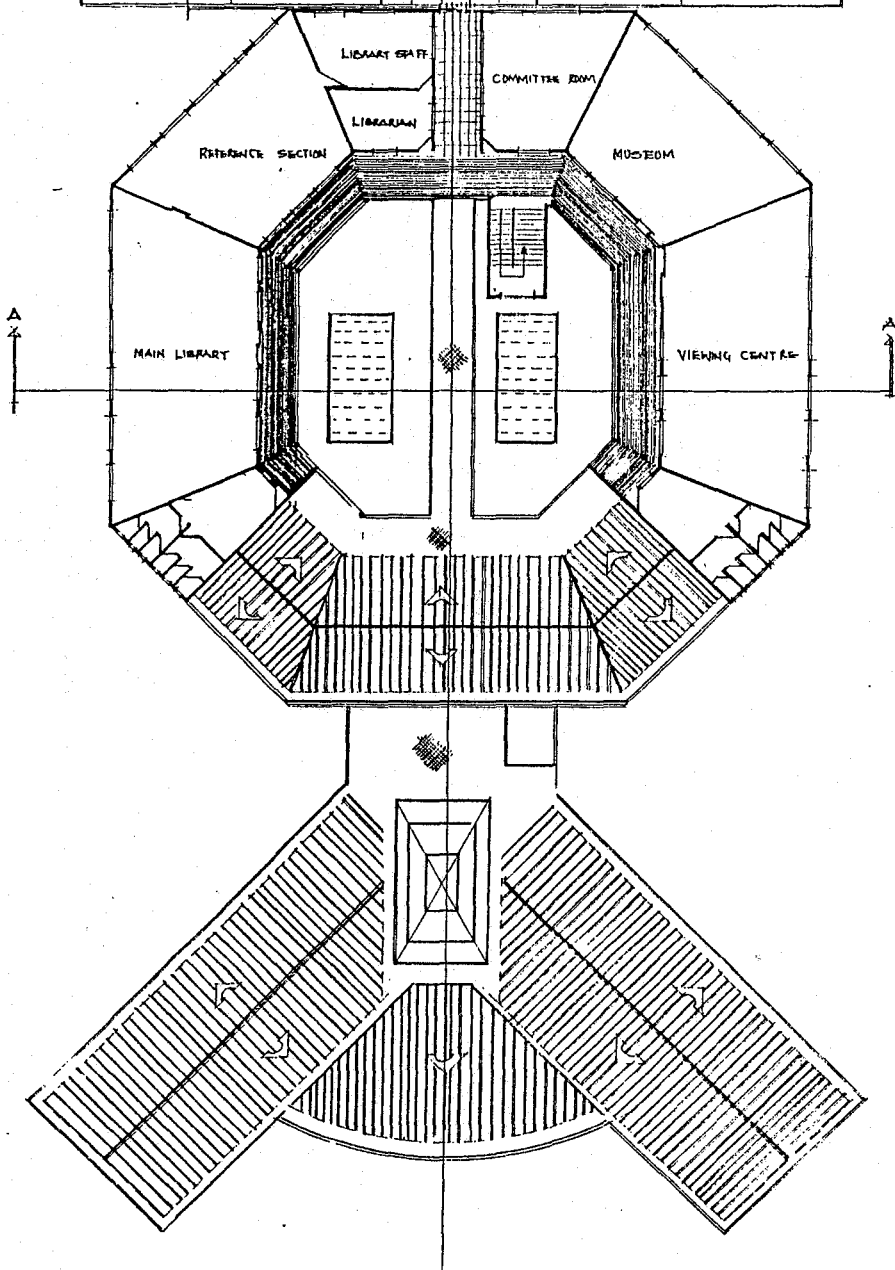
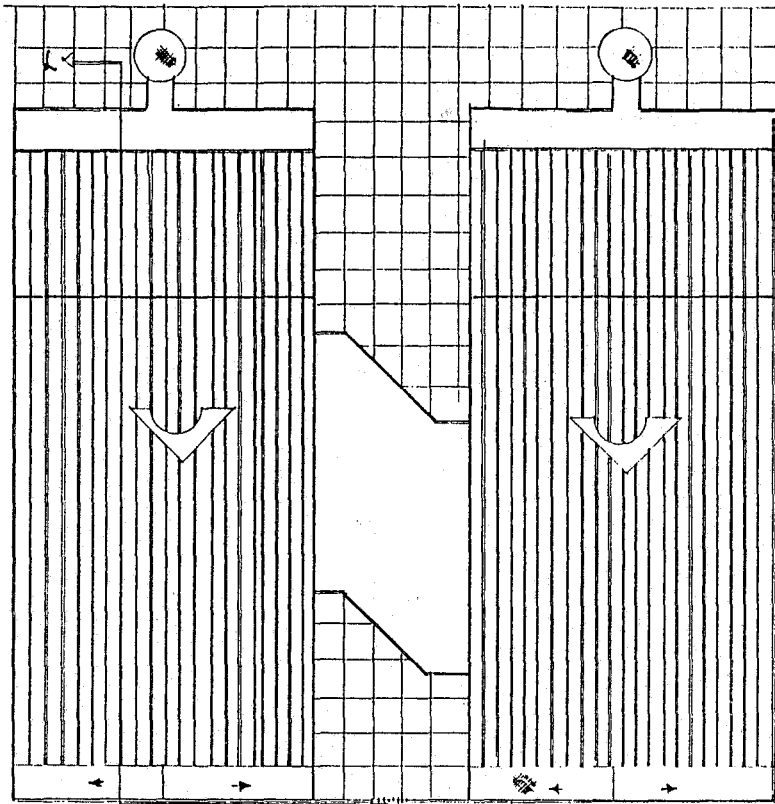
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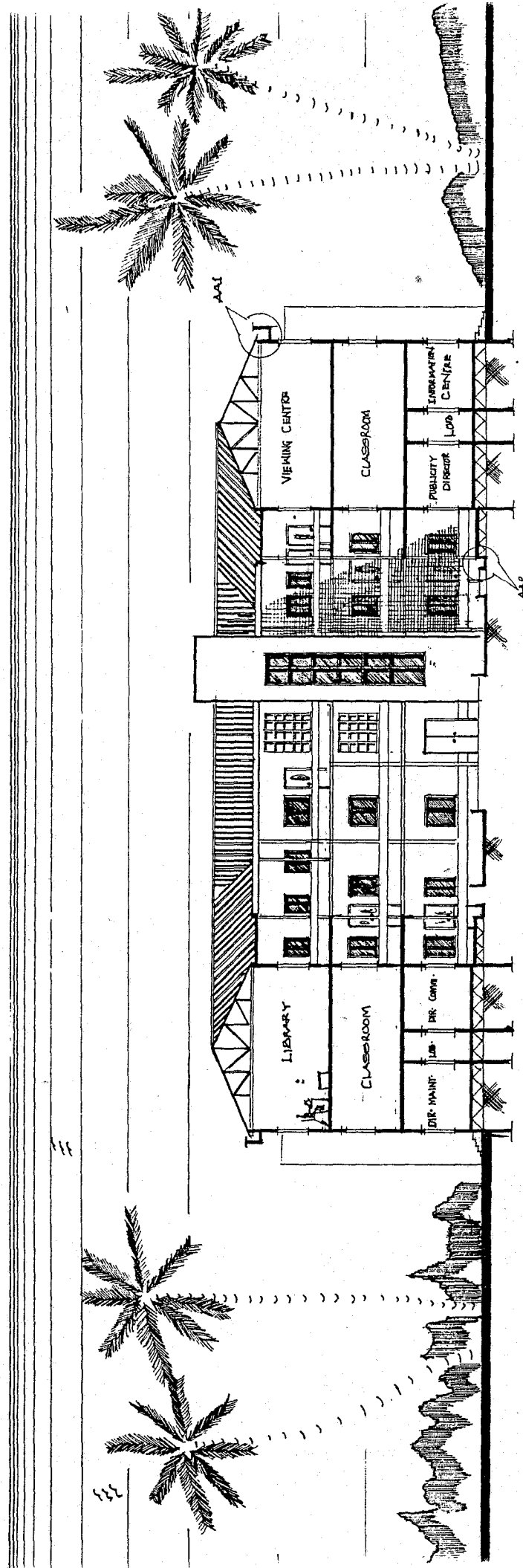
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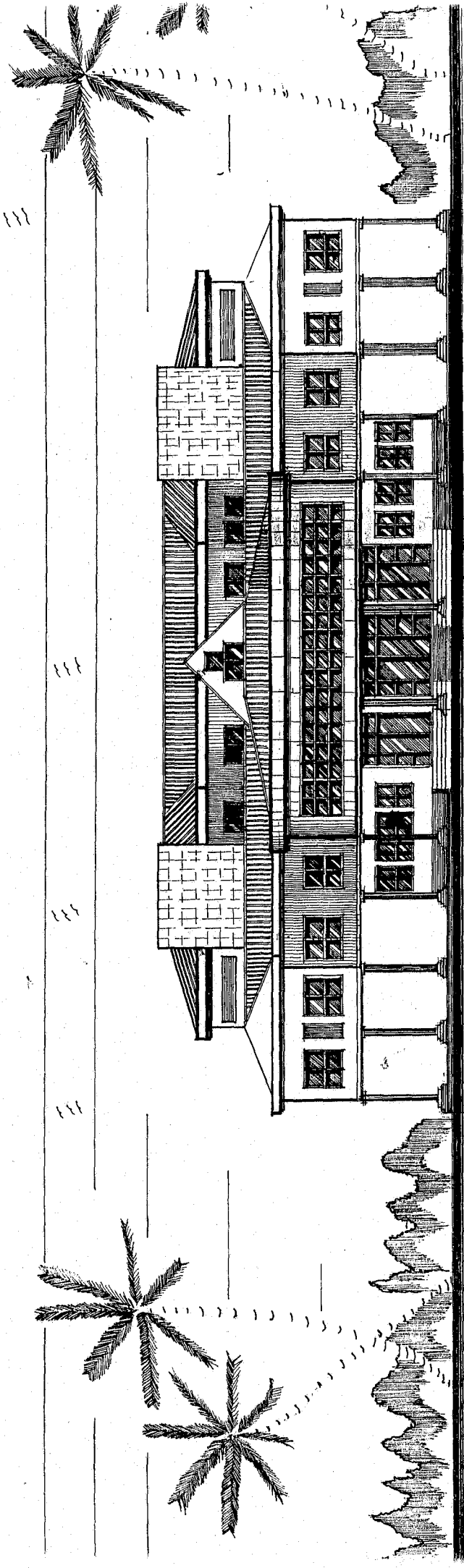
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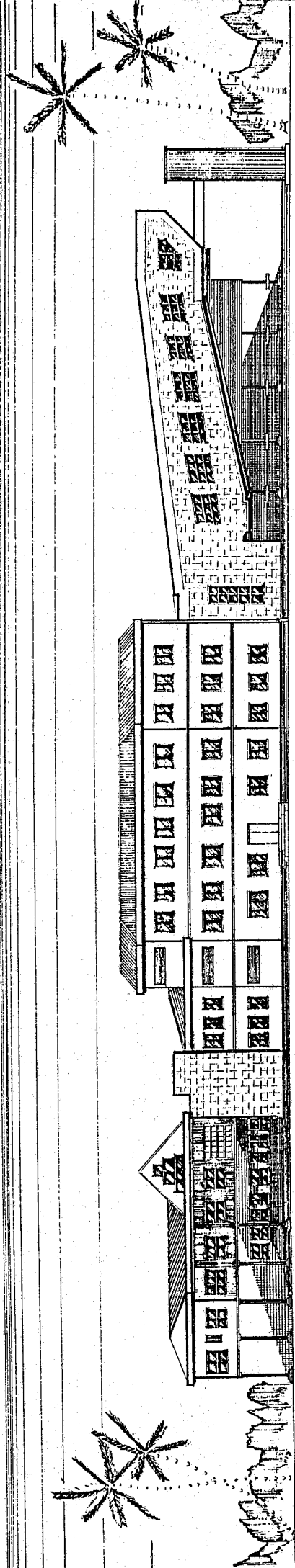




SECTION A-A



APPROACH ELEVATION

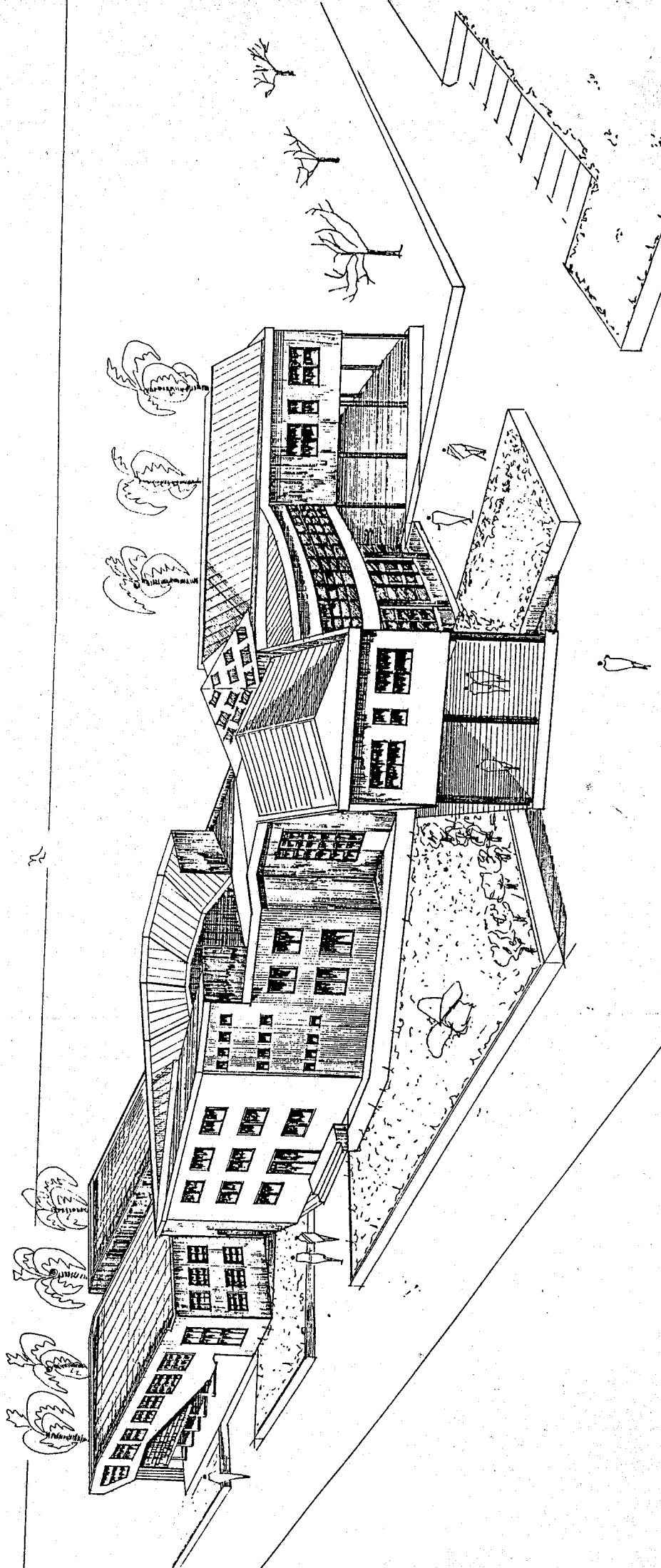


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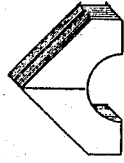
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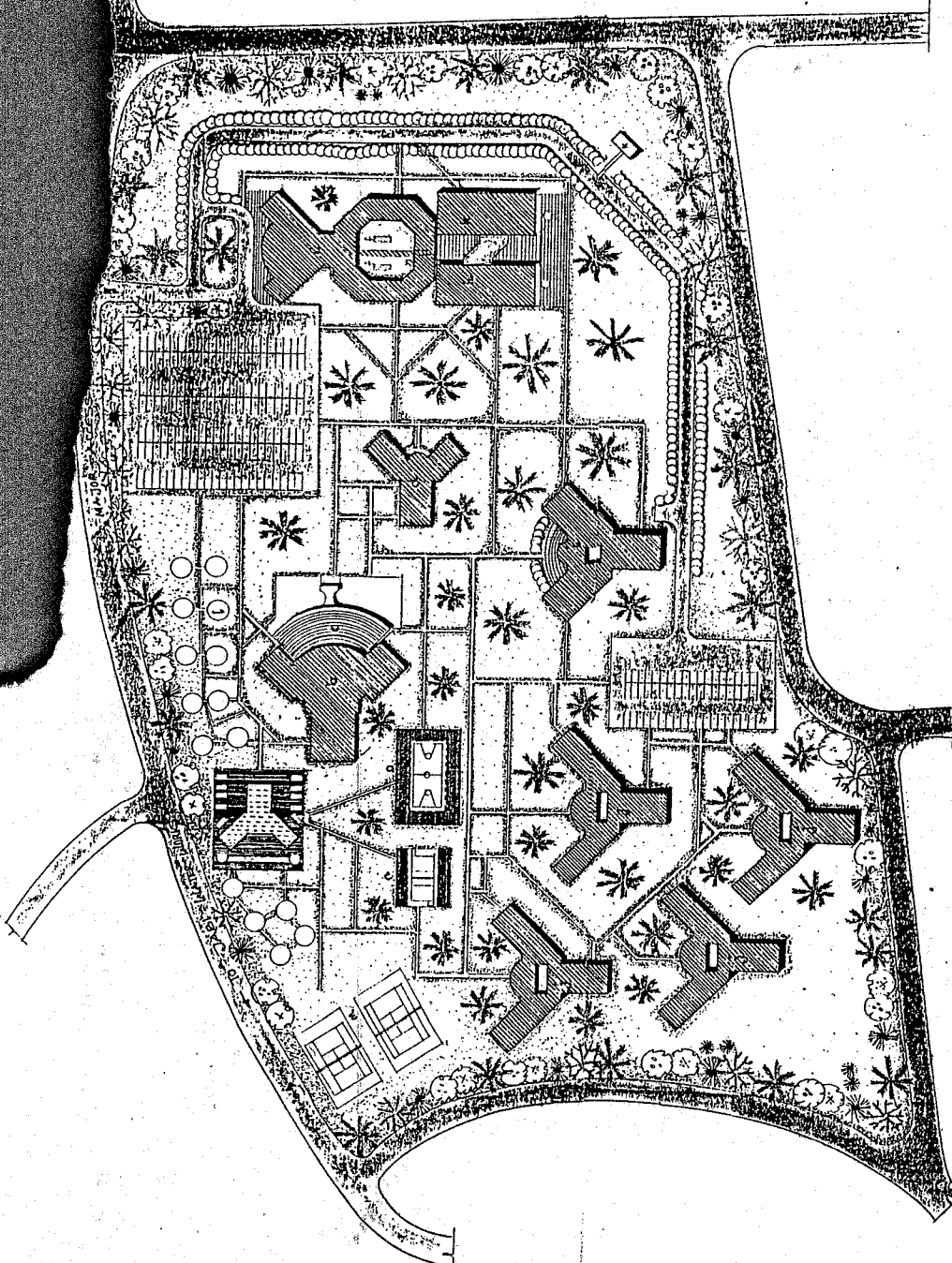


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LEGEND

A	Swimming Pool
B	Multi-Purpose Hall
C	Amphitheatre
D	Art Gallery
E	Administrative
F	Entrance
G	Stalls
H	Assembly Hall
I	Library
J	Workshop
K	Office
L	Workshop
M	Workshop
N	Workshop
O	Workshop
P	Workshop
Q	Workshop
R	Workshop
S	Workshop
T	Workshop
U	Workshop
V	Workshop
W	Workshop
X	Workshop
Y	Workshop
Z	Workshop



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NATIONAL YOUTH CENTRE
 ABUJA

AN. TECH. THESIS

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