DESIGN PROPOSAL FOR THE NATIONAL LIBRARY, GUSAU, NIGERIA WITH EMPHASIS ON NATURAL LIGHTING IN LIBRARY.

BY

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AUGUST 2003.

CERTIFICATION

THIS IS TO CERTIFY THAT THIS THESIS TITLED **THE NATIONAL LIBRARY,** GUSAU, NIGERIA, IS AN ORIGINAL WORK UNDERTAKEN BY **MOHAMMED. A. N.** OF THE DEPARTMENT OF ARCHITECTURE, POST GRADUATE SCHOOL, FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE ARCHITECTURE AND IS APPROVED FOR ITS CONTRIBUTION TO KNOWLEDGE AND LITERARY PRESENTATION.

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I **MOHAMMED ADEBAYO NASIRU** HEREBY DECLARES THAT THIS THESIS TITLED THE **NATIONAL LIBRARY**, GUSAU, NIGERIA. IS AN ORIGINAL PRODUCT OF MY RESEARCH WORK UNDER THE SUPERVISION OF **ARC. J. U. ANIYA**.

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DEDICATION

This thesis is sincerely dedicated to the memory of my beloved friend, late Arc. Eyitayo Omoniyi Shode. We started this journey together hopeful of B.Tech/M-tech, but Allah knows better.

BYE FOREVER.

a. Sometime we wonder, what it means, when we loose someone so dear.

b. If only we could say those farewell words again.

c. If only your nose could help your beautiful glasses again.

d. We kept our ears close to your voice like they are to our pillows wanting to be sure if only we could meet again

e. TAYO, we missed your charming, lovely and kind embrace for all, you are one in a million. You shall ever remain the memory of our histories.

f. We miss you so much.

ADIEU dear friend, may your gentle soul rest in PEACE.

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ABSRACT

Libraries form a vital part of the world system of communication an education. They make available through books, film recording and other media, knowledge that has been accumulated through the ages. So, library as an institution is not only vital in the development of the individual, but is strategic for national development. The thesis looks into the National library, which belongs to the largest category of libraries. Then, the present state of which new ideas and scientific break through have become more frequent, in the technology of information acquisition, storage and dissemination due to the worldwide computerization process.

The thesis therefore concludes that the planning process for any structure depends upon three elements: the aesthetic, the functional and the elements of building components, any omission of one from the others in the various stages can cause a break down in usability.

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CHAPTER 1

1.0 INTRODUCTION

Different groups of people use libraries teachers and students, youngsters and the elderly, police and politician, each group, each person has different library needs. Library can take care of all needs of individuals irrespective of their discipline or profession or chosen career.

It is generally accepted that the library is an active participant in teaching and learning programme at all levels. Without libraries, advancement will be slow or impossible knowledge will be limited. Knowledge itself cannot be created, it is only discovered or uncovered. The difference between people and Nations is in their access to vital information. Knowledge is power; it serves as the backbone to any technological revolution. Libraries form a vital part of the world's systems of communication and education. They make available through books, recordings, films, and other media, knowledge that has been accumulated through the ages. Every body depends on information to be effective at their work. (Shores, 1966).

Library is the principal means where by the records of man's thoughts, ideals and the expression of his reactive imagination is made freely available

to all. An individual book, scroll, or codex is a powerful thing in itself, but its full potency can be achieved only when it is a part of a well-selected aggregate of books. So, a library of a thousand books brought together servers a function different from and far greater than any that can be served by a thousand volumes in separate places. Books endure, as works of man do not speak only from one man to another, from one culture to another, but from one generation, one age to another. (Bassenet New York 1970).

Therefore, the library as an institution is not only vital in the development of the individual, but is strategic for national development. Indeed, all people in all walks of life have used library, this is a sure sign that libraries are becoming recognised as a major force in the information age is the attention they are beginning to receive in the non-library press. The public library of this kind is a practical demonstration of democracy's faith in universal education as a continuing and lifelong process, in the appreciation of the achievement of humanity in knowledge and culture. As earlier on stated, is the principal means whereby the record of man's thoughts and ideals, and the expression of his creative imagination, are made freely available to all. So, the National Library, for Zamfara State are in the categories of public libraries financed directly by the Federal government of Nigeria and range

from large art and science library of international standing to "popular" services provided nationally.

This project will be design to operate with the materials and techniques if the future rather than of the past. Libraries have always been associated with books and it is certainly with printed books (and periodicals) that the vast majority of libraries will continue to be concerned for very many years. The coming of micro forms into libraries on a large scale (in the 1940s in Great Britain) added a new dimension and this has been increased by the arrival into normal library stock of film, audio disc, audio tape and video tape. With the current advancement in technology of information acquisition, storage and dissemination due to the large world wide computerisation process leaves one with no choice but to have a National library for the state that can adapt to these changes, serve as a national Bibliographic centre and serve as a legal deposit and for the exchange of books, house government publications, periodicals, Newspapers, seminar paper, journals e.t.c.

Much, the most important machine looming over libraries at present is the computer, so, the proposed library will be computerised, which relieve people of routine work in many fields; it can eliminate card catalogues, stock

records and present issue methods in most libraries. The future contribution of the microfilm is more likely to be an active than an archival one. Computer output microform can open completely new fields; it may be that the National Library Headquarter, as a central, will hold vast quantities of micro forms and that each will be swiftly retrievably at a terminal in any of the satellite libraries like the proposed project. (Stated Kemeny John G. 1962).

This project is significant because there is no standard library in the state capital of Zamfara as of the present. The library, which is a collection of recorded communications organised and processed for easy retrieval and use by the public, will serve as a base for new discoveries and research.

AIMS OF STUDY

The project entitle National Library - Gusau is basically aimed at enhancing the conducive reading environment, as well as serve as a national Bibliographic centre of the people of the state.

Others aims include:-

(a) Design an aesthetically library that can be appealing and accessible to all.

(b) To design a satisfactory library building that can accommodate the current and future functional requirements in the new trend of library services.

(c) A place to aid in finding solution to research problems.

OBJECTIVES

(a) Provide access to large volume of printed information by the use of computerisation.

(b) Be a place of study, reflection, and contemplation.

(c) Provide for group, study, group access to technology, and a gathering place for the exchange of ideas.

(d) Provide special reference phones system services where with telephone, you can receive information in your home or office

1.2 RESEARCH METHODOLOGY

The following research methods and procedures are employed in the projects.

- Visits to existing similar projects
- Direct interviews and enquiries
- Consultation of maps, journals, books newspapers and periodicals.

1.3 SCOPE OF STUDY

Fundamentally a library is not a building but a service organisation, the scope covers five major functions:-

A) MAIN SERVICES

B) ADMINISTRATIVE SERVICES

C) GENERAL SERVICES

D) TECHNICAL SERVICES

E) AUXILLIARY SERVICES

A) FOR MAIN SERVICE

- Entrance hall
- Control and enquiry
- Readers storage unit
- Exhibition hall
- Lending and receiving counters
- Catalogues
- Browsing Unit
- Newspaper and periodicals reading unit
- Audio visual

- General reading unit
- Bibliographical
- Reserves section
- Special reference section
- Bookshop
- Typing/photocopy shop
- Conference/board room.
- Mini lecture room.

B) **ADMINISTRATIVE SERVICES**

- Director of Library services and secretary
- Ass - director and secretary.
- Reference, circulation, cataloguing and serial office
- Serial office
- Finance and personnel officers office
- Staff Area
- Book processing area with storage facilities.
- Lavatories.

C) **GENERAL SERVICES**

- Portal agency/telephone office
- Typing and Photostatting
- Bookshops
- Lavatories

D) **TECHNICAL SERVICES**

- Binding unit
- Acquisition
- Collection and Development
- Typing pool
- Computer section

E) **AUXILLIARY SERVICES**

- Snack bars
- Loading and off loading bay
- Exhibition hall/Archives.
- Books and materials studies
- Books and materials storage.

1.4 IMPORTANCE OF STUDY

Sequel to the government's possible and untiring effort's to bridge the gap between the literate and the illiterate members of the country, hence the mass literacy drive compaign by the federal government, Zamfara as one of the newly created state of the federation deserves a Library, not just a library, but a National library which is a public kind of library to promote enlightened citizenship and enrich personal life in term of knowledge.

1.5 DEFINITION OF TERMS

NATIONAL:- Is an organisation having local units throughout a nation. The National Library's branches in every state of the Federation is maintained by government to serve the needs of government bodies and citizens of the nation as a whole.

LIBRARY:- "A library is not a building but a service orgainisation,"(America Library Association Chicago, 1966) therefore is a collection of books and other informational materials intended to serve people by furnishing answers to specific questions and meeting general needs for information and entertainment. The word "library" comes from the Latin word libber, meaning "books". (Encyclopedia of library, Vol.20). Though, few present - day libraries are limited to books or even to printed

materials, in addition to books, their resources often includes magazines, pamphlets, newspapers, manuscripts, documents, recordings, motion pictures and filmstrips.

NATIONAL LIBRARIES:- These are the largest of all libraries in book stock and reader seating. The term "national library" does not always have the same connotation. For example, there are national libraries in the other countries of Great Britain, as well as the smaller libraries, which are national in that they are provided by state funds. And Italy, there are a number of "national libraries" (including one, in come, built in the last decade). (University grant committee report, London, 1967, pp272).

1.6 PROBLEMS FACING THE PRESENT TREND

The library system is currently being faced by the following problems.

a) Time inefficiency - (i.e time waste in searching for and retrieving needed data, this leads to the possible congestion of the library.

b) Inadequate storage place for the books and the over emphasis on book counters rather than uses space.

1.7 PROBLEM IDENTIFICATION

Changing space needs of a library complex demand the possibility of a reading area being converted to shell stacking area and vice-versa as the need arises or the conversion if a stocking area to office space. That is why library complexes are built with framed design in grids or modules to facilitate the knocking - off of partition walls and conversion of space as the need arise. (Wheeler, Joseph L. and Alfred Morton, 1941 pp272)

These are the main architectural problem in design of a library. The library, which ranks as one of society's most useful service organisation, people in all works of life with varying needs come in large numbers to use the library resources.

1.8 PROPOSED SOLUTION

Consideration will be given to work flow, distribution of traffic in building, adequate ventilation, proper natural lighting and the reduction of noise both within and outside the building. Additional, a computerised library system is proposed.

CHAPTER 2

2.0 LITERATURE REVIEW

2.1 EARLY LIBRARIES

The library is older than the book as we know it, older than paper, older than print. It extends back to the scrolls, papyri, and clay tablets that appear near the dawn of writing-back to ancient Mesopotamian and Egyptian civilisations. Through all the centuries of its existence library has three main functions: to collect, to preserve, and to make available. The library we know today, with shelves of books and other materials on every imaginable subject, had its origins in ancient libraries that go back at least 4,000 years ago.

2.2 ANCIENT ROME

The first libraries in Rome were filled with texts brought back from Greece by conquering generals. These texts spread the influence of Greek literature among the Roman, who had no literature of their own. Often, the Roman libraries were located near and connected with temples. Manuscript rolls stored in these libraries well placed upright in boxes shaped like cylinders. The little appeared on tags fasten to the room and boxes. Reading rooms often, faced the east. This was partly for religion reasons. Also the morning

light made it easier for scholars to read, and the light helped ward off the dampness that is such an enemy of manuscripts, as well as books. The most celebrated Roman library was the Bibhostheea Ulpia, which was founded in Rome by Emperor Trojan (AD 53-117). The library house large separate collections of Latin and Greek manuscripts and its walls were decorated with busts of writers. The libraries of ancient Rome were not destined to survive. The Roman emperor Theodosuib, the Great (AD316 - 395) closed the temples with all the libraries. When the Goths and Vandals came down from the north and ransacked Rome, some of the manuscripts were reserved, but the last of the Rome libraries vanished. (Encyclopedia of library, Vol.20).

2.3 THE MIDDLE AGES

Between AD.100 and 400, scrolls were replaced by Codices - the first bound books. A codex was easy to carry and easy to preserve. Because of this the codex form was favoured by the early Christians, who found it convenient for carrying the books of the Bible. As Christianity spread throughout the Roman Empire, the codex became established as the standard form for books. (Encyclopedia of library, Vol.20),

2.4 BABYLONIAN AND ASSYRIA

In the 184's, a British archaeologist excavations of the ancient city of Ninereh, he discovered a library was founded during the 700's Bc by Sargon II. His greatgrandson Ashurbanipal (668-627 B.C.) organised and greatly enlarged the collection. It was temple or a palace, as were most libraries of that time. Librarians, called "men of the written tablets; were in charge of there ancient collections. The heavy, durable tablets preserved information about affairs of daily life, especially trade and religion. Many of the tablets were used for record keeping. Others told stories of heroic deeds.

2.5 ANCIENT EGYPT

Libraries had existed in Egypt before the times of the temple libraries. The nobles of the feudal age may have gathered and maintained their own collection as early as 200 BC. Because perishable papyrus scrolls were used for recording information, however we know very little about early Egyptian libraries. We do know that a library existed in the temple of Horns at Edfu (now 'Idfu).This "House of papyrus" dating from about 237 Bc contained scroll on astrology, astronomy, religion, and hunting. These scrolls were listed in a "catalog" that was at one of the library's stone walls. Archaeologist working at the karnak temple at thebes (now Luxor), in

central Egypt, also discovered an inscription for a "House of Books" other archaeologists unearthed the tombs of two librarians, a father and son, at karnak, the job of librarian was probably inherited and, like may administrators, librarians were priests.

The greatest library of the ancient world was the library at Alexandria, in Egypt. It was founded by ptolemy (367-2832BC). During his reign, Alexandria became the capital of Egypt a place where scholars from all over the world gathered.(Encyclopedia of library, Vol.20).

2.6 RENAISSANCE AND REFORMATION

Many of the great university libraries in Europe were founded during the 1300'AD. By the 1400 AD and 1500 AD century national libraries were established on the continent.

Among such libraries are:-

FRANCE:- The first important national library are the Biliotheque National in France. It was developed from the libraries of such early French Kings as Charles V, Charle VI, and Louis XIX (1638 - 1715), the library was double in size by Jean-Baptiste Colbest (1619-63) and moved to the present site in

Paris. The library became national property after the French Revolution. Today the Library's collection includes books, photographs, prints, and audio-visual materials.

ENGLAND: The roots of the first great university library in England go back to the late Middle Ages. In 1444 AD, Humphrey Duke of Gloucester gave his collection of books to oxford university. The library itself did not open until 1488 AD.

ITALY: In 1440, about the time that oxford university acquired de' medic (1389-1464) established Italy's first public library in Florence, in the cloisters of san Marco- the Vatican library, the oldest public library in Europe, was formed in the 1400's through the roots back as far as the 300's and Pope Damascus I. Under Pope Pius x I (1857-1989) the collections were organised and catalogue for the first time. The library is known for the number of rare books and manuscripts in its collection.

THE WESTERN HEMISPHERE

The San Marcos University library in Lima, Peru, founded by the Spanish in 1551, is the oldest in the Western Hemisphere. The first library in North

America was established in Canada in Quebec city, Quebec, in 1635. In the United State, libraries such as Harvard University in Cambridge. Massachusetts, the college of William and Mary in Williamsburg, Virginia. and Yale University in New - Haven, Connectient, had considerable collections by the middle of the 1700 AD.

2.7 **NIGERIA:** Library services at all levels must be expanded rapidly to meet the needs of this increasing population of potential Library users. Library history in Nigeria is less than half a century old. it all began in the late 1920s, when a handful of expatriate civil servants formed the Lagos Book club in order to have a few books circulated among themselves. By 1929, the president of the carnage corporation, new York, Dr Frederick Kippea took over the books belonging to the Lagos Book Club. By the end of 1933, the library had nearly 5,000 volumes, excluding scientific journals, e.t.c. Book boxes were sent on a regular basic to sub-libraries location at Abeokuta, Apapa, Burutu, Enugu, Ife, Ilorin, Ikot-Ekpene, Port-Harcourt, Warri, and Zaria. The Lagos library, a subscription library, was thus the first library in Nigeria to provide public service. Today the country has National Library in almost every state. (Aleogena, 2000 pp12).

NATIONAL LIBRARY OF NIGERIA.

Following a survey by Hans Vischer, joint secretary of the Advisory Committee on Education in the colonies, and Margaret wrong of the international committee on Christian literature in the colonies, office made the first formal request for carnage assistance for library development in Africa. A grant was promptly made, and in November 1939 the colonial secretary notified the Governor of Nigeria of the availability if funds. The Nigeria government informed the colonial secretary in 1940 that carnage gift was little value as Nigerians showed interest only in reading of self-improvement through the passing of examinations. Reading materials of a broader scope were, therefore, not required. In spite of its indifference, the Nigeria government did appoint a standing committee to advise the government on provision of libraries. The outbreak of the second world war abruptly terminated the work of the committee, but by July 1945 it was able to present to the government a three- point scheme for library development in Nigeria. Among other schemes, the committee recommended the establishment of a national central library "to make into one central library, the present British council library in Lagos, the Lagos library and the Henry Carr collection of the British, council library was opened in 1943 as an information centre for the British war effort. The, Henry Carr collection

belonged to an outstanding Nigeria Scholar and book collector who had died in 1945.

In July 1948, the chairman of the standing committee set up to advise the government on the provision of libraries amplified his committee envisaged, he said, was a copyright deposit library which would provide facilities for learning and research along the time of the British Museum Library and the New York State Library. The committee also recommended that the central government in Lagos be responsible for the Library, the scheme was approved by the chief secretary to the government, the same year, and it was hoped that the colonial office agreement to Nigeria government would be able to put the carnage grant to some use by 1952.

In November 1955 a young Nigerian Librarian Mr. Gbole Nwikina submitted a document entitled "Beginning of a National central reference library service for Nigeria to the central government of Nigeria. He envisage a National library, which would not be a public Library, but which could provide special services, act as a clearing house for bibliographical information, provide training e.t.c Mr. Gbole document reopened the whole question of a national library for Nigeria and in December 1958 the Nigerian Federal Government appointed a Library Advisory committee. The

committee, composed of representatives of the Federal and Regional Governments and leaders of the Library profession, was to advise the government of Nigeria on Library and bibliographical policy and problems. On the recommendations of the committee, the government sought expert advice on the establishment of a national library.

The ford foundation agreed to give assistance, and in 1969 Dr Frank Rogeis, director of the National Library of medicine in Washington, came out to Nigeria "to consider the problem of the National library for Nigeria and the question of providing improved library services to elements of government in the Lagos area"; such as

1. The establishment of a national library in Lagos to provide adequate library services for elements if the Federal Government in Lagos and take on a wider role of a national bibliographical centre.

2. The appointment of Library advises to be charged with developing plans, drafting an enabling act e.t.c.

2.8 TYPES OF LIBRARIES.

Different types of Library have different spatial and environmental emphases and these can be enormous variations within each category.

2.8.1 UNIVERSITY LIBRARIES:

The main function of the university library is to store bibliographical and audio-visual materials and to make them available swiftly to students, faculty and research workers. The library serve as a tool to assist learning, teaching and research, and will offer hospitality in varying degrees to outsiders - visiting students. local industry and, to a limited extent, the general public. University Libraries will tend to have a higher proportion of books per reader on issue at any one time than most other types of library; Some impose no limit on the number that maybe borrowed by faculty member. (University grant committee London, 1976.)

2.8.2 COLLEGE LIBRARIES: Colleges vary enormously in size and function but most consist if a single large building of which the library occupies a floor or a wing. Therefore, the function of the college library is generally similar to that of the university library but on a smaller scale, because colleges generally include fewer residential students than

universities, there are more emphasis on the issuing of books for use outside the building. The staff's bibliographical activities include providing reading lists and bulletins to exploit the Library's resources, both in association with the curriculum and for general cultural ends. The library's resources, both in association with the curriculum and for general cultural ends. Some colleges make use of recreational literature to encourage reading among students who are not basically book-oriented. This means that there will be attractive browsing areas with paperback books, display and other features more usually associated with the public library. In many modern colleges (as in many schools) the library has changed its identity and is no longer merely a place where books are housed. If the classroom is now where they are stimulated to use their minds, the library is a place where the resources can be found to follow up this approach and where they can create something unique to themselves; this act of creation is a fundamental part of the aim of education today. (Shores, Louis the library college idea. In library journal, 1st Sept. 1966.)

The basic difference between the colleges and university libraries between the colleges and university libraries is that college library stocks will be neither so vast in number nor so comprehensive in ranges as those of

universities and they will more directly echo the subject emphases and limitations of the college.

2.8.3 **SCHOOL LIBRARIES:** This is the primary school library, which may be a few books housed centrally in an informal atmosphere and supplemented by collections in classrooms; it is commonly said that the library is the heart of the school, however, this is truism certainly has meaning if we apply it to the central position which it always occupy in the schools internal layout. Though, care is taken, of course, to prevent it being used as a passageway to and from other areas.

2.8.4 **PUBLIC LIBRARIES:** Extracts from the UNESCO Public library manifesto state the purpose of the public library in convincing term: The public library is a practical demonstration of democracy's faith in universal education as a continuing and life long process, in the appreciation of the achievement of humanity in knowledge and culture". (Public Libraries and Museums Act, 1964, Ch. 75 HMSO) Literally, public library is a tax-supported institution serving a city, town, country, or other local area. Its basic function is to make books and other library materials available to all the other citizens in the community it serves.

Public libraries provide materials for general reference and research, for continuing education, and for recreation. Many public libraries are small and can offer only basic materials; however, large public libraries often provide materials for specialized reference and research, co-ordinate programs for continuing education, and sponsor cultural and recreational events.

2.8.5 **HOSPITAL AND WELFARE LIBRARIES:** These are important because they serve people or communities who, for various reasons, cannot have access to other libraries. They vary in size from libraries in large hospitals (particularly mental hospitals.) Where they have some similarity to public branch libraries, to public branch libraries, to small reading as a therapy to alleviate worry and boredom is accepted. Quoting Library service in hospitals that states;

> "An efficient trolley service visiting each ward at sufficiently frequent in intervals to enable the service to be used properly is required for patients who cannot leave ward. Patients who cannot do so should be encourage to visit the library and make their own selection from the

shelves... the library service might also include the maintenance of a stock of gramophone records and the provision of sets of play reading. (Department of Health and Social security, pp70 23rd April 1970)

2.8.6 **PRISON LIBRARIES:** These libraries are doing a great deal towards the successful rehabilitation of those who are confined within prison walls.

2.8.7 **SPECIAL LIBRARIES:** This term is used to denote libraries which are not university, college, school, welfare or public libraries. Despite this negative description special libraries have some positive attributes in common. Their collections are usually limited in subject range but have great depth of average of their particular interest.

They not only acquire source material but also produce it by scanning and abstracting to the exact requirement of the users. They serve as information centres for their parent institutions, catering for the members of the organisation but undoubtedly an efficient and up-to-the -moment information service is the essence of much special library work. Among the chief divisions of special libraries are:-

- Government Bodies
- Nationalised industries
- Learned institutions and research associations.
- Professional associations, societies, and trade unions.
- Commercial and industrial firms. (Public library and Museum Act, 1964).

Special libraries tend to be smaller than public or university libraries and seldom occupy separate buildings, but there are exceptions. One factor which most special libraries have in common is that their interests are much less restricted to the bound book than other types of library. Some may have large collections of books but their chief interest will be current periodicals, pamphlets, parliamentary papers, reports and other more immediate forms of information.

2.8.8 **NATIONAL LIBRARIES:-** Is the largest of all libraries in book stock and reader seating, there are national libraries in the other countries of great Britain, as well as the smaller libraries which are national in that they are provided by state funds (national museum libraries and so on). The term

"national library" does not always have the same connotation. In Italy, for example, there are a number of "national libraries". Other libraries may be "national" in the sense that they are financed directly by the state and range from large art and science libraries of international standing to "popular" services provided nationally.

2.9 LIBRARIES OF THE FUTURE

Obviously a new library must be designed to operate with the materials and the techniques of the future rather than of the past. In whatever form information may be store in the future, it will continue to be the business of the library to obtain, house and process it for readers. To plan for this without knowing what form it may take is a seemingly impossible task and this adds force to the well-known dictum that "long term planning is impossible". Although the future is misty and more new materials and techniques arrive every year, each planning team will in practice tacitly accept a freeze date, planning according to what is available at that particular time and not according to what might one day become available.

Much the most important machine looming over libraries at present is the computer. The total contribution is making in the library world cannot be quantified. It can certainly relieve people of routine work in any fields, It can

eliminate card catalogues, stock records and present issue methods. It may be that the only action the planner can take at this time is to arrange that all equipment which might be entirely superseded (card catalogues for example) should be freestanding, and to allow space for a possible systems department which might have to be installed to work parallel with the traditional administration section while conversion to full computer operation taken place. Quoting from the conclusion reached by the conference participants who included, to librarians, architects and computer specialists from the U.S. and Canada on the Educational Facilities Laboratories of New-York, 1976 pp6 was:

In sum, it is consensus of those who participated in the conference that for at least the nest twenty years the book will remain an irreplaceable medium of information. The bulk of library negotiations will continue to be with books - although the science and technology sections will shrink. Remote retrieval if full texts in large amounts over long distances will not be generally feasible, and the continued use of a central library building will still be necessary. (Conferences in New York 1976).

Unquote, future trends in co-operation between libraries, not only in more efficient inter-loan of books but also in providing the information itself by

photographic and electronic methods, are likely to be the greatest influence on decisions relating to both the size and the space allocation of new libraries.

2.10 THE LIBRARY SITUATION

When designing a library the architect is forwarding a service whose rationale is not easy to assess. there is no easily defined "purpose of a library"; the contribution a library has to make to the community reflects something special in the nature of that community and in the particular direction of development which the library, among other instruments, exist to further. It cannot be assumed that the public library is basically a collection of books made conveniently available; its role is much more sophisticated, more dependent upon and involved in certain trends in the community's unconscious aims - "self-improvement in an atmosphere of freedom". In an institution the purpose of the library cannot be understood without knowing both the purpose of the institution without knowing both the purpose of the institution and the essential contribution, recorded or implied, which the library has to make in it. (Calderhead, London, 1972).

CHAPTER 3

3.0 ADEQUATE NATURAL LIGHTING

3.1 INTRODUCTION.

Choosing the best lighting for a library is a particular complex problem because the lighting has to do several entirely different things: to allow reading take place in comfort, to contribute to the internal appearance of the building and, to a lesser extent, to the external impact upon the passer–by. For each of these there will be available artificial light, which is entirely controllable, and natural light which very much less controllable, which is also areas of concentration in this chapter.

By natural light is meant the light received from the sun, which reaches us through the process of radiation. Another name for natural light is daylight. Daylight has predictable daily and seasonal variations and unpredictable patterns from cloud covers, atmosphere pollution, and other climatic variations.

In this part of the world, natural light is received for atleast twelve hours daily. This is not without a resultant heat from the sunrays the environment is bombarded with within those 12 hours.

The sun, which is the main source of natural light, rises from the east and sets at the west of the horizon. The intensity of the resultant heat from the

rays of the sun that convey light to the environment varies with the time of the day. The heat intensity is usually less in the morning and evening, with the highest intensity in the afternoons.

It will be interesting of note that daylight could be a source of visual and thermal comfort. If well manipulated and the reverse is the case when it is not well manipulated.

3.2 THE GOAL OF ARCHITECTURAL LIGHTING IN LIBRARY.

Any plan for national lighting depends upon the designer ideas on fenestration. Natural light is free, but it has three great disadvantages; whether through wall or roof, it imposes severe restrictions upon the flexible and economic use of floor and wall space.

However, the goal of architectural lighting is to create the visual environment that best accommodate the functions intended. Visual comfort results when we are able to receive the clear visual information that we instinctively or consciously want to know. Some general guidelines for achieving good lighting are presented below.

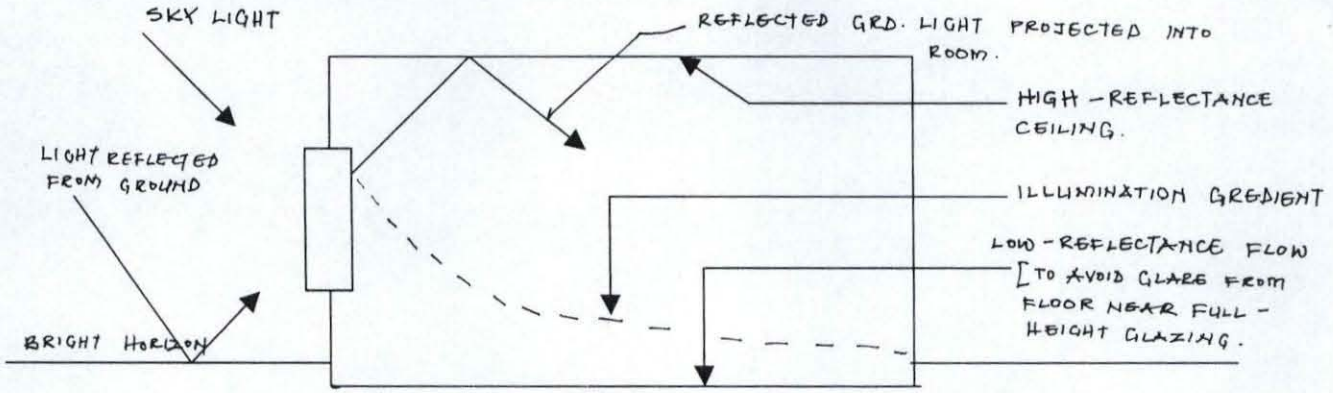
- Light must be free from disability glare (e.g. an oncoming cars high – beam headlights at night) or discomfort glare (e.g. one or two burning candles in a small room at night).

- Visual conditions are imposed if the visual task can be distinguished from its surroundings by being brighter, more colourful, strongly patterned, or a combination of two or more of these factors.
- Visual conditions are also better if the visual task is seen in an obstructive and unconfusing setting. The surrounding, should not be so bright or so colourful that attention is drawn away, or so that the task appears excessively brighten and glaring or the setting monotonous.
- Sufficient overall light should be provided in rooms with focal light on the visual task. Avoid creating conditions where the eyes must adapt too quickly over too great a range brightness.
- Enough light must reach ceiling in order to avoid gloomy conditions, which occur when denied visual information on structure is missing
- Surrounding should be provided by reflection from wall and ceiling surfaces or by opening for daylight.
- Daylight should be provided through openings to achieve contrast with nature and people and to induce feelings of well being and freshness.

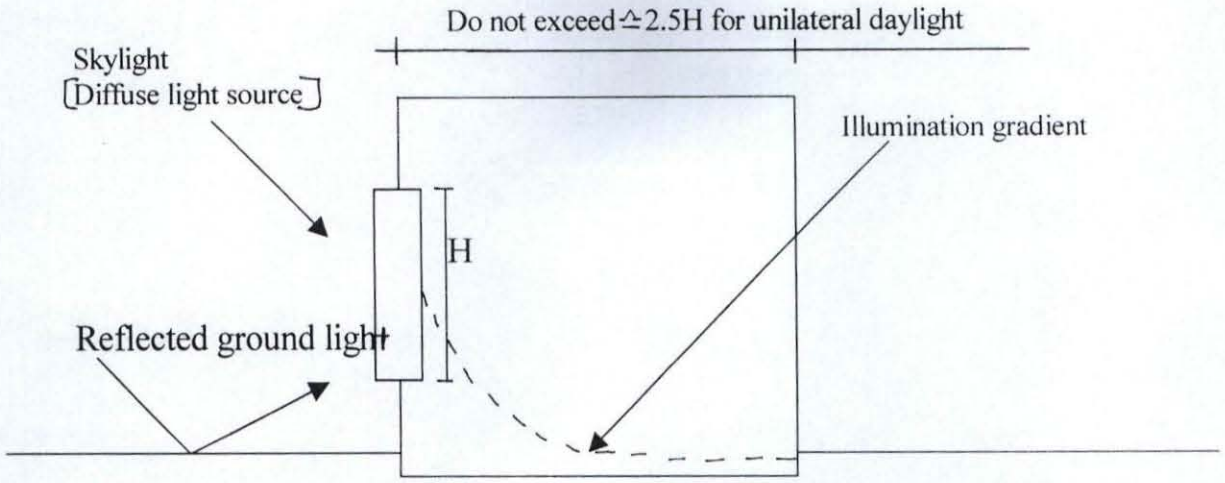
Electric light source and daylight cannot be applied like paint to building after design and functional decisions have been made. Consequently lighting objectives and desired concepts should be established from the very earliest design stages of projects to avoid costly alterations.

3.3.0. DESIGN ALTERNATIVES FOR ACHIEVING DESIRED NATURAL LIGHT IN BUILDING.

3.3.1 SUNNY DAY. Clear skies (30% cloud cover) can provide focus, and shadow and texture patterns, as part of the horizon will be brighter than overhead sky by as much as 12-1. Use of side lighting such as high window openings to achieve deep penetration of light.



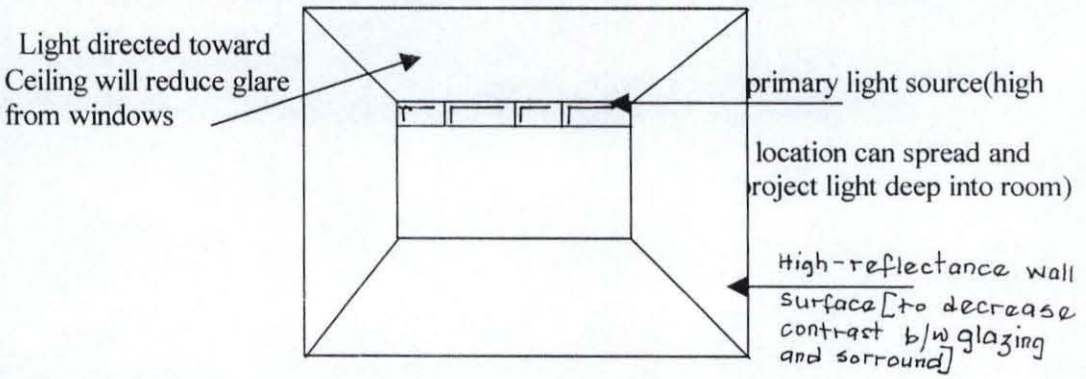
3.3.2 OVERCAST DAY: overcast skies (100% cloud cover, with sun not visible) are about three times brighter at the Zenith than at the horizon. Therefore, openings, which provide top lighting (e.g. skylight clerestories) should be used to achieve an effective distribution of daylight at site where over cast skies are frequent.



3.4 LOCATION FOR SIDE LIGHTING

The brightness of the sky can be seen through opening will determine the luminance from daylight. For uniform illumination, the area of window opening should equal ¼ of the floor area. To minimize reflected glare, desk and tables should be oriented so that daylight comes to visual tasks from the direction normal to the side of occupants.

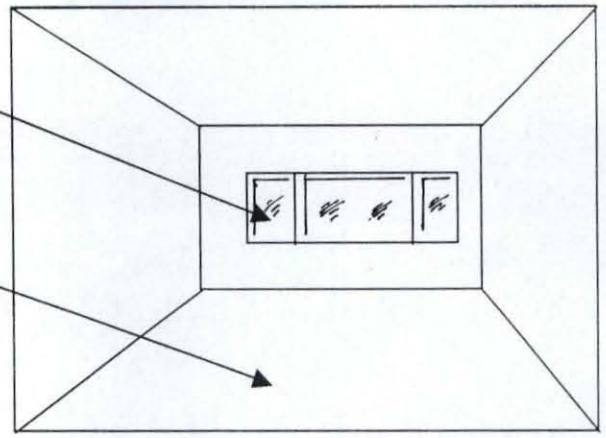
3.4.1 HIGH: the high, narrow opening (e.g. ribbon windows) can project light deep into rooms and achieve uniform distribution of daylight, but view of out doors will be restricted. Ceiling and upper walls should be high reflectance matter surfaces.



3.4.2 CENTRAL. Opening with low sills projects more light into floor and permit better distribution of reflected ground light.

Wide opening (correspond to
Normal horizontal "to and fro"
Eye movements of room's occupants)

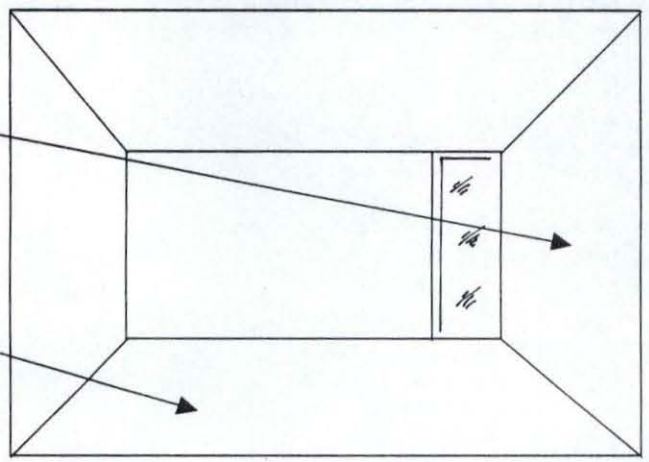
Secondary light source (reflection from
Floor can balance reflected light from walls
and ceiling)



3.4.3 END: opening at end walls can help uses understanding size and shape of rooms by defining intersections of major surfaces. End opening also can reduce brightness ratios by illuminating adjacent surfaces. However, views of out doors for time orientation and weather information will be restricted.

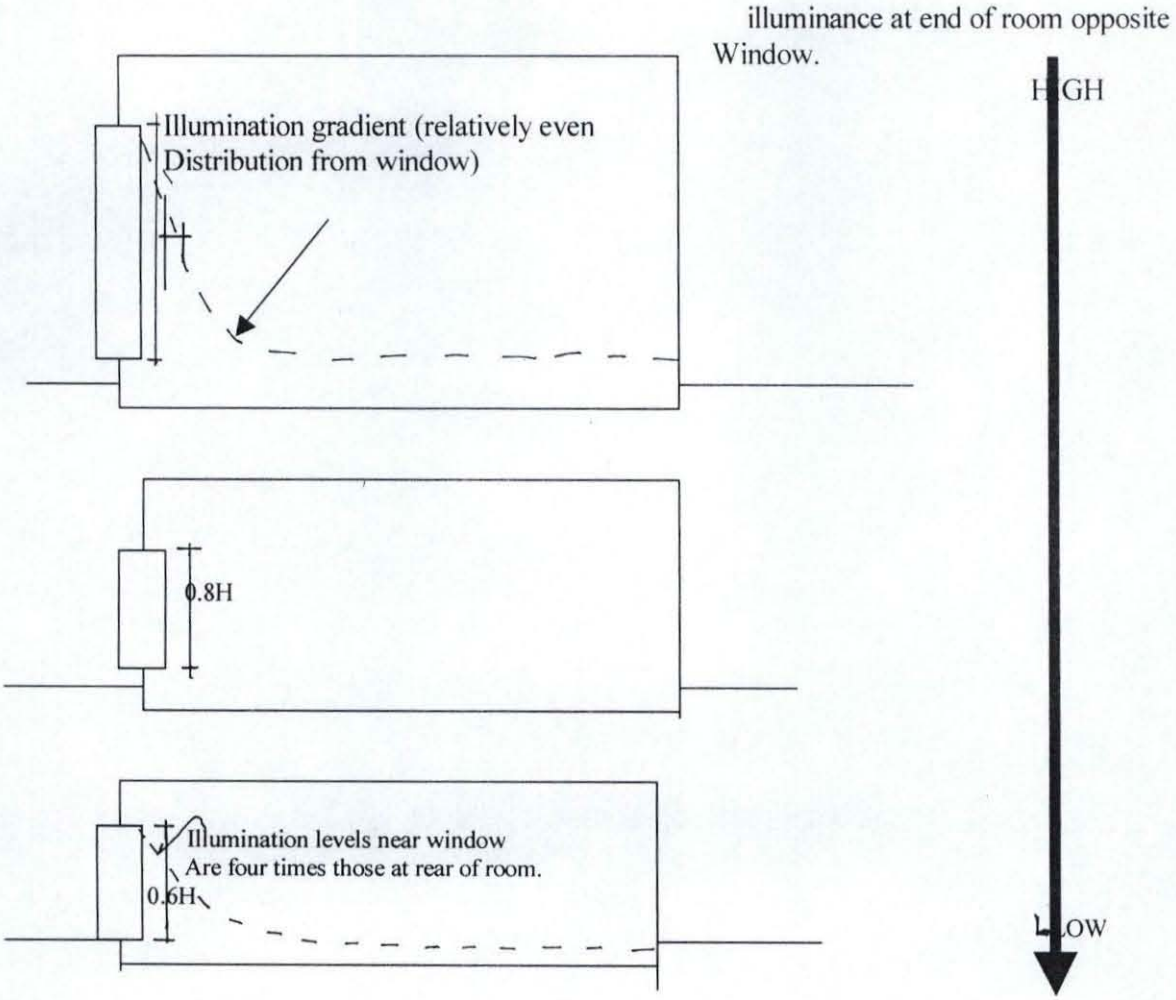
High reflectance wall (very important
Secondary light source as light is
Confined to end of room)

Low reflectance from adjacent to
Glazing (to avoid reflected glare)



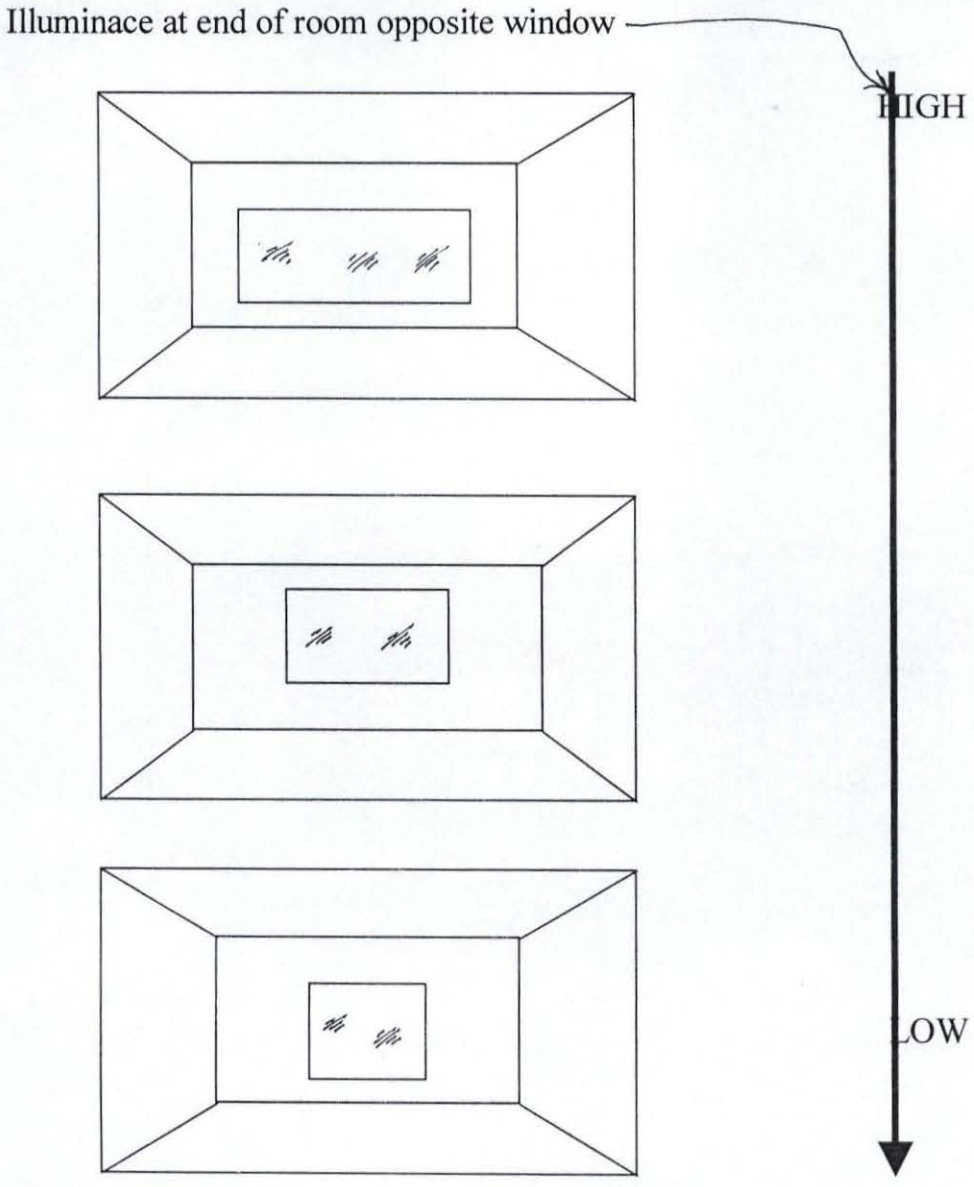
3.5. OPENING HEIGHT.

High window placement can be used to project light deep into rooms. As shown below, reduced window height restricts depth of daylight penetration. For example, under identical overcast sky conditions, reducing window height H from 14'-8' will lower the illuminations at the rear of a room by over 60%. Similar reduction will occur in rooms with bilateral openings (i.e. windows on both sides of a room), although illumination levels will be higher throughout room.



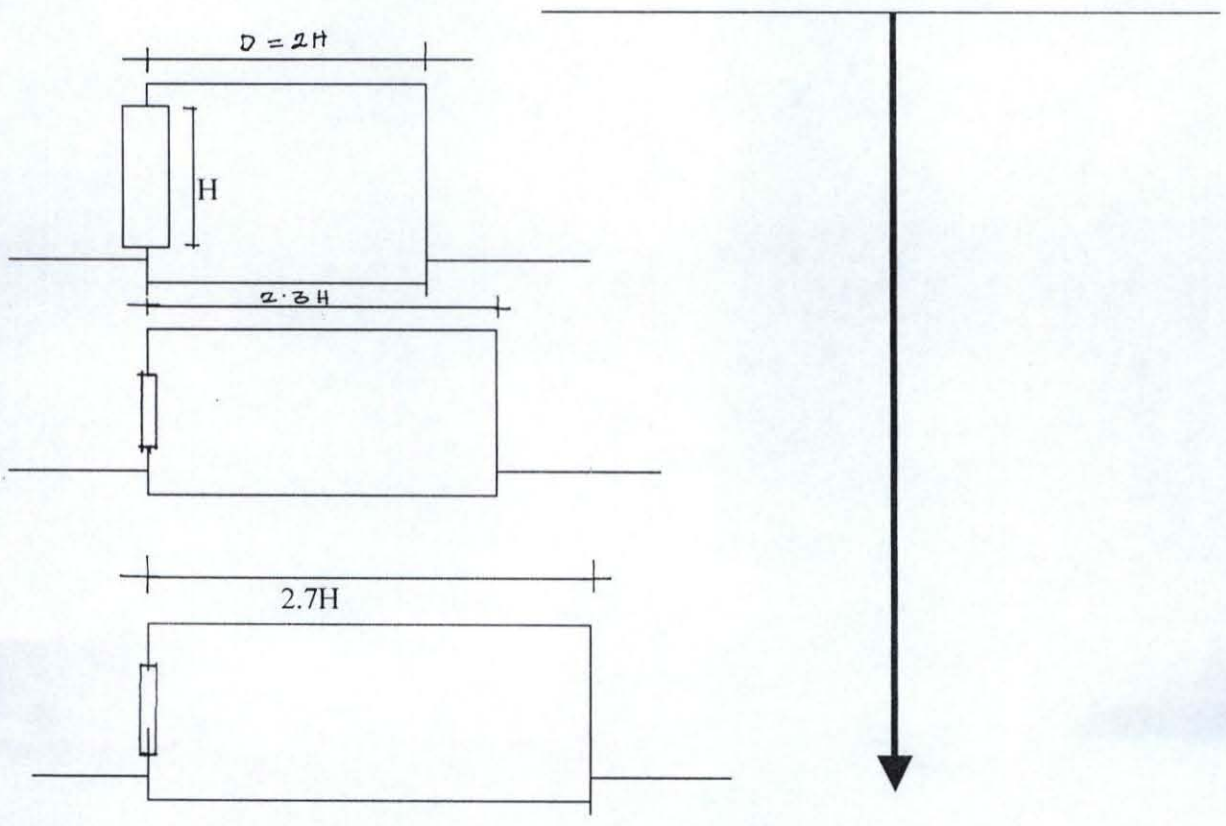
3.6. OPENING WIDTH.

Wide window openings can provide greater depth of daylight penetration than narrow openings. The shape of wide openings also may correspond to the normal lateral seen of the eyes when room occupants are seeking information on a long wide opening of equal area and luminance. In addition, occupants generally prefer, wider openings when the primary views of interest are of nearby objects or activities.



3.7 ROOM DEPTH

In rooms with unilateral openings (i.e. windows on only one side) illumination level at the end of the room opposite the windows are reduced as room depth D is increased. This is due to the fact that the transmitted light is spread is spaced over a greater area. To achieve effective distribution of light from unilateral day lighting, room depth should not exceed 2.5H (where H is window height).

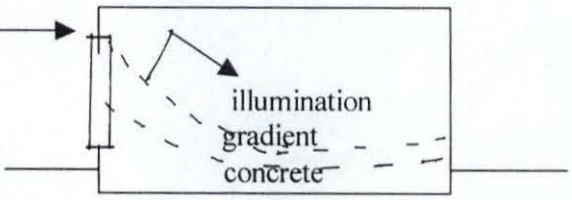


3.8. ROOF OVERHANGS

Illumination levels are reduced as the width of the overhang for sum control is increased. Although levels throughout the room are reduced, the greatest reduction occurs nears the windows. Therefore, the distribution of light through out the room is more uniform. Cantilever can be used to project reflected ground light into rooms beyond 40' from the building, however, ground condition are not significant for simple storey windows.

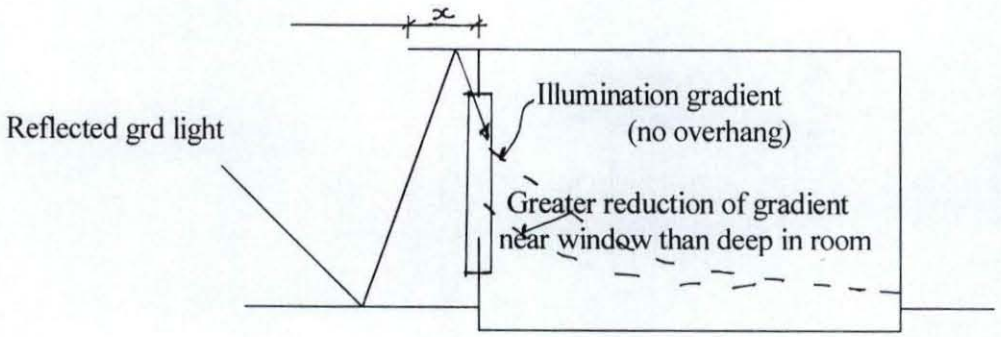
NO OVERHANG

Small window head (to allow Penetrating of sky light)

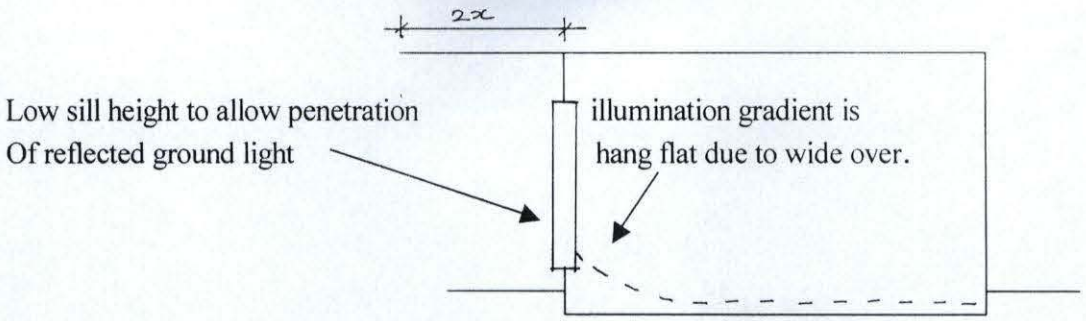


Note
Concrete, white gravel, or white pavers (p= 55%) are better reflector than asphalt or dark green grass (p=5%)

SHORT CANTILEVER



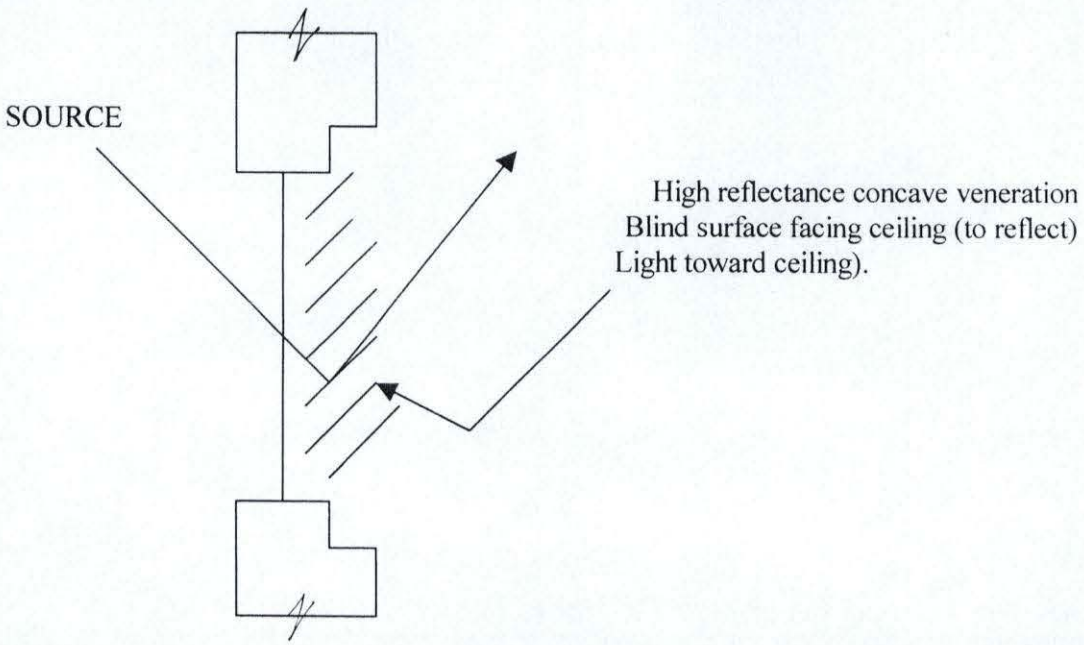
WIDER CANTILEVER



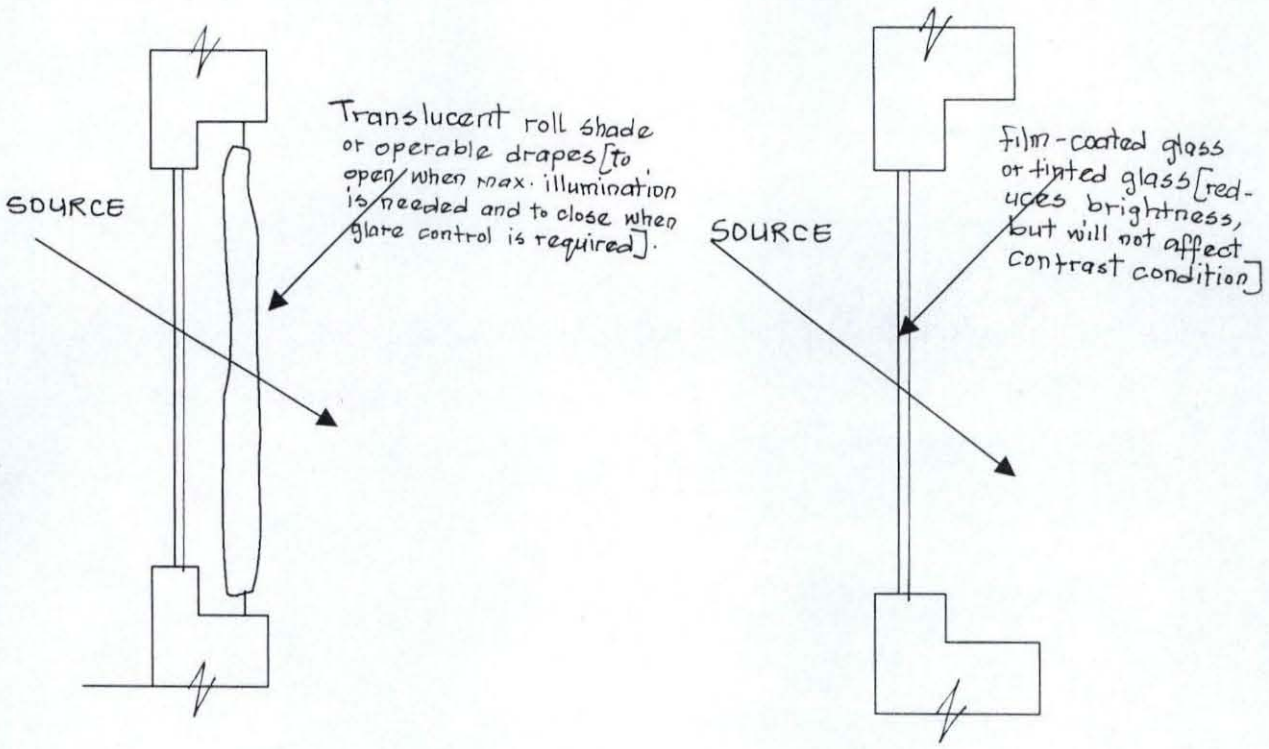
3.9 GLARE CONTROL FOR WINDOWS.

The most obvious control of glare is by directing all light sources downwards, shading them from horizontal emission, but this will certainly be effective in lighting horizontal book case surfaces. But as daylight constantly change, the most effective control are those, which can be adjusted by the user or are automated by photocell devices.

3.9.1. BLINDS: Blinds and narrow slate lowers can be oriented to reflect light towards ceiling and control direct glare from the sky.

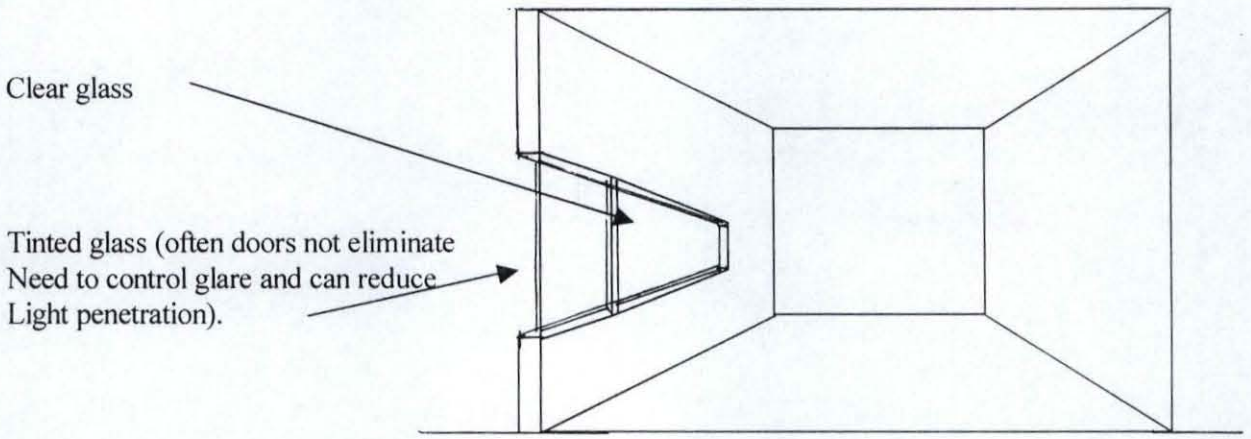


3.9.2 SCREEN (OR FINE- MESH DRAPES) FILMS: Reflective and low transmittance films can be applied, to glass to diffuse light and lower brightness. However, brightness ratios in the room will be unaffected. Low –transmittance film or coatings reduce daylight penetration but do not prevent glare from direct sun –they also can cause glare and visual noise at night by reflecting images of bright lighting features.



3.9.3 LOW TRANSMITTANCE GLASS: Avoid using how transmittance glass (i.e. tinted glass, glass block) adjacent to clear glass in doors or windows. Low-transmittance glass can restrict useful contract with the outdoors for time orientation and can generate gloom when a

comparison is made to actual outdoor condition through adjacent clear glass. For similar reason, large, translucent skylights (e.g. double- dome with glass-fibre core) can simulate overcast sky condition at all times during the day during the day, regardless of the actual weather conditions.

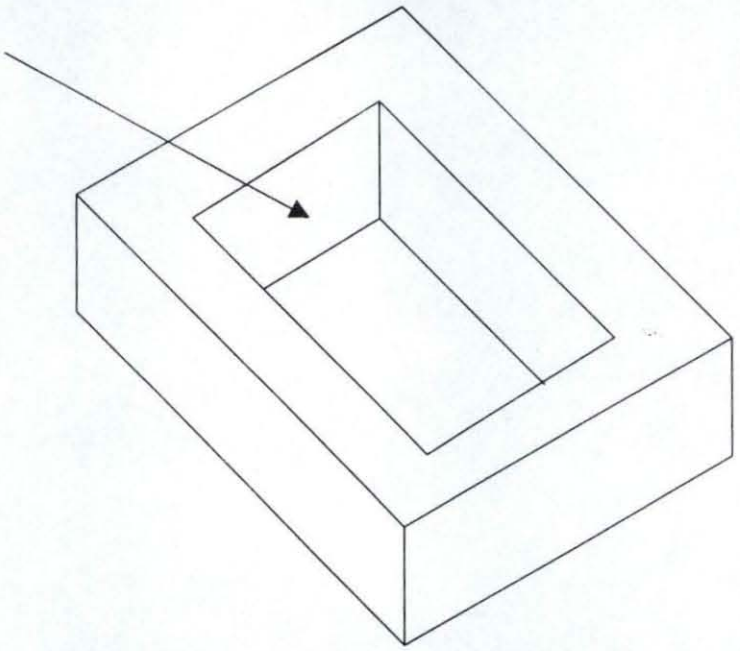


3.9.4 BUILDING SHAPES

Building shapes have significant effect on the distribution of daylight. For example, narrow building (<30' wide) can allow complete penetration of daylight, stepped section with set back floor levels and reflective roof surfaces can project daylight into upper stories and stepped plans atria or light wells can open buildings to allow deep penetration of daylight.

HOLLOW RECTANGULAR.

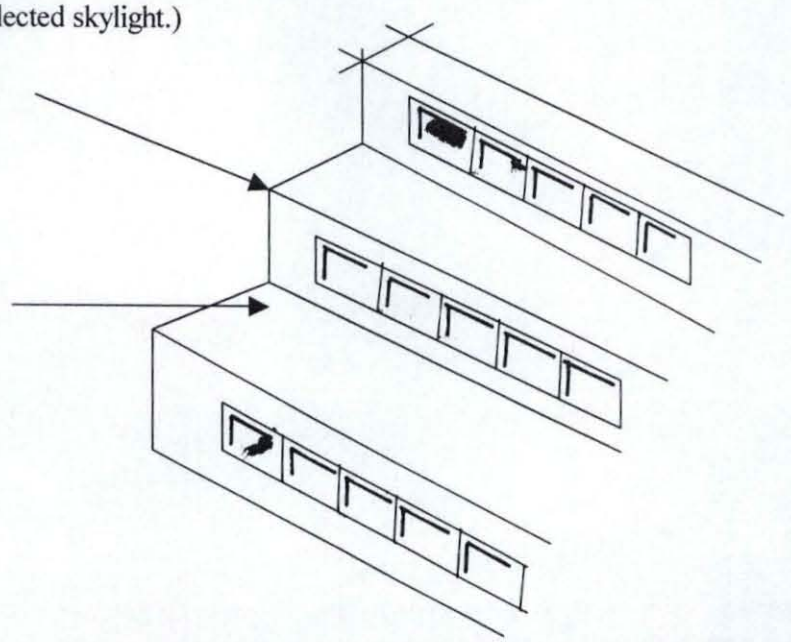
Atrium or light well allows light
To reach interior of deep plan
Building



STEPPED SHAPE

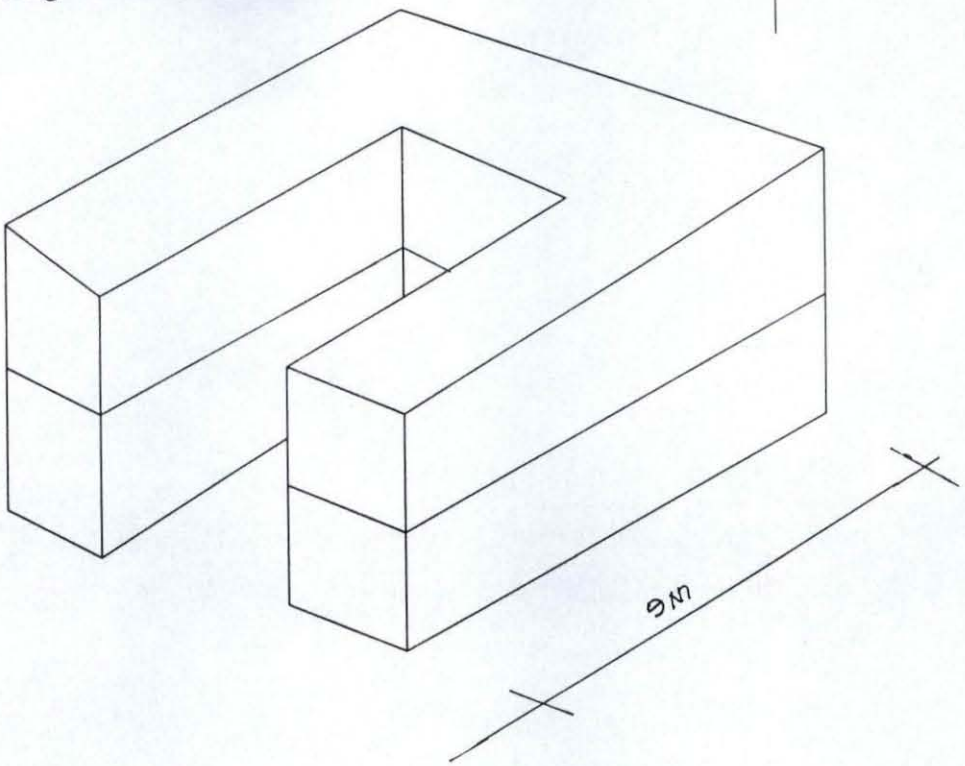
Set back floor level (to provide reflected skylight.)

High reflectance roof covering



U SHAPED

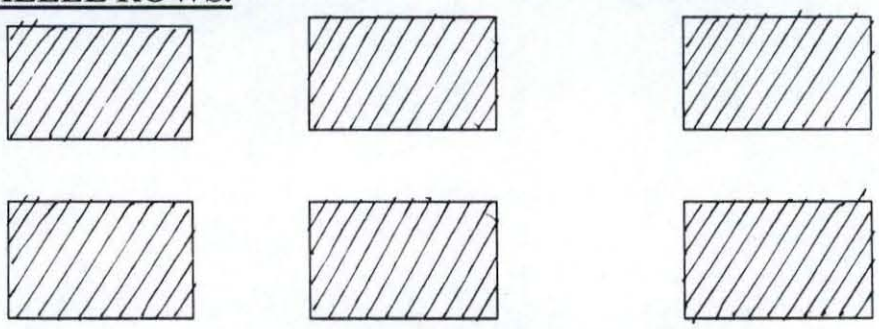
Light-coloured high-reflectance surface.



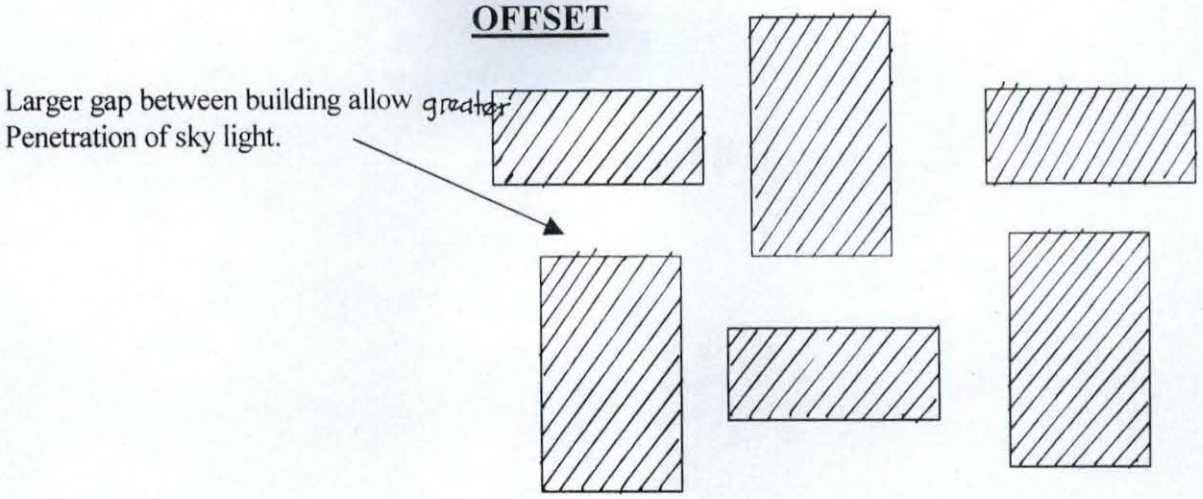
Window can be protected from environmental noise by building elements such as balconics, setback floors and light walls. For example, these elements can act as noise reduction barriers by shielding windows from direct exposure to noise from automobile and trucks.

3.9.5. BUILDING LAYOUTS: Offsets building layout allow significantly more daylight penetration than parallel building layouts.

PARALLEL ROWS.



OFFSET



3.9.6. DEDUCTIONS

From the study of natural lighting and the various design approaches outlined in this chapter. I have adopted those parts that are relevant to the scope of this project; in so doing some are used either singly or in combination in the units contained in the design proposal.

CHAPTER FOUR

CASE STUDIES.

The importance of this part of the research cannot be over emphasized because, the different existing type of state national libraries in various state are closely studied and analyzed. The analysis aimed at exporting their design functional faults and merits so as to provide a sound basis for my own contribution to Architecture.

4.1. CASE STUDY 1 NATIONAL LIBRARY, ILORIN, KWARA STATE.

4.1.1. INTRODUCTION

The National library of Nigeria, Kwara state branch is located along Federal road in Kulende estate, Ilorin.

The building was the former state SDP headquarters minor internal innovation was carried –out to accommodate some facilities required. The library is a storey high.

ACCESSIBILITY:-

The site location is not easily accessible. It is hidden within the environs.

FACILITIES

- Entrance hall
- Viewing centre
- Control section

- Newspaper hall
- Offices
- Catalogues
- Reference/serial/reserved section
- Reading hall
- National bibliography units.

4.1.2. OBSERVATION

MERITS

- Good circulation
- Good functional link between various section provides
- Good arrangement of facilities.

DEMERITS

- No room for expansion
- Not easily accessible to uses.
- Inadequate parking space.
- No provision for generator
- No provision for children reading hall.
- Poor floor acoustic
- Not landscape.

4.2 CASE STUDY 2 NATIONAL LIBRARY, MINNA NIGER STATE

4.2.1 INTRODUCTION

The library is located along old airport road. It's the former presidential liaison office for political party in 1983 (N.P.N.)

ACCESSIBILITY

The location of the sites makes accessibility to the library easier. And all the road leading to the site are motorable and easy for pedestrians.

FACILITIES

- Reading hall/reference
- Newspaper hall
- Viewing centre.
- Open reception/control unit
- Offices.

4.2.2 OBSERVATION

MERITS

- Floor acoustic are quit ok.
- The open space (out –door relaxation) for the library is quite suitable and convenient for the users.
- There are provisions for generator.

DEMERITS

- Inadequacy natural lighting
- Poor circulation
- Inadequacy natural ventilation
- No space for future expansion
- Poor maintenance of the facilities
- The parking spaces are inadequate.
- Inadequate toilets facilities
- Over-congestion in the reading hall.

4.3 CASE STUDY 3 NATIONAL LIBRARY KADUNA, KADUNA STATE.

4.3.1. INTRODUCTION

The library is one of the prototypes of the National libraries in the country. It is being headed by a director (1) in the ministry with an appellation of Head of zone. The Head of zone oversee the North-West zone of the library services.

The library is located along Bida road opposite first Bank, Kaduna. It is a storey structure and has a seating capacity of about two hundred and fifty people. There are main entrances to the library; the main entrance is for both

library users and library staff; while the second is for the head of zone, the chief librarian and other staff.

ACCESSIBILITY

The site is easily accessible through different routes within environs because it was at the earth of the commercial centre.

FACILITIES.

Ground floor

- Open reception
- Reference
- Reserve books section
- Photocopy section/newspaper & journal section.
- T.v viewing section
- Offices
- Catalogues

1st floor.

- Nigeriana section
- Official document
- Serial/reference
- Store
- Conference hall/kitchenette.

- Auditorium
- Offices.

4.3.2 OBSERVATION

MERITS

- There is a fair landscape
- Good lighting
- Good ventilations
- Good use of modern building material
- Good circulation and spacing
- Adequate site selection and location
- Adequate toilet facilities.

DEMERITS.

- No provision for children hall
- Too small for the alarming growth of users
- No provision from audio-visual
- Inadequate for parking space.

4.4 DEDUCTIONS

From all the case studies carried out, careful investigation of various existing library is being done. And a cause of failure of most of the library to meet the present trends of library services is being highlighted. However in any

proposal all the problems on existing national libraries shall be taken care of. The problem includes.

INADEQUATE ACCOMMODATING FACILITIES

All the libraries visited have this problem. The libraries are all congested, no enough space for intended users and also conversion of space to reading hall is common to all the libraries visited.

LACK OF BASIC AMENITIES

For the convenience of the users, certain basic amenities has to be provided is the library. Most library doesn't made provision for an outdoor relaxation, carrels, internet services (computer) restaurant/snack shop, children hall of which makes the library a functional public services.

CHAPTER FIVE

5.0 DATA COLLECTION.

5.1 CLIMATIC CONDITION.

A comfortable living environment will depend on maximizing the aspects of the environment, which reduces heat, and the effect of humidity and protect from rain and dust.

Two climatic seasons – the wet and dry characterize the northern part of Nigeria. The dry season covering the period between October and April is characterized by dry weather with the north-east trades wind being the prevailing winds. When these winds are strong (harmattan period) the weather turns dry, cool and dusty.

The next season is determined by the south-west trade winds which raise humidity and consequently discomfort at the beginning of the season and gives a cooling effect during August/September by the rains associated with them.

5.2 TEMPERATURE

The net radiation in human terms is felt as air temperature, the response to which is greatly influenced by the condition in the air, Gusau records its highest temperature during the dry season when there are few or

no cloud changes. The mean temperature which is equal the sun of the maximum and minimum temperature for the day is between 35oC – 38oC. During the rainy season, the maximum temperature is lower due to the dense cloud cover. The temperature change per day is also lower sometimes in November/December.

5.3. HUMIDITY

Human sensibility to temperature is greatly affected by the relative humidity. During the dry season, relative humidity falls to as low as 65% in the territory. This low relative humidity coupled with the extremely high afternoon temperature, accounts for the desiccating effects of the dry season. In the rainy season, the relative humidity is much higher especially in the morning hours when it can reach as high as 90%, even though the temperature is slightly lower, the effects is to create a heat trap. When this situation occurs, the general feelings are to be uncomfortabably hot.

5.4 SUNSHINE

In Nigeria, there is a general increase in the total hours of sunshine further north from the Atlantic coast. The amount of sunshine ranges from a minimum of 1,300 hours in the Niger Delta to cover 3,200 hours in the extreme north-east of the country. The sun as the major source of radiant energy provides about 99.97% of the energy required for physical activities

C

MAP OF NIGERIA SHOWING RELATIVE HUMIDITY IN THE MONTH OF JANUARY.

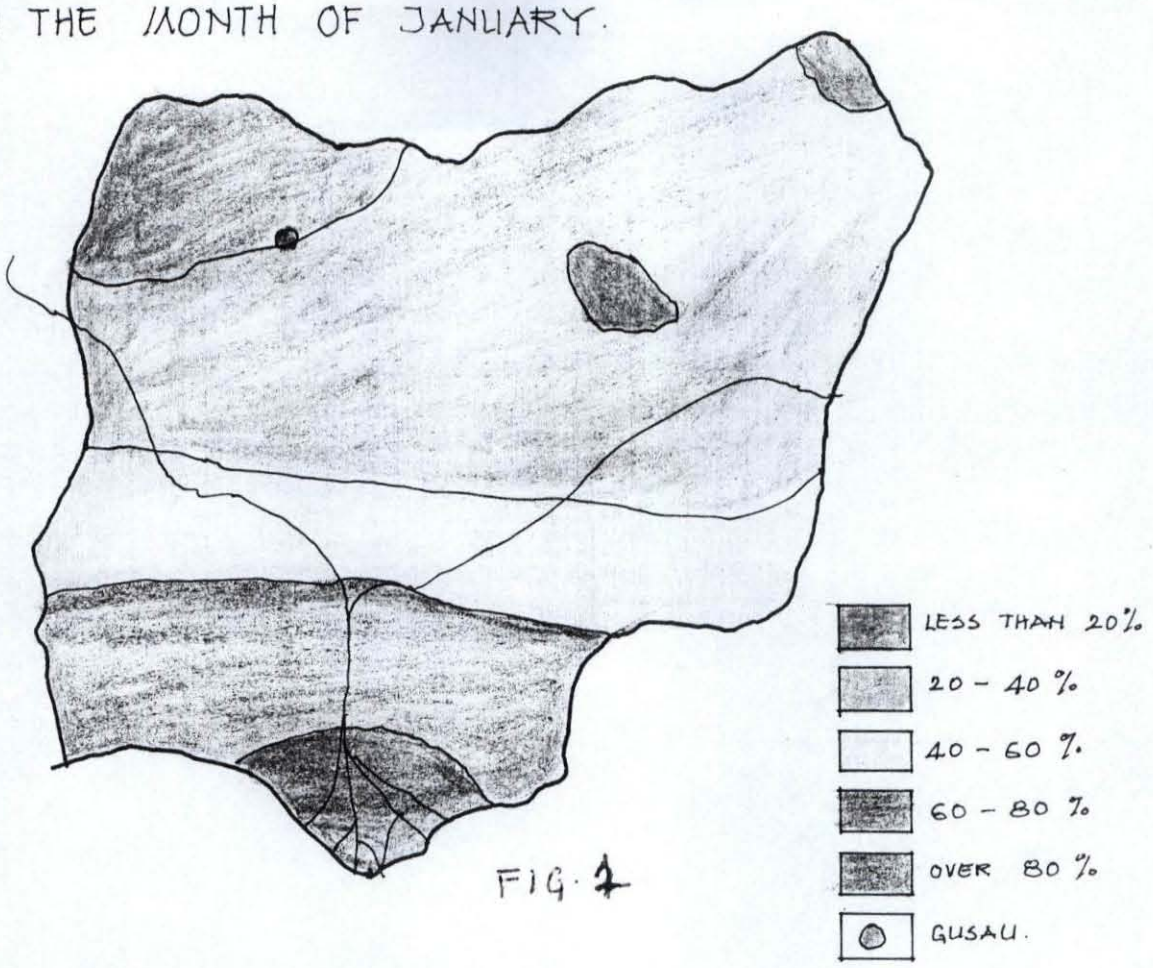
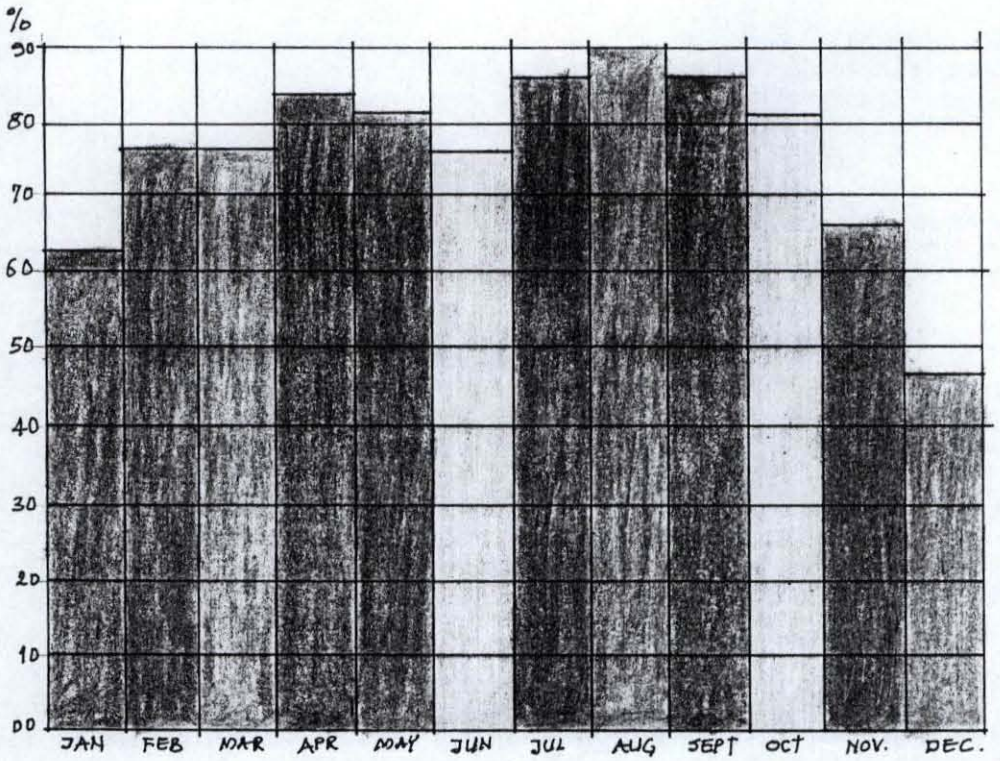


FIG. 1



HUMIDITY AS SHOW ON BAR CHART.

taking place in the earth atmospheric system. The radiant energy is emitted as electro-magnetic waves.

Each minute the sun radiates approximately 56 x 1026 cal. of energy. In terms of energy per unit area, the value is equivalent to approximately 1.94 cal.cm2/mm, this is the solar constant.

5.4.1 Mean annual sunshine hours: The general patterns shows that the number of sunshine hours is lowest in the coastal areas and increases, although not uniformity, to the highest values in the extreme north east of the country.

Mean monthly hour sun between 1961-70

Jan	Feb	Mar	April	May	June	July	Aug	Sept.	Octo	Nove	Dec.
211.9	211.6	214.2	188.4	201	172.5	109.9	76.6	103.8	175.1	220.3	126.4

TABLE : 1

5.4 GEOLOGY AND TOPOGRAPHY.

Gusau is sited on pre-Cambrian basement complex geological formation. The formation is of igneous and metamorphic rocks such as gneisses, granite and magnetite.

The area is characterized by a gently rolling highland topography. Associated with the old granites rock formation are inselbergs rising to some

A

METEOROLOGICAL DATA FOR GUSAU

MAP OF NIGERIA SHOWING WET SEASON, MAJOR PREVALLING WIND AND RAINFALL [MARCH - OCTOBER].

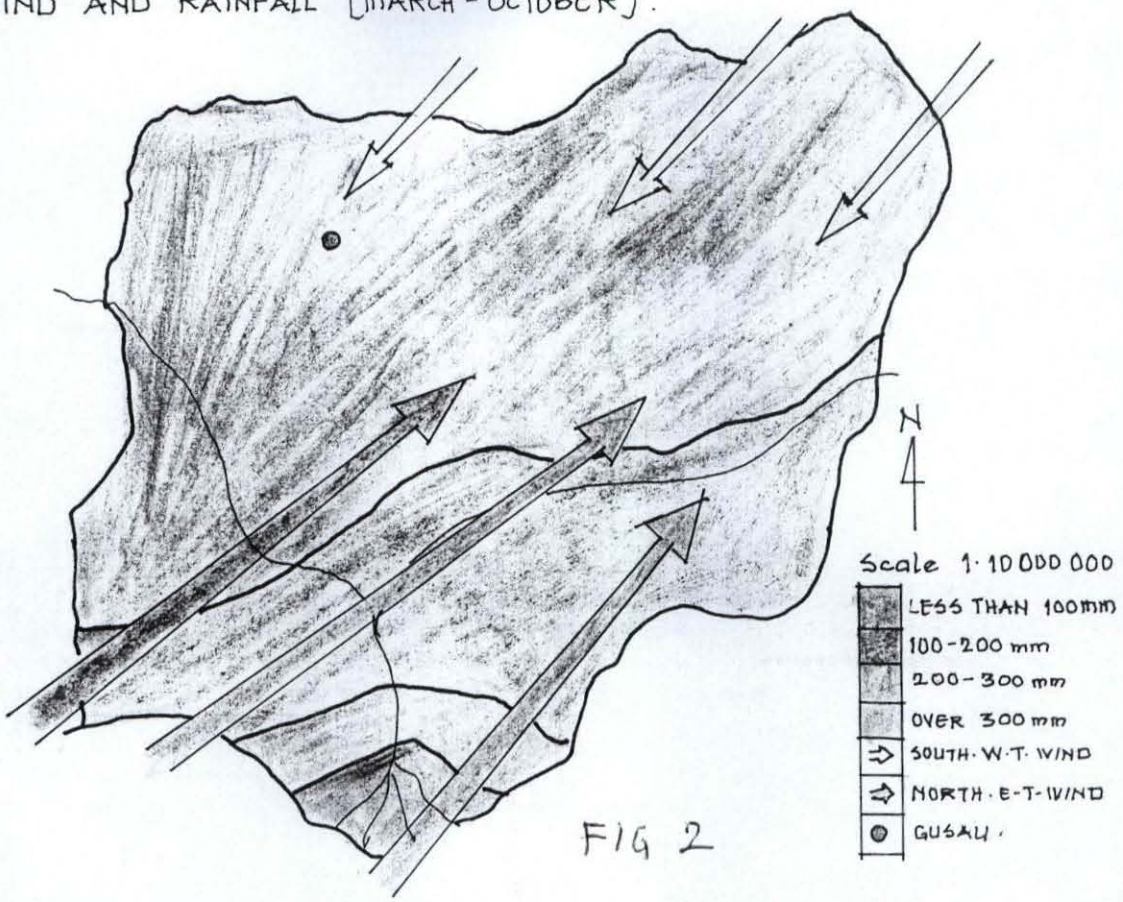
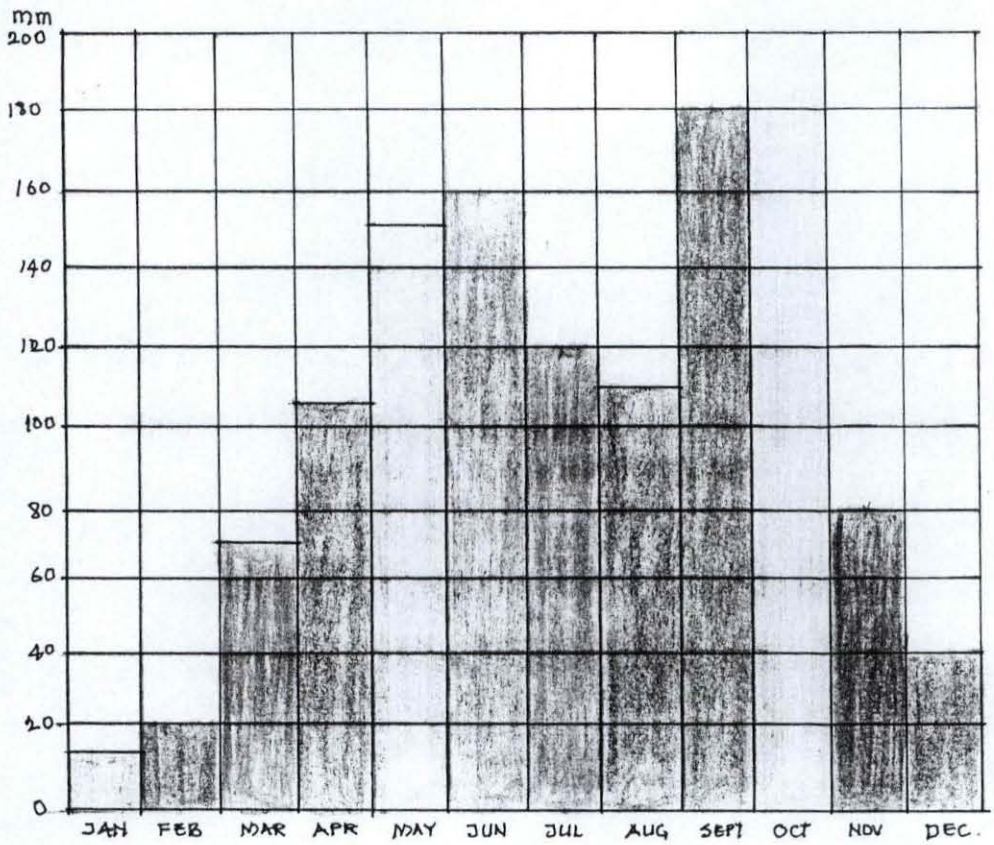


FIG 2



RAINFALL IN BAR CHART

FIGURE 2

B

MAP OF NIGERIA SHOWING DRY SEASON, MAJOR PREVAILING TRADE WIND AND RAINFALL
[NOVEMBER - FEBRUARY]

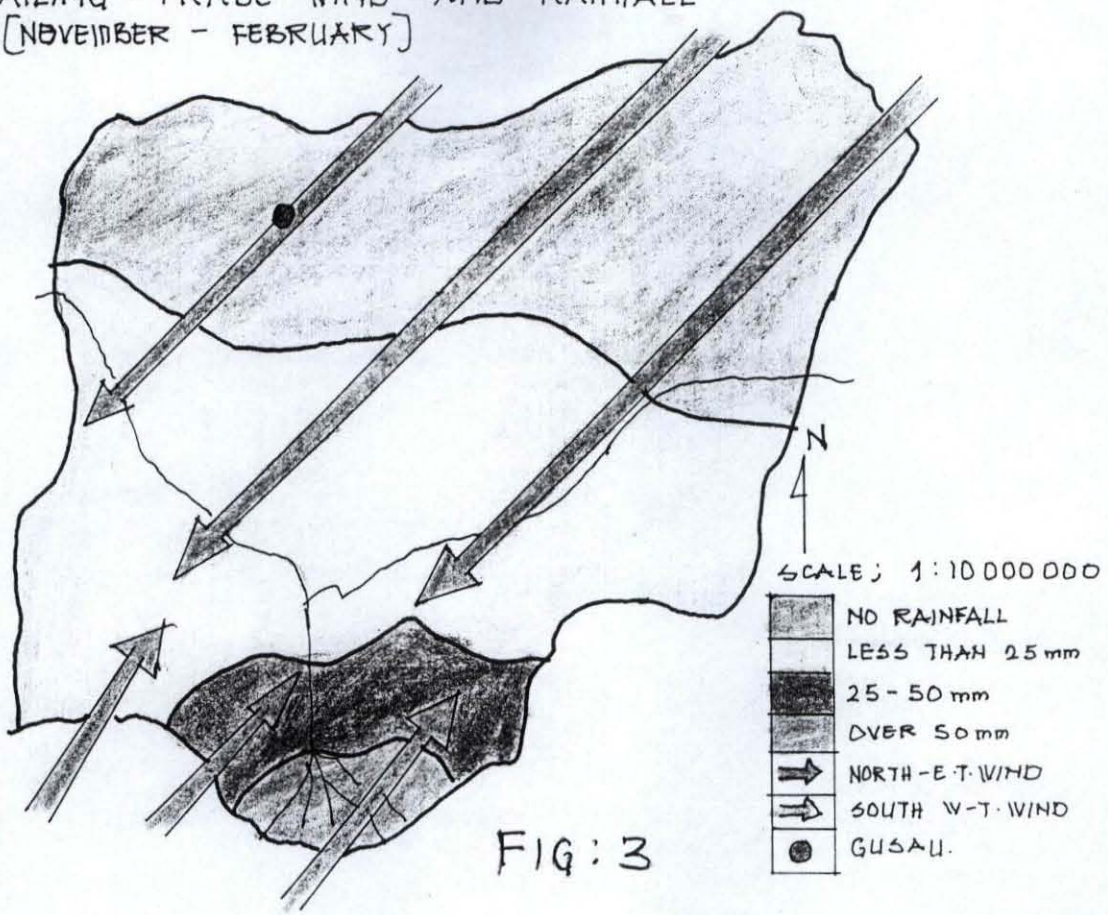
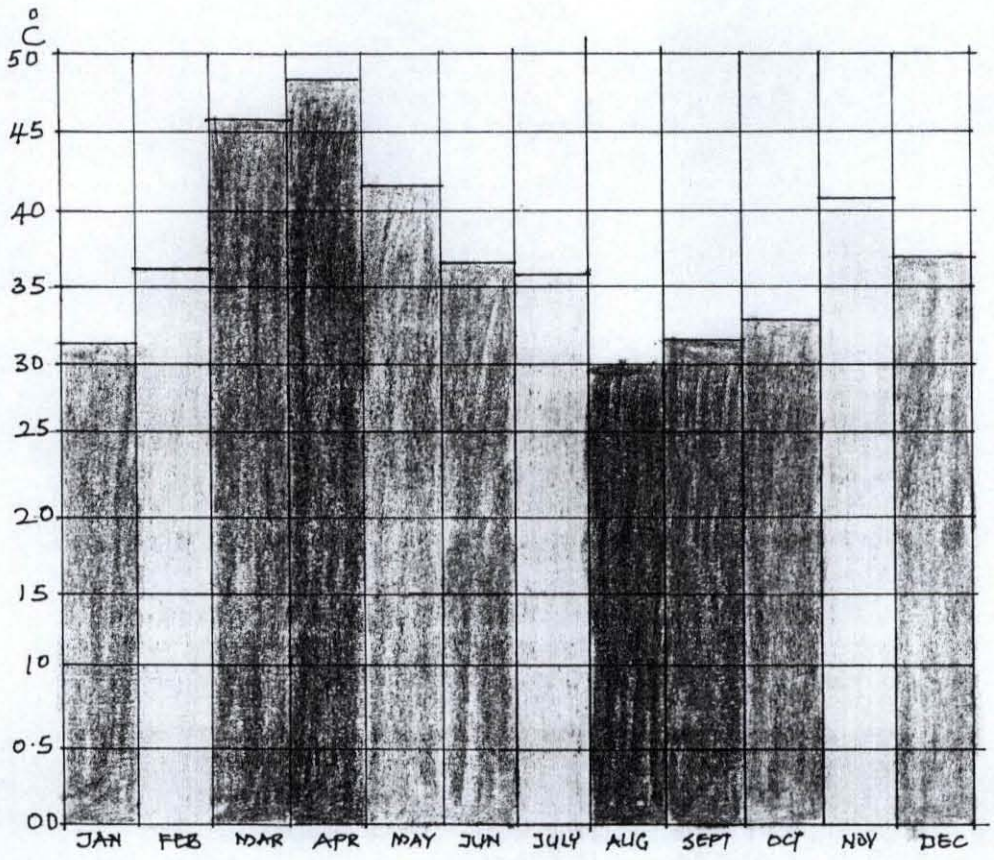


FIG: 3



TEMPERATURE IN BAR CHART

FIG·2

300 metres above the undulating plains of the Gusau terrains. Prominent of these inselbergs is the Kotarkwashi hills to the east of Gusau.

The Gusau uplands are traversed by some small streams and rivers. These are tributaries of the Rima, Sokoto and Niger rivers flowing west ward and southward along the regional slope of the Gusau area.

5.6. VEGETATION.

Gusau is located within the Sudan savannah zone. It consists of short, turft grasses forming a matrix for thorny shrubs and scrubs. Thick and perennial forest vegetation is found along the valleys of the major streams and rivers that truncate the area. The depressions (Fadama) are intensively farmed giving a system of economic green in the area. Together with the several cereal crops grown during the rainy season, the vegetation cover moderates the otherwise harsh physical landscape.

The dominant trees are Acacia Senegal and Insoberlina (doka). The caesalphicaceae and combustanceae trees are also common economic trees like Adosonia digitata (Baobab), mangifera indica (Manges) are common in the area. In this harsh and fragile environment, the vegetation needs to be saved and generous landscaping encouraged.

MAP OF NIGERIA SHOWING VEGETATION COVER.

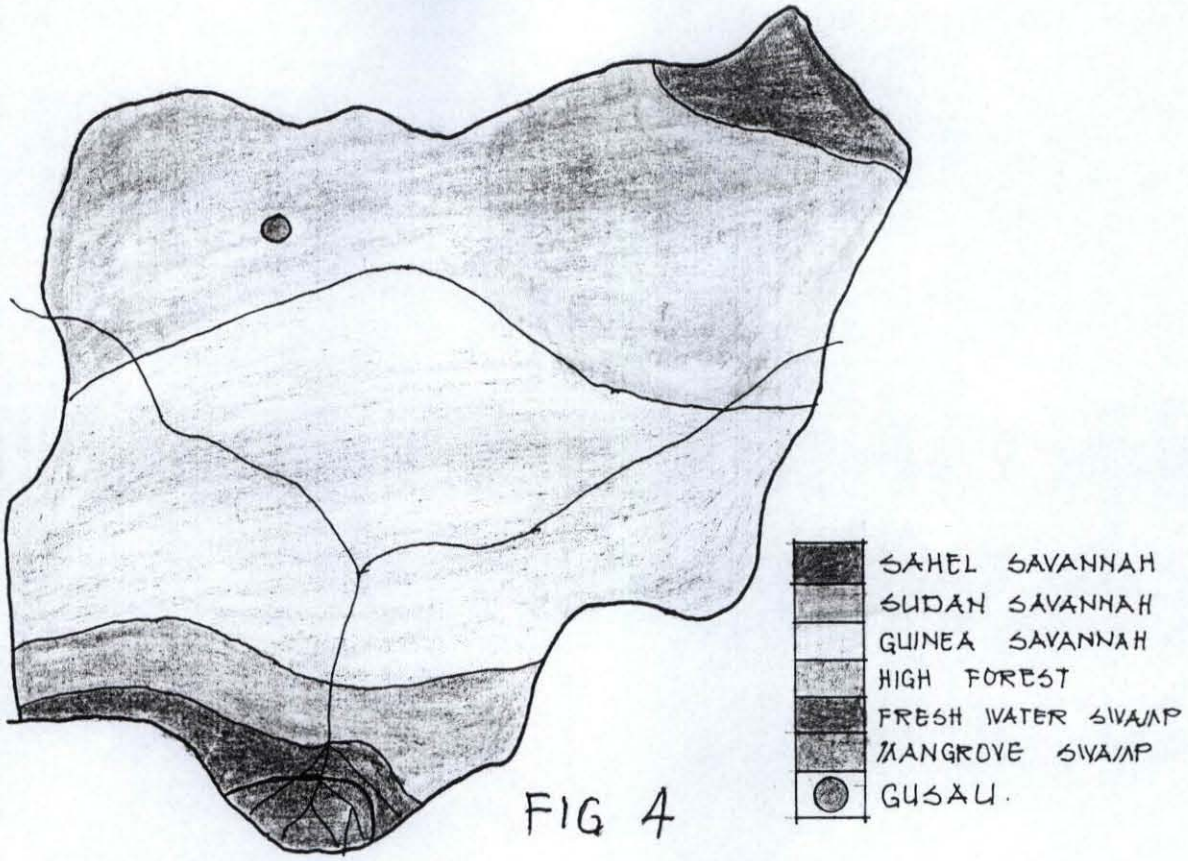


FIG 4

MONTH	AV. MONTHLY RAINFALL	AV. MONTHLY MEAN TEMP.	AV. MONTHLY REL. HUMIDITY
JANUARY			
FEBRUARY			
MARCH			
APRIL			
MAY			
JUNE			
JULY			
AUGUST			
SEPTEMBER			
OCTOBER			
NOVEMBER			
DECEMBER			

TABLE OF SUMMARY OF METEROLOGICAL DATA FOR GUSAU.

5.7. SOCIO-CULTURAL LIFE.

There are numerous ethnic groups in gusau town. The Zamfarawa constitute about 96% of the total population of the town. They are the indigenes of the town and they are farmers and traders. There are other Hausa and Fulani people as well as other northern ethnic minorities like the Gwari, Nupe, etc. together with the business oriented Igbo and Yoruba people from the Southern part of Nigeria. As the town grows, it shall become more cosmopolitan.

The cultural environment in characterized by strong family ties and Islam are the religion of the people. Christianity is being practice by the ethnic minorities in the state.

Id,-El-Maulud, Id-ElKabbir and Id-ElFitri are usually highly festive periods in the state. Therefore the social influence of Gusau is strong and associated with religion activities especially Friday prayers and a network of social visits.

In addition, intense interaction between Gusau and settlements in its immediate region is marked by visits for medical, educational and cultural services available within Gusau.

5.8 ECONOMY AND COMMERCE.

Gusau is a town, which enjoys a locational advantage and therefore it serves as a first order commercial center in the Sokoto sub region. Wholesale trade is quite strong owing to the towns collecting and distributing role for industrial and agricultural goods at town and regional levels.

The wholesale trade facilities are located in the canteen area of the town where the railway sidings are found and access by road is adequate. That is, wholesale establishments like SCOA, U.A.C, NTC, etc. are located in this area, including large private –owned wholesale businesses.

Commercial activity occurs in traditional markets in the town. These include the central market, which is located in the old part of the town. It is a regional market with the highest level of activity occurring two days a week and is attended by the town population and people within influence zone.

5.9 DEMOGRAPHIC DATA.

The 1991 national census put the population of Gusau local government at 260,446. The population of Gusau town is taken to be about 95% of this figure; that is, 247,425 person in 1991. At a growth rate of 2.5% the figure is estimated as 294,671 in 1996. Using 3.5% growth rate, the population figure for 1997 is estimated as 304,984. Taking 1996 as the base

Table : 2

Table 2: Population Projection for Gusau, 1991-2010				
Base Yr	Pop. [Nos]	Growth Rate [%]	Projection To Yr.	Pop [Nos].
1991*	247425	2.5	1996	294671
1996	294671	3.5	2000	338142
2000	338142	4.0	2004	395578
2004	395578	3.5	2010**	486226

* The National Population Census year

** Target year of the plan. The population for that year is rounded off to 500,000.

year, the later estimated population figure is projected to the year 2000 as 338,142.

A higher rate is used for the five years in the period between the period between the period 1997-2000 reflecting the expected (and observable) rapid population increase for Gusau owing to the influx of public servants, services-workers, etc. associated with the state creation.

5.10 TRANSPORTATION AND TRAFFIC FLOW.

Gusau had some facilities for road, air and rail transportation before becoming a state capital. Four roads namely Zaria road, Sokoto road, Kaura Namoda road and Kontagora road link Gusau with the rest of the country and some neighboring countries.

The national network, which extends from the south to the north-west axis passes through Gusau and terminates at Kaura Namoda.

The airstrip is located along Kaura-Namoda road. The air traffic is very light but air travel is still a strategically significant means of passenger transport to and fro from Gusau.

5.11 **EXISTING LAND USE AND FUTURE TRENDS.**

Gusau has grown to cover a built-up area of about 4428.6 hectares. The developed vacant land is about 19.78.1 hectares (45%). The gross density is about 125 persons per hectares. The town area consists of about

44% for residential use as the largest land use category. This is followed by public/semi public (27%) road space (9%) industrial (6%) and commercial (5%).

For its size, the industrial and public/semi public land uses of Gusau occupy rather higher proportion of the built-up area. This is on accounts of the leadings industrial role Gusau has played as a second order town within the Sokoto region and because of the quite generous land allocated to public uses without relating it to realistic level of need.

5.12 DEDUCTIONS

Having collected all the required data for the project. The climatic condition is so studied carefully to distinctively select the best approach to the design and construction of the project.

CHAPTER SIX.

6.0. SITE ANALYSIS.

An in-depth study of site was carried out by geographical maps to acquaint one with the relief/topography of the site and natural features present at the site. A visit was also paid to the site to confirm the map work and to take stock of the existing natural and artificial features of the site.

6.9 CRITERIA FOR SITE SELECTION.

Libraries which form part of a larger organization in a building complex with seldom have much say in choice of site. In a university the master plan will probably have fixed the library site will usually be a section of a building rather than a piece of land on which to build. The public library, on the other hand, must take the question of site selection very seriously because so much of its success in attracting readers will not only depends on the functionality of the design solution, but also on a careful choice of site. It has to be central and easily accessible from main traffic routes by those it is designed to serve.

The site must be suitably oriented to its immediate vicinity by making sure that, the use of the site compliment with the surrounding, considering the distance to the site from the farthest point that its services, availability of utility services such as communication link, electricity water. A suitable site

r a particular purpose should take full advantage of above injunctions and well as the following consideration.

a. Proximity to central business, state and federal government areas is important for five main reason; (1) both business and government officials conduct extensive research as part of their routine functions. (11) These three areas will be an employment centre for thousands of educated people who will want to use the library for personal reason during their leisure time.

b. The library should be located near, but not adjacent to activities that continue after regular working hours, such as theaters and restaurants.

c. The library should be adjacent to the public transit routes.

d. The library should be located in an area of heavy pedestrian circulation and directly linked to the central area pedestrian network.

6.1.1. ANALYSIS OF SITE EVALUATION.

LOCATION: the site is along the secretarial road, within the vicinity of the federal government secretarial (FGS), the state government secretarial, house of Assembly, Judiciary ministry and the local government area secretariat.

SIZE: - total area covered is 80,000m2

TOPOGRAPHY: the site almost flat with a gentle slope towards the eastern part. The geological soil and the subsoil is good for horticulture (i.e. landscaping) and easy to clear for construction.

HYDROLOGY: - it is not swampy.

6.1.2 PUBLIC UTILITIES: - electricity supply water supply, telephone and other communication are easily available within the site location.

6.1.3. SITE ZONE: the site for library is zone in the federal and state government area as well as the business area.

6.2.4 SITE LOCATION PROPER.

The location of the site is at the heart of the administration centre of Gusau. It has access road on two sides of the plot as shown in the master land use plan of 1997-2010. The piece of land is rectangular in shape and it measures 200 x 400m2 in area.

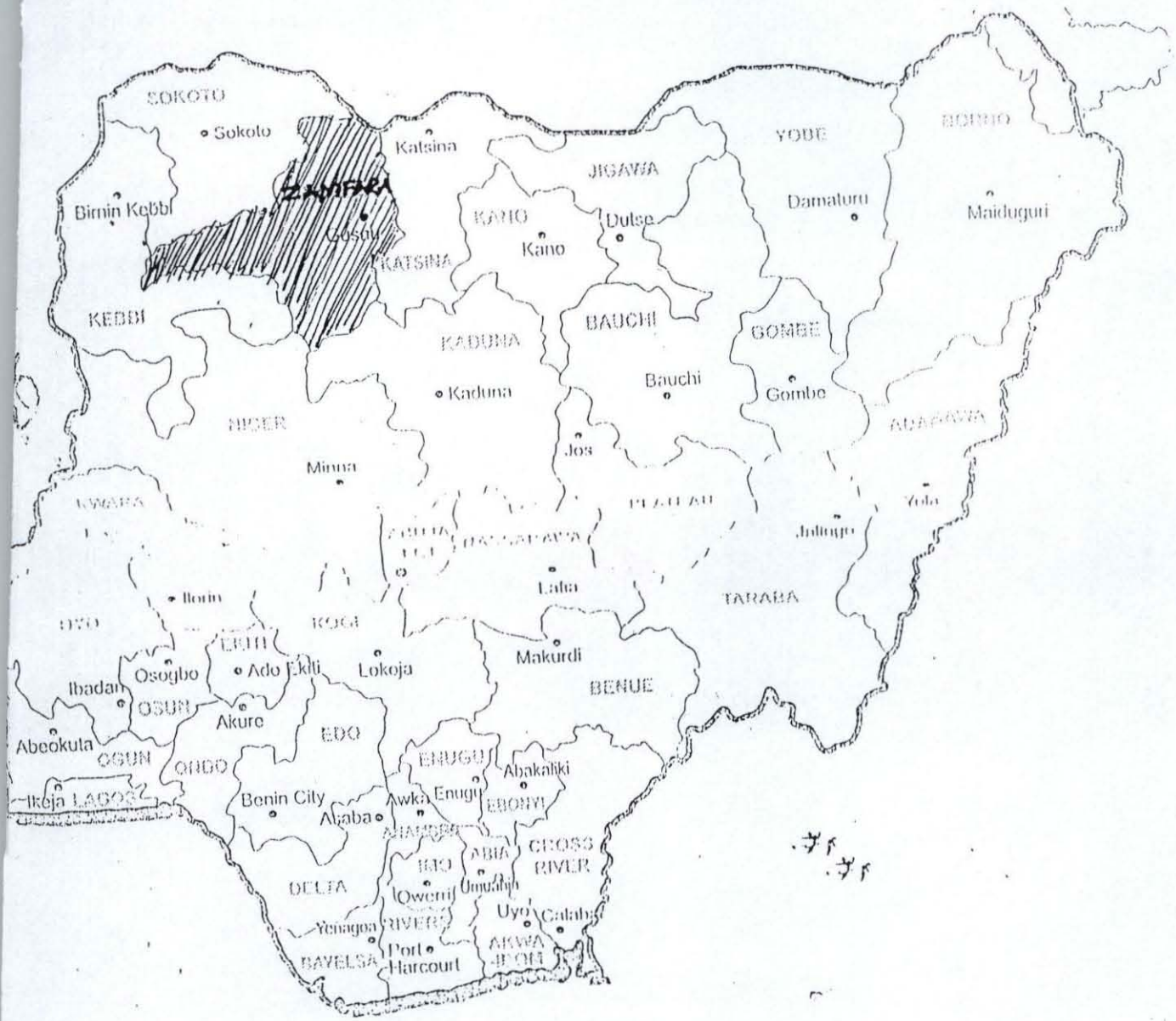
Actually, the site is undeveloped (vingin) and is meant for future development, as indicated in the master plan.

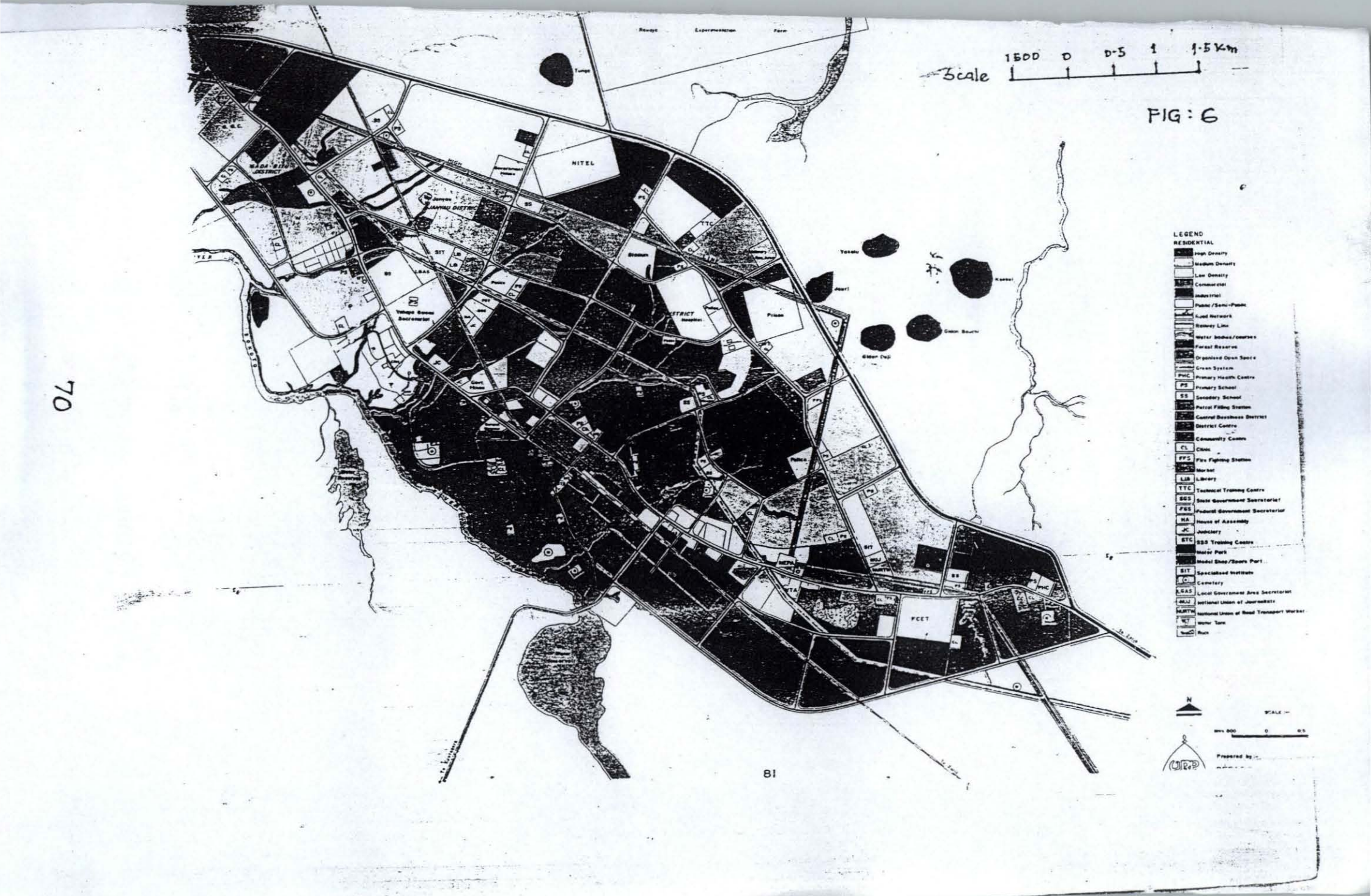
6·3 **ACCESS AND PARKING.**

i) Separate entrance/exit should be provided to service entrance visitors parking area and staff facilities.

MAP OF NIGERIA INDICATING ZAMFARA STATE.

G: 5




Scale 1500 0 0·5 1 1·5 Km
FIG : 6
LEGEND
RESIDENTIAL
High Density
Medium Density
Low Density
Commercial
Industrial
Public /Semi-Public
Road Network
Railway Line
Water bodies/courses
Forest Reserve
Organised Open Space
Green System
PHC Primary Health Centre
PS Primary School
SS Secondary School
Petrol Filling Station
Central Business District
District Centre
Community Centre
CL Clinic
FFS Fire Fighting Station
Market
LIB Library
TTC Technical Training Centre
SGS State Government Secretariat
FGS Federal Government Secretariat
HA House of Assembly
JC Judiciary
STC SSS Training Centre
Motor Park
Model Shop/Spare Part
SIT Specialised Institute
Cemetery
LGAS Local Government Area Secretariat
NUJ National Union of Journalists
NURTW National Union of Road Transport Worker
WT Water Tank
Ruin
NITEL
Prison
Police
FCET
N
SCALE
Prepared by :-

ii) The national library should have direct access from public right –of way, of at least collectors standard or a permanent basement connected to a public right- of way.

iii) Drive ways provided to the above access requirement should be surface with an appropriate all-weather material to minimize dust and debris and provide safe access and should meet the minimum standard for local roadways.

iv) Parking should be provided for the projected numbers of cars driving users of the library. Parking areas should be relatively close to the building.

v) Parking should be provided for library personnel at a standard of one space for every 3-4 employers.

vi) It is expected that parking for national library will consist entirely of surface parking.

The following guideline defines the conditions under which this parking areas should be developed.

(a) Parking lots should not be built immediately adjacent to the public right –of-way. Lot should be set back a sufficient distance to allow landscaping of the parking lot perimeter, and provide safe entrance and exit.

(b) Large expanse of parking should be avoided.

(c) The numbers of driveways and curb out within the library site should be minimized through the use of shared entryways and clustered parking arrangements.

(d) On- street parking contributions to traffic congestion and should be allowed in the central area.

However, the site is accessed from a tarred road at both ends of the site, which is motorable.

6.4. UTILITIES.

(a) The library site has the following basic facilities that pass along it, sufficient to meet the needs of the users.

i. Portable water supplies.

ii. Waste water disposal system.

iii. Telecommunication system.

b. Where these basic services lines must be extended into the site, they meat following guideline.

(i) All interior – site utility times will be located underground and the allocation co-ordinated with the alignment of street and layout of buildings between the connection periphery of the site or, where utilities must be located above ground (telecommunication only)

there should be visually screened from public right –of-way, internal site roads and on site or adjacent development. Preferably these above ground lines should be run in a side lot or real lot location and buffered with planting or other appropriate landscape treatment.

(ii) Dedicated basement for utility alignments will provide for any intensive utility time to ensure continued access for service and repair of facilities.

6.5 SCENERY/MAN-MADE FEATURES.

There are no scenery/man-made features on the site

6.6. ENVIRONMENTAL PROBLEMS.

There are two major problems that are associated with the issue of the environment in Gusau.

(i) The thermal comfort.

(ii) Wind control.

6.6.1 THERMAL COMFORT. This constitutes a problem wherever there is high temperature in the area. But, ensuring necessary careful designs of the walls, roofs, as well as chosen good materials as method of construction could rectify this. All shunt of openings are carefully chosen and designed to achieve thermal comfort for both days and nights.

6.6.2 WIND CONTROL:

There is an extreme wind-blow in this area (Gusau) it is generally take care of by adequate landscaping and the use of external barriers as this would improves comfort conditions in the building. The designed of recess walls as well as the location of windows also serve as form of wind control devices.

6.7. DEDUCTION

Site analysis involves knowing the site condition. This is the first stage prior to the design. Access to the site, soil nature and terrain of ground, existing features, utility and environmental problems is being studied so as to known the type of structural design to be used, the orientation of the structure and also to envisage all constructional failure that could occur if the appropriate constructional method is adopted.

CHAPTER SEVEN

7.0 DESIGN CONCEPTS AND CONSTRUCTION

7.1 PLANNING PRINCIPLE.

The planning principle adopted is the one that provide flexibility in space allocation and use. A modular of good structure, which transfers all the loads to a system of columns and beams frame, frees the internal or partition walls do not bear any load and so can be knocked down at will without any effects to the rest of the building. It is possible to convert a shelf area to a reading room, office or whatever other functions it is intended, without any far reaching effect to the entire structure.

The following activity space are particularly considered in library design, organized along functional times: acquisition, cataloguing, circulation, special collection and administration which agrees with the fact that most planning of sites and building boil down to arranging space in a sensible relationship to one another and to the world outside.

The organization of the books and materials are done according to subject divisions, while some are available centrally. The unloading bay bears a special relationship to the acquisition section where new books are received, accessioned and recorded. Cataloguing follows, then the circulation section. The cataloguing hall should be located as close as

possible to the acquisition and cataloguing section since staff from both section make a frequent use of the library catalogues.

In designing a library building it is desirable to take account of the convenience and habit of library users in general. Most of them very often visit the library either to return books borrowed, use the reference room in order to make a quick reference enquiry or use the catalogue in order to assertions whether a particular title is in the library stock. Other call in the library for the purpose of borrowing specific works return borrowed books or using the facilities for private study. All these observations point to the need of planning the distribution of traffic in the building particularly at the entrance floor.

In allocation of reading spaces, standards have been established for readers in public libraries a floor space of $3.72m^2$, is considered. As for the numbers of seats required, it is 25% of the total population will be enough. Reading areas can either be closed access or open. Open access favours the opportunity of readers browsing around the shelve and enhances the possibility of discovery.

7.2 DESIGN CONCEPT

The great American architect Sullivan said, "the solution to a problem is in the composition of that problem", the requirement of a purpose building

cannot be divorced from the design solution. The design requirements dictate the space and eventually the building form. No wonder, he is claimed to have said "form follow functions", the function concept.

This project is no different. The purpose library has reading areas, technical section and circulation consideration, which must flow into each other systematically. Therefore the design concept is the function design concept as well as the elevational concept. The elevational concept (the main entrance) is achieved by the symbol of a torch and source of light. Light brings illumination, which is synonymous to knowledge. The burning flame from the torch is crested with the symbol of technology is a signification of the introduction of an environment via imposition/fusion of technology being the aid to acceleration of advancement and development to any society.

7.3 DESIGN APPRAISAL

7.3.1 purpose: The National Library, Gusau will inspire and enhance the education of all citizens of Gusau and its environ through its resources collection, and its services. It will provide space and facilities for a full services library, local art and craft displays, and educational programme of cultural and historical interest.

7.3.2 objective: The Library will ensure efficient operation, provide flexibility of space, be direct and easily considered in arrangement, and provide an environment that is friendly, intimate, and pleasant. The facility will be a live, vital place in which the discovery of ideas becomes exciting.

The main areas of the library are outlined below. Table 2 gives the schedule of accommodation and space requirements.

7.3.3 PUBLIC SERVICE AREAS

i. **Main entrance**:- the lobby will serve to introduce and welcome people to the library, capture their interest by display and special activities, help in directing them towards specific destinations, and generally set the tone and atmosphere of the building.

ii. **Main circulation desk, card catalog:-** the circulation desk are visible form the entrance foyer and it was located to serve as a control point for people entering and leaving the library. The circulation desk was also located in the proximity of the card catalog. The circulation desk also serves as an information desk. Other activities that will take place at the circulation desk are insurance of library cards, payment of library fines, and keeping of general book circulation records.

The card catalogs are visible from the lobby and adjacent to the circulation desk, and the technical process department. Since the card catalog will grow as the book collection expands, it was located in a position that will allow for expansion. The card catalog cabinets will have built-in telephone packs so that staff working with the catalog can communicate with staff members in the technical process department.

iii. Reference area: Reference services will include facilities for a reference librarian, a reference desk, and a collection of reference books, periodical indexes, and a periodical directory. Most of the reference materials will be on open stacks, some materials such as unbound past periodicals and newspapers and special reference volumes, will be shelved on closed stacks and/or controlled by the reference librarian. The reference reading study area is being provided with individual carrels. The reference section will contain a microfilm reader –printer.

iv. Popular reading and browsing (including current newspaper and periodicals):- This area of the library may include new fiction, best sellers, and currents newspaper and periodicals, plus books of special interest. The stacks will be open, visually and physically accessible to the library users. This area will include a general reading area with group table and seating and lounge-type seating.

v. Children stack, reading and browsing:- This area will have facilities for a children librarian. The children area will include an area for story telling and group seating.

7.3.4 SPECIAL SERVICE AREAS:-

Audio hall:- The audio hall will include phonograph records and tapes, film strips, microfilm, provided are cubicles (booths) for listening and viewing will be provided.

Conference room:- the conference room will be used by both the library staff and the public. The staff boardroom is located near the chief librarian office.

Auditorium/viewing hall:- the auditorium will be planned to film showing, other audiovisual services, and large group meeting. The auditorium is to be useable when other parts of the library are closed.

7.3.5 ADMINISTRATIVE AREAS

Administrative areas of the library include the individual offices or station for staff directly involved in the administration and supervision of the library.

Proximity relationships between departments

FIG: 7

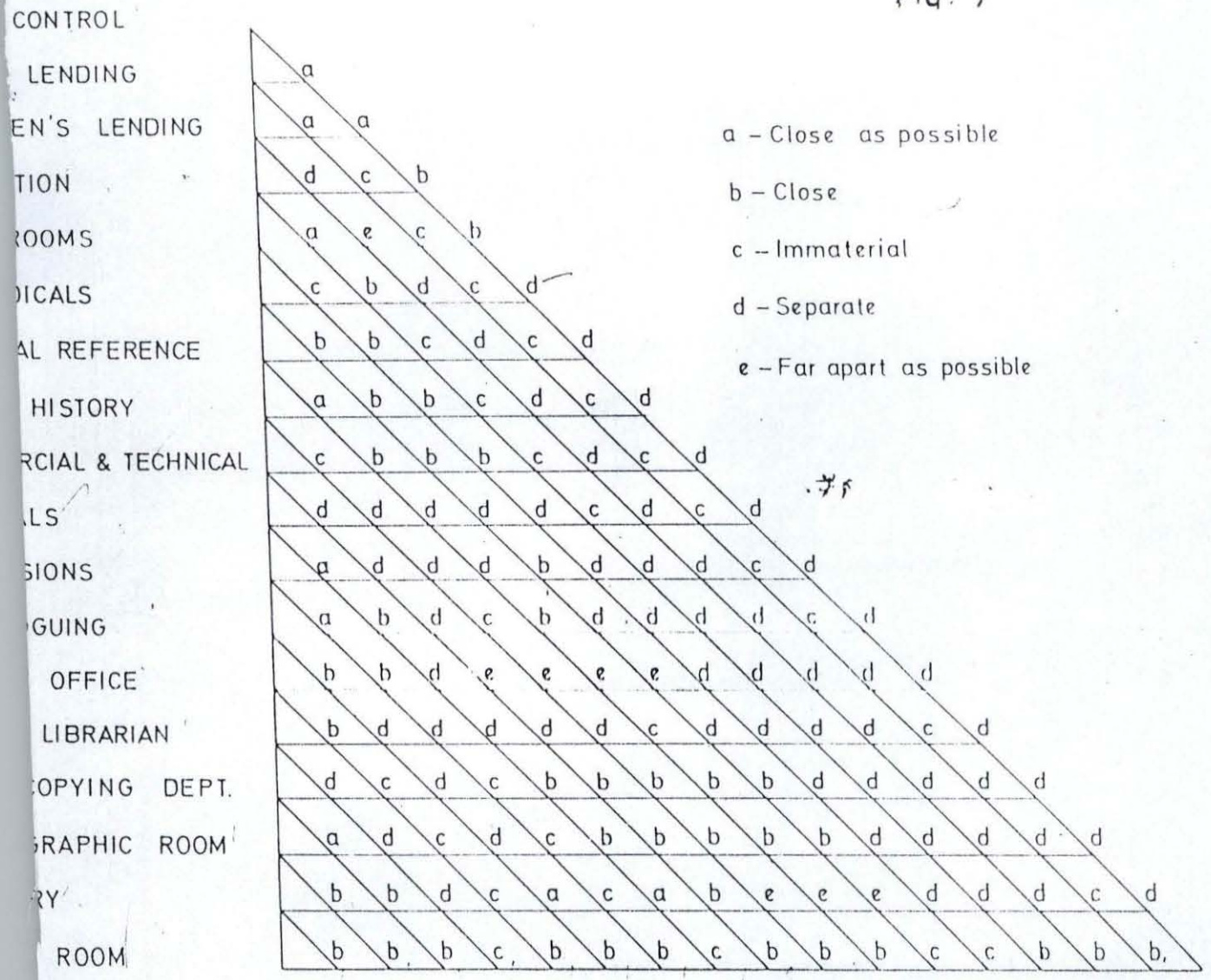
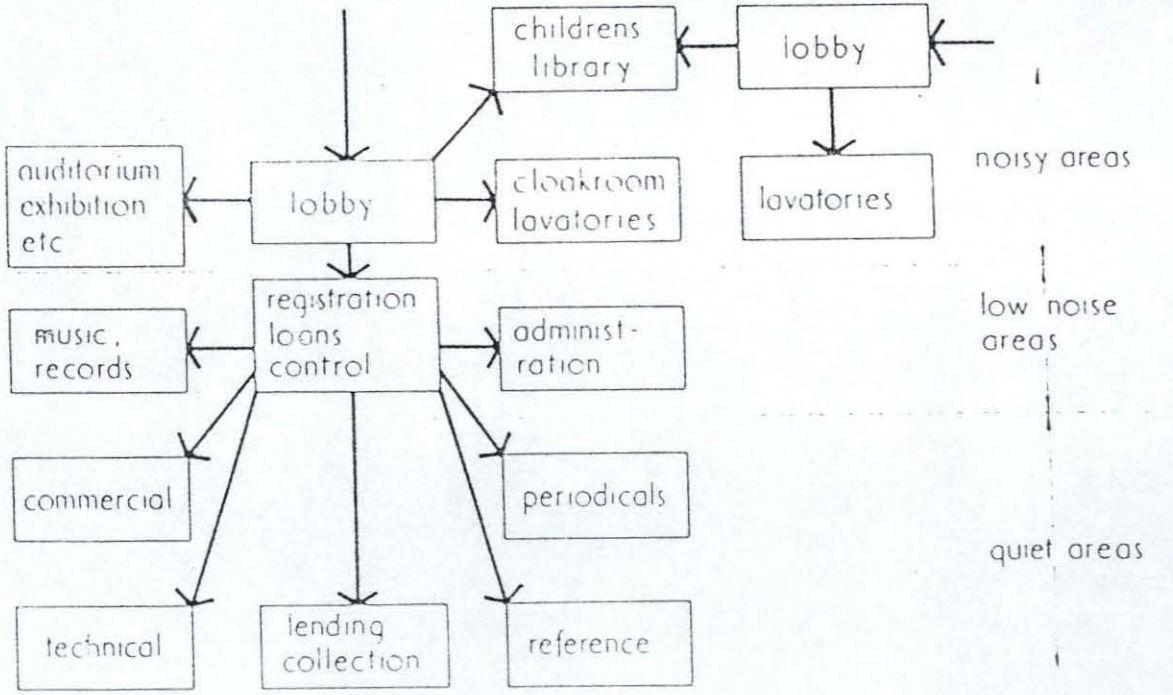


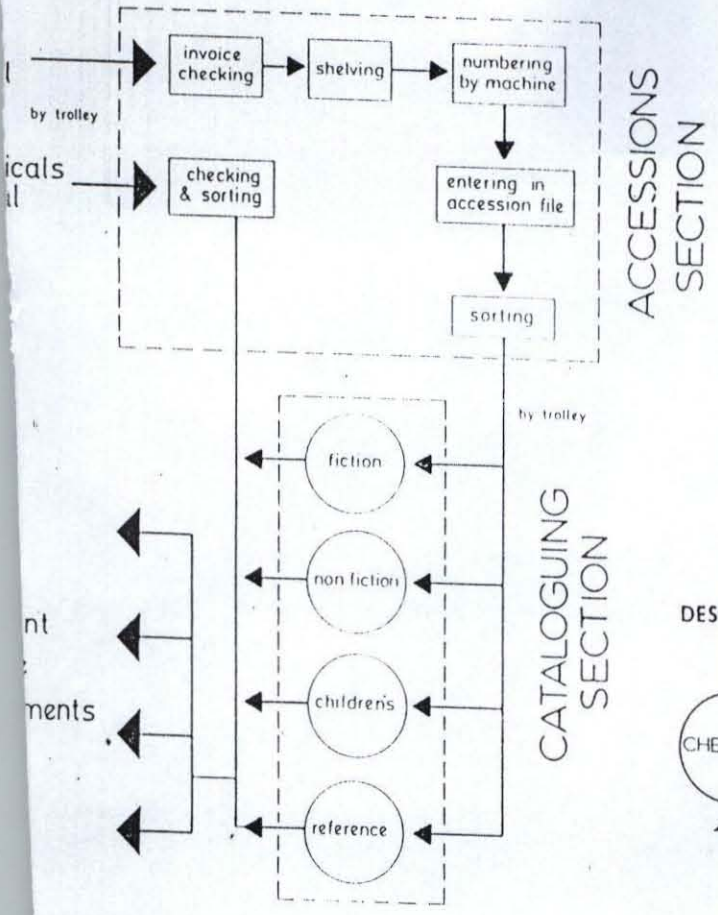
FIG : 8



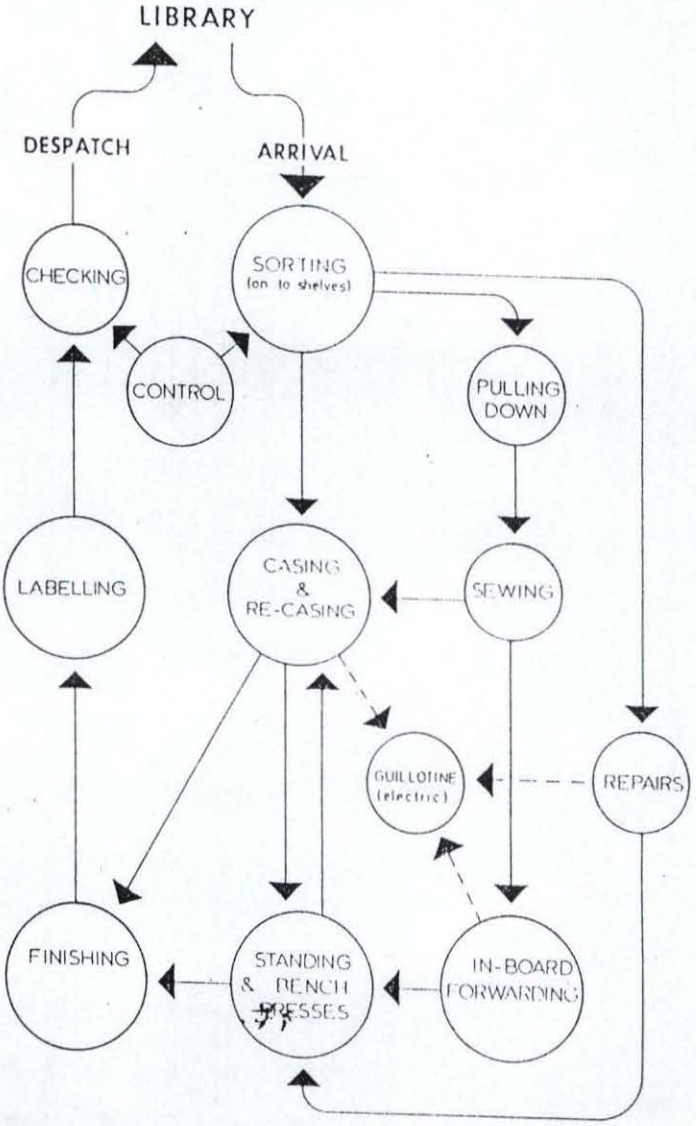
Progress of readers through a public library

fig : 8

FIG : 9

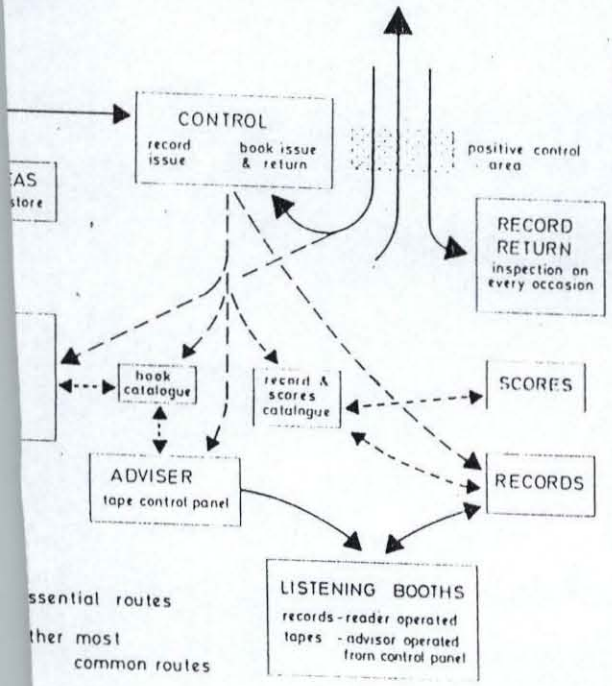


ls intake through processing sections



Flow diagram of library bindery

gram of music and record department



i. The chief librarian office will be accessible to the public through a secretary and will be convenient to the other staff and work areas of the library.

ii. The reference librarian's office are located in the reference area to provide supervision and control.

iii. The desks of the children librarian are located in the children area to facilitate supervision and control. The children librarian will organize children program and activities

7.3.6 work area (Technical process)

This department will be responsible for the planning and development of resources as well as their maintenance and bibliographical control. The area will include the following services.

i. **Receiving and mailing:** In this area all incoming material is unpacked and sent to the acquisition areas. All incoming materials are sorted here and forwarded to their respective department.

ii. **Acquisitions:-** This department order all library materials and checks all incoming materials against orders and invoices

iii. **Serials**: the serials area is where unbound library, materials are collated and organized before distribution to respective locations in the library.

7.4 BUILDING MATERIALS

The following factors are very important to be considered in choosing materials to use for library building.

a. **Cost**: the initial cost of material should not surpass the initial cost.

b. **Satisfied**:- materials chosen should not be dangerous

c. **Quietness**:- materials choosing should be of good sound insulation

d. **Comfort:-** Comfort of both users and staff should be considered in the choice of materials.

e. **Durability**: All the materials chosen should be able to stand the test of time without fading or being destroyed by strains.

f. **Maintenance:-** Materials chosen should be easy to maintain in cleaning with les cost.

g. **Appearance**: Material appearing to the eyes should be chosen.

7.5 FLOOR MATERIALS

All materials are generally subject to wearing and tearing depending on the amount of usage. In choosing for floor, consideration was given to the quite area, low noise and heavy traffic areas.

I. Quite area: Including all the reference sections, reading areas, carpet is recommended, for its good acoustics quality. With a quality sponge rubber underlying will help to produce an even softer feel and longer a life. This underlay can be laid as a roll, prefixed to a roll of carpet or pre-fixed to each carpet tile.

ii. Low noise areas: this materials use here will staff working rooms. The materials use here will have some acoustic qualities though may not be to the same degree as the quite area. P.V..C sheets is recommended, for the floor finish, based on its resistance to wearing and tearing. It is resilient and can stand weak acid ills.

iii. Light reflection:- The wall will have sufficient reflective qualities especially in the reading areas. Washable distemper light colour quality is recommended for reflection and maintenance purpose.

7.6 MAINTENANCE:

Wall surface especially areas prone to constant touch by readers will require cleaning from time. Therefore materials that will fade due to regular cleaning are avoided. A hard smooth and washable surface is desirable.

7.7 CEILING MATERIALS.

Light reflection and acoustics are considered when deciding on ceiling material. Suspended ceiling will be use in all the components parts of the building. Cellotex acoustics ceiling will be use.

7.8 FURNITURE AND EQUIPMENT.

As furniture and equipment commonly account for between 10 percent and 15 percent of the total cost of a library project, this is obviously not a matter to be treated lightly.

Shelving: Factors to be considered are appearance, durability, suitability for purpose, and cost; in practice there are other factors, such as weight, stability, public safety and so on. The relative importance of the qualities of book shelving will vary, not only according to the type of library but also in different sections of each library.

Materials to be housed compare mainly of bound hardback books. Special furniture have been manufactured for holding of microfilms, sheet maps and computer products as well as charter rolls, broad slides, rolled maps, prints and other inconveniently shaped materials.

Back file of newspapers, periodical and seminar papers are bound into book form or collected in boxes and shelved.

TYPES SHELVES.

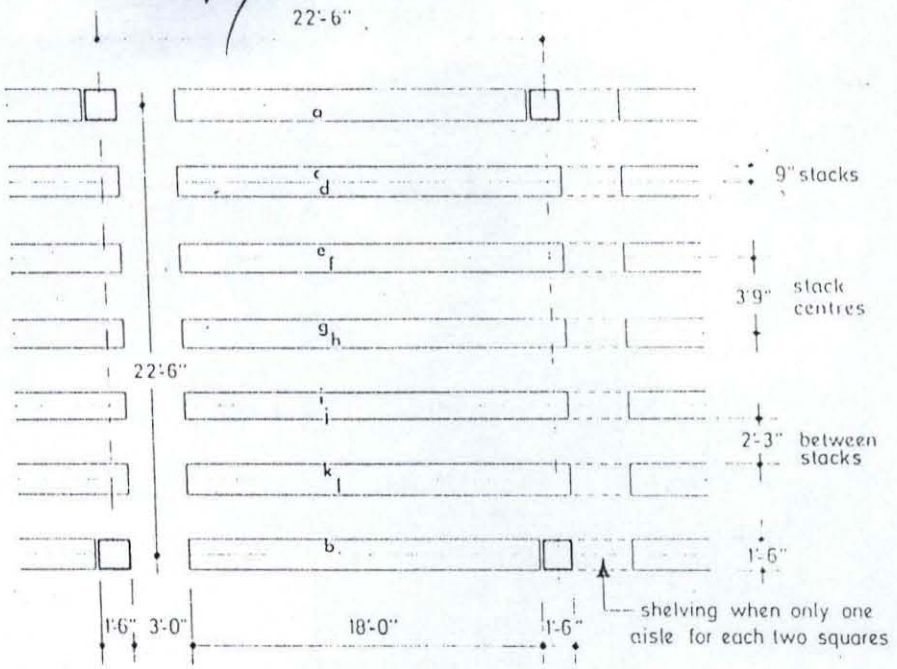
The first consideration is the choice of materials- wood or metal; plastic shelving is not yet a feasible proposition.

Metal shelving is recommended in this project. Is much the most common for tall stacks in large libraries where vast stocks of books have to be housed. The stacks are usually of steel although some pillars and brackets are now made of lighter materials. The stacks are of considerable strength and the shelves, can now be provided up to 1400mm long without intermediate supports.

A. There is a bracket shelving with closed base, the easiest to rearrange. Closed base acts as a shelf, spreading the weight more evenly along the floor, but can cause floor damage. Fairly stable if corners are welded;

Copy

Closed stack:
Imperial sizes



A

A Example based on a grid of 6·9 m (22 ft 6 in)
One 3 ft cross-aisle per grid square
2 single-sided stacks (a and b) each 18ft long = 36 ft
0 single-sided stacks (c to l) each 19 ft 6 in long = 195 ft
} = 231 ft
31 ft 7 shelves high = 1617 linear ft
617 linear ft at 6 books per ft 9702 books 19 books/ft².

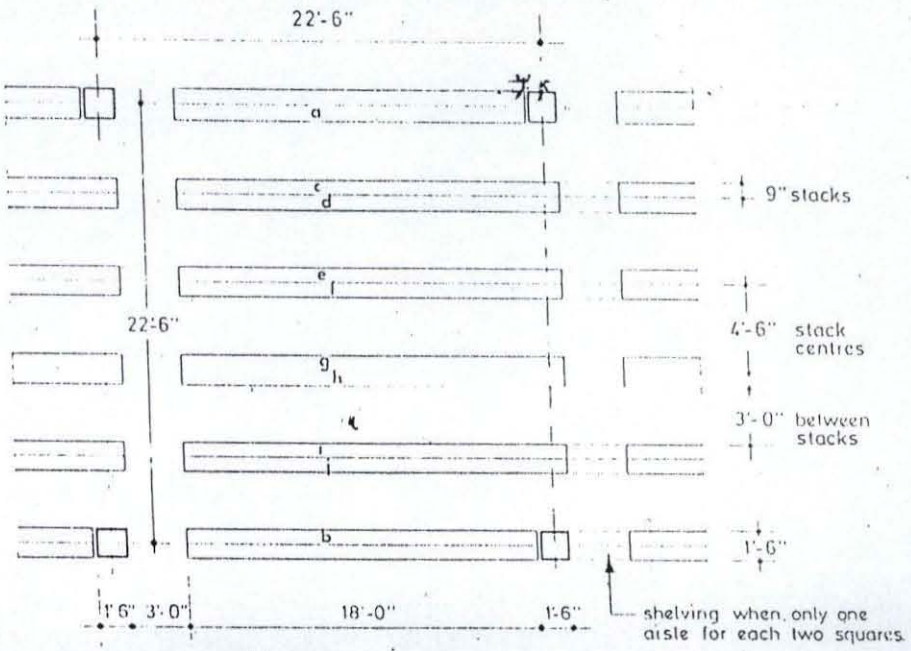
ne 3 ft cross-aisle every other grid square
xtra shelving = 12 × 3 ft = 36 ft

ft 7 shelves high = 252 linear ft
2 linear ft at 6 books per ft 1512 books every other square
= 756 books per square
9702 ÷ 756 = 10 458 books
= $20\frac{1}{2}$ books/ft².

B Example based on a grid of 6·9 m (22 ft 6 in)
One 3 ft cross-aisle per grid square
2 single-sided stacks (a and b) each 18 ft long = 36 ft
8 single-sided stacks (c to j) each 19 ft 6 in long = 156 ft
} = 192 ft
192 ft 7 shelves high = 1344 linear ft
1344 linear ft at 6 books per ft 8064 books = 16 books/ft².

One 3 ft cross-aisle every other grid square
Extra shelves = 10 × 3 ft = 30 ft

30 ft 7 shelves high = 210 linear ft
210 linear ft at 6 books per ft = 1260 books every other square
630 books per square
8064 ÷ 630 8694 books
= 17 books/ft².



B

units can be taken apart and stand-alone. If sway braced, stacks cannot stand alone, but can be demounted and stored in small sections.

B. Bracket shelving with open base: stacks rest on pedestals, allowing better air circulation and easier cleaning. Recommended for very large runs of stacks, but pedestal may puncture floor.

Shelve dimension

Table 3

Area	Unit (m)
Children	1.5
loan	2.0
Bookstand	2.3

Source: archi data.

Table 4.

Books types	Shelf depth (m)
Children	0.2 – 0.3
Fiction, literature, history, politics, economics, law	0.2
Scientific, medical technical.	0.3

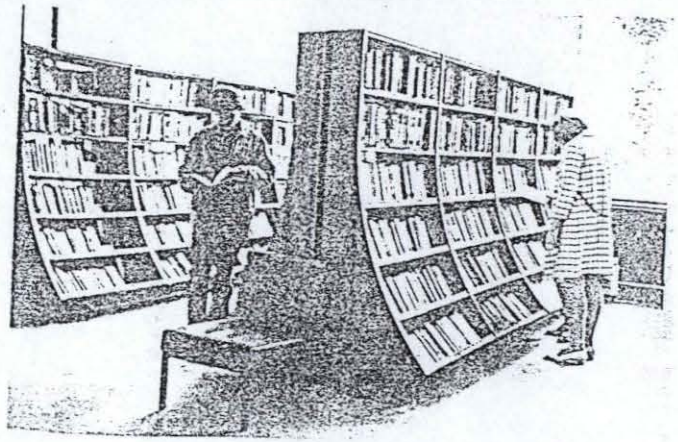
C. Bracket shelving with open base: resting on elongated pedestals for greater stability. Weight distributed more evenly with less possibility of front and back sway, but pedestals may be a hazard for people walking in aisles.

D. Slotted or standard shelving with welded corners or sway bracing: braces are unnecessary with finish bases, end panels, and canopy types, or it section corners are welded units may stand alone; can be made of wood or metal shelves more difficult to adjust than bracket type.

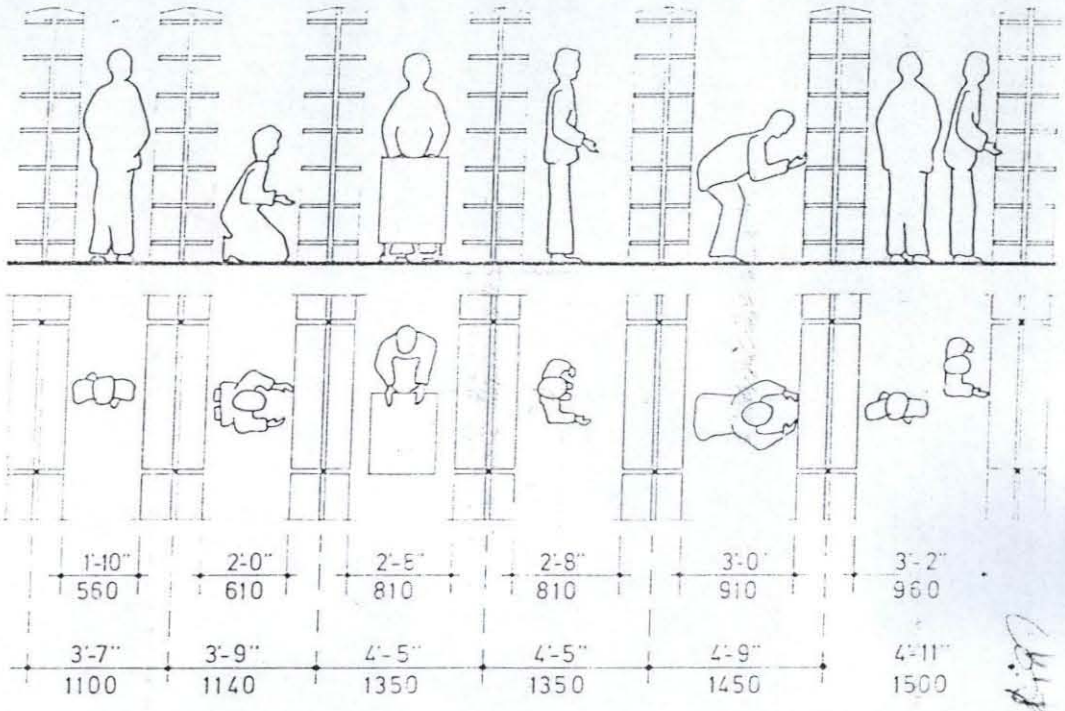
All stacks may have various end panels – metal, wood or fabric. If fabric is used, acoustical material may be applied underneath for greater noise control.

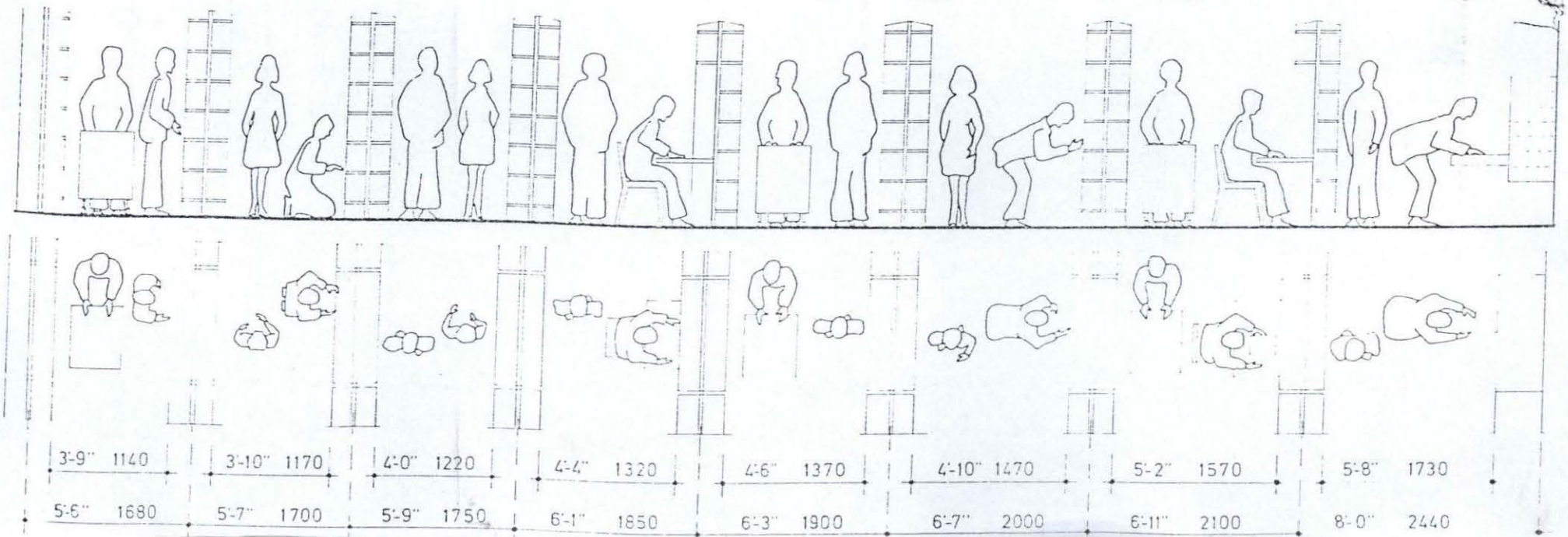
7.9 CATALOGUE CABINETS.

The size of the drawers is related to the size of the guide cards, which are naturally larger than catalogue cards. Steel catalogues are noisy; softwood and plastic are nearly always unsatisfactory. Hardwood is experience but almost inevitable. Some catalogues incorporate consultation, shelves below or between the drawers.



Central Library, Grimsby (The Terrapin International Group; photo: A. C. H. Kirk)





This page and facing page: Minimum clearances for various attitudes in shelving areas

FIG : 12

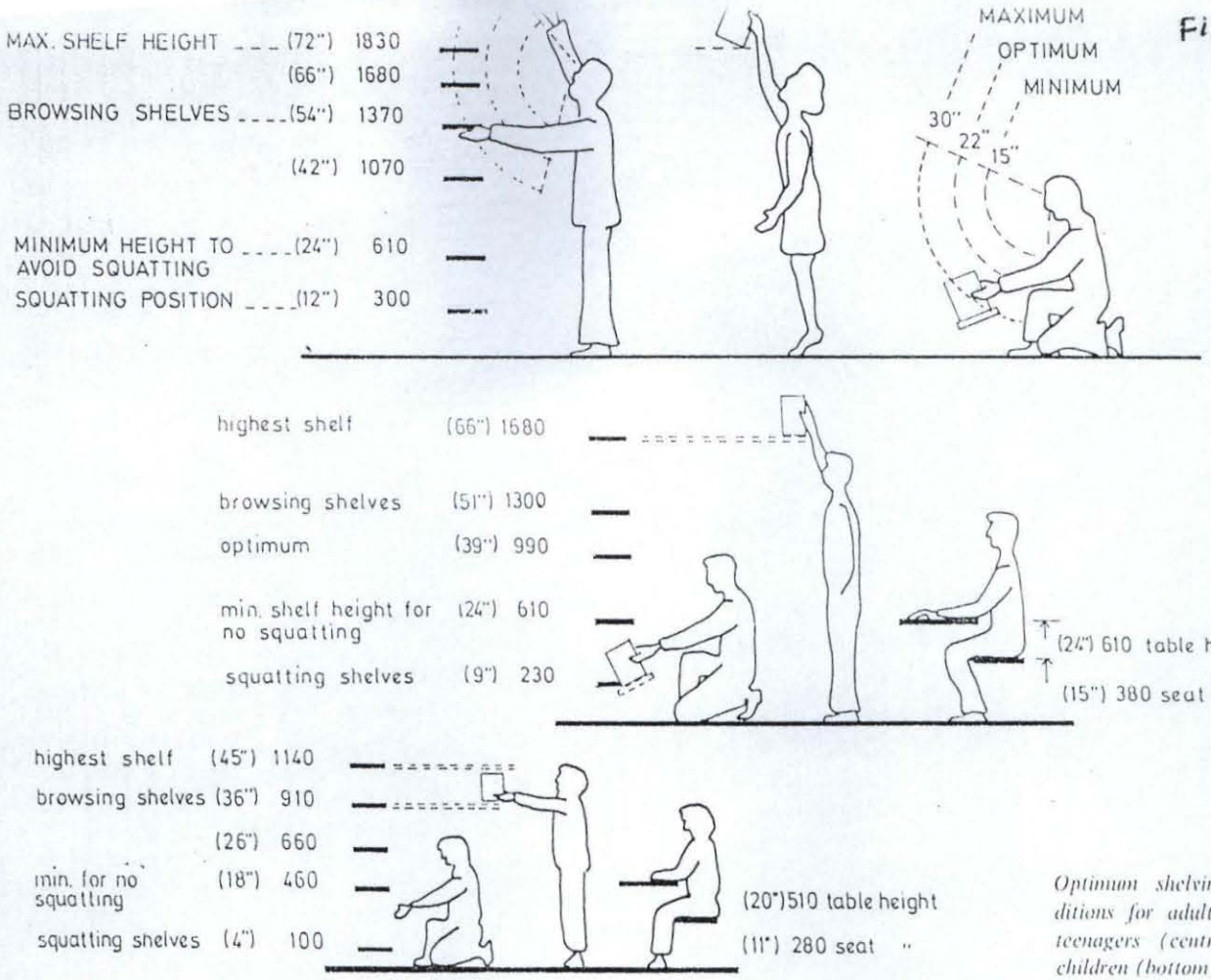
7.10 GUIDES

Guides to the contents of the individual cases, ties or even shelves will be needed and an infinite variety of these is available. In close stack area guided are less important because only the staff will have to locate books.

General guides: In a prominent position near the reader entrance there will be a plan of the shelf layout of the entire library, another will be needed for each separate room. Ingenious systems have been devised, ranging from a layout map with coloured symbol (the colours being associated with the guides to individuals shelving areas) to press-button system, which light up the required area on map.

Guide to shelves: Because of the greater thickness of steel shelves there is often provision for lettered strips to be slid along the front edges of the shelves, either letter by letter or in made up words;

Book supports: As shelves will seldom be completely full in open access conditions, rows of books will tend to fail sideway, so some form of support is valuable, particularly for large books. The supports can take the form of reversed u-shaped of rounded section rod, screwed onto the shelve but on both wood and metal shelves movable support are more usual. These can stand independently on the shelves, being move along as books are inserted or removed.



Optimum shelving conditions for adults (top) teenagers (centre) and children (bottom)

81

Fig: 13

7.11 CONSTRUCTION

The structure of any building must evidently be strong, stiff and durable so as to last its life-span safety and in good condition. It should also, allow the changes of use, which may be needed from time to time. The construction technology of the library building will be based on a trade-modern method since the structure will be based on the post and plan method.

The foundation is reinforced concrete spread footing. A system of grid beams is used to carry the load of the building town to the column. While walls mainly serve as partitions to subdivide the enclosure to the define space. The columns and beams are made of reinforced concrete while the walls are largely made of hollow sandcrete blocks. The floor slabs are made of reinforced concrete with the ground serving as a good bearing platform for the ground floor slab. Upper floors, the slabs are suspended by the system of WAFU system of construction

7.12. NOISY AND HEAVY TRAFFIC AREAS: which include corridors reception and stairways, rug carpets are recommended.

7.13 SPACE REQUIREMENT

GROUND FLOOR.	AREA. (m^2)
Entrance foyer	$76.8m^2$
Control & enquiry unit	$54m^2$
Exhibition hall	$72m^2$
Catalogues	$22.8m^2$
Services counter	$28.8m^2$
Book sorting	$24m^2$
Reproduction	$15m^2$
Binding and repairs	$15m^2$
ACQ librarian	$12.25m^2$
Books store	$60m^2$
Books process	$30m^2$
Periodicals, newspaper journal	$180m^2$
Children section	$384m^2$
Snacks	$5m^2$
Audio hall	$62m^2$
Viewing hall	$176m^2$
Seminar/conference hall	$115.2m^2$

AVC librararian	$15m^2$
Cubicles (7)	$33.6m^2$
WCS (14)	$25.2m^2$
Furniture store (15)	$10.8m^2$
Projection room & store	$51.6m^2$
Lift	$7.2m^2$
Tea room	$9m^2$

FIRST FLOOR	Area (m^2)
Periodical	= $144m^2$
Browsing	= $144m^2$
Serial librarian	$20.16m^2$
Serial library	$139.2m^2$
Reference library	$198m^2$
Computer/internet service	$90m^2$
Head of computer service office	$11.52m^2$
Photostat and typing unit	$1.6m^2$
Services counter	$9m^2$

Sorting	$15m^2$
Store	$15m^2$
Office (2)	$33.6m^2$
Stoves (2)	$= 20m^2$
Carrels (4)	$= 12.96m^2$
WCS (11)	$19.8m^2$

Second floors	Area
Reading I	$343.36m^2$
Reading II	$192m^2$
Special collection unit	$= 150m^2$
Chief librarian office	$39.3m^2$
Secretary office	$17.86m^2$
Deputy librarian office	$16m^2$
Staff meeting room	$21.09m^2$
carrels	$30m^2$
Tea room	$12.96m^2$
Sorting	$7.5m^2$
Store	$15m^2$

Offices	$7.5m^2$
Store	$33.6m^2$
Stoves (2)	$20m^2$
WCs (11)	$19.8 (m^2)$

Third floors	Areas (m^2)
Reading hall I	$343.36m^2$
Reading hall II	$258m^2$
Special collection unit	$150m^2$
ATLAS & MAN COLLECTION	$= 78m^2$
Offices	$23.2m^2$
Offices (2)	$33.6m^2$
Carrels (4)	$12.96m^2$
WC (11)	$19.8m^2$

FOURTH FLOORS	AREAm^2
Reading hall I	$343.36m^2$
Reading hall II	$258m^2$

Special collection unit	150m^2
Facility management	70m^2
Offices	23.2m^2
Offices (2)	33.6m^2
Carrels (4)	312.96m^2
WCs (11)	19.8m^2

CHAPTER EIGHT

8.0 DESIGN SERVICES

8.1.0 LIGHTING

Choosing the best lighting for a library is a particularly complex problem because lighting has to do several entirely different things: to allow reading to take place in comfort, to contribute to the internal appearance of the building and, to a lesser extent, to the external impact upon the passer-by. For each of these there will be available artificial light, which is entirely controllable. Because the human response to light is largely subjective, or at any rate by which success can be judged.

Intensity of light is the most obvious of the questions to be considered but by no means the most important; in using light to contribute to the overall design one will have to comply variations, not only of intensity but also of quality, colour, direction, shape (as created by the fittings) and contrast with both operational efficiency and interior design. These variations will enable one's to indicate change of mood in different parts of the building, and to produce interest, quietness, sparkle or whatever effect one's wants to achieve. In doing so one must take care that reading conditions are not impaired and must assess what levels of glare and contrast are acceptable.

Recommended lighting intensities

	Recommended illumination (Lux)	Limit glare index
Reading rooms (newspapers & magazine)	200	19
Reading tables (lending libraries)	400	19
Reading table (reference libraries)	600	16
Close book stores	100 (on vertical surface)	-
Binding	600	22
Cataloguing –sorting stock rooms.	400	22

These figure represent the maximum acceptable degree of glare for the room in which each activity is to take place.

Table 5.

8.1.1 NATURAL LIGHTING

Any plan natural lighting depends upon the architect's ideas on fenestration. Natural light is free, but it has three great disadvantages:

i. Whether through wall or roof, it imposes severe restriction upon the flexible and economic use of floor and wall space.

ii. Protection has to be provided against the concomitant heat, cold and glare: this can be extremely expensive.

iii. Solar radiant heat can be partially deflected and its installation and transmittance reduced by the installation of special glass inevitably they will add to the cost.

There are enormous variations in intensity: A clear summer day can be twenty-five times brighter than a cloudy winter day, and as the human eye is very sensitive to change, variation of a tenth of this amount is unacceptable in continuous reading conditions. Also the continuous change in the angle of the light although predictable is often disturbing to the serious reader.

From the sole viewpoint of functional efficiency it would be much better to use only artificial, and therefore controllable light. But if natural light is used, the problem will be to control it, and to bear in

mind its various and changing effects when plan an artificial lighting system suited to the needs of the different users of the library.

8.1.2. ARTIFICIAL LIGHTING

i. **Intensity:-** standard of intensity are based upon the light- emitting power of a candle and the intensity is expressed in Candelas. The illumination is the spread of light over a surface and is expressed in Lux (or lumens/m^2). If a librarian does decide to use a light meter himself he should be sure that reading are taken at the horizontal plane at 850mm above floor level or at the normal working height, but it should be noted that light from any source decrease with the square of the distance from the source and that the illumination on a surface varies as the cosine of the angle at which it reaches the surface.

There is strong medical evidence that the human eye has not present changed in the last few decades and that no present-day readers eye sight would be strained by reading in the condition familiar to our fathers, even though such conditions, would today be regarded as intolerably gloomy. We tend to forget that to read black. Print on white paper is not difficult visually. Bad lighting will not damage the eye but information collection may be less efficient.

People who have the same standard of visual acuity (sharpness of vision) do not necessarily perform visually with the same ease. An increase in the intensity of light on the task material considerably improved its readability for the average person up to a level of 300lux. On the other people with poor sight benefit more from increase levels of lighting than do people with normal sight. It is also important to note that visual comfort (a very important matter) appears to be more affected by increased luminance of the surrounding area that is the actual task of reading.

An increase in the surrounding luminance to about thirty times that of the reading matter impairs the reading performance and increases discomfort. Uncomfortable conditions of luminance of the surrounding area are therefore more likely to give rise to complaints of glare. While the effects on reading performance may not be great.

Normal reading- and in serious working condition reading includes note-taking- can take place perfectly adequately with a general lighting intensity of 150lux. The light intensity we require depends drastically upon the task we are to perform.

A psychological factors to be taken into account is that reader will be happy to work in a bright area within sight of other areas

which are less brightly lit, but he will suffer a sense of frustration if he can see areas brighter than the one in which he is working. This must be allowed for in the layout by isolating from any brighter areas rooms where intensive study is to take place.

ii. Contrast:- Eye fatigue is caused mainly by glare and excessive contrast. Extensive investigation of the best lighting for comfortable working shows that the aim should be smooth graduation in brightness from the book itself to the immediate surround (the table top) and finally to the general background. A ratio of luminance (photometric brightness) of about 3:1 is between page and tabletop is probably best and more than 5:1 is bad for continuous reading. If the page must be white the tabletop should not be too dark; certainly it should not be black. The general background should not be les bright than the tabletop, but not excessively so.

Books are normally printed on white paper of a reflectance of 0.7 to 0.8. If the tabletop has a reflectance of about 0.2 – 0.3 and is illuminated more or less uniformly, the recommended luminance ratio will have been achieved. To give acceptable conditions the colour and material of the table top and the surrounding areas will have to be

balanced, so lighting cannot be considered in isolation from interior decoration and choice of furniture.

iii. Glare: This depends on various factors: the brightness itself, both from the source and by reflection, size and position of the source and number of sources in view. It follows that there is more danger of glare in open areas because of the greater number of sources in view. The most obvious control of glare is by directing all light sources downwards, shading them from horizontal emission, but this will certainly be ineffective in lighting horizontal bookcase surfaces. Large shades around incandescent lights are commonly loss of efficiency and limits on interior design.

8.1.3 METHOD OF ARTIFICIAL LIGHTING.

At present most usual form of general lighting for reading area consists of fluorescent lights recessed into a false ceiling and covered by diffusers. The effects bright efficient, cold and rather soulless. Among the advantage are flexibility, comparative cleanliness (and therefore economy of maintenance) absence of shadows and low consumption of current.

The architect will certainly wish to vary the lighting conditions in different part of the building in order to indicate changes of environment and to add sparkle and interest. Combination of lighting will be an important part of aesthetic concept and will break up regular and rather flat functional lighting by spots and chandeliers. In doing so, there is need to consider careful the effects which these light may have upon serious readers and its must be design and position them to avoid glare. Lighting fitting exist to provide adequate visibility and to add to the attraction of the building.

Efficiency of lighting installation.

Fluorescent tubes	light output (lumens)
80 watt	3100 –4950
65 watt	2700 – 4400
40 watt	1700 – 2600
Filament bulbs	light output (lumens)
25 watt	200
40 watt	390
60 watt	665
100 watt	1260
200 watt	2720
500 watt	7700

Table 6

Source: Encyclopedia of library and information volume 20

8.2 HEATING, COOLING AND VENTILATION.

Acceptable thermal condition for people are hose in which body heat is retained at not less than 27^0c; as body heat is almost always higher than that of the air in the library, the aim is to stop excessive loss of body heat, loss caused chiefly by convection. If air is still and

its temperature between 20^0c, readers will normally be content. Much depends on their clothing and on their personal preference; experience has shown that readers notice, and dislike, change of temperature more than conditions, which are either a few degrees too hot or too cold. If readers are moving about, choosing and carrying, for instance, the acceptable temperature can be as low as 13^0c in lending department, where visits may be short and out dour clothing is normally worn: the comfort of the staff who work at desks for long periods is the critical factors. Books keep better at lower temperature, so that in general the lowest acceptable level for humans is satisfactory for book preservation.

Cooling is necessary to dissipate heat produced by people themselves, by very high lighting levels. Where full air-condition cannot be installed, adequate mechanical ventilation can provide generally satisfactory conditions for readers but less definitely for fragile books.

8.3 ACOUSTICS

Serious attention is given to noise problem. Noise has great effect on working efficiency of human beings especially in reading noise could be from external and internal sources.

Internal noise is a noise inside a library consists mainly of conversation, frictional. Noise (chairs scraping the floor and the impact of heels on hard surface), and mechanical noises (from book hoists and typewriters) Staff discipline can eliminate a good deal noise – librarian on duty are often less inhibited in their conversation than readers and a high pitched voice speaking into the telephone can carry a long way. Acoustic hoods are seldom popular with busy staff but their use over telephones may have to be enforced.

The use of acoustics tiles or other prepared surface on ceiling and by breaking up open areas by partitions or bookcases. Also by the use of carpets on the floor and stairs well.

The external noise is noise felt within the library building but the source of which is outside the building. Sources can be from road traffic, and aircraft overhead. There noise can be reduced by the use of acoustics materials by using enclosing walls and windows, which attenuate the noise to a suitable degree, another control measure in planting tree to screen.

8.4 FIRE SAFETY.

All libraries – the buildings, the people inside them and the materials – must be protected against certain hazards. Of these, by far

the greatest is fire, and the damage, which often accompanies it, caused chiefly by smoke and water.

The librarian will play his part by ensuring careful discipline in operation and particularly in the organizing of materials so that loose paper, packing materials and so on are never left near possible (even remotely possible) fire hazards. It is perhaps significant that most fires begin in basement with one important exception; the greatest of these hazards are heating and lighting systems principally electrical ones. The exception referred to is smoking.

Measure for combating fire:

i. **Inspection** – ideally there should be regular patrolling by a member of the staff whose duties include that of following a prescribed path through the building at regular interval, day and night, checking for possible fire danger.

ii. **Detection**- there are sophisticated devices which can give early warning of a fire developing, both locally (usually placed on the underside of ceilings) and in general areas (such as air conditioning ducts) these devices usually detects either rises in temperature or the presence of smoke.

iii. **Suppression** – when a fire is formed an alarm is sounded to warn staff and, where possible, to alert the fire brigade directly. Because speed is essential, action may the triggered automatically to suppress the fire.

8.5 SECURITY

This is more of a problem for the librarian than for the architect. It is not the layout or the design of machinery, which are difficult, but the policy decision as to the extent to which security of the book stock is to be maintained at the expense of freedom of access by readers.

Ideally, in an educated society, there should be little need for barriers and checks; in practice, unhappily this is not so. Book thieves and mutilators form a very tiny proportion of the great mass of readers. The problem is to deal with them in the interest of the majority without disturbing general freedom to use the library.

To protect the library against this common and alas, growing habit there are two "weapons": supervision of exist and compulsory depositing of cases and bags in a cloakroom inside the entrance hall.

8.6 MAINTENANCE

Because of high labour cost fluorescent tubes are now usually replaced periodically in bulk, rather than piecemeal as one tube fails.

This can result in lower lighting levels in certain areas while replacement is awaited. To overcome this by having higher lighting levels than needed, to allow for failure, is wrong: a better method is to have two or even three tubes in fitting, one to come into operations automatically if another should fail. Easy access to fitting is also an item of economies importance in maintenance; ornamental clusters in high ceiling areas, which require scaffolding so that light can be cleaned and replaced, are a librarian nightmare.

In open areas the switcher, who control lighting, should be placed where they are entirely under staff control, the whole area being lit or unlit as one unit. Individual carrels will have their own switches, but staff time will be saved if all these can be overridden by a master switch so that staff do not have to check that each light is out at the end of the day. A similar arrangement is economical for closed stacks: switches for each stack ensure that lights can be put on when needed but all light should controllable lay a central cut –off at closing time. Main aisle lighting can be exempted from this central control so that patrol and cleaning can take place at night.

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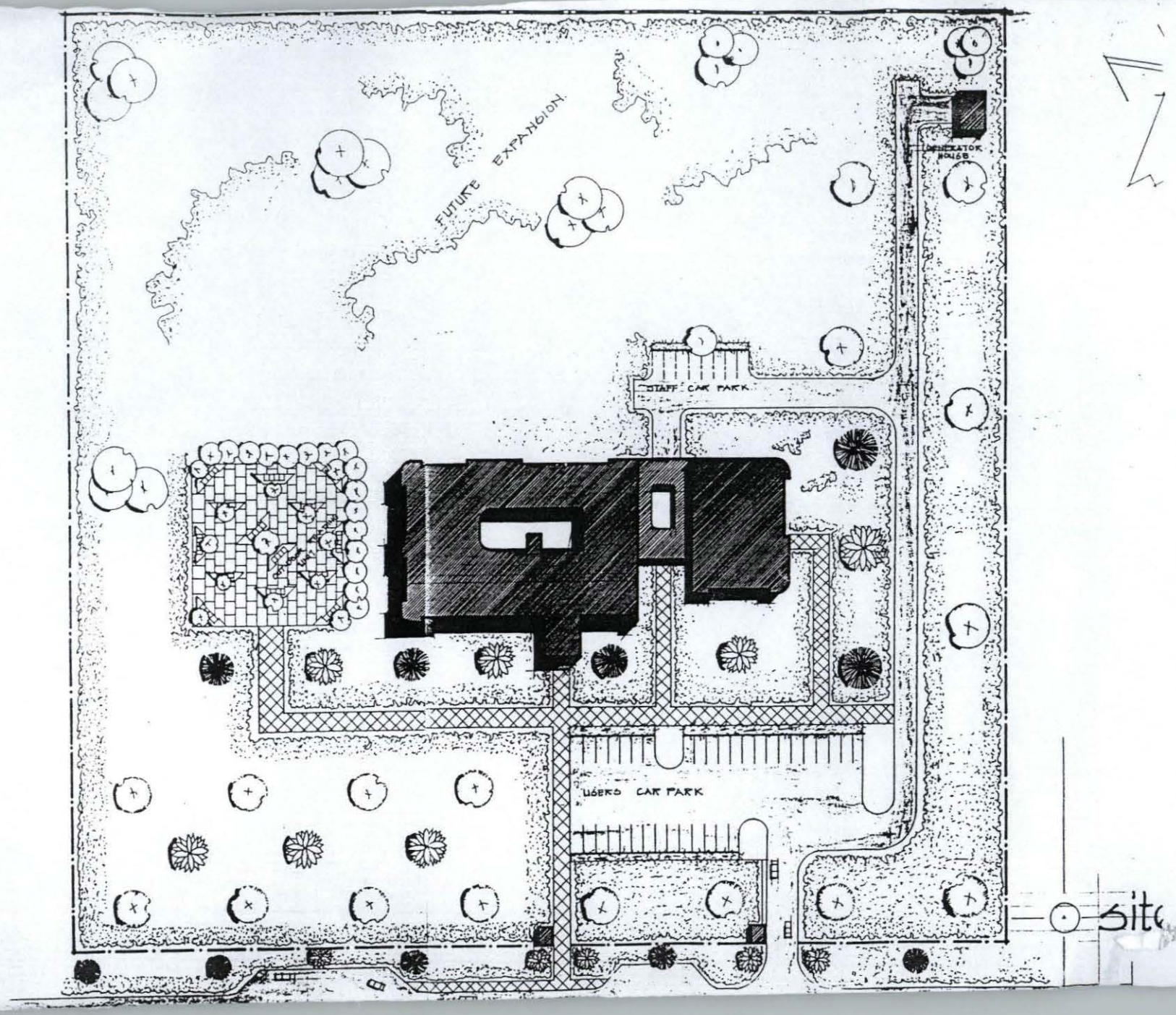
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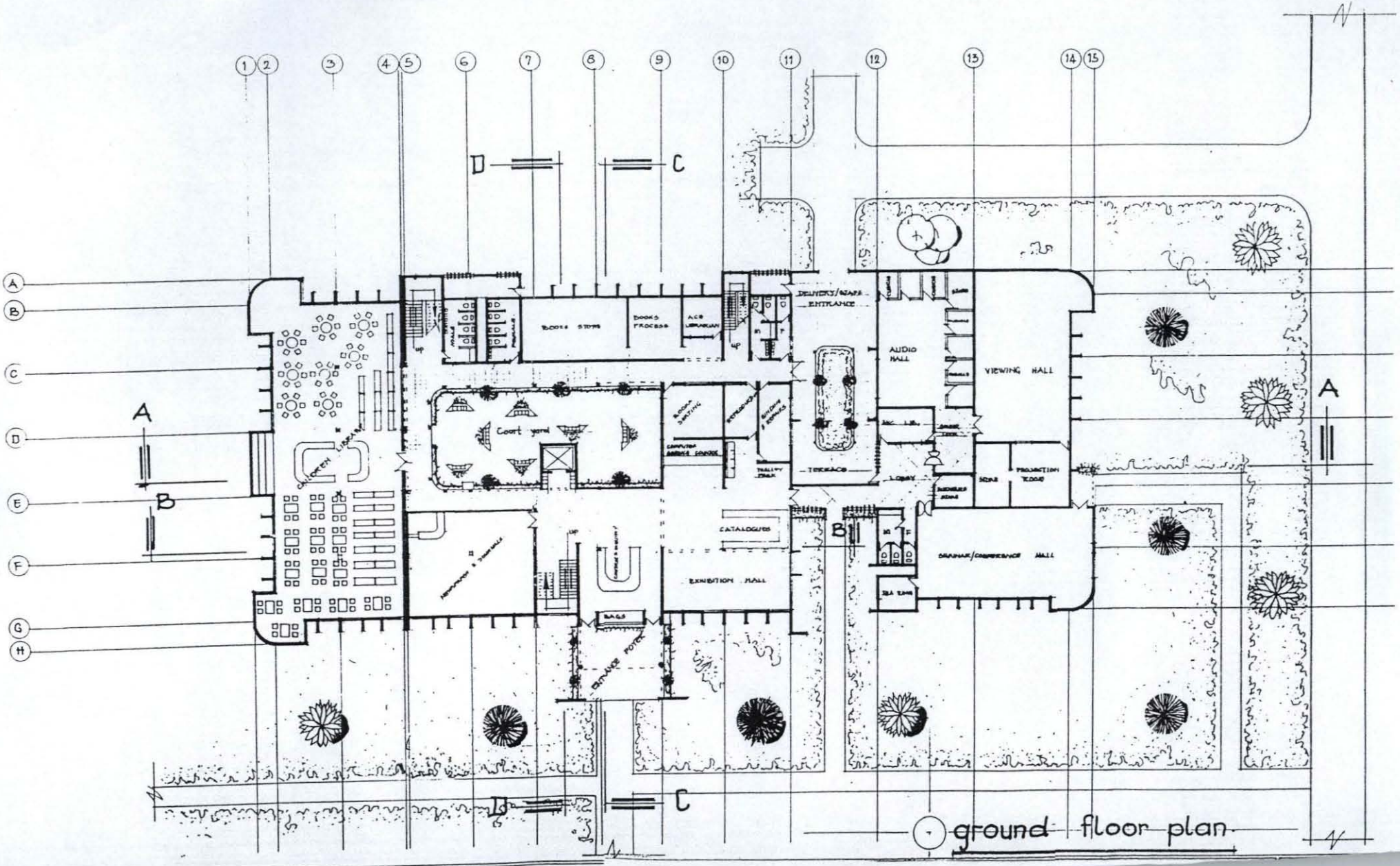

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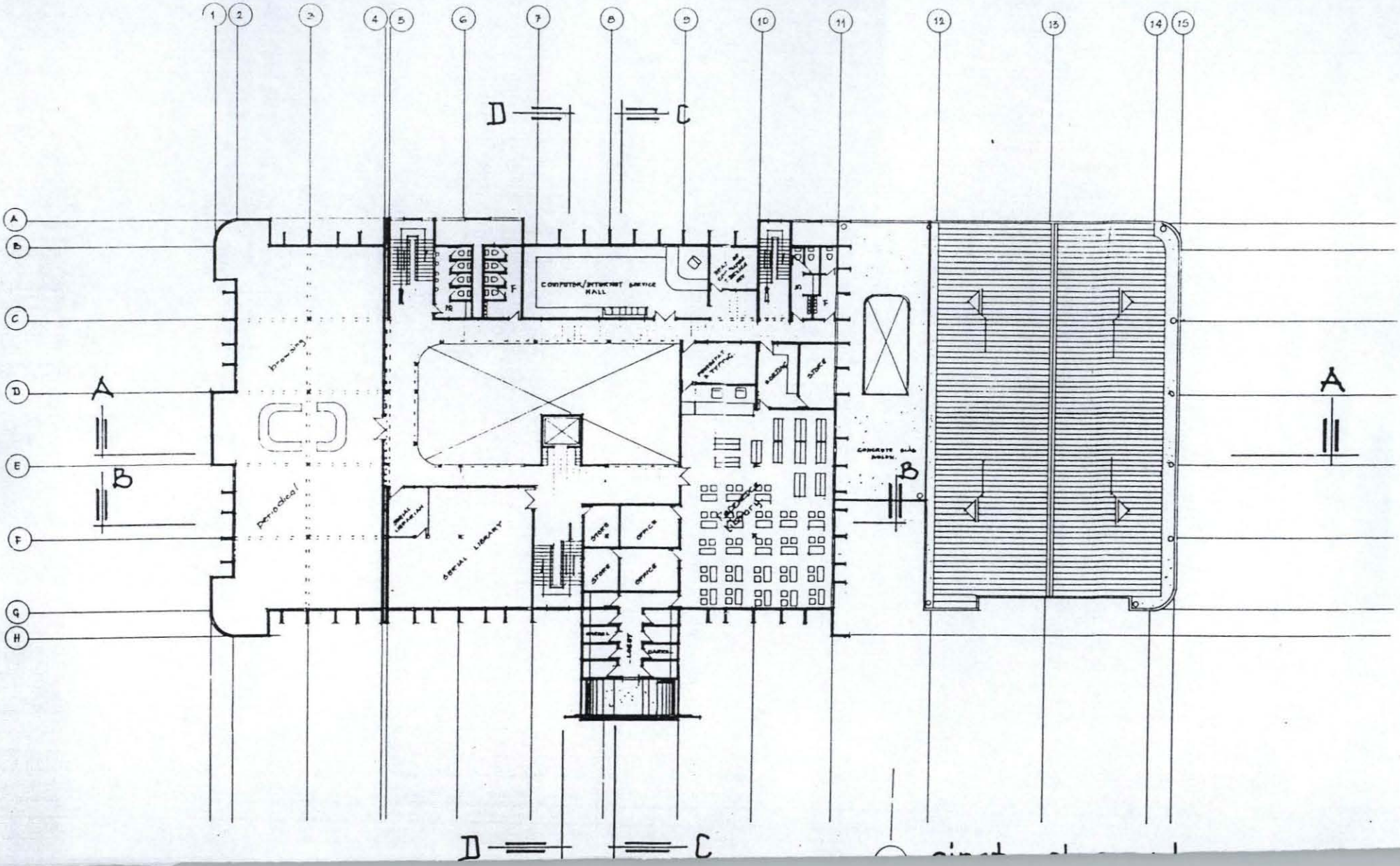
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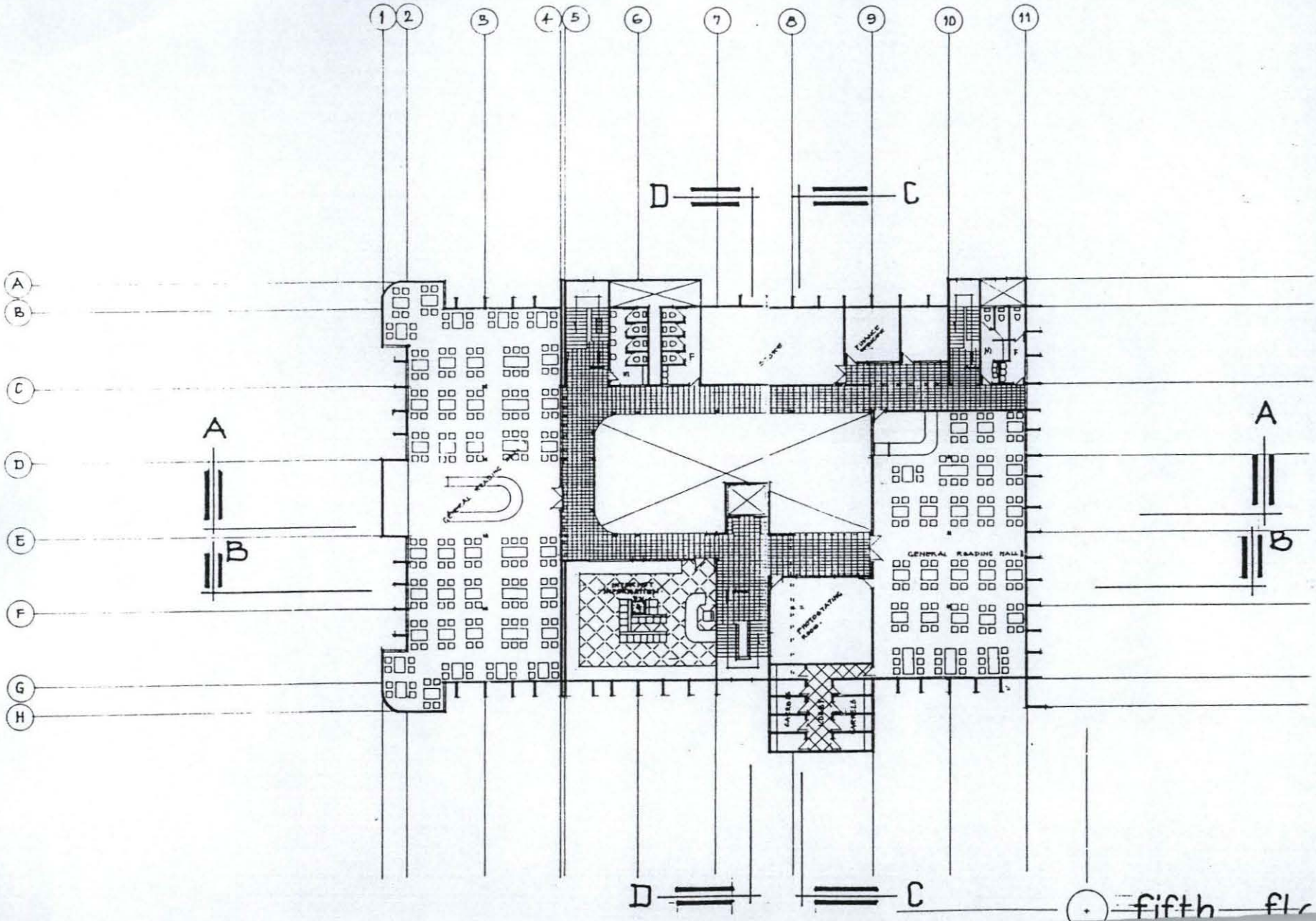
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GENERAL READING HALL
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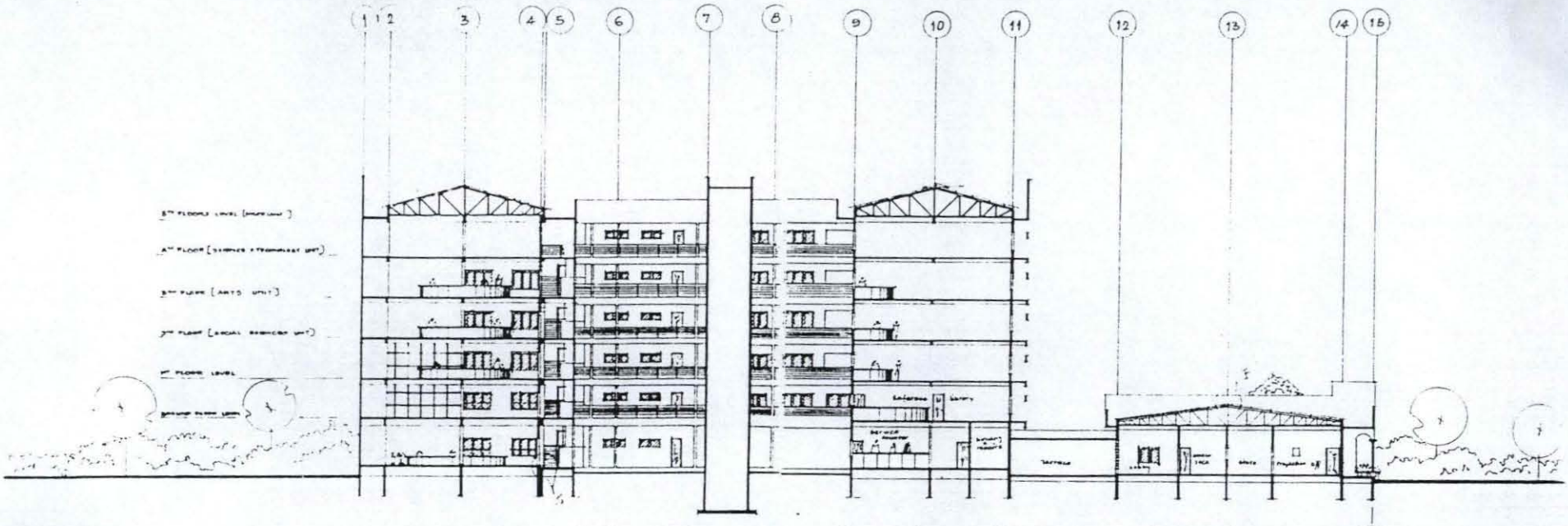

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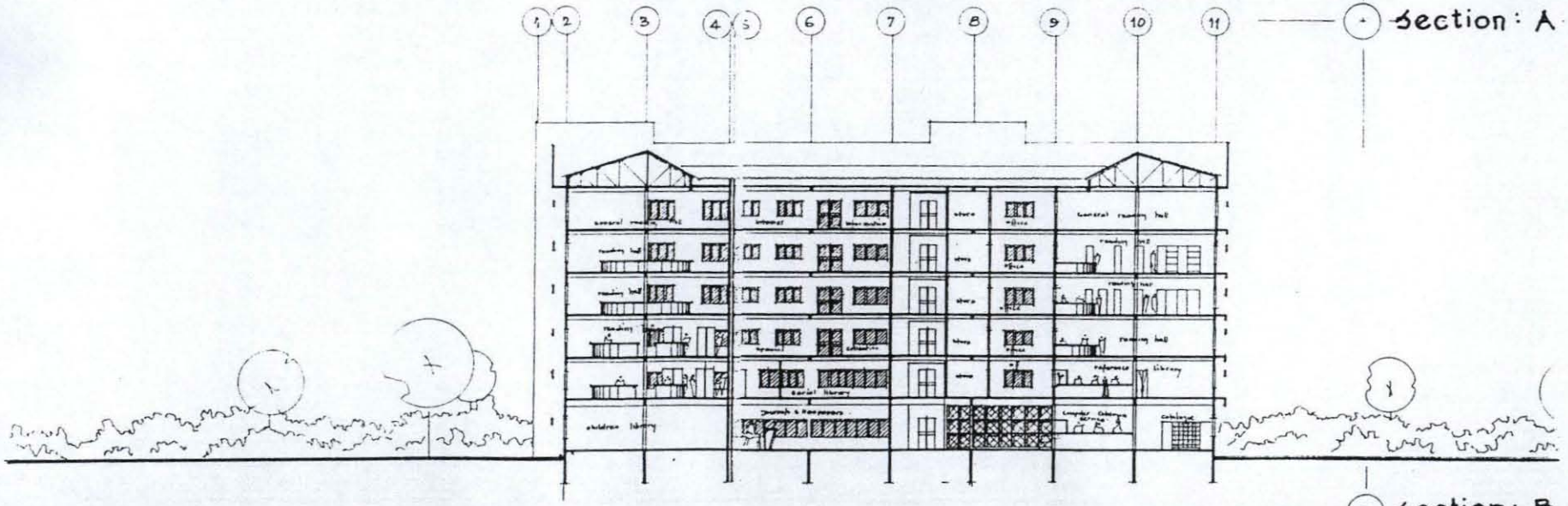

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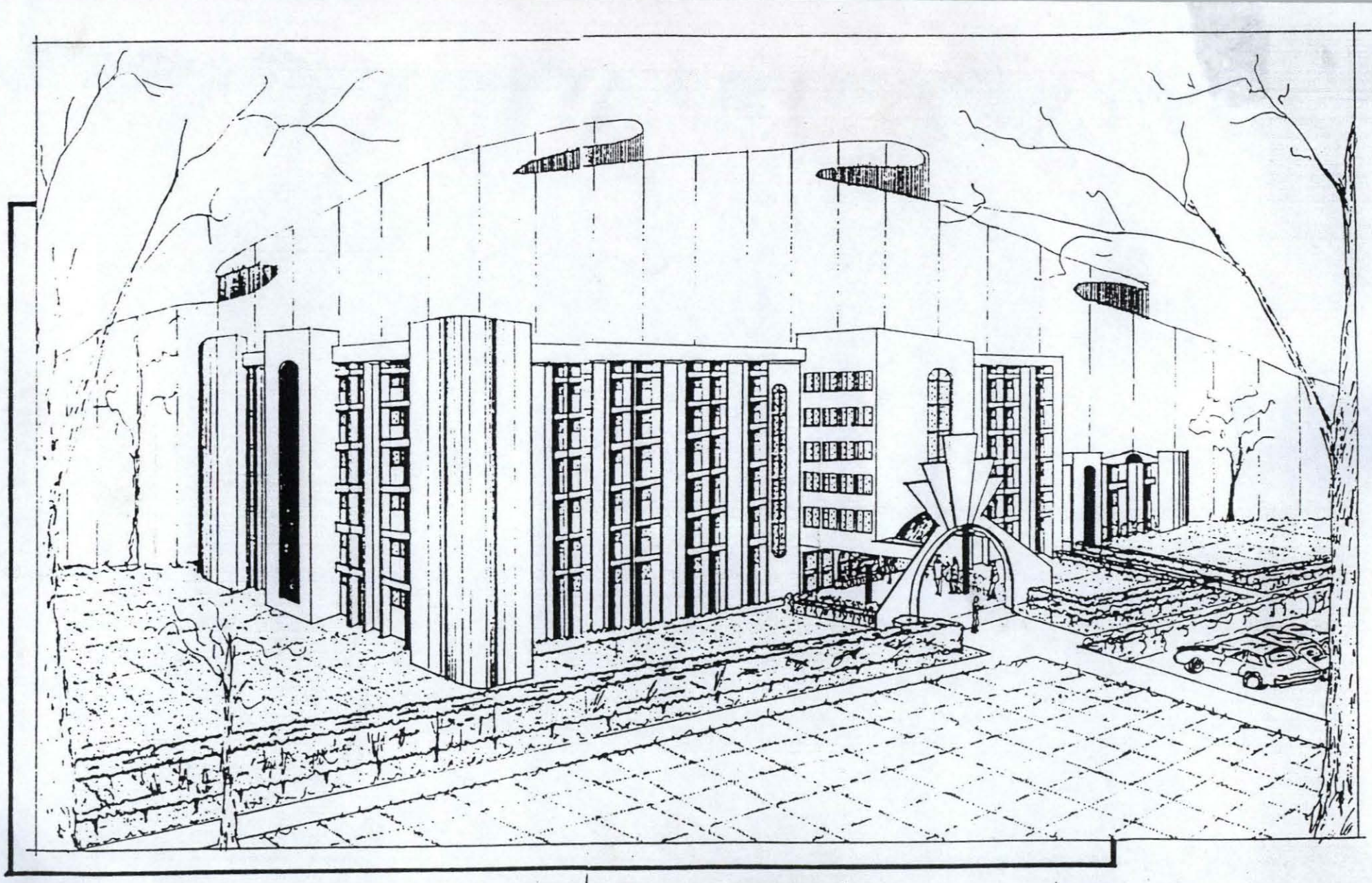

perspective