NIGERIAN LAW SCHOOL, ABUJA

(JUDICIOUS APPLICATION OF LANDSCAPE DESIGN

IN AN ACADEMIC ENVIRONMENT)

BY

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A thesis

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DECLARATION

I BABALAKIN, Omotayo Mufutau of Department of Architecture, Faculty of Environmental Design, Ahmadu Bello University, Zaria hereby declare that this dissertation is an authentic and original documentation made by me under the supervision of my mentor:- Arc M.M. Mufwang of the Department of Architecture, Ahmadu Bello University, Zaria, and that all quotations and information utilized and their sources have been duly acknoqledged by means of references.

STUDENT'S SIGNATURE MENTOR SIGNATURE H.O.D.'S SIGNATURE

CERTIFICATION

This thesis project entitled NIGERIAN LAW SCHOOL, ABUJA (Judicious application of landscape design in an academic environment) meets the regulations governing the award of degree of Master of Science in Architecture (M.Sc. Arch) of Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

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Dean, Post-Graduate School

DEDICATION

To my parents:

- Hon. Justice B.O. Babalakin, "a complete gentleman" I will always continue to emblem your attitude towards life in terms of discipline, honesty, morality, human relations, fairplay and justice for all.

- Ramotu Ibironke Babalakin "the great mother" for your support, kindness, inspirations and the love for all.

To my late sister "Peju" - we all miss you and

To all students of Ahmadu Bello University that lost their lives on the May 23rd student-Police clash. May their souls rest in perfect peace. (Amen).

QUOTABLE QUOTES

- "One day is worth two tomorrows,
  What I am to be I am now becoming"

- "Little minds are framed and subdued by
  misfortune, but great minds rise above it"

- BEJAMIN FRANFLIN

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My experience in the past five years of learning what is architecture is comparable to a soldier just enlisted in the Army and immediately posted to the war front. There I built up my knowledge of the weapon I have, and how it could be effectively used and managed.

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NAGODE

ABSTRACT

Philosophy

The legal profession is one of the few profession in Nigeria that has been highly internationally ranked. In attaining this platform, the legal practioners have always emulated the law school as a doyen of their knowledge. This on the other hand has enhanced the hierarchy of Nigerian lawyers on the international scene. A Nigerian at present is presiding over the World Court, a standard school that will represent the dignity of the legal profession is therefore a worthwhile thesis project.

Goals and Objectives

The Nigerian Law School started in 1963 on a temporary site with a student intake of 20, but at present the student enrolment has risen to 1,6500. The primary objective of this thesis project will therefore be, To evolve a design that will satisfy the owner/users requirements by obviating the existing architectural problems in a view to create unity in the diversified functions of each architectural space abnormally existing in such an institution. The main goal however, is to create a new social, functional environment condusive for learning, guidance and mutual interaction between the staff and students by evolving a pragmatic landscape design taking into consideration the provision of adequate car-parks, pedestrian routes, greenery, good accessibility, conscientious use of specified trees and outdoor spaces.

Scope

The scope of this project will be restricted to the macroscope while the microscope will be dictated by the owner/users requirements through thorough research studies. The macroscope (design area of concentration) is the academic/ administrative section which includes classrooms, administrative offices, conference hall, Auditorium, Tutorial classrooms, Audio-visual classrooms, courtroom, Resturant/ Bar/Cafeteria and Library.

Contribution

In achieving the objectives of this thesis project, the student would have contributed to the architecture profession in enhancing the slogan "Unity in Diversity", evolve a pragmatic landscape design for future design of institutions of higher learning, To Nigeria as a nation, a building complex worthy of recognition and emulation for future design of such academic institutions in other third world countries, and To the Legal Profession by uplifting the dignity of the profession in training well baked lawyers.

Thank you

BABALAKIN OMOTAYO MUFUTAU
M.Sc. II ARCHITECTURE
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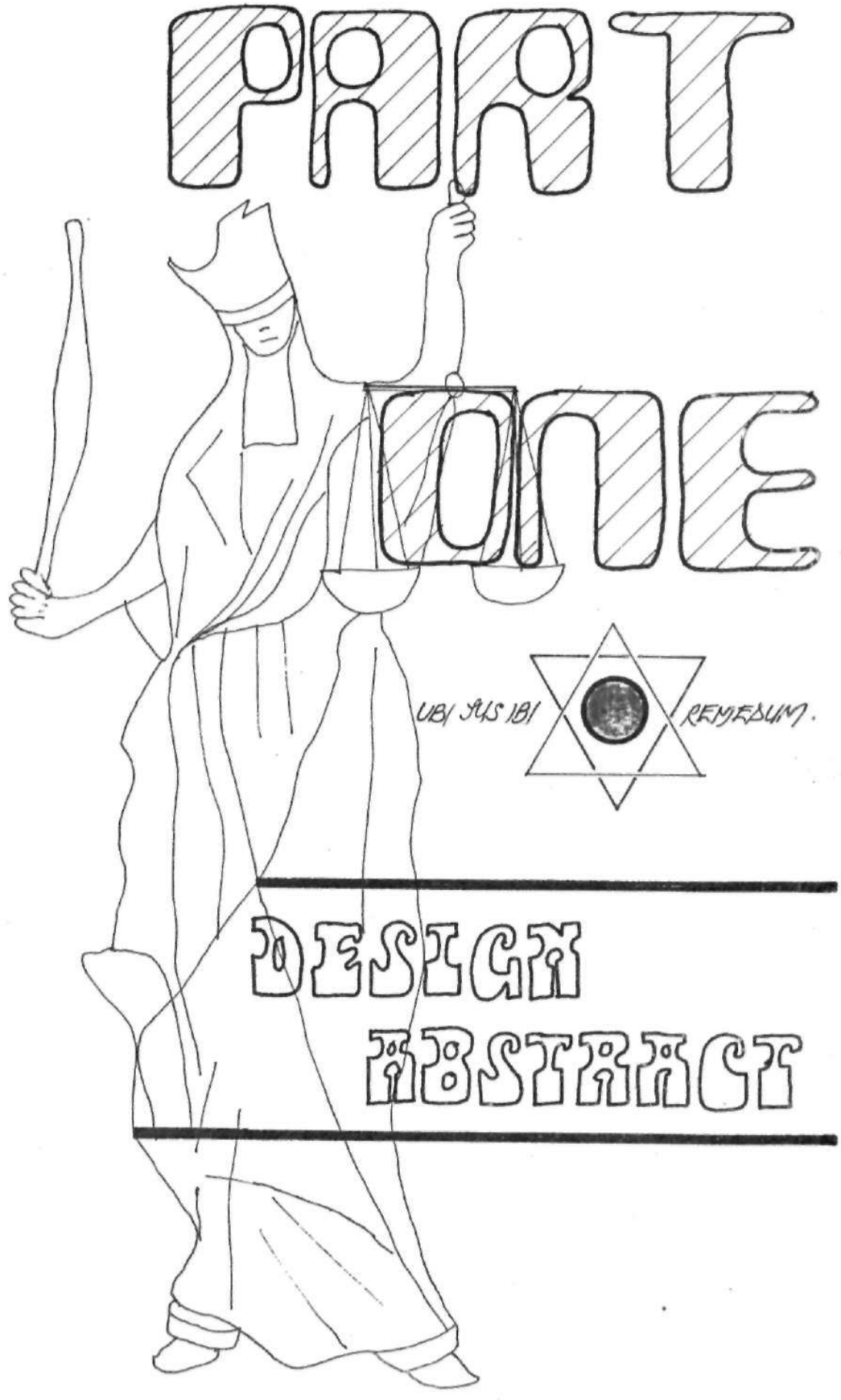
PREFACE

The writing of this dissertation was undertaken primarily to meet the regulations of the post-graduate school as regards to the award of M.Sc.(Architecture) and more importantly to offer my colleagues, and other students of architecture a concise general description of project reporting.

The write up is divided into four parts and eight sequencial chapters. Part I - "Design abstract" sets out in defining the problem, proposal and project in Chapter One while the second chapter briefly describes the history of legal Education in Nigeria. The second part - "Design Appraisal" evaluates the various case-studies in the development of the project in chapter three thereby making necessary deductions. Part III - "Design Analysis" as the name implies, analyses all perimeters, required in accomplishing a worthwhile design solution in four chapters - brief/schedule of accommodation, Design parimeters, landscaping, and site analysis. The final part - "Design Content" explains the concept derivation and design report in chapter eight, followed by the conclusion.

It is not possible for a work like this to be up-to-date in every respect. Everyday brings some change in National and Educational policies, in public attitudes and in professional theories and methods. Nevertheless, the fundamentals of present day planning will remain valid for a very long time.

PART ONE



DESIGN ABSTRACT

CHAPTER ONE

PROBLEM/PROJECT DEFINITION

1.0 INTRODUCTION

The present day awarness for the need of Legal aids in the Nigerian society demands that lawyers must possess a good pratical professional training to compete favourably in the community and on the international scene.

The Legal Education act of 1962 established a Council of Legal Education charged with the responsibility for providing suitable legal education for persons seeking to be admitted to practise Law in Nigeria. In pursuance of this, the council established THE NIGERIAN LAW SCHOOL for the purpose of providing a systematic course of professional training suitable for a legal practioner in the fused Legal profession of Nigeria. The Legal Education act of 1962 was repealed in 1976 and replaced by the Legal Education (consolidation e.t.c.) decree of 1976 which revised and consolidated the previous act and amendments.

The present system of Legal Education is briefly, the acquisition of an approved law degree or equivalent qualification, attendance at the Nigerian Law School, Lagos, and obtaining a qualifying certificate therefrom. Subject to good character and a citizenship qualification, the applicant is CALLED TO THE BAR by the body of benchers.

1.1 THE PROBLEM

The existing Nigerian Law School on its permanent site in Victoria Island, Lagos, started in 1970 with a student intake of about 158, then the facilities provided were adequate, thereby, well baked graduates with sound practical training were enrolled with Nigeria Bar Association. This in turn gave Nigeria an international recognition as one of the few countries blessed with brilliant lawyers. By 1985-'86 session, the student population had grown to 1650 just within 16 years and this rendered the facilities unable to support the student demands, consequently, it led to discomfort, congestion, over-stressing of available facilities because expansion was impossible on site. The School environment therefore became uncondusive for learning rather, it encourages poor academic performance.

Considering the nature of the school being a specialized institution and the highly formalized nature of the law profession, the Council of Legal Education need to maintain a high quality academic standard which will encourage order, competition, sense of belonging and efficient practical training of students so that the school will compare favourably with the Law Schools of first world countries. To achieve this objective, student population need to be streamlined with facilities available and the nation's requirements because "Small is Orderliness, Reliability, and Accountability".

1.2 THE PROPOSAL

(a) That the Federal Government of Nigeria in collaboration with the Council of Legal Education and Nigerian Bar Association should establish a new Nigerian Law School in Abuja, Federal capital to decongest the existing one in Lagos, thereby restricting the training of lawyers to two favourable locations in Nigeria.

(b) The Council of Legal education should set out guidelines relating to the student population density according to the number of facilities/utilities to be provided for the achievement and maintenance of an effective and economical institution. However, other locations of the school might be necessary in future in case these schools exceeds their effective or economical level of operation due to rapid population growth.

(c) The placing of students in each location will be totally devoid of ethinicity in order to maintain the unity of Nigerian populace and to discourage the north-south dichotomy.

(d) The Nigerian Law School, Abuja will serve as the main administrative centre considering its locational merits while the existing one in Lagos will serve as an annex.

1.3 THE PROJECT

TOPIC: NIGERIAN LAW SCHOOL, ABUJA

SUB-TOPIC: JUDICIOUS APPLICATION OF LANDSCAPE DESIGN IN AN ACADEMIC ENVIRONMENT

The Goal

- to develop a new socio-functional academic environment that is friedly, intimate, pleasant, and condusive for guidance, mutual interaction and practical training of a future legal practioner in Nigeria.

Objectives

- to evolve a design that will satisfy owner/users requirements by obviating the present architectural problems of the existing school in order to unite the diversified functions of each architectural space.
- to consider the school environment as a "total achietectural space" and an integral part of education" thereby evolving a pragmatic landscape design solutions desirable for people engaged in the learning process.
- to develop in students, the social understanding and sensitivity to repect others, and to acquire ethical values and principles related to the legal profession by the development of social achitectural spaces.

Scope

The project will cover the

(a) Macroscope:- The overall planning of the institution including the residential, recreational and academic areas; but the design will concentrate on the academic section of the school.

(b) Microscope: - These are facilities provided in the academic section which are general facilities, - aublitorium, lecture theatre, clinic, snack bar and open area, Academic core facilities - tutorial and audiovisual classrooms, court, library and lecturer's offices, Administrative facilities comprising various departments like council of legal education, policy and management, admissions or student affairs e.t.c.

Limitations

The author is constrained in terms of time and finance to travel overseas to visit, appreciate and document foreign case-studies; therefore the design of the institution is limited to personally acquired ideas and lessons from the local case studies.

Project Finance

The project will be solely financed by the Federal Government of Nigeria in collaboration with the Nigerian Bar Association and Council of Legal Education.

CHAPTER TWO

HISTORY OF LEGAL PROFESSION

2.1 THE ENGLISH LEGAL PROFESSION

The legal profession in Nigerian derives its origin from the English legal system and legal profession, which were introduced into this country in the second half of the nineteenth century. Therefore, in order to appreciate some of the characteristics of the profession and, to the layman, the conservative behaviour of members of the profession in this country (and, indeed, in most common law countries), a historical sketch of the English legal profession is necessary.

Although, the English legal historians are uncertain about the date professional lawyers first appeared in the English common law system, but a group known as the narrators came into existence in the thirteenth centruy. As the name implies, they narrated the case by conducting the pleadings and arguing questions of law on behalf of the litigants. By the fourteenth century, some of these narrators were appointed "sergent-at-law" and, it was from the ranks of these narrators or pleaders that barristers came.

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[1] The majority of this chapter is based on extracts from J. Ola Orojo LLm(London,L.L.M.,Ph.D.(Lagos) book-conduct and etiquette for Legal practioners.

The sergents organised themselves into an exclusive group which had the monoply of appearance in the Court of Common Pleas and Judges were appointed from among them while they retained their membership of the guild. Other pleaders whatever their ability were ranked together with students as apprentices. The apprentices belonged to one of the Inns of Court. The life in the Inns was described as follows:[2]

> "Their life centred in the Inns of Court, which, like a university, provided for their general education and common life. Here they studied law and many other things- history, music and dancing, for example - and this full and fashionable education made the Inns a great resort for the youth of wealthy and noble families, eventhough they had no intention of practising law".

Describing the organisation of the Inns of Court and the legal education given there. Plucknett said:

> "In time, the Inns acquired a roughly uniform type of constituion. The benchers[3] formed a governing body somewhat similar to the fellows of a college at Oxford or Cambridge, while the readers conducted an elaborate system of legal instruction. It was from the readers that sergents were chosen. Next below the readers came the utter barristers, who were the most notable rank among the apprentices and were priviledged to argue in the mock trails or moots which were staged for the instruction of students. Below them were the inner barristers, who soon were known simply as students".

The promotion from student to utter barrister was known as a call to the utter Bar, later simply called a "call to the Bar". After being called to the Bar, an utter barrister served a probation of five years (later reduced to three years) before the judges allowed

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[2] See Plucknett - A concise History of theCommon Law Law (5th edition) p. 225.

[3] They acted as judges on the bench in the moots at the Inns

him to appear in court on behalf of the litigants.

By the middle of the 15th century, another class of legal professionals appeared. These were the solicitors. Their rapid growth stemmed from the need for their services in the courts of equity-chancory, Star Chamber and Court of Requests. Attorneys were not recognised in these courts and so the duty developed on the solicitors of acting as "a sort of law agent who would set the complicated machinery in motion by engaging with the various branches of the profession as occasion required, and doing other duties of a legal and sometimes of a business character.

Thus, before the end of the 19th century, there were only two classes of legal professionals in England, namely, the Barrister and the Solicitor. This division has become perpetuated and no one can practise in England as both a barrister and a solicitor.

2.1.1 The Differences Between Baristers and Solicitors

The requirements for admission for each class were different. While a barrister qualified by enrolling in one of the Inns of Court and being called to the Bar after a number of dinners and a pass in Bar Examination, the solicitor was articled for a number of years in addition to passing the prescribed examination.

The barrister's business consists mainly in advocacy's. He has the right of audience as an advocate in all the superior courts such as the House

of Lords, the Privy Council, the Supreme Court of Juduature and also in most of the inferior courts, tribunals, and inquiries. In addition to advocacy, his other ordinary duties include the drawing up and preparation, "for or in expectation of reward" of instruments relating to real or personal estate or any legal proceedings and advising on questions of law. His priviledges include the change of appointment both as a judge and to some other specified judicial offices reserved for barristers.

The solicitor, on the other hand, is generally excluded from audience in the superior courts, but has a right of audience as an advocate in the inferior courts such as the country courts, crown courts, and magistrates' courts, before coroners and before tribunals of inquiry if the tribunal permits. solicitors are often commissioners of Oaths and their best knwon area of operation is in non-litigious work. This includes the drawing up of various documents such as conveyances, contracts and wills, administering estates and trust and advising clients generally. Even in litigious matters, the solicitor instructs the barrister, makes all preliminary enquires and prepares all preliminary papers needed for a brief. It is he who is constantly in touch with the client.

2.2 THE LEGAL PROFESSION IN NIGERIA

The history of the legal profession in Nigeria dates back only to the latter half of the 19th century.

The first part of Nigeria to come under British administration was Lagos, which became a British colony on August 1, 1861. In January 1862, a police court was set in Lagos to deal with cases which had arisen as a result of growing commercial transactions in the colony. This was quickly followed the next year by Supreme Court Ordinance 1863 which constituted the Supreme Court of Her Majesty's Settlement of Lagos with effect from April 9, 1863.

The Ordinance of 1876 provided for three categories of people who would be admitted to practise law - (i) Those who ere entitled to practise law in Great Britain (Section 71 of the Ordinance), (ii) Those who had served articles (Section 73) and (iii) The Local attorneys (Section 74). The attorneys were under the strict control of the Chief Justice, who was entitled to discipline or remove any erring persons. Although, the Supreme Court Ordinance 1876 was introduced into this country at a time when the legal profession in England was clearly divided into two classes, namely, barristers and solicitors, both necessity and convenience dictated a different approach here.

Section 76 of the Ordinance provided that "Every barrister shall be entitled to practise also as a solicitor and protor, and every solicitor shall be entitled to practise as an advocate". This means, in effect, that from the earliest period of our legal history the legal profession in this country was fused.

By 1908, when the last local attorney was licesed, only about 30 persons had been entered on the roll in the country as legal practioners, and by 1915 there were still only 28 of them in private practise, most of them in Lagos and a few in Calabar. To be admitted to practise law in Nigeria, a person had to be called to English, Scottish or Irish Bar or be enrolled as a solicitor in one of these places.

2.2.1 The New Scheme

The situation whereby a person who had qualified in England without any opportunity to study either Nigerian statue law or the customary law and considering that, practically every Nigerian legal practioner was trained in the Inns of Court as a barrister and was without any training as a solicitor, and yet practised as both, it was beoming clear that the high standard required of a fused legal profession in an an expanding economy could hardly be archieved. These were among the considerations which led to the appointment by the Federal government in April 1959 of the "Committee on the future of the Nigerian legal profession".

The Committee's report was published in October 1959 and after close study and consultation with the legal profession, two acts were passed to give effect to the Committee's recommendations. These were the Legal Education Act 1962, which provided for legal education for admission to practise, and the Legal Practioners Act 1962, which provided for the

comprehensive regulation of the legal profession. The Legal Education Act 1962 established a Council of Legal Education which later established the Nigerian Law School for the purpose of providing a systematic course of professional training suitable for a legal practioner in the fused legal profession of Nigeria.

From the above historical sketch, it is evident that the Nigerian legal profession cannot easily get away from its past completely. This is made more so by the fact that all legal and judicial institutions in this country are either derived from or influenced by English Law and English legal system. It will, therefore, be appreciated that there had to be constant reference to these English Legal Institutions in building our own system.

PART TWO



DESIGN APPRAISAL

CHAPTER THREE

CASE STUDIES

There are many methods of evaulating buildings. Some are very formal requiring a team composed of a variety of professionals, numerous interviews, questionnaires and observations, and they take as many as five years to produce a voluminous report. Others are very casual requiring a minimum of criteria and they involve maximum subjectivity. Some methods emphasize only one of the major factors which influenced the design of the building. For example, it is common to evaluate a building from the standpoint of its function alone i.e. how a building works to do the job it is supposed to perform. Although, the peformance of a building is important, but so is the design quality of its space and form, the response to the clients pocketbook,and the building's time-quality.

What is needed, then, is evaluative criteria which is comprehensive in terms of the major contributing factors:- FUNCTION, FORM, ECONOMY, and TIME. The citeria should be fairly consistent while the evaluation process must remain subjective, therefore, the value measurements should be quantifiable in order to tell at a glance the quality profile of a building. Questions are set and the case studies are evaluated by denoting to each question a value number from 1-10: Complete

Complete failure	- 1,	Good	- 6
Critically bad	- 2,	Very Good	- 7
Very poor	- 3,	Excellent	- 8
Poor	- 4,	Superior	- 9
Acceptable	- 5,	Perfect	-10

The lesson to learn from each case study are denoted as (+) and the ones denoted by (-) are to be avoided in the design considerations of the thesis project. The graphic profile formed by the final values shows the relative strengths of each of the four factors (fig. 3.0).

3.0 THE NIGERIAN LAW SCHOOL, LAGOS

The Nigerian Law School came into existence in 1962 on a temporary site at Igbosere Street, Lagos Island. In 1964, the Council of Legal Education commissioned the firm - J.G.L. Poulson, Ponterack, United Kingdom, (Chartered Architects, Town-planning consultants and Surveyors), to design a new permanent building complex for the Law School at Victoria Island, Lagos. The building was completed and handed over to the client in December 1967.

However, another contract was signed with another architectural firm - Anobem, Twigg, Brown and Partners, Lagos in 1978 for the expansion of the existing facilities in order to cope with the rising student/staff population. Working drawings were tendered in 1979, but work commenced on site in 1983 and the buildings are still under construction targeted for completion in November 1986. The cast study has therefore been divided into two categories namely:-

(i) Nigerian Law School, Lagos (1969-'86)

(ii) Nigerian Law School, Lagos (1987- to the future).

3.1 NIGERIAN LAW SCHOOL, LAGOS (1969-'86)

3.1.1 Function - Poor (4)

(a) How well expressed is the overall organization idea and how effectively are the spaces arranged and shaped to respond to functional relationships and goals?

(b) To what degree do the spaces allow people and/or things to circulate efficiently and the extent in which adequate space has been provided?

(c) To what degree does the building satisfy the requirements of the user - physical and social?

Comments:-

(+) concentration of student facilities commended, however the improper zoning of general facilities is noted.

(+) zoning criteria noted-noisy areas at the back, quiet areas in front.

(+) single loaded corridors for easy circulation, ventilation and expansion commended.

(+) academic expansion program introduced by the provision of two shifts (morning and afternoon) in order to cope with rising student population and the shortage of facilities noted.

(-) entrance lobby not pronounced

(-) waste of open courtyard - if adequately landscaped, it could have been utilised as a sit-out/relaxation area for students as a form of relief from academic pressures and to reduce the overcrowding of the covered walkway before and after lectures.

(-) lack of social spaces except a shabby snack bar located away from the student activity zone.

(-) inadequacy of spaces in all respects - car parks, student/general/lecturer's facilities and administrative offices.

3.1.2 Form - Very Poor (3)

(a) How imaginatively concieved is the building as an expression of originality and excellence and how well does the building respond and relate to the nature of the site in which it is placed?

(b) How well are the building systems (structural, mechanical, and electrical) integrated or expressed and how well is the physical environment enhanced by controls to provide physical comfort?

Comments:

(-) building fails to express the nature/function of the school - law is highly formalized profession and the schools of law should both uphold and emblemize this tradition.

(-) the harmony created in unifying the building complex by the contrasting vertical and horizontal direction is destroyed by the low horizontal direction of the dining hall.

(-) the overall landscape has been limited to green lawns, hedges, without provision for tree shade in car-parks.

(-) poor natural lighting/ventilation in classrooms, theatre, and morstcourt caused by indirect openings.

(+) vitality is achieved in the building complex by the use of repititive arches and screens.

(+) plan laid on geometric grid enhances the stability of the building structure.

(+) single a.c. units for mechanical ventilation and good artificial lighting highly commended.

3.1.3 Economy - Very Good (7)

(a) How well does the building embody appropriate lean simplicity or rich complexity.

(b) To what extent do the materials and their connections respond to climate and activities in order to reduce maintenance and operational costs?

(c) To what extent is the building a good return for the investment - "the most for the money" idea?

Comments:

(+) lean simplicity achieved by the rectangular forms and shapes of the building complex

(+) well treated concerete flat roofs, accoustic board crelings, glass windows with steel frames, wooden flush door (1 hr fire resistant) well coasted ceramic/terrazzo floors are all durable materials.

(+) all sections of the building complex completed according to the proposed relatively low cost as compared to present days.

3.1.4 Time - Good (6)

(a) To what extent does the building respond to dynamic changes in function through convertible and negotiable spaces (i.e. flexibility) and to what

extent does it respond to growth over time (expansibility)?

(b) To what extent does the building embody the spirit and expression of the times in the use of materials and technology available at the time?

Comments:

(-) spaces are rather static and fixed.

(+) materials and techniques of construction adopted still widely used.

(+) the expansion provided on site now been utilised for the new facilities.

Plates I - V

3.2 NIGERIAN LAW SCHOOL, LAGOS (1987 - to the future).

The new Law School will provide expansion facilities to the existing one for a designed population of about 1,300 students and 300 staff members. The new facilities are categorised into

(i) Academic facilities:- offices, tutorial classrooms, conference room, auditorium and dinning hall extension.

(ii) Residential facilities:- senior staff houses and student hostels.

The present existing facilities that will be provided in the Nigerian Law School, Lagos by the year 1987 are therefore as follows:-

(i) General facilities: - Library for 200 readers with 3,000 vols of book, Dinning hall to sit 702 persons at a seating, snack bar, 400 car packing spaces, and clinic for staff and students.

(ii) Administrative facilities:- offices, conference room for 50 people, storage facilities and services.

(iii) Academic facilities:- Auditorium to sit 1,000 people, 9 tutorial rooms of 60 students each, Lecture theatre for 250 students, 2 classrooms (150 - 200 students each) with audiovisual facilities, Moot court (115 students) with audio facilities.

(iv) Residential facilities: - Accommodation for 700 students and 15 senior members of staff.

3.2.1 Function - Poor (4)

Comments:-

(-) the total organization concept is based on the linear concept probably due to the nature of site and this is us satisfactory in many respects - poor circulation, ventilation, lighting and makes project lack identity (fig.).

(-) the whole organization idea has been disrupted since the expansion facilties were concieved as a totally new complex.

(-) juxtaposition of spaces all over the site, however, the student facilities zone is still maintained.

(-) building still fails to satisfy users requirement due to inaccurate population projection/forecast.

(+) building encompasses a fairly adequate amount of space thereby enhancing fairly efficient circulation of people and things.

(+) deceleration lane provided to allow entry into the site at a speed to safeguard pedestrian users while also

avoiding possibility of accidents on the expressway caused by fast moving traffic.

(+) good views from the new complex to the lagoon.

3.2.2 Form - Very Good (7)

Comments:

(+) the strong horizontallity of the new complex breaks up the verticallity of the old complex creating a contrast which is an expression of a good architectural composion-harmony, magnitude, vitality and balance (fig.)

(+) the imposing auditorium partially depicts the magnitude and subjectivity of law to the people.

(+) adequate comfort provision in the new complex and better conditions been introduced to the old complex.

(-) landscape still limited to shrubs, trees, and lawns without interplay of activity spaces.

3.2.3 Economy - Acceptable (5)

Comments:

(-) Rising cost of building construction and the delay in project execution increases the value of the building far above projected cost - therefore, building is not most for money.

(-) water-logged site conditions also affected total building cost.

(+) fairly lean simplicity achieved in the complex

(+) fairly good economy of space in the whole complex but subject to better improvements.

3.2.4 Time - Good (6)

Comments:

(-) expansion impossible because the site has been over stressed.

(+) the open ground-floor plan of the new complex gives an impression of fairly flexible and directional spaces.

(+) good use of materials and technology applicable to present day development (Plate VI).

3.3 MANAGEMENT INSTITUTE, SANDYFORD, DUBLIN

The choice of this cast-study has been due to certain reasons, - the formalize nature of the management profession compares favourably with law profession. The incapability of the author to collect adequate/relevant data on the Inns of Courts in England and most importantly be was over-whelmed in the way the landscape features introduced to the surrounding have brought the whole building alive.

The Irish Management Institute has a dual role. It provides a corporate headquarters of a large membership involved in advisory and information services on one hand, and on the other, a highly specilized training centre for managers. The brief consisted of a schedule of accommodation for 150 staff and 480 participants per day with department such as - Conference areas, Teaching laboratories, Library, Computer room, Resturant and Office accommodation for management and executive staff with their respective secretarial back up.

3.3.1 Function - Very Good (7)

Comments:

(+) the approach is a very pleasant invention - the visitor of the building is brought up to the middle level, where the main entrance is, by ascending three short but wide and grand flights of steps and by crossing two equally wide and grand intermediate landings.

(+) good placing of functions - the general facilities (library, resturant) located near the main entrance and adequate privacy is maintained

(+) access to building complex totally pedestrian - carparks divorced from the complex.

3.3.2 Form - Excellent (8)

Comments:

(+) the building depicts its purpose - for managerial and educational purposes. The marriage between the bright white boxes of the corbusian architecture with the sweeping stratifications of "organic architecture" produces an effect which is undesirable grand while still remaining human, giving us the joys of monumentality.

(+) good architectural landscape design achieved - the site was more or less flat, but the placing of the accommodation has turned it into the semblance of a hill.

(+) the building has also been crubled in the sense that the constituents parts have been disposed separately on the site to give the impression of a building which has"grown" rather that one which is the outcome of a

single sophisticated act.

(+) the detailing is adequate and the interiors are comfortable with good views.

(-) there is an aesthetic gap between the landscape complex and its immediate surroundings.

3.3.3 Economy - Acceptable (5)

Comments:

(+) the corbusian white boxes and well composed landscape makes the building rich and complex-rich complexity achieved.

(+) the architectural intentions are reflected in the choice of materials - the materials which figure as ground are of in-situ concerete while the parts which figure as building are of precast concrete, cast in storey and double storey height frames and panels.

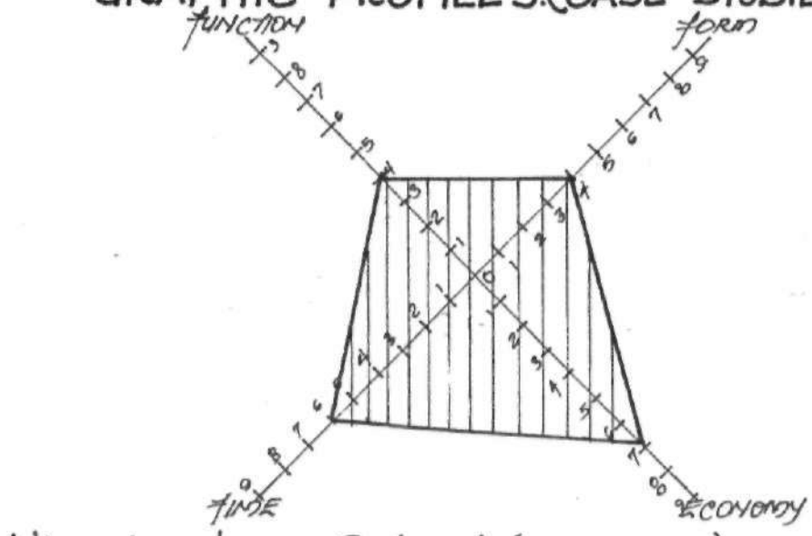
(-) cost of changing nature of site and the use of precast concrete on a small scale increase the building cost.

3.3.4 Time - Good (6)

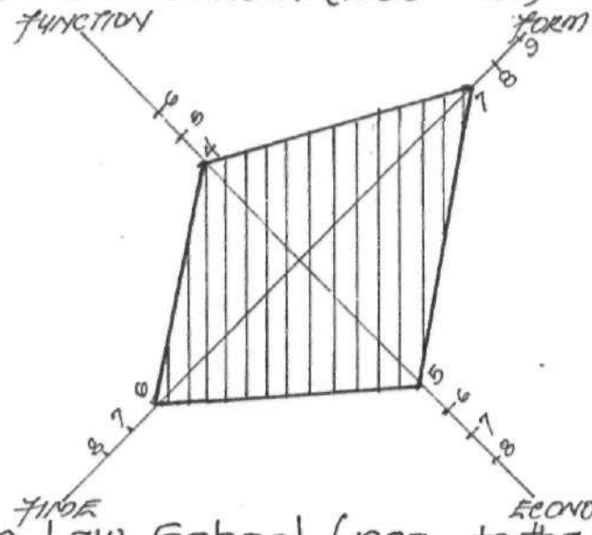
Comments:

(+) the building incorporates a considerably inbuilt flexibility and has the facility of expansion on a large scale as future requirement.

GRAPHIC PROFILES.(CASE-STUDIES).



Nigerian Law School. (1969 - '86)



Nigerian Law School (1987 - to the future).

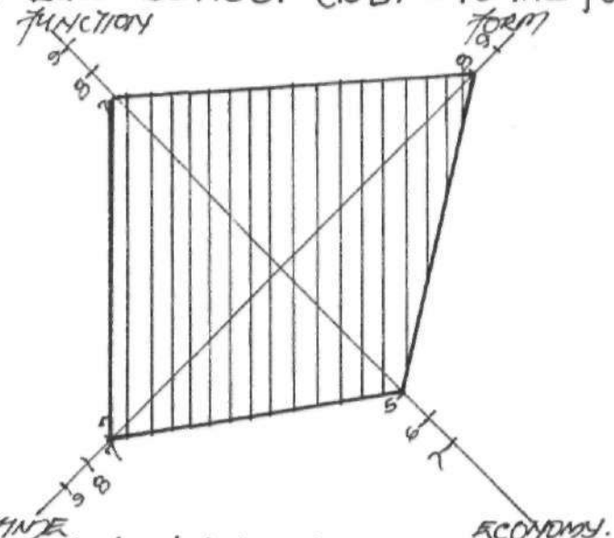


FIG. 3.0 - Management Institute, Dublin.

NIGERIAN LAW SCHOOL, LAGOS.
(1969 – 1986)



PLATE I :- view of the open courtyard from covered walkway.

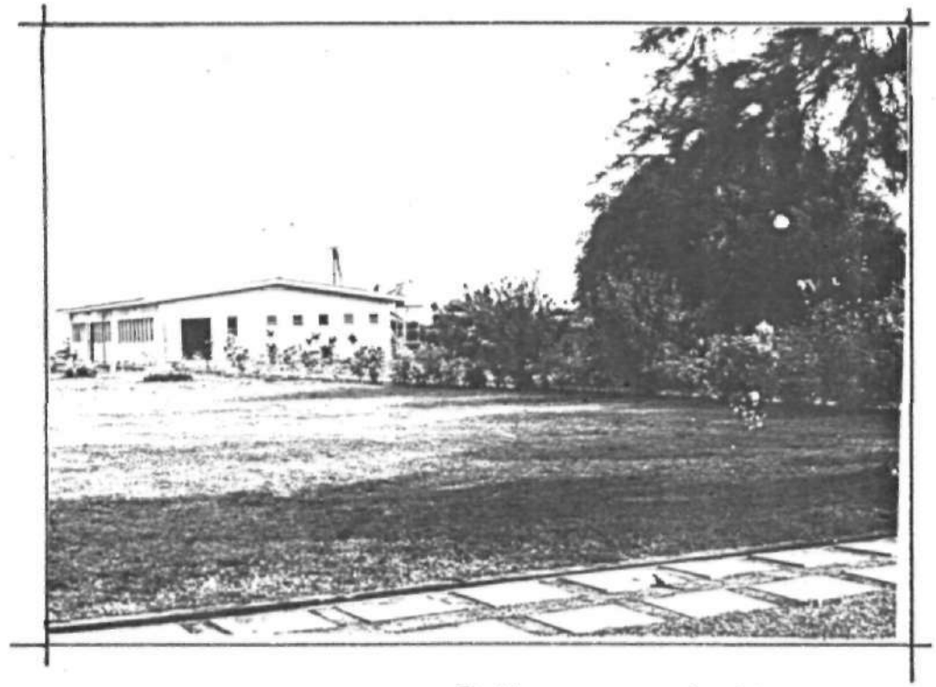


PLATE II :- view of the snack bar.

NIGERIAN LAW SCHOOL, LAGOS.
(1969-1986)

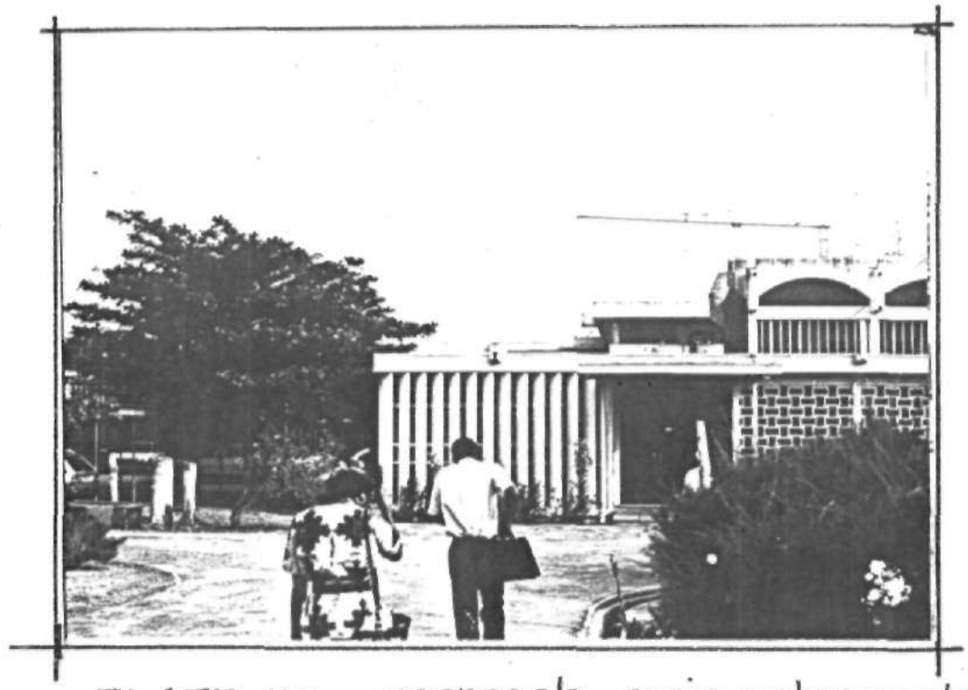


PLATE III:- approach-main entrance's view from the access road.

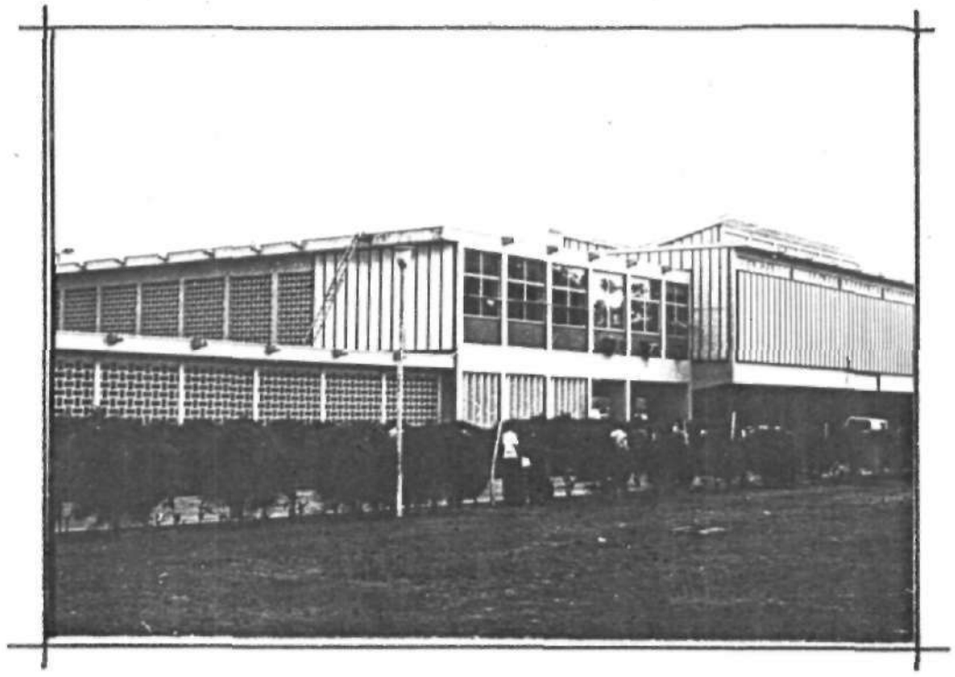


PLATE IV:- front façade-south elevation

NIGERIAN LAW SCHOOL, LAGOS.
(1969-'86/'87 TO THE FUTURE)

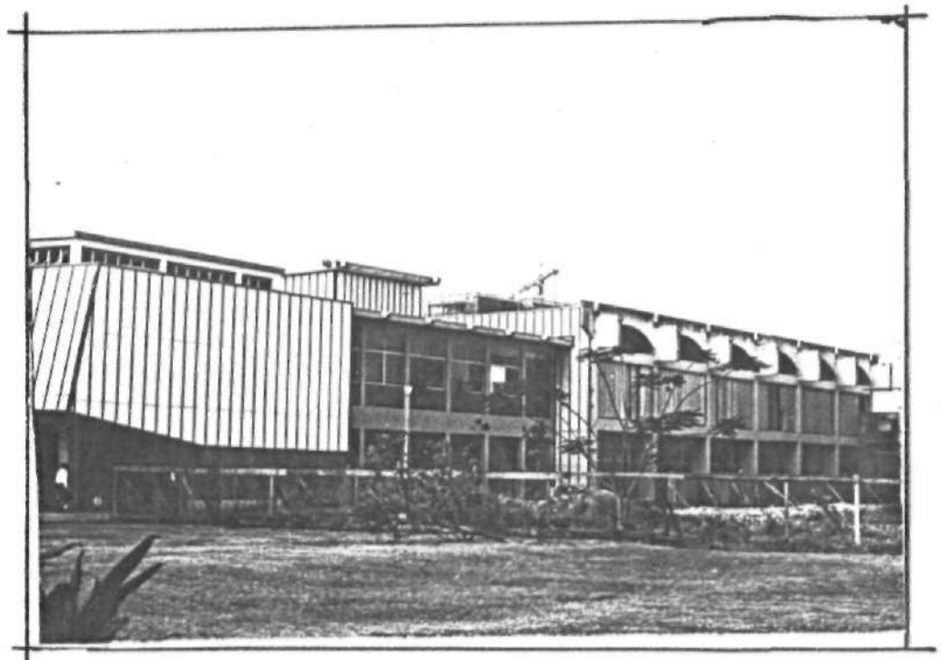


PLATE V:- back view-north elevation.

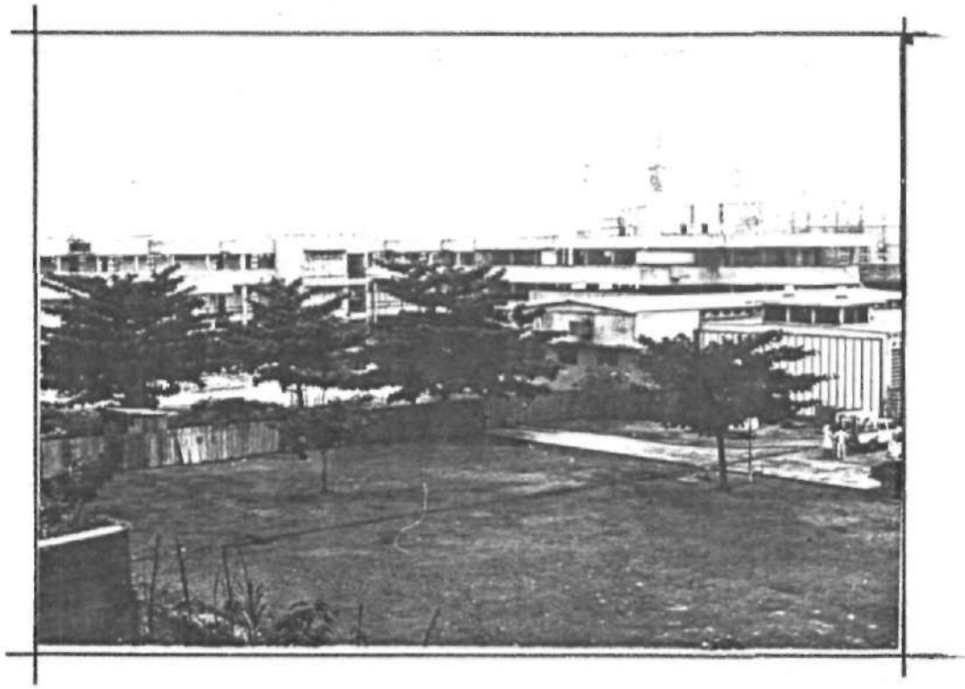
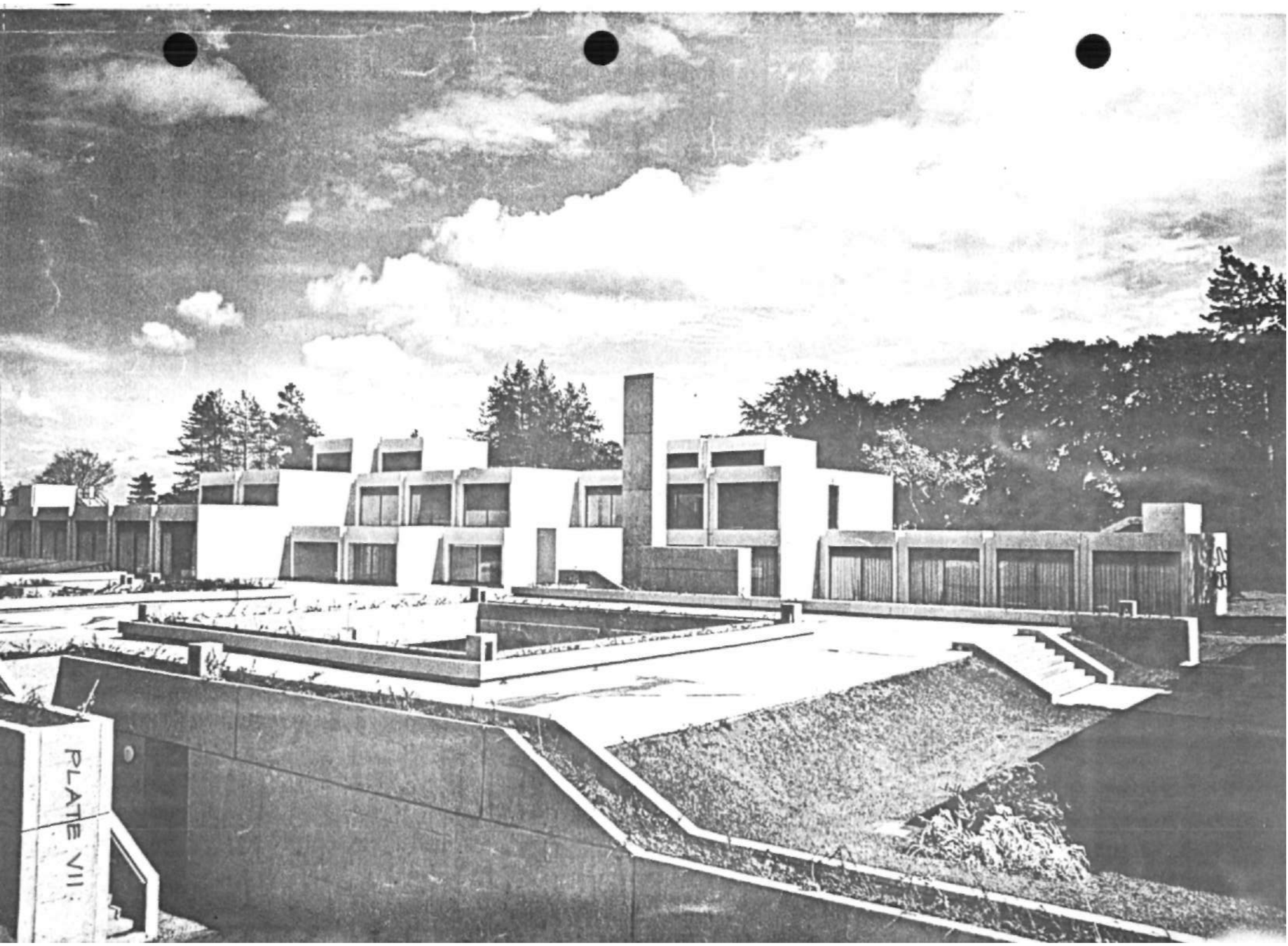
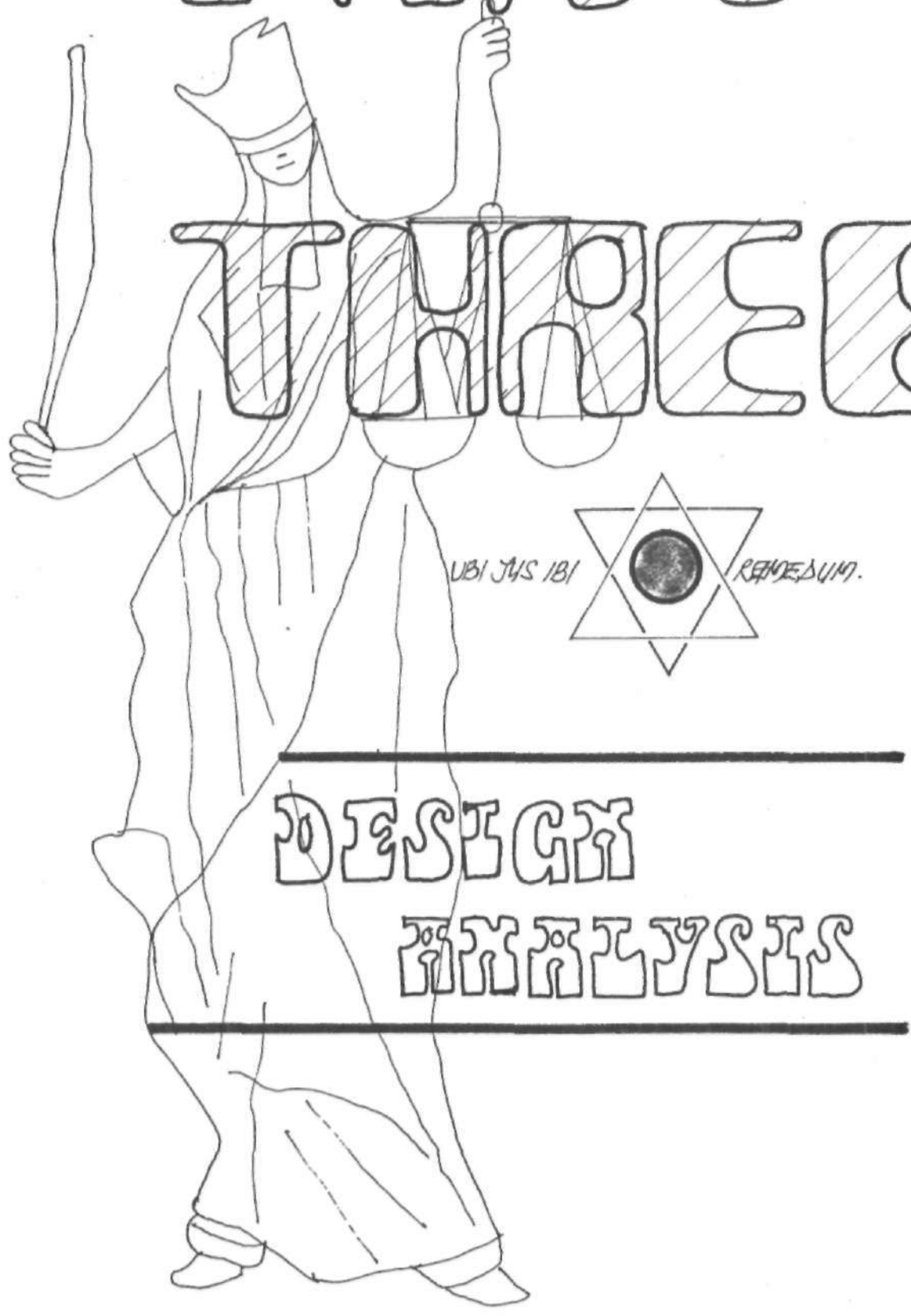


PLATE VI:- view of the new expansion facilities.


PLATE VII

PART THREE



DESIGN ANALYSIS

CHAPTER FOUR

BRIEF DEVELOPMENT/SCHEDULE OF ACCOMMODATION

4.1 POPULATION PROJECTION

4.1.1 Analysis of the Graph

1964-74 Session;- Unstabilised population growth due to

(i) Less awareness about the law profession.

(ii) Limited number of universities producing law graduates.

1975-83 Session:- Stabilised population growth due to:-

(i) awareness about the law profession led to

(ii) increased number of universities producing law graduates thereby the graph follows

(iii) a straight line graph (A) of gradent $\frac{480}{6.5} = 74$ and equation $y=a+bx$ where $a=110$ and $b=74$

1984-86 Session:- High population growth rate due to

(i) high percentage of failures in bar examination because of

(ii) indadequate number of facilities to cope with increased student population which led to the

(iii) introduction of two streams (morning - 9.00 a.m. - 1.00 p.m. and afternoon:- 2.00 p.m. - 6.00 p.m.) and

(iv) the graph follows a straight line graph (B) of gradent 600/2 = 300. Fig. 4.1.

4.1.2 Conclusion

The straight line graphs (A) and (B) is combined to form a single straight line with gradent

$b=\frac{74+(0.45x300)}{2} = 105 = (45\%$ influence

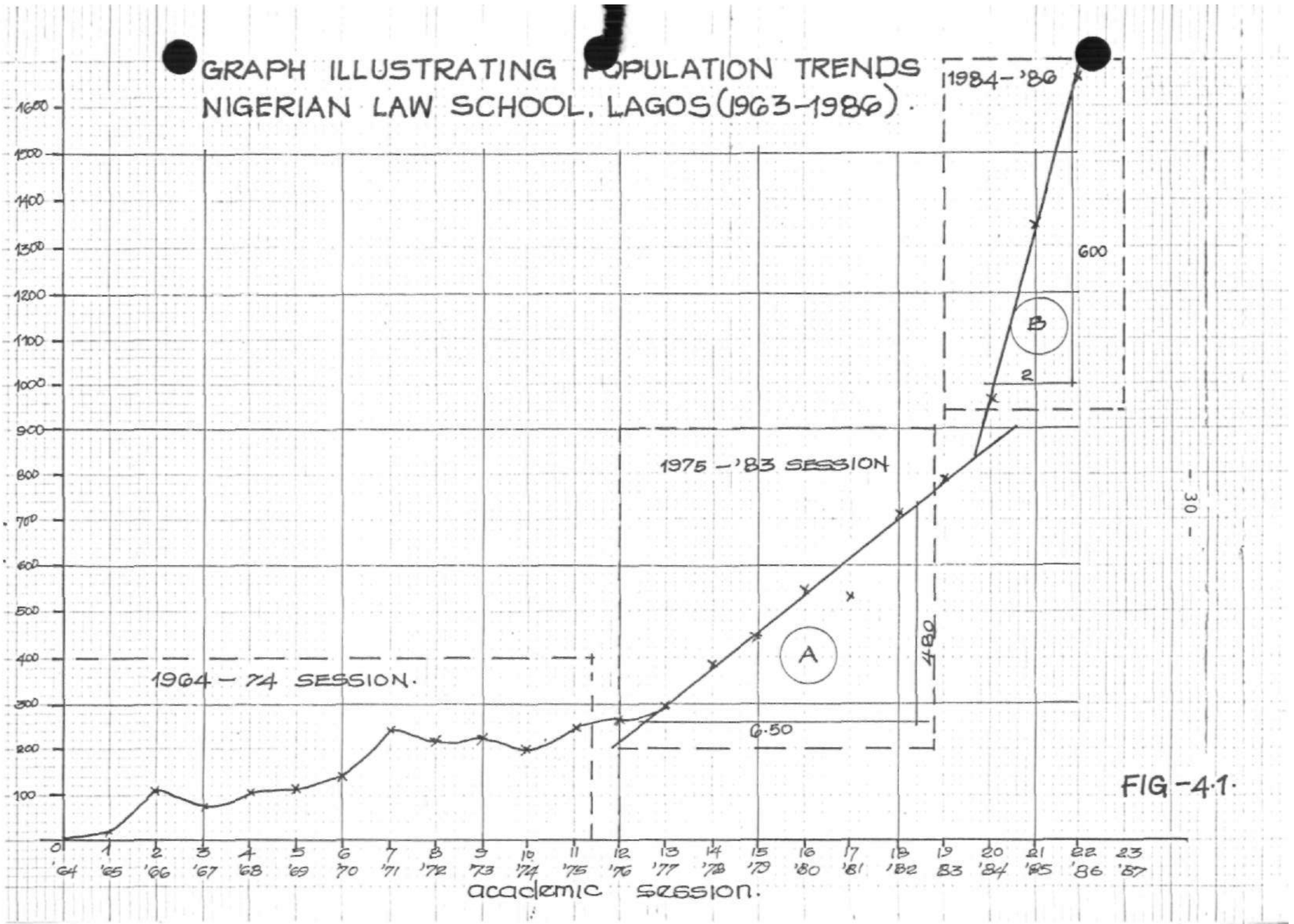

GRAPH ILLUSTRATING POPULATION TRENDS
NIGERIAN LAW SCHOOL, LAGOS (1963-1986).
1984-'86
600
B
2
1975 - '83 SESSION
30
480
A
1964 - 74 SESSION.
6·50
academic session.

FIG-4·1·

of (B) on A and a= 110)

1975 (when x = 0), y(population of students) = $110+105^{X}(0)$

= 110 students

1985 (when x = 10), y = 110+105 (10) = 1160 students

1995 (x = 20), y = 110+105 (20) = 2,210 students

2000 (x = 25), y = 110+105 (25) = 2,735 students

2030 (x = 55) y + 110=105 (55) = 5885 students

Design Population:- (1995 - 2030)

Capacity of Nigerian law school Lagos = 650 students, and max. student population with introduction of two streams = 650x2 = 1,300 students.

Proposed law school in Abuja should accomodate between (2210 - 650) = 1,560 students in 1995 and (5885 - 1300) = 4,585 students by the year 2030. For effective, economical and reliable institution, designed population = 2,000 students and max. capacity = 4,000 students.

All these calculations are based on assumptions and the actual number of students population may likely change, the possibility being in favour of a reduction than of an increase in population due to the following factors.

(i) changing educational policies in Nigeria.

(ii) expected reduction in Universities producing law graduates by the council of legal education in association with Nigerian universities commission by the end of 1987.

(iii) the proposed rationalization of courses in each University expected to be introduced by the Federal Government by the beginning of 1988.

(iv) the need to justify the rising demand of legal

i.e. supply should meet demands.

4.2 BRIEF DEVELOPMENT CRITERIA

It is a common saying that "buildings live longer than their brief". This is also applicable to educational buildings, therefore in developing the brief, I have consulted quite a large number of dignitaries and pracitising lawyers who are partially invovled in the educational field (apart from the director, staff and students of the Nigerian law school, Lagos) through questionaires and interviews. (questionnaire in appendix).

My major criteria has been in the "economy and flexibility of space". The peak utilization period of each space is considered and adequate space is provided while still adapting the space to other form of activities or functions.

General Facilities

4.2.1 Auditorium

The auditorium will be utilised for multipurpose functions involving the institution and the community since it is an expensive school facility, therefore its economic value should be achieved by exposing it to constant/thorough use. Activities that will take place in the auditorium include:-

(i) Lectures:- involving large student participation or otherwise involving external/guest/part-time lecturers will necessitate the accomodation of all the students in one or two halls.

(ii) Moot trials:- the auditorium should be flexible

enough to accomodate this activity. Although a seperate court is provided for the frequent utilisation by tutorial classes, but there would be need to accomodate large audience (staff, students, public, lawyers etc.) during ceremonial moot trials involving the public.

(iii) Ceremonial activities:- in such an architectural space are diversified, ranging from small activities like law meetings, symposia, conferences, and debates etc. to large activities like the call to the bar ceremonies, film shows etc.

The brief

Considering the various activities that is expected to take place in such a hall, one would have proposed an auditorium that will occupy the student/public/staff population but this is not economical because such large halls would evolve more architectural problems like e.g. necessity for a very good and strong acoustics, lighting and service systems. The brief is therefore developed from the following considerations.

Peak utilisation period:- ceremonial activities (call to the bar ceremony).

Seats to be provided for:-

85% student population = 85% x 2000	=	1700
body of benchers	=	25
academic staff		45
guests/student ratio = 3:2 = 3/2x2,000	=	3,000
Total		4,770

anticipated call to the bar ceremony on two occasions

therefore, designed no of seats = $\frac{4770}{2}$ = 2385

Inconclusion;

auditorium to sit	1,400 persons
Lecture theatre to sit	600 "
Over flow arena " "	400 - 1,500 pers
Total	2,400 - 3,500 persons

The lecture theatre and overflow arena audience will follow the proceedings inside the auditorium by the use of audio-visual facilities.

The overflow arena will be properly landscaped for other activities like, relaxation, sit-out for snack bar, outdoor reading for library etc.

4.2.2 Lecture theatre - Capacity = 600 pers

This facility will be adaptable for the following activities.

(i) Lectures:- daily use of this hall for lectures involving large groups or composition of tutorial classes.

(ii) Moot trials:- serve as a large mock court for both students and staff and as rehearsal hall for the ceremonial moot trials.

4.2.3 Snack bar - Capacity = 240 persons.

(i) For general relaxation, serving of refreshments.

Peak Period - 10% student population
= 200 (0.10 x 2000)
15% staff population = 7(0.15 x 45)
5% addition staff = 30 (0.5 x 600)
TOTAL = 240 persons 237

4.2.4 Parking

There are 3 kinds of parking areas within the academic section of the school namely:-

(i) Staff:- Senior, Intermediate and junior.

Senior staff:- parking spaces = 1:1 i.e. 100% population = 120 car parking spaces.

Intermediate staff = 2:1 i.e. 50% population.

= 0.5 x 180 = 90 car parking spaces

Junior staff: parking spaces = 1:5:1 or 3:2:= 67% population = 0.67 x 360 = 240 motocycle/bicycle parking spaces.

(ii) Students:-

Allow 1:7 i.e. car parking space to student number.

i.e. 14.3% student population

= 0.143 x 2,000 = 286 = 300 car parking spaces.

(iii) Visitors:-

Allow 1:4 = ratio of visitors to senior staff population = 0.25 x 120 = 30 car parking spaces.

Academic Core.

4.2.5 Moot Court-Capacity-300 students

(i) Moot trials:- for the purpose of teaching and learning the practise, conduct and etiquettee of the legal practioner in a court room. Tutorial groups are organised into large groups of 300 students and are enlightened on the conduct of legal practioners in the court.

(ii) Lectures involving small groups of students.

4.2.6 Classrooms

The classrooms will be flexible and adaptable to accommodate the following activities

(i) Lectures:- Anticipated number of students in each lecture room will be 120.

(ii) Tutorials:- Each lecture room/classroom will accommodate two tutorial classes of 60 students each.

(iii) Audio-visual facilities:- This will be shared by two classrooms or provided in 50% of the classrooms

Peak Use:- During lectures

Total student population = 2,000

Lecture theatre accommodates = 600

∴.No to be accommodate in classrooms

= 2,000 - 600 = 1,400 students

Classrooms of 120 students each will produce

$\frac{1,400}{120}$ = 11.67 classes = 12 classrooms

∴. 6 with audio-visual facilities and 6 without audio-visual facilities

Expansion is provided by the utilisation of the Moot Court which seats 300 students.

4.2.7 Library

The Nigerian law school is a totally research institution and according to standards, the percentage of students for which seating should be provided = 55% student population

= (0.55 x 2,000) = 1,100 students at a sitting.

The library is divided into

(i) General Section

Reference Reading room to accommodate 15% designed population = 0.15 x 1,100 = 165 persons.

(ii) Primary Section dealing with books on history/ sources of law/law reports - foreign or local

This section is the most important section of the library, therefore, the reading room will accommodate 40% population = 0.40 x 1,100 = 440 persons

(iii) Secondary Section dealing with textbooks, and journals on annotation to other books, recommending reviewing, and commenting on law reports.

Reading room (Textbooks) to accommodate 30% population = 0.30 x 1100 = 330 persons and Reading room (Journals/Magazines/Newspapers) to accommodate 15% designed population = 0.15 x 1100 = 165 persons

Other support sections include the administration and storage areas.

4.2.8 *Academic Staff*

For a good, effective, economical and conveniency sake, the lecturers/student ratio should be maintained between 1:40 and 1:60

Assume 1:50 ∴ No of lecturers = $\frac{2,000}{50}$ = 40 lecturers.

3 principal lecturers

8 senior lecturers

11 Lecturers (Grade I)

12 Lectures (Grade II)

6 part-time lecturers

2 Research Officers

Total = 40 + 2 additional

The proposed hierarchy analysis might be altered depending on the availability of persons to suit such positions.

4.3 SCHEDULE OF ACCOMMODATION (Space requirements)

4.3.1 General Facilities

The net area in each of the facilities is calculated from established standards in terms of area (m^2) per person or place or seat e.t.c. and the gross area is deduced by adding net area and area alloted for circulation/services derived from space standards.

Note: The Summary of the space requirements of all facilities (General, Academic and Administration is given in Appendix, Table V.

AUDITORIUM (1666.0 m²)

Seating 0.85m²/person x 1400	=	1190
Projection room		34
Preparation/dressing		45
Plant room		60
Net area	=	1329 m²
Circulation.storage/conveniences	=	(1666 - 1329) m²
	=	337 m²

LECTURE THEATRE (714.0m²)

Seating 0.85 m²/person x 600	=	510
Project room		22
Preparation/dressing room		30
Circulation/conveniences	=	(714 - 562) m²
	=	152 m²

OPEN ARENA (3375 m²)
Seating, relaxing, viewing, and landscaping
1.50 m²/person x 1500 = 2250
Circulation = 50% net area = 6.50 x 2250 = 1125 m²

CLINIC (567 m²)

4 consultation/examination rooms = 4 x 20	=	80
2 treatment rooms = 2 x 26	=	52
Pharmacy/storage/waiting		84
Reception/waiting areas		72
Medical records		36
Lying in ward (6 beds) 7.5 m²/bed		45
Injection room		12
2 Snr. Nursing sister's offices 2 x 12		24
Circulation/storage/Conveniences = (567 - 405) m²		
	=	162 m²

SNACK BAR (538.00 m²)

Seating 1.60 m²/person x 240		384
Kitchen 0.10 x 384		38.4
Store		12
Catering Officer's Office		14.5
Circulation/conveniences = (538.0 - 449) m²		
	=	89.0 m²

PARKING (12420.0 m²)

Senior staff 23.0 m² per car x 120	=	2760
Intermediate staff 23 x 90	=	2070
Students 23 x 300	=	6900
Visitors 23 x 30	=	690
Motocycles/bicycles 0.60m² per cycle x 240		144
Total		12564 m²

SUMMARY

Auditorium	1666 m²
Lecture theatre	714 m²
Open arena	3375 m²
Clinic	567 m²
Snack bar	538 m²
Parking	12564 m²
	19424 m²

GROSS AREA (General Facilities)

= 19424 m² 1.94 Hectares

4.3.2 Academic Core

COURT (376.0 m²)
Seating 0.90 m²/person x 300 = 270
Projection room 16
Dressing/preparation room 26
Circulation (378 - 312)m²
= 67.0 m²

CLASSROOMS (1620.0 m²)
6 classrooms with audio-visual facilities = 6x168=1008m²
Seating = 1.00m²/person x 120 = 120
Projection room = 12
Circulation (168 - 132)m²
= 36 m²
6 Classroom without audio-visual facilities = 6x156=936m²
Seating 1.00 m²/person x 120 = 120
Circulation 0.30 x 120 = 36
156 m²

LIBRARY (6546.0 m²)
General Section - (809.0m²)
Bag Storage 12
Control counter 14.5
Exhibition/lobby 120
Card Cataloging 8 x 14 m 112
Reading room 0.15x1,100 x3.25 m²/person = 536.3
Librarian 14.5
809.30 m²

Primary Section - (1445.0 m²)
Reading room (Pry.section) =0.40x1,100x3.25 = 1430
Librarian 14.5
1444.5m²

Secondary Section - (1623.0 m²)
Reading room (textbooks) 0.30x1,100x3.25 = 1072.5
Reading room(Journals) 0.15x1.100x3.25 = 536.3
Librarian 14.5
1623.3m²

Administration (284.0 m²)
Chief Librarian 17
Confidential Secretary II/waiting 26
Senior Librarian 14.5
General Office 37.7
2 asst.executive offices 2x5.0m²
2 clerical officers 2x4.3m²
1 snr. typist 1x4.60m²
1 typist(grade I) 1x4.30m²
2 typist(grade II) 2x4.1 m²
1 messenger 2.0m²

Meeting room 10x2.3 m²/person	23
Receiving/despatching/packing	43.2
Photography (darkroom/preparation room)	39.6
Printing/binding	46.8
Photocopying/waiting	36.0
	283.8 m²

Storage (203.0 m²)	
Strong room	12
Central Book STorage	82.8
Stationary Store	36
Furniture/Equipment store	72
	202.8m²

Circulation/Conveniences = 50% Net area
= 0.50 x 4364 = 2154 m²

ACADEMIC STAFF (848.0m²)			
3 Principal lecturers	3x20m²	=	60
8 Senior lecturers	8x17m²	=	136
11 Lecturers(Grade I)	11x14.5m²	=	159.5
12 Lecturers (Grade II)	6x17.0m²	=	102
6 part-time lectures	2x20m²	=	40
2 Research Officers	1x17m²	=	17
1 Confd.Sec.II/Snr.Executive Officer		=	17
Staff Lounge/Kitchenette	45x2m²/person	=	90
General Office		=	39.9
1 snr clerical officer	4.6m²		
2 typists(grade I)	2x4.3m²		
2 typists(grade II)	2x4.1m²		
1 clerical officer	4x3m²		
2 clerical assistants	2x4.1m²		
3 meesengers	3x3.2		
Circulation/Conveniences/Storage = (848 - 661.4)m²			
		=	186.6m²

Summary	
Court	376 m²
Classrooms	1620 m²
Library	6546 m²
Academic Staff	848 m²
Total	9390 m²

GROSS AREA (Academic Core) = 9390 0.94 Hectares

4.3.3 The Administration

The office area requirements is calculated in two parallel ways:-

(a) People space i.e. (the individual space standard x number of people) + (allowance for immediate ancillary e.g. file/storage space) + (factor, usually 25% for primary circulation).

(b) Non-people space e.g. special rooms or equipment will depend more on the equipment space than on the staff number for their space area requirements.

A space area based on 1.2 m grid was developed after consideration of the two factors, therefore office area allocation depends on the hierarchy of the office personnel. The Administrative brief was also developed prior to the existing organization structure of the Nigerian Law School Lagos.

Ref:- Appendix Table I and II

COUNCIL OF LEGAL EDUCATION (261.0 m²)
Chairman's Office 26
Chairman (body of benchers) 26
Conf.Sec.I/Typist II/Waiting 29
Conference Room (60 persons) 120
Kitchenette 8
Circulation 25% net area = 209 m² = 0.25x20 = 52.0 m²

POLICY AND MANAGEMENT (230.0 m²)
Director's Office 23
Personal Secretary to Director 14.5
Confd.Sec.I/Waiting 29
Secretary to the Council 20
Confd.Sec.II/Waiting 26
Principal Exc. Officer 14.5
2 Snr. Executive Officers 17
General Office 40.2
1 snr. typist 4.6 m²
2 typist (grade I) 2x4.3m²
2 clerical officers 2x4.3m²
2 typists (grade II) 2x4.1m²
2 clerical assistants 2x4.1m²
1 messenger 2.0m²
Circulation = 25% Net area = 184m² = 0.25x184 = 46.0 m²

ACADEMIC OFFICE (207.0 m²)
Chief Executive Officer 17
Principal Exc. Officer 14.5
Confd. Sec.III/Waiting 23
Snr.Exc.Officer/2 exc.Officers 20
General Office 28.2
1 snr. clerical officer 1x4.6
1 snr. typist 1x4.6
2 typist,1 clerical officer 3 x 4.3
1 typist II/messenger 4.1x2.0
printing room 62.5
printing equipment 30
3 machine operators/2cl.assists) = 5x4.1

storage	12	
Circulation = 25% Net area		165 m²
= 0.25 x 165 =	42 m²	

ACCOUNTS/INTERNAL AUDIT (270.m²)

Chief accountant		17
Confd. Sec.II/Waiting		26
Accountant (Grade I)		14.5
2 Accountants (Grade II)		17
3 Account Officers		20
1 Acct. Officer/3 assist.acct. officer		23
Account's office		41.7 m²
2 asst. acct. officers	2x5.0	
3 cashiers	3x4.3	
2 clerical officers	2x4.3	
2 clerical asst.	2x4.1	
1 messenger	1x2.0	
General office		44.8
2 snr. clerical officers	2x4.6	
2 clerical officers	2x4.3	
2 typist (grade I)	2x4.3	
2 typist (grade II)	2x4.1	
2 clerical assts.	2x4.1	
1 messneger	2.0	
Strong room/cash machine		12
Circulation = 25% Net area = 0.25x216 = 54.0m²		216 m²

HOUSING/ACCOMMODATION (166 m²)

Principal accommodation officer		17
Senior accdn. officer		14.5
Confd.Sec.III/Waiting		23
2 accommodation officers		17
3 asst. accdn.officers		20
General office		41
1 asst. exec.officer	1x5.0	
1 snr. clerical officer	1x4.6	
2 typist (grade I)	2x4.3	
2 typist (grade II)	2x4.1	
3 clerical assts.	3x4.1	
1 messenger	2.0	
Circulation = 25% Net area = 0.25 x 133 = 33.0m²		133 m²

ADMINISTRATIVE OFFICE (660 m²)

Deputy Secretary	20
2 Chief Exec. Officers	2x17
3 Principal Executive Officers	3x14.5
6 Snr. Executive Officers	3x17
6 Executive Officers	2x20
8 Asst. Executive Officers	2x20
Conf. Sec.I/Conf.Sec.II	20
Confd. Sec. II/Waiting	26
3 General Offices	3x38.6
2 Snr. Clerical Officers	2x4.6
4 Clerical Officers	4x4.3

2 clerical assts	2x4.1	
2 messengers	2x2.0	
2 Typing Pools		2x34.1
2 Snr. Typist	2x4.6	
2 typist (grade I)	2x4.3	
3 typist (grade II)	3x4.1	
2 messengers	2x2	
Telephone Exchange/Reception		51.6
2 receptionists	2x5.0	
1 telephone operator	1x4.6	
2 asst.tele.operator	2x4.3	
4 telephone attendants	4x4.1	
Telephone equipment	12	
Storage		18
Circulation = 25% Net area		528.10m²
= 0.25 x 528.10 = 132.0 m²		

ADMISSIONS/STUDENT AFFAIRS (121 m²)		
Principal Exec. Officer		14.5
Confd. Sec.III/Waiting		23
1 Snr. Exec. Officer/2 Exec. Officers		20
General Office		39.5
3 Clerical Officers	3x4.3	
4 Clerical Assts.	4x4.1	
2 typist (grade II)	2x4.1	
1 messenger	2.0	
Circulation = 25% Net area		97
= 0.25 x 97 = 24.5 m²		

STORES		(297 m²)
Chief Store Officer		14.5
Furniture/Equipment Store		72
Stationary Store		60
General Storage		72
Store Office		19.3
1 Store officer	4.6	
2 Snr. Store Keeper	2x4.3	
1 typist Grade II	4.1	
1 Messenger	2.0	
Circulation 25% Net area		237.8
= 0.25 x 237.8 = 59.45 m²		

MAINTENANCE DEPARTMENT (354 + 487 + 895) = 1736 m²		
(i) MAINTENANCE (354 m²)		
Building Supretendant	14.5	
Asst.bld.Supretendant/ 1 technical Officer	17.0	
Air Condition Workshop	39.6	
Plumbing Workshop	36	
Electrical/Audio-visual Workshop	36	
Carpentary Workshop	43.2	
Building/Painting Workshop	43.2	
Gadner's Storage	23	
Circulation/Storage 40% net area	252.5²	
= 0.40 x 252.5 = 101.5 m²		

(ii) TRANSPORT (487 m²)		
Transport Officer		14.5
Transport Office		29.3
2 asst. transport supervisors	2x5.0	
1 Snr. Motor-driver mechanic	4.6	
2 clerical officers	2x4.3	
1 typist (grade II)	4.1	
1 messenger	2	
Mechanical Workshop		304
2 Snr. Driver-Motor Mechanic	17	
Equipment/STorage	100	
5 Cars Parking	5x23	
2 buses parking	2x36	
Circulation = 40 net area		348
= 0.40 x 348 = 139 m²		
(iii) SECURITY (895 m²)		
Security Officer		14.5
Security Office		29.6
2 asst. Security officers	2x50	
2 head watchmen	2x4.6	
1 clerical officer	4.3	
1 typist (grade II)	4.1	
1 messenger	2/0	
Parking of School Vehicles		595
17 cars	17x23.0	
4 buses	4x36.0	
10 motor bikes	10x0.60	
Circulation 40% net area		639
= 0.40 x 639 = 256.0 m²		
CATERING (254 m²)		
Staff canteen		195
Seating 20% int/junior staff		
population x 1.3 m² per person		
= 0.20 x 540 x 1.3 =	140.4	
Snr. Cat.Officer	14.5	
Kitchen 0.20x140.4 =	28.1	
Storage	12	
Circulation/Conveniences = 30% net area		
= 0.30 x 195 = 58.5m²		

The catering division of the school will be expenaded with the provision of a central cafeteriat for students in the student hostels. This facility is neglected since my area of concentration is within the Academic Section of the school. However, appropriate space will be allocated for it along with the student residential areas.

Summary

Council of Legal Education	261m²
Policy/Management	230m²
Academic Office	207m²
Accounts/Internal Audit	270m²
Housing/Accommodation	166m²
Administrative Office	660m²
Admissions/student affairs	121m²
Stores	288m²
Maintenance	354m²
Transport	487m²
Security	895m²
Catering	254m²
Total	4193m²

GROSS AREA (Administration)
= 4193m² 0.42 Hectares

4.3.4 Residential

There are 3 main residential areas in such an academic institution which are (i) senicr staff residences (ii) intermediate/junior staff residences and (iii) student hostels

(i) 120 senior staff houses
Total area per staff = 230 - 140m²*
Assume 180 m² per staff $\frac{(230 + 140)}{2}$
Total area = 185 x 120 = 22200 m² = 2.2 Hectares

(ii) Intermediate Staff - assume 80% to be accommodated
(a) Total area per staff = 150 - 90 m²*
Assume 120m² per staff $\frac{(150 + 90)}{2}$
Total area = 0.80 x 1.80 x 120
= 17280 m² = 1.73 Hectares

(b) Junior Staff - assume 80% to be accommodated
Total area per staff = 60 m²
Total area = 300 x 0.80 x 60 = 14400 m² = 1.44 Hectares.

(iii) 2,000 students
Density = 420 students/ha-medium rise buildings without lifts
= $\frac{2,000}{420}$ = 4.76 Hectares

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*Nigerian University Commission standards. (Residential areas)

Central Cafeteria
Designed population 2,200
Area per person 1.40 m²
Net area = 2,200 x 1.40 = 2080m²
Circulation 40% Net area
= 0.40 x 3080 = 1232m²
Gross area = 3080 + 1232 = 4312 m² 0.43 Hectares

Total Residential accommodation

Senior Staff	2.22	
Intermediate/Jnr. staff	3.17	(1.73 + 1.44)
Students accommodation	5.19	(4.76 + 0.43)
	10.58	Hectares
	11	Hectares

4.35 Recreation

The recreational facilities of such an institution should not be ellaborate since students derive more pleasure in making use of other community facilities, but provision must be made for the following

Outdoor Sports

Track/Football field	= 127x 87 =	11049 m²
4 law tennis courts	= 4x32x19 =	2432 m²
3 basketball courts	= 3x32x19 =	1824 m²
1 swimming pool	= 65x30 m =	1950 m²
		17255 m²

Indoor Sports
Gynasium = 32 x 36.5 = 1168 m²
to include
4 badminton courts
4 table tennis courts

Total = 17255 + 1168 = 1825 m² 1.84 hectares

Circulation = 60% net area

= 0.60 x 1.84 = 1.10 hectares

Gross area = 1.84 x 1.10 = 2.94 hectares

3 Hectares

CHAPTER FIVE

DESIGN PARAMETERS/FUNCTIONAL

5.1 DESIGN PARAMETERS

5.1.1 Auditoriums

-Seating Capacity:- In modern cinemas with seats spaced 900 mm back to back, the total area of the auditorium in m^2 divided by 1.05 will give seating capacity. With more closely spaced seats, the factor may be reduced to 0.85. Space requirements for seating are given in Fig.5.1.1

-Gangways:- Gangway provision depend on width of auditorium and number and width of seating blocks. The normal considerations are:-

(i) medium sized cinemas: two gangways may suffice. Audiences prefer them at the two sides of the auditorium rather than dividing up seating.

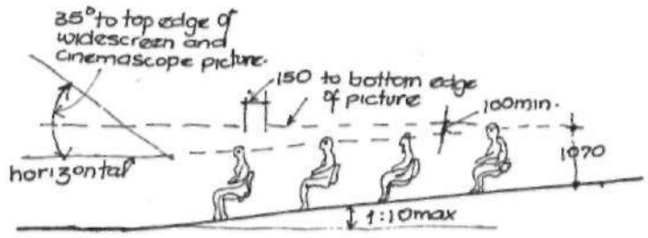
(ii) three gangway situations not popular, as the central gangway is in the prime seating position; a four gangway arrangement is preferred in cinemas seating more than 500.

(iii) width of gangway usually 1067 mm clear, but continental seating with extra wide seating blocks is usually extended to 1372 mm.

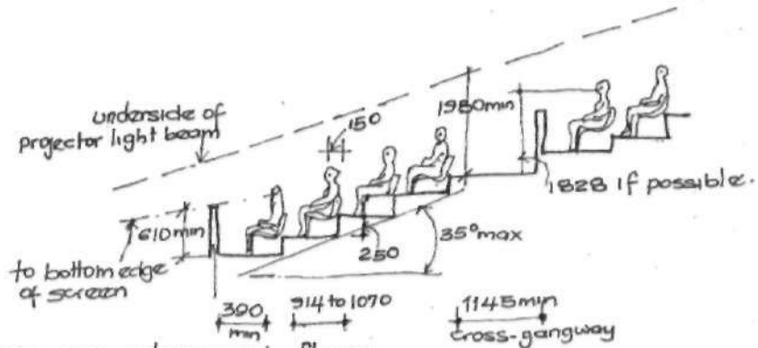
(iv) central exist to 2 or 3 gangway auditorium necessitates rear cross gangway of 1067 mm.

(v) 4 gangway auditoria usually have two exits in line with inner gangway and a linking cross-gangway (1067 mm) at the rear.

(vi) side exits should be avoided. They necessitate a

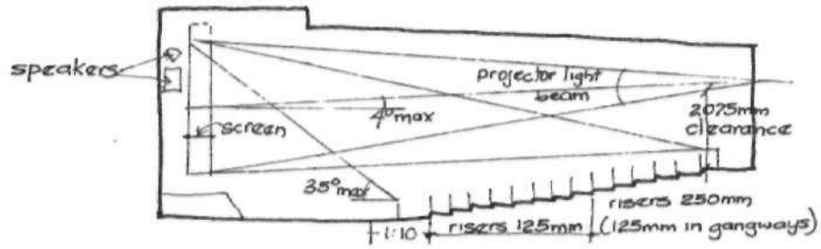


seating on raked floor.

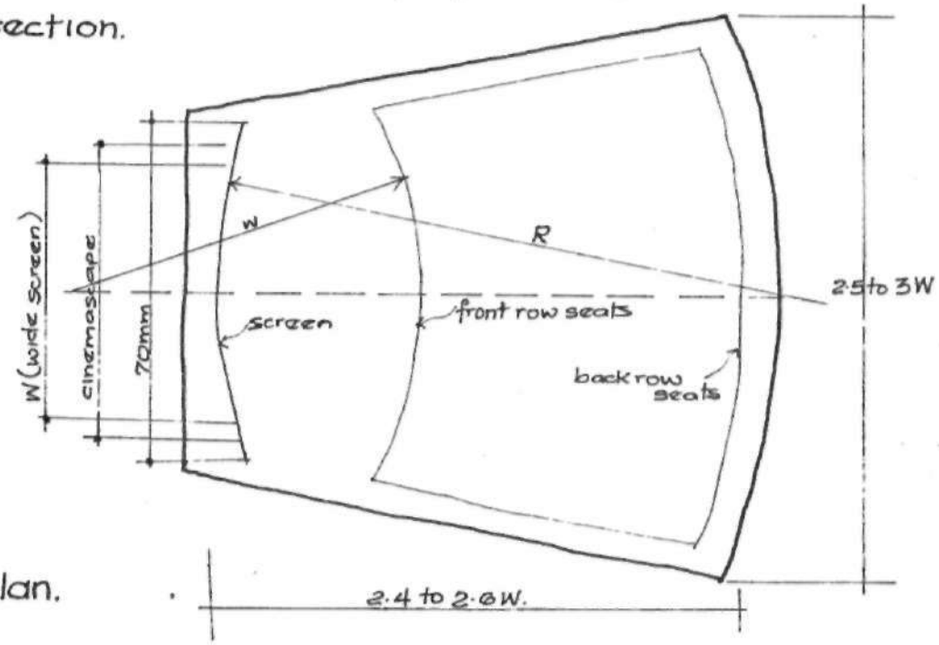


seating on stepped floor.

CRITERIA FOR A SEMI-STADIUM AUDITORIUM FOR 35 AND 70MM PROJECTION.



section.



plan.

— FIG. 5.11. —

cross-gangway through main bank of seating, and can be visual nuisance.

-Projection room:- with minimal equipment - 3.9 x 4 m, with effects lantern and spotlight - 5.5 x 3.9 m, generously equipped - 7.3 x 4.6 m, floor to ceiling height - not less than 2.6 m. The projector level should be kept as low as possible to prevent distortion of the picture to a keystone shape.

5.1.2 Lecture rooms/theatres

- Utilisation of lecture room, and theatres traditionally low in relation to space requirements and capital cost; therefore consider designing flexibility to accommodate various functions.

- Basic shape:- shape of lecture theatre becomes more important as size and volume increase. Square flexible but fan shape preferred for larger theatres where plan form relates to adequate sight lines for audio-visual presentations, cinema e.t.c. Small capacity lecture room up to approx. 80 persons quite satisfactory with flat floor; larger balls require either ramped floor (max. 1:10) or stepped floor, dependent upon achieving adequate sight lines.

- Seating

(i) Seating min. dimensions

back to back distance between rows of seats (with tip-up seats)	-750
width of seats, linked, without arms	-460
width of seats with arms	-500
unobstructed vertical space between seats	-300

(ii) Cinema: criteria for good viewing -30°

max. horizontal viewing angle	-35°
max vertical viewing angle	-12°
critical angle of projector	-6xw of screen
max. viewing distance	-2xw of screen

- Fire Regulations:- Design of lecture room or theatre must conform to safety regulations, in particular fire and means of escape. Number of seats permissible in any row dependent upon clear distance apart of rows (back to back dimension A), resultant clear section (dimension E measured between perpendiculars) and distance of seats from gangway (D=w of seat) Fig. 5.1.2.

- Acoustics:- Just as important,hear distinctly is as see clearly, lecture hall must be acoustically isolated from other noise sources. Design of ceiling as reflector of sound from original source important factor in achieving even distribution throughout hall. Design of wall surfaces and finishes also an important consideration in either reflecting or absorbing sound according to their relationship to stage or dais.

5.1.3 Health Centres

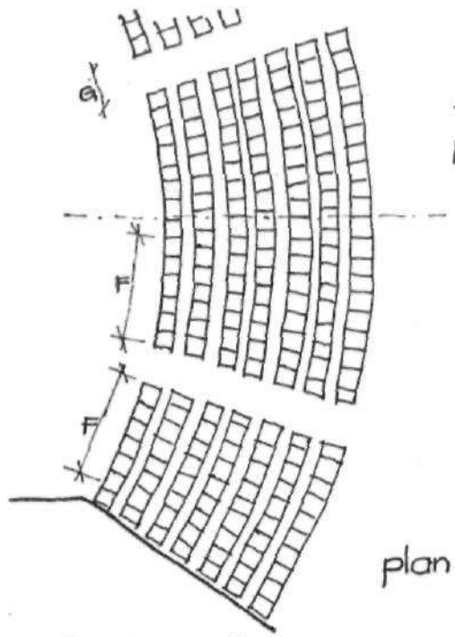
- No single pattern of health centre has evolved, and any health centre may contain a different mix. of services and because of changing nature of general medical practise, a health centre should provide both for flexible use of space, and of balanced growth.

- Car parking:- On site car parking (25 m² per car) should be allowed for staff in the amount of 1.5 spaces consulting room (qv), and for patients 2.5 spaces per

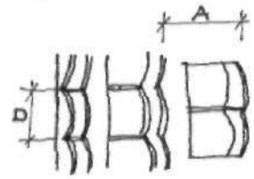
FIRE REGULATIONS:- LECTURE ROOMS/THEATRES.

min. seatway (measured between perpendiculars) E	min. distance of seat from gangway (500mm seats) F	max. number of 500mm wide seats/row.	
		gangway on both sides	gangway on one side.
300	3000	14	7
330	3500	16	8
360	4000	18	9
390	4500	20	10
420	5000	22	11.

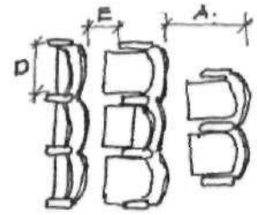
distance of seats from gangway



part of auditorium.



plan of seating without arms.



plan of seating with backs & arms.

- FIG. 5.12.-

consulting room. Space for manoeuvring ambulances should be allowed.

-Main Entrance:- should be clearly visible, identifiable and easily accessible to all patients and staff.

-Reception:- reception staff has to cope with the direction of patients to waiting areas, the making of appointments. Allow 5.5 m^2 per receptionist on duty at peak hours (fig. 5.1.3).

-Record storage:- usually associated with reception, but ideally not part of it, is record storage. Assuming that all records (of A4 size) are centralized, allow 1.4 m^2 per 1000 patient. It is most important that this area is out of sight of waiting patients and that it can grow.

- Waiting areas:- usually associated with the reception desk. Six seats should be allowed for each consulting room and treatment room, 1.4 m^2 each. Location of wcs and pram parks should be carefully considered in relation to waiting and reception areas.

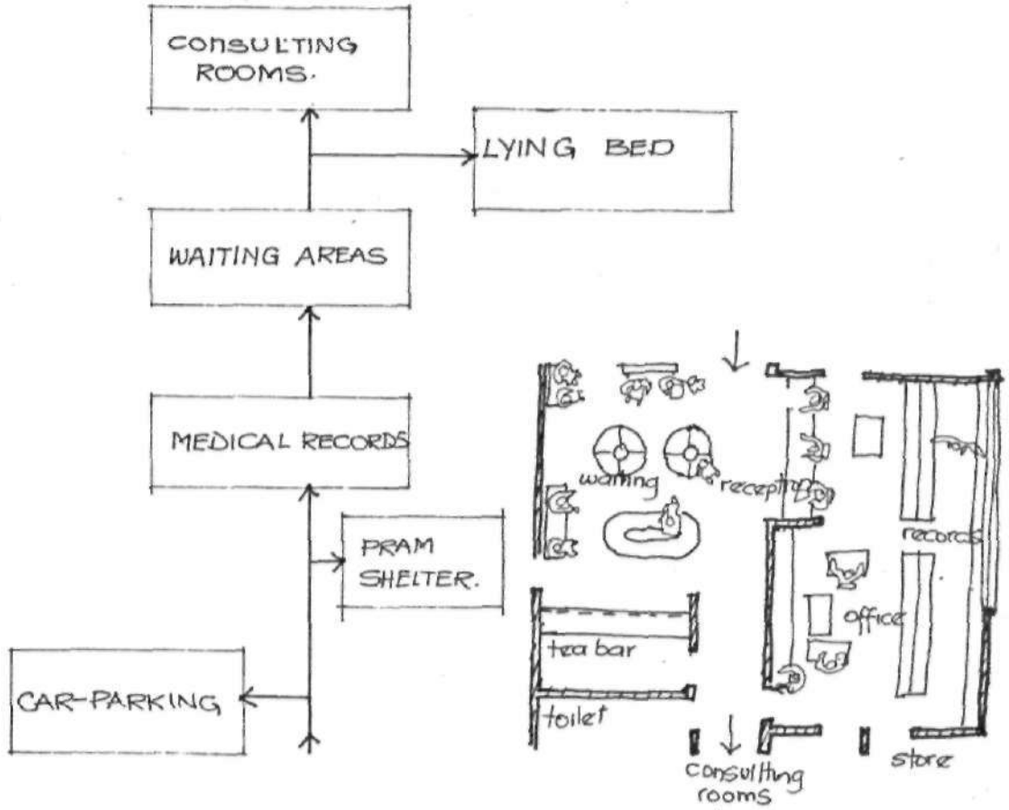
- Consulting rooms:- As general rule allow 17 m^2 per combined room (Fig. 5.1.3).

-Treatment rooms:- used primarily by nurses performing simple therapeutic techniques. For one nurse, allow 17 m^2 - two nurses with 2 patients in one room - 25 m^2, although on the ground of privacy it might be better to provide two rooms (Fig. 5.1.3).

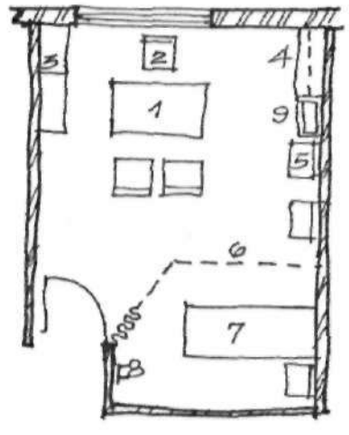
5.1.4 Catering - (Dining hall, Canteen/snack bar)

- Space allowances:-

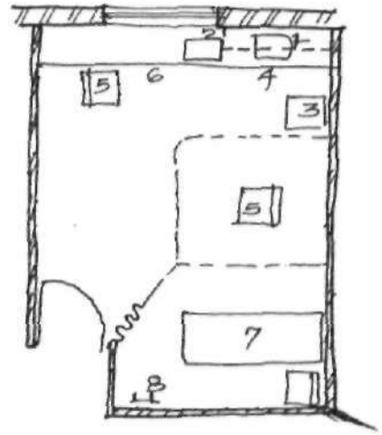
FLOW DIAGRAM - HEALTH CENTRES.



reception/office.



consulting/examination room



treatment room.

1. desk.
2. swivel chair.
3. bookcase
4. worktop
5. trolley
6. ceiling mounted track with curtain.
7. couch
8. coat hooks
9. washand basin

1. sink.
2. washand basin
3. trolley
4. worktop
5. chair
6. admin. area
7. couch
8. coat hooks.

— FIG. 5.13 —

Type of Seating and Service	Area per dinner(m^2)
Canteens (industrial and offices)	
Cafetaria service, tables for 4 or 6	= 1.1 to 1.4
Cafeteria service tables for 8 or over	= 0.74 to 0.90

-Alternative arrangements for self-service counters (Fig. 5.1.4) between 9 and 11 m would be suitable for a menu offering 2 or 3 choices of main dish and serving about 60 to 70 customers in 10 minutes.

-Kitchen design should include the servery, storage, cooking and preparation areas (Fig. 5.1.4).

-Services:- 1 wc for 12-15 women, 1 urinal/wc for 15 men, changing room should be provided for staff.

-Snack bar:- areas required per seat = 1.48 - 2.15 m.
ratio of service area to total area = 25-50%
net kitchen area = 15-25% (Fig.6.1.4).
Kitchen divided into areas for cooking, frying, grilling, wash up and preparation of soups and vegetables.

-Other requirements includes staff toilets, small office, food store (deep freeze and dry storage).

5.1.5 Parking

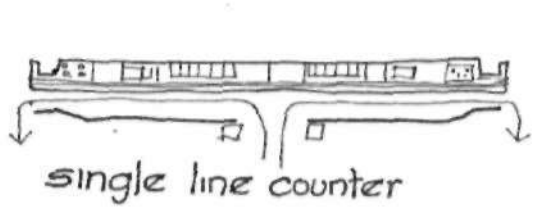
-Car parks:- In permanent car parks, lanes and bays should be clearly marked with safety strips for pedestrians.

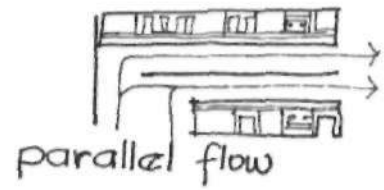
-Space requirements:- Space/car with driving lanes without main access and exit are given as

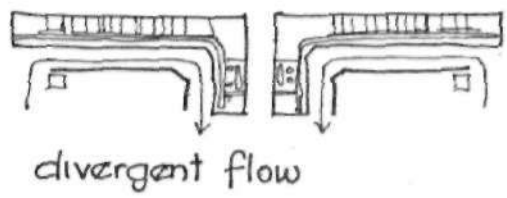
90° parking = 20 m^2

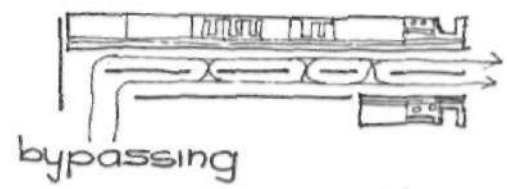
45° parking = 23 m^2 usually preferred for ease of parking.

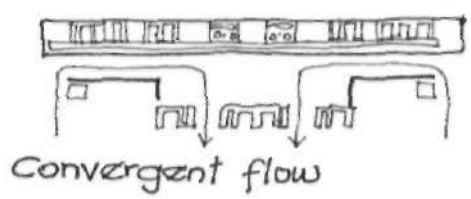
ALTERNATIVE ARRANGEMENTS FOR SELF-SERVICE COUNTERS.

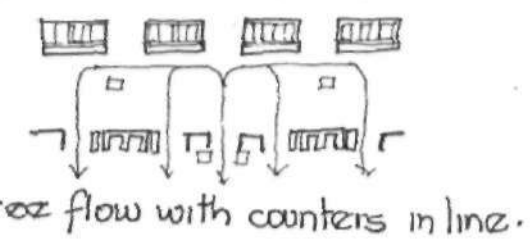


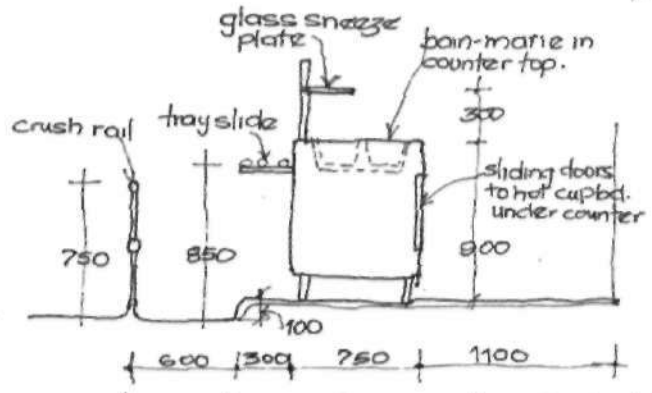




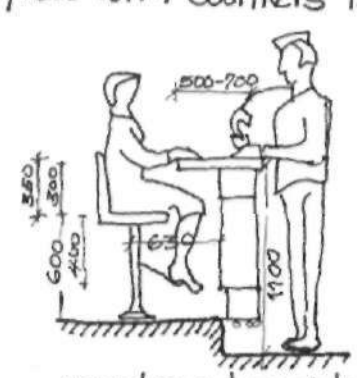




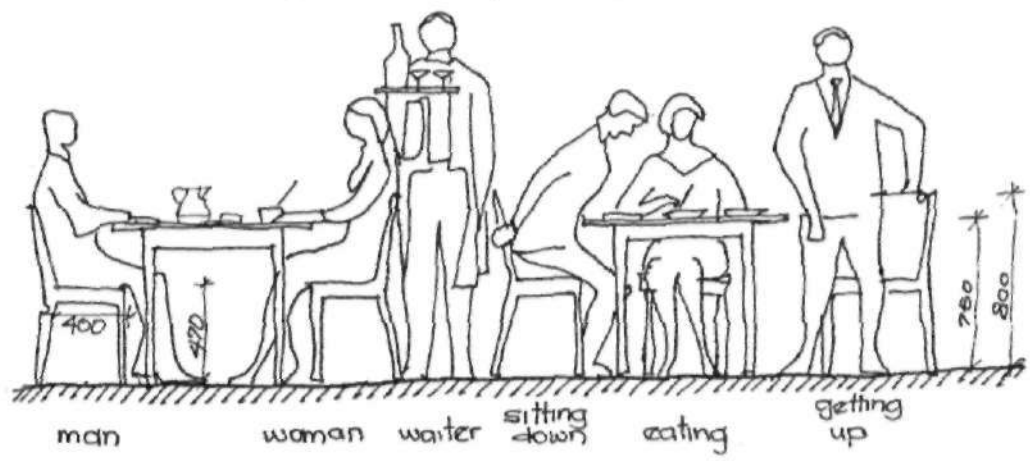




section through counter for hot food.



medium height bar stool.



— FIG 5.14.—

5.1.6 Courtrooms

-Relationship within the courtroom:-

(i) The judge presides over the courtroom and should be able to observe the whole courtroom and to see clearly the principal participants as well as the defendant in the clock, and when called, the antecedents and probation officers.

(ii) The court clerk administers the case and needs to keep a watching eye over the court. He often advises the judge and he should be able to stand up and speak to the judge without being over-heard.

(iii) The exhibit tables are in the centre area of the court are used to display exhibits put forward for evidence.

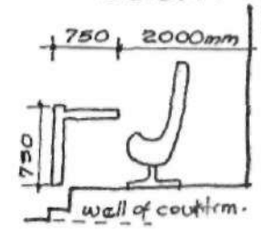
(iv) The counsel are barristers and solicitors who represent the defendant or prosecution. They need to be able to see the judge and the witness to who they address their remarks. (Fig. 5.1.6).

-The Environment within a Courtroom

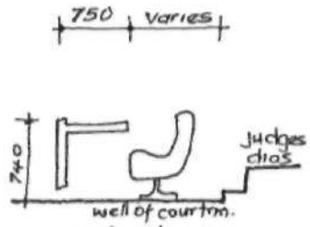
(i) Ventilation:- to assist smooth running of the court, to help keep participants interested and comfortable and to avoid distractions of the outside, it is recommended that courtrooms are internal rooms with air conditioning. Air-condition feed from ceiling but plant placed remote from the room.

(ii) Lighting:- Lights should be positioned and selected to give good illumination on bench tops and not produce glare. The light source should be carefully

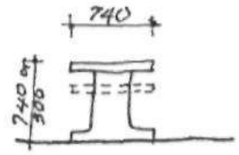
COURT FURNITURE DIMENSIONS.



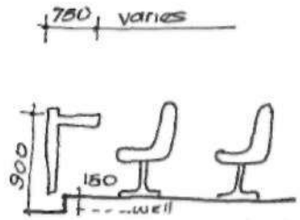
Judge's bench.



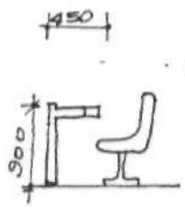
court clerk.



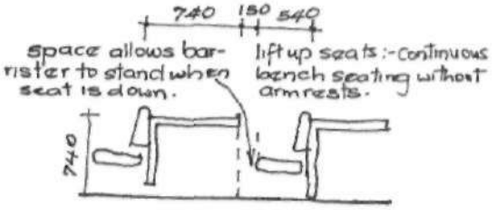
Exhibit's table.



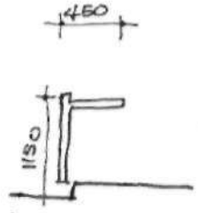
defendant (dock).



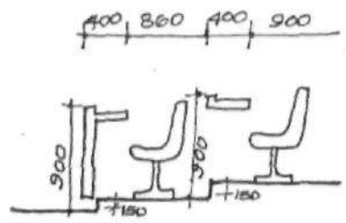
shorthand writer.



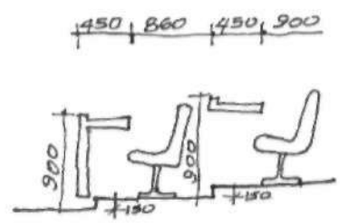
barristers & solicitors.



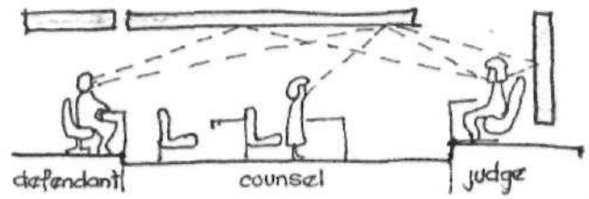
witness.

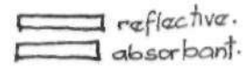


probation & antecedants.

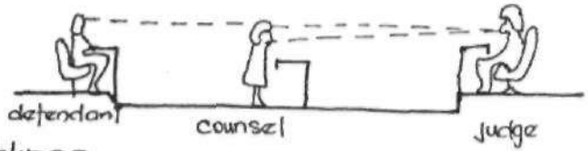


press.





Required acoustic treatment.



sightlines.

— FIG 5.16 —

selected to give reasonable facial modelling and accurate colour rendering. In order to reduce glare and contrast, bench tops and furniture generally should be of high reflective i.e. light colours - likewise for walls and ceiling.

(iii) Acoustics:- There should be reflective surfaces on the ceiling over the main well of the room, on the side walls and behind the judge. There should be absorbant surfaces around the edges of the celling and behind the public area. An NR rating of 25 + 2db is recommended and reverbration period of not more than 0.5 to 0.75 seconds should be achieved.

(iv) Finishes:- Floors should be carpeted and soft upholstery used for all seating. Bench tops must be hard waring surfaces suitable for writing on. Furniture should be hard finishes, easy to maintain and not easily damaged (Fig. 5.1.6).

5.1.7 Libraries

-Formulaes for percentage of students for whom seating accommodations are suggested

Type of Institution	Percentage
Superior residential co-education liberal arts College in rural area or small town	50-60
Superior residential liberal arts college for men and women in rural area or small town	45-50
Superior residential liberal arts college in a small city	40-45
Superior residential university	35-40
Typical residential university	25-30
Typical community university	20-25

- Published space requirements vary for universities

but approximate guide will be

(i) between 2.3 m and 3.5 m floor area per seat - overall area.

(ii) between 50-65 volumes per m^2, of overall floor area (Fig. 5.1.7)

-Libraries should clearly declare building function, and be welcoming. Lobby should reduce entry of noise/ draughts and should provide visual stimulation. Adequate control needed to prevent high losses of books through exit.

5.1.8 Offices

-Different elements of an office building have different life spans.

(i) The shell:- last at least 40 years, must be designed to meet wide variety of organisational needs.

(ii) Services:- Basic installation such as lifts or mechanical services will last at lea 15 years.

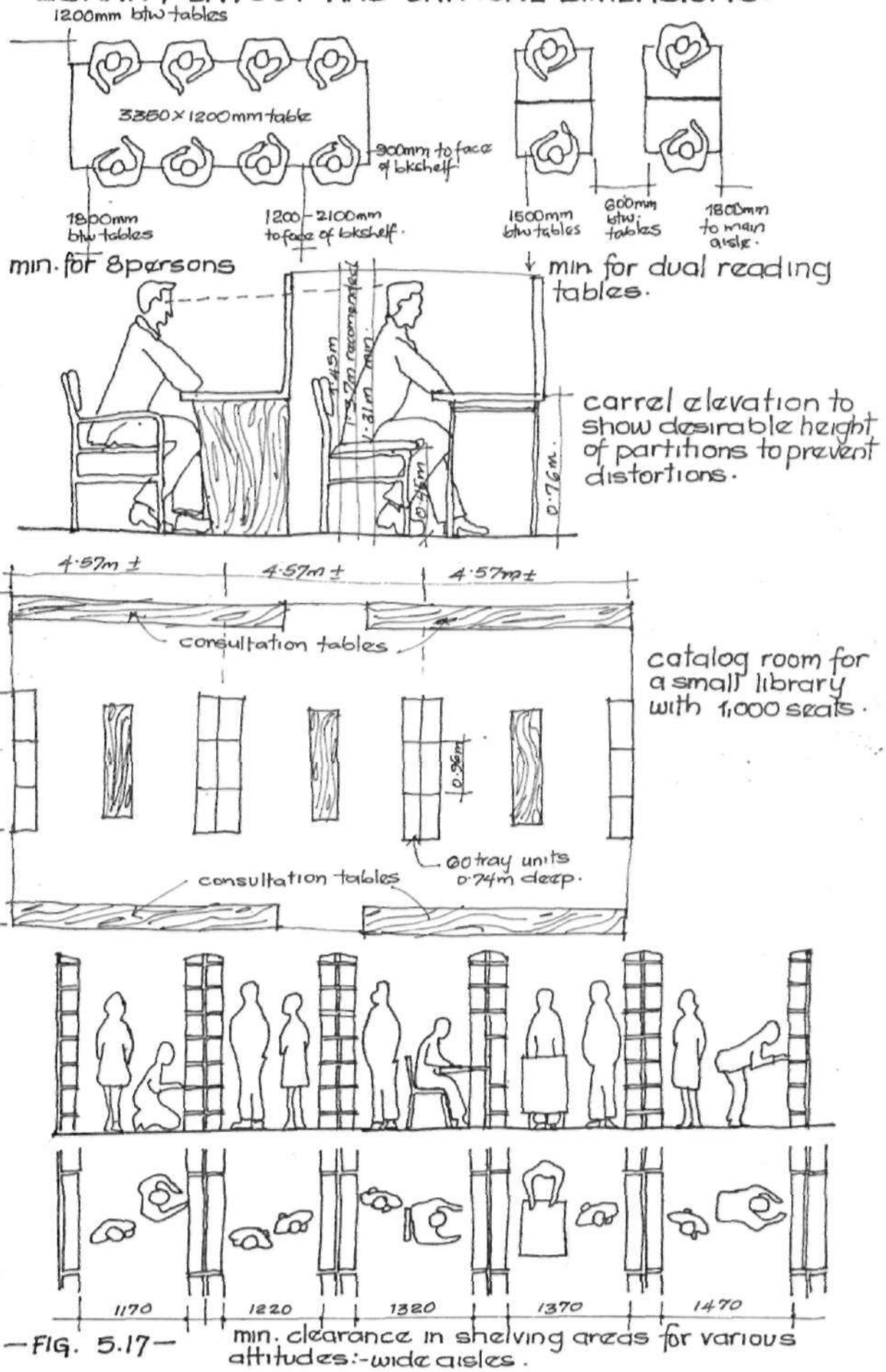
(iii) Sceneery:- Partitions, furniture and furnishings related to the life of a tenancy or a particular stage of an organisation's development will last 5-7 years.

(iv) Sets:- Positioning and repositioning scenery elements such as desks, chairs, screens, and partitions to meet immediate organisational needs perhaps even every 3-4 months.

-The core must provide for

(i) Elevators:- number and size depends on population of building, number of floors, and required waiting

LIBRARY LAYOUT AND CRITICAL DIMENSIONS.



—FIG. 5.17— min. clearance in shelving areas for various attitudes:- wide aisles.

time.

(ii) Ducts: vertical ducts required for heating, telephone, electricity, drainage and water supply, also for air movement in air-conditioned buildings should be provided on a generous scale, particularly for increasing important electrics and telecommunications.

(iii) Lavatories:- Proportion of men and women on each floor may change therefore it is desirable that male and female wc. be adjacent so that replanning is possible using same ducts.

(iv) Cleaner's cupboards:- On each floor of multi-storey office building provide cleaner's cupboard (min 2.0 m^2) containing storage and slop-hopper.

-Dept of Space (Fig. 5.1.8)

-Means of Escape

(i) Maximum travel distance with escape possible in one direction only - 12.20 m except for the ground and first floors when it may be 30.50 m.

(ii) Max. travel distance with escape possible in alternative direction is 46.0 m with no point in an office more than 12.20 m to nearest exit door unless second exit door is provided.

(iii) Max. distance between two adjacents exits from a storey = 61.0 m (Fig. 5.1.8).

(iv) At least one fire-fighting stair is required in buildings with floors over 18.30 m above ground level which should be (a) continuous throughout the building (a) have access at ground level direct to open air, (c) have openable windows at each

THE OFFICE SHELL.

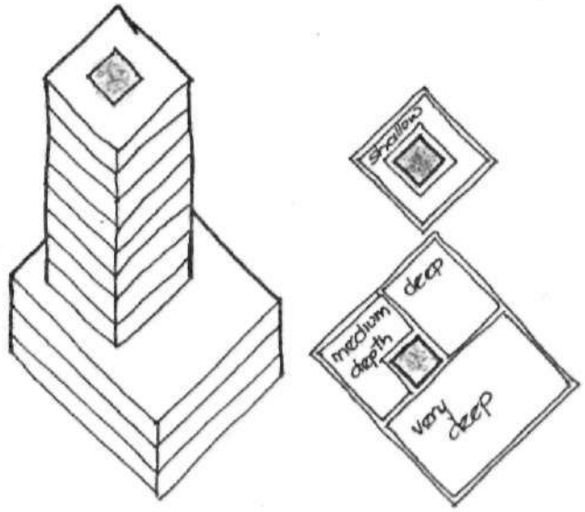
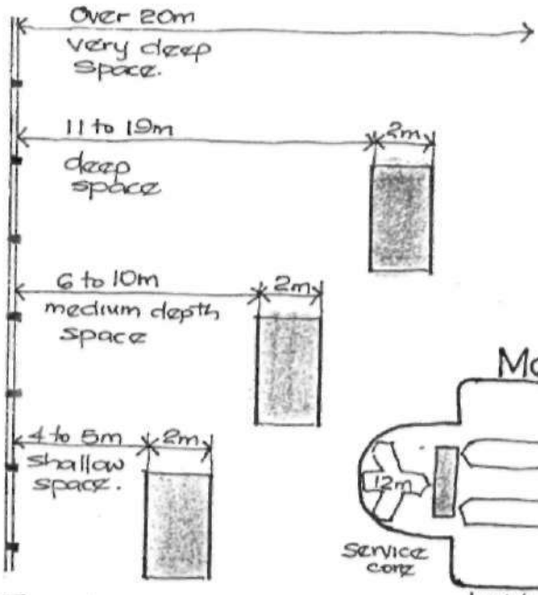
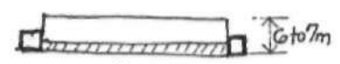


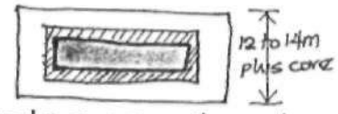
Illustration of how different types of office space with diff. kinds of use can be provided in one office bld. by simple device of core placed asymmetrically in the podium.



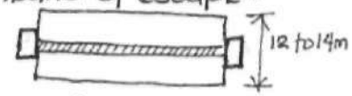
Four basic depths circulation is assumed to be 2.0m deep.



single zone.

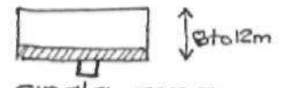


single zone - alternative means of escape.

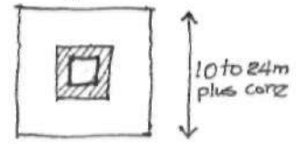


double zone.

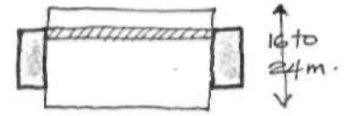
Examples of shallow spaces



single zone

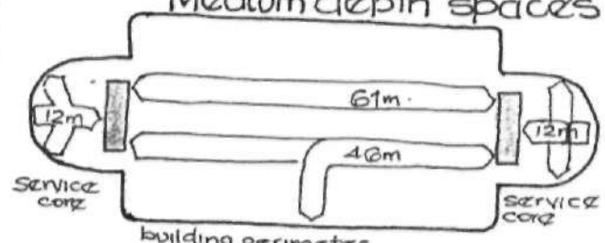


single zone - central core



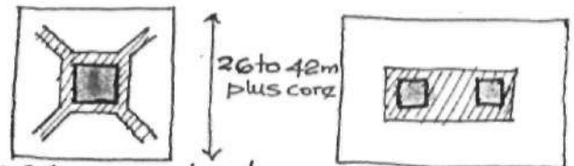
double zone - asymmetrical position of circulation providing shallow and medium-depth space.

Medium depth spaces



Escape routes and distances

Examples of deep space.



single zone - asymmetrical core.

double zone - split core.

-FIG. 5.18-

landing level, (d) have permanent ventilation at the top of the enclosure of min. 5% of enclosed area, (e) have protected and ventilated lobby at each floor.

5.2 FUNCTIONAL ANALYSIS

5.2.1 Zoning Criteria

There are two ways of zoning, viz.

(a) On the site and

(b) In Plan development

(a) The site zoning is represented graphically on the Site structure after thorough analysis of the site and it is determined by (i) Climatic requirements such as wind direction, solar radiation. (ii) Site factors like topography, drainage, soil capacity e.g. flat terrain is suitable for recreation but unsuitable for residential areas which requires an adequately surface drained area.

(b) The development of a building/building complex plan is achieved through proper zoning of the spaces according to the following methods or systems.

(i) Functional relationship:- Similar activities are grouped together e.g. auditorium, lecture theatre, classrooms can be grouped together as a building complex. This system permits a sequencial and orderly flow of activities.

(ii) Primary Space types:- All functions with similar space requirements are grouped together. e.g. spaces of an office building (shallow, medium

or deep) perform different functional activites. This system enhances adaptability and flexibility of spaces.

(iii) Technical building characteristics:- noise levels, degree of privacy, dirty/clean activities areas with special equipment, etc. can be grouped together as/within a building complex.

5.2.2 The School Organs

The school organs which are important elements that makes a school function comprises of (a) the academic, (b) the residential, and (c) the recreational facilities, The Residential is sub-divided into senior staff housing, intermediate/junior staff housing, and student hostels, while the Recreation is divided into the Indoor and Outdoor sports/games. The Academic Section of the school is also sub-divided into

(i) The Academic Core:- is the focus of the school and accommodates the classrooms, court, library, and lecturer's offices. It is limited to only students and academic staff and therefore should be located in the most private or quiet zone ensuring good accessibility from the students hostels.

(ii) The General facilities:- includes the auditorium, lecture theatre, snack-bar, clinic and the parking facilities. General in the sense that, they are utilised by the school populace and the community.

(iii) The Administration potrays the image of the school and it is in constant contact with the public. It

is composed of the school's administrative components viz:

Council of Legal Education, Policy and Management, Accounts/Internal Audit, Housing/Accommodation, Academic Office, Administrative Office, stores, Catering and Maintenance departments.

Refer to Appendix. Table

5.2.3 Overall Functional Analysis

The proposed and the alternative overall functional diagrams were developed from various combinations of the alternatives of each part of the academic section. The two diagrams overleaf enchances good utility of parking spaces, open Arena and ensures good accessibility from the residential areas. Fig. 5.2.3 (a) and (b)).

OVERALL FUNCTIONAL DIAGRAM

● proposed.

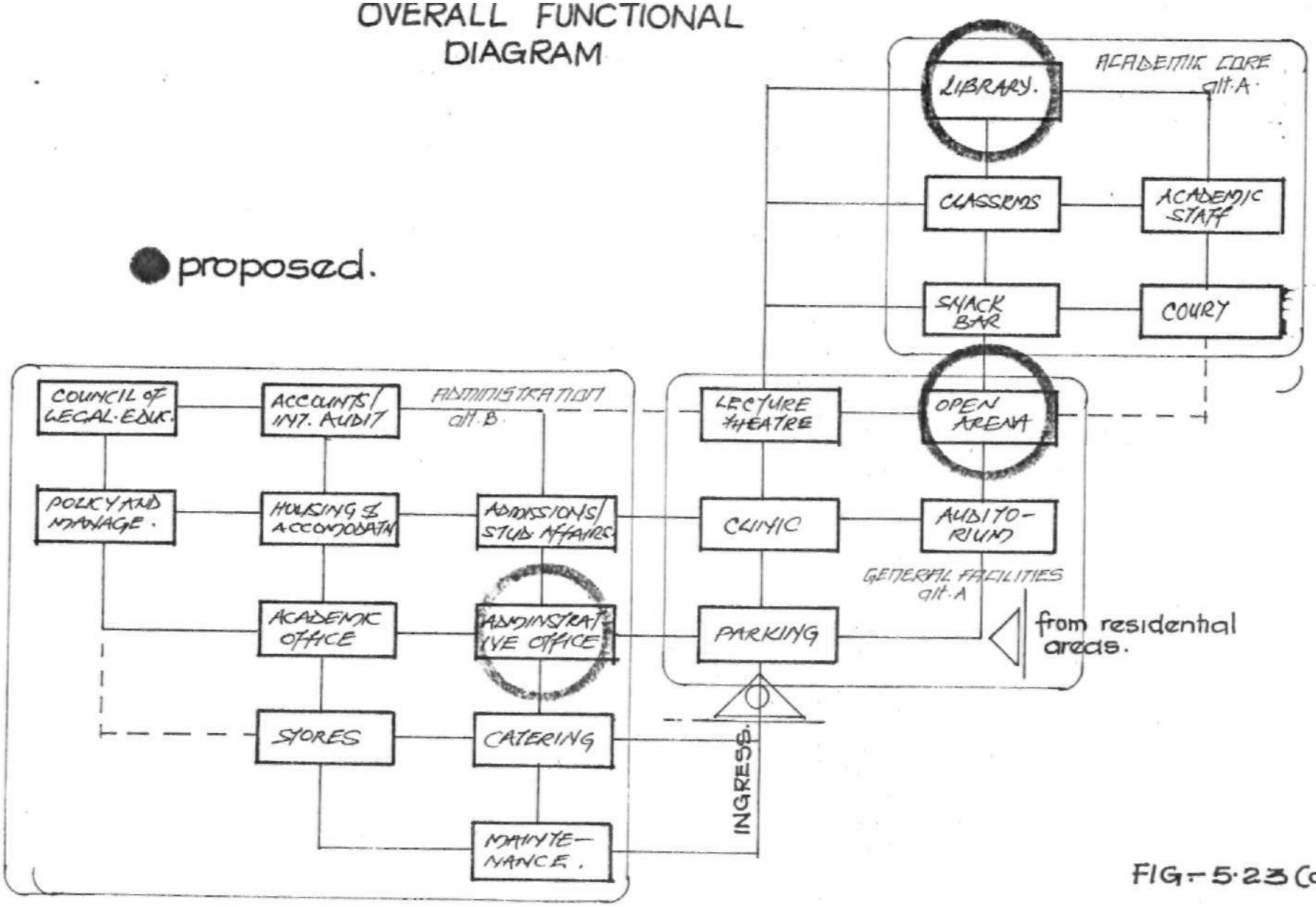


FIG-5·23(a).

OVERALL FUNCTIONAL DIAGRAM.

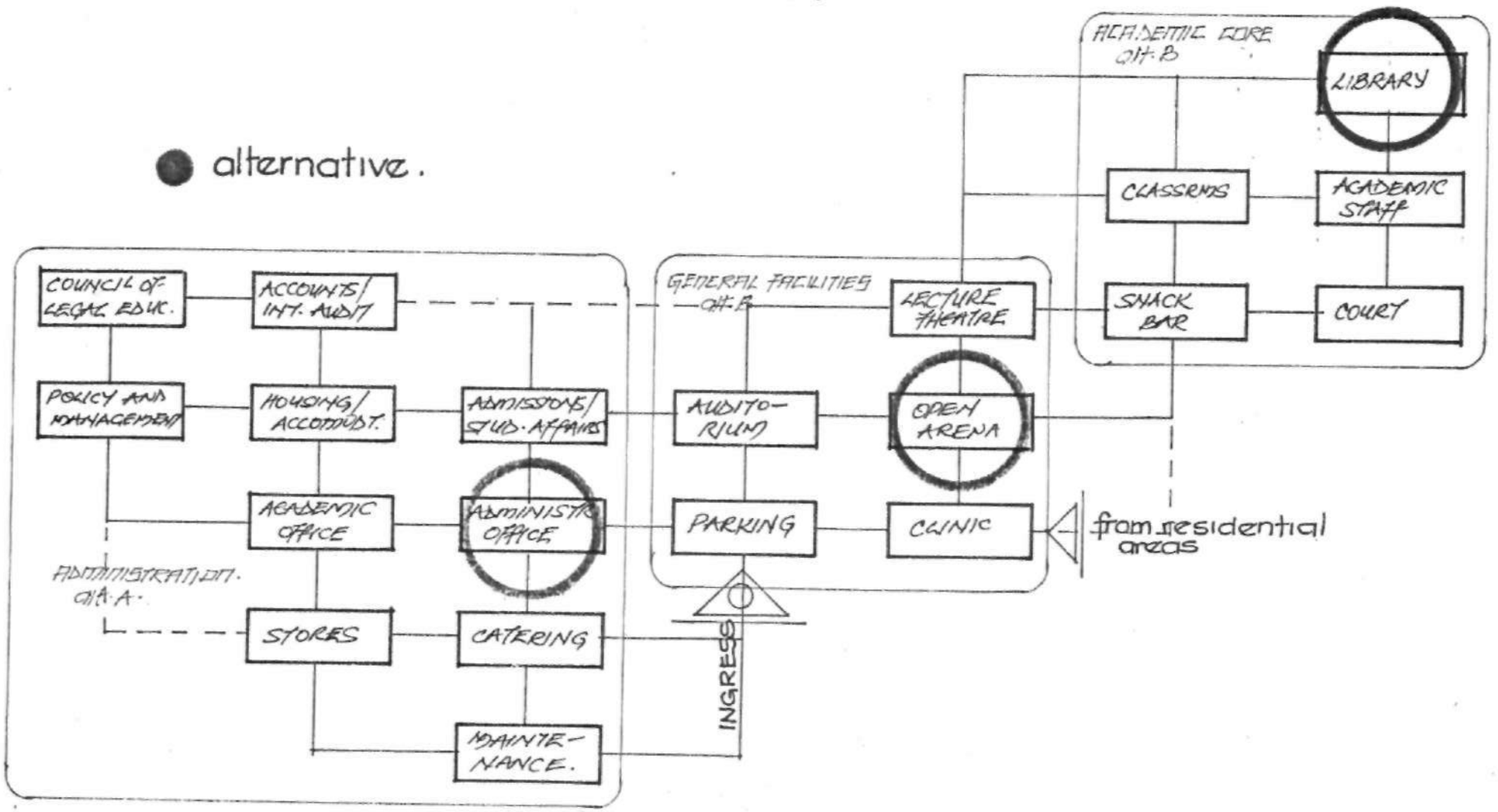


FIG-5.23(b).

CHAPTER SIX

LANDSCAPING

6.1 WHY LANDSCAPING?

"Education", "Environment" and "Economy" are the trinity of school planning. The Environment of a school should be of maximum desirability for the staff and students engaged in the learning process. The appearance or aesthetics of most building structures nowadays, have been destroyed due to the careless attention of the designer to the environment or outside space to which the building belongs and the extent to which we have used the building to solve or accommodate the physical factors is easily destroyed if proper care is not taken about the natural factors. In as much as possible, the school house should not fight the forces of nature, rather, it should work with it to provide comfort.

In short, the outside and the inside of a building should be in continuous unity and harmony, the more complete this unity and harmony, the more the pleasure to the observer. The degree of evident harmony and unity of various elements of a landscape area is a measure of not only the pleasure induced in us, but also the quality we call "beauty". For beauty by definition is "the evident harmonious relationship of all parts of a thing observed".

Architects are frequently blamed for the design of spaces that make it impossible to live and work in comfort

reason been, the lack of scientific knowledge about the effect of total environment on human well being and behaviour. My objective is therefore "To develop an efficient, well detailed, and revealing landscape (hence judicious), with due respect to human responses to spatial qualities i.e. its psychological effects".

In the past, landscaping was commonly regarded in one or two ways - as a luxury for the wealthy, or as a cosmetic for masking mediocre architecture. In its purest and most modern sense, however, landscaping represents a major defence against monotonous building styles, sprawling or unplanned sub-urban neighbourhoods, and destruction of land through mis-use. The principle of landscape architecture could also be grasped from Stanley White's definition, that

> "the ultimate principle of landscape architecture is merely the application and adjustments of one system to another where contrasting subjects are brought into a superior unit called "order"".

6.2.0 Categories of Landscape

There are two major categories of landscape, viz (a) the natural lanscape and (b) the built up landscape. The natural lanscape can be developed by

(i) preservation of the natural form:- the lanscape character of a hill may be such that is best use is realised if it is carefully preserved from change.

(ii) destruction of the natural form.

(iii) alteration of the natural form

(iv) accentuation of the natural form.

The elimination of the negative elements and accentuation of the positive qualities/elements of the natural landscape gives birth to the built up landscape which is further sub-divided into (a) soft landscape, (b) Hard landscape.

6.2.1 Soft Landscape

It includes natural elements of the built up landscape such as trees shrubs, flowers, grasses, (plant materials) and atimes water. Unique functions of plant materials are as follows

(i) the use of plants in form of textured ground cover, low and medium height plants/grasses to absorb and direct solar radiation and reduce reflected glare around buildings.

(ii) the use of creepers and climbing plants to provide absorption, reduce reflection and increase the thermal insulation of buildings, and the planting of climbers on screens and pergolas for shade to provide cool areas and pedestrian ways (fig. 6.2.1 (a),(b),

Water exist in landscape as

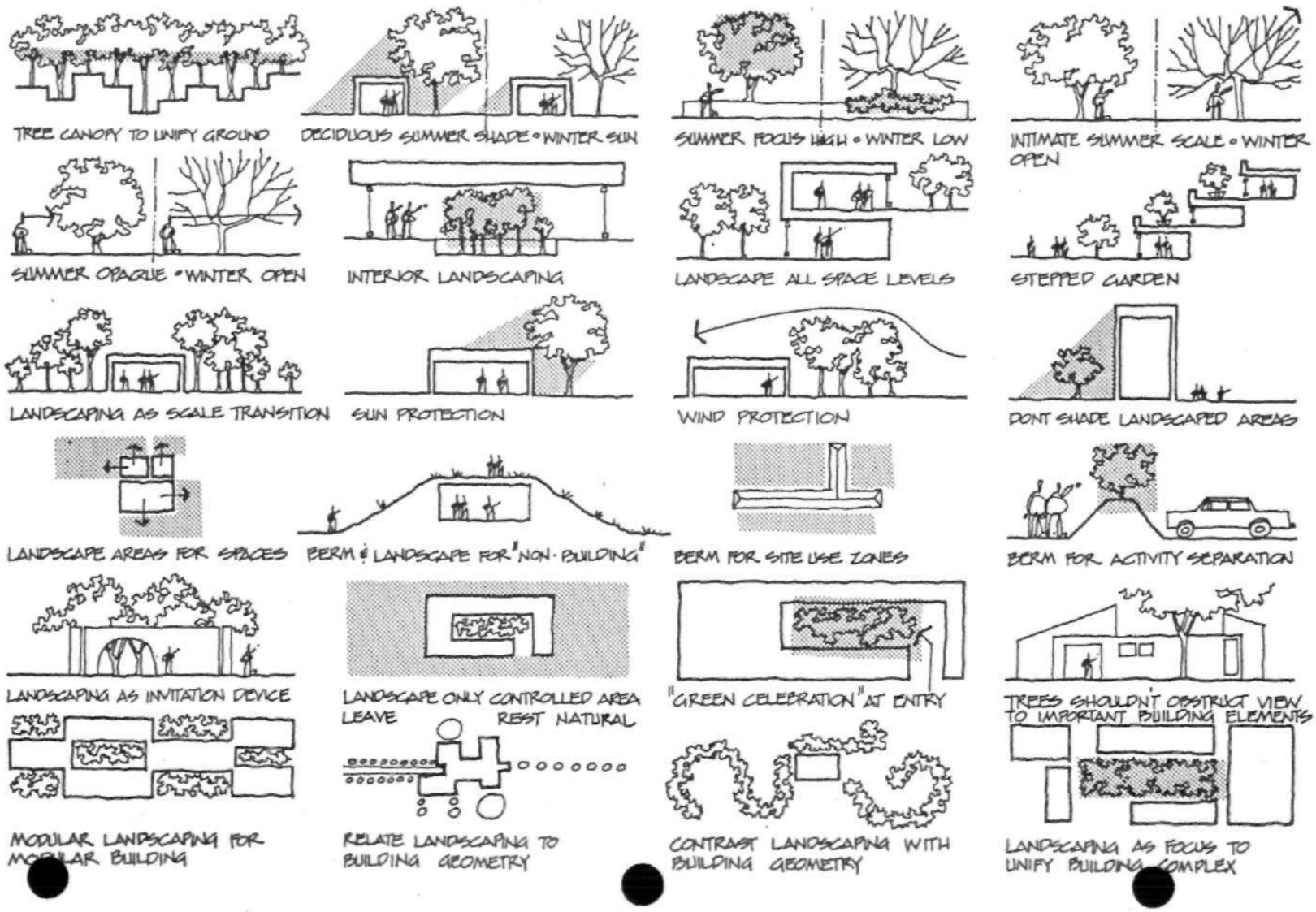
(i) Tranquil water :- natural rivers, lakes and pools.

(ii) Turbulent water:- fountains in water, fountains in basins, bowls, birdbaths, water falls, e.t.c.

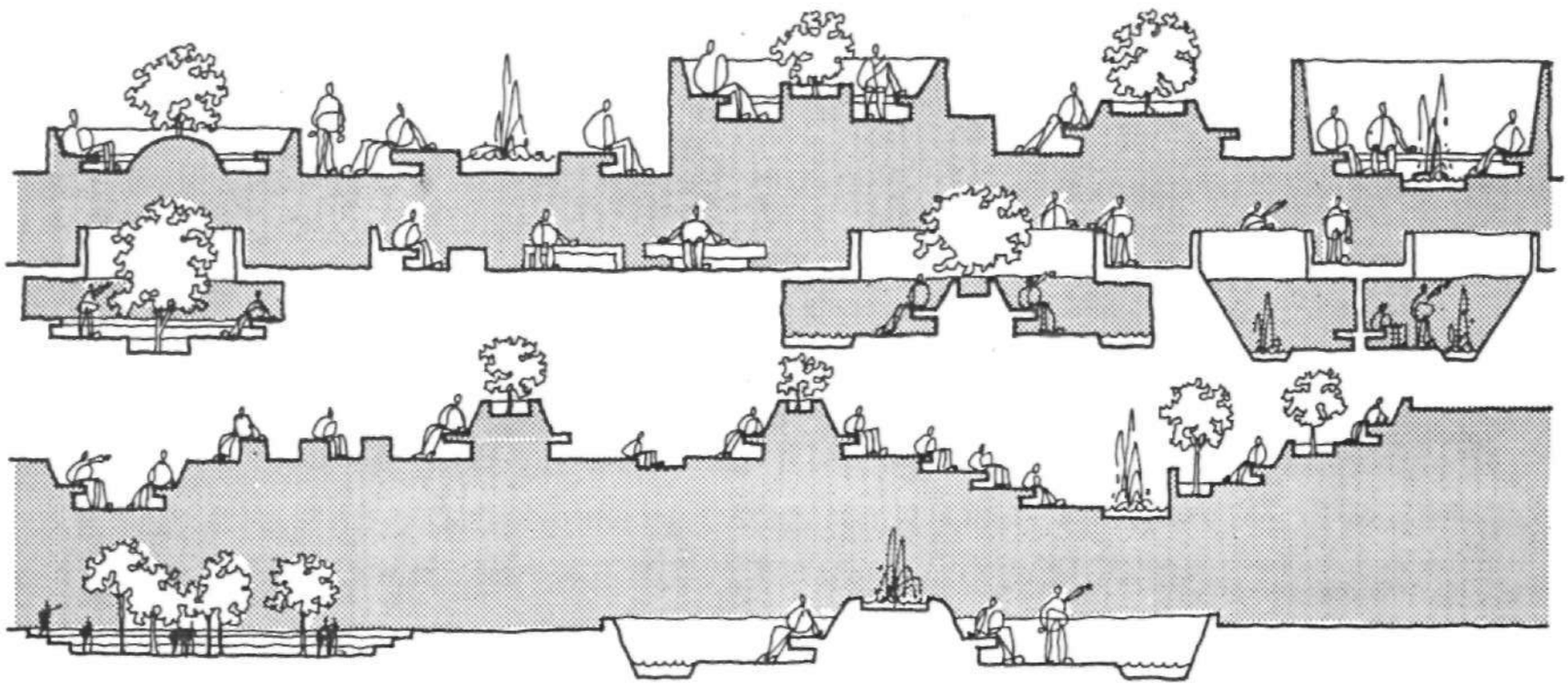
(iii) Biological water:- water plants, wildlife.

(iv) Water as exhibitions (fig. 6.2.1.(c)(d)).

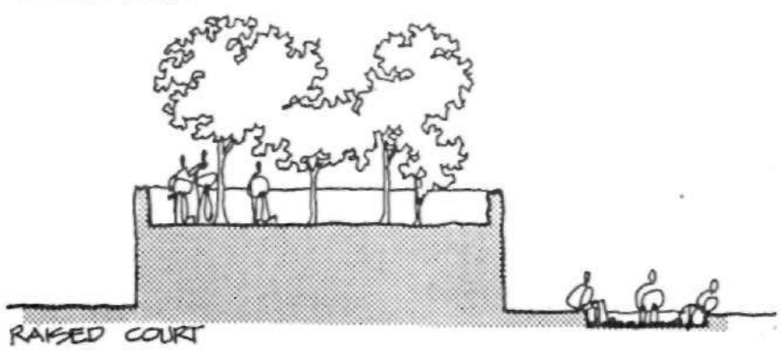
Landscaping with Plants



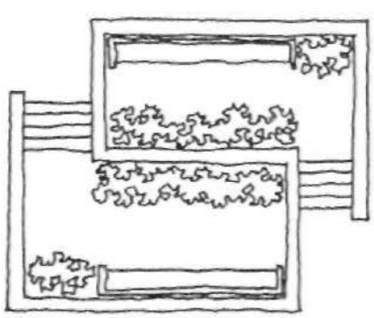
Seating Forms

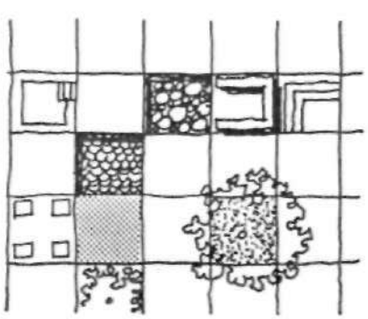


SUNKEN PLAZA



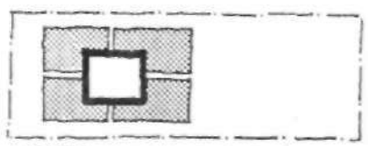
RAISED COURT



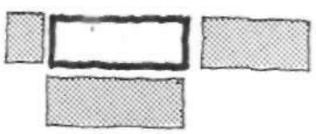


USE ZONES WITHIN A MODULAR FRAMEWORK

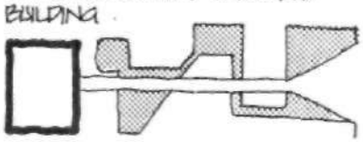
Landscaping with Water



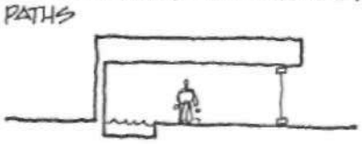
CREATE MOAT AROUND BUILDING



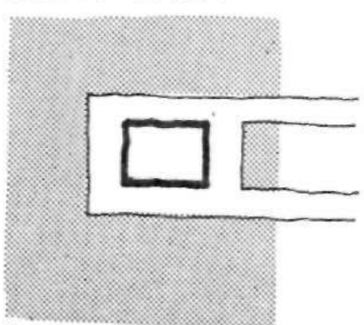
WATER GEOMETRY SAME AS BUILDING



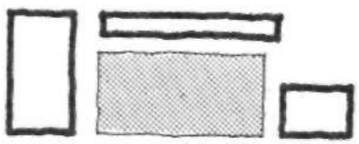
RAMBLING WATER THAT INTERSECTS PATHS



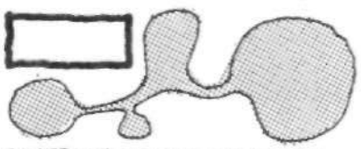
INTERIOR WATER



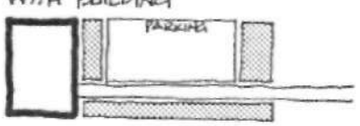
BUILDING ON AN ISLAND



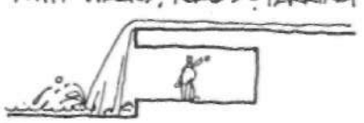
WATER AS UNIFYING FOCUS



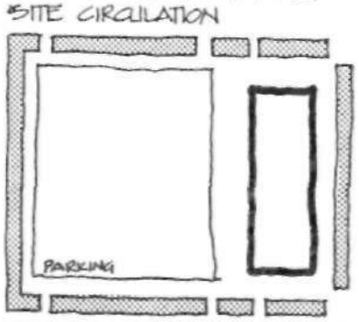
CONTRAST WATER GEOMETRY WITH BUILDING



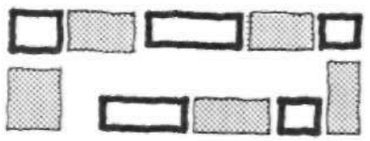
WATER GEOMETRY CONSISTENT WITH WALKS, ROADS & PARKING



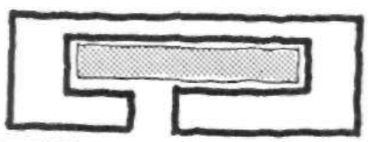
FALLING WATER AS PART OF SITE CIRCULATION



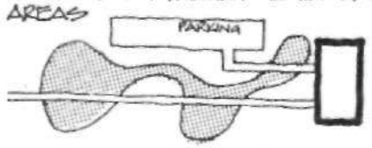
DEFINE BOUNDARY WITH WATER



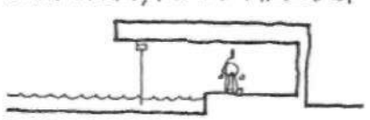
WATER TO COMPLETE COMPOSITION



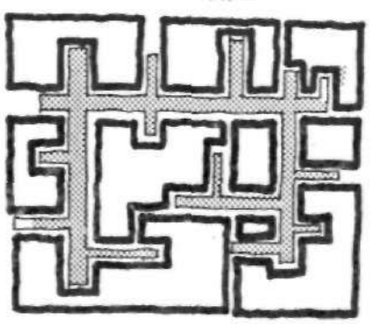
WATER IN CONTROLLED EXTERIOR AREAS



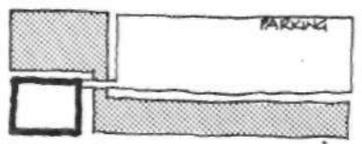
WATER GEOMETRY CONTRAST WITH WALKS, ROADS & PARKING



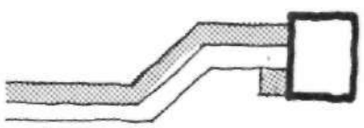
CARRY WATER INSIDE



WEAVE WATER AMONG OTHER SYSTEMS



DEFINITION OF SITE USE AREAS



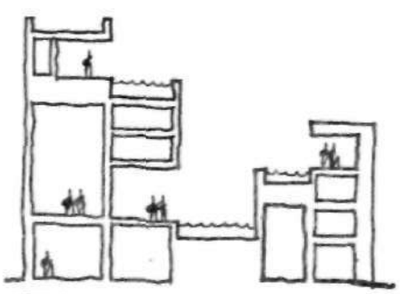
RUN WATER WITH SITE CIRCULATION



WATER AS REFLECTIVE SURFACE



WATER AS INVITATIONAL DEVICE



ROOFS AS WATER TRAYS

6.2.2 Hard Landscape

These are the man-made elements of the built up landscape and includes constructed elements like pavings, kerbs and edgings, plant containers, ecnlosures e.t.c. Pavings are used to provide a hard, dry non-slip surface which will carry the required load for pedestrian or vehicular traffic and are also used to provide direction and define hazards. The choice of pavings depends on cost and avaliability, appearance, weathering, cleaning, subsoil, drainage, and services.

Kerbs and Edgings are needed to prevent lateral spread of pavings and to denote changes of level. Plant containers can be used to provide vegetation in urban areas or used architecturally to emphasise spaces, pedestrian ways or as an element of building.

6.2.3 Factors Affecting Landscape

(a) Site factors

(i) climate:- creation of a favourable micro-climate is one of the basic reasons for site manipulation.

(ii) site contours:- it will suggest the best positions for buildings for views, for shelter.

(iii) Existing Vegetation:- Existing ground cover should be examined to see if it is suitable for retention, if so, it must be both protected and maintained for the duration of site works.

(iv) Water:- Early site investigation should ascertain whether water is available from natural

sources.

(v) Site conditions:- should be reflected in the plan and marked differentiation of soil quantity within the site will influence the siting of different elements.

(vi) Site surroundings:- will influence visual pattern of the development which must relate the site to the surroundings.

(b) Use Factors

(i) Traffic:- Approach roads should normally take shortest route compatible with contours and a pleasant line.

(ii) Special Functions:- building purposely designated for certain functions should reflect on the design of the landscape.

(c) Cost:- The costs of well designed landscape must justify the qualities of its elements.

(d) Maintenance:- Provision must always be made for access of maintenance.

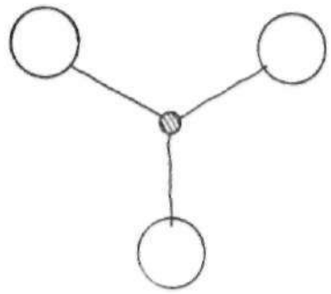
6.2.4 Landscape Planning Concepts

There are two major form of planning concepts utilised by landscape architects and these are (a) the symmetrical planning and (b) Assymmetrical Planning.

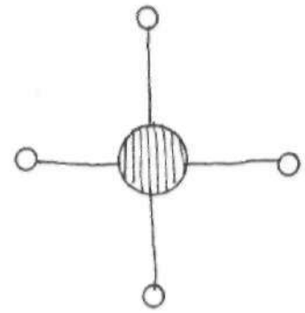
(a) The Symmetrical Plan:- The elements of a symmetrical plan are the same and in equilibrum about a central point or on either side of an axis. The central point may be an object or an area (fig. 6.2.4). The qualities of symmetrical planning are

TYPES OF SYMMETRY.

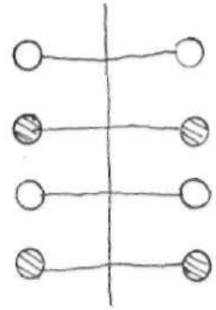
PLAN ELEMENTS ARE IN EQUILIBRIUM :-



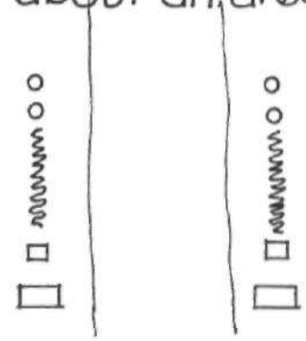
(a) about a point.



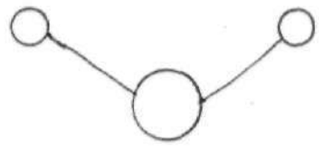
(b) about an area.



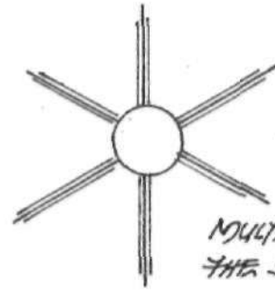
(c) about an axis



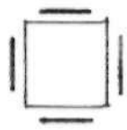
(d) about a plane.

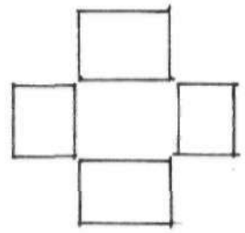


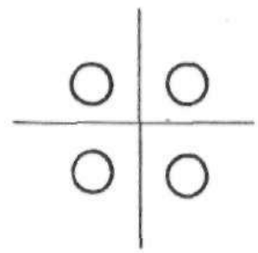
BILATERAL - AS THE DOUBLE WINGS OF A BUTTERFLY



MULTILATERAL — AS THE SNOWFLAKE







QUADRILATERAL - AS BY GEODETRY.

FIG - G. 24 -

(i) It subjects a landscape to control i.e. it systematizes and organizes the landscape into rigid patterns.

(ii) It subjects Man to plan comformity. His lines of movement are limited to the lines of the plan and the forms control his vision.

(iii) It can be realized that symmetrical plan forms, if skillfully handed and directed, maybe used to dramatize a concept and evoke in Man a sense of discipline, high order, magnificence, monumentality, stirring idealism, and even devine perfection.

(b) The Assymmetrical Planning brings Man into closest harmony with nature. Freed of the rigidity of the symmetrical plan, each area may be developed with a fuller regard for its natural landscape qualities, circulation is more free and views are of infinite variety, other qualities of the assymmetrical plan includes:-

(i) it is more subtle, casual, refreshing, interesting and human.

(ii) Each object in the landscape maybe seen and enjoyed for itself or its relationship to other landscape elements, rather than for its relationship to a prescribed plan pattern.

(iii) Assymmetric planning requires less disturbance of nature and natural or man-made landscape. Since it is developed in sympathy with the site, it normally requires less grading, retaining walls, screening and construction. It is therefore more economical.

(iv) Organic planning is usually Assymmetric.

6.3 HUMAN PSYCHOLOGICAL RESPONSE TO LANDSCAPE

6.3.1. Spatial Qualities

The appearance of spaces is modified by the activity that goes on within them, by the colour and texture of walls and floors, by the way in which they are lighted, and by the objects and details with which they are furnished. A confined space may be static and it may direct and concentrate interest and vision inward, alternatively, a space may open out thereby directing attention to its frame and beyond or it may be developed to have its own sufficient, satisfying qualities and seen complete within itself thereby having orientation inward, outward, upward, downward radial or tungential.

The spatial characteristics of a series of varying volumes are each specifically designed to induce a predetermined emotional or psychological response as follows.

(i) Tension:- Unstable forms, split composition, clash of colours, visual imbalance.

(ii) Relaxation:- Simplicity, fitness, familiar objects and materials, evident structural stability, pleasant and comfortable shapes, quiet colours.

(iii) Fright:- no points of orientation, illogical and unstable forms, unprotected voids.

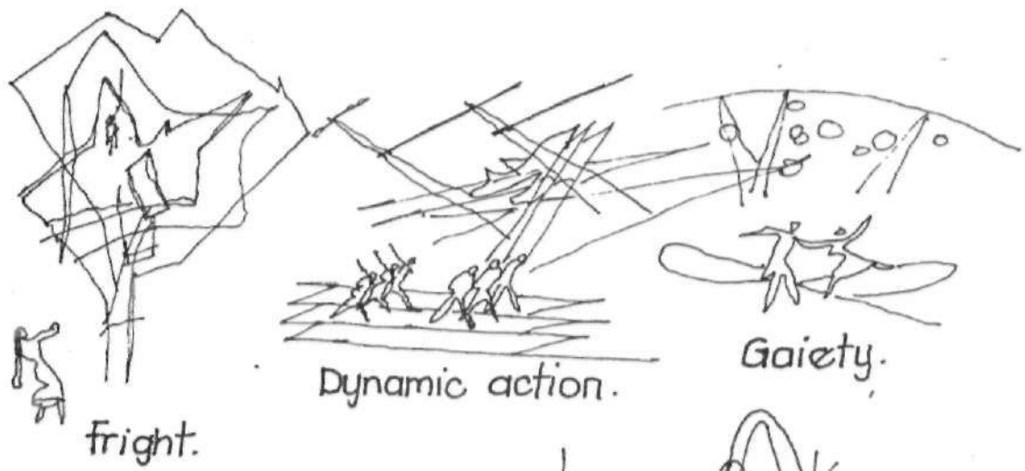
(iv) Gaiety:- free spaces, smooth, flowing forms and patterns.

(v) Dynamic action:- bold forms, heavy structural cadence, solid materials as stone, concrete, steel.

(vi) Sensous love:- complete privacy, inward orientation of rooms, low ceiling, soft rounding forms, cool colour (fig. 6.3.1)

SPATIAL CHARACTERISTICS.





CIRCULATION.

Man is attracted towards

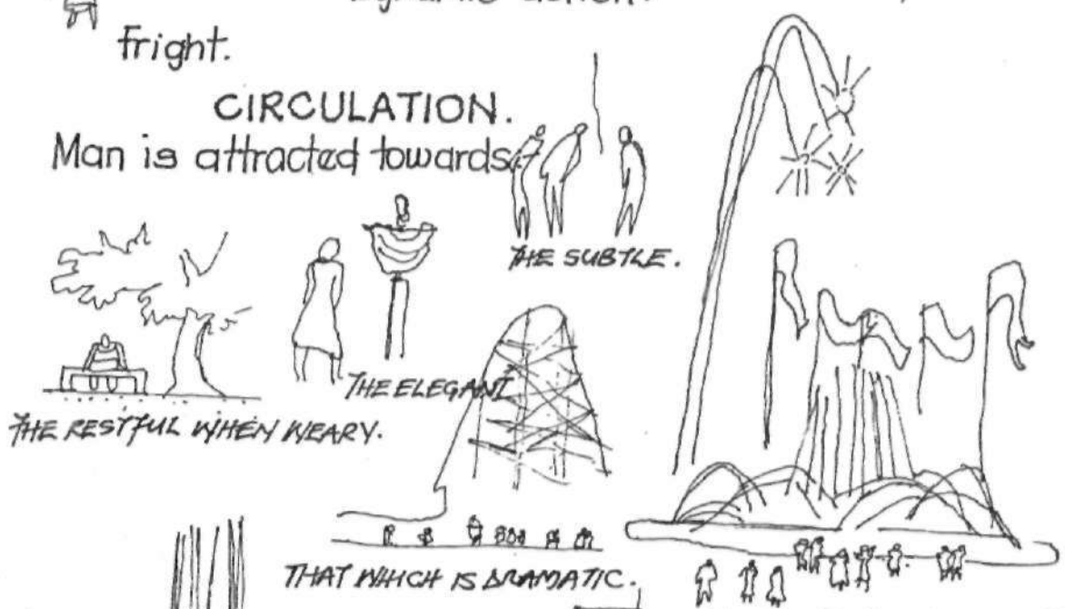




FIG-6.31

6.3.2 Circulation

Impelling factors:- Man tends to move in logical sequences of progession, in lines of least resistances, towards that which pleases, toward things wanted, towards points of entry or that which is beautiful or areas/ spaces that suit his mood or need.

Repelling factors:- Man is repelled by obstacles, danger, the ugly, friction, disorder, and man is directed by arrangement of natural and structural forms, space dividers, sign, symbols and spatial shapes (fig. 6.3.1).

6.4 JUDICIOUS APPLICATION OF LANDSCAPE DESIGN IN THE ACADEMIC ENVIRONMENT ("SUB-TOPIC")

In order to discuss the application of landscape in any environment, there is need to have a sound knowledge about landscape architecture, hence, the preceding sections of this chapter were included.

6.4.1 Landscaping a School

A school or an institution is composed of areas used for learning, living and leisure, (Academic, Residential, Recreation) performing different functions thereby necessitating different landscape treatments. A school is therefore "a matrix of conflicting social orders". However, the ulterior motive of landscape in a school is to create exterior and interior spaces condusive or adaptable to each of the diversified activities of the school.

The daily routine in a school environment is to

move from residential areas to the academic areas in the morning and back in afternoon and later in the day to the recreational areas depending on the individual. This shows a continuous physical harmony between the various activities/movements, therefore the landscape design solution should be tailored towards enhancing or pronouncing this physical harmony.

The recreational part for example, is the most informal and the activities of this section is geared towards achieving a maximum form of relief from the boring and monotonous academic pressures. This quality therefore suggests a landscape planned assymmetrically, where the individual is set free to explore his/herself and to discover in the landscape that which is beautiful, pleasant or useful. Circulation is more free, views are of inifinite variety and a lot of area is devoted to open space organization.

The residential area, is where people live and spend most of their time daily. The architectural design is therefore tailored towards achieving a balanced composition (harmony) between the building structures and open spaces designed to achieve relief. The landscape for this mood will simple by using familiar objects and materials, pleasant and comfortable shapes, quiet colours and general fitness for purpose.

The nature of the academic section of a school might suggest a symmetrical planning concept in order to damatize and evoke in students a sense of discipline,

order, and stirring idealism but this will in turn be monotonous, rigid, and psychologically depressing, therefore the need for organic assymmetric planning is important. However, symmetrical plans may suffice in open areas around classrooms, library, or offices but must be developed with due consideration of its psychological effects. Assymmetric plan will occur in other areas of the academic section.

The normal process of landscaping any environment with plant materials is the jutaxposition of various species all over the area without regard to their different qualities. A judicious landscape solution will consider the design of plant materials for the entire school by using specified trees for either shading, screening or as wind breakers and specified shrubs for either colour blending, ornamentation, interest or for dramatic effects. The paving will also be flexible subtle, and well detailed. It will also take into consideration the purpose of indoor landscaping in creating a refreshing relaxing garden indoor atmosphere. Indoor lanscaping also balances the lack of external view, reduces the effects of noise and bustle and helps in demarcating areas and providing visual barriers. Examples of shrups and trees to be utilised for landscape design in such an environment are illustrated in Appendix (Fig. I - VI), their characteristics, and the purpose they serve are also included.

CHAPTER SEVEN

"THE SITE"

7.1 LOCATION CRITERIA

7.1.1 Urban criteria for siting a Law School in Nigeria.

(a) The urban area should provide for lecturers and students the tools of their work e.g. Law books, law reports and various types of courts.

(b) Lawyers are future policy makers, therefore surrounding areas of the C.B.D./nerve centre of the town is a favoured location.

(c) Good accessibility to the area from all parts of Nigeria.

(d) The urban area should be active in terms of legal practise.

The choice of an urban area was decided by comparing 3 probable locations and all assumptions were made relative to the year 2,000 A.D.

Enugu

(i) Existing University of Nigeria provides good access to law reports, law books, and all types of courts except the supreme court.

(ii) Central business district (C.B.D.)/serve centre already developed but alternative location situated 10 km away.

(iii) Poor accessibility from other parts of the country.

(iv) Urban area active in legal practise.

Conclusion:- Urban area did not satisfy requirements for siting a law school in Nigeria.

Lagos/Ikeja

(i) Existing university provides good access to the lawyer's tools of work.

(ii) Central business district already over developed but Ikeja is suggested as an alternative location.

(iii) Satisfactory access from other parts of the country.

(iv) Urban area very active in legal practise.

Conclusion:- Urban area fully satisfy requirements, proposed as an alternative location.

Abuja

(i) Future facilities/university provides good access to law books, reports and various types of courts.

(ii) Areas within or around C.B.D. yet to be fully developed

(iii) Good accessibility from all parts of the country.

(iv) Urban area will be prominent in legal practise in future.

Conclusion:- Abuja satisfies location criteria, therefore it is proposed as a suitable location for the Nigerian Law School, moreover, the Government of the Federal Republic of Nigeria has indicated her intensions in siting a law school in Abuja, the Federal Capital.(Fig. 7.2)

7.2 SITE SELECTION CRITERIA (Fig. 7.2)

Site 'A' (Fig. 7.2.0a)

Merits

(i) good views to surrounding environment

(ii) good accessibility to the courts.

(iii) site accessible from arterial road S13, collector road B2, and outer northern transitorway.

-87-

wuse district

NATIONAL THEATRE

COMPREHENSIVE LANDUSE PLAN OF ABUJA (PHASE ONE)

STATE HOUSE ANNEX

VIP'S RESIDENTIAL

PRESIDENTIAL COMPLEX

NATIONAL ASSEMBLY

ARMS ZONE

SUPREME COURT

MINISTRIES ZONE

COURT OF APPEAL

CENTRAL BUSINESS DISTRICT

CULTURAL ZONE

city centre

asokoro

PST

N.I.A.

F.C.D.A

N.I.I.A

CENTRAL AREA PHASE II

garki district

legel

GUDU DISTRICT

SITE SELECTION

AND (FLOOD AREAS, STEEP
EST RESERVE).

cilities

-88-

ems

PRIMARY SCHOOL

HILTON INTERN. HOTEL

wuse district

TELE-PHONE EXHANGE

NATIONAL THEATRE

FED. HIGH COURT

BRIGADE OF GUARDS

PRESIDENTIAL COMP.

SITE 'A'

NATIONAL

MIN. OF

ministries

zone

STATE LIAISON OFFICES

MIN. OF

F.H.A.

MIN OF HO. HOUSING

MIN OF INT. AFFAIRS

MIN. OF ADMIN. LAB

HEAD OF CIVIL SER.

EXE. OFFICE OF THE PRE

MIN. OF STA.

MIN. OF JUST.

Demerits

(i) Small size of site (approximately 3 hectares) discourages expansion and accmmodation of residential facilities.

(ii) a busy location - might be uncomfortable due to the social and environmental problems affiliated to such a location - pollution, lack of privacy, traffic hazards e.t.c.

Conclusion:- Not an advisable site for an institution.

Site B (Fig. 7.2.0b)

Merits

(i) good accessibility to the site from arterial road B_6 and S_1.

(ii) Large area of site (approximately 18 hectares) adequate for expansion, accommodation of academic, residential and recreational facilities.

(iii) site selection condo les the use of school facilities by adjacent functions - the commercial/residential zone and also Wuse district.

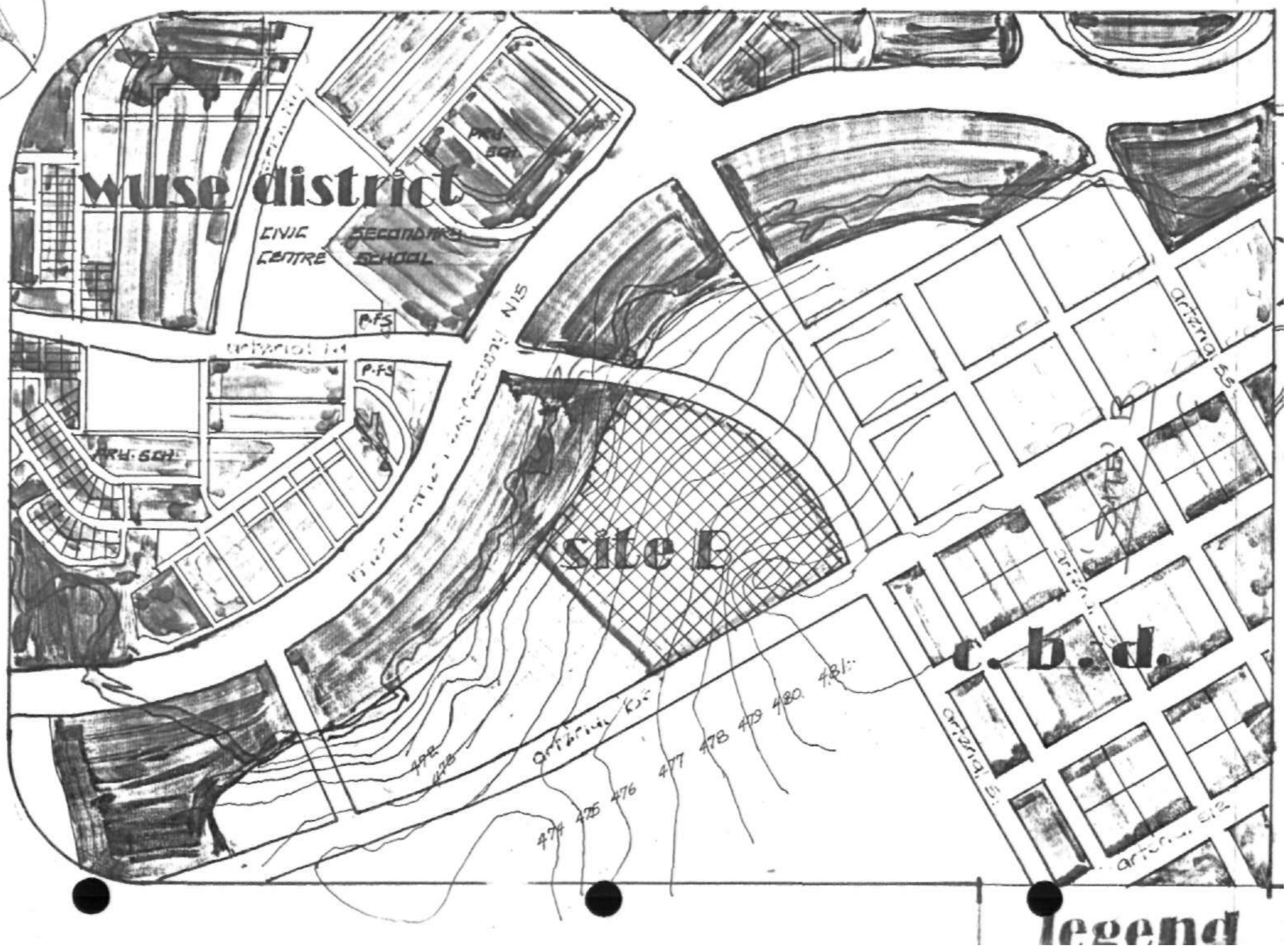
(iv) Site location to an extent enhances some degree of privacy.

Demerits

(i) Limited desirable view from site.

(ii) Fairly distant location from the courts - Supreme, Appeal and High Courts.

Conclusion:- PROPOSED SITE


wuse district
CIVIC CENTRE
SECONDARY SCHOOL
PRY. SCH.
P.F.S
N15
site E
c. b. d.
474
475
476
477
478
479
480
481
legend

7.3 SITE ANALYSICS

7.3.1 Site Macro-climatic conditions (Climatic data - Abuja)

Rainfall:- The start of the rainy season in northeastern part of the Federal Capital territory (F.C.T.) is around the 10th of April. The rain tapers off very rapidly after the 20th of October. The mean monthly distribution shows a tendency of concentration in three or four months. In the Abuja area, 60% of the annual rainfall is in the months of July, August and September. This concentration of rainfall shows the needs for drainage systems that can handle large volumes of water very quickly.(Fig.7.3.1a)

Sunshine Hours :- During the dry season (November-April), the month variation in the amount of sunshine hours follows the general trend of an increase from over 275 hrs on the city site. As the rainy season approaches, the trend is to increased cloudiness, the decline in sunshine hours becomes more intense as the rainy season progresses and reaches its lowest value in the month of August (fig. 7.3.1(a)).

Temperature:- The FCT records it highest temperatures during the dry season when there are few if any clouds. Changes in temp as much as 17°C have been recorded between highest and lowest temp. in a single day. During the rainy season, the max. temp. is lower due to the dense cloud cover. Durnal range is also much lower sometimes not more than 7°C in July and August (Fig. 7.3.1(a)).

Humidity:- The low humidity during the dry season coupled with the high afternoon temperatures, accounts

CLIMATIC DATA -ABUJA:-



FIG. 7.3(a)

for the dessicating effects of the dry season. In the rainy season, the relative humidity is much higher and temperature slightly lower, the effect is to create a heat trap thereby uncomfortably hot (Fig. 7.3.1(b))

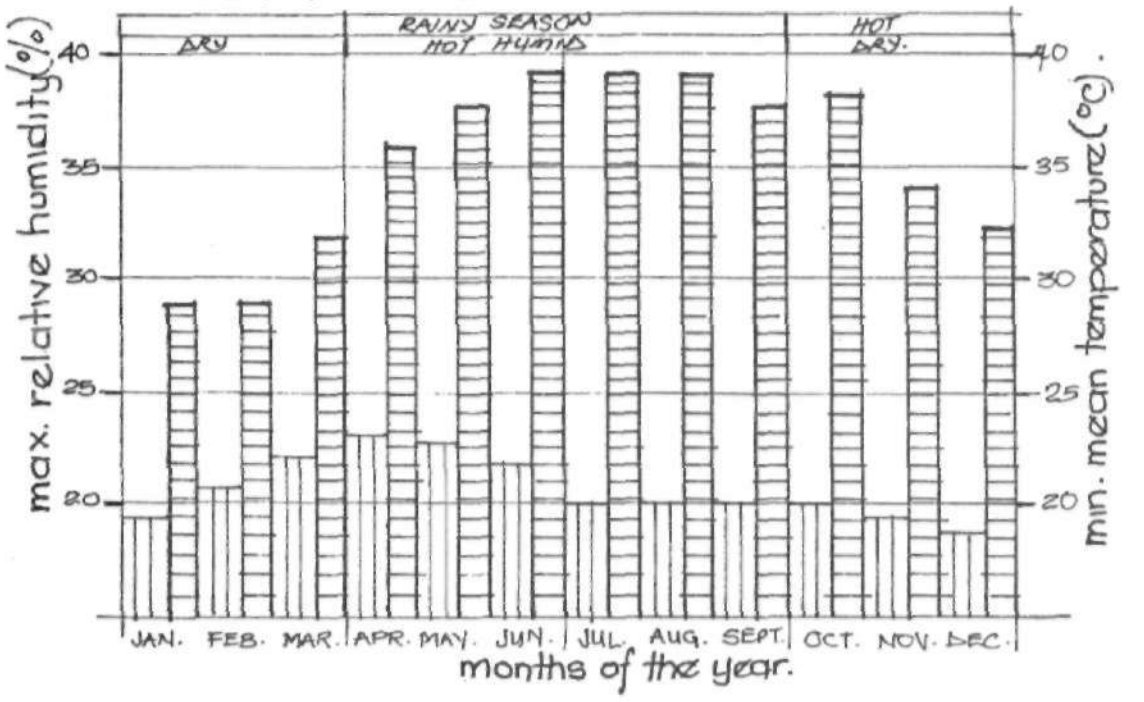
Seasonal Wind Pattern:- Two major air masses dominate the climate of the F.C.T. These are the maritime air mass and the tropical continental air mass. The tropical maritime air mass is formed over the atlantic ocean to the south of the country and is therefore moist and cool - The Southwest Monsoon Winds:-

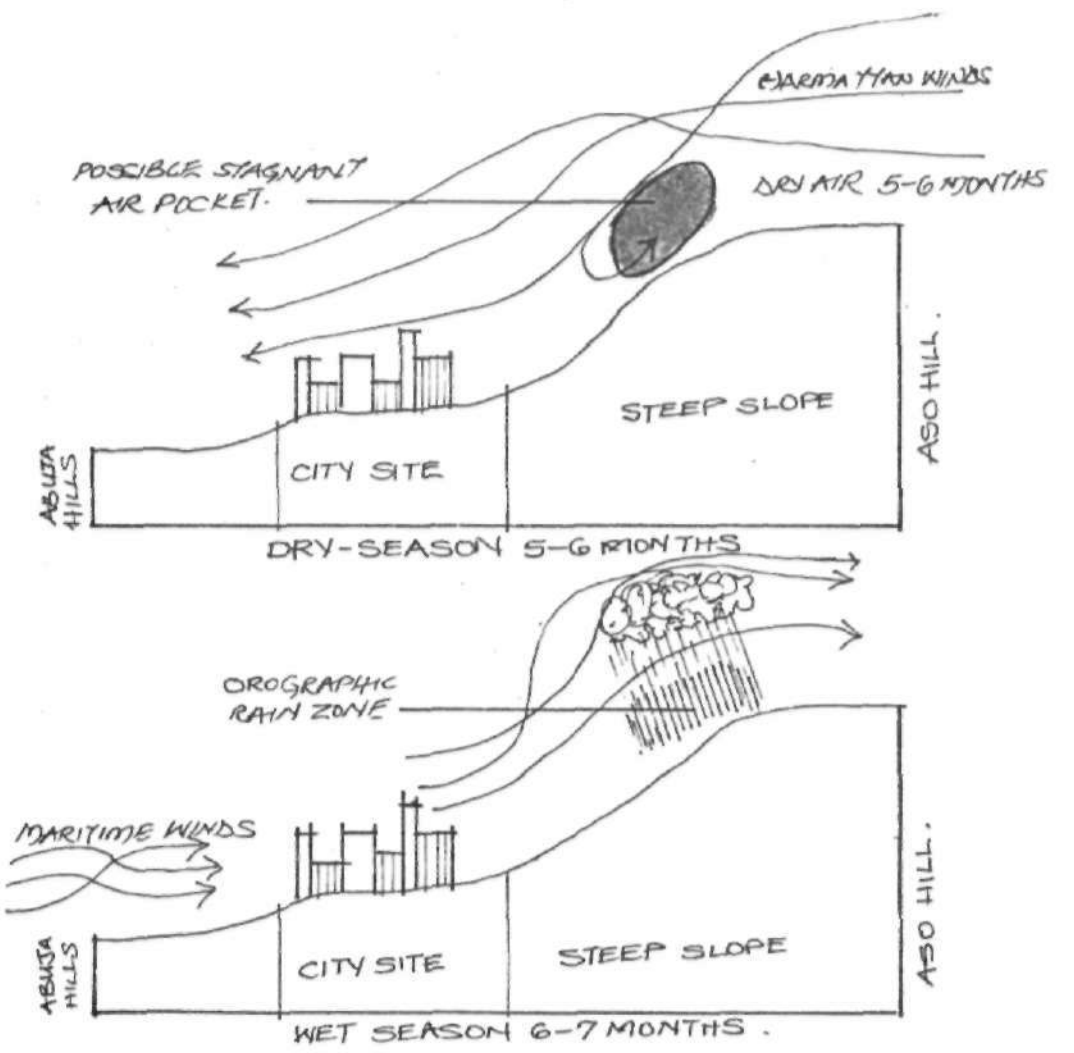
The tropical continental air mass is developed over the Sahara and therefore it is warm, dry and blows in the opposite direction, from northeast to southwest - The Northeast Trade Winds:-

In June, the northerly flow of air component has weakened and only the southerly flow predominates. Being moisture ladden, it brings a lot of rain. In September, the tropical continental begins its intensity over the territory and the Northeast winds becomes dominant wind from October to March bringing with it dry, cloudless dust-ladden conditions associated with harmattan. (Fig. 7.3.1.(b)).

7.3.2 Site-Micro-climate-Conditions

Vegetation:- The predominant vegetation type is park-savanah, which produces a pleasant open but partially shaded environment. Trees remaining where actual building activities does not take place will retain an environment not requiring re-planting.





seasonal wind pattern.

FIG.- 7.34(b)

Geology:- The site is made of migmatite-metarmorphic rock outcroppings which are light brown in colour, and with adequate strength to withstand any engineering structure.

Soils:- The soil belongs to the "WUSE TYPE" which are deep and generally well drained, having low to moderate erodobility and run-off potential. The texture is typically loamy to sandy clay loam and these are characteristics of a good workable site.

Landscape:- Trees which are large, very efficient for shade and screening with slow growth rate are advisable to be preserved on site. Among such trees are

Khaya Senegalensis (dry zone mahogany)

Azaderachia indica (neem tree)

Delonix regia (broad fine shade tree).

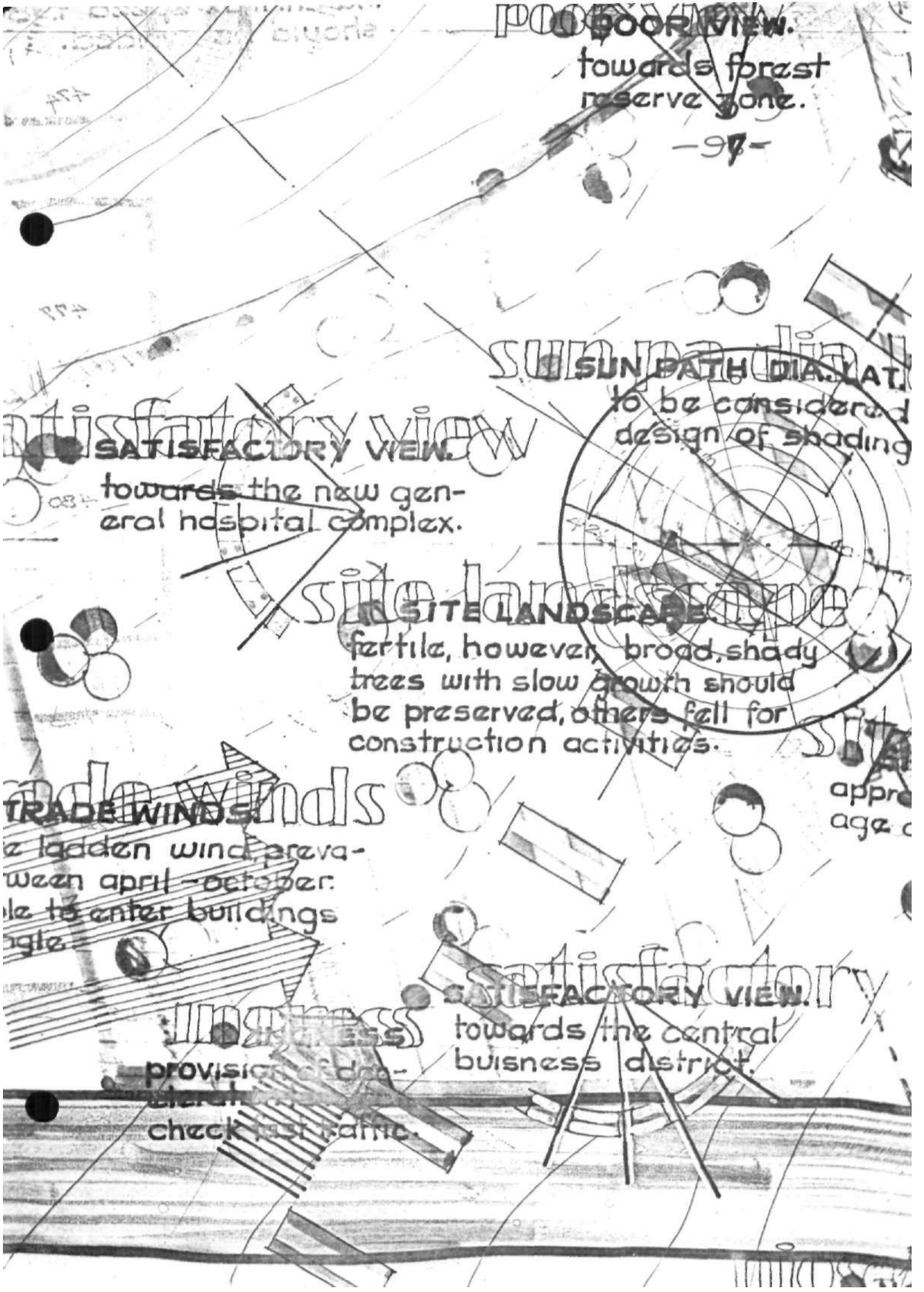
Road Analysis:- (Fig. 7.3.2.)

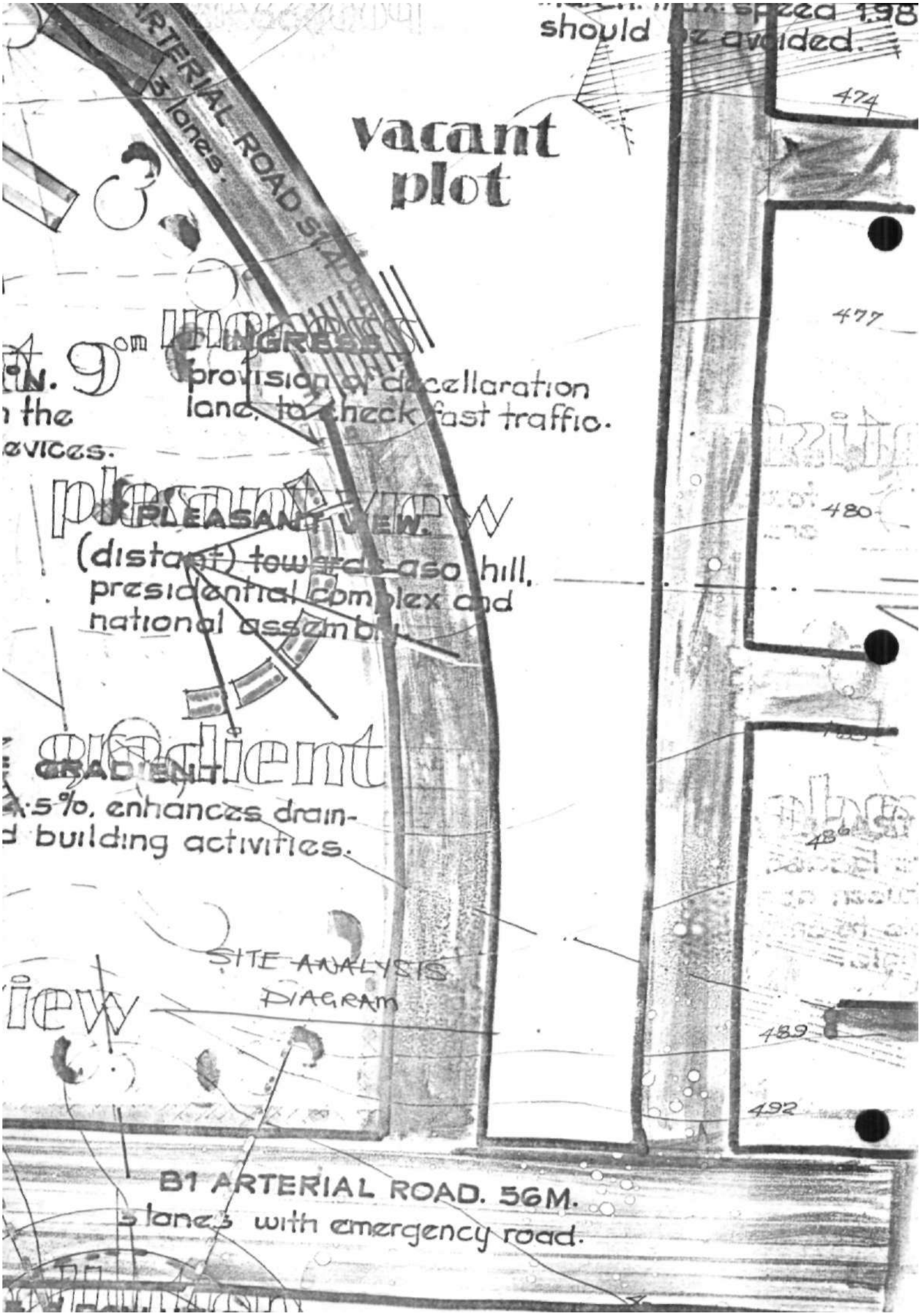
7.3.3 Site Analysis Diagram (Fig. 7.3.3)

7.3.4 Site Sections (Fig. 7.3.4)

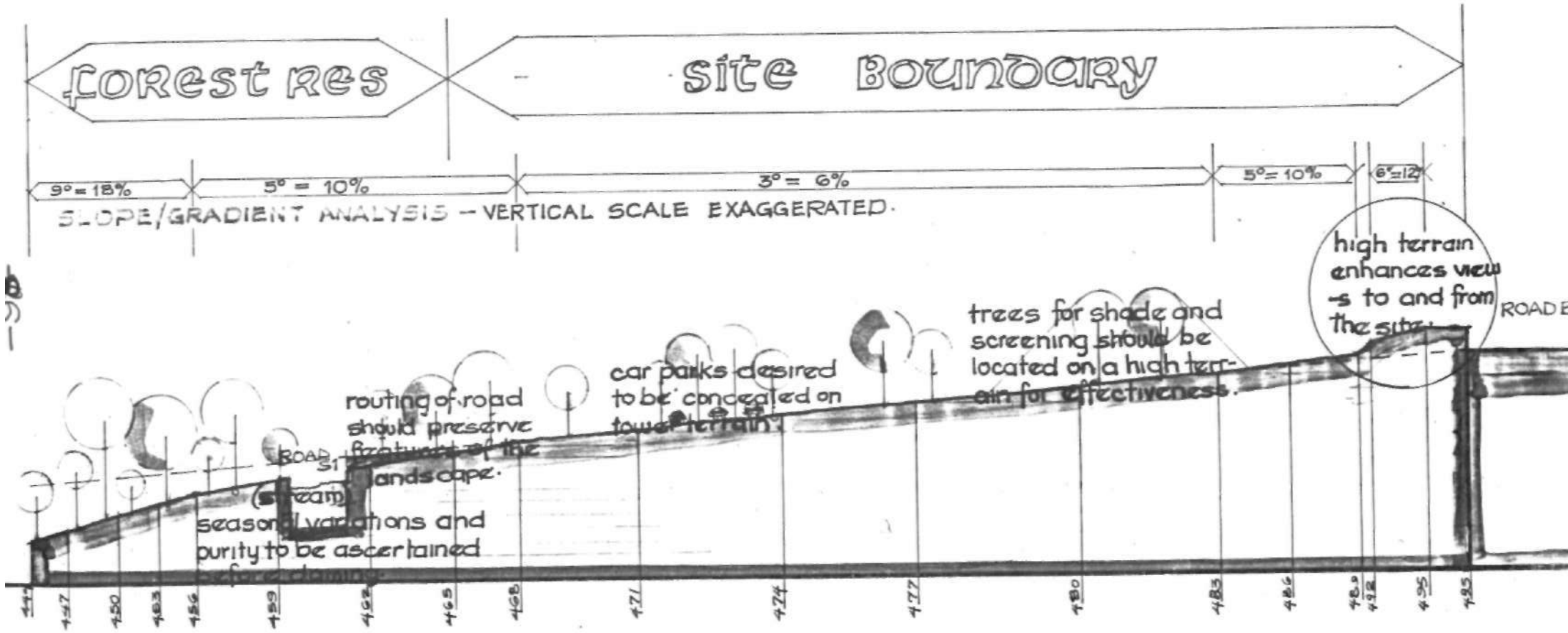
7.3.5 Alternative site Development (Fig. 7.3.5)

The sloping site has a dynamic landscape qualities - The site lends itself to dynamic plan forms. The Dramatic quality of the slope is in its apparent change in grade - natural grade changes may be accentuated and dramatized through the use of flying terrace, overlook platforms and terraced balconies which affords great interest in view and can be used to separate different functions.


POOR VIEW.
towards forest
reserve zone.
-97-
SUN PATH DIA.
to be considered
design of shading
SATISFACTORY VIEW.
towards the new gen-
eral hospital complex.
SITE LANDSCAPE.
fertile, however, broad, shady
trees with slow growth should
be preserved, others fall for
construction activities.
TRADE WINDS.
SATISFACTORY VIEW.
towards the central
buisness district.


should be avoided.
vacant plot
474
477
480
489
492
INGRESS
provision of deceleration lane, to check fast traffic.
PLEASANT VIEW
(distant) towards aso hill, presidential complex and national assembly
GRADIENT
4.5% enhances drainage building activities.
SITE ANALYSIS DIAGRAM
B1 ARTERIAL ROAD. 56M.
3 lanes with emergency road.

site SECTIONS



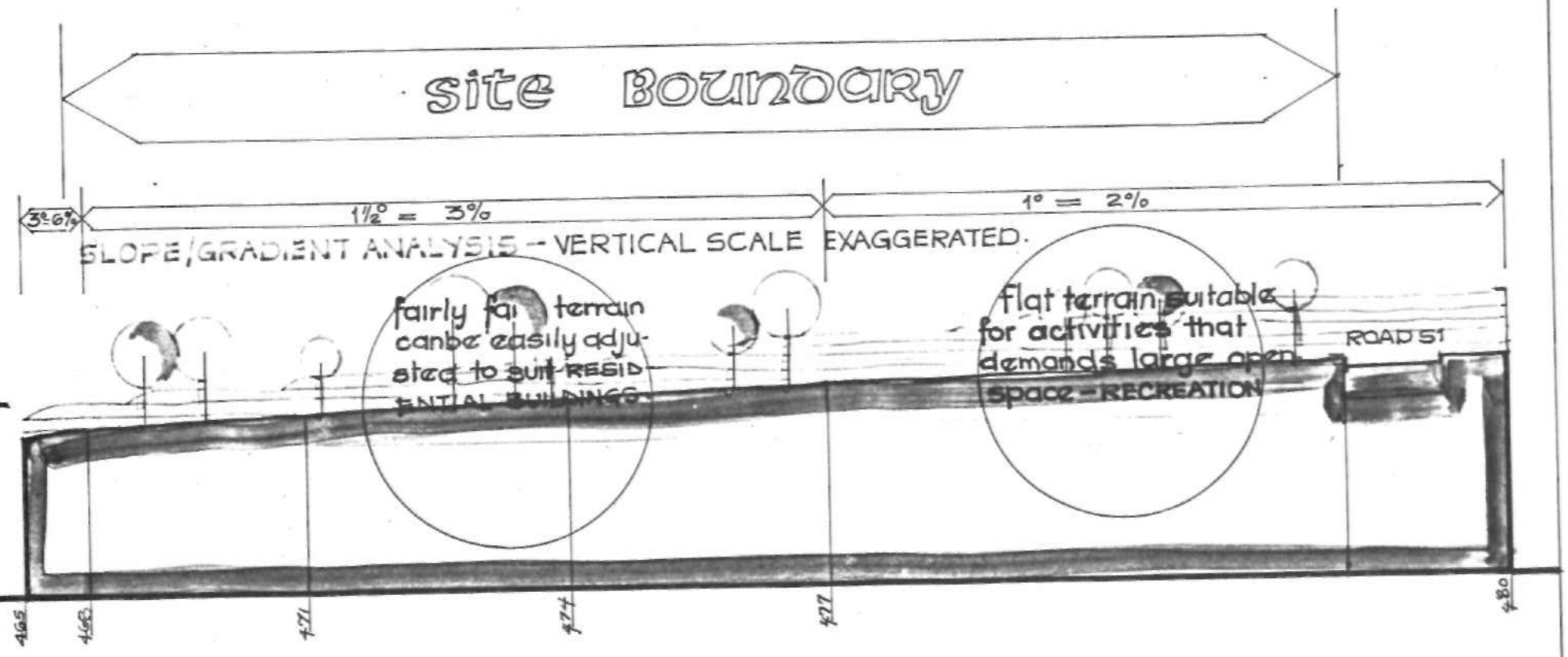
section a-a SCALE 1:2000.

DEVELOPING THE SITE

THE SLOPING SITE HAS DYNAMIC LANDSCAPE QUALITIES — THE SITE LENDS

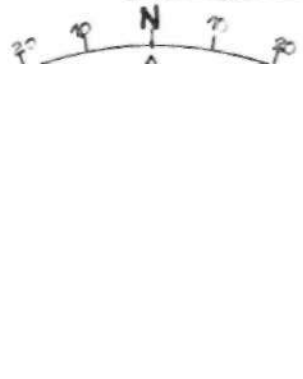
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DESIGN ANALYSIS



section b-b SCALE 1:2000.

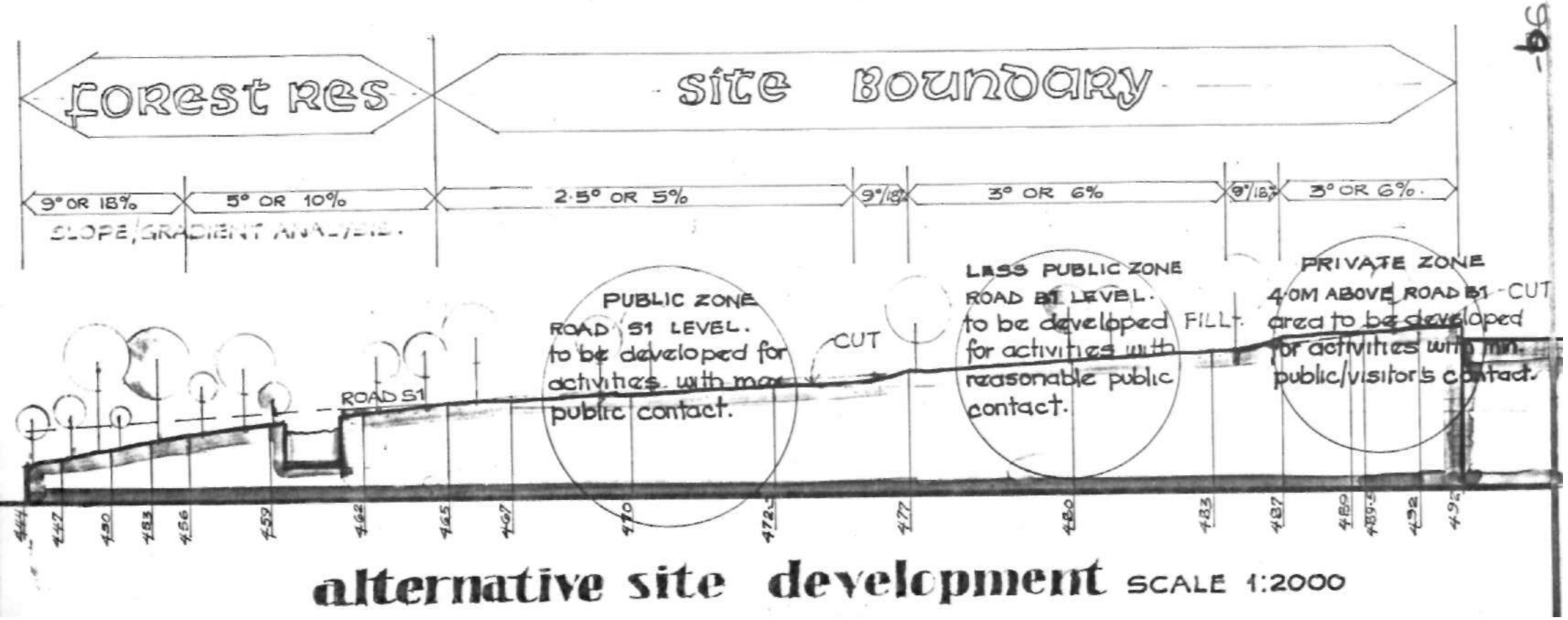
DESIGNING THE SHADING DEVICES



DEVELOPING THE SITE

THE SLOPING SITE HAS DYNAMIC LANDSCAPE QUALITIES — THE SITE LENDS ITSELF TO DYNAMIC PLAN FORMS.

THE DRAMATIC QUALITY OF THE SLOPE IS IN ITS APPARENT CHANGE IN GRADE. — NATURAL GRADE CHANGES MAYBE ACCENTUATED AND DRAMATIZED THROUGH THE USE OF FLYING TERRACE, OVERLOOK PLATFORMS AND TERRAC -ED BALCONIES WHICH AFFORDS GREAT INTREST IN VIEW AND CANBE USED TO SEPERATE DIFFERENT FUNCTIONS.



alternative site development SCALE 1:2000

7.3.6 Designing the Shading Devices (Fig. 7.3.6)

Time Correction

Longitude 0 12 noon

∴ Long. 7°E 7 x 4 mins 28 mins 12.28 p.m.

Permanent overheated period

10.28 a.m. - 4.28 p.m.

Activity Period

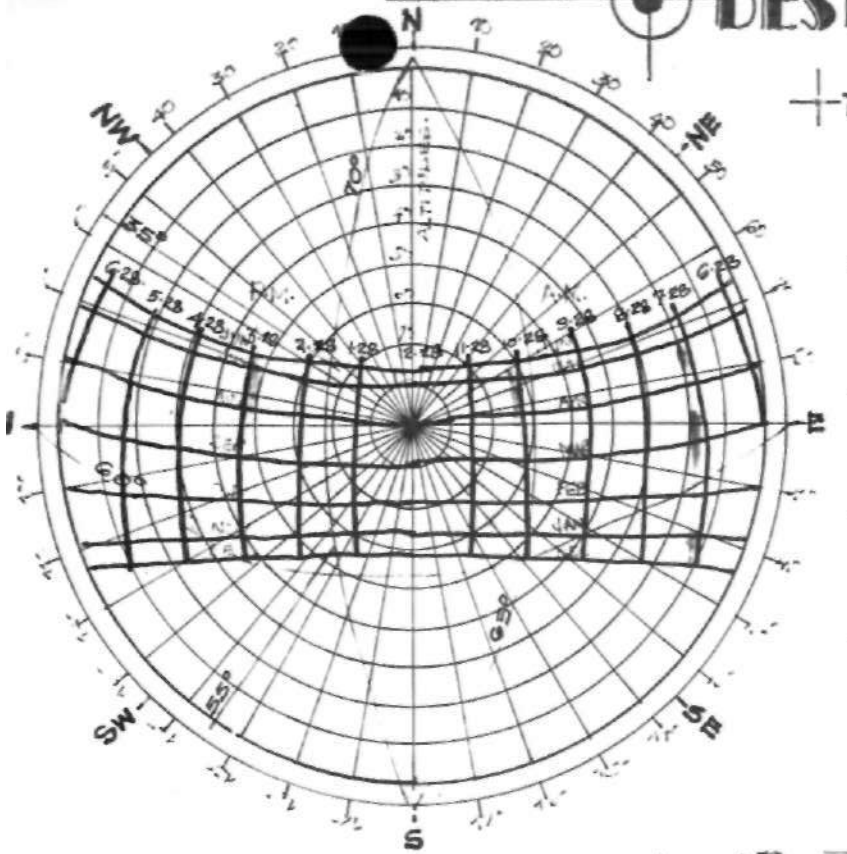
7.28 a.m. - 3.28 p.m.

Functional Overheated period

10.28 a.m - 3.28 p.m.

7.3.7 Site Visual Survey: (Plates VIII - XI)

DESIGNING THE SHADING DEVICES



sun-path dia. lat. 9°n

TIME CORRECTION.

LONGITUDE 0° ⇒ 12.00 NOON.
∴ LONG. 7°E ⇒ 7X4MINS = 28MINS ⇒ 12.28 p.m.

PERMANENT OVERHEATED PERIOD.

10.28 a.m — 4.28 p.m

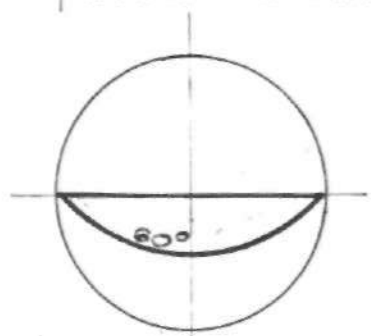
ACTIVITY PERIOD.

7.28 a.m — 3.28 p.m.

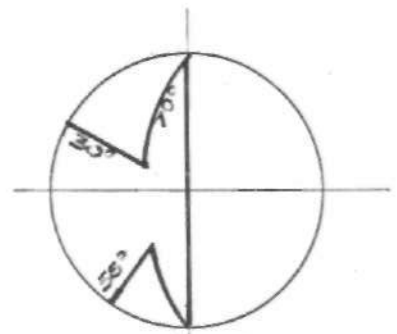
FUCTIONAL OVERHEATED PERIOD.

10.28 a.m — 3.28 p.m.

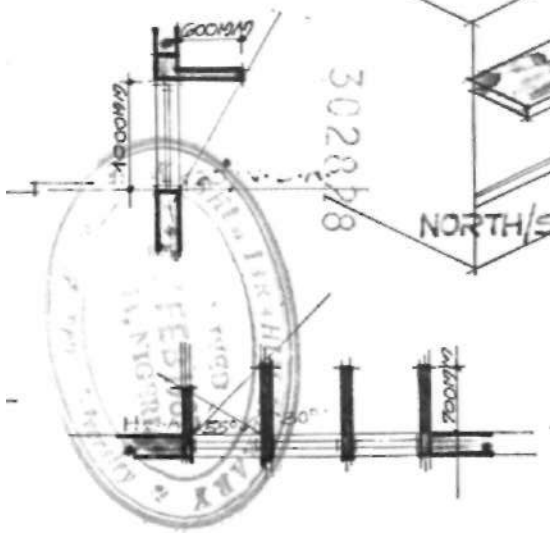
SHADING MASKS.



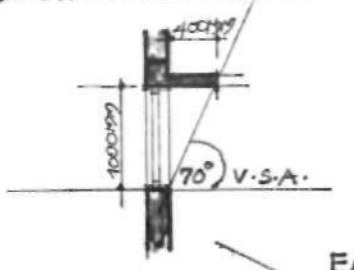
SOUTH/NORTH
V.S.A. = 60°

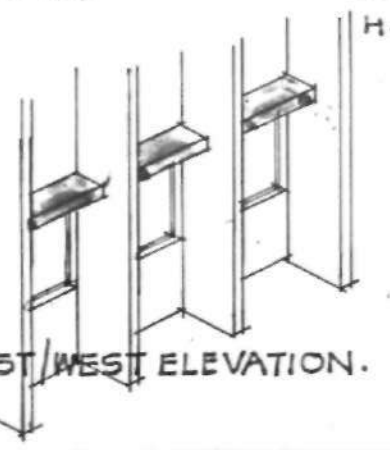


WEST/EAST.
V.S.A = 70°
H.S.A = +55°–0 and 0–30°.



NORTH/SOUTH ELEVATION.





EAST/WEST ELEVATION.

shading devices



scale
1:2000

3028/88

SITE VISUAL SURVEY.

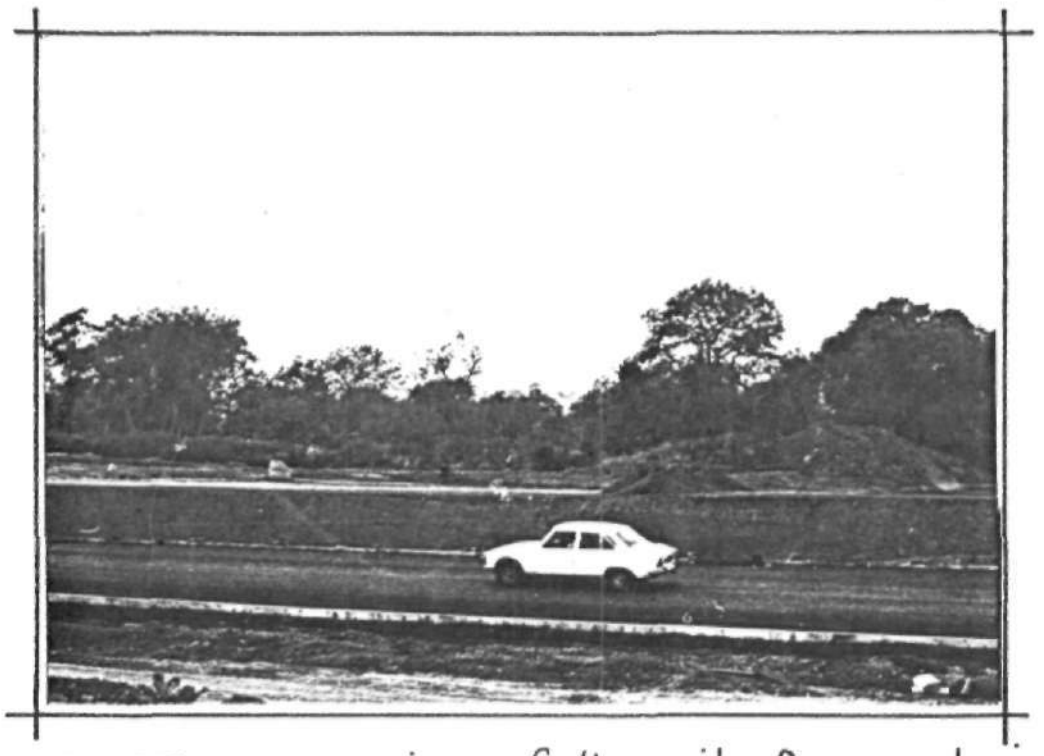


PLATE VIII:- view of the site from arterial road - B6.

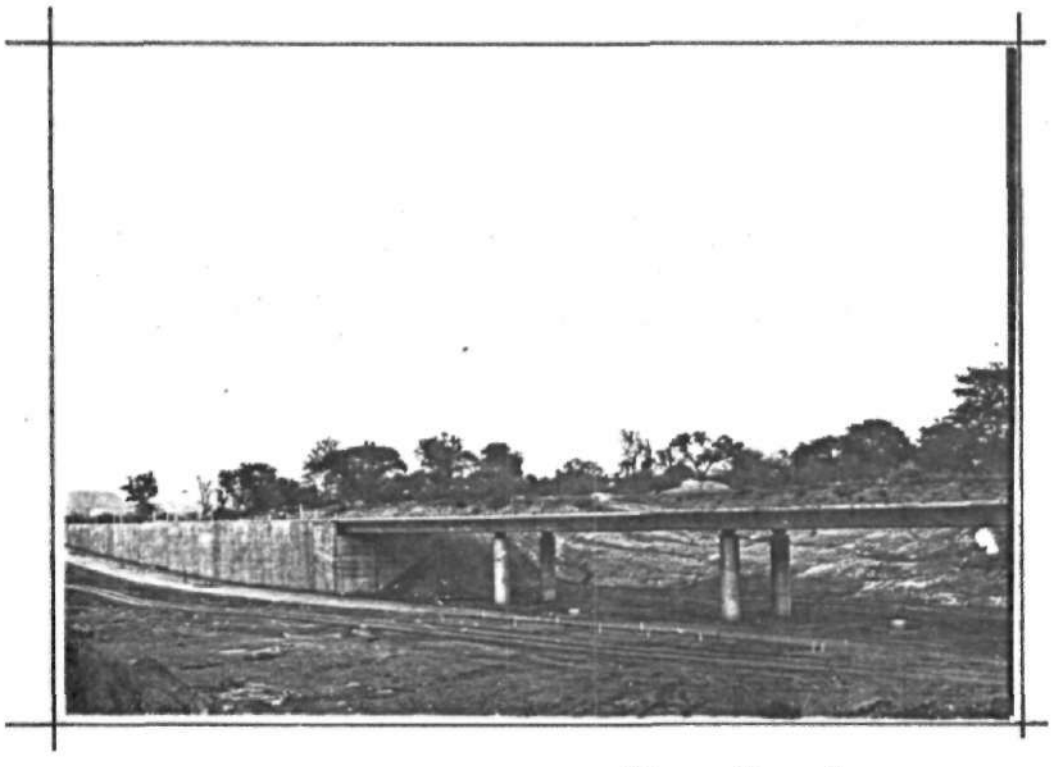


PLATE IX.:- site view from the bridge (junction arterial roads B6 & S1).

SITE VISUAL SURVEY.



PLATE X:- site view from arterial road S1.

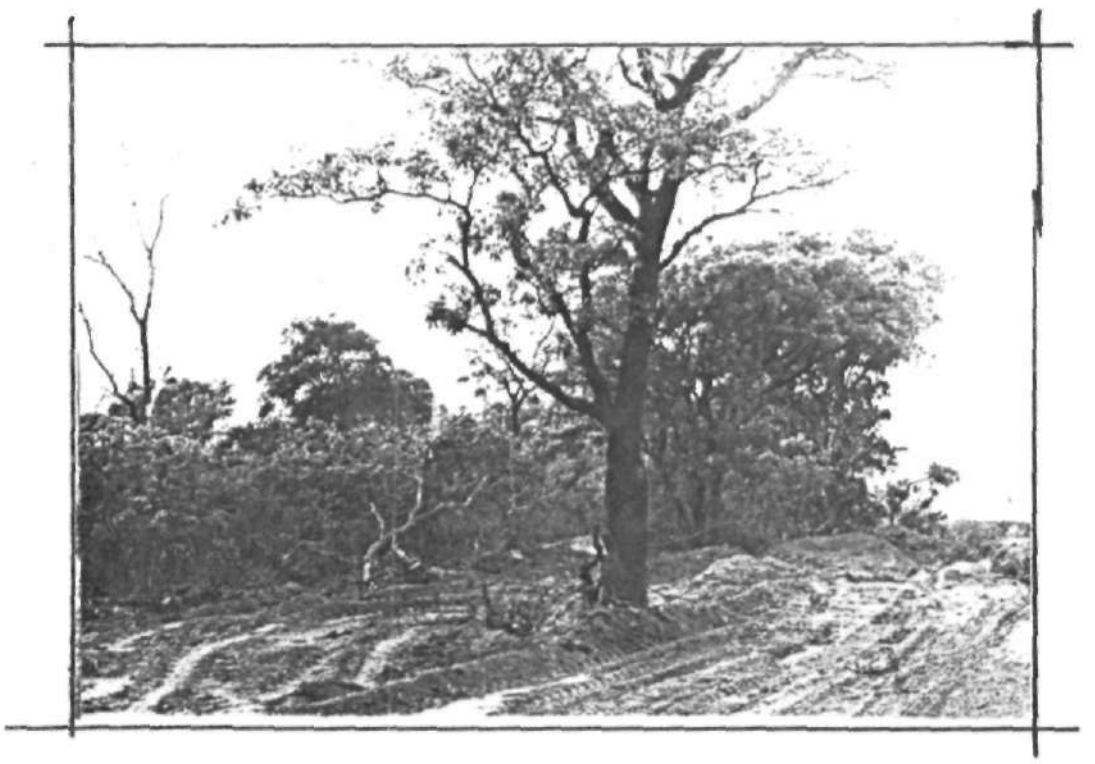
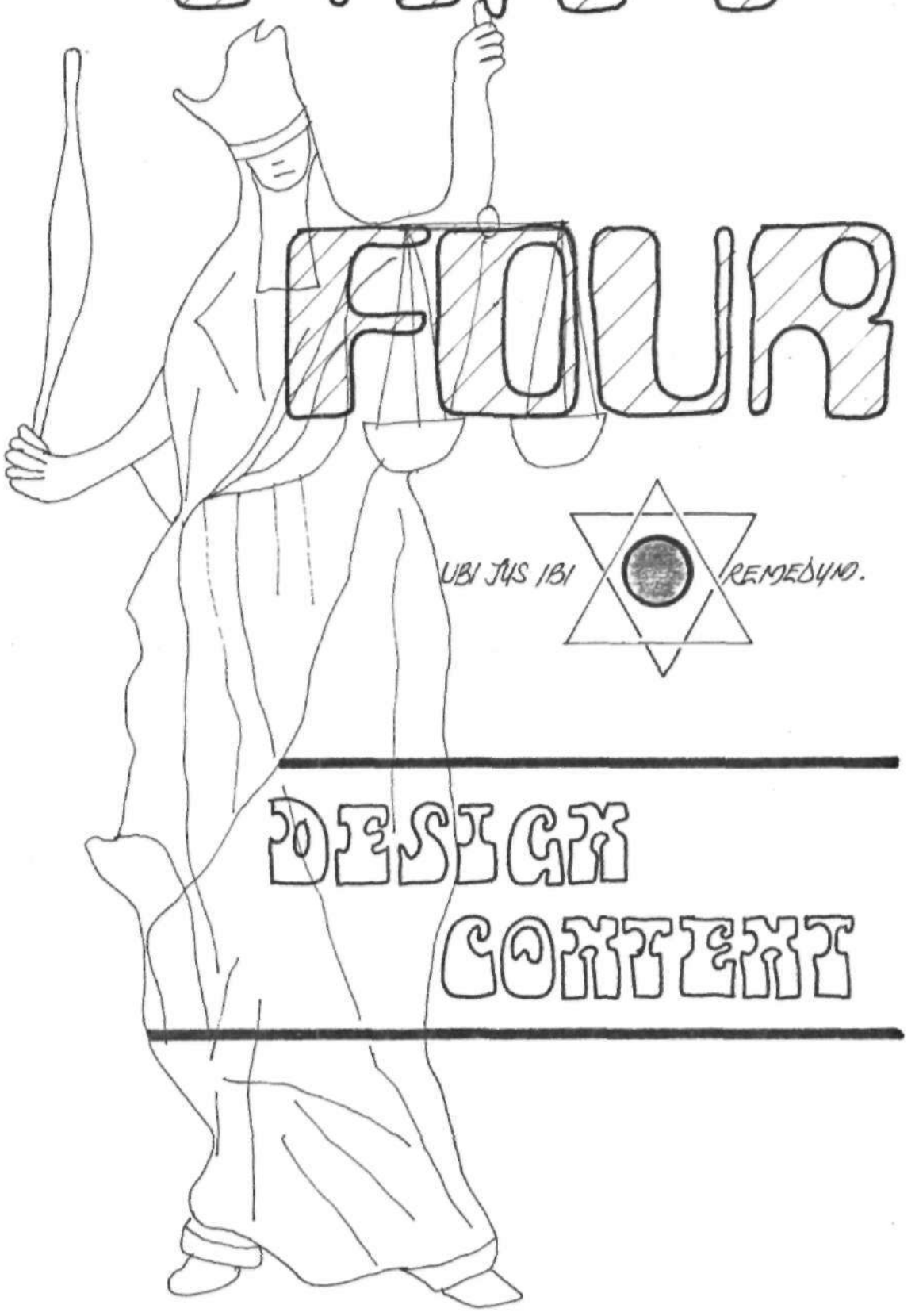


PLATE XI:- view within the site.

PART FOUR



DESIGN CONTENT

CHAPTER EIGHT

CONCEPT METHODOLOGY/DESIGN REPORT

8.1 CONCEPT METHODOLOGY

Concept methodology describes the way of getting architectural concepts and the development of these concepts. In searching for concepts that respond symbolically to important design themes, it is useful to explore the available design alternatives for meeting each single project need. There are usually several that are valid for each requirement but it is sometimes fruitful to look for concepts that seem to be valid solutions to several project needs because "singular concepts that solve multiple problems not only result in a more efficient building form, but also leaves more concepts to spend on reinforcement" Reinforcement involves the statement of the principal messages of the concept in many ways as possible.

The design philosophy of this project is rational by considering the school as per se, a KALIEDOSCOPE MATRIX OF LEARNING, EXPERIMENTATION, MUTUAL INTERACTION, AND PRACTICAL TRAINING. The singular concept employed is "JUSTICE" in terms of implementing the four aspects of the matrix with equal considerations for each of them and the design approach however, will be to achieve this justice through response to design goal and objectives, case studies, design analysis and the "humanistic approach".

8.1.1 Humanstic Approach

This approach is governed by the following conditions:

(i) It insists that school planners should begin with clear and scientifically accurate realization of the actual physical and emotional needs of the student and should never in any phase of the planning compromise to meet these needs.

(ii) That the school is a building for learning and "comfort is the pride of function" and therefore recognizes that school must be safe, strong and economical.

(iii) Holds that "form follows function" and beyond "form should express function" it stands firm in the belief that the beauty which comes from good composition of most suitable building materials used honestly and openly is at once the kind of beauty that will make that school a better school.

(iv) This approach insists that there is no "modern style" as such. Each new buildings ideally is a product of specific solutions to individual problems peculiar to the building's particular environs, site, function, budget, and designer.

8.1.2 Site Concept

In the design of school campuses, various forms of campus planning has been developed but the three most important and common are

(i) Linear concept:- Residential and Academic areas run parallel to a road in a linear direction with leisure areas distributed at some parts. The camp

is compact but monotonuous.

(ii) Concentric zone or Molecular concept:- Residential, Academic, Recreation/Leisure areas form three concentric zones. It requires more land and a circular space.

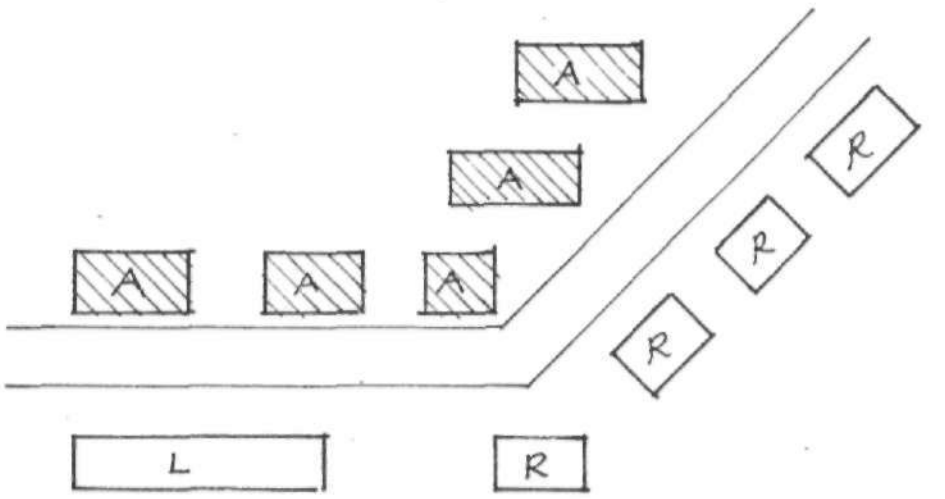
(iii) Sector Concept:- Learning, Living and Leisure forms three different sections. The road pattern is grid and suitable for heavy vehicular traffic. In each sector, provision for future expansion is provided. The disadvantage of this concept is that land is initially underutilized (Fig. 8.1.2(a)).

The sector concept is adapted in the development of the Master Pan and it is reinforced by some site planning concepts. These have emerged from a thorough analysis and understanding of the program information collected from the design abstract, appraisal and analysis. These concepts establish the physical objectives to be satisfied by the Master Plan. Some of these concepts are:- (Fig. 8.1.2(b)).

(i) TO DEVELOP A SCHOOL ZONING SYSTEM IN RESPONSE TO THE NATURAL LANDSCAPE QUALITIES OF THE SITE. Site contours suggest the best positions of buildings for views and for shelter while the site surroundings will influence the visual pattern of the development. which must relate the site to the surroundings.

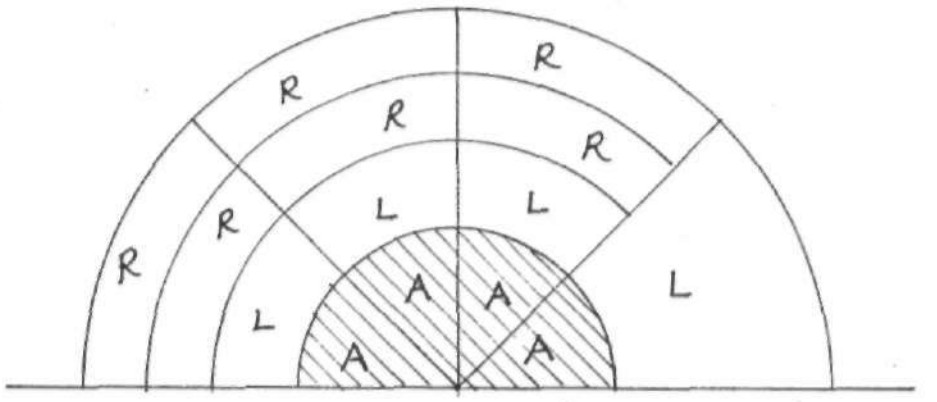
(ii) DEVELOP ONE MAJOR ENTRY ROAD (WITH DECELLARATION LANE) FROM WUSE RESIDENTIAL DISTRICT for security, good accessibility, visual invitation and to

CAMPUS PLANNING CONCEPTS

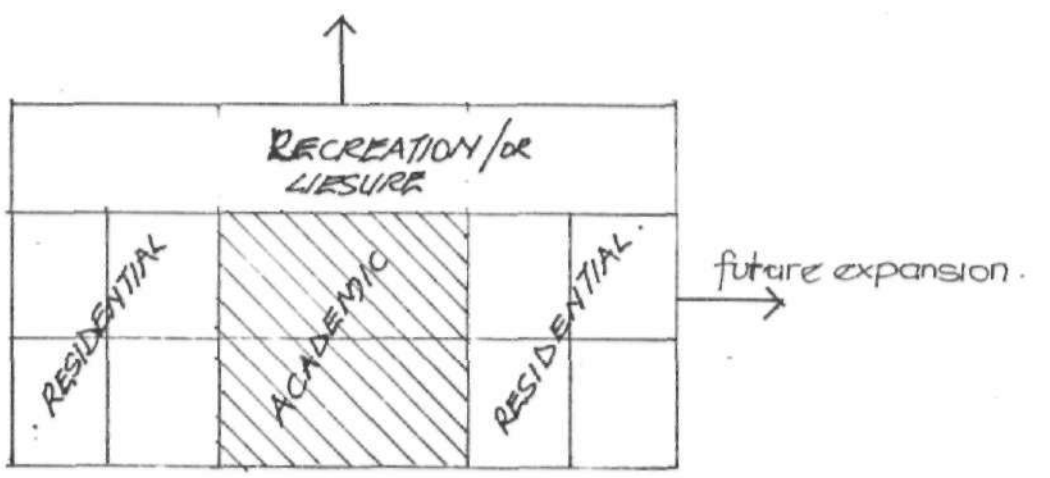


linear concept.

A — ACADEMIC BLDGS
R — RESIDENTIAL
L — RECREATION OR LEISURE.



molecular concept.



sector concept.

FIG.-8.12(a)-

develop one vehicular access system to serve the perimeter of the three different sections of the school and encourage maximum utilization

(iii) TO DEVELOP THE ACADEMIC SECTION IN THE HEART OF THE SITE as a focus or form of identity for the institution, ensure good accessibility from other parts of school, and to develop recreational facilities within the same loop thereby encouraging constant activity.

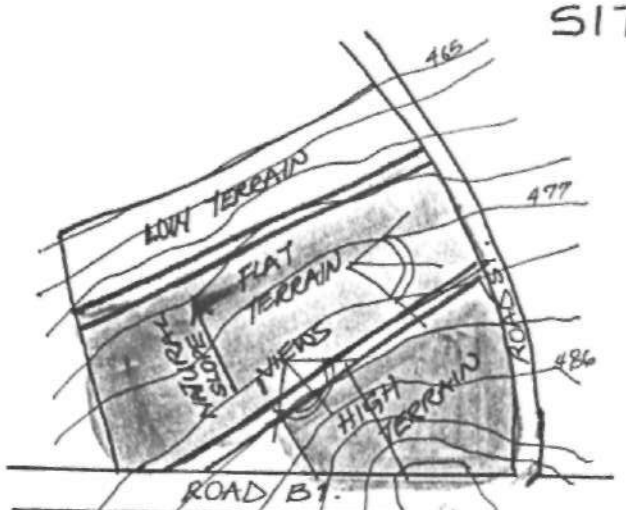
(iv) DEVELOP STUDENT HOUSING AREAS ON A HIGH TERRAIN ADJACENT TO THE ACADEMIC CORE, to provide short walking distances to classes, core facilities, distinct student territories and flexibility of phasing, growth options and easy ventilation achieved by terracing.

(v) TO DEVELOP STAFF HOUSING IN CLUSTERS OF SIMILAR BUILDING TYPES adjacent to pedestrian ways, open space and vehicular access, and the location of the Intermediate/Junior Staff housing adjacent to the ingress for ease of pedestrian access and to limit noise around the busy ingress is of paramount importance.

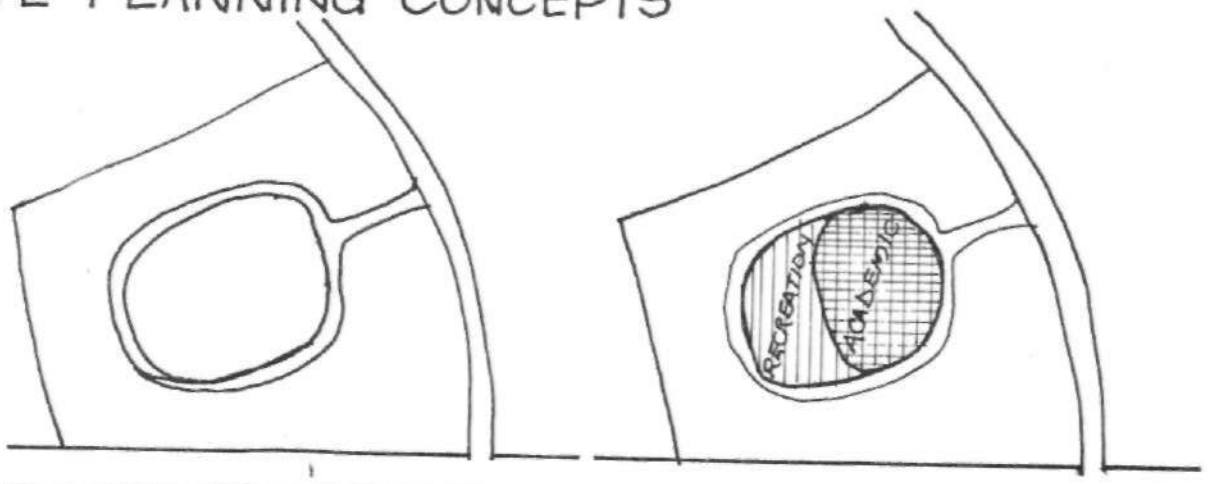
(vi) DEVELOP PEDESTRIAN WALKWAY SYSTEM which connects all campus elements to the Academic core allowing a majority movement to occur on foot within the compact radial.

(vii) TO PROVIDE SEVERAL SMALL LAKES ON SITE TO: act as holding ponds for drainage at low points on site during the wet season and to function as reservoirs of water for fire protection and emergency supply.

SITE PLANNING CONCEPTS

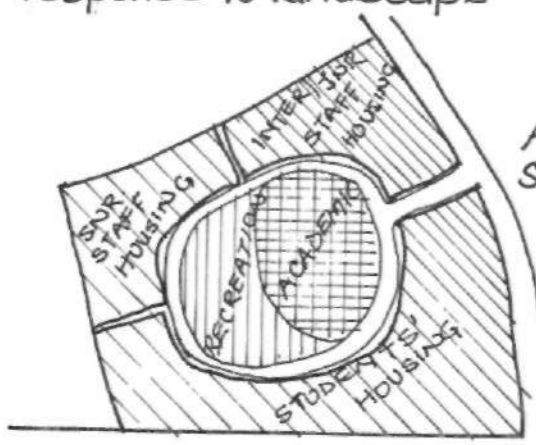


To develop zoning system in response to landscape

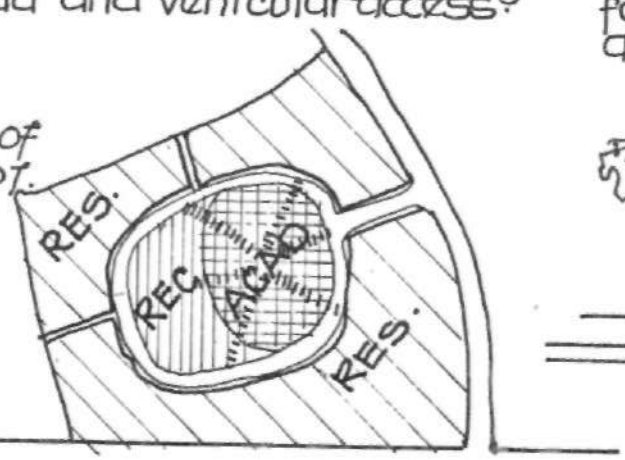


To develop one major entry road and vehicular access.

academic section as focus and recreation on a flat terrain.



ADAPTATION OF SECTOR CONCEPT.



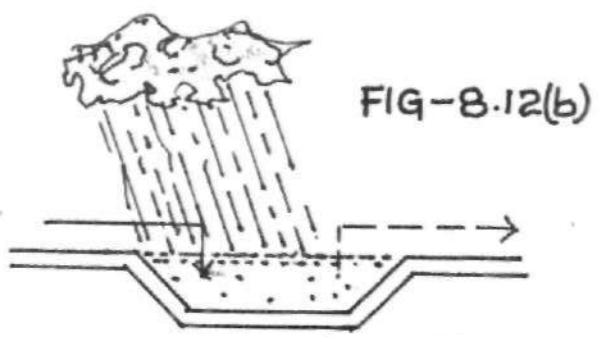


FIG-8.12(b)

to develop students'/staff housing adjacent academic section.

pedestrain walkway systems connecting elements to central core.

several small lakes on site as holding ponds and reservoirs.

8.1.3 Developing the Concept

Justice is represented symbolically by the scale of Justice which is symmetrical about a pole suspending the two balances. Symmetry as earlier illustrated (Fig. 6.2.4) is achieved in four ways which can be dramatised into three of the existing archetypal forms or organization concepts namely,

(a) Symmetry about a point is developed into the Hierarchy Organization concept where organization and spatial composition is achieved by establishing a harmonious balance among all parts. (part to part/part to whole). It enhances good circulation, expresses project identity and it is flexible but have no directional growth which may later obstruct the organization structure itself.

(b) Symmetry about an area can be developed into the star concept. All functions and activities of this concept have their origin or destination in the central core. It enhances good circulation but expansion of the central core is impossible.

(c) Symmetry about an axis as Axial or Linear concept. Building segments are arranged perpendicular to a single spine containing other segments. The monotony of direction causes poor circulation and the project becomes rigid and lacks identity (Fig. 8.1.3)

8.1.4 Design Concept

The Heirarchy Organization Concept is developed as the design concept of the academic section of this institution. This is achieved by orientating the Academic

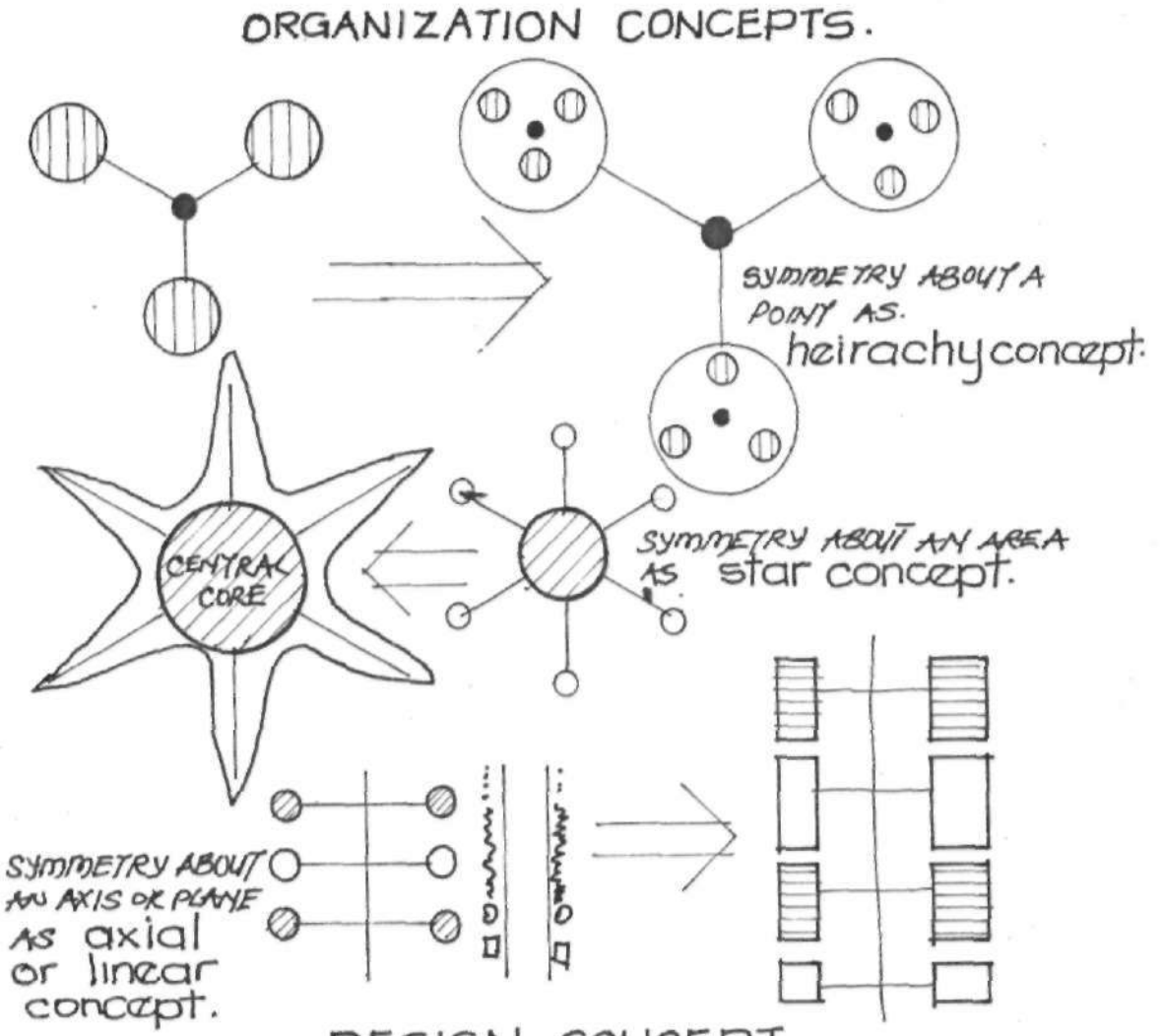
core, General facilities, and Administrative buildings towards an Open Arena thereby ensuring good circulation of "parts to whole". The Court, parking, and admin. office will represent the focus or heart of the three sub-divisions respectively in order to maintain good circulation of "parts to part". (Fig. 8.1.3).

This concept is further reinforced by another sub-planning concept, "Harmonious flow of spaces and forms to dramatize order, flexibility, and the emancipation of spaces for the desire of maximum student/staff interaction". Harmonious flow of spaces will necessitate compact planning, total organization and the planning of buildings around courtyards while the flow of forms implies the origination of lean simplicity or rich complexity achieved by use of pleasant, comfortable shapes and forms, fitness using familiar objects and evident structural stability. Exterior spaces will also be emancipated into social spaces to serve as a form of relief from academic exertions, and the use of landscape to accentuate this activities.

8.2 DESIGN REPORT

8.2.1 Observer's Impression

The entire school covering about 18 hectares is accessed from the North-east end through arterial road S1. The visitor is brought into the school at a lower level entrance road. He/she is at first overwhelmed by the landscape developed from the interplay of levels, the way in which plants have been used to relate structure


ORGANIZATION CONCEPTS.
SYMMETRY ABOUT A POINT AS. heirachy concept.
CENTRAL CORE
SYMMETRY ABOUT AN AREA AS star concept.
SYMMETRY ABOUT AN AXIS OR PLANE AS axial or linear concept.
DESIGN CONCEPT .

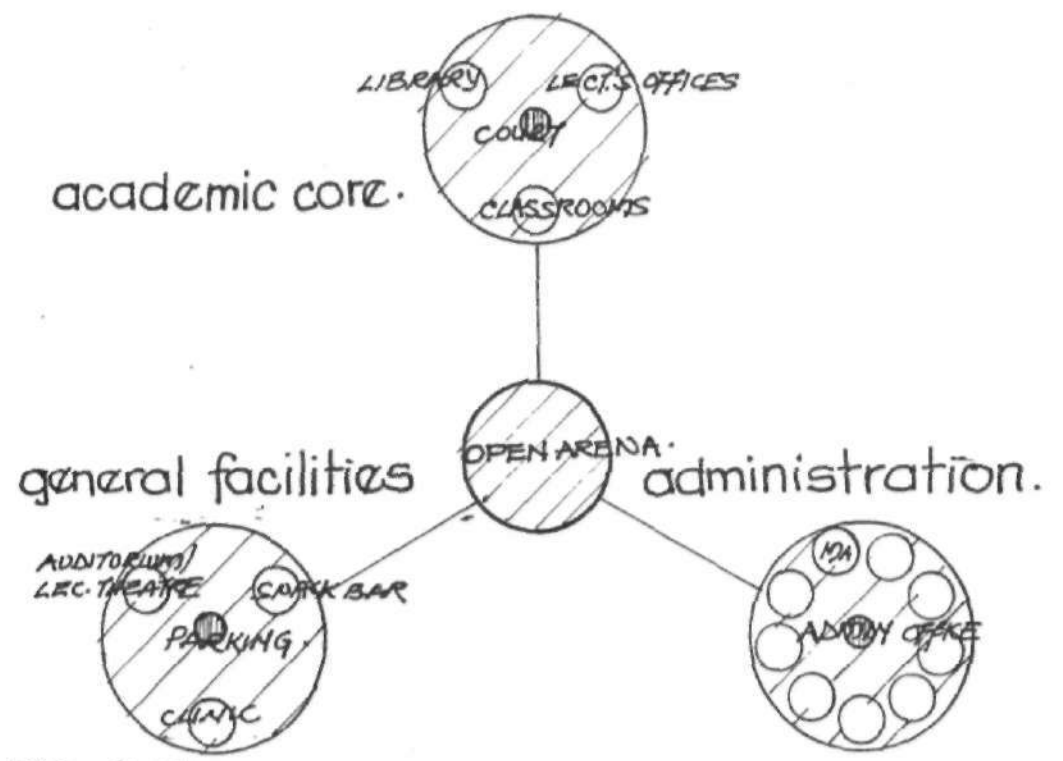

LIBRARY
LECT.'S OFFICES
COURT
CLASSROOMS
academic core.
OPEN ARENA.
general facilities
administration.
AUDITORIUM/ LEC. THEATRE
CAFE'/ BAR
PARKING
CLINIC
ADMIN OFFICE

FIG-8.13.

to the site, and link external spaces within the site and the contrast and harmonies used to emphasize or accentuate the individual qualities of plant/architectural forms. In progressing further, he observed the school is more or less a semblance of a hill broken by the long tower of the council building. On getting to tail end of the road which is broken into two, the decision of where to go is obvious achieved by the accentuation of the architectural forms. On his left, which is on a higher terrain are the typical four storeyed student hostels and to the low left are the sprawling low storeyed housing units for staff. The housing units continues throughout the outer sides of the loop enclosing the academic and recreation section of the school.

The visitor is brought in the academic section covering four different levels, about 1.20 m rise from each level, through the main entrance by ascending three short but wide and grand flights of steps to the 2nd level. The spartial pause between the auditorium and the council block helps in deciding his direction. He is either invited as a guest lecturer at the 1,400 seater auditorium on his left or proceed on official business in the council building or alternatively he decides to go through the two buildings for research studies in the Library (1200 seats) by passing through an open Arena.

3.2.2 Student/Staff Approach

The students approach the academic section directly from their hostels located within the S.E./S.W. through

a 3.60 m paving (consisting of 600 x 600 mm precast concrete laid on carpet grass) by descending a flight of steps into the academic core building. Total organization achieved by crumbling the voluminious brief into an assembly of six separate buildings (The Council, Core, Library, Auditorium, Clinic, and Maintenance buildings) without compromising neither effective circulation nor adequate space is a blessing of this design. The students are only restricted to three major buildings, the Auditorium building encompassing a 600 seater lecture theatre, both harbouring a snack bar constitutes the noisy area of the student zone, the core building comprising of 12 classrooms, a court, and lecturer's offices all crumbled within a 3-storey building and lastly the 3-storey library building, both make up the private zone. The functions of this buildings are further enhanced by each overlooking a 55 m square generously landscaped Open Arena thereby bringing people in contact with nature.

The Open Arena which is assymmetrically planned in response to human free desires, is composed of one main physical feature, the fountain which overflows into three bays surrounded by landscaped open spaces. The spaces around the core/library are mainly utilised for study and therefore demands privacy and seclusion. This is achieved by creating secluded reading alcoves united under a tree or two to form a circular space. Areas within the auditorium building are utilised for relaxation and discussion by the provision of pergolas to serve

as overflow seating, majority of the seating been orientated to the foutain and water bays to act as a visual relief. The part of the Arena overlooked by the Council building is only utilised for waiting. In all, plants are used in respect to their functions to creat a natural environment. Acalpha Ross species used for ornamentation, spiderlilies around bays for beach environment, cactus, Sanvica, Ixora, within the rock garden for dramatic effects e.t.c. Flower pots apart from creating a garden effect, are utilised in breaking the seating monotony and the space occupied is used for leg accommodation. Trees with tiny stem but large foilage e.g. Terminalia Catapa and various species of grass have helped in creating a natural environment of interest with contrasting colours in the horizontal and vertical planes.

The staff members are brought into the building complex by ascending a flight of steps from two separate pedestrian ways. A lecturer parks his car near the library and walks along a 3.6 m precast paving bypassing the maintenance building and the library to his office, then to other parts of the school or alternatively he bypasses the clinic to the council building. On the other hand, Intermediate/Junior staff are brought through the maintenance and clinic buildings to other parts of the school by following the pedestrian route from their housing areas.

8.2.3 General Planning

The planning of the whole institution has beeen based on an octagonal grid system developed in response to site potentials and incorporating a lot of flexibility expansion, order, and economy upon which an efficient structural grid is developed. Reinforced concrete columns placed between 7.5 - 5.0 m apart suspending different types of waffle floors and covered by miscellaneous steel framed roofs makes up the basic structural component. The external walls are made from the normal 23 cm concrete hollow blocks and 100 mm brick blocks appear as internal walls, however, different types of cement-sand finisnes are applied.

Indoors, the spaces has the same easy amplitude which the exteriors has led you to expect. They are comfortable, well planned with good views and adequately landscaped. Circulation areas are generously provided, lighting/services are concealed within ducts or waffle floors and gypsum sound insulators appearing on walls where necessary. Fire alarm systems are also provided within the complex.

There is never a perfect design moreover "perfection is relative" therefore there are two sorts of deficiency in this complex which are glaring to an observer. First is the symmetry in plan forms of the complex which is inevitable because of the

necessity to response to the routing of roads and site conditions. However, this effect has been reduced by providing each building with different facades, the splitting of the complex into four different levels and the assymmetrical planning of the open arena. Secondly, initially there are a lot of open spaces designated for future expansion due to the sector concept idea thereby making the school to lack orientation. On the whole, this is a successful building, a useful addition to educational buildings developed in response to humanistic approach.

PROPOSED NIGERIAN LAW SCHOOL,
ABUJA, NIGERIA.

PLATE xii:- ground floor plan.

PLATE xiii:- 1ST and 2nd floor plan.

PROPOSED NIGERIAN LAW SCHOOL
ABUJA, NIGERIA.

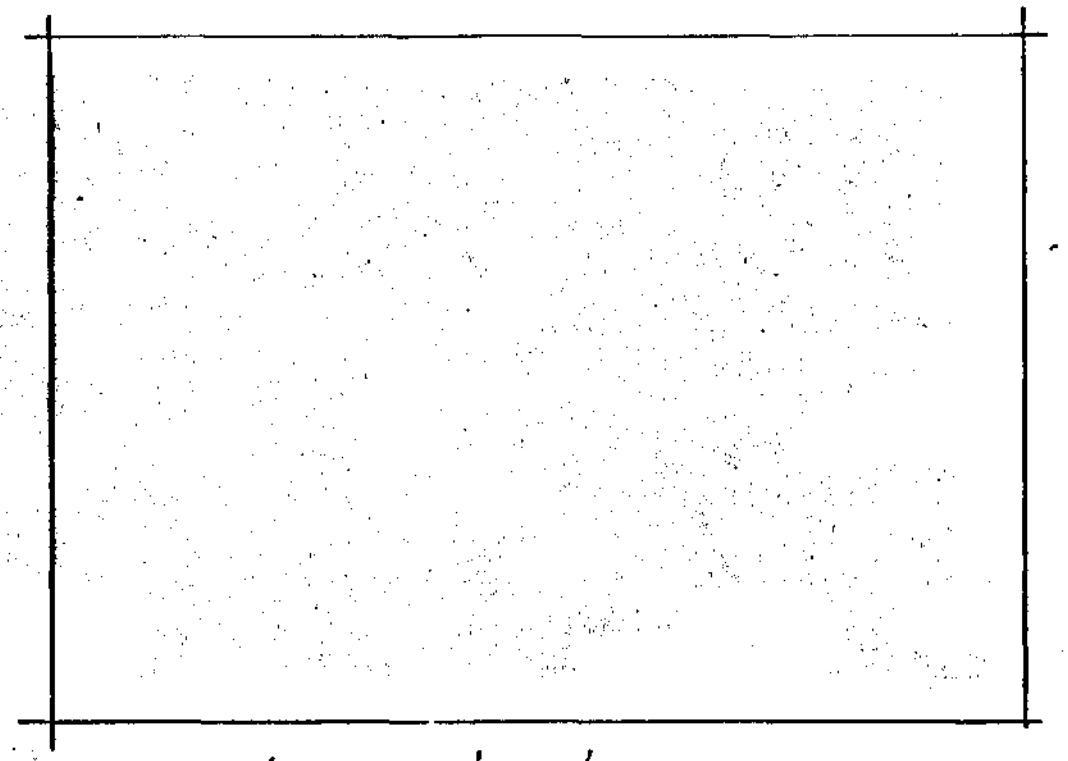


PLATE XIV:- elevations.

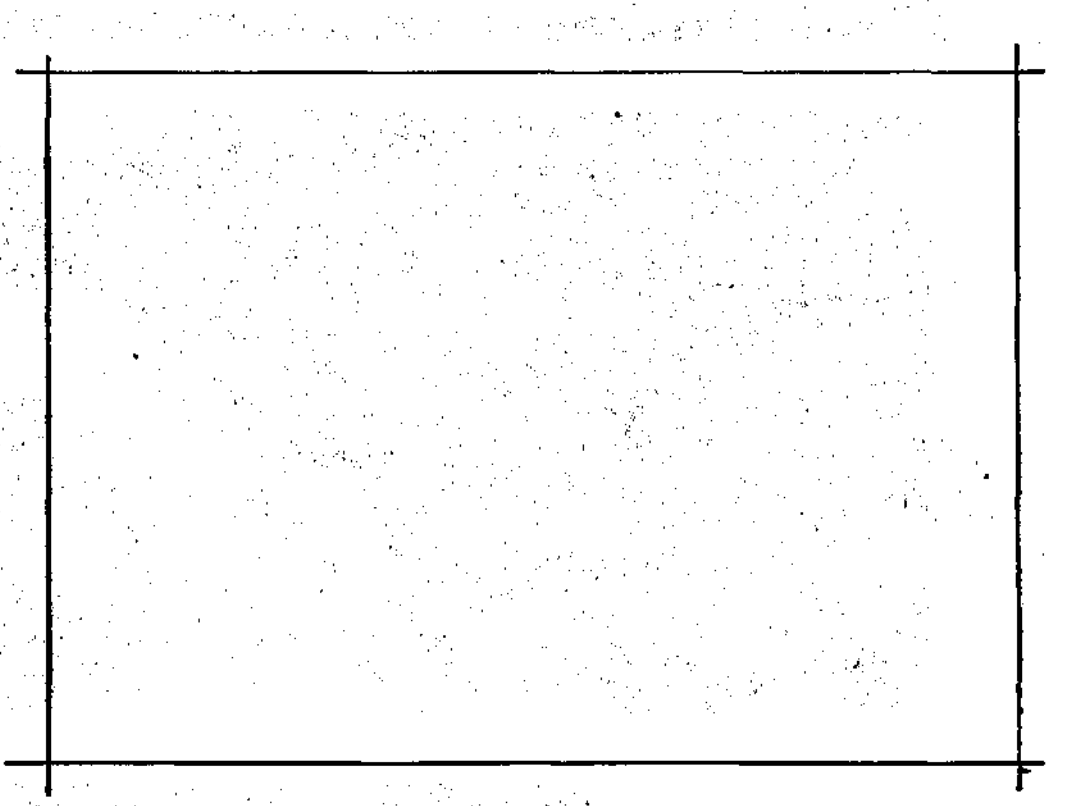


PLATE XV:- sections.

PROPOSED NIGERIAN LAW SCHOOL
ABUJA, NIGERIA.

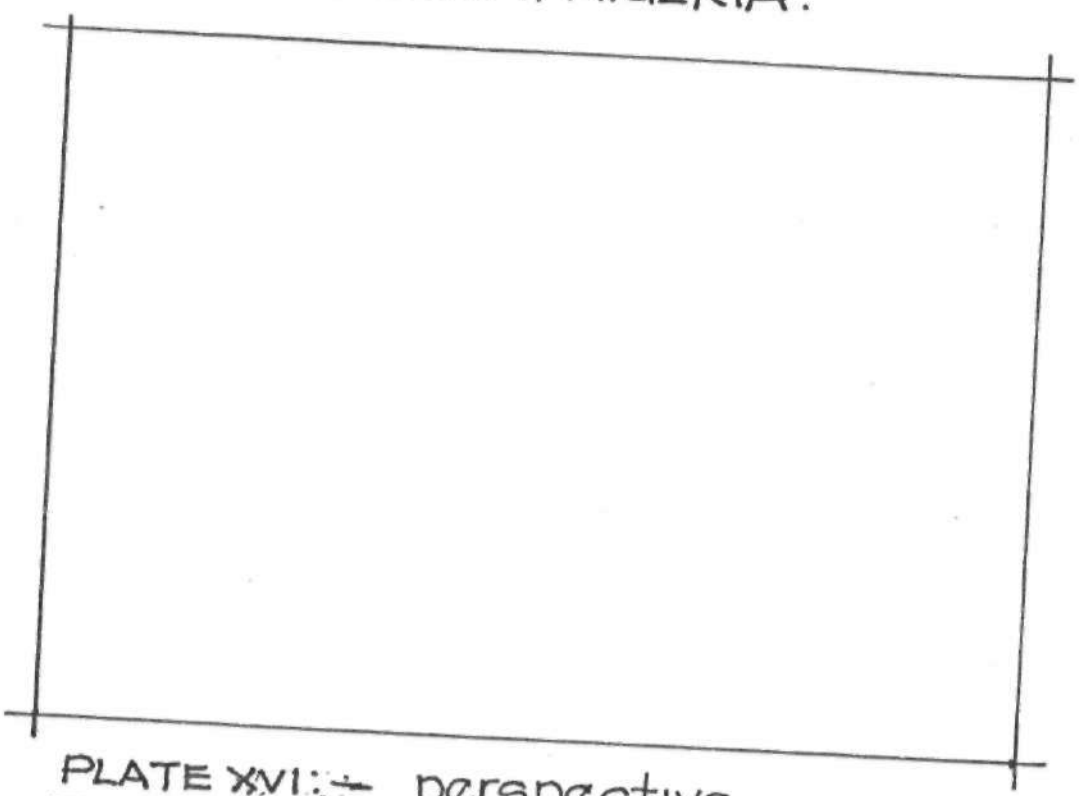


PLATE XVI:- perspective.

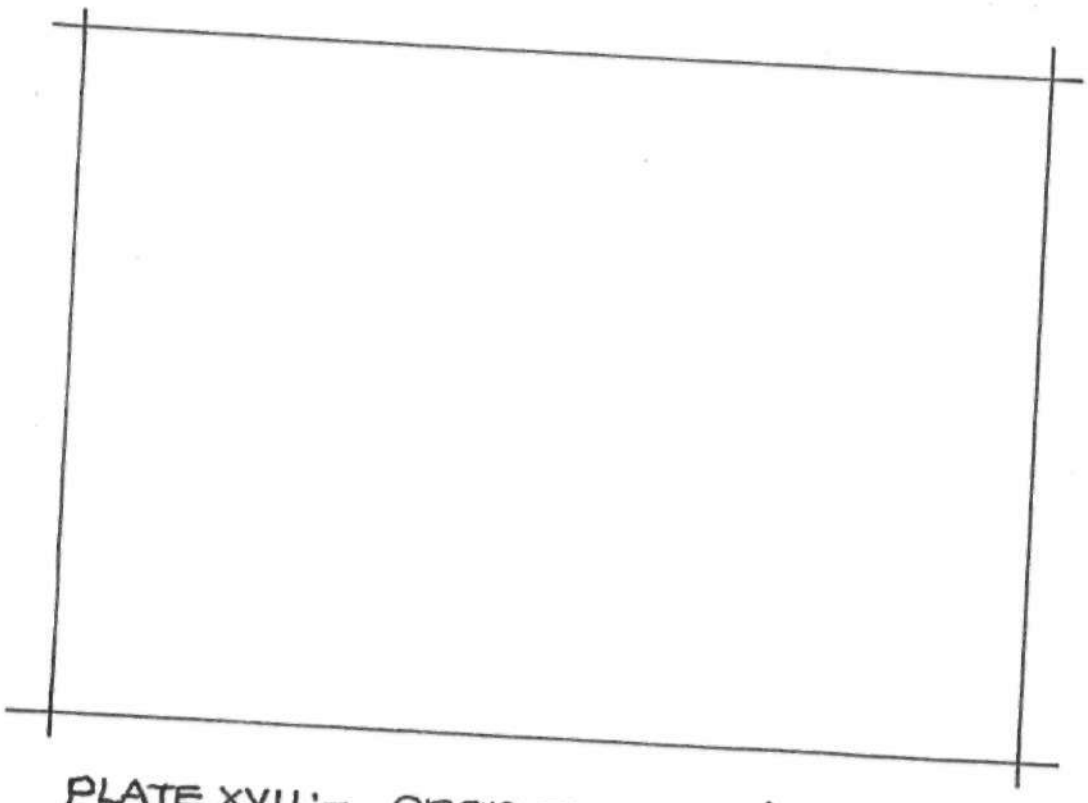


PLATE XVII:- open arena plan.

CONCLUSION

Education will continue to take a large part of the Federal Government's budget because of its importance, it is life and people doing things together. However, the planning and design of educational buildings can go a long way in providing an efficient and economic educational system if given proper attention. The school is both a kind of shelter and a kind of stage bringing together children and adults on the day-to-day business of contending, learning, working hard, having fun, and growing up. Considering the economic crunch we are experiencing in this country nowadays, there is need for the Government to ensure that these activities takes places in any school with minimum effort and reasonable cost. This means the planning process of a school will respond to the real needs of learning, teaching philosophies and community objectives.

Schools in Nigeria nowadays have only been directed in providing spaces which are only functional in respect to meeting immediate demands, without regard to providing a functional environment that responds to human desires. The Government should engage the architects efforts (specialized in educational buildings) into the creation of a school which activity and attractively suits the functions of the educational environment it serves. This is important because the physical aspects of environment (those relating to bodily senses of temperature, vision and hearing) may be relatively well controlled by known

engineering methods but those environmental qualities which affect emotions and behaviour are far more difficult to accomplish through building design since they are not subject to established formulas or system.

The project (Nigerian law school, Abuja) if implemented will go a long way in depicting an institution born out of considering these aspects of human psychology. Human scale, harmonies, warmth, excitement and repose of this design are recognizable attributes of a building which engenders real responses from its occupants. The schools developed from these idealogies are more economical because, apart from stimulating the development of human beings socially, intellectually, physically and emotionally, they have anticipated the inevitable changes of educational policies.

"Creating an environment, and not just a space, should not be a bonus, but rather is a minimum essential".

The standard attained in this design is only limited to the author's ideas which can be improved by a consulting team of professionals involved in school planning, but the theme of the project must not be compromised. It will also necessary to remember that, the author was also bombared with numerous problems before getting to this stage, and if eliminated in future, a better design will suffice.

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Dear Sir, Ma, Fellow Student,

This questionaire is prepared by a research student (M.Sc. Architecture) of Ahmadu Bello University, Zaria, currently on a data collection for his thesis project, "THE DESIGN OF AN IDEAL NIGERIAN LAW SCHOOL". This work is a totally academic exercise, you are therefore implored to be sincere and give accurate, adequate answers to the following.

However, you should kindly submit the questionaire to the bearer on/before Friday 7th, February, 1986.

1. Your Sex: Male

2. Your Status (either Snr. Lecturer, Student, Librarian Grade 1 or Typist etc.): Student

3. Do you own/drive a Car to School: No

4. Do you participate in the afternoon/evening stream... Yes

5. Which stream do you consider most convenient: Afternoon

6. What are the present inadequacies of the School in terms of function, space, equipments and location of the present facilities available. Administration, Library, Cafeteria, Moot Court, Classrooms and Services.

(a) Administration: is Good

(b) Library: Inadequate space and books

(c) Cafeteria: Fairly okay but food is rather costly

(d) Moot Court: Arrangement is okay except that the pressure of work does not allow one sufficient time to participate fully.

(e) Classrooms: I do not like the Vedio rooms where I receive lectures - Fans are inadequate. Teaching (reception not very good. One does not see items that are illustrated on board).

.../2..

(f) Services (toilets, car-parks, storage etc.): I have no comment since I do not own a car.

7. Do you consider the use of television rooms as a good means for education communication. If Yes/No, give reasons and suggest other forms of communications: Physically seeing the lecturer makes alot of difference. Item illustrated on board are never properly seen at T.V. rooms. Sometimes the T.V's do not function well.

8. What is an ideal student/teacher ratio in this kind of institution:
One teacher to 40 students.

9. Give your comments on the Cafeteria system or otherwise suggest a better system of dinning with reasons: Food sale is presently too costly.

10. What other forms of student relaxation can you suggest in this kind of academic environment:

11. Give other suggestions of facilities to be found/provided in an ideal Law School:
Hostels should be provided for all students that desire it or the school decentralized.

Thanks for co-operation

BABALAKIN GMOTAYO
M.Sc. II ARCHITECTURE
A. B. U. ZARIA.

APPENDIX Table 1 TABLE SHOWING HIERARCHY OF STAFF IN DIFFERENT DEPARTMENTS

	DEPARTMENTS						
	ADMINISTRATION	LECTURERS	LIBRARY	SECRETARIES/ TYPISTS	ACCOUNTS	CLINIC	CATERING
1.	Chairman	-	-	-	-	-	-
2.	Director	-	-	-	-	-	-
3.	Sec. to Council	Princ.Lecturer	-	-	-	Ch.Med.Officer	-
4.	Ch.Exec.Officer	Sen.Lecturer	Ch.Librarian	Pers.Sec.	Ch.Accountant	Princ.Med.Off.	Ch.Cat.Officer
5.	Princ.Exe.Off.	Lecturer Gd.I	Srn.Librarian	Confd.Sec.II	Accountant I	Med.Officer	Prin.Cat.Officer
6.	Snr.Exec.Officer	Lecturer Gd.II	Librarian	Confd.Sec.I	Accountant II	Snr.Nur.Sister	Snr.Cat. Officer
7.	Executive Officer	Res.Officer	Snr.Lib.Officer	Confd.Sec.III	Acct.Officer	Nursing Sister	Cat. Offier
8.	Asst.Exec.Officer	-	Lib. Officer I	-	Asst.Acct. Officer	Staff Nurses	Head Cook
9.	Snr. Clerical Officer	-	Lib.Officer II	-	Cashier	Lab. Techno-	Cook Grade I
10.	Clerical Officer	-	Library Asst.	-	-	Clinic Asst.	Cood Grade II
11.	Clerical Assistant	-	-	-	-	-	-
12.	Messengers/Cleaners	-	-	-	-	-	-

APPENDIX Table II TABLE SHOWING HIERARCHY OF STAFF IN DIFFERENT DEPARTMENTS AND OFFICE SPACE REQUIREMENTS

	DEPARTMENTS						
	ADMINISTRATION	MAINTENANCE	STORES	TRANSPORT	SECURITY	SPACE REQUIREMENTS	
1.	Chairman	-				(1)26.0m²	SENIOR STAFF
2.	Director					(1)23.0m²	
3.	Sec.to Council					(1)20.0m²	
4.	Ch.Exec.Officer					(1)17.0m²	
5.	Princ.Exec.Officer				Ch.SecurityOffic.	(1)14.5m²	
6.	Snr.Exec.Officer	Building Supr.	Ch.Store Officer	Transport Supv.	Security Officer	(2)17.0m²	
7.	Executive Officer	Asst.Bld.Supr.	Store Officer	Asst.Trans.Supv.	Asst.Security Off.	(3)20.0m²	INTERMEDIATE STAFF
8.	Asst.Exec.Officer	Technical Off.	Snr.Storekeeper	Snr.Mot.Dri./Mech.	Head Watchman	(4)23.0m²	
9.	Snr.Clerical Officer	Snr.Cratesman	Storekeeper	Mot.Dri./Mech.I	-	(5)26.0m²	
10.	Clerical Officer	Craftsman	Store Attendants	Motor/Dri./MechII	matchman	(6)29.0m²	JUNIOR STAFF
11.	Clerical Assistant		Store Assistants		Gateman	(7)32.0m²	
12.	Messengers/Cleaners	Gardners				2.0m² /person	

APPENDIX

Table III - FUNCTIONAL RELATIONSHIP -(GENERAL FACILITIES/ ACADEMIC CORE)

Description of Space	Location
GENERAL FAILITIES	
1. Auditorium	located around the public area but still maintaining the necessary privacy needed for lectures. ensure good accessibility to parking areas.
2. Lecture Theatre	same location criteria as auditorium but a more enhanced privacy is recommended.
3. Snack-Bar	near academic core facilities
4. Open Arena	located adjacent to auditorium, lecture theatre, snack-bar and academic core facilities
5. Clinic	location priority should be given to staff and their families especially the I & J staff.
6. Parking	Most public zone, ensure good accessibility from all functional spaces.
ACADEMIC CORE	
1. Classrooms	less public zone, should be easily accessible from student hostels and adequate connections to other facilities must be maintained.
2. Academic Staff	adjacent to classrooms and easily accessible from senior staff residential areas.
3. Court	focus of the academic core, ensure good connections to other parts of the core
4. Library	most private location and accessible mainly from the General and Academic core facilities

APPENDIX

Table IV FUNCTIONAL RELATIONSHIP (ADMINISTRATIVE)

Description of Spaces	Function	Location
1. Administrative Office	main core of the admin dealing with matters involving general admin.	public zone.
2. Admissions/student affairs	student matters and admission policies	ensure good linkeage with admin. office/council of legal education
3. Academic Office	academic matters relating to staff and students, printing of exam papers, results and organization of school calendar	located nearer the a cademic core, semi public zone.
4. Housing/Accommodation	housing of snr, int. and jnr. staff, accommodation of students	less public and good access from residential areas.
5. Accounts/Internal Audit	estimating/auditing of running and maintenance cost of the school	private zone
6. Policy and Management	responsible for the overall running and management of the school	private zone but maintaining good connections to other parts of admin.
7. Council of Legal Education	functions like the senate of a university making vital decisions	most private location
8. Stores	general storage of admin equipment, furniture e.t.c.	public zone with provision for loading and unloading.
9. Catering	maintaining/running of catering facilities-canteen,cafeteria, snack-bar	public zone
10. Maintenance	general maintenance, transport, and security services	most public zone, good automobile, access essential

Table V - Space Requirements Summary

Description of Facility	(e) No of rooms	Popu la- tion	m²/ place or seat	(f) Net area	(exf) total net area	(g) Services/ circulation % of net area	(exf)+g Gross area
GENERAL FACILITIES							
Auditorium	1	1400	0.85	1190	1190	40%=476	1666
Lecture Theatre	1	600	0.85	510	510	40%=204	714
Open Arena	1	1500	1.50	2250	2250	50%=1125	3375
Parking (cars)	1	540	23	12420	12420	-	12420
Parking(Moto-bikes/cycles	1	240	0.60	144	144	-	144
Clinic	1	-	-	405	405	40%=162	567
Snak Bar	1	240	1.60	384	384	40%=153.6	538
				TOTAL			19424m²
					1.94 Hectares		
ACADEMIC CORE							
Court	1	300	0.90	270	270	40%=106	376
Classrms with audio-visual	6	120	1.00	120	720	40%=288	1008
Classrm without audio-visual	6	120	1.00	120	720	30%=216	936
Library	1	1100	3.70	4070	4070	61%=2476	6546
Academic Staff	1	45	-	678.4	678.4	25%=171	848
		+25	axillary staff			TOTAL	9390 m²
					0.94 Hectares		
ADMINISTRATION							
Council of Legal Education	1		-	209	209	25%=52.0	261
Policy and Mana-gement	1		-	184	184	25%=46.0	230
Academic Office	1		-	165	165	25%=42	207
Accounts.Internal Audit	1		-	216	216	25%=54	270
Housing/Accommo-dation	1		-	133	133	25%=33	166
Administrative Office	1		-	528	528	25%=132	660
Admissions/ Student Affairs	1		-	97	97	25%=24.5	121
Stores	1		-	237.8	237.8	25%=59.45	297
Maintenance	1		-	252.5	252.5	40%=101.5	354
Transport	1		-	348	348	40%=139	487
Security	1		-	639	639	40%=256	895
Catering	1		-	195	195	30%=58.5	254
				TOTAL			4193 m²

= 0.42 Hectares

APPENDIX SHRUBS

Hibiscus rosa-sinonsis
Red hibiscus

Vigorous, much branching shrub, 2-4m in height and spread.
Leaves dark-green and large numbers of short lived trumpet flowers produced throughout the year.
Colours range through red, orange, yellow and magents, single or double
Tolerates full sun or partial shade, but it will not withstand salinity
Prefers moisture but will tolerate drought.
Can be pruned to keep low.
Good, decorative hedge.
Propagate by cuttings.



Hymenocalis littoralis
Spider Lily

A low plant with dark-green long leaves and pure white, delicate flowers, borne in clusters on stout stalk. Flowers ones a year, but bushy leaves make effective edging.
Prefers sun and moderate moisture.



Ixora coccines

Evergreen woody shrub, flowers scarlet, in crowded terminal clusters.
Of slow growth,
commonly cultivated in gardens as a decorative shrub.
Prefers sun, it will tolerate drought.
For visual effects across boundaries.



FIG-1.

APPENDIX SHRUBS

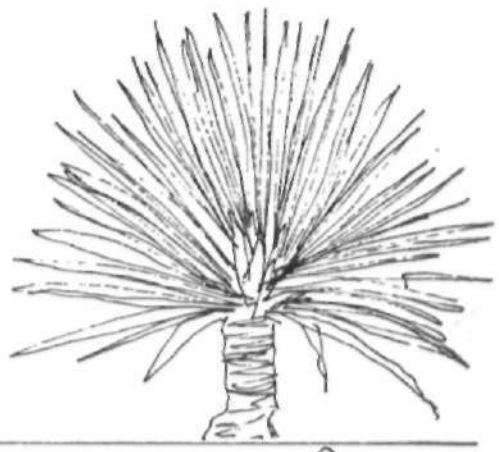
Acalypha marginate

Red and orimson colour large leaves
Different varieties.
Quick growing shurb, up to 1.50 m height. Axillary.
It will not tolerate drought.
Ornamental shrub, good for hedges.
Medium texture, Evergreen. Hedges/ Bamers for perimeter plantings



Agave sisalana - Sisal agave

A perennial stemless plant, with thick succulent leaves, up to 1.50m long, smooth, with a sharp optues on the edges. Leaves containing quantity of fibre.
As every succulent, drought resistent
It will tolerate any type of soil.
Succulents
For dramatic effects



Allmanda cathartica (a)
Cryptostegia grandiflora (b)
or. Purp e Allmanda
(a) Bell-shaped, bright yellow flowers and dark-green glossy leaves.
Straggling shrub, up to 2.0 m height.
(b) Bell-shaped purple flowers, and dark-green glossi leaves.
Climbing, quick-growing shrub.
Prefers sun.
Everygreen, Medium, For ornamentation.



Bira orleana-Annatco

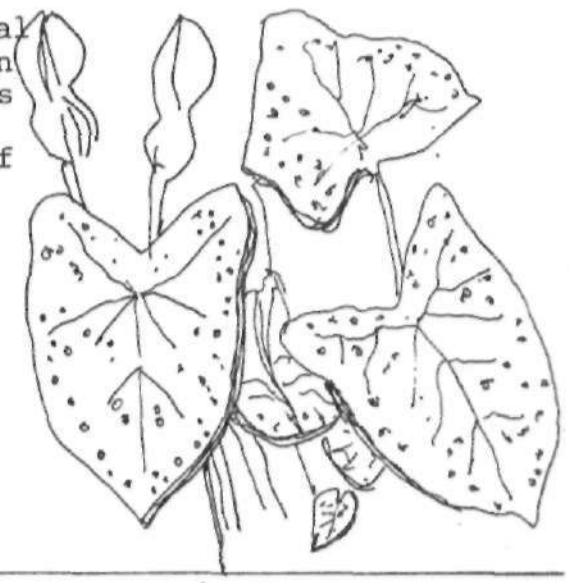
A large, quick-growing shrub or small tree.
Pinkish flower; and brown fruits, spiny, containing numerous red seeds.
(A red dye is obtained from the surface of the seeds.)
Leaves heart-shaped and shiny.
The plant is handsome, decorative, suitable for gardens and makes coarse hedges.
Widely spread in the tropics.
Deciduous, Medium (Hedges/Dainers.)



APPENDIX SHRUBS

Caladium Spec.

A low plant, with large, ornamental leaves, variegated white and green or green with pink and white spots effective for edging and designs. Require rich soil and abundance of moisture. Thrive best in moderate shade.
Leaves die down once a year. In dry season, and reappear in next wet season.



Cacepa spec. - castus
Raille cactaceae

Plants of this kind are generally suited to very dry sub-tropical regions.
The cactus family (cactaceae) are remarkable of their curious, leafless, often branchless, spiny and grotesoue forms.
They withstand a drought which few other plants will survive, and many have showy flowers.
The group includes numerous general and succulent forms.
Very dramatic and suitable for rock garden. Maintenance free.



Bantana camara

Fast growing evergreen straggly shrub usually grows to 2m high but becomes rosepant with excess irrigation.
Leaves medium green with rough texsture.
Dense flat-topped flower heads of small circular flowers, orange, pink, yellow red. Drought resistant although needs moisture when establishes.
Withstands full sun and any type of soil. Pest green as device hedge, clipped often.
Hedge/Screen.



FIG-3.

APPENDIX - TREES (LEAF BRANCHES)

Delonix Regia
Poinciana, Plant Tree

Widely grown
decorative tree.

A handsome tree,
branches forming a wide
crown, flowers bright
scarlet (marmay) abundant
Fast growing tree, thrives
well under fairly dry
conditions.
Medium decorative
brought Tolerant
Deciduous, Fine Texture
scarlet flowers.
Broad fine shade
Brilliant spread of
flame in drier regions
Shade tree



Khaya Senegalensis
Dry zone mahogony

Savannah and frirging forest

Shapely, durable tree,
crown wide spread, leaves
croweded on the end of
branches.
Shade tree

Khaya Ivorensis
African mahogony

Deciduous and evergreen
forest. Dominant true with
fairly open crown.



FIG-4.

APPENDIX - TREES (LEAF BRANCHES)

Albizzia SP.
(Katsari)

Wide distribution,
savannah regions.

Fast growing tree,
Crown spreading, flowers
(jan.-mar.) greenish-white,
fruits thin, papery, yellow
Large tree
Drought tolerant
Deciduous
Medium texture
N/S
Good shade tree/
Screening.
Prominent pods.



Azadirachia Indica
Neem tree

Drought resistant specis,
widely cultivated.

Crown dense, leaves glossy,
crowded on the end of branches,
Flowers white, scented, (decmay)
Very endurable tree.
Large tolerant
Deciduous, medium texture
Shade/Screening tree.



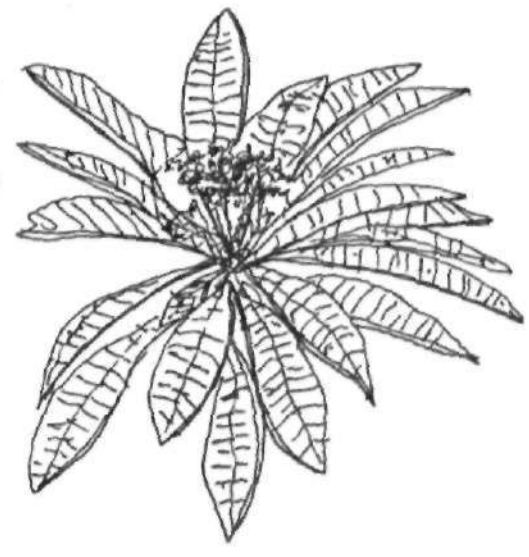
FIG-5.

APPENDIX TREES (LEAF BRANCHES)

Plumeria SP.
Frangipani

Widely grown in tropics

Alow, spreading tree.
Quite bare of leaves in the dry season when it bears large heads of flowers (highly fragrant), Colours white, yellow, pink, red.



Casaurina Equisetifodia
Whistling Pine



Wide distribution,
grown often on poor soils

A rapidly growing tree,
with slender branches and
tiny, nidle-like leaves.
Makes useful hedges and
stands clipping soil.
Large
Drought resistant, saline tolerant
Evergreen, fine texture
Useful wind break.
Rapid growth, can be clipped for barrier.

FIG.-6.