KWARA PARLIAMENT COMPLEX ILORIN (DESIGN PROPOSAL TOWARDS MAINTENANCE PROBLEMS ALLEVIATION IN NIGERIAN PUBLIC BUILDINGS)

M.SC. ARCH. THESIS

BY

MOYO UTHMAN T.O

KWARA PARLIAMENT COMPLEX ILORIN (DESIGN PROPOSAL TOWARDS MAINTENANCE PROBLEMS ALLEVIATION IN NIGERIAN PUBLIC BUILDINGS)

BEING A THESIS PRESENTED TO THE POST-GRADUATE SCHOOL OF AHMADU BELLO UNIVERSITY, ZARIA NIGERIA IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE THE AWARD OF MASTER OF SCIENCE DEGREE IN ARCHITECTURE

BY

MOYO UTHMAN T.O

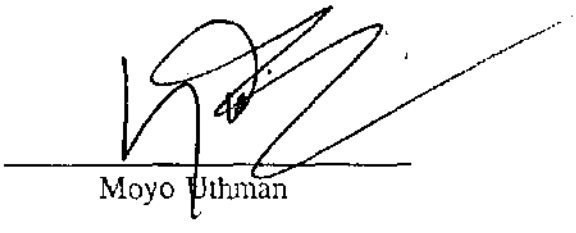
OF

DEPARTMENT OF ARCHITECTURE
FACULTY OF ENVIRONMENTAL DESIGN
AHMADU BELLO UNIVERSITY
ZARIA - NIGERIA.

SEPTEMBER 1999

DECLARATION

I, Moyo Uthman, of the Department of Architecture, Faculty of Environmental Design, Ahmadu Bello University, Zaria - Nigeria, do hereby declare that the work presented in this thesis work is a personal academic work, undertaken under the kind joint-supervision of Dr.(Arc.) O.O. Ogunsote and Arc. A.K. Yebaoh both of the Department of Architecture, Faculty of Environmental Design, Ahmadu Bello University, Zaria - Nigeria. The work has not been accepted either partially or wholly in any previous application for a higher degree and that all the utilized quotations, information and their sources have been duly acknowledged by way of references.



Moyo Uthman

12/11/99

Date

CERTIFICATION

This thesis report, entitled Kwara Parliament Complex, Ilorin: Towards Alleviation of Maintenance Problems in Nigerian Public Buildings, by MOYO UTHMAN, T.O. meets the regulations governing the award of the degree of Master of Science in Architecture of Ahmadu Bello University, Zaria - Nigeria and is approved for its contribution to knowledge and literacy presentation.

Chairman, Supervisory Committee — Date: 08/01/01

Member, Supervisory committee — Date: 8-10-2000

Member, Supervisory committee — Date

Head of Department (Arch) — Date: 8/2/2000

Dean, Post-Graduate School — Date: 05/10/01

DEDICATION

This work is specially dedicated to Allah, the creator of the universe and its contents. To all lovers of true DEMOCRACY and lovers of a peaceful and prosperous Nigeria. Also to my parents, wife and children most especially Junior Moyo Uthman and Mutmaina.

ABSTRACT

A group of people that live together in one defined geographical area, feel belonging and often share a common language as well as and a history of triumph and disasters, is called a nation. Such group of people are organised to maintain laws and orders, provide defence against attack by other nations and preserve the territorial integrity of the nation. The organ through which the laws and demands of a nation are prepared, promulgated, put into effect and interpreted is known as the government. There are three arms in the democratic system of government. These are the Executive, that sees to the smooth running of governance, the legislature, which formulates the laws and orders of the nation and the Judiciary which adjucates on the laws and orders so formulated.

Architecture portrays a delight of paramount gravity in its bid to articulate shapes and forms to serve the heeds of humanity. However, as spontaneous as its products may be in catching the attention of its observers, the response to appreciate or reject a building depends primarily on the physical state of its product - the built environment. Undoubtedly, the consequential repulsive feeling of people towards a building structure of paramount importance, is better imagined; so also is the psychological effects on the integrity and prosperity of the people.

This is due largely to poor maintenance. The major causative factors of maintenance problems in public buildings, range from tiny design details, services, poor construction materials to poor workmanship. However, evidence has shown that it is at the design stage that the burden of maintenance problems could be made for better of for worse. Since a great percentage rectification and replacement of deteriorating elements with respect to services areas of buildings, i.e toilets, stairs and etc. continued to constitute maintenance burden, the idea therein is to bring out a synthesised design that would invariably address

such areas, among others, towards reducing the maintenance problems.

This thesis intends to propose a modern parliament complex that would provide a very conducive atmosphere for the proper functioning of the parliament as well as stand the tests and rigours of time.

——M.T. UTHMAN

TABLE OF CONTENT

Page

Title page i

Declaration iii

Certification iv

Dedication v

Acknowledgement vi

Abstract vii

Table of Contents ix

List of Tables xvii

List of Figures xviii

List of Plates xx

CHAPTER ONE INTRODUCTION

1. INTRODUCTION 1

1.1 Historical Preambles 1

1.2 Statement of Problem 1

1.3 Motivation 2

1.4 Statement of Intention 2

1.4.1 Aims 3

1.4.2 Objectives 3

1.5 Scope and Constraints 4

1.6 Research Methodology 5

1.6.1 Field Research 5

1.6.2 Environmental Data 5

1.7 Architectural Significance 6

1.8 Users of the Complex 6

1.9 The Client and Site 6

CHAPTER TWO LITERATURE REVIEW

2.0 Literature Review 7

2.1 House of Assembly Development and Demoracy 7

2.2 Administrative Set-Up of Northern Nigeria in Pre-colonial Era 10

2.3 Constitutional Transition in Nigeria 13

2.3.1 The Amalgamation of the Protactorate and Colony 13

2.4 Kwara State in the Fourth Republic 15

CHAPTER THREE DESIGN CRITARIA

3.0 Design Critaria of a Parliament Complex 18

3.1 Basic Considerations 18

3.2 The Legislative Chamber 19

3.3 Services 20

3.3.1 Address System 20

3.3.2 Microphones 20

3.3.3 Control Unit 21

3.3.4 Loud speakers 22

3.3.5 Recording Facilities 22

3.3.6 Alarm system 22

3.4 Galleries 23

3.4.1 The press Gallery 23

3.4.2 The V.I.P Gallery 23

3.5 Committee Rooms 23

3.6 Clerk of the House Department 24

3.7 Arminity Rooms 24

3.8 Parliamentarians Secretariat 24

3.9 The Library 25

CHAPTER FOUR . CASE STUDY

4.0 Introduction 26

4.1 Case study One - Lagos City Hall 27

4.1.1 Location 27

4.1.2 Phylosophy of Design 27

4.1.3 Structure 27

4.1.4 Finishes 31

4.1.5 Management 31

4.1.6 Merits 33

4.1.7 Demerits 33

4.2 Case study two: Ogun state House of Assembly, Abeokuta . . . . . .

4.2.1 Introduction 34

4.2.2 Facilities 34

4.2.3 Appraisal 35

4.2.4 Observations 39

4.2.5 Conclusions 39

4.3 Case study three: The New Southwales Parliament House, Australia

4.3.1 Introduction 41

4.3.2 Facilities 41

4.3.3 Appraisal 42

4.3.4 Observations 45

4.3.5 Conclusion 48

CHAPTER FIVE STUDY AREA

5.0 Maintenance Related Problems in Nigerian Public Buildings 49

5.1 Introduction 49

5.2 Factors Affecting the Maintenance of Nigerian Public Buildings 50

5.2.1 Environmental Factors Affecting Maintenance Works in Buildings 50

5.2.2 Use/Occupancy Factors Affecting Maintenance Work in Buildings 51

5.2.3 Design Needs Affecting Maintenance works in Bildings 51

5.2.4 Workmanship Problems Affecting Maintenance Works in Builsings 53

5.2.5 Other Factors Affecting Maintenance Works in Builsings 57

5.3 Types of Maintenance Works in Public Buildings 57

5.3.1 Maintenance Works in Servicing 58

5.3.2 Maintenance Works in Rectification 58

5.3.3 Maintenance Works in Replacement 58

CHAPTER SIX OBJECTIVE

6.0 Maintenance Problems Alleviation in Nigerian Public Buildings 60

6.1 Introduction 60

6.2 Building Site and Maintenance 60

6.2.1 Soil types 61

6.3 Foundation and Maintenance 61

6.4 Walls and Maintenance 64

6.4.1 External Walls 68

6.4.2 Internal walls 68

6.5 Floors and Maintenance 68

6.5.1 Ground Floors 70

6.5.2 Upper Floors 72

6.6 Roof and Maintenance 72

6.7 Doors and Windows in Maintenance 74

6.7.1 Doors in Maintenance 76

6.7.2 Windows in Maintenance 76

6.8 Water flow and Maintenance 76

6.9 Finishes and Maintenance 78

6.10 Fire and its consequent Effects 82

CHAPTER SEVEN THESIS SITE

7.0 Environmental, Physiography and Demography 86

7.1 Historical Profile of Ilorin 86

7.1.1 Regional Location 86

7.1.2 Population of Ilorin 88

7.1.3 Demography of Ilorin 88

7.2 Climatic Characteristics 90

7.2.1 Rainfall 90

7.2.1A Design Inference 92

7.2.2 Wind 92

7.2.2A Design Inference 92

7.2.3 Temperature 93

7.2.3A Design Inference 93

7.2.4 Relative Humidity 94

7.2.5 Solar Rediation and its Effects 94

7.2.5A Design Inference 96

7.3 Physical Data Analysis 96

7.3.1 Geology and soil 96

7.3.2 Drainage System 98

7.3.3 Vegetation 98

7.4 The Site (Micro-data Analysis) 98

7.4.1 Approach and Access 100

7.4.2 Services Available 100

7.4.3 Soil and Geology 100

7.4.4 Topography 100

7.4.5 Wind 100

7.4.6 Precipitation 102

7.4.7 Temperature 102

7.5 Historical Background 104

7.6 Dwelling/Housing Pattern 103

7.7 Occupation and Economy 104

CHAPTER EIGHT DESIGN BRIEF

8.0 Design Brief Development and Schedule of Accommodation 106

8.1 Brief Development 106

8.2 Functional Analysis 106

8.3 Spatial Analysis 106

8.3.1 Activity Analysis 107

8.3.2 Objective Rationalization of Standards 107

8.4 Functional spaces 107

8.4.1 The Legislative Chamber 107

8.4.2 The Information Department 108

8.4.3 The Administrative Department 109

8.4.4 The Welfare Department 111

8.4.5 The Entrance 112

8.4.6 The Parliamentarians 113

8.4.7 Auxillary Facilities 113

8.5 Schedule of Accommodation 114

CHAPTER NINE THE DESIGN AND REPORT

9.0 Site Consideration 117

9.1 Design Concept 117

9.2 Hierarchy of Spaces 118

9.3 Circulation 119

9.4 Design and Design Report 119

9.4.1 Building Design 119

9.4.2 Services on site 120

9.4.3 Sewarage Disposal 120

9.4.4 Water Supply 120

9.4.5 Electricity Supply 120

9.4.6 Storm Water Drain 120

9.4.7 Spatial Form 121

9.4.8 Planning 121

9.5 Elevational Composition 123

9.6 Security 123

9.7 Lighting and Ventilation 123

9.8 Problems Encountered 124

9.9 Building Structure 124

9.10 Building Materials 124

9.11 Building Fire Protection 126

9.11.1 Causes of Fire Outbreak 126

9.11.2 Control of Fire Outbreak Escape 126

9.12 Construction Methodology 127

CHAPTER TEN SUMMARY AND CONCLUSION

10.0 Summary and Conclusion 128

10.1 Summary 128

10.2 Project Financier 129

10.3 Conclusion 129

BIBLIOGRAPHY 130

LIST OF TABLES

Tables	Title	Page
5.1	Characteristic/Properties of various floor finishes	54-56
6.1	Soil types and their bearing capacity	61
6.2	Soil and site conditions along side favourable foundation for each	64-66
6.3	Design Deficiencies that can contribute to fire spread from one building to another	79-80
6.4	Class of building and equivalent fire-resistance period in hours	82
6.5	Construction methods relative to five resistance period	83
6.6	Fire resistance construction method	83

LIST OF FIGURES

Figure	Title	Page
4.1	Site location, Lagos City Hall	28
4.2	Site plan, Lagos city hall	28
4.3	Ground floor plan, Lagos city hall	29
4.4	Third floor plan, Lagos city Hall	30
4.5	Site plan, Ogun State House of Assembly, Abeokuta - Nigeria	36
4.6	Ground floor plan, Ogun State House of Assembly, Abeokuta - Nigeria	37
4.7	First floor plan, ogun state House of Assembly, Abeokuta - Nigeria	38
4.8	Site Plan the New Southwales Parliament House, Australia	43
4.9	Section through floors, the New Southwales parliament House, Australia	43
4.10	Seventh floor plan, the New Southwales Parliament House, Australia	46
4.11	Eigth floor plan, the New Southwales parliament House, Australia	46
6.1	Detailed section through Foundation wall	62
6.2	Expansion Joints in walls	68
6.3	Floor construction Illustration	70
6.4	Details of suspended ceiling	72
6.5	Details of Lintels and window cills	74
6.6	Details of windows	76
6.7	Vertical and Horizontal separation of openings	78
7.1	Map of Nigeria showing states and Map of Kwara State showing Local Government Areas	85
7.2	Map of Ilorin town	87
7.3	Nigeria, Total annual Rainfall and Ilorin, Mean monthly rainfall	87

7.4 ILORIN: Minimum and Maximum Temperature 92

7.5 ILORIN: Minimum and Maximum Relative Humidity and Comfort Zone diagram 94

7.6 Map of Geology formation of Nigeria 96

7.7 Map of Relief and Drainage formation of Nigeria 96

7.8 Map of Vegetation zones in Nigeria 98

LIST OF PLATES

Title		Page
I	Front view, Lagos city Hall, Lagos - Nigeria	32
II	Perspective view, Lagos City Hall, Lagos - Nigeria	32
III	Perspective view, Ogun State House of Assembly, Abeokuta - Nigeria	40
IV	Office Interior, the New Southwales parliament House, Australia	44
V	View from Domain, the New Sathwales parliament House, Australia	47

CHAPTER ONE

1.0 INTRODUCTION

1.1 HISTORICAL PROBLEM

Before independence in 1960, Nigeria as a nation was made up of three regions. Each region attained self governance at various times and had a very strong government with a relatively weak government at the federal level. After independence, a fourth region was created from one of the then existing three regions during the first republic.

There have been military interventions in the governance of Nigeria. The military has severally sub-divided the estwhile four regions to states and currently, Nigeria is made up of thirty-six states.

Nigeria has, at various times, attempted both the British Parliamentary and the American Presidential systems of governments, with intermittent military Unitary system.

The Democratic Presidential system of government has three arms, namely the Executive, the legislature, and the Judiciary. The Legislative arm formulates the laws and regulations for smooth governance; it is therefore of paramount importance as the importance of participation by the people, through their representatives, in the government of the state cannot be over emphasized. The functions which each arm of government performs usually determine the type of structure to be provided to accommodate the arm.

1.2 STATEMENT OF PROBLEM

The effective performance of any parliamentarian in the parliament has a bearing on the availability of tools, comfort and a conducive environment.

In 1980, the Kwara State Government quickly put up some facilities in an attempt to meet the needs of parliamentary meetings of the then dispensation. This, however, does not

meet the requirements of a modern parliament and would not be able to withstand the tests and rigours of time.

1.3 MOTIVATION

"We alone regard a man who takes no interest in public affairs, not as a harmless, but as a useless character, and if few of us are originators, we are all sound judges of policy". ---PERICIES OF ATHENS. 430BC.

There is the danger of confusing politics solely with party politics, that it is somehow concerned with having a political opinion, or that it, at least implies a distance with the intrigues of and tricks of party politicians seeking political power. On the contrary, political activities involve disagreements and the reconciliation of those disagreements. Every human being is a Political Animal.

The importance of politics and the complexities of the legislative business has brought the need to change and build a new, modern parliament complex that would stand the tests and rigour of time for Kwara State; since the present building is spatially inadequate, functionally inefficient and above all, its chamber wholly depends on mechanical means of ventilation (fenestration).

1.4 STATEMENT OF INTENTION

In a proposal of this nature, it must be shown to have identified very closely with the goals and aspirations of the parliamentarians and the public; as this is the only way that there could be a sound basis for the proposal.

1.4.1 Aims

(i) To identify all problematic areas in public buildings.

(ii) To ascertain probable causes of such problems.

(iii) To identify proper functional requirements of the parliamentarians.

(iv) To search for a landmark for the state.

1.4.2 Objective

(i) To profer or propose possible solutions to the causes of problems associated with maintenance in public buildings; particularly at the design stage.

(ii) To design a state parliament Complex that is architecturally symbolized, that is able to stand the tests and rigours of time as well as being able to alleviate maintenance problems.

(iii) To provide common facilities for the use of the parliamentarians in order to foster unity and progress among them as the peoples' representatives.

(iv) To provide a complex that would be able to resolve many conflicting demands such as the prevention of disorder, the provision of adequate publicity of the proceedings of the parliament, the provision of adequate privacy and safety of the parliamentarians, the provision of facilities to ensure economy and efficiency of its administration. By all these, the parliamentarians would have greater opportunities to interact with each other in a very conducive atmosphere and without rancuve, which would inturn promote greater unity among the people of the state.

(v) To provide literacy facilities within the complex which would increase the awareness of the parliamentarians, particularly on specialized fields; thus

enabling them to contribute more constructively to the state and national development policies.

(vi) To provide a complex that would signify the importance and the paramounce of the legislative arm of the presidential system of government.

1.5 SCOPE AND CONSTRAINTS

the scope of research in this work would go beyond the existing Houses of Assembly to other public buildings that have similar provisions of multiple usage; particularly as it affects maintenance and its attendant problems.

The major research constraint in this work is the fact that existing Houses of Assembly are classified as public but security areas where there are alot of restrictions in carrying out meaningful research work on them. Such restrictions include taking of the physical measurements of the functional spaces, taking the photograph of the structure and its environmental, and e.t.c.

The design of a parliament complex presupposes the legislative chamber as the main focus. Much as it is the desire of the author to provide the design of a total and well integrated parliament Complex for Kwara State, it may not be possible to design all the functional spaces which make up the complex because of time constraints. As such the design is intended to be limited to those requirements that would make the functions of the parliamentarians easy to carry out as well as bring the much desired unity and progress to Kwara State.

In this regard, the proposal shall, in addition to the legislative chamber, committee rooms and public gallery, include such departments as:-

(i) Administration Department

(ii) Welfare Department

(iii) Information Department

(iv) Auxiliary facilities.

1.6 RESEARCH METHODOLOGY

Research works into Architectural problems can be carried out using mostly either the field research or the library research. In this context, both methods are to be employed and would be carried out under the following leading:-

(a) Data Collection

(b) Field Research

(c) Library Research

(d) In-depth interview

(e) Sample survey

(f) Environmental data

These headings are however interwoven as shown below.

1.6.1 Field Research: This is based on purposeful sample surveys and focus/intensive/indept interview; which will provide genuine case study, personal, observations and environmental data.

Case study is to take into consideration various public buildings as they relate to the proposed complex.

1.6.2 Environmental Data: Assessment would enhance the analysis of the prevailing environmental conditions both at the micro and the macro levels of the site for the structures

around the site.

1.7 ARCHITECTURAL SIGNIFICANCE

The research topic is towards maintenance problems Alleviation in Nigeria Public Buildings and it is intended to contribute to the knowledge of Architecture by making Architects to be aware of possible maintenance problems at the design stage; thereby achieving aesthetically pleasing, economical and functional designs.

It is envisaged that the research study shall propose an Architectural design that would not only portray the various activities of the parliamentarians, but also find lasting solutions to the various problems associated with maintenance of public buildings as well as inculcate the much desired MAINTENANCE CULTURE into Nigerians, so that the Nigerian Public Buildings shall hence forth be pleasing to the eyes of the observers at all times as well as be able to stand the tests and rigours of time.

1.8 USERS OF THE COMPLEX

The facilities in the proposed Kwara parliament complex shall be used by the following:

(a) The parliamentarians

(b) The parliamentary Administrators

(c) Members of the Mass-media

(d) Members of the public

(e) Invited members of the executive arm of Government.

1.9 THE CLIENT AND SITE

The Client of the project is the Kwara State Government; while the project is to be located in Ilorin, the Kwara State Capital.

CHAPTER TWO

LITERATURE REVIEW

2.1 HOUSE OF ASSEMBLY DEVELOPMENT AND DEMOCRACY

The word state refers to a geographically delimit area which has an organized political system with its apparatus of government. A state has her own law-making body and financial burdget. The states are controlled by the Federal Government, the autonomy of each state will depend on each country where it is operated. The autonomy of the states in the United States of America is more than that of the states of Nigeria in terms of finance and area of jurisdiction.

The history of state originated in the ancient world, and the most important of them was Greeks in the old Greece Empire. The most important proof was the political theories and the practice of the Greeks. By the fifth century B.C. the Greece had started living in a number of city-states, among the most famous of these area Athens and Sparta. The word city-state is an english translation of the Greek word polis. City-state such as that of Athens consists of Athens and the country area which can be found in her immediate surroundings.

The Greek politics may be said to have three outstanding importance and these can be found in Athens which is one of the city-states is Greeks. Firstly, there was a highly organised system of government. The Athenian political system became a democratical one.

Secondly, the Athens city-state government was governed in accordance with a known constitution and known laws which were made by the people. The rulers who carried out the act of governing were subject to the rules of law and established code.

Thirdly, there were significant contributions by the Greeks to the discussion of

fundamental political problems and the development of political theories. An example of the contribution to the theory was that of Plato and Aristotle, the great Greek thinker. Plato described the organisation of government of what seemed to him as an ideal community as those who were competent to rule should be carefully selected and trained for the supreme task ahead of them.

In the sixth century A.D. when the Empire in the Western Europe had collapsed, Emperor Justinian ordered his lawyers together to write down the civil laws, the laws written down were to be used for order and justice whereby the people settle their differences and were judged in accordance with the established laws.

The idea of making laws started and grew in the ancient world to the extent that there arose natural laws. That is the laws which dictated by nature. These natural laws make a reasonable man to know what is wrong from what is right, and what is naturally right can not be made wrong while what is naturally wrong can not be made right.

In Nigeria, before the advent of the Europeans, there existed some ruling methods in each locality. For example, in the western part, the 'Obas' with the assistance of Council of Chiefs and that of Elders ruled his domain. In the northern part, the 'Emirs' had some personal appointees who assisted them in the act of ruling and sent their decision through the district head to the village rulers who carried out their order. But there was a disparity in the eastern part, where each small family unit and clan had their own separate rulers.

At the advent of the Europeans, the native authority provinces and regions were created for easy administrative purpose. This system was on for many years without the people's representatives in the governance of their own country.

The constitutional transition started in 1922 without any representation of the Nigeria citizen in the body which ran the affairs of the country. As time went on, a handful of the citizens were selected to represent the interest of the whole country, this continued until 1954

when the first election took place. Finally, the citizens of the country started to administer their affairs, since 1963 when she had her republic after the 1960 independence from Britain. Each of the regions elect its law makers and the premier, was the head of the government in the region while the prime minister was the head of the Federal cabinet. This continued until 1966 January, when the Military took over power.

By 1967, General Gowon's administration created the twelve states which had increased to Thirty-six under different administrations. During the first, second and third republics, each state had its own governor, judiciary and legislature which make her own laws. Houses of Assembly were built in each of the old states to cater for the legislatures. so there is the need to build parliament complex in Kwara State.

In conclusion, the development of states and the Houses of Assembly originated from the ancient world of Greek and spread gradually to other parts of the world like the United States of America and Nigeria.

Democracy:

The word Democracy came from the Greeks word Demos, meaning 'people' and Kratos, meaning 'rule'.

Different definitions and connotations have been given to the word democracy by different people, among them are:-

The Oxford Advanced Learner's Dictionary of Current English (PP. 96) that gives the meaning as "A form of government in which the supreme power is vested in the people".

Abraham Lincoln, an American, defined democracy as the "government of the people by the people and for the people".

The meaning of this word had been a source of confusion in the society. This word

could not take its rightful position in England not until several civil wars of the Seventeenth century. Also the revolution which took place in the French land has two types of democracies as its aftermath effect. They are democracies of the physocrats, upon which the modern democracy is based, it is the democracy which is political and not economy while the second one is the democracy which is both political and economy. A more striking definition was pioneered by Jean Reousseau, he defined it as "the rule of general will". The totalitarian system of government upon which the former Soviet Union based her government originated from the Jean Rousseau's definition. It was the opinion of the generality, that the civil war fought in Nigeria will herald the era of democracy but Nigeria is yet to be a democratic state.

A state could be said to be democratic when her faith and affairs are determined by her citizens, this is where each person has equal right and share the same privileges, duties and responsibilities in the society. And also where radio, television and print press are free of government censorship. However, it is noted that democracy is still the wish of the governed in many countries.

2.2 ADMINISTRATIVE SET UP OF NORTHERN NIGERIA IN PRE-COLONIAL ERA

This section intends to examine the ways and manner by which the Northern Region was administered before the advent of the Europeans and also to trace the tradition by which the people have been governing themselves from ages to the present day thirty-six states.

The administration of the Northern part of the country was carried out by the rulers of each locality and controlled at the centre of each emirate such as Kano, Adamawa, Ilorin and many others. This was before the advent of the Arabs who came to spread the trans-

sahara trade in Nigeria and other West African Countries. They came along with Islamic religion which was spread mostly in the northern prt of what became known as Nigeria. The Fulanis, under Usman Dan Fodio's Islamic Jihad, which conquered and took over the already existing centre of control, (the emirate), established a Feudalistic type of government in which a council of personal appointees assisted the Emire who was the absolute head. Under the Emir's directive are the districts heads who passed instructions from the Emir to the villages heads. The villages heads ruled through the council of elders.

In the Yoruba part of the Northern Region, the 'Obas' were the supreme heads. They were assisted in the act of governing by the Council of Chiefs and elders. There was a centralised, organised emirate type of government in the Northern Region. The political and the administrative structure of this area formed the basis of the Native Authority System of government that was first introduced in the north and later in the southern provinces by 1900.

The Native Authorities were grouped together to form the provinces for administrative conveniences. Laws were made to legalise and modernise the native authority, a system which evolved through the centuries into the present day Local Government Authorities. The unit of the administrative set up is the native authority of which there were about seventy of them in the Northern Region. A few of such Native Authorities are: Bida, Ilorin, Kano, Yagba West, Kabba, Igbira, Igala.

Powers of the Native Authorities were received from the Native Authority laws (No. 4 of 1954). These laws made no distinction between a large native authority like Kano with population of over four million and that of United Hill with a population of about twenty thousand then. The Northern Nigeria is covered by native authorities except Kaduna Capital territory and two township within the development areas - Bussa (Niger Dam) and Bacita (Sugar factory).

RECEIVED
473331
ALA

The Native Authority laws were made in two ways:-

(i) By the Chief-in-Council

(ii) By the Chief and Council

In a native authority appointed as chief in council, the chief has power under certain circumstances to make a decision without previous consultation with his council but he must consult with at least two of the council members after he has taken the decision. He can also make contrary decisions to the advise of his council but in the latter case, he must make an immediate report submission to the governor.

In a native authority appointed as chief-and-council, the chief has no power whatsoever to make a decision contrary to that of his council. Also he can not take any contrary action to the majority of the council. In both cases, the chief presides over the business meeting of the council.

The composition of the native council are as follows:-

(i) Ex-officio members

(ii) Personal members

(iii) Nominated members

(iv) Elected members.

The work of the native authority was carried out either by portfolio councillor or by committee. So, they have council chamber where bills are passed to bye laws and other problems affecting the council and native authority are discussed and decision taken.

The District Officer (D.O) co-ordinate the activities of the districts which made up the native authority and second their report to the provincial administrator who co-ordinates the activities of the province and reports to the governor of the region.

At the provincial level, representative of each ministry acted as an adviser to the

native authority. The provincial administrative officers, that is the provincial secretaries and Divisional Officers had the specific duties of ensuring that the native authorities carry out their duties and government policies.

2.3 CONSTITUTIONAL TRANSITION IN NIGERIA

Nigeria was the biggest African country which the colonial master depended upon before she attained independence and republic in 1960 and 1963, respectively, from Britain.

The country has a recent history but the history of her people is very old. The existence of Nigeria as a country came to being in 1900 when Britain declared Lagos as a colony and the area around rivers Niger and Benue as a protectorate. The British established its influence and claim over Nigeria at various stages during the nineteenth century. The Royal Niger Company was formed to administer the area, but by the year 1900, the crown took over the administration of the area.

2.3.1 The Amalgamation of the Protectorate and Colony

The country was administered as two separate parts, until 1914. They were:

(i) The Protectorate of Northern Nigeria, and

(ii) The Colony and Protectorate of Southern Nigeria.

In 1914, the two protectorates were amalgamated as the colony and protectorate of Nigeria. Between 1920 and 1999, Nigeria has nine constitutions.

They are as follows:-

(i) The 1922 Clifford Constitution

(ii) The 1946 Rechards Constitution

(iii) The 1951 Macpherson Constitution

(iv) The 1954 Lyttelton Constitution

(v) The 1960 Independence Constitution

(vi) The 1963 Republican Constitution

(vii) The 1979 Republican Constitution

(viii) The 1992 Republican Constitution

(ix) The 1994 Republican Constitution

Between 1922 and 1958, the legislative body grew from thirty Europeans to a body of three hundred and twenty elected Nigerians with real legislative power. The Council of Ministers was evolved in 1957 while the Federation of Nigeria was formally established in 1940.

The parliamentary system of government was practiced during the First Republic with the Prime Minister as the head of government while there was a Ceremonial President. The Houses of Representatives and Senate were maintained at Federal level while in the Regions, Houses of Assembly and House of Chiefs were operated in the Northern Region. Initially, only the regional Houses of Assembly were operated in the Eastern and Western Regions, the Houses of Chiefs were later operated in addition to the Houses of Assembly. Later the mid-west Region was created out of the then Western Region.

The presidential system of government was practiced during the second Republic with an executive President as head of the government. Both the Senate and Representative Houses were maintained at the Federal level. Between first and the second republics, the four regions have been split into nineteen states, Only Houses of Assembly were retained in those states, and by the aborted third republic, it became thirty states.

The proposed fourth republic is to be run under the presidential system of government, the Houses of Senate and Representative will be maintained at the Federal level

and the states will maintain only the Houses of Assembly, though there are thirty-six states now.

There were military intermittent interventions between the first, second, third and the fourth republics, thereby punctuating the continuous flow in the political arena of the country. It was during the military interventions that the country was split into thirty-six states from the former four regions. The states created brought about a lot of developments both physically and politically, the physical developments are in form of building structures such as the different Houses of Assembly of the different states.

As the constitutional transition was going on at the Federal level, the Regional governments were not left out. In the Northern Region which is the area of concern, the House of Chiefs and the regional House of Assembly were developing. The political development which started at the region are still developing at the different states.

2.4 KWARA STATE IN THE FOURTH REPUBLIC

Kwara State is created from the Ilorin province. It is necessary to have knowledge of the structure of the state government as specified in the constitution of the Federal Republic of Nigeria.

The Arms of the Government

The government of Kwara State shall have three arms as follows:

(i) The Executive

(ii) The Judiciary

(iii) The Legislature

The Executive

Section 174, sub-section 5-(2) of the constitution of Federal Republic of Nigeria

promulgated by decree number 12 of 1989 states as follows.

The executive power of a state shall be vested in the Governor of that state and may, subject as aforesaid and to the provisions of any law made by a House of Assembly, be exercised by him directly or through the Deputy Governor or Commissioners of the Government of that state or other officers in the public service of the state; and shall extend to the execution and maintenance of this constitution.

The executive powers of a Local government shall be vested in the Chairman of that Local Government, the power is to be exercised directly by him while the Vice-Chairman, supervisory Councillors or other officers in the service of the Local Government exercise the power indirectly.

The Judiciary:

The power to adjudicate shall be vested upon the following:-

(i) The High Court of the State

(ii) The Sharia Court of Appeal of a state

(iii) The Customary Court of Assembly of state.

Legislative:

Section 174, sub-section 4-(6) of the Constitution of Federal Republic of Nigeria vested the absolute legislative power of a state of the Federation in the House of Assembly of the state and its powers shall be defined by the constitution.

Since this thesis is concerned with the design of a parliament complex, the author will examine closely the set-up of the state parliament with a view to providing information leading to the creation of a brief for the design.

The Parliament:

The constitution states that the parliament shall be made up of two representatives

from each Local Government Area. this brings the total number of the parliamentarian to thirty-four in Kwara State which has Seventeen Local Government Areas. There shall be a Speaker and Deputy Speaker of the House as well as the Majority and Minority leaders who shall be elected by members of the House from among themselves.

There exists a department of the Clerk of the House. This department shall be responsible for all the administrative functions and the daily running of the House. The department shall be headed by the Clerk of the House who shall have Sergeant-At-Arm and the internal Auditor under his direct control.

The business of the House shall be conducted in a hall and English Language shall be adopted as there are ethnic dialets in the state. The Governor shall annually address the House and he (the governor) can attend any session of the House to deliver an address on any matter that concerns the welfare of the state, or he can make statements on the policies of his government that he considers to be important.

There are some other facilities such as library, printing department and maintenance which will promote efficient performance of the parliamentarians.

CHAPTER THREE

3.0 DESIGN CRITERIA OF A PARLIAMENT COMPLEX

3.1 BASIC CONSIDERATIONS

The guiding principle in the design of a parliament complex lies in the provision of a solution that would resolve very many conflicting demands such as:

(i) The prevention of disorder

(ii) The provision of adequate publicity for proceedings.

(iii) The provision of adequate privacy for the parliamentarians.

(iv) The provision of adequate security for lives and properties.

(v) The economy and efficiency in the administration of the complex.

Circulation is another consideration in the design and planning of a parliament complex. The separation of the different levels of movement is critical to the public convenience and the smooth running of the parliament. Intersection of routes in unwanted areas creates the much dreaded traffic problems and also reduces the control over the most deserved security in the parliament.

It is also very essential to exclude visitors from the area designated as the precinct, set apart for the parliamentarians, while they are to be allowed access to those galleries, committee rooms and etc. into which they are normally admitted. There should be limitations of doors, corridors, staircases, and etc which provide communication between the areas used by visitors and those used by the parliamentarians. There should also be security control on each of such communication providers.

Visitors to the complex could be admitted easily into the following functional areas:-

(i) The public gallery in the chamber

(ii) The committee rooms into which the public is normally admitted.

(iii) The House messenger service for contacting members. Generally, the use of "the Radio Multone system, as used by Doctors in hospitals is worthy of study with a view to its application in calling parliamentarians from any part of the complex.

(iv) Interview rooms for confiring with members.

(v) The refreshment rooms into which they are normally admitted as guests of parliamentarians.

However, certain visitors, in addition to the staff are required, in the course of their duties, to access some parts of the precincts from which ordinary visitors are restricted. Guests of parliamentarians as well as the general public are excluded. These previledged visitors include the following:

(a) Accredited media reporters

(b) Parliamentarians private secretaries

(c) Other private staff of the parliamentarians such as Drivers.

In this regard, the areas into which these privileged visitors are allowed should be clearly defined and strictly controlled to avoid inconveniences to the Parliamentarians.

3.2 THE LEGISLATIVE CHAMBERS

The legislative chamber should be designed to reflect both parliamentary democracy and unity. It should also have the following features for an efficient parliamentary procedure.

(i) There should be continuous seat (chairs) and desks. These would be used by the parliamentarians members to hold books and papers. The seats and desks

are to be raked in order to obtain a clear view. These seats and desks are to be permanently fixed on the floor and continous.

(ii) The seat of the speaker of the house should occupy a prominent position (in the front of the throne), it should have a writing table while access to the seat should be on either side of the table. The seat shall be on a podium of about 800mn height this would ensure good view both ways.

(iii) The table of the clerk of the house should be large enough to accommodate three seats and, in addition, there should be a long table farming a 'T' with the clerk's table, this would house the Mace and papers of the legislature. It should be designed and constructed to be able to carry the Mace on top of it when the parliament is in session and below it when the parliament is meeting in committee.

3.3 SERVICES

473331

Services for an efficient Parliament should include the following:

3.3.1 Address system

A multi-core cable system is desired. A wireless system, to be used in conjuction with, or as an alternative to the above system is as well desired.

3.3.2 Microphones

Each Parliamentarian should have an individual microphone for his use. At the foot of the microphone there is a "Request signal" botton, by means of which a parliamentarian alerts the speaker of the house of his intention to speak; while a "Request granted Signal"

allows such Parliamentarian to speak. However the Parliamentarians microphones are not suppose to have device for switching on or off.

In addition, there should be two standing movable and adjustable microphones. One should be located at the middle of the chamber for use of the Parliamentarians who may wish to speak standing out and another should be located close to the seat of the speaker of the House for the use of guests who may wish to address the parliamentarians.

Also, the table of the Clerk of the House should have an identical microphone set as those of the Parliamentarians. This would afford communication between the Clerk and the speaker of the House.

3.3.3 Control Unit

The control unit, together with the Chairman's unit is to be installed on the desk of the speaker of the House who will operate it. All the microphones are to be identifiable on the control panel.

When a member wishes to speak, he presses the 'request botton' on his microphone which inturn illuminates the appropriate lamp signal on the speaker's desk. such request is usually noted and in due time, the request can be granted by the speaker of the House, who depresses the appropriate botton to alert the member to speak. The grant is usually communicated by the lamp high coming on, on the member's microphone. It is important to note that the microphone with the individual would only be energized when the speaker grants a member's request to speak.

Usually the microphone on the table of the speaker has an on and off botton in order to cut off private discussions on the speaker's table. It also has a priority switch so that the speaker of the House can interrupt or call to order any Parliamentarian who may be

speaking.

3.3.4 Loud Speakers

There are various possibilities; and could be either of:-

(i) Each Parliamentarian may have a loudspeaker incorporated at the base of his microphone with á volume control nob. This would mean having the conventional public address load speaker system installed only in the public gallery, the press booth, the Reporters room and any other part of the hall that may require such services.

(ii) All loudspeakers are to be installed in convenient locations within the chamber. The loudspeakers could be ceiling-or wall-mounted. This arrangement means there shall be no individual loudspeaker for members.

3.3.5 Recording Facilities

Normally, it is expected that all the Parliament proceedings shall be recorded on audio tape for the publication of the Hanssard. In this regard, an efficient audio recording facility, for recording the daily proceedings without change of tape should be installed.

3.3.6 Alarm system

An alarm system which is to be operated by the clerk of the House, should be provided to summon the parliamentarians from various parts of the complex for meeting.

3.3.7 Galleries

There should be adequate provision for members of the public who are desirous of watching the proceedings of the parliament. Provision should also be made for members of the mass media.

The public gallery should be designed in such a way that if can easily be cleared it the event of disorder. It should have a direct approach and separated from the other galleries. An office or a cubide is required for the admission order.

3.4.1 The Press Gallery

The press Gallery should be located close to the press writing room with the following:-

(i) A writing office where reports are completed.

(ii) A number of rooms for the reporters.

(iii) Very good visibility

3.4.2 The VIP Gallery

There should be a gallery reserved for very important visitors to the Parliament. It should be separated from both the Press and Public Galleries.

3.5 COMMITTEE ROOMS

There should be an adequate number of Committee Rooms for the use of the various committees that may be set-up in the Parliament. the minimum size of each of the rooms should be based on the size of the table that would be large enough for the use of the number of the parliamentarians that make the committee in addition to adequate circulation space

within the committee Room.

The committee Rooms are to be located near the precincts to which the public is usually admitted while the rooms are to be acoustically treated.

3.6 CLERK OF THE HOUSE DEPARTMENT

The department of the clerk of the House should be located close to the following functional spaces.

(a) The Parliament chambers

(b) The House speaker's office, and

(c) The Committee Rooms.

3.7 AMENITY ROOMS

Such amenities like relaxation facilities for the Parliamentarians should be provided at the members' level, separate from the public level. There should be security check point at the entrances of the amenities rooms. Parliamentarians requirement may range from the following:-

(i) THEATRE: of about 300 people capacity for Parliamentary discussions, film shows and etc.

(ii) HALLS: Large enough for ceremonial addresses.

(iii) Library: For improved literacy and awareness level of the Parliamentarians.

3.8 PARLIAMENTARIANS SECRETARIAT

Offices are required for the Parliamentarians and to each of then a Private Secretary. These office spaces are required for the purposes of giving dictation to their secretaries as

well as carrying out other procedures connected with the Parliamentary duties but at personal level.

3.9 THE LIBRARY

The library is one of the main animities of the Parliament. The services provided in the library for the Parliamentarians include:-

(i) The maintenance of a sound, rich, comfortable, well-lighted and clean library.

(ii) The Research and statistical records and materials.

(iii) The mounting of exhibition and provision of secretarial services such as phoco-copying, cyclo-styling, and etc.

All these are in addition to the normal library service.

CHAPTER FOUR

CASE STUDY

4.0 INTRODUCTION

There is the need to study similar existing buildings in order to ascertain and identify functional arrangements, and the relationship between these arrangements. Such study would also determine the viability of the proposal.

Since the sub topic on this thesis work is TOWARDS MAIN TENACE PROBLEMS ALLEVIATION IN NIGERIA PUBLIC BUILDINGS, it is imperative to under study maintenance related problems particularly in public buildings subjected to similar use. This would serve as a guide in exposing design to the various problems and possible solutions inherent in design formation via adequate knowledge of existing situations.

Three complexes have been chosen for this propose. Two are existing Parliament complexes for the purpose of design consideration while the third is a public building subjected to similar use but studied for the purpose of maintenance considerations; since it is observed to have stood the tests of time.

4.1 CASE STUDY ONE

4.1.1 Location

The Lagos City hall is owned by the Lagos city council and is located in the Lagos Island which is the commercial, Administrative and Business area of Lagos. The hall is bounded on the North by Igbosere street, on the south by Mission street, while it is bounded on the East and West by Prison and Glover streets respectively. The main entrance of the hall is to the South over a paved forecourt (fig. 4.1 and 4.2).

4.1.2 Philosophy of Design

The complex was conceived as a single compact designed block with no external emphasis given to any of its functions. The complex is accessible through two entrances on two axis.

The ground floor provides accommodation for the licensing offices, traffic division dept., the cost and pay hall, the maintenance workshop, central Airconditioning machine room and car parking lot (fig. 4.3).

The first floor accommodates part of Treasury offices, staff canteen and the Banquet hall (A multipurpose hall), the second and third floors accommodate the Administrative department and the council chamber that seats one hundred members; while the fourth floor accommodates the offices in the various departments of the council (fig. 4.4).

4.1.3 Structure

The structural principle of the complex is based on the columns and beams grid network. This arrangement is however slightly upset in the central spine block where bigger columns are provided at alternative bays. This is probably due to the need for large space

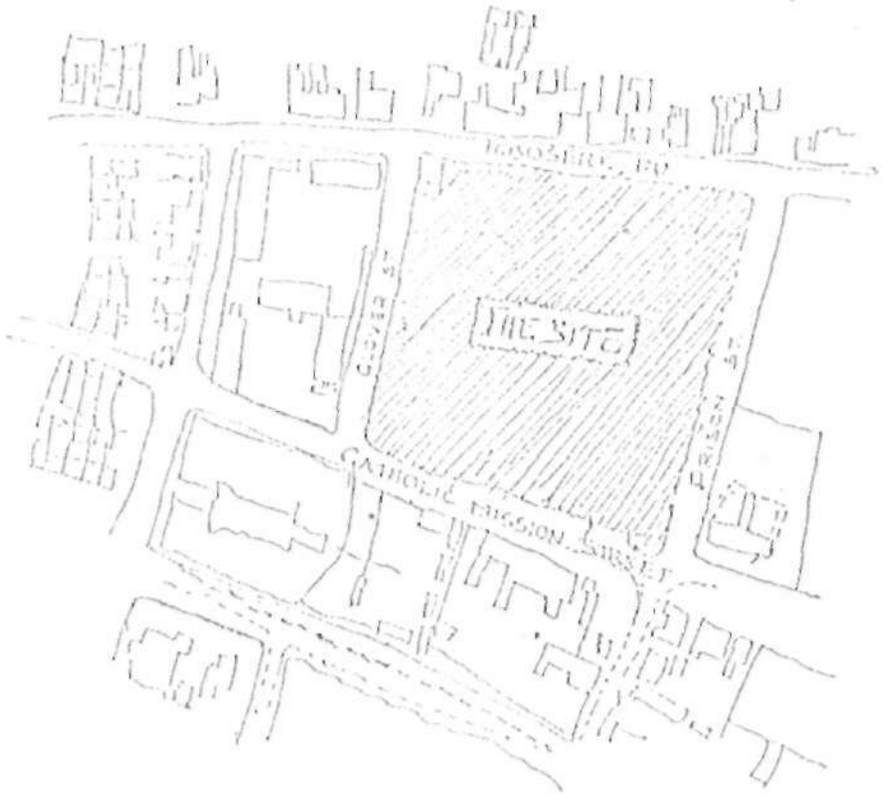
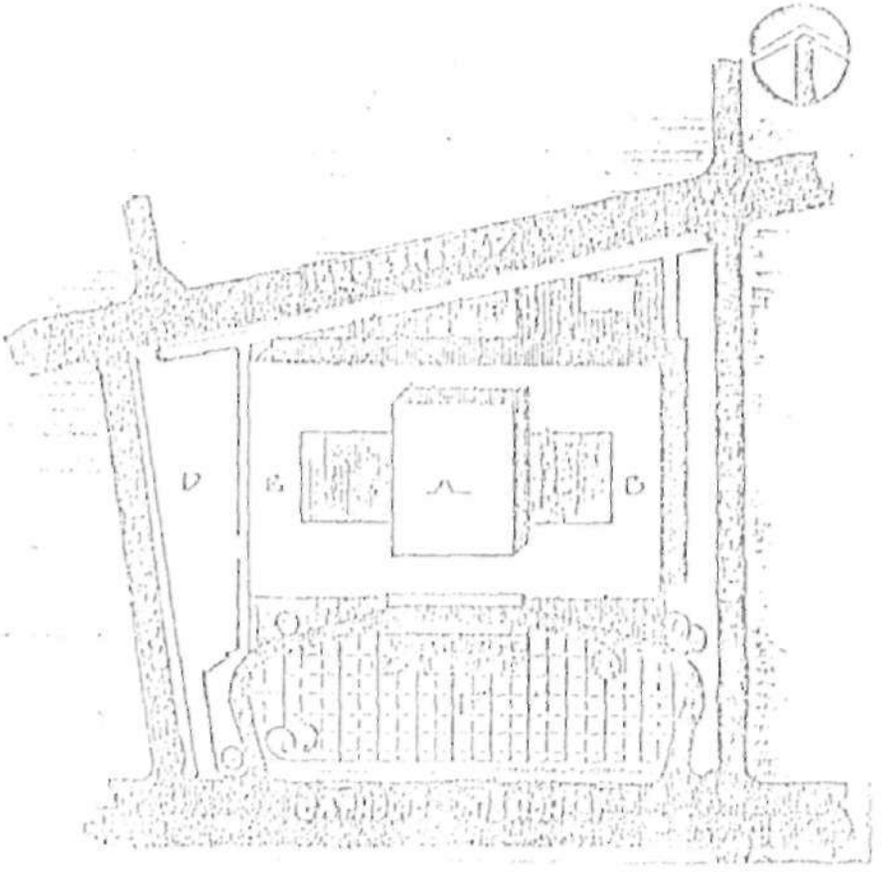
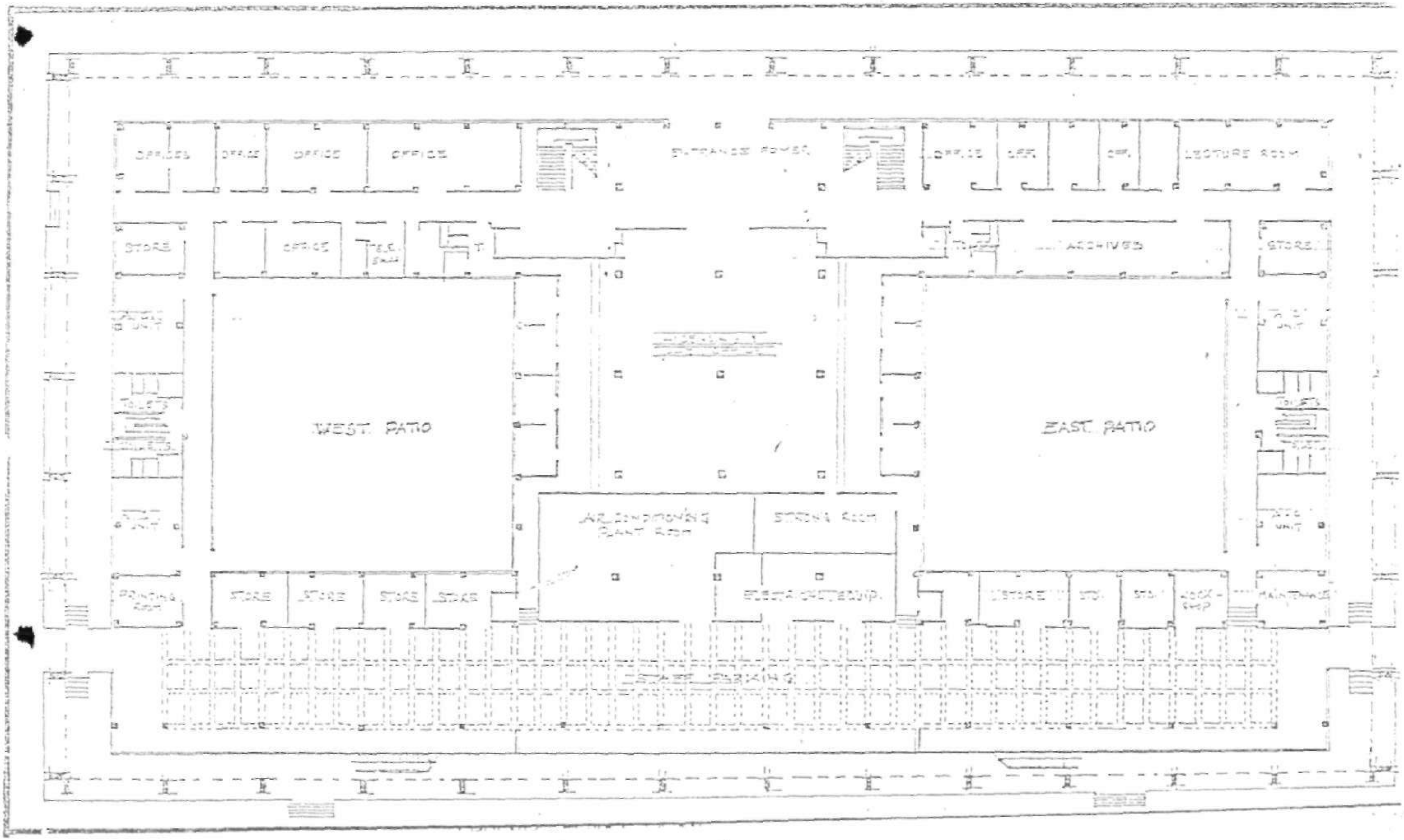


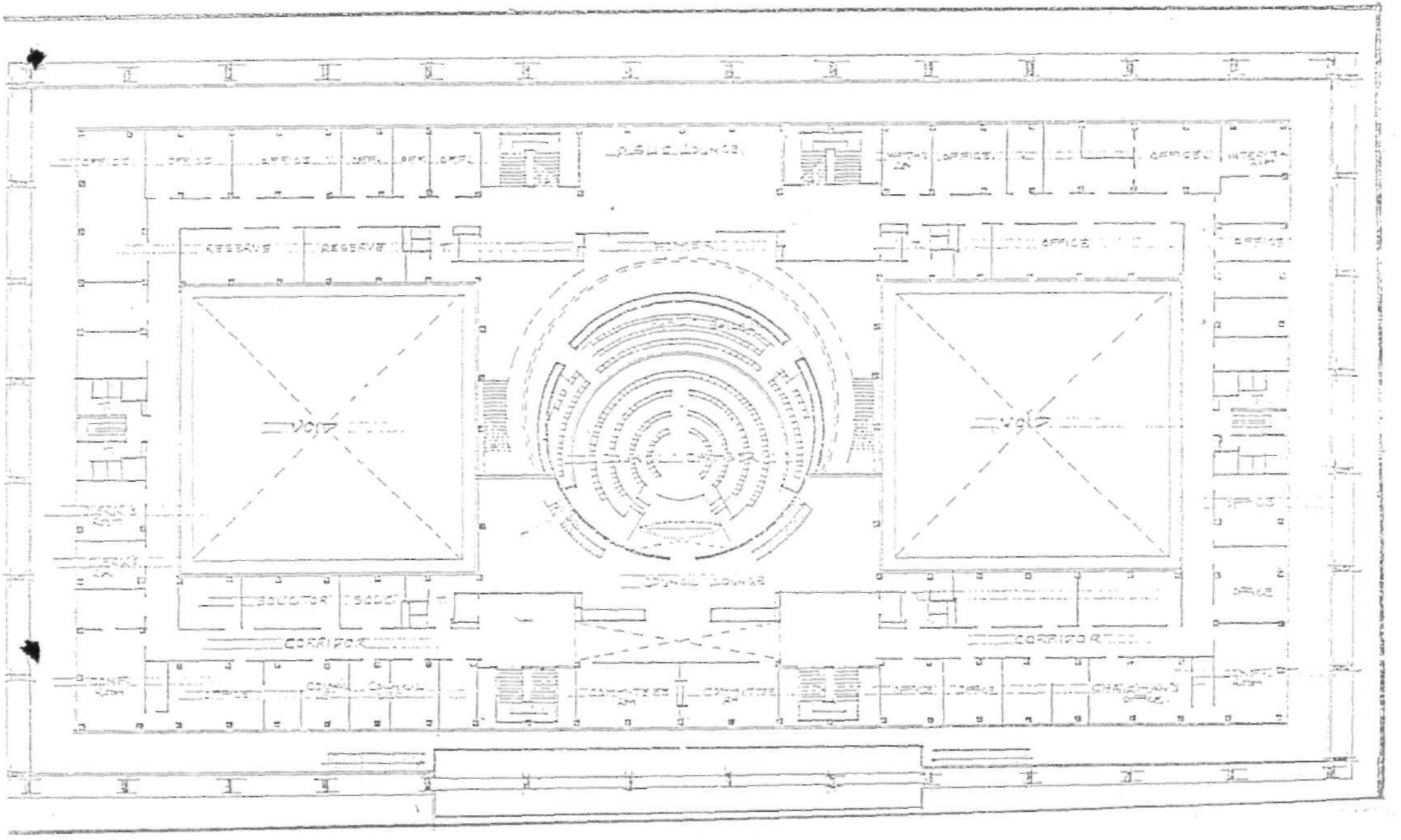
Fig. 2.1

SITE LOCATION: In the Old Calabar, Cross River State- Nigeria.





GROUND FLOOR PLAN



THIRD FLOOR PLAN MTG. 4.4

clearance within the cash and pay hall on the ground floor, the Banquet hall on the first floor and the support provided for the council chamber on the top floor. The external columns stand clear of the walls and provide shade to the elevations as well as give full expression of their strength. The roof of the complex is reinforced concrete with prismatic reinforced concrete slab over the council chamber. These give an overall impression of a structural order that complement monumental image of an important and powerful institution.

4.1.4 Finishes

The special features of the complex are mainly art works. Within the public area are well decorated with murals and motifs. At the entrance to the Banquet hall are two modern carvings of 5.0m and 2.0m of Nigerian motives. At the public entrance to the council chamber is a mosaic art work measuring 15.0mx 2.8m showing typical Lagos festivals. The entrance door of the cash office which measures 4.8m x 2.8m is carved in local motives. Another moral that measures 4.8m x 3.3m at the entrance the post office services area shows local elebrations.

Majority of the finishes on walls, floors roof and ceiling are of permanent nature particularly in the public areas (plate 1).

4.1.5 Management

The Lagos city hall complex is currently managed and maintained by the Lagos Island Local Government Authority; which occupies a considerable part of the complex. The council has a maintenance department that functions very well in the maintenance of the complex.

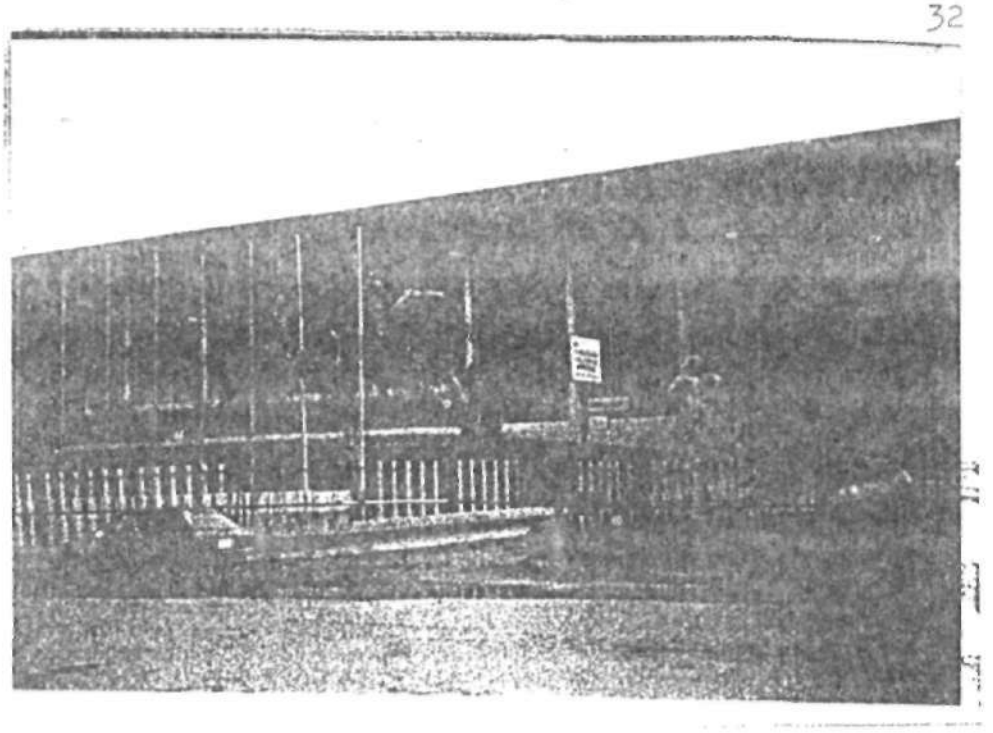


PLATE I
FRONT VIEW : Lagos City Hall, Lagos Nigeria

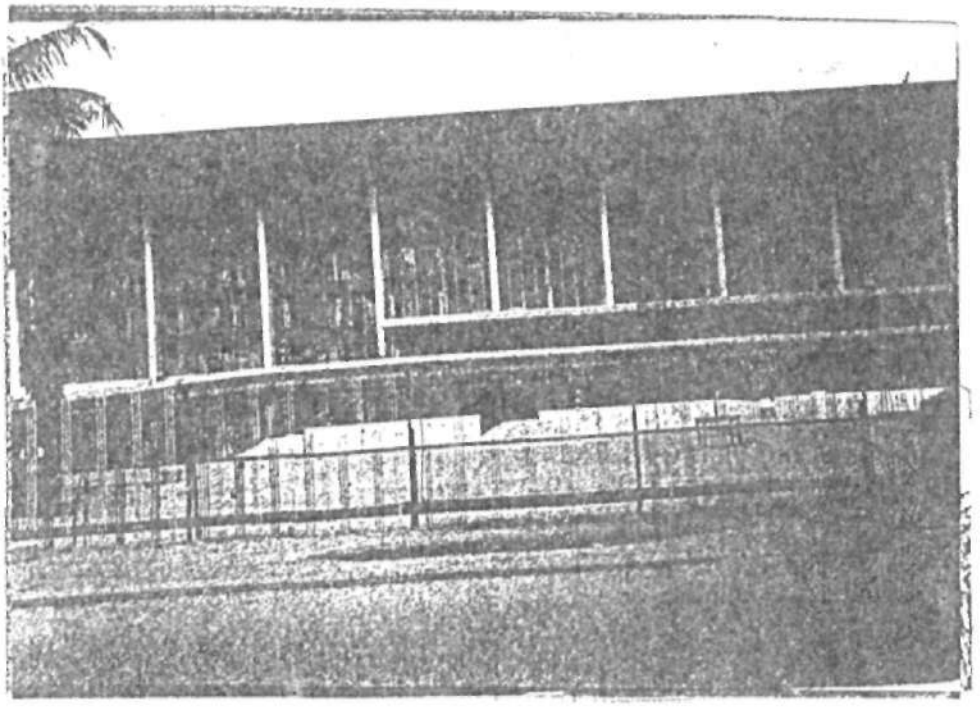


PLATE II

PERSPECTIVE VIEW: Lagos City Hall, Lagos- Nigeria.

4.1.6 Merits

(a) The effective drainage system on site affords ease of draining rainstorm water.

(b) The projection of the reinforced concrete roof affords good shading and protection of the curtain wall from direct effects of solar radiation and water.

(c) There is ease of maintenance due to the simple configuration of the complex.

(d) There is separation of vehicular and pedestrian movements.

(e) Finishes on the floor, wall, ceiling and roof are carefully selected to satisfy various requirements such as resistance to heat, ware, and etc.

4.1.7 Demerits

(a) Inadequate parking space has resulted in parking on the paved court; causing damages.

(b) The use of curtain walls has resulted to frequent replacement of broken glasses.

(c) Honzontal expansion is not possible causing over crowding of functional spaces and the attendance inadequacy of supply of essential services.

(d) The inadequate use of trees as landscape elements has exposed the complex to direct effects of winds, solar radiation, and etc.

4.2 CASE STUDY TWO.

OGUN STATE HOUSE OF ASSEMBLY

4.2.1 Introduction

The Ogun State House of Assembly was designed by a team of Architects in the Ogun State Ministry of Works and Housing, Abeokuta, under the supervision of Arc. J.O. Backley, the state Chief Architect. The project Architect was Arc. F.J. Bautista while the construction was carriedout by M/S Solel-Boneh Nigeria. Ltd. The complex is located along the Abeokuta - Shagamu Road, Abeokuta.

4.2.2 Facilities

The following departments are in the complex:

(i) The parliament - The Parliament is made of the following:

a. The Assembly (Session) hall

b. The Delegates Lounges

c. The Mass media Rooms

d. The Special guests Unit

e. The Public Gallery

f. Toilets

(ii) The Administration - The Administration section consists of:

a. Offices

b. Restaurant

c. Workshop

(iii) Auxiliary - This consists of the following:-

a. Generating plant

b. Storage

c. Parking lots.

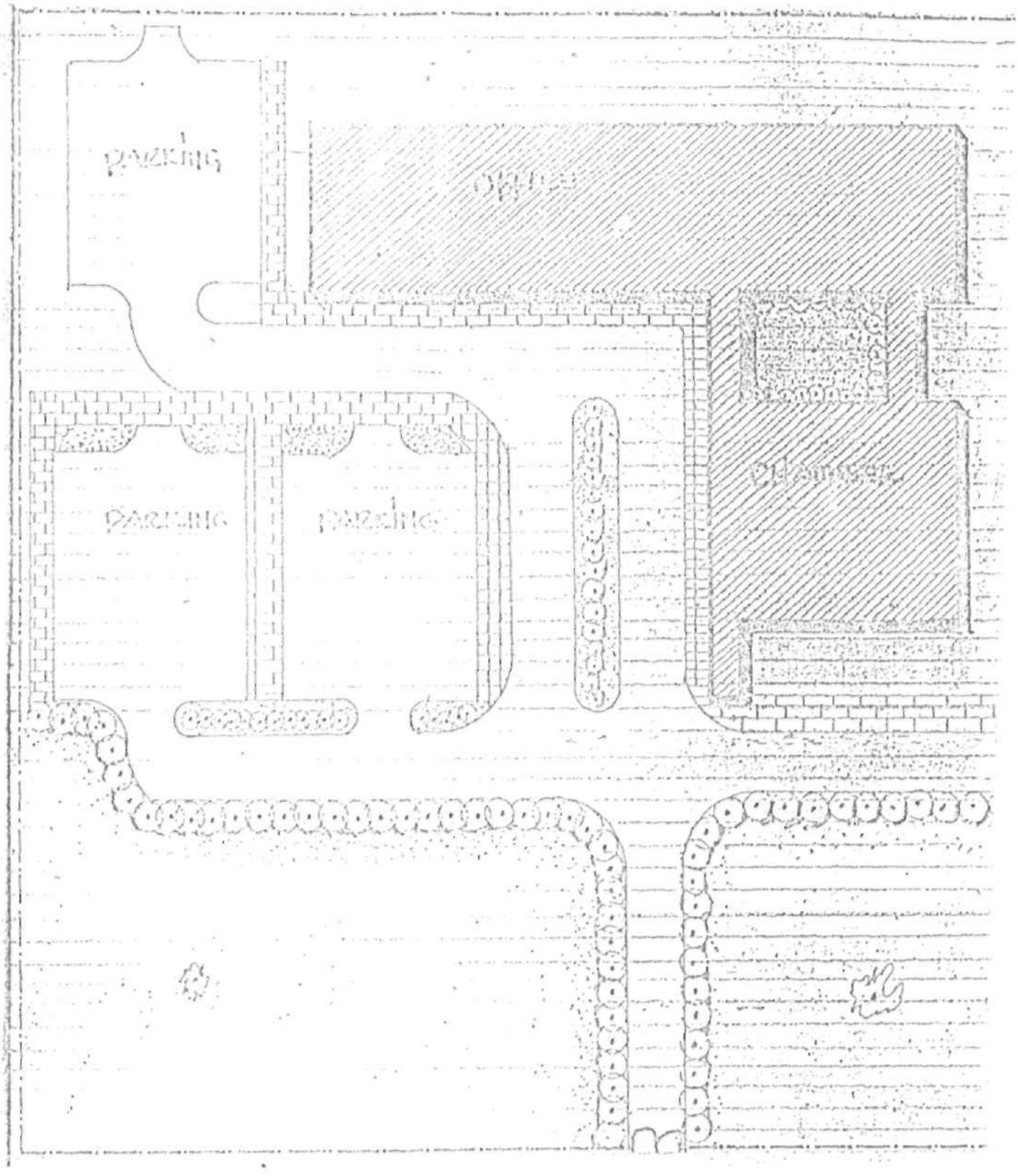
4.2.3 Appraisal

The Ogun State House of Assembly is an inverted 'L' shape building with a long corridor connecting the Administration Block and the Assembly block. It has an external court yard that physically separates the two units. (fig. 4.5).

The complex is located very close to the Governor's office. This enhances close co-ordination of activities between the Executive and the legislative arms of the state government.

The two units have a common approach but separate entrance. In the legislature block, there are two entrances; one for the legislators and the other for the public. The legislature block is partly of two floors and double volume. Its ground floor is made of the session hall, lounges and toilets while the upper floor has the public gallery, mass media room, electronic control room and toilets. There is a security control that prevents the public from getting to the session hall. There is a staircase that provides vertical transportation. The walls are sancrete blocks finished externally in textured paint and internally in smooth paint and polished plywood cladding. The doors and windows are of glazed Aluminium while the roof is of cement asbestos corrugated sheets on steel roof structure in hip-ended roof that drains to reinforced concrete roof gutters. (see figures 4.6 and 4.7).

The Administrative block is of three floors with a part basement. (The part-basement is due to the slope of the site). The ground floor houses services such as restaurant, workshop, etc while upper floors house offices for the staff of the complex.


PARKING
OPEN
PARKING
PARKING

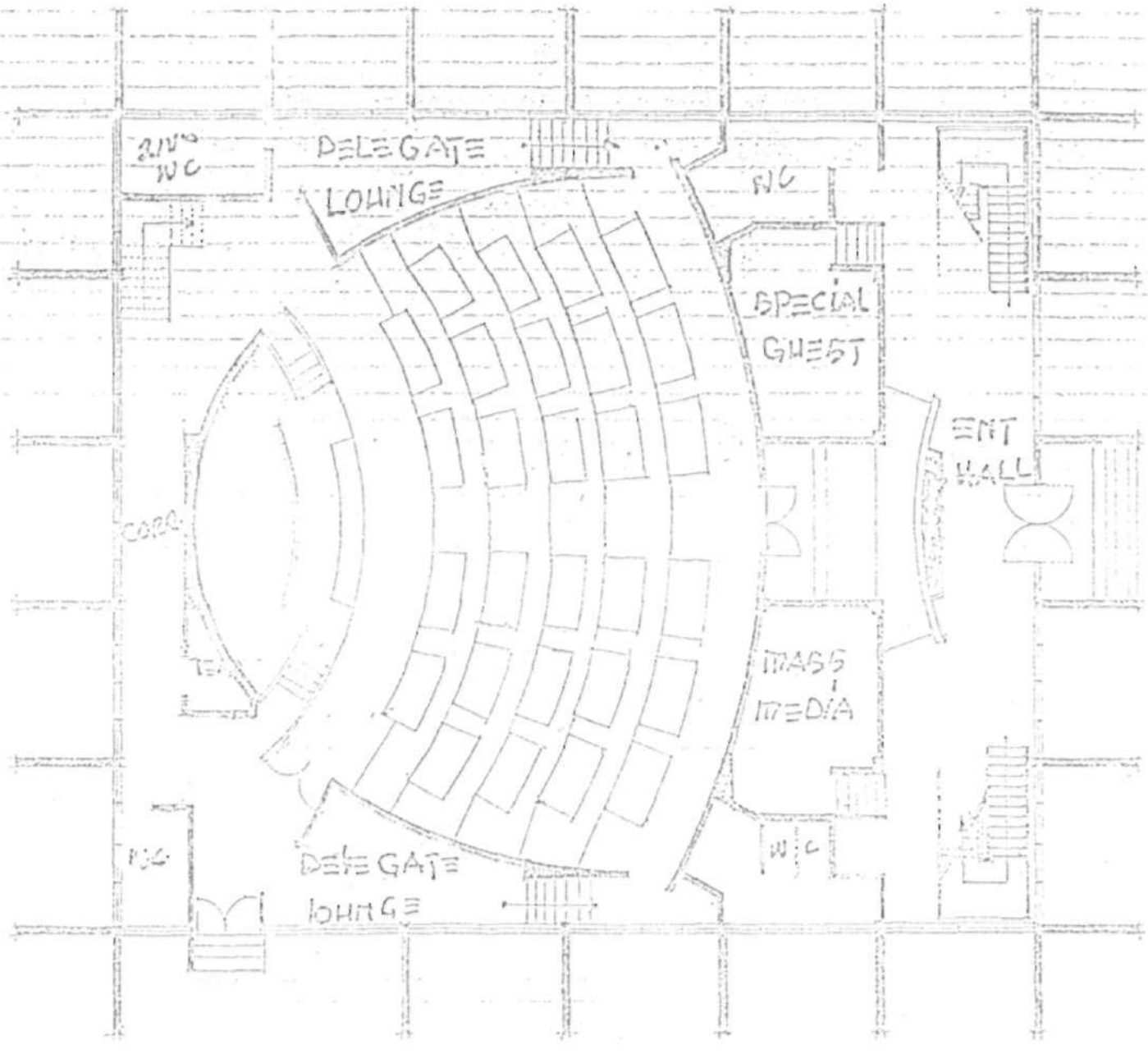


FIG.4.6

GROUND FLOOR PLAN(Session Hall): Upon the to House of Assembly, Zimbabwe Building.

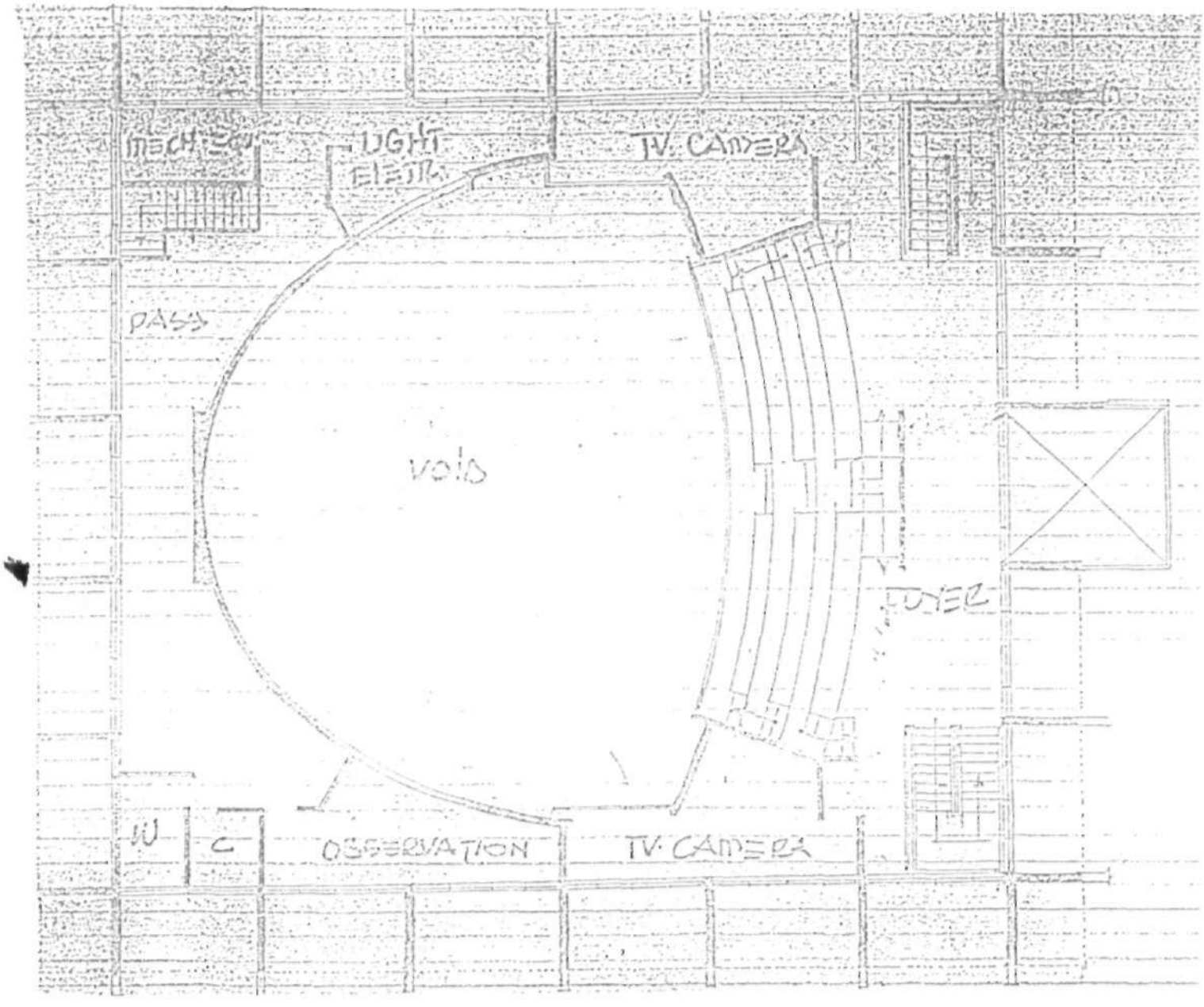

MACHINERY
LIGHT
ELEVATOR
TV. CAMERA
PASS
vols
FOYER
W
C
OBSERVATION
TV. CAMERA

FIG. A-2

The sketch drawings and photograph of the Assembly hall could not be made as it is categorised as a public but security area. (plate 3).

4.2.4 Observations

(i) Merits

a. There is good separation between the Parliamentarians and the public circulation area.

b. Both the pedestrian and vehicular circulation are well defined in the site planning.

c. There is effective utilization of the natural slope of the site.

d. The location of the toilets is good.

e. The location of the mass media rooms is good

(ii) Demerits

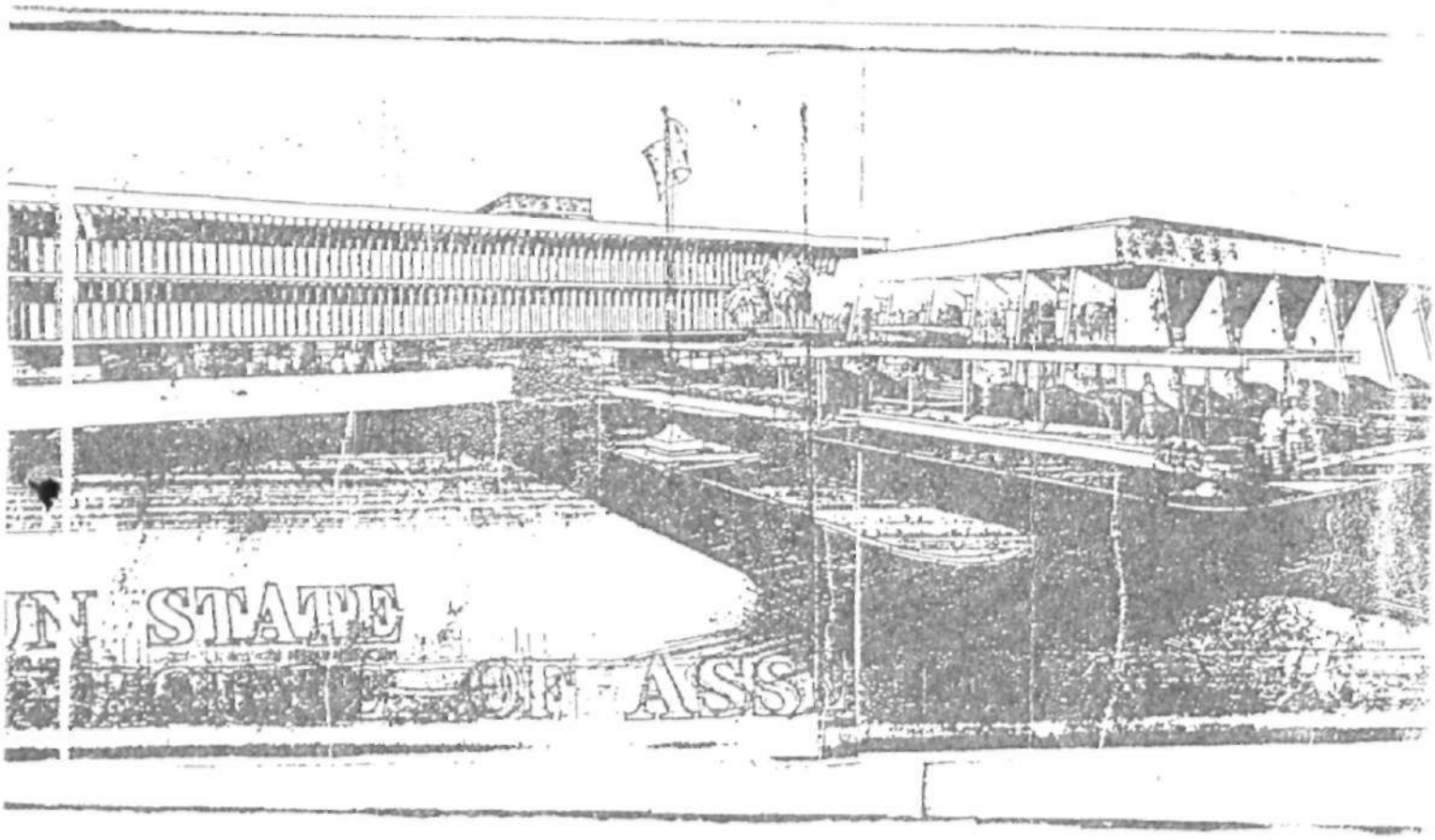
a. Inadequate seats in the public gallery

b. Incomplete supportive facilities like printing section, and etc.

c. There is glare effect on the building as a result of lack of trees between the parking lot and the buildings.

4.2.5 Conclusion

The inadequacy of facilities within the complex may have adverse effect on the effective performance of the parliamentarians.



PERSPECTIVE VIEW

PLATE III

4.3 CASE STUDY THREE

THE NEW SOUTH WALES PARLIAMENT HOUSE

4.3.1 Introduction

The New South Wales Parliament House was designed by a team of Architects from the Government Architects brange, Deportinent of public works, New South Wales; under the supervision of Arc. Andrew Andersons, the project Architect.

The complex is located at Macquarie street, sydney, between the library of New south Wales in the North, the sydney Hospital in the south and the Domain in the East.

The original building was constructed between 1811 and 1814; it was appropriated to the use of the Executive and legislative council in 1829. The increase in the membership in 1842, necessitated the construction of another chamber at the North end of the first building called Historical building. At a later stage, a pre-fabricated case iron framed building was erected. This was used with piece meal additions made at the rear of the site over a period of one hundred and twenty years.

By the year 1972, the existing accommodation was considered inadequate and coupled with structural defects in some parts of the building, a new Parliament House was conceived.

4.3.2 Facilities

The following facilities are available in the Parliament house.

(i) The Parliament - This consists of the followings:

a. The Assembly chamber

b. The Interview Room

c. The council chamber

d. The Parliamentary Musium

e. Public lobby

f. The Parliamentarian lounge

g. The staff Dining

h. The visitors Dining

i. The speaker

j. Toilet facilities

(ii) Administration - This is made of the following:-

a. Offices

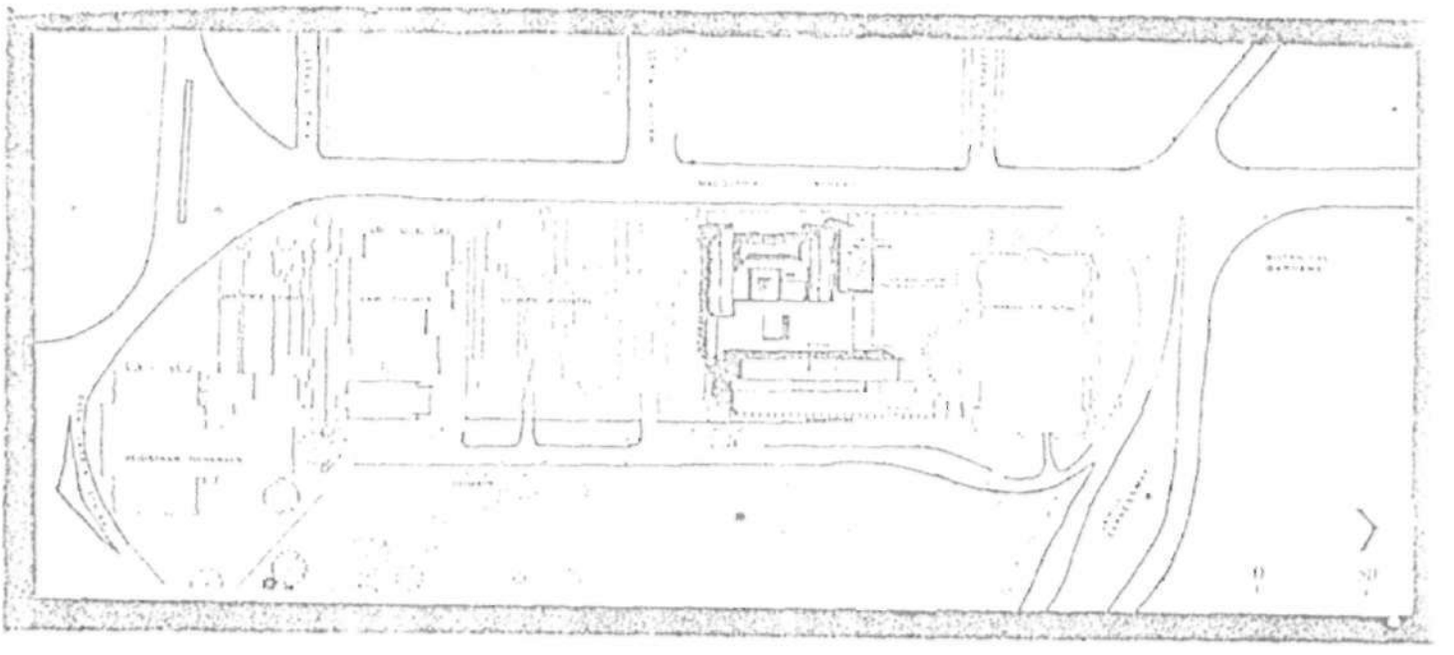
b. Reception

c. The Bess room

4.3.3 Appraisal

The New South Wales Parliament House is a single massive rectangular building constructed in two phases. The first phase has a thirteen level structure with five levels in basement with a total area of 32,600 sq.mtrs.; while the second phase has a four level structure with an area of 7,400 sq.mtrs. This second stage is an infill between the first phase and the Historic Building.

The first four levels of the basement are used as parking lot while the fifth level is accommodates the generating plant and other mechanical services. The machine room is located at the roof top. The sixth floor accommodates the parliament department as well as the library. The museum, public lobby and refreshments are located on the seventh floor; while the offices are located within the eigth to twelveth floor (figs. 4.8A, 4.8, 4.9A, 4.9 and plates 4 and 5).



SITE PLAN

FIG. 4.8

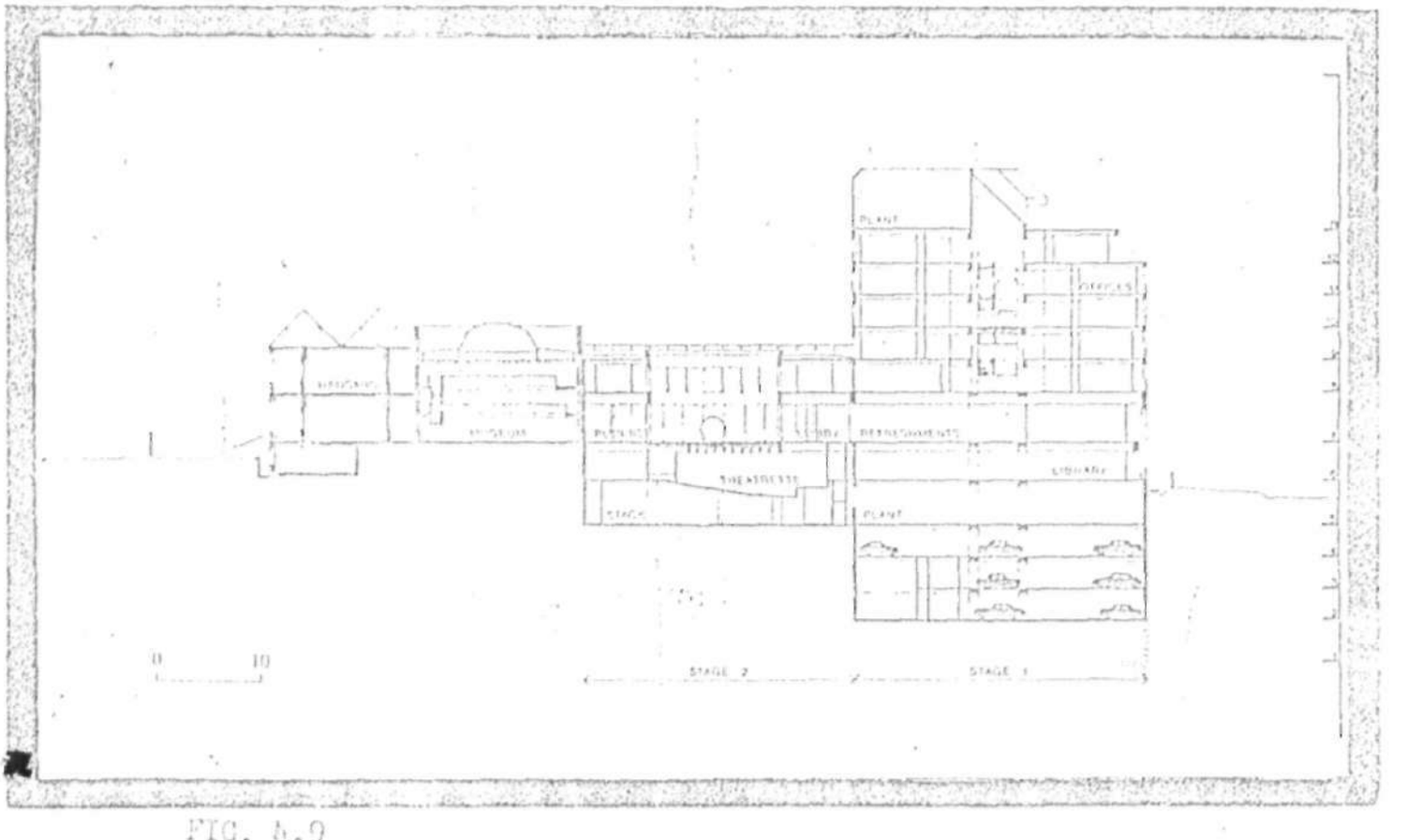


FIG. 4.9

SECTION THRO' FLOORS

SOURCE: ARCHITECTURAL AUSTRALIAN 1981.

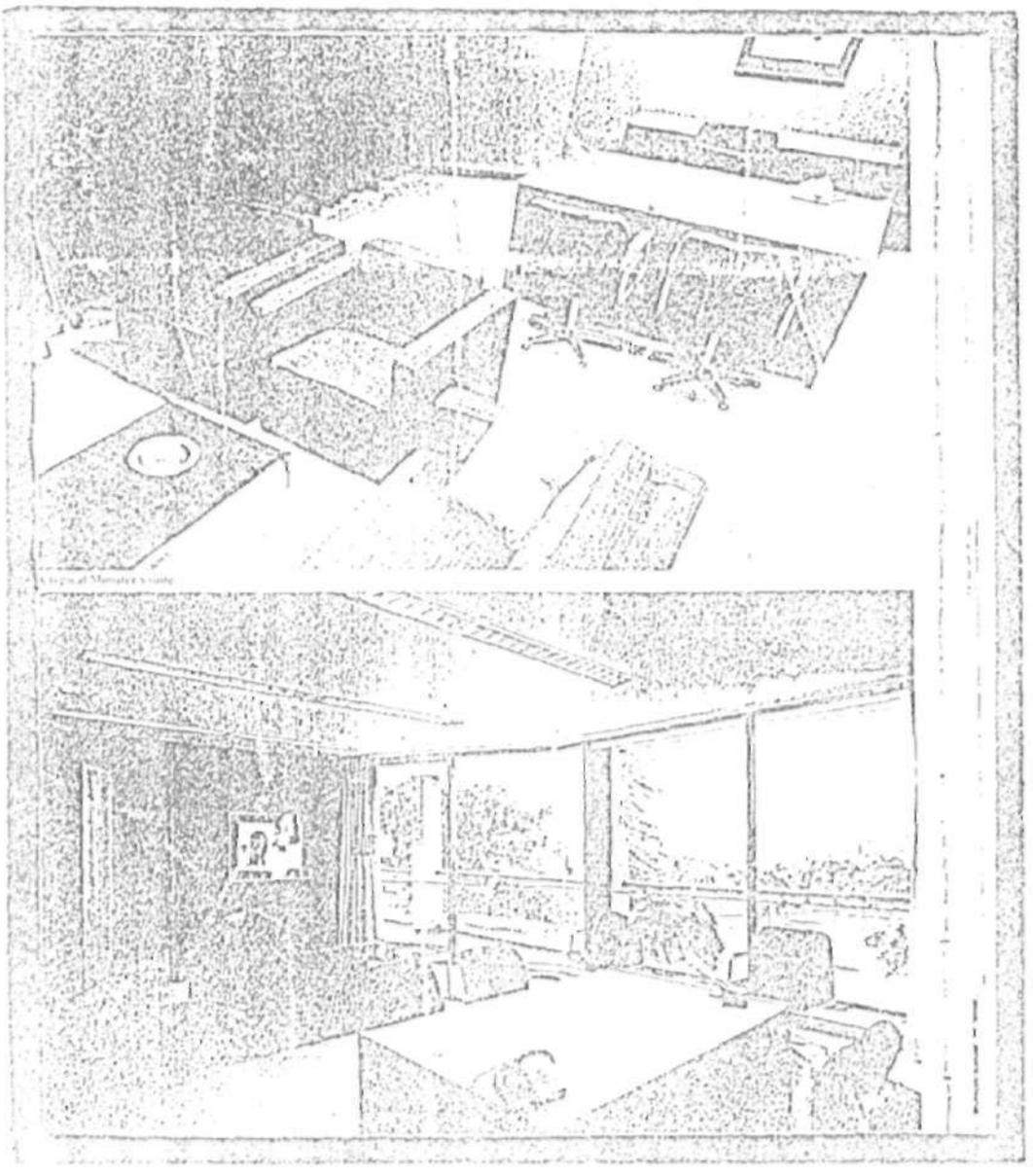


PLATE IV

OFFICE INTERIOR

SOURCE: ARCHITECTURAL AUSTRALIAN 1981

The site has two approaches. one from carlill express way while the other is from Macquarie street. The building has two entrances, one from the North and the other from the East. (fig. 4.8 and 4.9).

The building is constructed of framed structure with glass in fill as the walls. A corridor is constructed round the building as enclosure for the glass wall. The roof of the twelve level structure is of reinforced concrete while that of the second phase, four level structure is of longspan corrugated Aluminium sheets on steel roof structure.

4.3.4 Observations

(i) Merits.

a. the design is properly integrated as a single solid building which allows proper coordination.

b. There is adequate provision of facilities

c. There is proper separation of facilities between the visitors and the members.

d. There is adequate grouping of functional spaces.

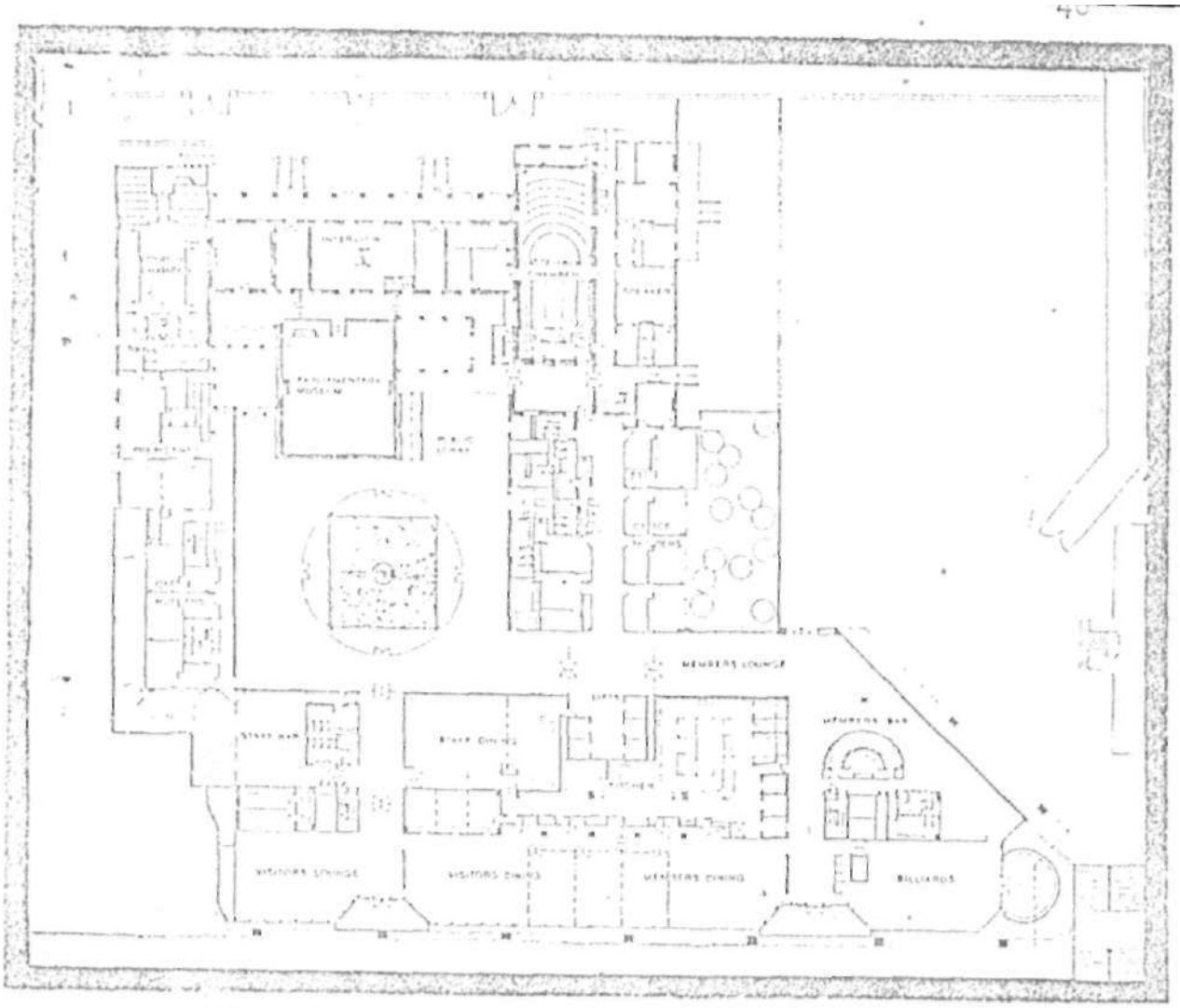
(ii) Demerits.

a. There is inadequacy of land leading to the use of basement as parking lot.

b. The circulation system is clumsy.

c. There are two many unidentified entrances on the seventh floor.

d. There would be some problems in serving the toilets located internally.



○ 7TH FLOOR PLAN FIG. 4.10

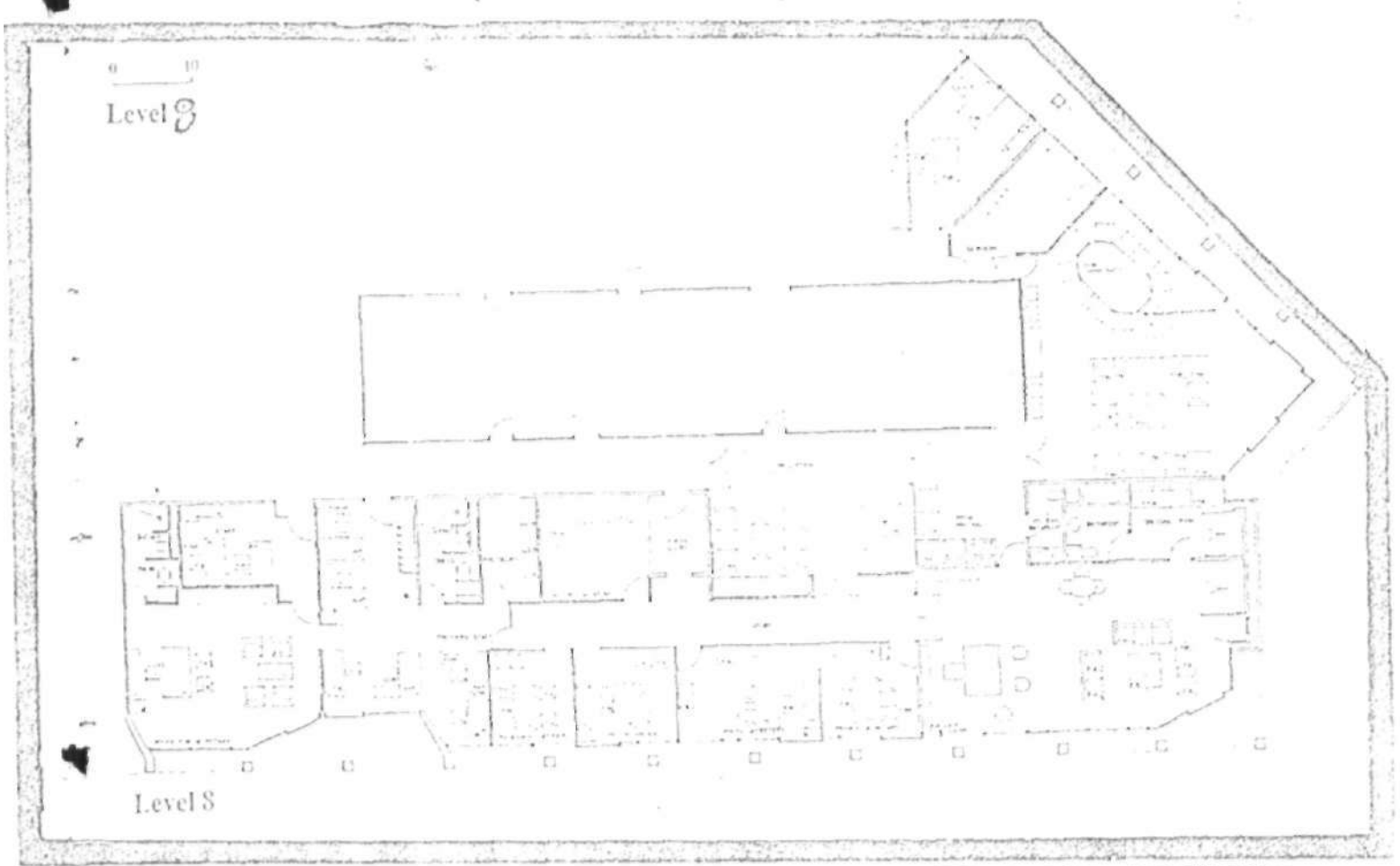
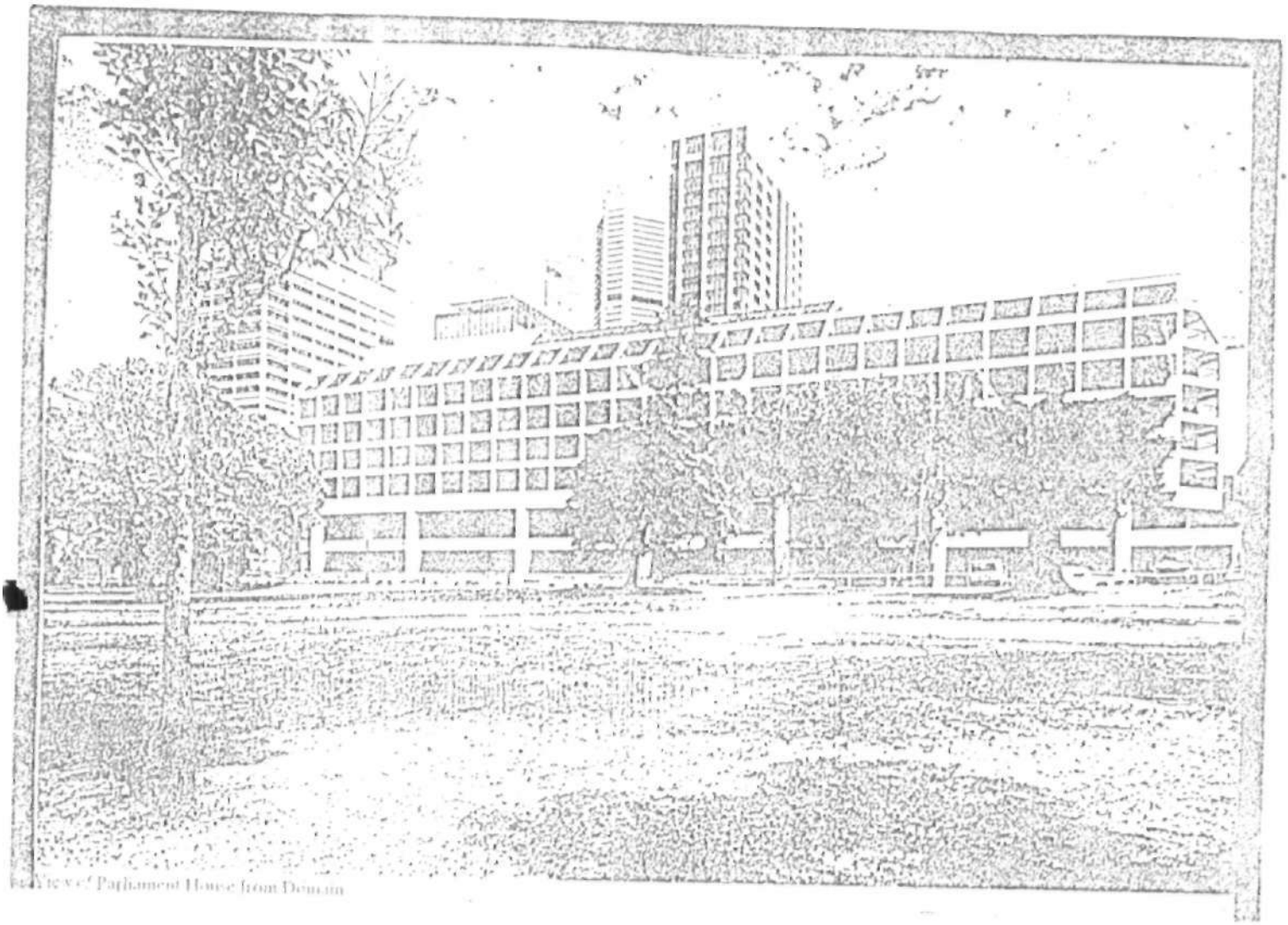


FIG. 4.11 ○ 8TH FLOOR PLAN SOURCE: ARCHITECTURAL AUSTRALIA 1981



View of Parliament House from Domain

PLATE V

O VIEW OF PARLIAMENT HOUSE FROM DOMAIN

SOURCE: ARCHITECTURAL AUSTRALIAN 1981.

4.3.5 Conclusion.

Though the use of the New south Wales Parliament House has spanned over many years and still meets the needs of the parliamentarians, yet there are some problems such as clumsy circulation, too many unidentified entrances on a particular floor, insufficient land and etc.

CHAPTER FIVE

STUDY AREA

5.0 MAINTENANCE - RELATED PROBLEMS IN NIGERIAN PUBLIC BUILDING

5.1 INTRODUCTION

The British standard on Building construction code No. 3811, defines maintenance as "work undertaken in order to keep or restore every facility, i.e every part of a site, building and contents to an acceptable standard" ([1])

It is very unlikely to have a building that doesn't need maintenance especially if it is categorised as a public building which is normally exposed to use by a considerable number of people of various categories. However, experience has shown that detailed design, choice and treatment of materials as well as good workmanship are of paramount importance in this regard.

Primarily, all building materials deteriorate with age. While some deteriorate fast, others withstand the test and rigour of time going, by scientific observations. Exposure to causative factors causing the wear and tear of building fabrics as well as the conditions to which the buildings are exposed, and go along way to dictate the maintenance needs of such buildings.

In restoring buildings to required standards, maintenance is said to be synonymous with controlling the conditions of such buildings so that they lie within a specified region, the limit of which must not be less than the statutory requirement in terms of functionality, technicality as well as aesthetics [2].

5.2 FACTORS AFFECTING THE MAINTENANCE OF NIGERIAN PUBLIC BUILDINGS:

The prime aim of maintenance work in building is to preserve the building in initial state, as far as practicable; so that the building serves its purpose effectively. However practicable this might be, the following interacting variables are known to indicate the rate of deterioration in buildings:-

1. the environment
2. The use/occupancy
3. Design needs
4. Workmanship
5. Other factors.

5.2.1 Environmental Factors Affecting Maintenance Works in Buildings

Basically, the environment in which buildings are sited is variably or invariably dictated by the climatic situation of that environment. Nigerian environment is no exception. The climatic factors in reference are such as rainfall, humidity, temperature, wind speed, topography, soil and etc. These factors vary in severity according to the LOCATION and the ORIENTATION of the building.

It is worthy of note that environmental factors have special significance in respect of the external features of buildings. Unfortunately only very minimal control can be exercised on these factors as the majority of the factors occur after the completion of buildings.

Features of the environmentally - inflicted defects on the built forms (buildings) include:

(i) Blown-off roofs; due to high wind speed.

(ii) Weathering of the walls or wall finishes; due to driving rain.

(iii) Efflorescence; due to dampness

(iv) Shattering of fenestration glazing; due to rain storms.

(v) Wall cracks; due to differential settlement of concrete foundation on load bearing soil.

(vi) Bleaching of roofs and walls; due to excessive sum radiation.

5.2.2 Use/Occupancy Factors Affecting Maintenance Works in Buildings

The functions which a building is made to accommodate matter greatly as the activities of its users could cause deterioration to the building's fabrics. The behaviours and habits of the occupants as well as the mechanical usage in the building need be considered in this respect.

Problems associated with the human usage could be either authorized or otherwise, depending on the functions that the building accommodates; while problems associated with mechanical usage in the building could be due to the mechanical devices housed by the building or those made to service the building. The later is identifiable with the breakages of floor titles, cracking on walls, collapse of floors, and etc. On the contrary, the factors of use are related to events occurring after the completion of the building and their influence is minimal to the external elements of buildings.

5.2.3 Design Needs Affecting Maintenance works in Buildings

Basically, it is at the design stage that the maintenance burden can be positively influenced. A skilful design can reduce the amount of maintenance works as well as make such works easy to perform Good and effective maintenance works actually begin from the

Architect's drawing board. Ideally, the Architect should aim at producing a building which is attractive, functionally efficient and constructionally sound with a minimum of maintenance[3]. Design embraces all the special technical, aesthetics and economical skills of the Designer within the context of the owner's requirement and budget which usually involves events that take place before the building is practically completed and occupied[4].

Design factors and their maintenance problems are as follows:-

(a) Problems due to forms

This is where the skill of the Architect comes to play. Decision as to the general composition of the building in terms of shape will indeed determine so many structural considerations. Simple forms, when skilfully composed could assist in enhancing cheaper construction while at the same time obtain an aesthetically pleasing structure.

Highrise structures, for example are known to be expensive as they incure high maintenance problems in terms of how to reach, clean and replace the building components requiring cleaning and replacement; but if effectively considered at the design stage, such problems could be greatly reduced.

(b) Problems due to Poor Detailing.

The choice of construction methods and architectural detailing become an essential part of any construction work. With articulated architectural/construction details, for example in term of roofing system adopted, could make or mar the type of maintenance problems to be encountered in the future; especially with the effect of wind, rainfall, and etc.

Generally, the principal cause of early maintenance is, wrong or inadequate construction details. All details, no matter how small or remote

have to be properly made at the design stage. With current and adequate construction details, such problems as leakages, backflows, and etc. with respect to roofs and window sills could be avoided.

(c) Problems due to Choice of Materials

The choice of the various construction materials and finishes plays a very significant role in solving maintenance problems. Public buildings are usually subjected to abuses of various kinds, culminating in lots of weathering and tearing of floors and walls surfaces. so also are stains of various sorts, particularly on walls.

However, having realised this, conscious efforts should be made at specifying materials or finishes which could withstand the test and rigour of time. In this regards, finishes such as terazzo on floors in place of screed or PVC tiles would be adequate and go along way at reducing maintenance frequency.

Table 5.1 illustrates the various floor finishes and their respective characteristics.

5.2.4 Workmanship Problems Affecting Maintenance works in Buildings

Workmanship refers to the works which cover the entire efforts of the builder in construction works. Good workmanship entails the use of materials in their best condition as directed by the Architect in his specifications or in the established practice.

Table 5.1 Characteristic / Properties of various floor finishes

FLOORINGS

Material, form and references[1]	Base	Properties	Appearance	Sizes[4] Thickness mm	Width mm	Length mm	Laying	Surface treatment: Initial	Surface treatment: Maintenance	Average cost factor[5]
1 Bricks Manufactured from unrefined clays, pressed and burnt Intended primarily for walling BS 3921 : 1969 *Bricks and blocks of fired brickearth, clay or shale* BS 3679 : 1963 *Acid resisting bricks and tiles*	*Internally* – concrete *Externally* – (i) for vehicular traffic – concrete (ii) for pedestrian traffic – rammed earth or hardcore	Best products (eg *Engineering bricks Classes A and B* (BS 3921) have excellent resistance to wear, impact, chemicals and frost) For external use '*Special quality*' (BS 3921) bricks must be specified	Colours – wide range Joint patterns – brick bonds and unbonded, with wide joints Texture – usually plain	65	102·5	215 or can be laid *brick-on edge* or *brick-on-end*	*Externally*: pedestrian traffic – units may be bedded in sand or weak mortar heavy traffic – units bedded on 16–19 mm cement : sand mortar on concrete base	Clean off and protect as for quarries	Sweep	30 – 60
2 Pavors (or Pavers) (i) Manufactured as for *Engineering bricks*	Concrete or screed finished to suit method of laying	As *Engineering bricks* but without frogs		19 51	95 108 114 124	190 216 241 251	*Internally*: See page 34 Remove cement **stains** with proprietary fluid	As *Bricks*		60
(ii) Manufactured from refined clay and fired at very high temperature		Most pavors have resistance to chemicals and wear superior to that of quarries	Colours – red, buff, cream, brown Texture – plain, ribbed, chequered and roughened					*Externally* as *Bricks* *Internally* as *Vitrified tiles*		70
3 **Quarries** Manufactured from unrefined clays, pressed and burnt BS 1286 : 1974 *Clay tiles for flooring*	A damp-proof membrane may be needed to prevent water vapour passing through joints and through porous units and to prevent water evaporating from the surface leaving salt deposits	Similar to equivalent bricks. Some have harder surfaces than interiors Wear resistance good to excellent, especially for red and blue quarries *Slipperiness*: moderate to good *Maximum water absorption* (BS 1286): Class 1 6 per cent Class 2 10 per cent *Size tolerance* (BS 1286): 4 (±2) per 95 mm 8 (±4) per 193 mm	Colours – natural clay colours, ie red and in certain sizes, brown, blue and buff. Slight variations are characteristic Texture – slightly irregular Joint patterns – usually square bond. Wide joints are necessary for less accurate quarries	*Preferred Modular co-ordinating sizes:* 19	100	{100 200}	Methods of laying See page 34 *Mortar* on – concrete 15–20 – separating layer 15–25 *Semi-dry mix* 25 min *Cement-based adhesive* 5 max *Thickness of bedding mm*	Clean immediately with sand or sawdust Wash repeatedly with water until any efflorescence ceases Protect with whitewood sawdust during works	Wash with warm water and neutral sulphate-free detergent (Soap residues cause slipperiness and hold dirt) Rinse thoroughly with clean water (Do not use oiled sweeping compounds)	30 – 50
				Modular work sizes 19	95	{95 193}				
				Non-modular work sizes 15	150	150				
				16 19	{76 152}	152				
				22 32	{114 229}	229				
				Other BS thicknesses 12·5	—	—				
				19·0	—	—				
				also diagonal halves, sills, stairtreads, etc						

Sourse: Everette A. (1979) FINISHES : Anchor Press London (pg. 40-45)

Table 5.1 Characteristic / Properties of various floor finishes

FLOORINGS

Material, form and references[1]	Base	Properties	Appearance	Sizes[4] Thickness mm	Width mm	Length mm	Laying	Surface treatment: Initial	Surface treatment: Maintenance	Average cost factors[5]
4 Vitrified ceramic floor tiles[2] Manufactured from refined clays, of more uniform composition than used for quarries and which include fluxes to increase vitrification		More accurate size and shape and more uniform colours than above units Smooth surface Greater resistance to wear, oils, fats and chemicals including alkalis and to frost than quarries	Colours – black, white and wide range of monochromes and mingled colours Textures – *Matt* develops sheen with wear. Available	15 20 20 30 35 40	150 200 225 300 400 500	150 200 225 300 400 500	As for similar clay products see above and page 34 but the backs of concrete tiles or slabs are brushed with neat cement slurry immediately before they are laid	May be sealed to prevent oil stains – see Concrete Finishes page 31	Scrub with detergent in hot water and with mild scouring powder if dirt is engrained (Avoid acidic cleaning agents on Portland cement and strong alkaline	30 – 50 60 (industrial)
				also hexagons and other shaped *tiles*						

Table 16 B IV Clay and precast concrete floorings

7 Concrete – precast Ordinary or coloured cement and aggregate hydraulically pressed Heavy duty tiles have hard stone or metal aggregate and/or abrasive included in surface		Properties very widely Better products benefit by quality control, hydraulic pressing etc, are 'pre-shrunk' and have high resistance to wear, but inferior products may craze and 'dust' Resistance to chemicals varies with density	Colours – given by natural grey, white and pigmented cements and by aggregates when exposed in manufacture, by wear or by weathering Textures – plain, rib-	*Preferred Modular co-ordinating sizes* 9·5	100	{100 {200		Polishes, linseed oils and other seals are not absorbed. Use polish sparingly and remove occasionally – a build-up becomes slippery and holds dirt		60
				Modular work sizes 9·5*	95·5	{95·5 {194·0				
										– *continued*
8 Terrazzo – precast tiles Hydraulically pressed concrete tiles, faced with marble aggregate in white or coloured cement matrix about 10 mm thick (abrasive may be incorporated) Surface ground BS 4131 : 1973 *Terrazzo tiles* BS 4357 : 1968 *Precast terrazzo units (other than tiles)* eg stair treads and risers	Concrete	Properties generally as for high quality precast concrete units Similar to in-situ terrazzo, but tiles benefit from factory production as above Should not be laid for 21–28 days after pressing *Size tolerance* (BS 4131) ± 1 mm	Colours – wide range Joint pattern – can be inconspicuous or colours of tiles can be alternated Appearance similar to in-situ terrazzo but very large aggregate is sometimes used in a matrix of smaller particles and cement Liable to staining by some timbers, rope and straw	15 20 20 30 35 40	150 200 225 300 400 500 300 and 500 max width hexagons	150 200 225 300 400 500	As for clay tiles see page 282 but backs of tiles are brushed with neat cement slurry immediately before they are laid. Dividing strips (see in-situ terrazzo) between groups of tiles	Usually ground after laying to remove any lipping edges Protect with non-staining sawdust Scrub with non-alkaline non-acid soap and allow to stand overnight Rinse with hot water Can be protected against staining with suitable water-based seal	Wash with warm water and occasionally fine abrasive powder. Use soap only if it is thoroughly rinsed off Do not apply polish or allow to become contaminated with soap or wax Do not use oiled sweeping compounds or disinfectants containing phenols and cresols	70

Source : Everette A. (1979). FINISHES : Anchor Press London (pg 48-45)

Table 5.1 Characteristic / Properties of various floor finishes.

FLOORINGS

Form of unit and reference[1]	Base	Properties	Appearance	Typical sizes: Thickness mm	Typical sizes: Width mm	Typical sizes: Length mm	Laying	Surface treatment[2]: Initial	Surface treatment[2]: Maintenance	Average cost factor[3]
Composition blocks Various combinations of cement and drying oil or PVC binder, chalk, sawdust, wood flour, inert aggregate, and pigments pressed into blocks and cured Blocks have dovetailed keys on underside CP 202 : 1972 *Tile flooring and slab flooring*	Concrete or screed A dpm is recommended on wet sites and is essential below floor warming	Good resistance to wear Heavy duty blocks incorporate white spar chippings Resilience low. Very good resistance to indentation Moderately warm Slippery only if highly polished Very good resistance to vegetable oils Good resistance to water, alkalis, acids, animal and mineral oils	Colours – rather dark Black and four colours on grey cement base Seven colours on white cement base Patterns – basket, herringbone and brick bond	10 and 16	52 63	157 190	Bed on 13 mm 1 cement : 3 sand Joints grouted with proprietary mortar Cure with wet sawdust Also accessories	Sand Seal	Sweep with damp sawdust Wash with soap and water Rinse Apply proprietary polish Can be resurfaced by sanding	36 (10 mm) 43 (16 mm)
7 **Parquet panels** 6 mm hardwood parquet mounted on laminated softwood Tongued and grooved on all edges	1 Joists or battens 2 Screed	Composite construction gives wear properties equivalent to strip	As end-matched hardwood strip	25 — 32	305 and 610 squares for laying		1 Glue tongues and nail through tongues if necessary 2 Bedded in hot bitumen 3 Some interlocking products can be laid loose, eg as removable dance floor on carpet	Products without shop finishes treated as *blocks*	As 1 Blocks	
8 Mosaic Hardwood butt-edged 'fingers' bonded to a base of scrim, felt or perforated aluminium foil or overlaid with membrane which is stripped off after laying BS 4050 : 1966 *Wood mosaic flooring*	Floated screed, 4 mm resin-bonded plywood or 4·8 mm hardboard	Similar to blocks Smaller units and basket pattern localize moisture movement	Generally supplied in less exotic hardwoods than parquet Joint pattern – Usually basket weave in 114 or 150 mm square units each comprising five or six 'fingers' respectively	10 — 16	305 and 457 squares for laying		Bonded with cold adhesive and rolled Any surface overlay removed Gaps below skirtings and cork expansion strips as for wood blocks			34 – 60 (10 mm)

Source: Everette A. (1979). FINISHES : Anchor Press London (pg. 40 – 45)

Poor workmanship usually results in fast deterioration of buildings. A combination of negligence and incompetence arise from either insufficient skill or indifference on the part of the construction team.

In this context, workmanship is intended to cover faulty materials, as well as workmanship in terms of craftsmanship. Poor workmanship usually results in cracks and foundation failures. This implies that within the construction trade, there are expected standard of workmanship which are closely related to the functions of the building.

5.2.5 Other Factors Affecting Maintenance works in Buildings

Variations in the standard of construction could worsen or improve the finished product. Application of paints for the essence of aesthetics enhancement via colour scheme also becomes relevant in effects on maintenance works. The change in the pattern of deterioration caused by the failure of other Sancrete block, paint is another factor of maintenance work that is difficult to quatify.

5.3 TYPES OF MAINTENANCE WORKS IN PUBLIC BUILDINGS

In the Nigerian context, maintenance works are usually carriedout based on either regular or routine; primarily to prevent deterioration and also on health grounds, aesthetic or for reasons of breakages in working parts.

The following types of maintenance are of importance:

1. Servicing
2. Rectification
3. Replacement

5.3.1 Maintenance Works in Servicing

Servicing is essentially an operation that is carriedout at regular intervals which is sometimes as closed as daily or weekly maintenance.

Various activities such as dusting sweating, washing, brushing, polishing, painting are some examples in servicing maintenance. The frequency of cleaning, brushing, polishing, etc depends largely on the building components employed.

5.3.2 Maintenance Works in Rectification

Rectification entails the restoration of function of a facility without changing any of its parts. This is usually brought about as a result of mistakes in design, damage of components during carriage or installation and the incorrect assemblage as well as unsuitability of certain components.

Rectification could entail the under pinning of foundations which is undertaken due to failure in such foundations as a result of faulty design or an unforseen change in soil condition. Failure of decorative floor coverings on solid concrete ground floor slab due to the penetration of dampness could also warrant maintenance work in rectification of such fault.

5.3.3 Maintenance works in Replacement

When a part or a whole component of a building is totally changed due to lack of functional qualities, being aesthetically unpleasing and generally unsatisfactory; a replacement could be inevitable.

Maintenance work in replacement is usually carried out due to the break down of materials, the decay or deterioration of appearance of such components, and etc.

1. Iwor H. Seeley (1985) Building Maintenance: Macusthein Hong Kong (pg. 1-3).
2. Iwor H. Seeley (1985) Building Maintenance: Macusthein Hong Kong (pg. 1-3).
3. Iwor H. Seely (1985) Building Maintenance: Macusthein Hong Kong (pg. 12-13).
4. Ezimako N. Emeka (1991).

CHAPTER SIX

OBJECTIVE

6.0 MAINTENANCE PROBLEMS ALLEVIATION IN NIGERIAN PUBLIC BUILDINGS

6.1 INTRODUCTION

Since nature doesnot allow physical eternity, buildings are no exceptions. A critical analysis of the various aspects of the building structure with respect to the various component parts coupled with an understanding of the physical conditions in which a building is sited assist in curtailing maintenance problems.

In this chapter, the various aspects requiring consideration shall be treated to give an insight into the various measures required to achieve good results. This would be discussed under the following headings:-

(a) Building site and maintenance

(b) Foundation and maintenance

(c) Walls and maintenance

(d) Floors and maintenance

(e) Roofs and maintenance

(f) Doors and windows maintenance

(g) Water flow and maintenance

(h) Finishes and maintenance

(i) Fire and its consequent effects

6.2 BUILDING SITE AND MAINTENANCE

For a building to function effectively, it has to be adaptable to its site. Hence before construction work commences on a site, consideration must be given to the location, soil

type, topography, water presence, climatic conditions, orientation, and etc of the site. All these added together contribute, in no small measure to the resultant maintenance needs of any built form.

6.2.1 Soil Type

Basically the ground, of which sand is it's constituent matter, is required to socially support the building structure; hence the structural integrity depends largely on the soil type and its strength when put under loading (load bearing capacity) A measure of the various soils strength is the compressibility or bearing capacity in killogrammes per meter square seely 1985. See table 6.1).

6.3 FOUNDATION AND MAINTENANCE

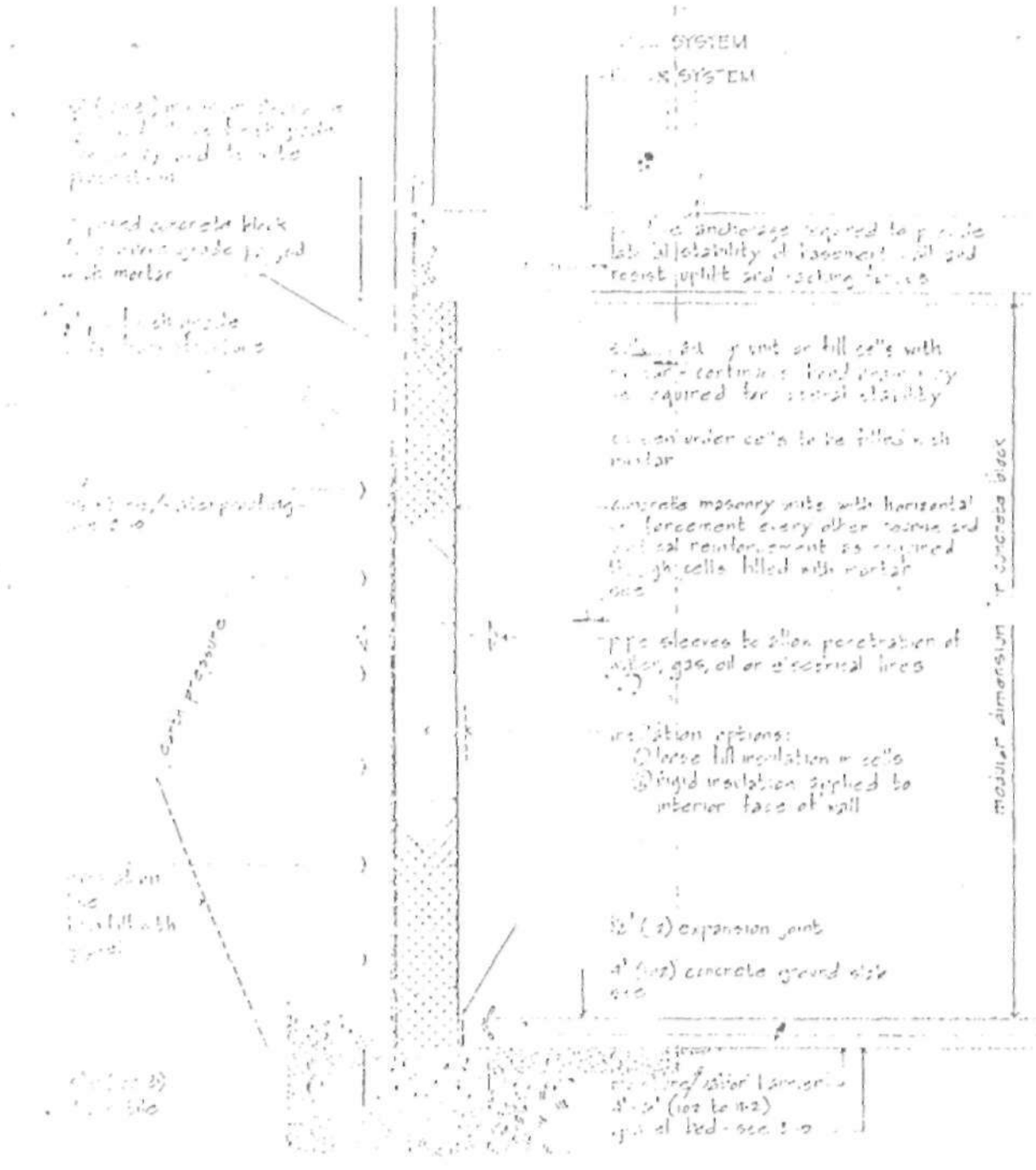
The substructure of any building is the vertical link in transmission of a building load down to the ground bearing directly on the soil. Loads are expected to be distributed vertically and in such a manner that faults/problems such as differential settlement do not arise (see fig. 6.1).

The type of foundation required for any given building structure, depends largely on so many factors; the primary of which is the load bearing capacity of the soil. The most efficient loading and foundation system should be able to produce such transmittion not exceeding the bearing capacity of the soil. In order to achieve this, an effective design should be employed such that very little or no harmful distortion is allowed, hence the idea is to keep the movement as slight as possible. In this regard, the substructure (foundation and basement alike) should be sufficiently rigid to redistribute the load and keep settlement within the allowed limit.

Table 6.1

No.	Soil Type	Soil Bearing Capacity kg/m²
1.	Compact, partially cemented gravel or sand; well graded with little or no fires.	97,640
2.	Compact gravel; gravel and sand mixture	58,584
3.	Course, compact sand; loose gravel; hard, dry, clay	39.056
4.	Course, loose sand, fine, compact sand; loose sand and gravel mixture	29,292
5.	Fine, loose sand; dry, stiff clay	19,528

Source: Ivor H. Seeley, (1985) Building Construction; Macmillian Hong kong (pg



FOUNDATION WALL SECTION

The details illustrated here and on the following page are applicable for both concrete block and cast concrete foundation walls

Fig 6.1 Foundation Wall Section

For public buildings, whatever foundation design to be adopted should be such that the calculation of all possible loads be carriedout by qualified professionals authorised to carryout such work. Loads to be calculated in this wise include wind sunction and over turning. Both dead and imposed loads are to be calculated and added together. Result obtained from these calculations ensures the selection of an appropriate foundation type to be specified which could be either strip, raft pad or pile, (see table 6.2).

Other considerations in the design of foundations may include: Site topography, desired building form, structural system, foundation materials (concrete or mainsonry wall) requirement for thermal insulation water, proofing, moisture protection, expansion and contraction.

6.4 WALLS AND MAINTENANCE

Walls are the vertical elements of the built form. It is either of solid structure in bricks, stone cancrete, saixcrete blocks, aluminium or timber. Basically walls are of two members - post and column, which constitute the linear bearing vertical element while the other member is the panel filling in between the columns and forming the non-structural member. Walls are either external - load bearing or internal non load bearing. (see figure 6.3).

The design, size and location of door and windows in walls are determined by the type of natural lighting, ventilation, view, access and etc. required to be admitted into any given space. In addition, these openings should comply with the resistance of the wall system construction, so that structurally, vertical loads are properly distributed around the openings and ensure that the stresses around such openings are not transferred to the door or the window units themselves.

Table 6.2: SOIL AND SITE CONDITIONS ALONGSIDE FAVOURABLE FOUNDATION FOR EACH.

Source: Building Construction Illustrated.

Soil type and site condition	Foundation	Details	Remarks
Rock, solid chalk, sands and gravels or sands and gravels with only small proportions of clay dense silty sands	Shallow strip or pad footings as appropriate to the load bearing members of the building	Breadth of strip footing to be related to soil density and loading. Pad footings should be designed for bearing pressures tabled in CP. 101: 1963. For higher pressures the depth should be increased and Civil Engineering Code of Practice No. 4. 'Foundations' consulted	Keep above water wherever possible. Slopes on sand liable to erosion. Foundations 0.5m deep should be adequate on ground susceptible to frost heave although in cold areas or in unheated buildings the depth may have to be increased. Beware of swallow holes in chalk

Table 6.2 (cont.)

Soft clays, soft silts, clays	Strip footings up to 1 m wide if bearing capacity is sufficient, or rafts	See CP 101: 1963	Settlement of strips or rafts must be expected. Services entering building must be sufficiently flexible. In soft soils of variable thickness it is better to pile to firmer strata
Peat, fill	Bored piles with temporary steel lining or precast or in situ piles driven to firm strata below	Design with large safety factor on end resistance of piles only as peat or fill consolidating may cause a downward load on pile. Field tests for bearing capacity of deep strata or pile loading tests will be required	If fill is sound, carefully placed and compacted in thin layers, strip footings are adequate. Fills containing combustible or chemical wastes should be avoided
Mining and other subsidence areas	Thin reinforced rafts for individual houses with load-bearing walls and for flexible buildings	Rafts must be designed to resist tensile forces as the ground surface stretches in front of a subsidence. A layer of granular material should be placed between the ground surface and the raft to permit relative horizontal movement	Building dimensions at right angles to the front of long-wall mining should be as small as possible

Source: Building Construction [Illustrated]

Table 6.2 (cont.)

Uniform, firm and stiff clays: (1) Where vegetation is insignificant	Bored piles and ground beams, or strip foundations as least 1m deep	Deep strip footings of the narrow widths can conveniently be formed of concrete up to the ground surface	Downhill creep may occur on slopes greater than 1 in 10. Unreinforced piles have been broken by slowly moving slopes
(2) Where trees and shrubs are growing or to be planted close to the site	Bored piles and ground beams		
(3) Where trees are felled to clear the site and construction is due to start some afterward	Reinforced bored piles of sufficient length with the top 3 m sleeved from the surrounding ground and with suspended floors, or thin reinforced rafts supporting flexible buildings, or basement rafts		

6.4.1 External Walls

The external walls serve to protect and shield against exterior conditions for a building's interior space (the enclosure). Some external walls are nonload bearing depending on the adopted structural system. However, most external walls are load bearing.

As part of the maintenance requirement, this member is expected to have sufficient resistance to external weather effects; depending on orientation on the site. The heat transmittion properties as well as the reflective and absorptive nature of walls, along side their insulatory values need be considered in the design and choice of wall system. (see fig. 6.2).

6.4.2 Internal Walls

The internal walls are usually nonload bearing members and are of no structural linkage. They only serve to divide and define internal spaces. Usually referred to as partition walls, they have very well finished surfaces and are made to be of high wear resistance.

6.5 FLOORS AND MAINTENANCE

The floor constitutes the horizontal plane which supports the live and dead loads of spaces within a building or without.

All loads on the floor are structurally expected to be transferred laterally to either beams and columns or load bearing walls; while providing, at the same time, lateral support for the adjacent walls. Proper design and choice is required in order to prevent major maintenance problems. This is because the floor system may be composed of linear beams or joints over loud within plane of seating or it may be of an almost homogenous material.

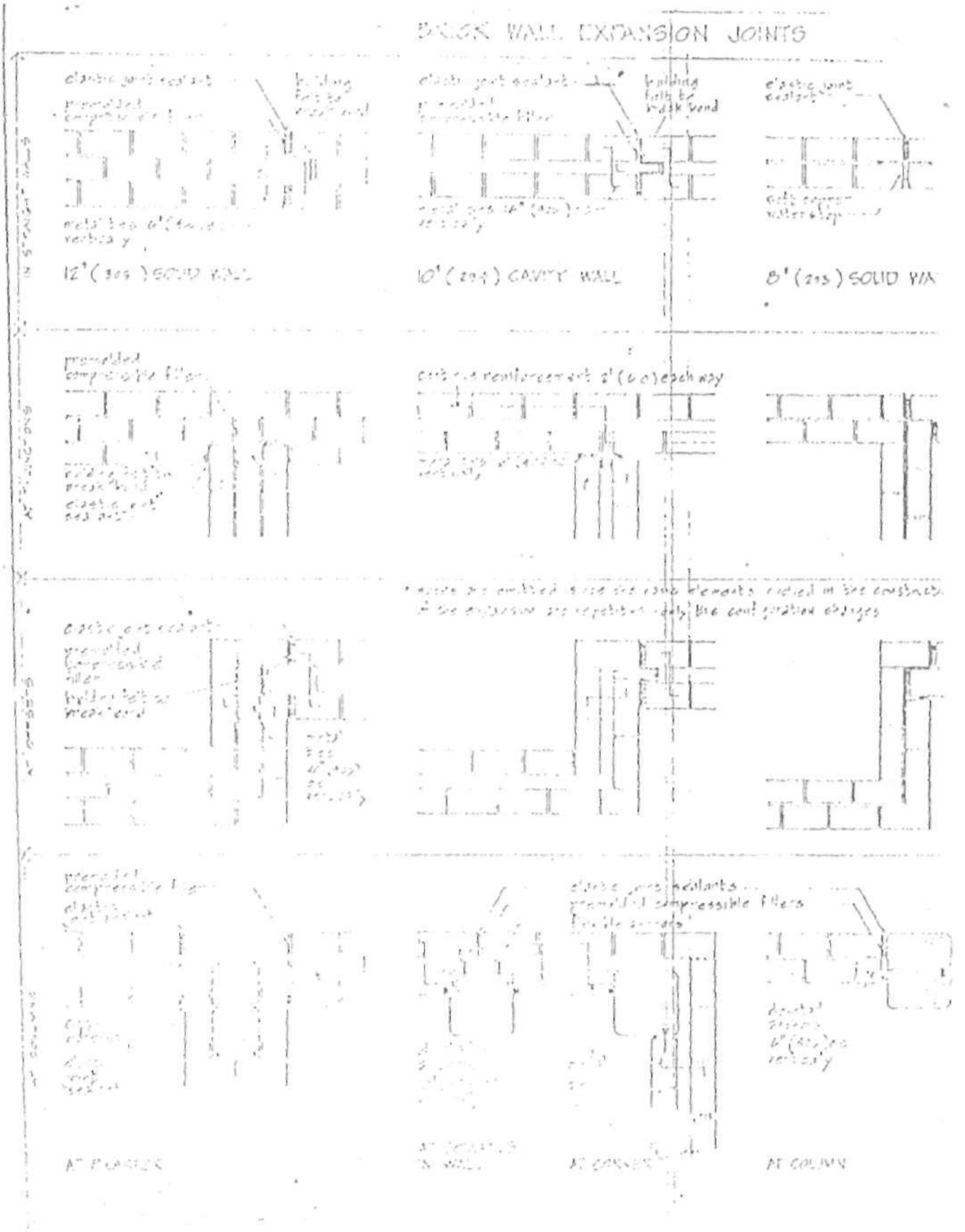


Fig 6.2 Expansion Joints in Wall.

In addition to the span of a floor system, the desired openings within the floor plane, cantilever, size, proportion and placement must be considered in the structural determination of the floor system. Floors should safely support moving loads: hence the support of floor system must be relatively stiff in this instance, while its elasticity should also be maintained. (see fig. 6.3) By virtue of their requirements, floors can either be ground floor or suspended upper floor.

6.5.1 Ground Floors

Ground floors are partly or wholly in contact with the substructure; hence the following requirements need be satisfied in their design in order to achieve effectiveness and reduce maintenance on them:

(i) Prevention of growth of biological matters in side the building by the provision of concrete blinding before casting the floor stab.

(ii) Penetration of Dampness must be prevented by the use of damp proof membrane (DPM) inside or beneath the floor slab. In the case of a suspended ground floors, under - floor ventilation is required in order to prevent stagnant water and the accumulation of moist air under the floor.

(iii) There is need to introduce a layer of an insulating material in order to reduce heat loss into the ground as the case for heated buildings is very important.

(iv) Provision of acceptable surface finishes to meet the needs of the users in terms of appearance, comfort, safety, cleanliness and etc.

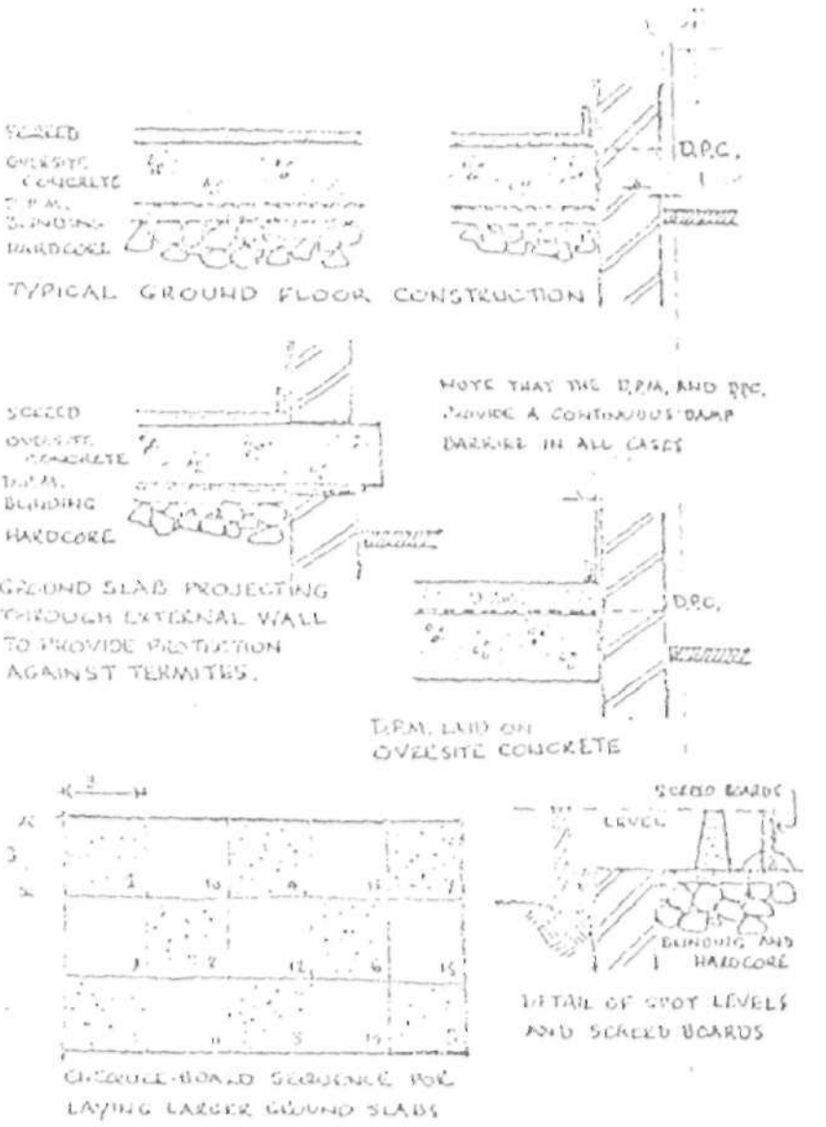


Fig 5.3 Floor Construction Illustration

6.5.2 Upper Floors

Upper floors are often suspended, being elevated via post or columns as the case may be. The following need be satisfied in their design in order to achieve effectiveness and reduce maintenance in them:

(i) Upper floors should be capable of supporting their own weight (self weight)

(ii) Should be capable of ensuring fire retardation; this is predominantly required in high rise buildings.

(iii) Should be durable and of very high standard.

(iv) Should readily accommodate services

(v) Provide acceptable surface finishes to meet the needs of the users in terms of appearance, comfort, safety, cleanliness and etc.

In either of the two types of floors, finishes and their visual properties, i.e materials, colour, texture, pattern and etc, help to determine the choice of the floor system which can most easily support these finishes and thus reduce its maintenance.

6.6 ROOF AND MAINTENANCE

The roof system in a building is the primary sheltering element, protecting the interior spaces of the building from the natural elements. It should also control the flow of water from rain, water vapour, heat, wind and etc. In addition to this primary function, the roof must be structured to carry its own weight as well as the live loads such as that of wind. The roof system must be fire resistant and may have to accommodate mechanical and electrical equipments fig. 6.4.

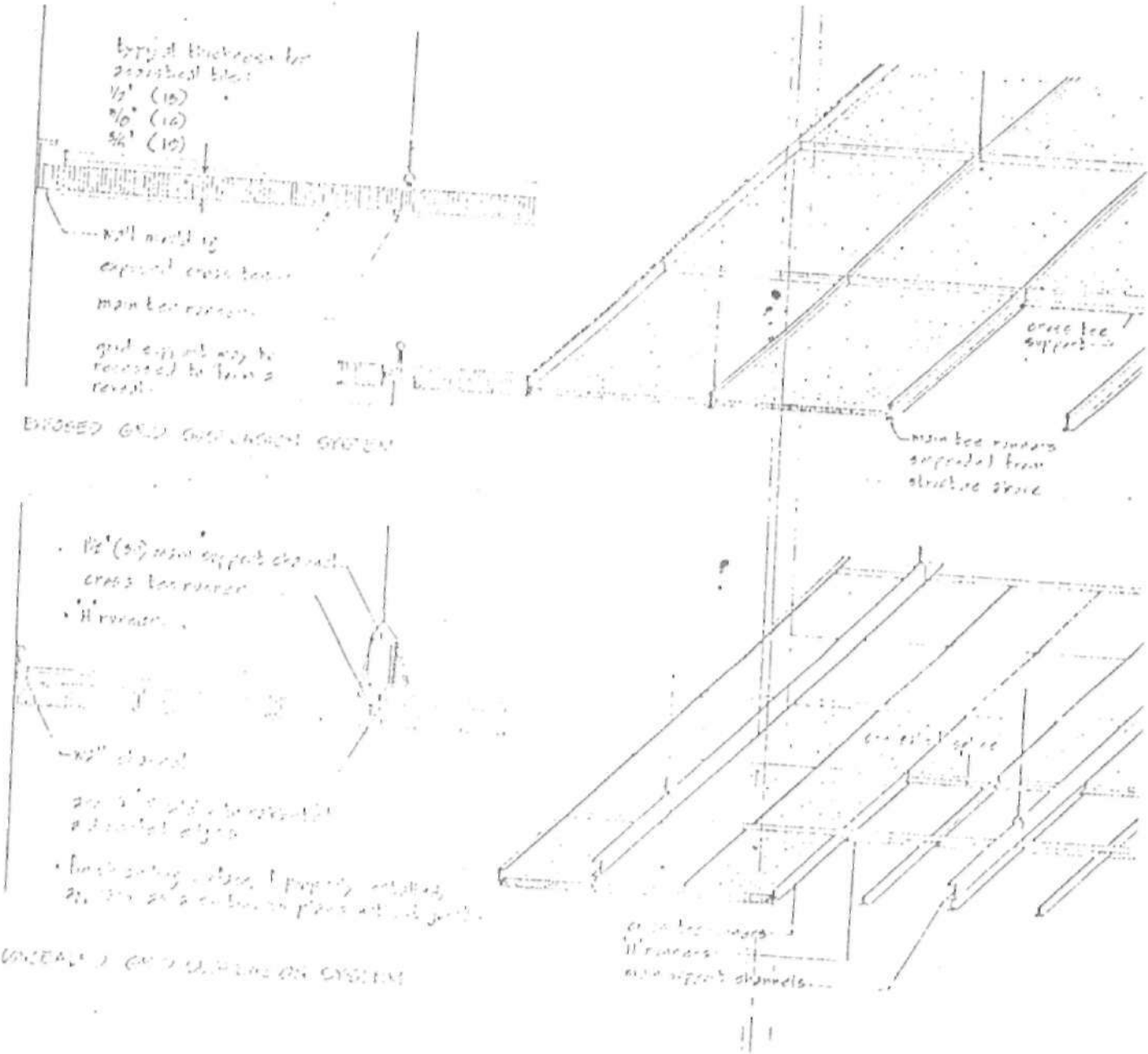


Fig 6.4 Suspended Ceiling Details

The roof system is the most expensive system of the building because of its varied functional tasks that are spread over a large area. Worthy of consideration in the design and choice of materials of roof system are economy, maintenance, durability, weather resistance, fire resistance, strength, insulation against potential heat loss or gain and etc.

The form of the roof system is a critical element in the visual image of a building, whether flat or hidden indene by a parapet wall. The roof form and the spacing span and slope of its structural members also affect the choice of the roof covering material, the interior ceiling system and the layout form of the building's interior spaces. Long roof spans would open up a more flexible interior spaces while short spans would demand more rigidly defined spaces.

6.7 DOORS AND WINDOWS IN MAINTENANCE

Doors and windows provide for physical, visual and light penetration into and through a building's interior; while enclosing interior space and maintaining the continuity of the building skin.

From an exterior point of view, doors and windows are very important compositional and scale-giving elements in a building's facade. The manner in which they break up a building's surface affects the massing visual planes; whether filling spaces within a skeleton structural frame, or puncturing a masonry wall. fig. 6.5.

The size, proportion and location of doors and windows in a building must be carefully planned for that adequate rough opening with properly-sized lintels can be built into the building wall system to allow for minimum maintenance.

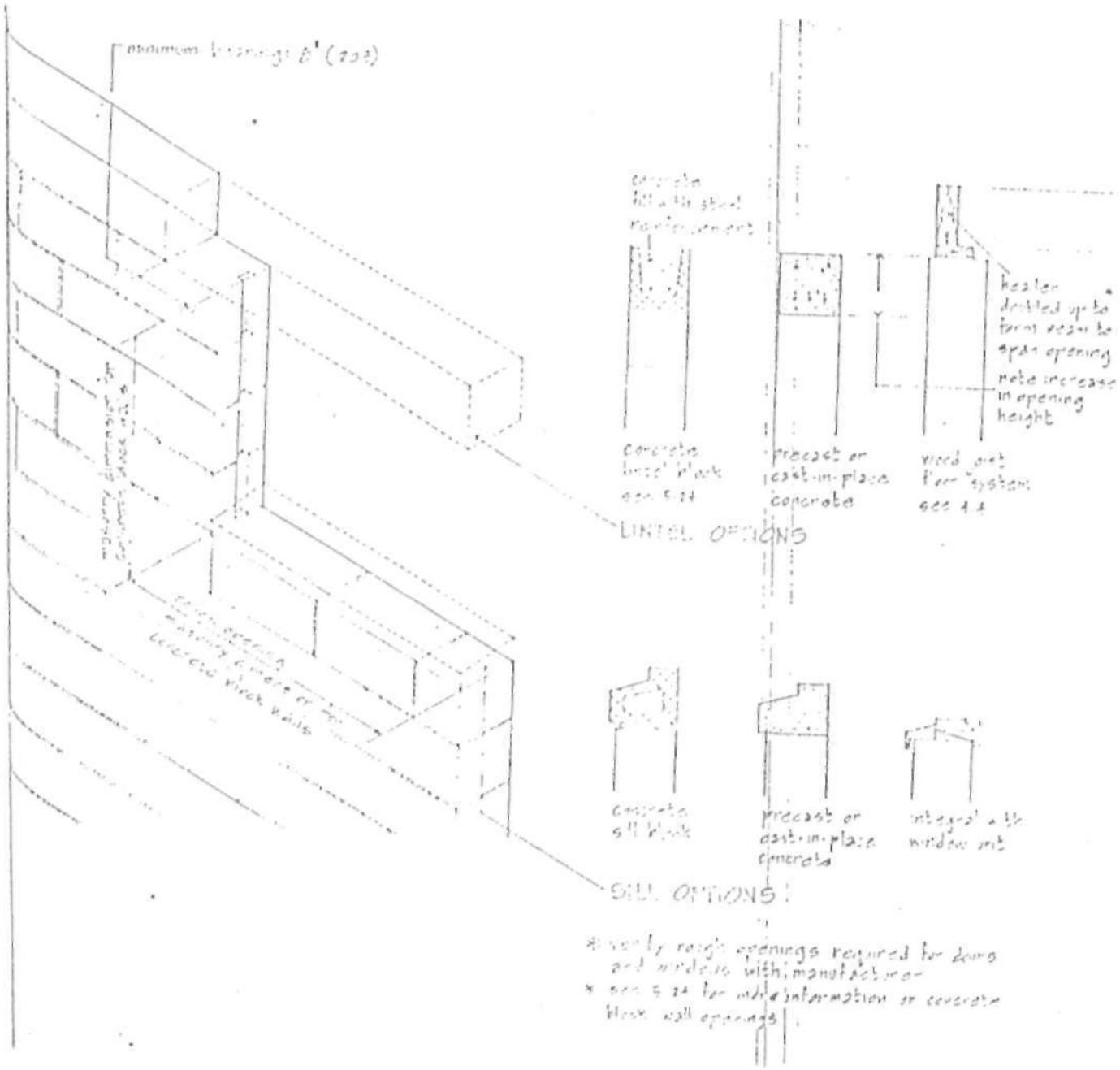


Fig 6.5 Lintel and Sill Details

6.7.1 Doors in maintenance

Doors and doorways provide the means of access into a building's interior from the exterior and the passages between interior spaces. External doors must provide weather - tight seals when closed in order to maintain the appropriate insulative value of the building's external walls, and also to minimize the possibility of condensation forming on their internal surfaces.

Doors must be large enough to move through it easily and to accommodate the movement of all interior furniture and equipments. Consideration performance of doors should also include ease of operation privacy, security, light needs, ventilation, view needs and etc.

6.7.2 Windows in Maintenance

Generally, windows provide light, ventilation and view. Windows should provide a weather tight seal when closed, have insulative value and be free from condensation in order to avoid maintenance problems.

There are many sizes and types of windows; the choice of which affects not only the physical appearance of a building but also the natural lighting, ventilation, view potential as well as spatial quality of a buildings interior. fig. 6.6.

6.8 WATER FLOW AND MAINTENANCE

In the past, the traditional glossary of building details has saved the architect from having consideration for whatever was readily happening when rain deluge the surface of his buildings. He applied more for aesthetic than practical reasons. The details, his architectural training had taught him, though most of the details had the very practical effects of breaking

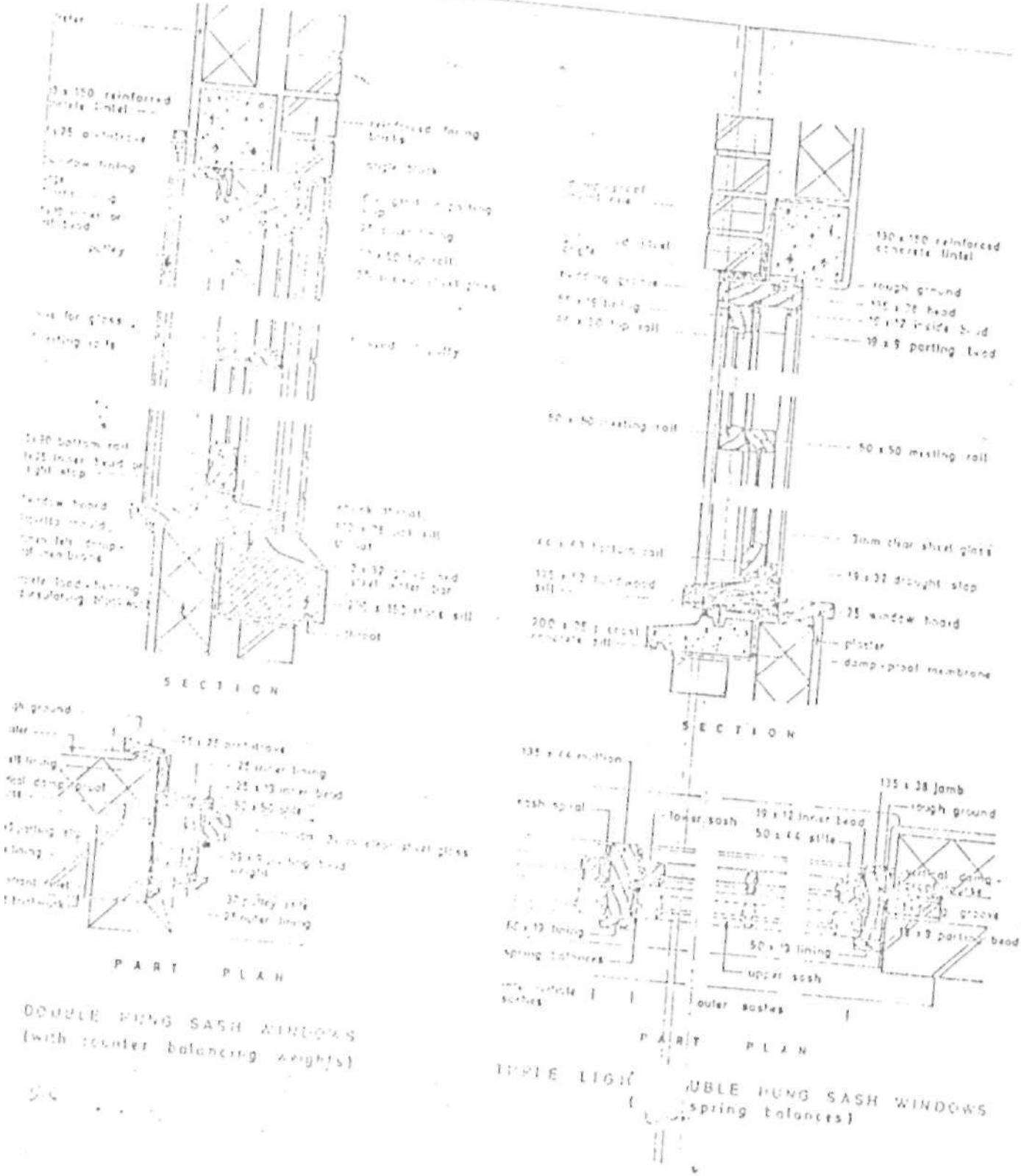


Fig 6.6 Window Details

473331

up concentrations of rain water and spreading the washing effect of the rain more evenly over wall surfaces; thereby improving the weathering of the buildings.

Over hanging eaves, projecting gutters and canopies/coping, strings courses and cills save buildings from the worst effects of the water flowing over the building surfaces. The secrete of even weathering is an efficient control of the water flowing over a building surface.

All the three objectives mentioned are relevant to the problem of maintaining the weather proof integrity of the building shell in order to minimize maintenance problems.

Architects, to this effect, should design buildings whose details would dissipate the expected built-up of water either by casting it off the building or by diffusing the flow as evenly as possible to places where it will not affect the weather tightness of the building; often this is of necessity; a question of logically analysing and thereby ultimately solving a problem. fig. 6.7.

6.9 FINISHES AND MAINTENANCE

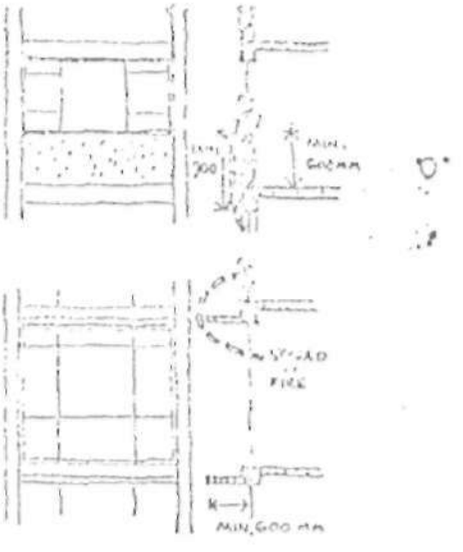
Basically, external wall surfaces must be weather resistant, durable and relatively maintenance - free. External walls should be wear-resistance and cleanable. Floors should be safe (non-slippery), and durable against traffic. Ceiling should be maintenance-free. All these depend on the right choice of materials applicable for effective performance.

The strength of a finishing material depends on its stiffness and, or brittleness and the rigidity of its backing.

For visual appearance, all finishing materials should be considered in terms of their colours, texture, pattern, modular - characteristics and their maintenance nature and requirements.



HORIZONTAL SEPARATION
OF OPENINGS RELATIVE TO A
COMMON BOUNDARY



VERTICAL SEPARATION
OF OPENINGS

Fig 6.7 Vertical and Horizontal seperation of openings

Table 6.3 : DESIGN DEFICIENCIES THAT CAN CONTRIBUTE TO FIRE SPREAD FROM ONE BUILDING TO ANOTHER.

Source: Building Construction Illustrated.

Design Deficiencies That Can Contribute to Fire Spread Through a Building
Lack of or inadequate vertical and/or horizontal fire separations.
Unprotected or inadequately protected floor and wall openings for stairs, doors, elevators, escalators, dumbwaiters, ducts, conveyors, chutes, pipes, and windows.
Concealed spaces in walls and above ceilings without adequate fire-stopping or fire divisions.
Combustible interior finish, including combustible protective coatings and insulation.
Combustible structural members (beams, girders, and joists) framed into firewalls.
Improper anchorage of structural members in masonry-bearing walls.
Explo sion or pressure damage to the building due to lack of or inadequate expplo sion venting where required.
Damage to unprotected framing resulting in weakening or destruction of floors and walls used as fire barriers.
Lack of means to ventilate fire gasses.

Table 6.3 (cont)

Design Deficencies That Can Contribute to Fire Spread From One Building to Another.
Lack of or inadequate fire division walls between adjoining buildings.
Unprotected or inadequately protected openings in fire division walls between adjoining buildings or in firewalls between detached buildings.
Exterior walls lacking adequate fire resistance
Inadequate separation distance.
Combustible roofs, roof coverings, roof structures, overhanging eaves, trim, and so forth.
Lack of protection at openings to passageways, pipe tunnels, conveyors, ducts and so forth between detached buildings.
Explosion or pressure damage to adjoining or detached buildings
Collapse of exterior walls.
Source Fire Protection Handbook.

6.10 FIRE AND ITS CONSEQUENT EFFECTS.

Fire is a special kind of condition known as combustion. Fire has a triangular need to be effective; these are fael, oxygen and heat. If deprived of any of these fire would seize to burn and therefore become extinguished.

There are three common objectives of fire safety, in building, in order of visual importance. These are:

(i) Protection of life

(ii) Protection of properties

(iii) Continuity of operation

Many of the elements of fire safety in building are covered by building codes; but it is important to remember that codes usually specify the minimum acceptable protection. Architects can go much further than the codes required to enhance fire safety. It is also important to realise that codes cannot cover all aspects of the fire safety, as there are too many variables to the building design (see table 6.6).

The fire safety requirement of a building shall depend on what is done to prevent fire from starting in the building and secondly what is done via design, construction and good management to minimize the spread of fire especially when it happens.

The fire resistance that building structure is required to offer is measured in units of time via; one-half, one, two or four hours. The period of time is determined by the height, the floor area and the volume of the building. It also depends on the use to which the building is put.

Table 6.4 : CLASS OF BUILDING AND EQUIVALENT FIRE RESISTANCE PERIOD IN HOURS.

Source: Building Construction Illustrated.

Class of building	Height, cubic capacity, floor area	F.R period (hours)
1 3-storey house, flats hostel, hotel	a) Up to 15 metres high or b) Between 100m³	1/2
	a) Over 15 metres high or b) Over 250m² in floor area	1
2 Shop, office, hostel, hotel	a) Between 15 and 22.5 metres high or b) Between 1666m³ and 4166m³	1/2
	a) Over 22.5 metres high or b) Over 4166m³ cubic capacity	1
3 Church, hospital college, School, theatre, cinema, concert hall, ballroom, exhibition factory.	a) Less than 15 metres high or b) Between 1666m³ and 4166m³	1/2
	a) Between 15 and 22.5 metres high or b) Up to 750m² in floor area or c) Between 4166 and 8332 m³	1
	a) More than 22.5 metres high or b) More than 8332m³ or c) More than 750 m² in floor area	2
4 Warehouse	a) Between 7.5 and 15 metres high or b) Between 833m³ and 1666m³	1/2
	Between 1666 and 4166m³	1
	a) Between 15 and 22.5 metres high or b) Between 4166 and 8332m³ or c) Up to 750m² in floor area	2
	a) Over 22.5 metres high or b) Over 8332 m³ or c) Over 750m² in floor area	4
	*Floor area per floor	

Table 6.5 : CONSTRUCTION METHODS RELATIVE TO FIRE RESISTANCE PERIOD.
Source: Building Construction Illustrated.

Construction		Fire resistance period			
		½	1	2	4
Walls	Stone or brick no plaster	100	100	215	215
	12 mm plaster	100	100	100	100
	Lightweight concrete blocks no plaster	60	75	100	—
	12 mm plaster	50	60	100	—
	Dense concrete blocks no plaster	75	100	—	—
	12 mm plaster	50	75	100	—
	Reinforced concrete min. cover 25 mm	75	75	100	75
Floors	Solid reinforced concrete	80	100	125	150
	Cover to reinforcement	12	12	12	25
	Hollow block total thickness of the solid material	60	75	80	125
	Cover to reinforcement	12	12	12	25
Timber work	Columns cased in concrete	25	25	50	50
	cased in brickwork	50	50	75	112
	Beams cased in concrete	25	25	50	60
R.C.	Columns minimum overall dimension	150	200	300	450
	Beams no requirement for size but cover to reinforcement	25	40	50	60

Thickness in mm

Table 6.6 : FIRE RESISTANCE CONSTRUCTION METHOD.

Source: Building Construction Illustrated.

Example	Walls	Floors	Steel	Concrete —
1	Brick 100 mm Concrete blocks 75 mm	Hollow pot 75 mm	—	—
2	Reinforced concrete 75 mm	Solid concrete		R.C. columns
3	Brick 215 mm Blocks 100 mm	—		

Fire resistance construction

The limits are set out in table 6.4 which while the first resistance period gives a reasonable time from the moment the fire is discovered and the alarm should for the evacuation from the building and for the fire Brigade to enter the building and contain the fire.

When the fire resistance period required by the structural elements of a building has been determined, the dimensions of materials which will provide the appropriate resistance can be selected from table 6.5. The fire resistance period should be applicable to all the other demerits of the building structures like doors, ceiling, floors and etc.

CHAPTER SEVEN

THESIS SITE

7.0 THE THESIS SITE: ENVIRONMENTAL PHYSIOGRAPHY AND DEMOGRAPHY

The thesis site is at Ilorin, the capital of Kwara State of Nigeria.

7.1 HISTORICAL PROFILE OF ILORIN.

The historical profile of Ilorin is discussed fully under the following headings:

7.1.1 Regional Location

Ilorin is located in the northern part of Nigeria. It was the headquarters of the defunct Ilorin province and became the capital of Kwara State in 1967 following the creation of states. (see fig. 7.1)

Ilorin is a town founded several hundred years ago. Originally it was occupied by the Yorubas. The 13th century Islamic Jihad which extended its frontier to many parts of Northern Nigeria reided Ilorin and since then several others settled in the town; some of whom are the Fulanis, the Hausas, the Gobris,and etc.

Ilorin is generally regarded as the gateway between the Northern and souther parts of Nigeria. It is now regarded as being in the middle belt area of Nigeria. Its central location accounts for its moderate climate as the effect of both the North easterly Trade Winds and the south-West Trade winds are felt in the town at one time or the other throughout the year. Ilorin has become a meeting point for most civil servants working for the government and the citizens alike.

Generally, the land is flat in nature except for some inselbergs like the Shao hills and flowing rivers like the Asá Aluko and Ogun rivers that water the old city. One of the rivers, Asa river, crosses the town and almost disect it into the old and new districts.

7.1.2 Population of Ilorin

Statistics has shown that the city has witnessed rapid population growth since the creation of Kwara State on May 27th 1967. Since the town accommodates the vast majority of the state's civil servants as well as federal civil servants, about 75% of its population are in active labour force, spread over civil service, education, commerce, agricultural sectors and etc; a development that is very commendable. Ilorin, being traditionally an Islamic city, greater percentage of its devellers are Muslims.

The population statistics of Ilorin over the years till 1991 are as follows:

YEAR	POPULATION	SOURCE
1963	208,546	Census
1974	389,000	Master plan
1976	476,385	Local Plan
1991	572,178	Census

7.1.3 Demography of Ilorin

The growth of Ilorin started in the year 1900, but more rapidly in the year 1968 after its designation as the capital city of Kwara State. The population of Ilorin in 1980 was 486,000 and was estimated then that it would be about 537,000 by the year 1990.

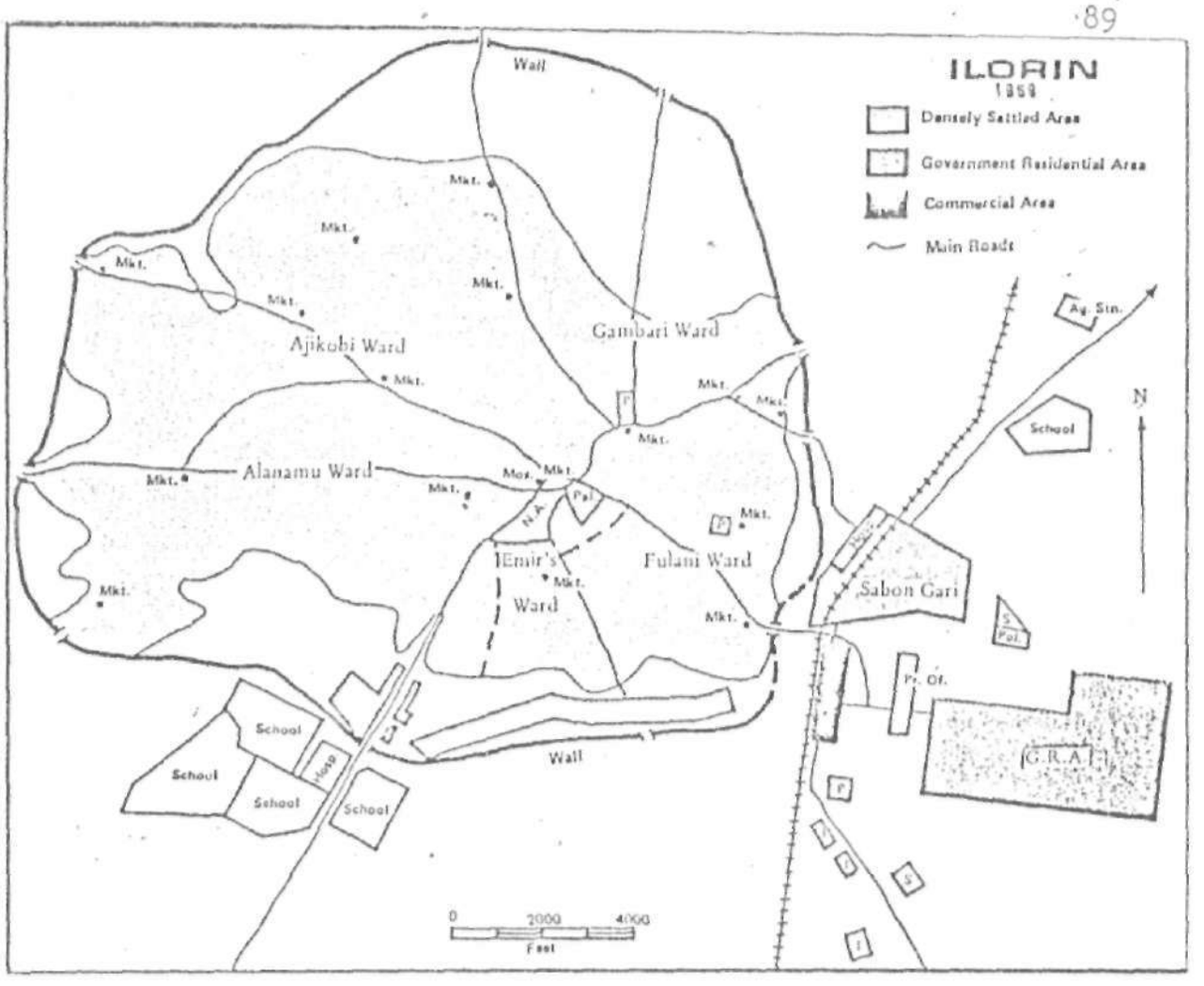


Fig 7.2



Fig 7.2A

Ilorin is a typical twin centre city seemingly divided into two districts, namely, the traditional and the new settlement districts. the two districts are the physically divided into by the Asa river with the traditional settlement on the west bank while the new settlement occupies the eastern bank (fig. 7.2 and 7.2A).

The traditional district consists of a number of large compounds usually enclosed with perimeter walls and having a maximum of two access points on two different sides of the perimeter. The Emir's palace. the Central Mosque and the Ilorin West Local Government secretariat form the focal points of the old/traditional district of the town. The new settlement district is made of two axis along the Ajase Ipo-Kaduna road which is the main axis, and the Government Reservation Area (GRA) as the minor axis of the new settlement. This new settlement district has the state secretariat, the state government house and the Federal government secretariat as its focal points.

7.2 CLIMATIC CHARACTERISTICS

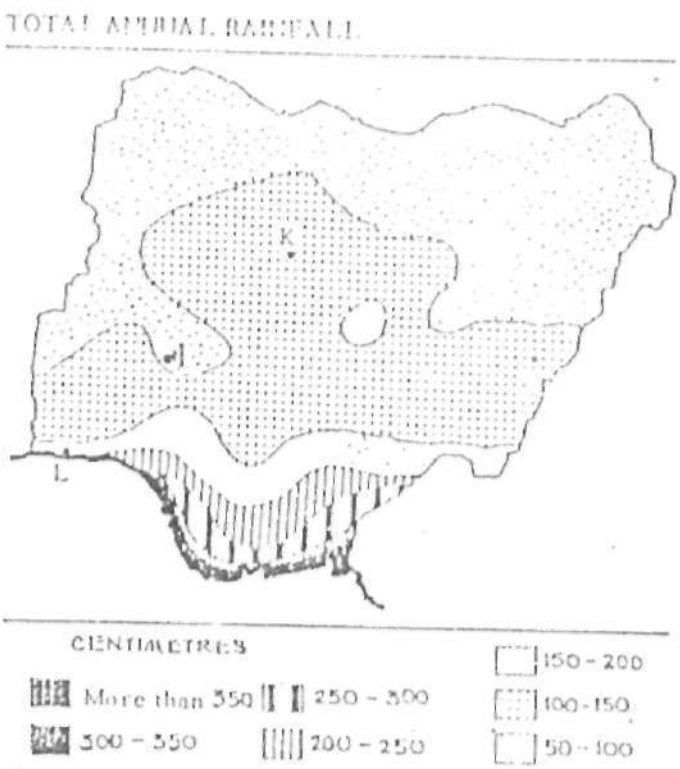
473331

The notable climatic seasons in Ilorin are:

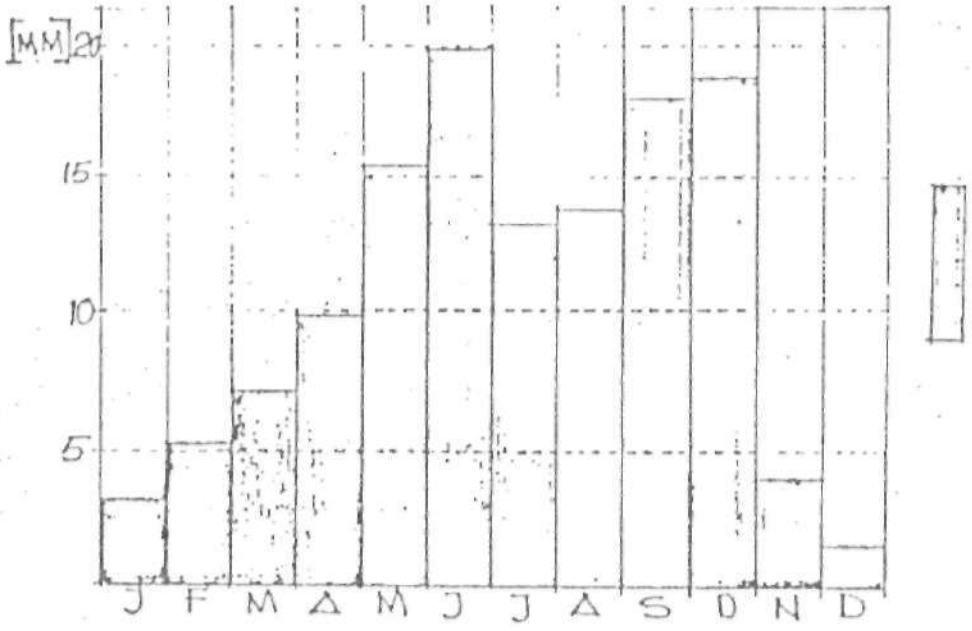
(a)	Wet season	April to October yearly
(b)	Harmattan season	November to January yearly
(c)	Hot season	January to March yearly.

7.2.1 Rainfall

The dominant wind during the wet season is the south west monsoon trade winds that bring rain usually from April to October yearly. The rainfall distribution varies between 2cm and 20cm while the mean annual rainfall is about 13cm. The minimum rainfall usually occurs in January at the inception of hot/dry season which spans from November to March



Fig' 7.3



Ilorin: mean monthly rainfall (1988/91

Fig(6.7.3A

with a monthly average of less than 2cm. The annual maximum rainfall of 20cm occurs in June and August yearly. The rainfall is sometimes accompanied by thunder storm at be beginning and towards the end of the season. the mean monthly rainfall for Ilorin and its environ is presented in (fig. 7.3 and 7.3A).

7.2.1A Design Inference

(a) The dimensions of storm water drainage system shall be adequate in order to accommodate the large volume of surface water during the torrential down pour.

(b) The details of roof structures and sections shall be properly carriedout, particularly at the ridges, valley, parapet walls, roof abutments and etc.

(c) The use of flat concrete roof shall be minimised in order to reduce the maintenance cost.

(d) Adequate clearance shall be sought and be obtained when planting trees asa landscape element around the building structure.

7.2.2 Wind

Ilorin, a typical middle-belt Nigerian city, has basically two types of winds blowing across it. These are the North-East Trade wind and the South-West monsoon wind.

(i) The North-east Trade wind

This wind blows from the Sahara desert. It is characterised by dust and dryness which have a negative impact on the health of the people. This usually occurs during the cold dry season.

(ii) the Sough-West Monsoon wind

This wind blows from the atlantic ocean. It is characterised by coolness. It occurs during the raining season (wet period) with a speed of about 2.82 metres per second. The South-west monson wind is the most prevalent in the town and blows for a period of seven months in a year (April - October) bringing coolness and the accompanied comfort.

7.2.2A Design Inference

(a) A screen of trees and shrubs shall be planted as a landscape element and also to offset the effects of the dry, dusty wind of the North-east trade wind.

(b) The building structures shall be aligned to take the advantage of the favourable South-west monsoon wind.

7.2.3 Temperature

The monthly average temperature in Ilorin is quite uniform; with February and March being the hottest months of the year (40°c) and this occurs during the dry season where there is virtually no claud cover that acts as blanket over the sky; most of the rainfall occur during this time. The coldest period is between December and January yearly and it is 28°c. The annual mean temperature is 27°c. The average monthly temperature chat is shown in fig. 7.4.

7.2.3.A Design Inference

(a) Building structures shall be aligned in the North-South direction to prevent over-heating and glare in the interior.

(b) The use of sun shading devices shall be encouraged.

7.2.4 Relative Humidity

The relative humity, like the temperature, by the equatorial air mass. The highest relative humidity occurs during the raining season between the month of April and October (75%-85%) The lowest relatively humidity is recorded during the dry season. (Nov.-March) and it is usually about 60%. the extreme humidity occurs between the months of February and September.

The extreme mean minimum evaporation is 9cm and it is in April, while the maximum evaporation is 19cm and occurs in March. The average monthly and maximum relative humidity is as shown in fig. 7.5.

7.2.5 Solar Radiation and its effects

Solar radiation is the heat generated from the sun. Solar radiation reaches the earth's surface through a form of heat transfer known as radiant heat transmission.

During the day, about 40% of radiant heat reaches the earth's surface while the remaining 60% is reflected back by the cloud surface, absorbed by the atmosphere and scattered into the air molecules before penetrating into buildings through their various openings. The reverse of this takes place in the night, when about 58% of heat absorbed by the earth's surface during the day is released into the atmosphere; thus creating a cooling effect on the immediate environs.

This phenomenon should be studied properly and considered in the choice of building materials in order to create interior comfort and habitable environment. (fig.)

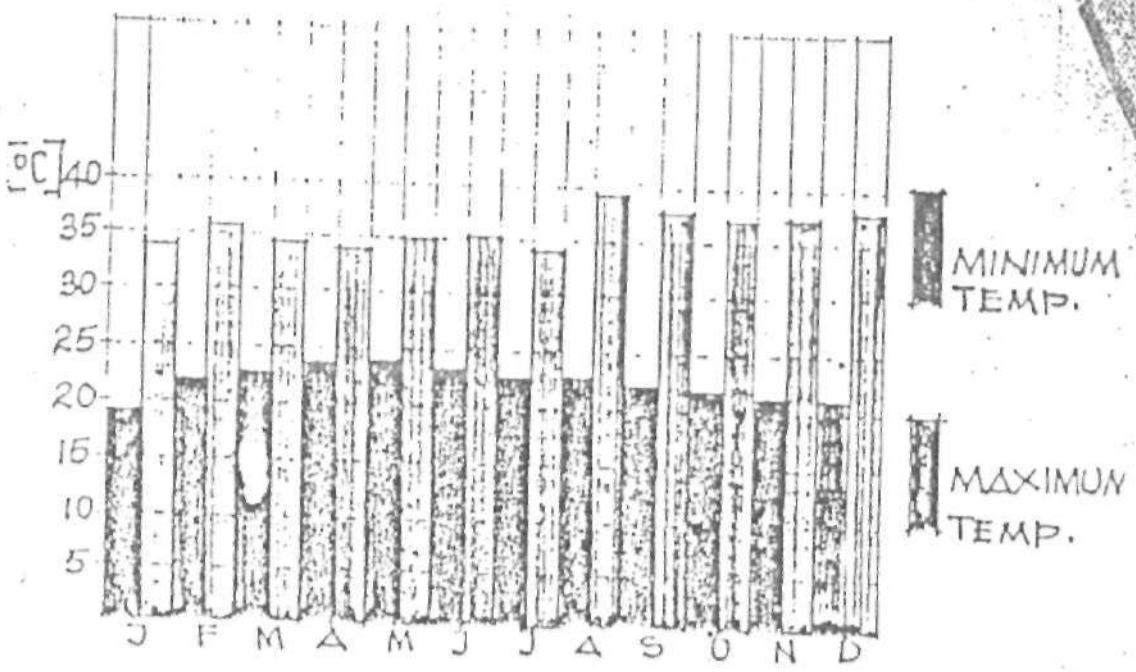


Fig. 7.4 ILORIN: MINIMUM AND MAXIMUM TEMPERATURE.

7.2.5A Design Inference

The treatment of the building structure can enhance good indoor comfort through the selection of good materials and treatment such as the following.

(a) Pavings - Paving reflects about 40% of solar radiation into the buildings and stores about 30% in the ground. As such pavings shall not be located very close to the building structure especially where there are openings.

(b) Grass Lawns - Grass lawn has a moderate heat absorption capacity and reduces temperature. It also assists in stabilising the environmental conditions. Grass lawn is a good practice if located close to the building, particularly where there are openings.

Above are, adequate use of shading devices should be encouraged in architectural designs.

7.3 PHYSICAL DATA ANALYSIS

The physical data analysis as regards the topography of the thesis site is discussed fully under the following headings:

7.3.1 Geology and Soil

The type of soil that generally covers Ilorin township is made up mainly of laterite substrata of undifferential basement complex of metamorphic rock.

Ilorin is located on the Southern part of Kwara State, in an undulating plain with an elevation of about 300 metres.

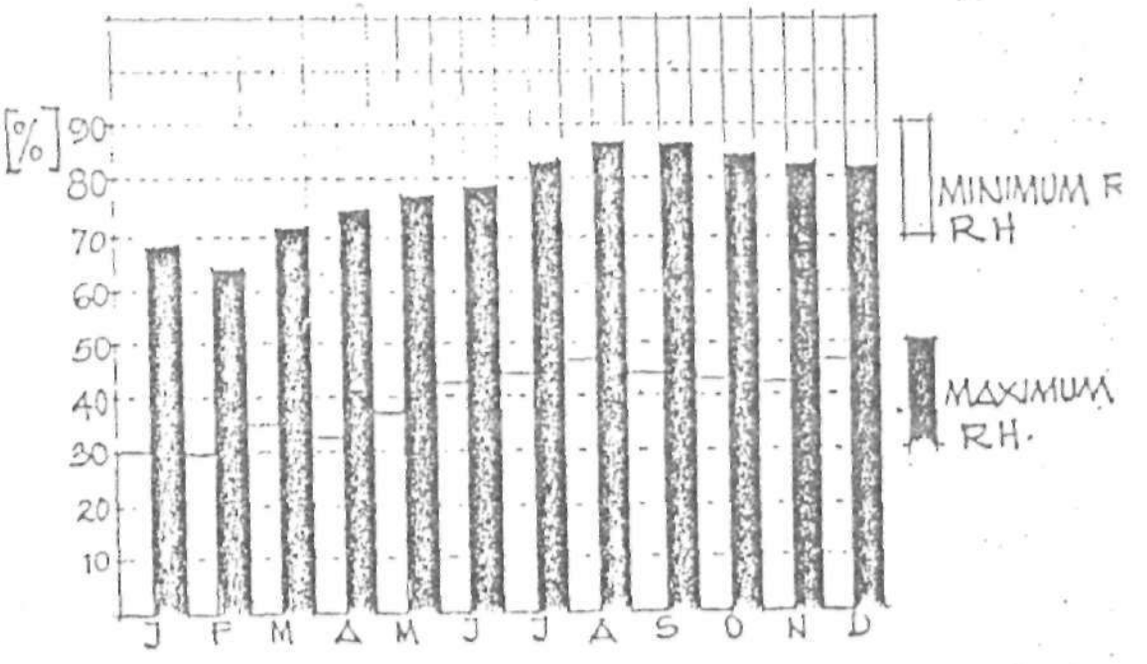


Fig 7.5 ILORIN: MINIMUM AND MAXIMUM RELATIVE HUMIDITY.

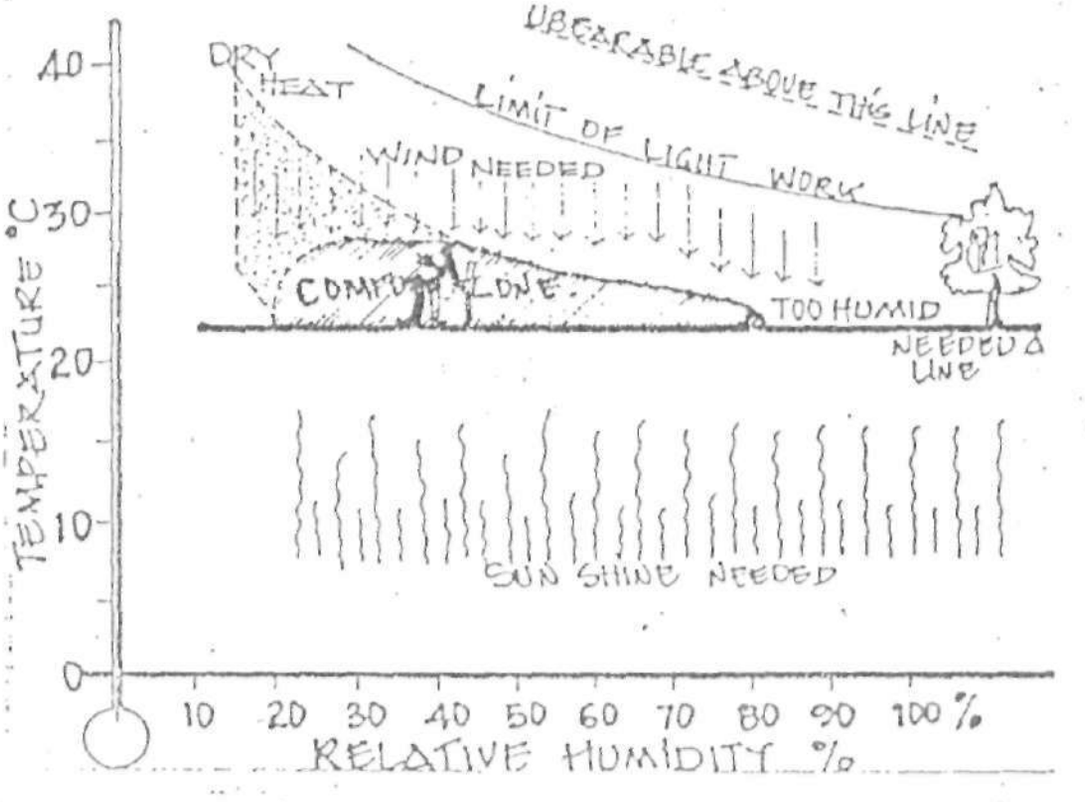


Fig 7.5A ILORIN: RELATIVE HUMIDITY/TEMPERATURE SHOWING COMFORT ZONE.

The major contour line of about 300 metres passes through the heart of the town in a semi-circular nature. The ground rises from both the west and the east. An existing analytical survey of the town shows that the soil formed from the parent rock (metamorphic) is capable of withstanding heavy structure. However any special foundation requirements shall be considered in the proposed design. fig. 7.6.

7.3.2 Drainage System

The basic system of river Oyun and its numerous tributaries (the main tributaries being Asa, Moro and Aluko rivers) drains the whole town out of these tributaries. the two most prominent ones, are Asa and Aluko rivers, run through the town and clearly demarcate it into two blocks.

The purely traditional/indigenous settlement area is demarcated from the new settlement area that forms the administrative, commercial and industrial area of the town. these rivers - Asa and Aluko, drains the town adequately with only a small area being liable to perianal flooding. fig. 7.7.

7.3.3 Vegetation

Ilorin lies between the Rainforest to the south and the Guinea Savannah to the north of the country. Hence, Ilorin exhibits the combined characteristics of the two vegetation zones. fig. 7.8.

7.4 The Site (Micro-data Analysis)

THE SITE for the proposed parliament complex has a total area of 66,000 square metres.

GEOLOGY

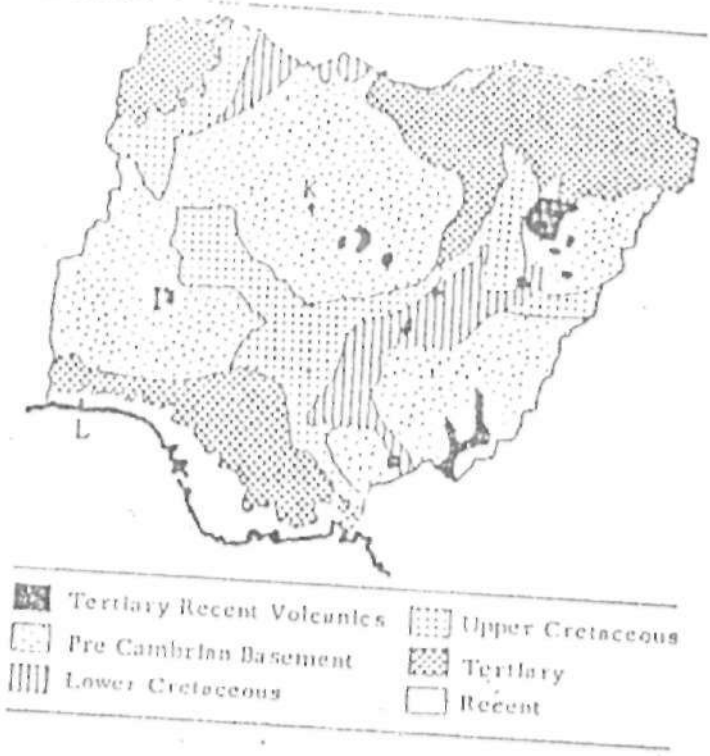


Fig 7.6

RELIEF & DRAINAGE

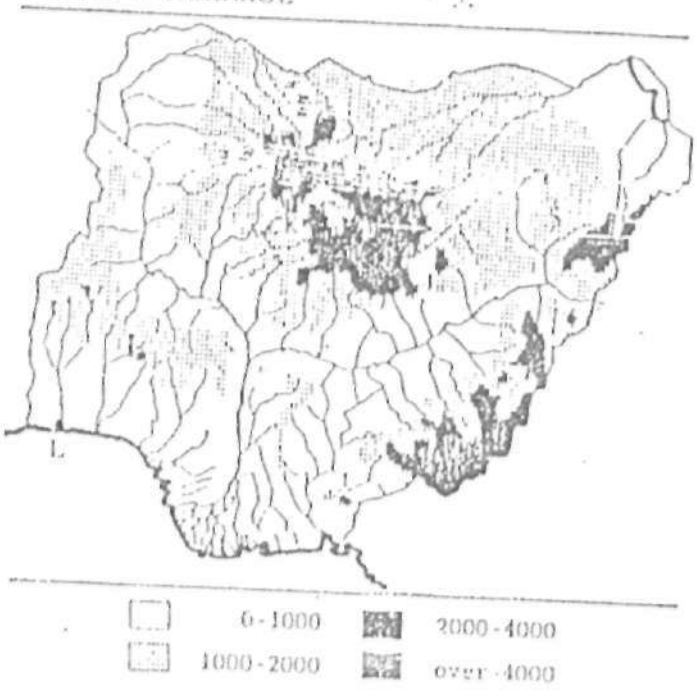


Fig. 7.7

7.4.1 Approach and Access

The site is bounded on two sides by roads to the west and the south. One of the roads is a major road that runs through the township linking the site with other major roads and town to the other parts of the city.

The site is easily accessible from the west and the south.

7.4.2 Services Available

The site falls within the civic area designate of the town. Necessary facilities such as water mains, electricity; and etc are existing within the site premises. The water mains and electricity lines runs parallel to one of the longer sides of the site along the boundary roads.

7.4.3 Soil and Geology

The soil and geology of the site is typical of Ilorin as discussed in 7.3.1. It has high load bearing capacity.

7.4.4 Topography

The site slopes in one direction. the highest point on the site is towards its western part with a vertical difference of about 1.1 metres towards the eastern and, running perpendicular to the major road to the site.

7.4.5 Wind

The prevalence direction and velocity of wind affect the following:

(a) Air infiltration into building (potential heat gain or loss).

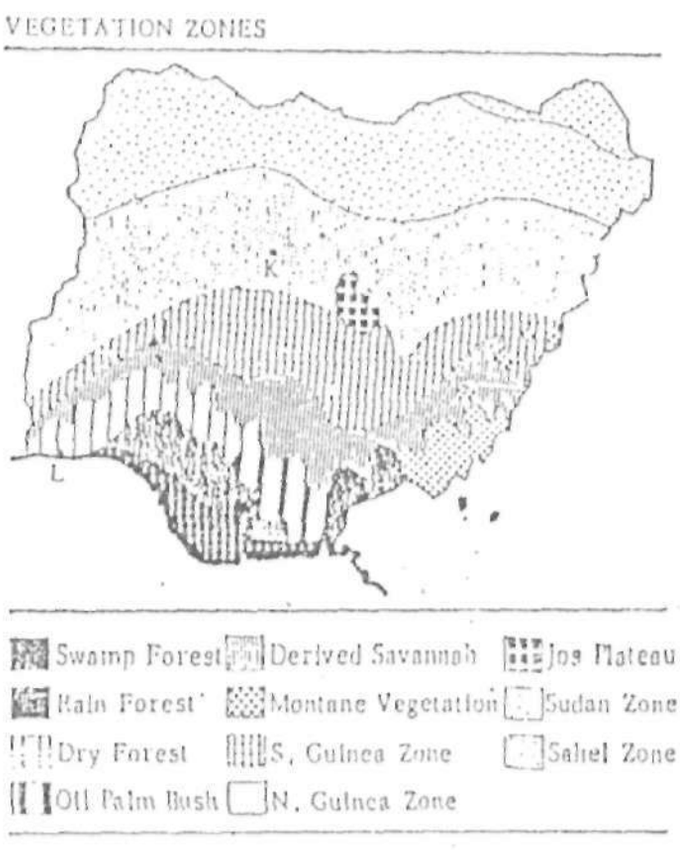

VEGETATION ZONES
K
L
Swamp Forest
Derived Savannah
Jos Plateau
Rain Forest
Montane Vegetation
Sudan Zone
Dry Forest
S. Guinea Zone
Sahel Zone
Oil Palm Bush
N. Guinea Zone

Fig. 7.8

(b) The ventilation of interior spaces and outdoor courts.

(c) The stress load on building structure.

7.4.6 Precipitation

The prevalence and amount of precipitation affect the following:

(a) The roof form, its construction and the resultant stress load to the building structure.

(b) The presence of water and its effect on site drainage and choice of building materials.

7.4.7 Temperature

Air temperature and thermal comfort are affected by all the factors mentioned earlier, thus sun, wind, precipatation and etc.

7.5 HISTORICAL BACKGROUND

Ilorin is a frontier town between the Hausa - Fulani culture of the northern Nigeria, to which it leans its political and religious affiliation since the early parts of the 19th century, on one hand; and the Yorubas of the western Nigeria which has a little influence on the language spoken.

The earliest settlement was at Sobi hills located north of the city. Sheikh alimi, the Jihadist created five wards within the town. (see fig. 7.2) central to the present city is the Emir's palace facing the central mosque on the North-west. The Native authority offices are clustered in the Magajin Gari ward. The Emir of Ilorin relves on supports from the Baloguns who are the chiefs of the various wards. Hence there is a secondary centre focus

on the compounds of the Baloguns and their sub-chiefs. Each sub-ward consists of descendants of a common ancestor of the people who migrated from the same town to Ilorin. Markets and mosques often adjoin the chief's compounds. There are several mosques scattered in the town for the purpose of Muslim workshop: particularly the five daily prayers. These secondary focal points make Ilorin more decentralized than most Hausa - Fulani cities in Northern Nigeria.

The British first entered Ilorin in 1887 when the armed forces of the Royal Niger Company left Lokoja. The first British Resideat Officer was appointed in the year 1900. He rounded up the city on assumption of office. Real authority then rested in the hands of the Emir via his Baloguns. The Lagos railway reached Ilorin in 1908. The city became a major marketing centre for cattle that were driven from the far North and very much unlike most northern cities, the cattle market did not influence the establishment of growth of a Tudun-Wada area in Ilorin. Neither did it influence the settlement of Northerners in a designated area, usually called Zango as in most Yoruba towns of Southern Nigeria.

Ilorin consists of a 19th century city wall that focused on the Emir's place, the central mosque and the central market; from which radiate the principal wards and roads to the city gates.

Generally, Ilorin shall continue to grow as a vacillate of its being the capital of Kwara State and a unique Northern town because of the Yoruba influence in the city.

7.6 DWELLING/HOUSING PATTERN

A survey of the housing pattern in Ilorin indicates two main types of dwelling - the multi-household company and the single family residence.

The first type is a residential compound of the Yoruba style which consists of a rectangular mud brick walls with a thatch or galvanized roofing sheefs as cover. Such compounds are grouped around an interior countryard which is usually surrounded by verandah created by overhanging roof structure as eaves. the verandah inturn form the workplace of the inhabitants with each wife using the space directly in the front of her sleeping room. The other walls of the compound are usually blank. The entrance to such compound is usually through the large apartment of the compound head which now built in the "Lagos style" with traders, especially the wealthy ones, having more elaborous dwelling and rooms in accordance with the size of the family. Modern nuclear family dwellings are being built in recent times between the Aluko river and the south-eastern section of the old city walls.

7.7 OCCUPATION AND ECONOMY

The geographical and cultural juxtaposition of Ilorin are reinforced by her transportation systems. Its nodal position of the North-South and the West-east nationwide, with overhead lines of communication cannot be overlooked.

The geographical position of Ilorin, given its potential and economic importance along, along with the other varied functional links that it has with many parts of Nigeria, makes Ilorin a unique city in Nigeria. This strategic position forms an effective and a dynamic element in its rapid growth into an important commercial centre in the middle belt area of Nigeria. The city is being served by the railway line, an airport of International standard and a good network of roads linking the town with the North, the West and the East.

The now cosmopolitan nature of the town coupled with the enduring business activities, bring about a great interaction between the major inhabitants (the indigens) *of* the town. Others are the Igbos, Ebiras, Yorubas and etc.

Basically the people of Ilorin are predominantly Muslims; hence their culture and traditions have been greatly influenced by the Islamic religion and way of life; alongside pockets of the Hausa-Fulani culture. Various skill-trades abound in the town, some of which are black smithing, gold smithing, leater works, dyeing, cleaving and etc.

CHAPTER EIGHT

DESIGN BRIEF

8.0 DESIGN BRIEF DEVELOPMENT AND SCHEDULE OF ACCOMMODATION

8.1 BRIEF DEVELOPMENT

A parliament complex within the context of this thesis would comprise of the following sections:

(a) The legislative chamber

(b) Information section

(c) Administration section

(d) Welfare section

(e) The Parliamentarian offices

(f) Auxillary facilities.

8.2 FUNCTIONAL ANALYSIS

Functions are usually associated with human activities that take place within a definite space. The process of functional analysis defines the space and establishes the activities that take place within a given space.

8.3 SPATIAL ANALYSIS

Spatial analysis in the process by which the dimensional requirements of spaces are established to serve a particular activity of a defined number of people.

The two methods above are adopted in the establishment of these space areas.

8.3.1 Activity Analysis

Activity analysis is the drawing out of the spaces in scale, based on the activity being carriedout in the space, indicating furnitures, circulation areas and other useful spaces.

8.3.2 Objective Rationalization of Standards

Text books on design, such as the Architect's Data, Building standard and etc established some space requirements for various functions. Such spaces are not usually applicable to the tropical needs because the design of such spaces are based on temperate environment and traditional criteria which are different those available in the tropical environment.

In this type of situation, an objective rationalization of the space is carried out in line with the Nigerian tradition, environment and other social and physical factors.

8.4 Functional Spaces

From an indepth analysis of these facilities, the following are proposed under the various departments/sections of the complex.

8.4.1 The Legislative Chamber

This would comprise of the following functional spaces:-

(a) The parliament session hall

(b) The public Gallery

(c) The Mass-media Gallery

(d) Waiting Lounges (for the public and the Parliamentarians)

(e) Entrance hall

(f) Toilet facilities (for the public and the parliamentarians)

(g) Tea room

(h) Committee rooms.

However, the following offices shall be closely located/related to the Legislative chamber:-

(i) Speaker's office

(ii) Deputy speaker's office

(iii) Chief whip

(iv) Receptionist/Secretary

(v) Sergeant-at-Arm

(vi) Deputy Sergeant-at-Arm

(vii) Males/Females Attendant's office.

8.4.2 The Information Department

The Information department shall be made of three sections; thus

(a) The printing section

This section shall comprise of the following:-

(i) Printing hall.

(ii) Principal and Senior Printer's offices

(iii) Printers office

(iv) General office

(v) Store

(vi) Toilets and charging room facilities.

(b) The library section

The library section shall consists of:-

(i) Control/survelance area

(ii) Senior librarian's office

(iii) Reading Room with book stack area.

(iv) Reference reading room

(v) Journal, dailies, periodicals, and etc.

(c) The Hansard section

The Hansard section of the information department shall have the following offices:-

(i) Editor's office

(ii) Deputy Editor's

(iii) Senior Reporter

(iv) Reporter's office

(v) Interpreters

(vi) General office

(vii) Storage facilities

(viii) Toilet facilities

8.4.3 Administration Department

The Administration Department of the Complex shall be made up of the following sections:

(a) The Clerical section

The clerical section of the department shall have the following Offices:-

(i) Office of the clerk of the House

(ii) Office of the Deputy clerk of the House.

(iii) Private secretaries' offices -

(iv) Administrative officer's offices

(v) executive officers

(vi) Open Registry

(vii) Secret Registry

(viii) Typing pool

(ix) Storage facilities

(x) Toilet facilities.

(b) Account Section

The Account section of the Administration Department shall provide office for:-

(i) The controller of Finance

(ii) The Chief Accountant

(iii) The Principal Accountant

(iv) The Accountants

(v) The Account Clerks (Accounting Pool)

(vi) Storage and toilet facilities

(c) Audit Section

The Audit section shall provide office accommodation for the following functionaries:-

(i) The Chief Auditor

(ii) the Principal Auditors

(iii) the senior Auditors

(vi) General office

(v) Storage and Toilet facilities.

(d) Budget Section

The Budget section of the Administration Department shall provide office accommodation for the following functionaries:-

(i) The Chief Budget Analyst

(ii) The Principal Budget Analyst

(iii) The Budget Analyst

(iv) General office

(v) Toilet facilities

8.4.4 Welfare Department

The following sections would make up the welfare department:-

(a) The protocol Section

Office accommodation shall be provided in this section for the following:-

(i) The Principal Protocol Officer

(ii) The Protocol Officer

(iii) General Office

(iv) Toilet and Storage facilities

(b) The Catering Section

This section shall have the following functional spaces and provide accommodation for:-

(i) Cafeteria (Referetory)

(ii) Kitchen and storage (cold and dry)

(iii) Catering officer

(iv) General office

(v) Toilet and changing facilities

(c) Maintenance Section

The maintenance section shall have office accommodation for the following:-

(i) The Principal Maintenance Officer

(ii) The Senior Maintenance Officer for the Electrical/Electronic, civil/Building and Mechanical

(iii) The Maintenance Officers for Electrical/Electronics, Civil/Building and Mechanical.

(iv) Workshops for the trades

(v) Storage and store keeper

(vi) Toilet facilities and changing Room

(d) Procurement Section

The procurement section of the welfare department shall provide office accommodation for:-

(i) Principal procurement/store officer

(ii) Procurement/store Officer

(iii) Store keeper

(iv) General Store

8.4.5 Entrance

The following shall constitute the entrance facilities to the complex:-

(a) Ceremonial/Entrance lobby

(b) Reception/Receptionist

(c) Telephone/Radio Switch board room.

8.4.6 The Parliamentarians

The Parliamentarians shall be the elected representatives of the people and shall formulate all the laws and regulations governing the people. They would, on assumption of duties be constituted into various offices and have facilities such as:-

(i) The majority leader

(ii) The Deputy Majority leader

(iii) The Minority leader

(iv) The Deputy minority leader

(v) Other Parliamentarians

(vi) There would be offices for Secretaries

(vii) Toilet facilities

(viii) Radio and Television rooms.

8.4.7 Auxiliary Facilities

Auxiliary facilities in the complex shall be made of the following:-

(i) Generating Plant of high voltage

(ii) Security house

(iii) Water reservour

(iv) Parking spaces

8.5 Schedule of Accommodation

S/N	Space	Function	Capacity (Persons)	Unit Area(m^2)	Area Reqd (m^2)
1	Legislative Chamber	Debates are held on laws to be enacted	32 plus 25% = 40	1.8	72.0
2	Public Gallery	Public seating in audience	150 at the peak	0.8	120.0
3	VIP. Gallery	VIP seating in audience	20 at the peak	1.0	20.0
4	Mass Media Gallery	Seating reporters in pairs to record proceedings	15	0.8	12.0
5	Parliamentarian Language	Relaxation area for the Parliamentarians	60% of the members = 24	2.0	48.0
6	VIP Louge	Entertain VIP before/after proceeding	20	1.8	36.0
7	Public louge	Parliamentarians receive and entertain visitors	25% of the members to have visitors = 20	1.8	36.0
8	Tea/snacks Room	Prepare and serve snacks/tea/drinks to Parliamentarian & visitors	4	2.0	8.0
9	Committee Rooms	Discussions held by sub-units of the members. To have 5 of such rooms	5	4.0	200.0
10	Speaker	Office space for the speaker of the House including toilet	1	-	40.0
11	Depty Speaker	Office space and toilet for the Deputy speaker of the House	1	-	30.0
12	Secretary	Office of the Secretary to the speaker and Deputy speaker of the House.	1	-	25.0
13	Sergeant-at-Arm	Office of the maintainer of law and order	1	-	25.0
14	Information Dept.				
a.	Printing hall	Works production Centre			
b.	Principal and Snr. Printing Officers	Offices space for principal and Senior Printing officers	1 2	- 16	 32.0
c.	Printer's office	For the remaining six staff	6	4	24.0
d.	General office	For other staff & store officer	4	1.5	6.0
e.	Store	Storage Facilities	Goods		

15	Library Dept.				
a	Control	Security	-		
b	Periodicals	For reading newspaper/Magazines	20		
c	Snr.Librarian	Head of Dept's Office	1		
d	General Office	For other Staff	3		
e	Reading Room	Space for members to consult books	40		
f	Toilets	Rest Rooms	-		
16	Hansard Dept.				
a	Editor/Deputy Editor	Working space for the head of Dept.	1 for each		
b	Secretary/ waiting	Working space for Departmental Secretary and Waiting area	1 visitors		
c	Reporters/ Interpreters	Working spaces for Reporters and the interpreters	10		
d	General Office	Working space for other staff	3		
17	Legal Dept.				
a	Legal Officer	Working space for the Head of Dept.	1		
b	Deputy Legal Officer	Working space for the Asst. HOD	1		
c	General Office	Other staff of the Department	3		
18	Admin. Dept.				
a	Clerk of the House	Office of the head of Administration of the complex	1		
b	Dty clerk of the house	Office of the Asst. Head.	1		
c	Secretaries	Offices for officers directly responsible to the clerk of the house.	7		
d	Admin. Officers	Offices for the men that implement policies	2		
e	Executive Officer	Officer for those who Asst the Admin. Officers	2/3		
f	Typing Pool	Centrally controlled typing office	10		
g	Open Registry	Office for documentation & Storage of same	6		
h	Secret Registry		4		
19	Accounts:				
a	Controller of Finance	Office for the head of Department & toilet	1		
b	Principal Accts.	Offices for those who assist the head	1		
c	Accountants	To assist the Principal Accts & head Accts clerks	2		
d	Accounting pool	To accommodate Accts clerks	6		
e	Store	For keeping materials	Goods		
20	Audit Dept:				
a	Chief Auditor	Office space and toilet for the HOD	1		
b	Principal Auditor	To accommodate the Asst. HOD	1		
c	Auditors	To accommodate Auditing Staff	2		
d	General Office	To accommodate other Auditing clerks	3		

21	Budget Dept. Chief Budget Analyst Principal Budget Analyst Budget Analyst	To accommodate the HOD with toilet facility To accommodate the Assistant Head of Department To accommodate other staff of the Department.	1 1 2		
22	Welfare Dept.: Principal Protocol Officer Protocol Officers Catering Officer Cafeteria Kitchen Storage	To accommodate the head of section plus toilet To accommodate the staff in the section To accommodate the head of section & toilet To provide space for eating food To prepare cook and service food For wet and dry food stuff	1 2 1 70 - Goods	 2.1 -	
23	Maintenance Dept.:				
a	Principal Maintenance Officer	To accommodate the HOD and a toilet	1		
b	Senior Maintenance Officer	To accommodate the Assistant to the HOD with a joint toilet	2		
c	Maintenance Officer	To accommodate Electrical & Mechanical supervisors	4		
d	Workshop and Changing room	Where the Maintenance works are carried out			
e	Store	To provide storage facilities of new and old spares parts	Goods		
24	Procurement Dept.				
a	Principal Store Officer	To accommodate the HOD with a toilet	1		
b	Central Store	To keep consumable goods	Goods		
25	Entrance Section	To provide spaces for main entrance, ceremonial hall and Reception			
	Telephone/ Radio Room	To accommodate electronic gadgets and operators	2		
26	Offices for the Parliamentarians	To accommodate each of the members of the house	40 No.		

CHAPTER NINE

THE DESIGN

9.0 Site Consideration

The site exists naturally, but the conscious efforts of man to make use of this natural environment causes interference. That is modifying some elements like trees and site topography.

During this design, some of the few trees have to be removed and new ones planted on other locations within the site that has an almost flat land as indicated only three contour lines on the site plan.

These factors were put into consideration during the design.

9.1 DESIGN CONCEPT

In a parliament complex, debates on bills, motions and meetings of the members take place in the chamber . The public also watch the proceedings of the parliament from the gallery that over looks the chamber directly.

By the arrangement above, the chamber is the focal facility in the design of a parliament complex other supportive facilities, such as welfare administration, information and etc are expected to radiate round the chamber.

The different communities that make up the state have courtyards as common feature in the design of their buildings. The yards serve as relaxing and transitional spaces between the main buildings and other parts of the house (fig. 7.1).

In view of all of the above, the cluster, linear radial and court yard concepts were seriously considered during the process of design. With respect to the considered concepts, the legislative chamber is made the focal point of the design while the various units of the

complex are organised around it. These units are also organised with courtyards separating them and been used for sculpture garden landscape as well as buffer zones.

Principally, this thesis is aimed at making the legislative chamber accessible to the people, this can be achieved by laying design emphasis on visibility of the chamber to the people; hence its location close to the entrance and the height of the structure being of double volume. Other supportive components are linked to the chamber by corridors and lobbies. Well landscaped courtyards are used to separate other components from the legislative chamber.

9.2 HIERARCHY OF SPACES

For the occupants of the complex to perform effectively, there must be an effective and adequate hierarchy of spaces. The space allocation and facilities provided for each officer must be in a hierarchical order. That is, two officers like the clerk and speaker of the house must be provided with the largest office spaces among the officers, because they receive more visitors and therefore require more furniture and other office conveniences. The allocation of space to officers would decrease in size as the responsibilities of the officers decrease.

In the area of common facilities like the legislative chamber and committee rooms, the number of users determines the area provided; hance the legislative chamber is larger than any of the committee rooms. While large committee rooms are provided for committees with large number of members, relatively small committee rooms are for committees of small number of members.

9.3 CIRCULATION

There are two groups of circulation in the building, namely the vertical and horizontal circulation. While the vertical circulation is attained by means of stairs and special elevator, the horizontal circulation is attained through corridors.

The staircases are well distributed within the complex to facilitate vertical movement of people and have tread of 300mm and rise of 150mm. While the width of each flight is not less than 2000mm. The special elevator recommended in the complex is the lift that can carry both able and disabled people on wheel chairs from floor to floor. On the other hand, the corridors linked the various units of the complex. They are not too long and are wide enough to cope with the envisaged human traffic within the complex.

9.4 Design and Design Report

The decisions that were finally arrived at in the design of the Parliament Complex are as follows in this segment.

9.4.1 BUILDING DESIGN

The guiding principle in any design is not only to ensure functionality but also to make sure that the building does not exist in isolation. It should be made to exist in harmony with its site and immediate environment. All the spaces are functional and are linked.

The elevational expression of any architectural work should be in harmony with both site and the immediate environment. The architectural expression of the people of the state in space definition form could be comparable to the Yoruba setting. These expressions are used to harmonize the complex with her immediate environment.

9.4.2 Services on Site

A network of electricity, water supply gas an sewerage disposal coupled with waste disposal exist on the site. Gutters and pipes are use to connect waste and soil waters to the proposed service grid with care ensuring that problems of maintenance are at the least. minimised.

9.4.3 Sewerage Disposal

A network of soil pipes connected to the inspection chambers from whence it is transmitted to septic tank at various points is employed to help prevent blockage due to long distance and ensure easy flow of waste.

9.4.4 Water Supply

Water is tapped into the site from the water mains along the major road. It is then conveyed to the water tank with the aid of rises by the maintenance department.

9.4.5 Electricity Supply

This is tapped from the overhead three phase high tension line into a step-down transformer from where it is distributed throughout the complex.

9.4.6 Storm Water Drain

Pipes adjoining walls connect storm water from the roof gutters to covered subterranean channels which is subsequently conveyed through other outlets to the main storm water drainage gutter bounding the site; to prevent maintenance problems.

9.4.7 Spatial Form

Two major forms were utilized in the design of the floor space - the rectangular and a sector of polygonal forms. The rectangular form facilitates space flexibility and adaptability and was used in the design of the supportive departments while the sector of polygon form was used in the design of the legislative chambers.

9.4.8 Planning:

The core of the design, which is bringing the legislative chamber into the focus of the people brought the chamber to the front part of the complex.

The main entrance of the complex is oriented towards the south. This allows pedestrian and vehicular traffic on the two roads have a good view of the building as they approach or passby the complex.

The chamber and other supportive facilities were organized based on the following features:-

(i) Legislative chamber

(a) It is located on the first floor of the four floor complex and on the southern part.

(b) It is linked to the ground floor by a staircase at the entrance hall and a special lift.

(c) Its configuration is visible from outside.

(ii) Administrating Department

(a) It is located on the ground floor at the north-west part

(b) It is directly accessible from the entrance halls.

(c) It is accessible to all other departments.

(iii) Welfare Department

(a) It is located at the north-west and south-east of the complex partly on the ground floor.

(b) There is easy access from the service park.

(iv) Information Department

(a) The information Department has a number of sections which are spread ground floor of the complex.

(b) The conference hall is located on the ground floor at the south-western part.

(c) The library is located on the first floor at the north-eastern part being one of the quiet areas in the complex.

(d) The hanzard is located on the ground floor at the south-western part.

(v) Legislators Offices

(a) The legislators offices are located on the first floor of the complex.

(b) The floor falls within the private zone of the complex; it would be quiet and have less traffic.

(vi) Ceremonial Hall

(a) It is located on the third floor.

(vii) Parking spaces

(a) Two parking spaces are provided. Both are is located on the southern part for the use of the legislators, oneguests staff and the public;.

9.5 ELEVATIONAL COMPOSITION

The architectural building design in Kwara state is of traditional sequence and rectangular in style with hip-ended roofs. This style is used with modifications in elevational composition to give a distinct outlook among the modern infrastructures in the state and enhance its landmark status, having long columns with boric orders and dome-finished to signify powerful enurnment from where laws emanate.

9.6 SECURITY

Security is of great importance in the design of a parliament complex; as it is classified as a public but security area. Members of the public are restricted into some areas while they are thoroughly checked before being allowed into others.

Transitional areas such as lobby at the entrance of the chamber, and controlling points at the end of public areas are adopted in this design for security purposes. Reception halls are created on each floor where members of staff of the complex can receive their visitors.

9.7 LIGHTING AND VENTILATION

The site plan has a simple functional layout with separate parking spaces located side by side for staff, public and the legislators. Cycles and motorcycles park are also provided.

The complex, which is almost square on plan is oriented at angle 45° for complete visual appreciation and for it to receive the southwesterly cool wind and enhance cross ventilation. Areas that unavoidably face the west are specially treated with sunshading devices to reduce solar radiation and penetration into the interior of the complex.

Generally, the pedestrian and vehicular traffic are separated. Expansion of the complex is possible towards the north and southwest axis where the escape stairs are located

and which could be converted to main stair way in the event of the expansion exercise. The parking space could also be expanded.

There are two entrances to the site, the main entrance is to be used frequently; while the service entrance is for occasional use.

9.8 PROBLEMS ENCOUNTERED

In a project of this nature, there is bound to be some problems encountered during the design process. Some of the these problems are:-

(i) Design considerations to alleviate or at least minimize maintenance problems in the complex. Though maintenance problems have been minimized via the design, the goal cannot be accomplished without thorough supervision and the employment of a technically competent contractor.

(ii) Elevational composition that would be symbolic and blend within the immediate environment should be evolved. This problem was eventually overcome after series of trials.

9.9 BUILDING STRUCTURE

The goal of the thesis is to alleviate maintenance problems in the parliament complex as a public building. The building structure is a frame structure consisting columns and beams. Various grid modules were adopted at different areas such as 5x6m. and 5x10m. The building frame is made up of two storey building excluding the ground floor.

9.10 BUILDING MATERIALS

The building materials recommended in this design are the type that will be durable

or at least last long as the complex is the seat of the legislative arm of government. The materials specified are categorized in descending order from the roof.

(a) The roof.

The main roofing materials are:

(i) Long span corrugated Aluminium roofing sheet

(ii) Reinforced concrete flat roof finished with bitumenous felt.

(iii) Steel roof trusses

(iv) Hardwood roof trusses.

The long span corrugated Aluminium roofing sheets constitute the main roofing material while the reinforced concrete flat roof is used on some of the staircases. The Aluminium is partly covered by a parapet fassia. Steel roof trusses are used in large areas such as the legislative chamber while hardwood roof trusses are used in large areas such as the legislative chamber while hardwood roof trusses are used in relatively small areas such as offices.

(b) Walling

Since the structural system of the complex is framed structure, extensive partitioning is used to sub-divide the internal functional spaces.

(c) Floors

The main floors are concrete slab on the ground floor and reinforced concrete slab on the upper floors. Various finishes are recommended for the floors depending on the functions expected on such floor and above all the finish that would minimize maintenance and above all last the rigour and fest of time.

9.11 BUILDING FIRS BOTECTION

In a building, there are three categories affected by fire hazards. These are:-

(i) Hazard to the structure from within and outside.

(ii) Hazard to the occupants of the building

(iii) Hazard to the contents of the building.

9.11.1 Causes of Fire outbreak

Some of the various causes of fire outbreak in buildings are:-

(i) Defective or misuse of electrical equipments

(ii) Cigarette smoking

(iii) Spontaneous combustion of oily and other materials especially in the kitchen.

9.11.2 Control of Fire Outbreak Escape

(a) The decree which was promulgated by the Federal Government, banning the smoking of cigarette in public places should be enforced in this complex.

(b) Regular tests and maintenance of all electrical equipments should be carried out in the complex.

(c) By design, escape staircases are provided within the recommended distances. Straight and direct corridors which can easily lead people out of the complex in case of fire hazard are provided.

(d) At easily accessible positions within the site stand pipes have been recommended for installation where they can be readily accessed by firemen. At entrances and suitable locations, hoose tracks are proposed for use. Above all, lionization detectors are also proposed for installation at different points

for easy detection of fire.

9.12 CONSTRUCTION METHODOLOGY

The construction materials proposed for the complex include concrete, steel rods, steel profiles, timber, aluminium, etc. All construction works are to be carried out in accordance with the recommended British standards on Building Construction.

CHAPTER TEN

10.0 SUMMARY AND CONCLUSION

10.1 SUMMARY

This thesis write-up, after being conceived due to some physical observations, commenced by looking at the amount of funds spent on maintenance of physical structures with respect to public buildings where it is carriedout at all and the delapidating nature of most public buildings dotted around the country and the general lack of maintenance culture of Nigerians; which is responsible for the filthy environment in the Nigerian Public buildings.

After due consideration of the afore-mentioned factors, the author aimed at inculcating in Nigerians the culture of maintenance as against the habit of replacement in the built environments. Also, to contribute to the research for a positive change in the lifespan of Nigerian public buildings. To achieve these aims, the author decided to design a parliament complex whereby despite a relatively interesting design it could still achieve a possible minimization of maintenance problems and in the process make architects to be very conscious of maintenance problematic areas, as much as possible during the design stage. By so doing, the author hopes to achieve a neat and healthy environment in the country generally.

The process of producing a design that will satisfactorily meet the need of the legislators and tackle problems associated with maintenance; requires detailed study of past master of scheme (Arch) works on principles of designing legislative Parliaments as well as tackling problems of associated with maintenance in buildings.

The author started this research by reviewing some existing public buildings with a

view to understudy the functionality of those pertaining to houses of Assembly and others purely for identifying maintenance problem areas within such buildings. These are well documented and acknowledged in the three case studies in chapter four of this thesis work.

10.2 PROJECT FINANCE

Though the legislative arm of government has a separate vote from that of the executive arm of the construction of public buildings, parliament complex inclusive, is the responsibility of the state government while the maintenance work on public building is usually carried out through votes in the annual state budget. Hence the Kwara State Government shall be the client and the sole financier of the proposed Kwara Parliament Complex, Ilorin.

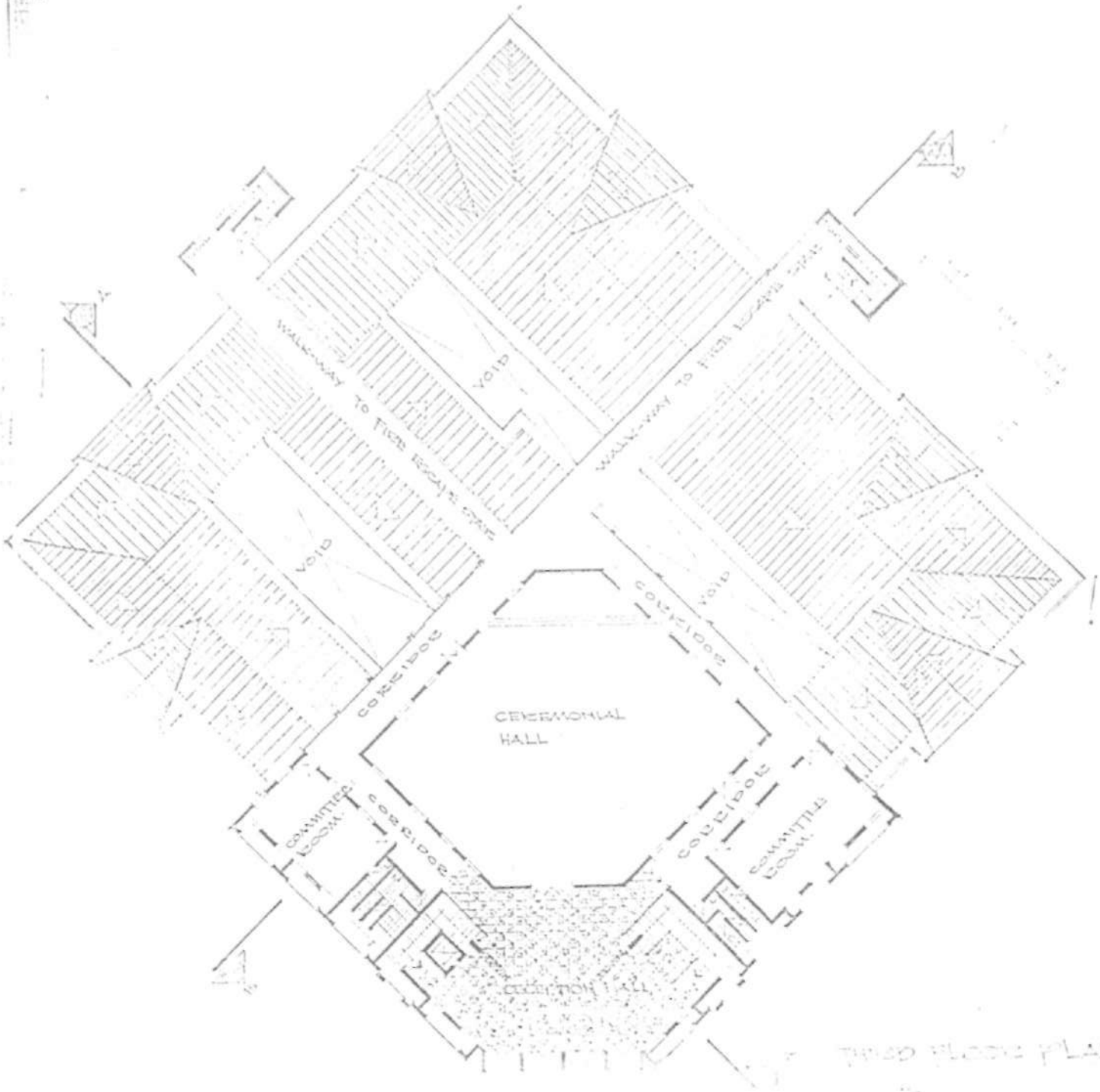
10.3 CONCLUSION

This thesis work has analysed the design of a functional parliament complex and also maintenance problems in Nigerian public buildings. The work also shows with evidence that the shift in the traditional pattern of design in which maintenance problems are neglected should be reviewed to save long term cost of buildings.

A GATE HOUSE
B STAFF AND PUBLIC PARKING
C MP AND VIP CAR PARK
D PARLIAMENT COMPLEX
E CHAMBER HOUSE
WT WATER STORAGE TANK


COMMITTEE ROOM
COMMITTEE ROOM
VOID
VOID
VOID
SESSION HALL
VIP GALLERY
MEDIA GALLERY
CHAMBER FLOOR
CLERK OF THE HOUSE
MPs LOUNGE
VIP LOUNGE
CORRIDOR

WALK-WAY TO ESCAPE STAIRS



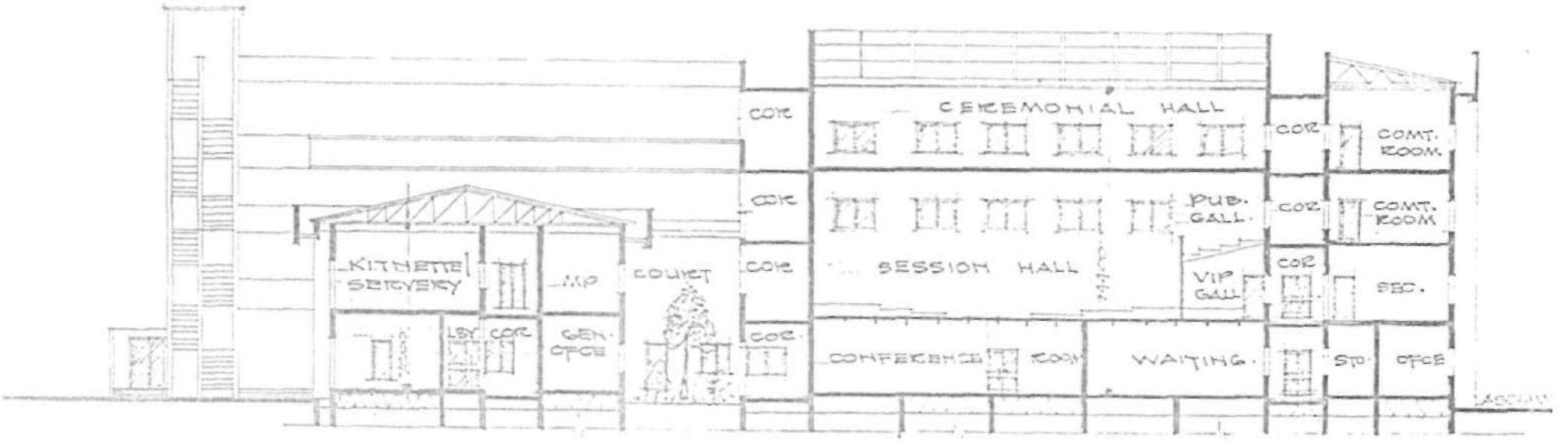
THIRD FLOOR PLAN



SECTION THRO' A-A.

ECH.
'99

KWARA PARLIAMENT COMPLEX ILORIN



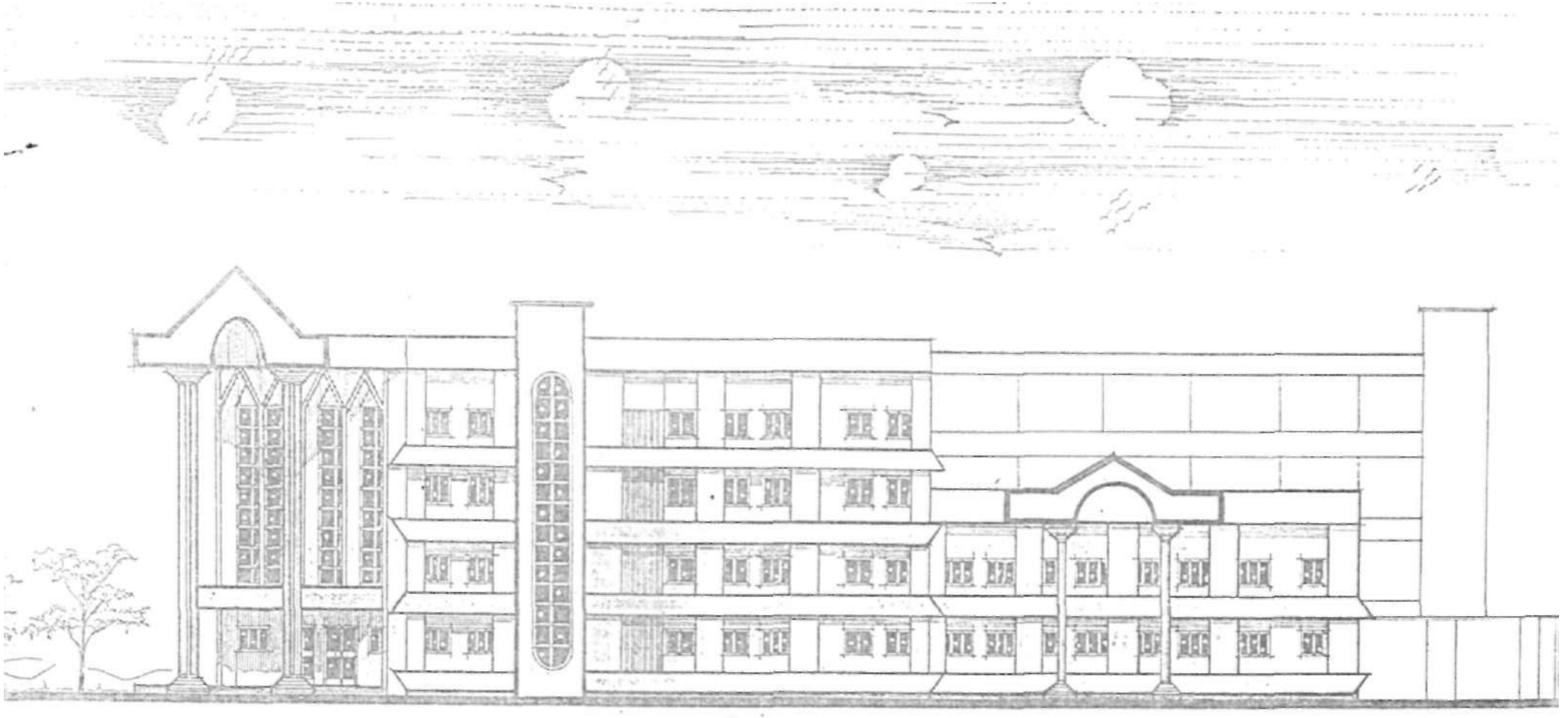
SECTION THRO' B-B



SOUTH ELEVATION



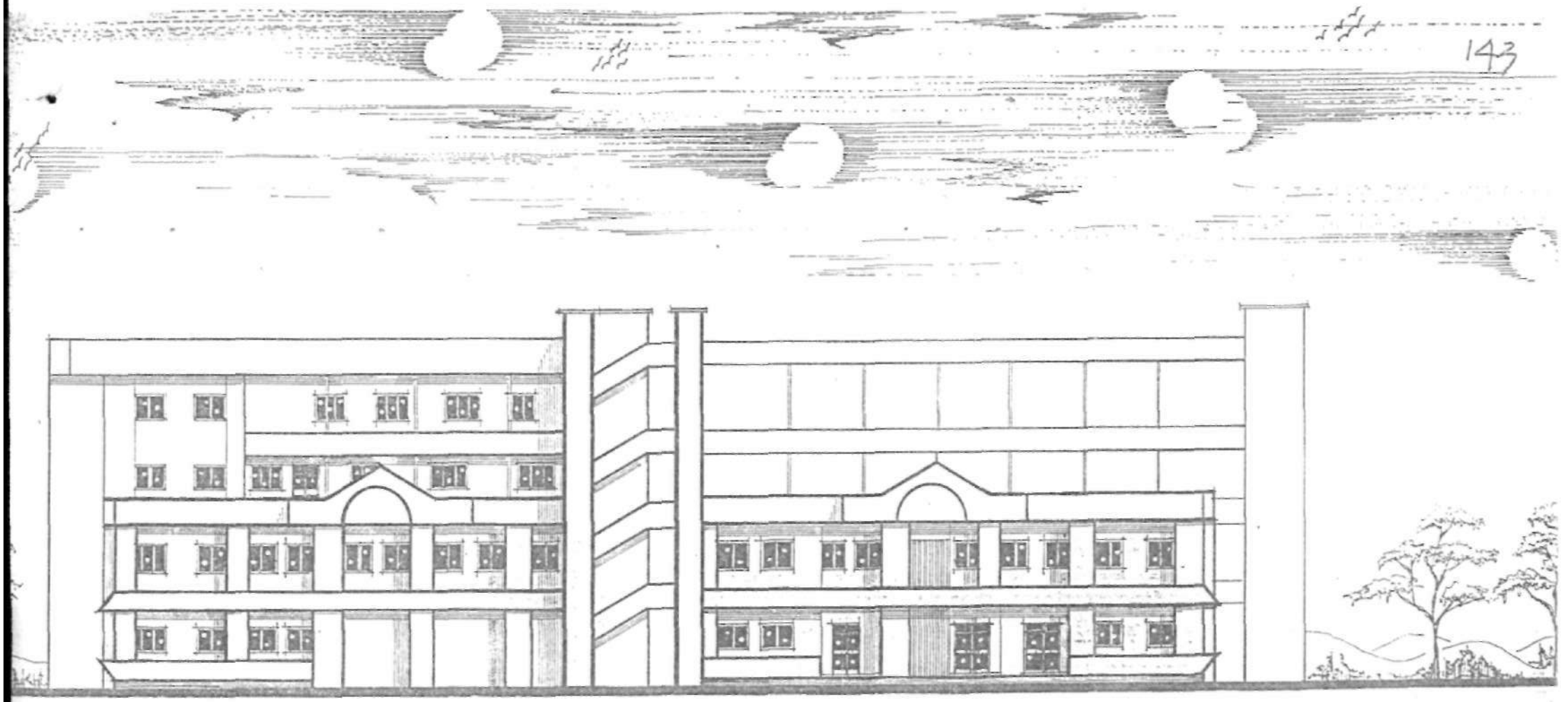
NORTH ELEVATION



SOUTH EAST ELEVATION



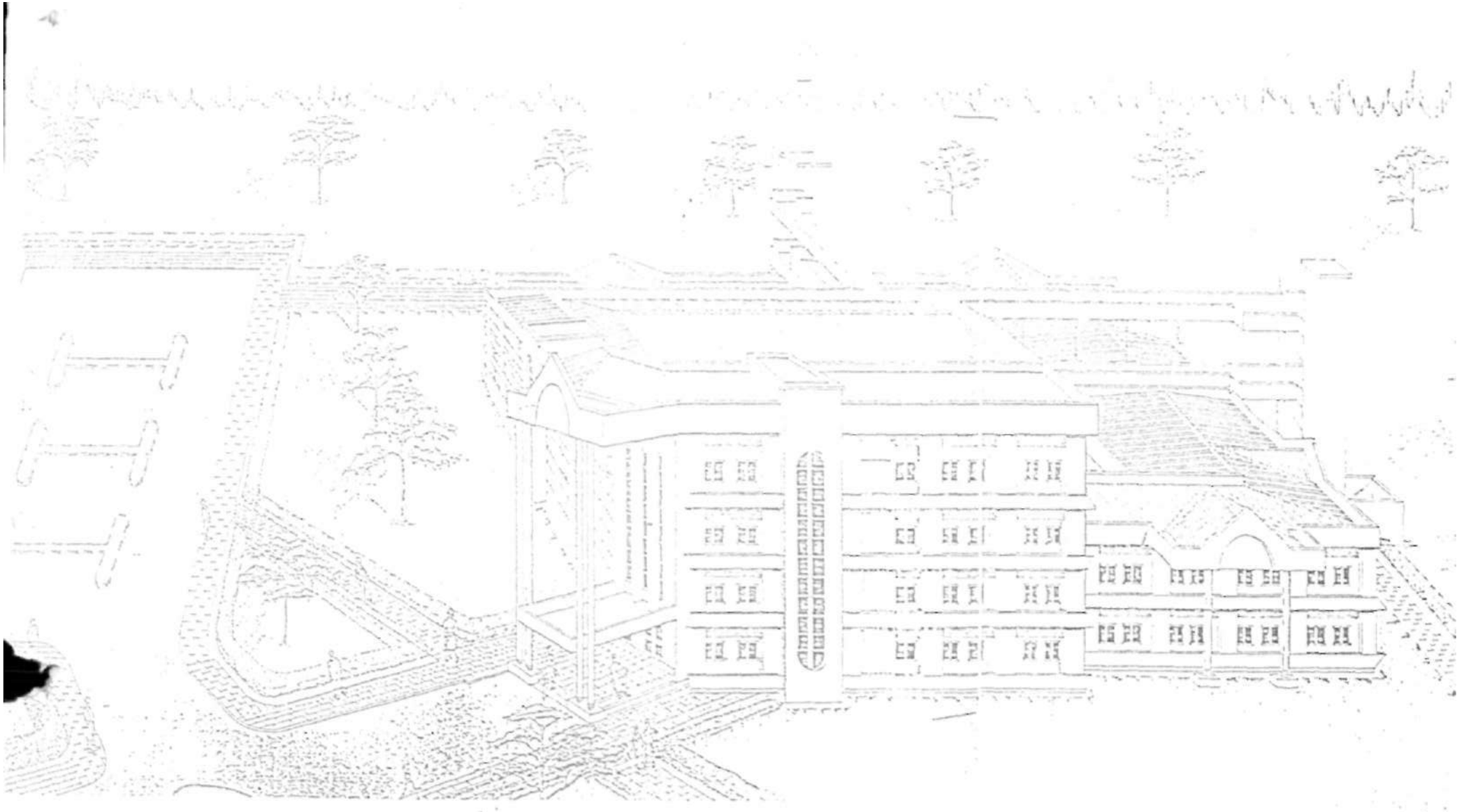
SOUTH WEST . ELEVATION



NORTH EAST ELEVATION



NORTH WEST ELEVATION



PERSPECTIVE.