"EKO TOWER"

DESIGN OF AN OFFICE COMPLEX FOR LAGOS STATE DEVLOPMENT AND PROPERTY CORPORATION

(Interplay of Building of Forms and Shapes on Space Flexibility in office Design)

By

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A thesis submitted to the Postgraduate school, Ahmadu Bello University, Zaria in partial fulfilment of the requirements for the award of Master of Science in Architecture.

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

DECEMBER, 1992

DECLARATION

I hereby declare that the findings contained in this thesis are of the honest research undertaken by me within the regulations of the postgraduate school of Ahmadu Bello University Zaria. It has not been submitted for the award of any other degree or publication anywhere.

All sources of information have been duly acknowledged by means of references all quotations are distinguished by quotation marks.

AMOS OLADIPO OLUFEMI

DECEMBER, 1992

CERTIFICATION

This thesis entitled, "EKO TOWERS DESIGN OF AN OFFICE COMPLEX" meets the regulations governing the award of the degree of Master of Science (M.Sc) in Architecture of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

To My sister, Mrs Olaitan Roseline Ogunbiyi

ACKNOWLEDGEMENT

Firstly, I must acknowledge the omnipresence of God Almighty for seeing me through right from the inception of my academic pursuit to this stage. He had been my Creator, Guardian, and my Lord.

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OLADIPO OLUFEMI AMOS

DECEMBER, 1992

ABSTRACT

The introduction of the Second Tier Foreign Exchange Market by the ruling military regime has brought about many business outfits springing upon a daily basis. Thus there is the need for a well planed office environment where creative thinking communications and adequate dissemination of information could be achieved.

The thesis therefore shall feature principally corporate architecture with special focus on the concept of space flexibility. This concept of space shall be examined within the context of the science of space flexibility in an ideal office design as well as feature general philosophies of office architecture.

Chapter 1 of the thesis features the preambles and the aims and objectives couplet) with the realisation of the scheme as well as the research methodology employed in the thesis. The second chapter examines the relevant literature on what office is, its functions, types and merits and demerits.

The successive chapters feature the phenomenon and concept of space and form composition in architecture and the relevant case studies of existing offices or corporate outfits both local and international with a view of realising the basic facts involved in design of offices. The later chapters comprise the study of the site area and the design brief as well as other functional requirements. The last chapter concludes and states the contributions and suggestions to the architectural education.

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ABSTRACT

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CHAPTER 1

CHAPTER ONE

INTRODUCTION

1.0 INTRODUCTION

The property development company is a key figure in the location of office activities. The classic property company has usually been started by an estate agent or solicitor, someone with intimate knowledge of land and property. He exercises this skill in purchasing land where he judges that development or redevelopment is possible and profitable. Office buildings are a common feature of the central business district (C.B.D.) of major cities of various countries of the world. In Nigeria, Lagos is a typical example where cluster of office blocks exist. The introduction of the second-tier foreign exchange market by the ruling military regime has led to emergence of many financial related investments outfits. These outfits are dotting every part of the central business district and each striving to make name and create identity for itself e.g. Banks.

More attention is now being paid to offices development by property developers than before as a source of revenue. Offices are commercial ventures which are capable of generating revenue to the owner. Adequate considerations would have to be given to produce the best results in their design and usages, since they are commercial ventures of which a higher return is expected of the owner.

The thesis is to provide standard facilities which are pre-requisite of any ideal office complex with the hope that it

shall help to raise the performance level of its users as well as bring dignity and self esteem to the occupants. The proposal shall also focus on the flexibility of spaces to provide for the immediate and future use of corporate bodies using it, which are by nature dynamic. The provision of basic and complimentary facilities which shall be flexible, to enhance conducive atmosphere for work, and to cater for present and future needs, and above all give dignity and pride to the owner and users.

Considering all the aforementioned points the research will focus on the flexibility to achieve optimal use of office space. Among the areas in view are ways by which office spaces can be designed and propose a suitable one for the developer for higher returns having considered the best forms and shapes to achieve flexibility.

1.1 CORPORATE BUILDINGS AND ARCHITECTURE

The growth in Nigeria's economy has brought about many business ventures in the last one decade. The restructing of the economy under the present military regime has brought about turnouts of big corporate concerns doubling which calls for rapid expansion of most of these conglomerates. Thus there is the need for these business conglomerates to have befitting offices for their opeations. The erection of a suitable environment, offering favourable conditions for creative thinking and for the communication and storage of results is the responsibility and function of the architect.

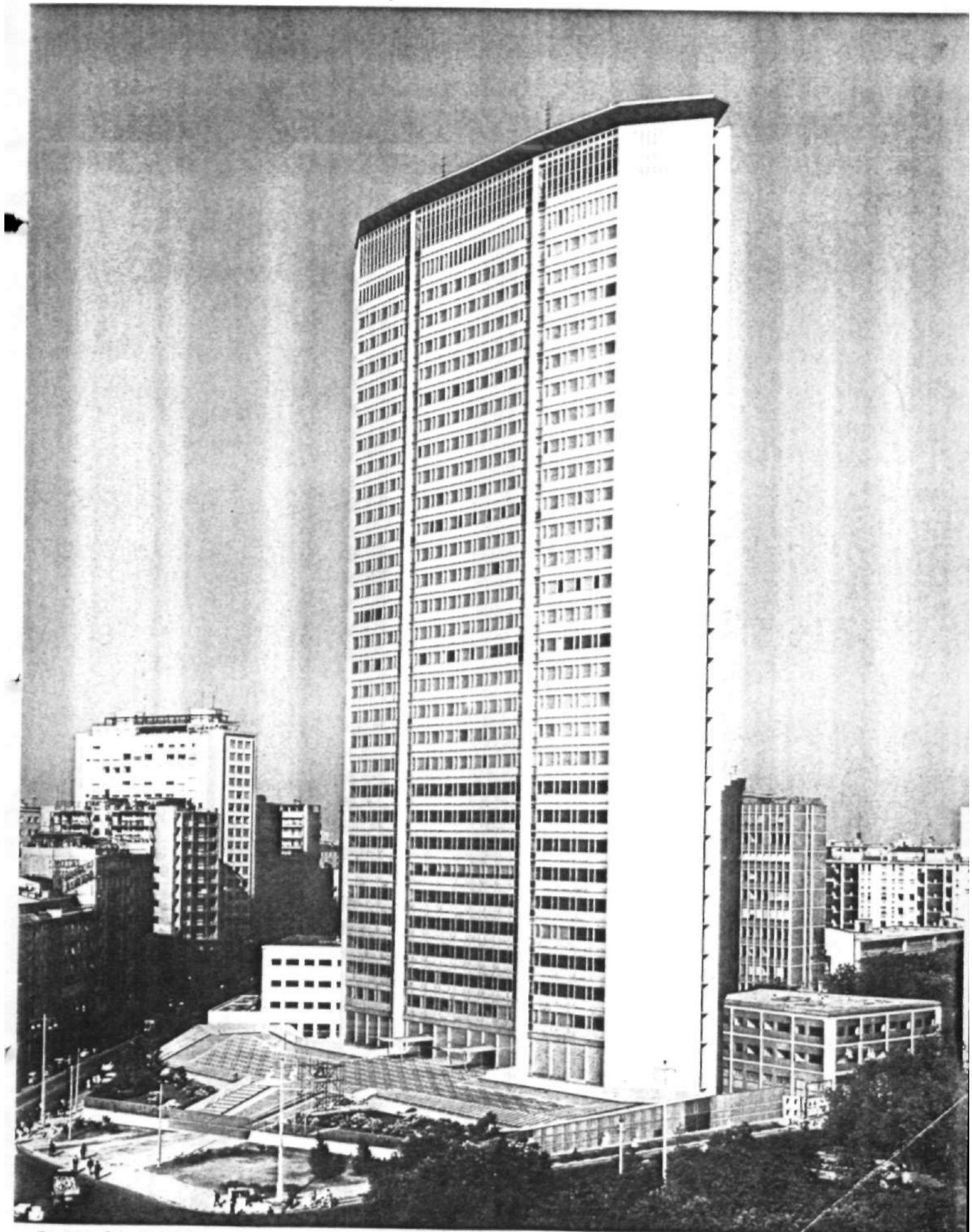


PLATE 1: PIRELLI ADMINISTRATION BUILDING, MILAN.

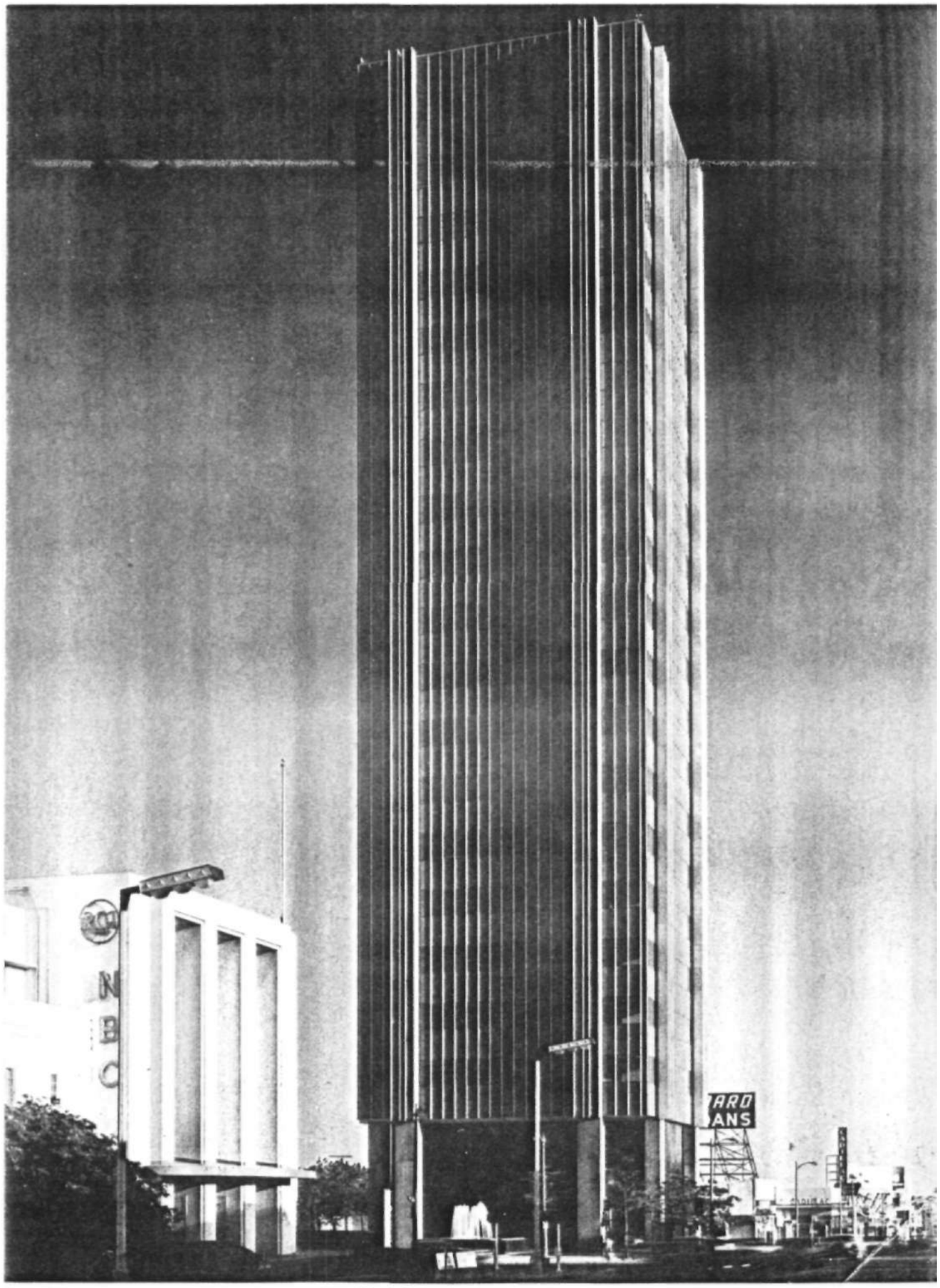


PLATE 2: SUNSET-VINE TOWER OF LOS ANGELES HOLYWOOD CALIFORNIA.

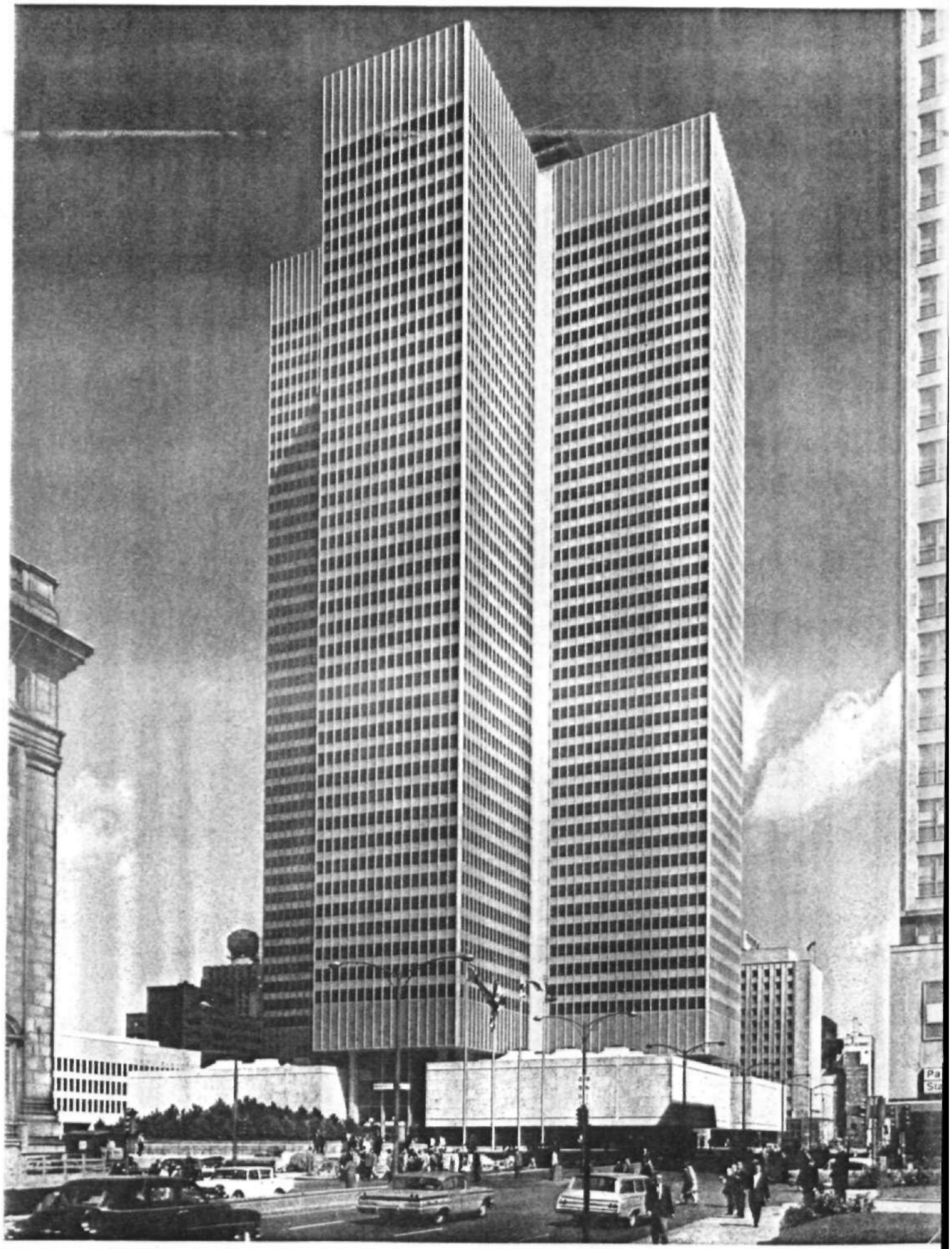


PLATE 3: OFFICE BUILDING AT THE PLACE VILLE MARIE, MONTREAL.



PLATE 4: A PANORAMIC VIEW OF PART OF C.B.D. LAGOS



PLATE 5 : A VIEW OF PART OF LAGOS C.B.D



PLATE 5 : PANORAMIC VIEW OF CORPORATE BUILDINGS IN LAGOS C.B.D.

Office buildings are begining to gain prominence in the city centres (C.B.D.) of major cities especially in Lagos. The array of highrise office buildings that tower the sky creates a good visual perception when approaching Lagos. The realisation by the government and private individual firms of real estate development to diversify into long term investment to seek alternative revenue generation source is highly noticeable in the present dispensation. This could be as a result of dwindling oil revenue from petroleum.

Office buildings are common features of central business district of major capital cities of the world ranging from New York to London to Paris and Tokyo. Office building as an integral part of town planning provides the much needed opportunity for the large-sclae erection of open space while keeping down the collective cost. These offices range from big to small, from forms and use of materials to construction techniques. Corporate offices of today transcend those of old in all aspects of design ranging from aesthetics, simplicity, use of materials and space realization. In today's corporate offices the latest available technology is employed to create a real corporate identity both to the owner and the users (tenants). Sophistication is the watch word. In view of the high capital investments required for a new office building, the desire to adopt the latest standards in office technology and operation is understandable.

The primary aim of any owner of such offices is to generate revenue and that calls for more considerations to be taken into concern during the design stages.

Among the secondary tasks associated with the construction of an office building are the means ensuring the physical and psychological well-being of the staff which, to some extent, governs the out-put. In addition, means must be provided to prevent the depreciation of assets and, not least, means specifically designed to enhance the prestige of the company. Hence emphasis is placed on the design as much as to avoid wastage interms of spaces and flexibility of spaces to the tenants usage which is by far dynamic and variable.

In the past there are occasions of wastage that which occur in the service cores, corridors and in some cases office space owing to poor design. These reduce to a great extent the commercial viability of the office which no investor would appreciate. For reasons of economic efficiency: in view of the growing volume of business any prospective investor will want maximum profit from business investment and with high yield. In the design of an office, careful and adequate considerations should be taken to achieve flexibility and optimum utilisation of the effective usage areas.

1.2 HISTORICAL BACKGROUND OF LAGOS STATE DEVELOPMENT AND PROPERTY CORPORATION

The provision of modern housing schemes and the transformation of the slums and ghettos in Lagos dates back to 1928 when the Board of the Lagos Executive Development Board was inaugurated. However, subsequent control of the city necessitated the involvement of the Ikeja Area Planning Authority (I.A.P.A) in the control of development and provision of public housing outside the city.

Consequently in 1972, the Lagos Executive Development Board: the Ikeja Area Planning Authority (I.A.P.A.) and the Epe Town Planning Authority (E.T.P.A.) merged into what is now known as the Lagos State Development and Planning Corporation (L.S.D.P.C.). Legality was bestowed on this merge by the L.S.D.P.C. Edict No.1 of 1972.

The functions of the new body, L.S.D.P.C., among others were:-

a. to provide and maintain roads, footways, bridges ,drains and sewers on its estates until a local authority takes over.

b. to establish a Home-Ownership Saving Scheme in respect of any housing estate or building owned, constructed and managed by the Corporation;

c. subject to the provision of the Edict, to carry on all activities which are necssary, advantageous or convenient for the purposes of carrying out its function under the said edict.

Upon its creation in 1972, LSDPC, which inherited the liabilities and assets of its three predecessors, was completely divested of all its development control powers which were transferred to the Lagos State Ministry of Works and Planning (L.S.M.W.P.) which became responsible for planning and development control throughout the State. But after much persuasion, the power to control development on its estates was transferred back to the LSDPC in 1978. Under the present arrangement however, the LSDPC has again been divested of powers to allocate plots for development of any kind and of plan approval, but it is vested with powers to provide and manage residential, commercial and individual houses throughout the State.

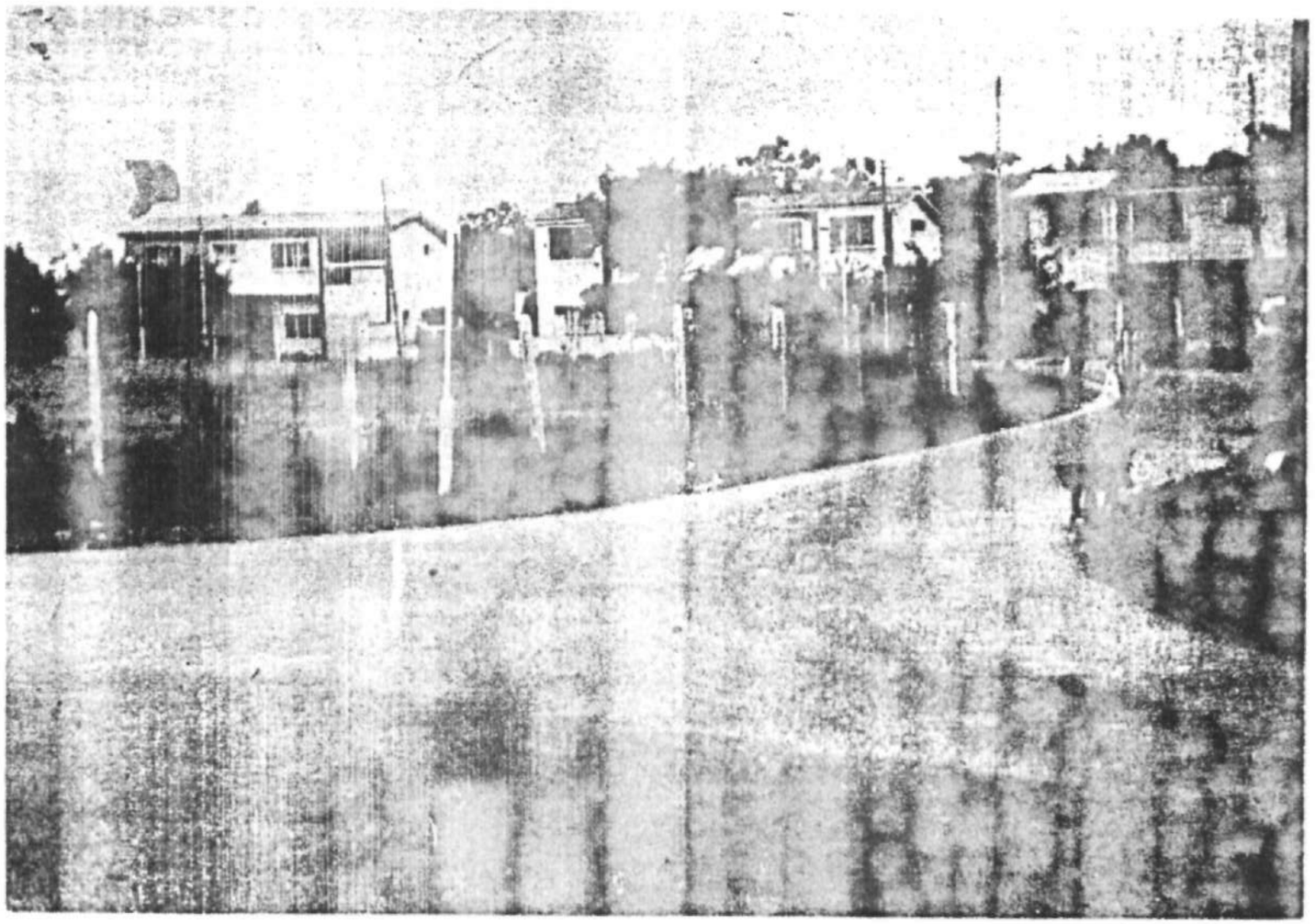


PLATE 6: LSDPC Freehold Housing at Surulere

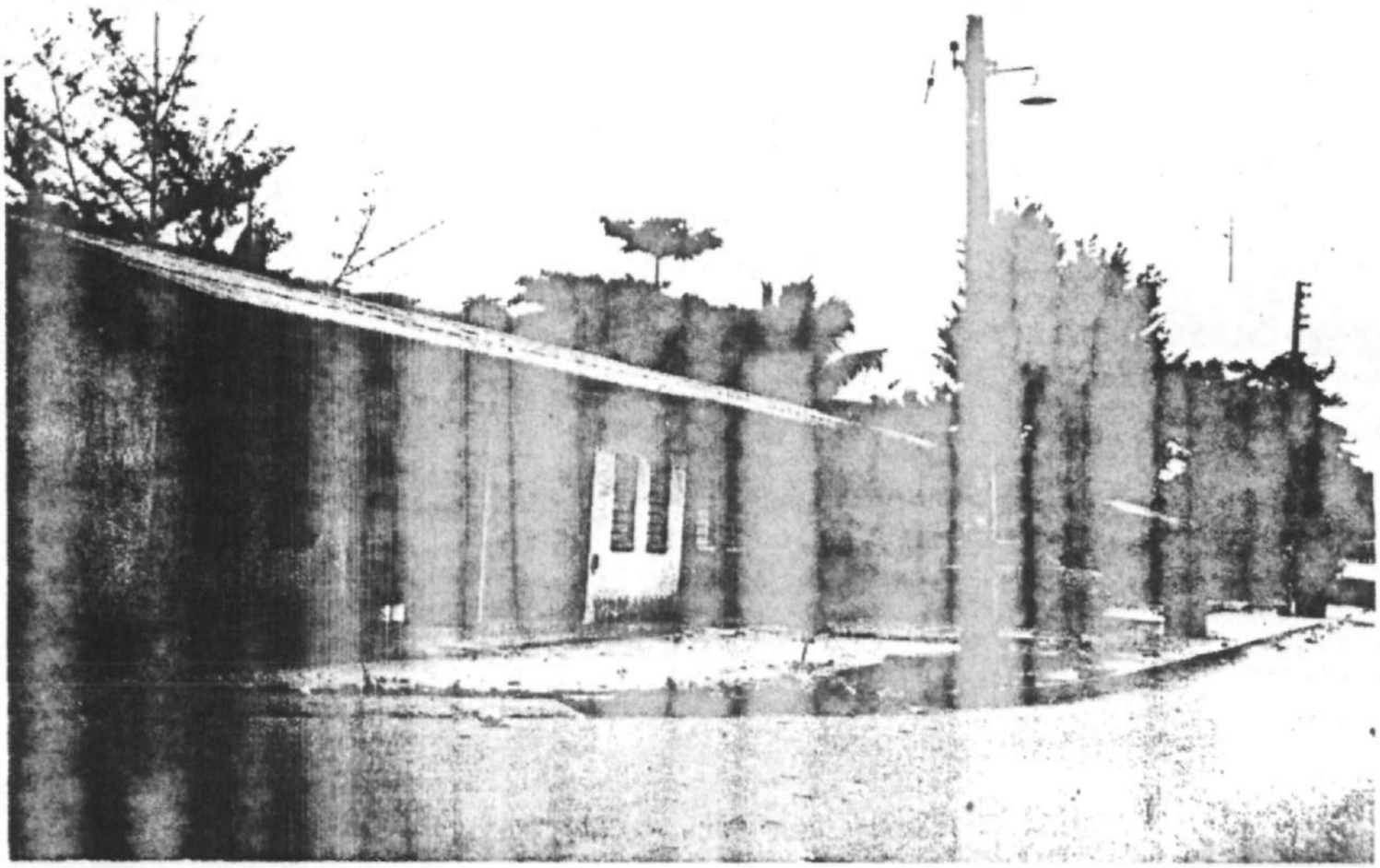


PLATE 7: A view of the Executive Development Board's (LEDB) Rehousing Scheme (RHS) at Surulere now under the control of LSDPC.

However, through subsequent years, more administrative bodies were carved out of the Corporation to enable it face housing development in the State. Such bodies carved out of the corporation include the New Towns Development Authority and the Lagos Building Investment Corporation which serves as the Mortgage Bank of the State in realisation of housing delivery to the people.

Apart from being the main Housing Agency for the State Government, the Corporation also undertakes design, costing, supervision and actual execution of agency work for the State Government.

The Corporation had prior to 1979 the largest and most experienced consortiumof highly skilled professionals in Nigeria which include Engineers, Town and Regional Planners, Architects, Quantity Surveyors, Estate Surveyors, Lawyers, Accountants and Administrators all of who put in their team work for the successful development of both industrial, residential and commercial properties of the State listed earlier on which today have become high revenue yielding ventures for the state.

The Corporation's high rental properties at Ikeja and Victoria Island have been a major source of revenue for the Corporation, part of which is being used to fund the construction of the Low Income Houses. Looking back at the achievements, one can conveniently claim that the aims of setting up the LSDPC has been fully achieved.

1.3 VIABILITY

The primary motive of this thesis is to justify and fulfill the primary aim and bring into reality one of the objectives for which the Lagos State development and property corporation was established. The Lagos State Development and Property Corporation a profit oriented parastatal, explained in clear terms that it wants to build the office complex purely to generate revenue for itself and the State. It aims at generating revenue by providing rentable office spaces for business organisations within Lagos metropolis.

The project under research is a long term investment like any other real estate business project. The rush for any available office space in the Central business district (C.B.D.) of Lagos is alarming, hence the boom in the real estate and property development industry. The advent of deregulation of interest rates and SFEM (Second-Tier Foreign Exchange Market) has brought about many finance related investments outfits by over 300% compared to the pre-SFEM era. This development has brought heavy rush for every available office space in Central Business District of Lagos. Often a structure that will create a corporate identity for its users are most sought after. Hence the classic property company exercises this intimate knowledge of land and property and exercises this skill in purchasing land where he judges that development or redevelopment is possible and profitable.

1.4 OBJECTIVES AND GOALS

Having established the rationale and phenomenon of the Lagos State development and property corporation and its relevance to the Lagos State economy the thesis shall for the L.S.D.P.C. seek to:-

i. Identify the incentives and facilities that may be necessary for its effective performance and thereby propose a concept that takes into congnisance the present state of needs and futuristic expectations;

ii. To take into consideration the locational factor of the site to create an environment of awareness and establish an identity with both the building and its functions. The prominence which the building receives with respect to other buildings in the environs shall be examined in this case.

iii. Seek reasons that may be responsible for the unpopular view held by the populace against most government agencies and thus look for a place an architectural language can take in the transformation and redemption of such views. Thus an indepth study of form would be done and which would at the sametime identify with the vernacular or local architecture of the environment. Architectural characters and symbols will be used so that on the whole a befitting design will be accomplished.

iv. A flexible designed architectural space for an ideal office work hence creating an abundant opportunity to meet formally and ensure a creative and productive use of offiee hours by the various tenants (Occupants) that are diverse in nature.

v. Creating a sense of communal identity and unity between different user's requirement and establish a communal landmark to enhance the corporate image of its owner (L.S.D.P.C).

1.5 METHODOLOGY OF RESEARCH

The thesis shall rely on case studies of already existing lettable office complexes and a prior consultation with the L.S.D.P.C. in the formulation of the design brief. References would however be made to relevant literature, Photographs will make a great impact in the documentation of relevant offices to be studied. Whenever it is possible, dialogues, interviews and examination of literature would be done to assess public opinion about office buildings in the formulation of public opinion pool for the design. The research shall therefore comprise of data collection, data synthesis and a design proposal.

1.6 SCOPE AND LIMITATIONS

Based on the nature of the project, case studies will be taken from both Nigeria and abroad, these will form part of its brief though not absolutely as any relevant literature would be used. The office building survey will be concentrated in Lagos considering the fact that it houses the highest number of lettable office complexes. But if necessary, references would be made to other offices outside this town. There are in existence on the site major traffic flow problems. Adequate design considerations would be made so that double parking on the streets that bounded the site will not be boredom for the occupants and their customers. This design thesis will attempt uplifting such facilities for final integration with the proposed office complex.

This thesis shall as much as possible follow the Lagos city Development Plans proposed by the Lagos State Government but shall not hesitate to make relevant suggestions if need arise.

1.7 FINANCING

Lagos State Development and Property Corporation has in its employment scores of people including its own architects, surveyors and other skills. The size of the company has nothing to do with the size of a structure that might be developed, although it will influence the number of schemes that can be underway at any time. This is because the development finance is raised externally, from the same sources, the clearing banks, the secondary banking, houses, the pension funds and the insurrance companies, whatever the size of the companies. It is primarily the skill and judgement exercised in borrowing capital, against the risks and profit inherent in a particular development, that characterizes the successful property developer. Hence the call for interested and reputable firms of property developer who have been jostling for a place at the windfall.

The State is also endowed naturally with vast materials and human resources thus so far the richest of all the 30 States in the Federation.

CHAPTER 2

CHAPTER 2

2.0 LITERATURE REVIEW

2.1 TOWARDS A NEW CORPORATE IDENTITY

In highly idustrialised countries, more and more people have to work at a desk. Desk work is predominantly concerned either with managerial decision-making or with the combination, subject to certain rules, of facts and figures, that is; "data processing" – a task increasingly assigned to machines. These activities all occur at an office. Office buildings range from big, small, complex to the costly and in then various functions are performed on a daily basis.

Offices constructed in the past were very simple, constructed with timber or stone could not be compared to today's office. Today's office buildings are highly complex and elaborately designed towering high into the horizon (sky), dominating and above all having imposing characters. Office buildings of this age offer opportunity for expressionism which could be architectural expressions or the corporate's organisation concerned expressed i.e., the owner.

Buildings of the past that towered to the sky were mainly temples, fortresses, cathedrals and palaces of kings or Emperors and they are usually built to emphasize the architecture of an area which could be artistic or an aesthetic work. It could also be for special purposes; to distinguish an individual or group of persons.

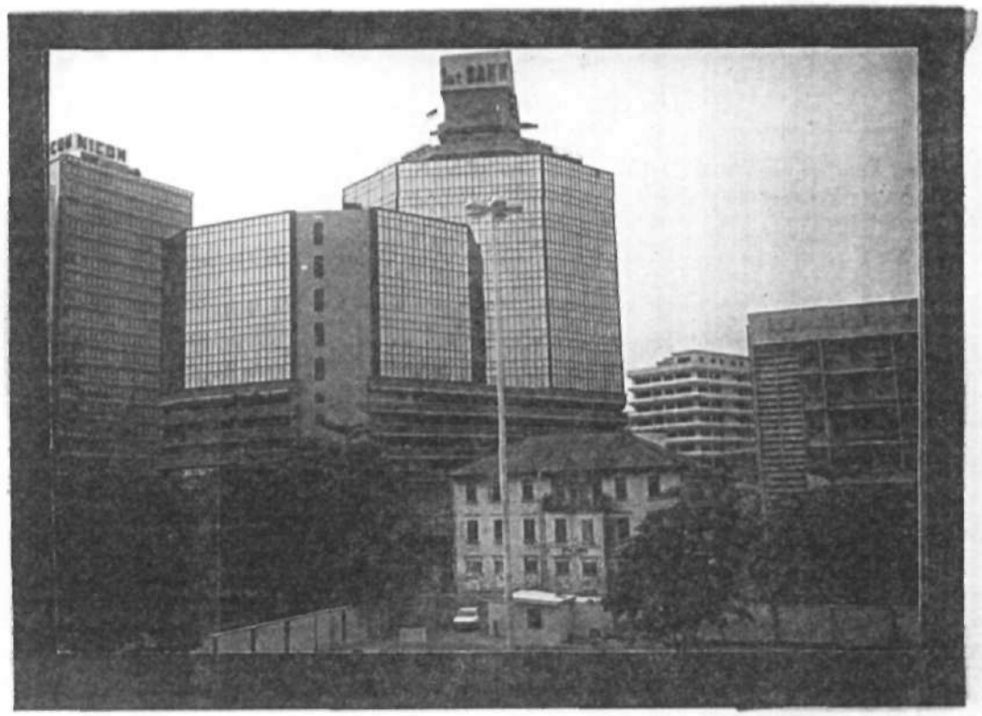


PLATE 8 : FIRST BANK HEADQUARTERS, LAGOS

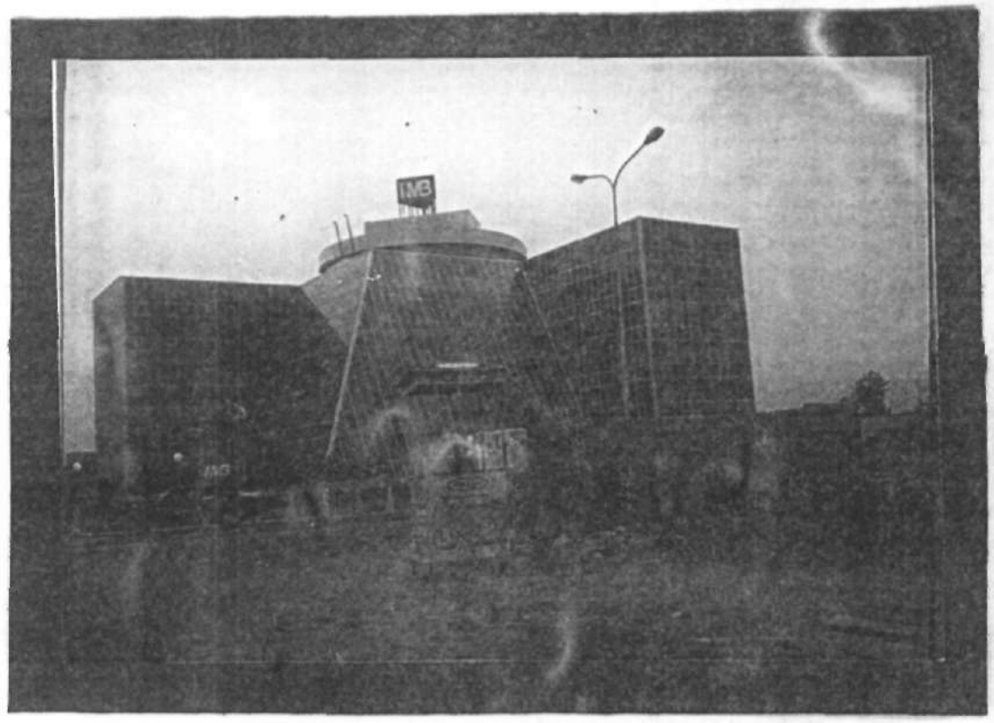


PLATE 9: I. M. B. HEADQUARTERS, LAGOS.

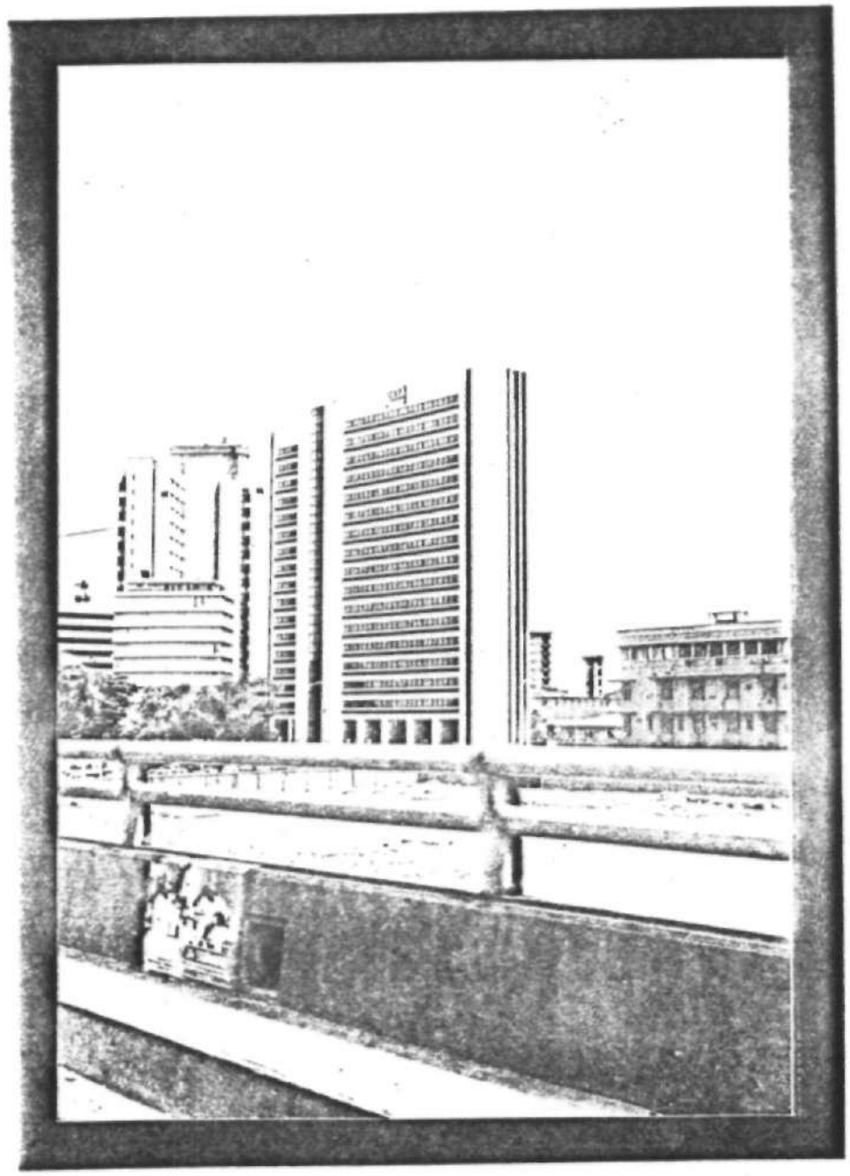


PLATE 10 : NAL TOWERS LAGOS.

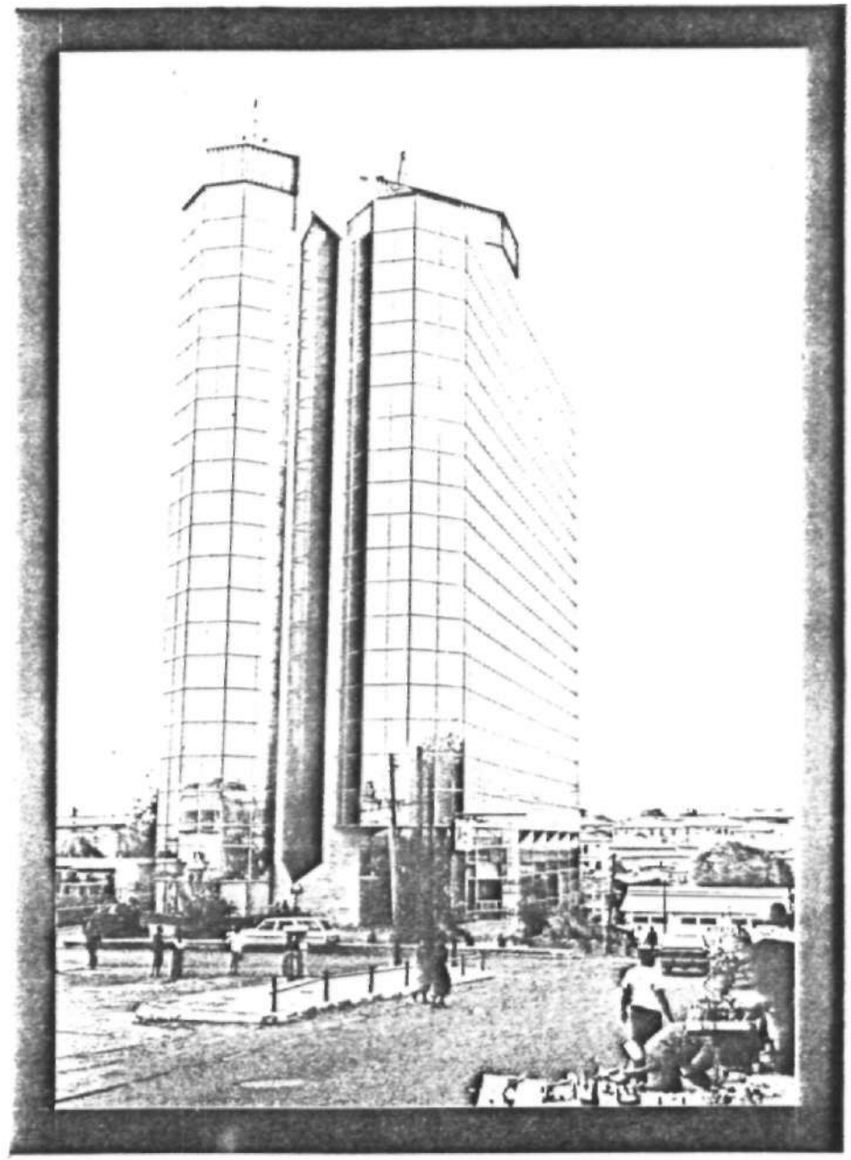


PLATE 11 : FEMI JOHNSON BROKING HOUSE, IBADAN.

Office developments of recent are also aim towards a form of expressionism that which embodies a fundamental space articulation, structure, materials and utilities in a manner true to contemporary industrialised technology. The justification put forward for such generosity in terms of space, floorings, wall claddings and furniture is the exterior and internal effect: the firm's prestige is enhanced and the staff feel their social status is raised. In this way, the basic costs incured by the client are increased to boost the self-assurance of the undertaking and its staff.

Every organisation wants to convey an image of itself to the outside world hence sophistication in the choice of designs and materials usage in most corporate buildings that parade (adorn) the Lagos city scope (e.g. Marina and C.M.S. area of Lagos). Identity is very important to corporate buildings, an office block should be easily distinguished from an apartment tower. Each of these buildings should have its own identity without any mix-up or confusion. The issue of identity and image of corporate buildings is highly significant in the customer service relations and of course in the engagement of customers in order to woo members of the public. W.B. Qurix (1987) says "Corporate buildings must not only establish prestige, reputation and confidence for their customers, workers, executives, but should also exude the elegance and sanctimony normally associated with the world of finance".

An example in this light is the NAL towers, from which elegance of purpose and prudence in materials usage could be seen. The decision of an in-town office tower is made inspite of adverse econmic calculations because the client believes he owes such a solution to the image and the prestige requirements of his undertaking.

2.2 OFFICE AND ITS FUNCTIONS

Offices as discussed earlier on are features of an advanced or growing economy and they (the inhabitants/citizens) work at desks in contrast to under developed economy which primarily is farming. The chambers dictionary defines office as "the order or form of a religious service, either public or private: that which a thing is designed or fitted to do; a place where business is carried on".

An office is based on information handling and managerial decision making and it also entails combination of facts and figures, which is called data processing which is now being handled by computers owing to efficiency and fastness over the manual method. It has become apparent that large variations exist based on office organisations, technology of office, managerial ability and management styles that varies from one office to another.

There are multi-nationals that employ thousands of people in one of many buildings to man enterprises. The difference between the formulation and execution of works between individuals according to hierarchy in offices is usually mirrored or shown in the design of office buildings by assigning different functions atimes to different floors of the building.

It is the responsibility and duty of an architect to create a conducive environment that gives creative thinking, to communicate and store results, for a poor office environment often results in decreased levels of production and employee morale. Absenteeism and tardiness are apt to increase as is the number of errors made by employees. In extreme cases, the employees' physical well-being may be jeopardised.

Works in offices are mostly stationary and they also involve, the followings; machinery spaces, meeting rooms, canteens, libraries, filing and other ancillary activities that could take up 1/3 of an organisation's space. Development in office organisations is fast changing, so adequate care must be taken in its design.

Two categories of office buildings can be identified; Custom builts and speculative builts, custom builts is when an organisation decides to build or develop an office to occupy itself and meet her set of requirements. This type of office is specially designed to meet the organisation's need and ought to reflect the image of the organisation atimes.

Speculative as its name implies is a design type not tailor-made for a specific organisation. This is a kind of development built and given out in rentage. The building is designed to attract largest possible range of interested tenants. Thus distractions (differences) in building forms. Theoretically, no difference in the office should exist , because all office designs have basic principle that is applied to them.

An organisation changes from time to time in the style of arrangement, but a building does not change. Thus, adequate care has to be taken when making decisions that relate to the design of an office.

2.3 TYPES OF OFFICES

Often there are distinctions in the form of offices and this has led to wide differences in the overall building form and composition. Components of buildings have different life spans. Reasons why a component may last longer than another might be due to expertise in the manufacture or due to adequate maintenance given to it. Maintenance plays a great role in increasing a building's life span. Four basic categories of offices could be seen based on their functions and needs.

i. The Shell:- This type of office must be designed to meet and satisfy the wide variety of the needs of the organisations concerned. When an organisation employs this type, the design has to be handled in such a way that it will be able to meet and satisfy the numerous and varying needs of the organisation. The design is expected to last as long as the building will be useful, while its structure care and skin are also expected to last the same duration too.

ii. The Scenery:- This type of office is to last as far as the tenancy of the building still exists. Furniture , Partitions, furnishings are related to the life of a tenancy. Interior fittings are designed to organisation's taste and requirements.

Scenery is always in existence as long as tenancy or lease is still in existence and it is expected to cover a reasonable number of years.

iii. Sets:- This involves constant re-arrangement of office scenery to meet changing short term needs of an organisation with the scale of time atimes measured in weeks. Scenery elements are being positioned and repositioned constantly to reflect the short-term changes that might have been reflected within the organisation. The scenery elements include desks, chairs, screens and partitions, which are done to meet immediate organisational needs.

Of recent, there have been developments in office buildings which have seen long term shell diminishing as short term scenery especially furniture, which absorbs more and more functions, carrying services, visual and acoustic separations and decorations are now frequently achieved by furniture.

Mechanical services such as lifts and other mechanical equipment become outdated in office with office technology which keeps on improving on a daily basis. These services must be replaced from time to time to meet up with technological change. However, these basic services may however last for between 20 to 25 years. Small scale services like light fittings and electrical parts change with the scenery.

2.4 THE OFFICE SPACE

Office buildings when viewed as factory require well designed spaces. Office environment is a function of the output which is expected of the workers there. The propensity to bring out a low productivity is evident in bad offices. The development of an office layout which conforms to and compliment the work flow requirements is perhap the most important phase of office planning. By systematic study of the operations the designer can assist the management team by providing work station patterns which ensure a smoother straight line flow of work.

2.4.1 Type of Office Space Layouts

Generally, there are 2 criteria for discussing the types of office layouts. There are:-

(i) Office layouts based on the location of service core(s) which usually contains staircases, lifts, toilets and the likes.

(ii) Another criterion is office layout based on the depth of space. The space is usually measured from the external shell to the primary circulation corridor across uninterrupted office space.

However, in both cases the type of layout is dependent on the form of the office shell which is the most important governing factor.

2.4.1.1 Office Space Layout Based on Core Location

(I) Central Core Location

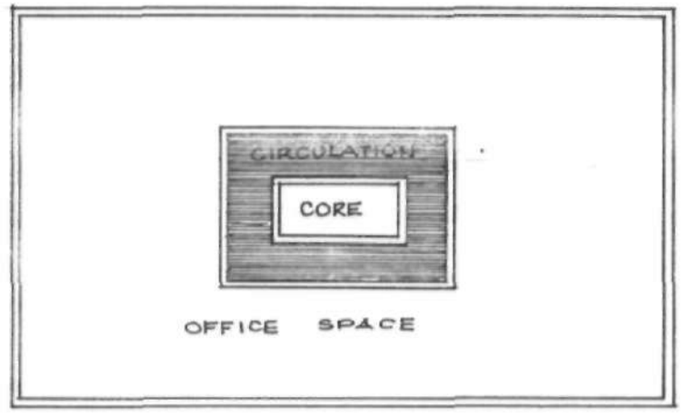


FIG. 1

Below are the merits and demerits of the above named office layout:

Advantages:

A. In a tower, the core help to subdivide shell into separate tenqncies i.e, helps out greatly in a multi-tenancy aggreement.

B. All sides open to daylight infiltration, thus office independent of artificial lighting.

C. Adequate centralisation of services for convenience and for proper maintenance.

D. The core helps in lateral stability against wind loads.

E. Suitable for large high rise offices on small site.

F. Distance from side of shell to core is uniform.

Disadvantages:

A. Reduction in floor area ratio.

B. The concept would be quite rigid.

C. Sometimes centralised services is a problem especially when it comes to ventilating the core.

Modification:- The above system have been however modified and the idea of split-core central location comes about.

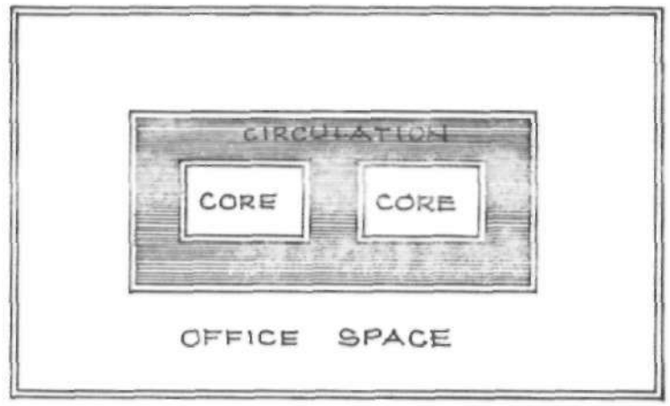


FIG. II

(II) External Core Location (Single Zone)

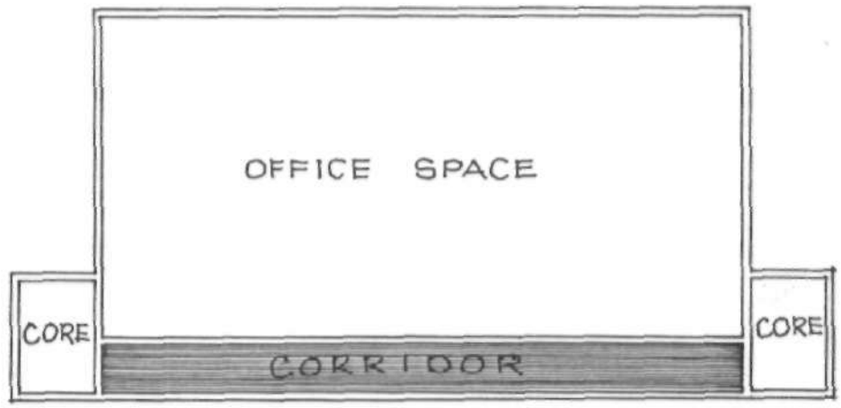


FIG. III

Advantages:

A. This concept allows perfect and adequate cross ventilation

B. All offices open to central corridor

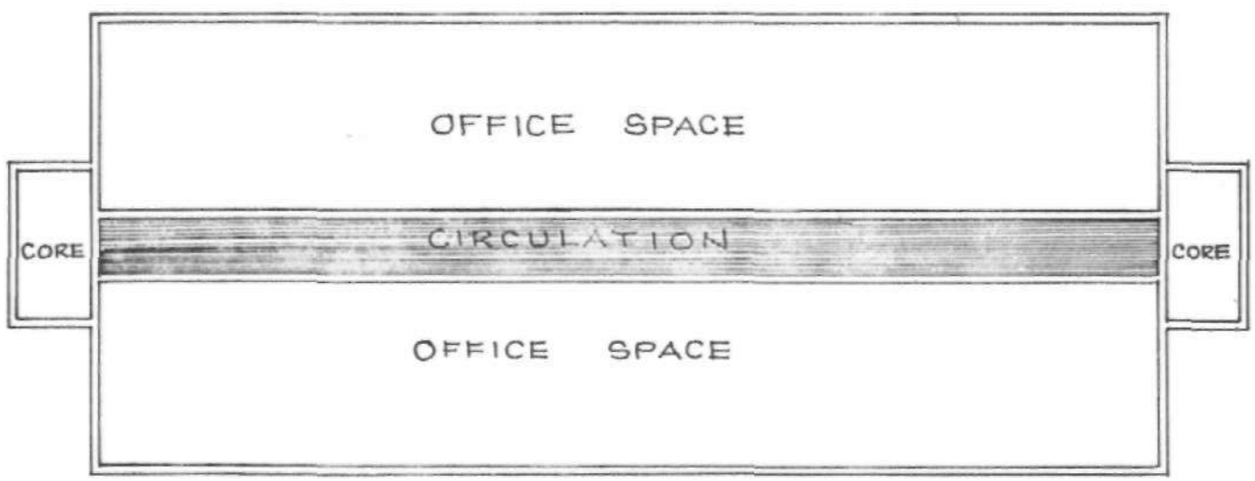


FIG. IV EXTERNAL CORE LOCATION (DOUBLE ZONE)

C. It makes possible for elongated design.

D. It is more flexible if designed as open plan.

Disadvantages:

A. Long distances from one end to another.

B. Long corridor has a bad visual perception and it affects people psychologically;

C. Only 2 sides allow for daylighting;

D. Incase of highrise buildings, it is inadequate to withstand high wind loads and thus requires additional stability.

(III) External Core Location (Double & Zone)

This is a modification of the single zone layout already discussed above:-

Advantages:

A. It is more economical and adaptable to wind loads.

Disadvantages:

A. Inhibits cross ventilation.

B. Corridor needs extra lighting

Modifications (General)

Central Core

A. The assymetrical location of core within building creates a mixture of office spaces thus making the system more flexible. The core could either be squared elongated or split into two for greater efficiency.

Single Zone External Core

A. To minimize overloaded use of core, there could be 2 cores placed at either side of building. These also help in lateral stability and thus forming shear walls.

Double Zone External Core

A. A variety of office depths can be achieved by assymetrical placement of circulation corridor.

2.4.1.2 Office Space Layout Based On Depth

The design of office layout can also be classified based on their depth of spaces. On this bases the following office spaces are listed.

i. Shallow or small space
ii. Medium office space
iii. Large or Deep Space

(i) Shallow or Small Office Space:- In this category we have offices that are between 4m to 5m in width. They have direct access to daylighting and adequate natural ventilation thus ideal for offices not requiring group tasks, as these types of office space cannot take group efficiently. Maximum area is $40m^2$ and minimum area is $8m^2$.

(ii) Medium Office Space:- In the medium office space category we have offices measuring from (40 to 150)m^2 and whose width measures from (6 - 10)m. This type has fair daylight and natural ventilation acheived and could serve as space for both group tasks as well as working in isolation.

The only demerit associated with this system is that fewer choice for locating circulation exists.

(iii) Large Or Deep Space:- In this class we have office spaces above 150m^2 in area and whose width is from 11m and above. This is suitable for workers performing a group task, with this, greater space flexibility is achieved owing to the openess of the plan and affords many choices for locating circulation space. There exists the possibility of insufficient daylight penetration and natural ventilation in this type of office space.

2.4.2 Goals of Office Layout

(i) Efficient Work Flow:- A well laid out space provides for easier flow of work in an office establishment. The inhibitions posed as a result of bad office layout greatly reduce the pace of work and create a displeasing aura in the workers.

(ii) Allocate and Utilise Floor Space Systematically:- This assures the occupants (users) of maximum space allocation and utilisation and thus allows for expressive thoughts and this helps to convey message which makes it a possibility for tenants to achieve their desired goals and objectives.

(iii). A Good Office Layout also helps to create an office environment that contributes to the satisfaction of office employees and that has a positive effect on the clients of the organisation.

(iv). It Provides for sufficient Flexibility for future expansion when the need arises. Efficient office layout enhances space flexibility which is capable of being changed rapidly to meet the changing needs of corporate buildings.

(v). Provision of efficient employee work areas. It makes possible variety of spaces to be inter-related to one another to ensure optimal utilisation of office spaces. For the architect aims at producing a conducive and integrated atmosphere for cohesive existence and comfort.

2.4.3 Developing Office Space Standards

The primary aim of any space administrator (architect) is determining an effective work area to a worker that is, space allotment to each worker based on his or her cadre or status in the establishment. The amount of space available to each worker reflects the atmosphere of the whole office. These standards (spaces) could either be liberal or economical (conservative) based on architect's inferences (Perceptions). Generally, any office requiring specialized work or where a strong effort wants to be established to boost workers morale, a generous space allotment shall be recommended.

The age-long problem of determining allotment of space area to each worker and of increased amount of space to each echelon or cadre forms the first step in scientific space planning. Within the limits of generous and economic individual space standards, certain broad trends could be seen.

In government parastatals an average large corporation space for routine clerical positions would be based on economic standards. While financial related corporate outfits like insurance companies, banks etc. will also tend to use economical space allotment in areas where there is little contact with the public.

Reasons one can aduce for this is because of rental cost. However, personalised organisation or smaller outfits may profitably use more liberal standards which do not have great number of clerks engaged in routine clerical operations. At this point it becomes important to define as the number of meters required to accomodate a person or a department within a given office space.

However, some companies choose liberal or economic space standard for their various levels of employees for reasons known to them But there is a limit for an individual work place beyond which it becomes wholly impracticable this becomes the problem of space administrator.

In planning developments, establishing space standards within reasonable limits is fairly simple since column spans and window modules of the building can be designed to satisfy the space allotment standards finally agreed on. But using 6m x 6m as the average structural bay, a variety of private office standards all falling within an acceptable standard or range can be established. If an organisation is not constrained by space limitation, they would be free to set any individual standard that seems desirable; liberal or economic space standards. What is the range between liberal and economic standards ?.

Categorisation of liberal or economic space standards could be observed by this statistics. For instance $9m^2$ for a general office clerical worker would be generally considered a liberal standard and $6m^2$ an economic standard (Source: the National Office Management Association NOMA).

Among the scope and purpose of this association is to provide standards useful to determine the number of square feet of office space required for an office layout. The standards mentioned do not provide for large concentration of file space. Special equipment and miscellaneous areas and building services.

Below are the office space assignment standards considerations:

TYPE	SIZE	TOTAL SQUARE METERS
A	6 x 6m	36
B	3 x 6m	18
C	6 x 4m	24
D	3 x 4m	12

For general office worker occupying 150 x 76cm desk we might assign the following allotments.

Supervisors 12Sq meters

Clerks 6-7.5Sq meters

6m x 6m bay are not the only dimensions possible, other spacing may be used especially in some specialised areas where longer column span may be necessary.

General Office Area: 6 - 7:5m^2 per person

Private Office Area:

(i) Executive Private Office - 45m^2 per person

Private Office - 36m^2

Corridor - 9m^2

(ii) Administrative Private Office - $23m^2$ per person

Private Office - $18.5m^2$

Corridor - $4.7m^2$

The above space allotment provides for occassional accessories like files, cabinets, water coolers e.t.c.

Recommendations:

with these ranges quoted, it again becomes confusing and difficult choosing standards, which is better: the upper limit or the lower limit. Whenever it is possible a generous rather than an economical (conservative) space standard be used and the reasons for these are:

The use of generous standard gives a company built in expansion factor. The use of the higher standard improves employees efficiency and work output as well. Desks separated from, rather than abutting on each other give each worker more of a sense of pride and prestige in his/her job. A spacious uncrowded office is usually less noisy and more relaxing physically. Efficiency is the least obvious of the factors which lead us to urge adoption of the high standards, but it is a very real benefit. Offices that give their workers the benefit of individual desks in adequate space can usually more than compensate for any extra costs involved by an increase in total clerical work output.

2.5 GRIDS IN OFFICE DESIGN

The use of grids is very important in the design of office building and its use should be adhered to in office designs as dimensional disciplines.

The use of grids help tremendously in the following areas:

(i) Layout patterns and

(ii) Elements of which the building is constructed.

Below are the various grids in use in an office design.

Framing Grid Or Structural Grid:

This grid defines some of the major elements of the building. whether vertically or horizontally e.g. columns and beams. Planning of all multi-storeyed office buildings depends on the basic grid layout adopted for framing. Units are based on the most economical development for each site and on whether the tower floors are to be used as offices or for other purposes such as shops or showrooms. If shops of other sizes such as 3m to 4.2m frontage are to be accommodated the upper floors to be used as offices should be based on a grid layout of the same dimensions. Large spans necessitate deeper beams which influence the floor to floor heights which when totalled together, are often controlled by local building regulations.

The following figures illustrate five typical grid spacings. Figure V illustrates 5.4m frontage spacing and 6m the depth. The spacing of supports across the block is based on duplicating the piers or stanctions on each side of a central corridor; the depth of the offices on both sides of the corridor is based on a span of 6m, with the width of the corridor as 1.5m.

A spacing of supports as illustrated in Figure VI, VII, and IX shows special consideration for offices overlooking courtyards:

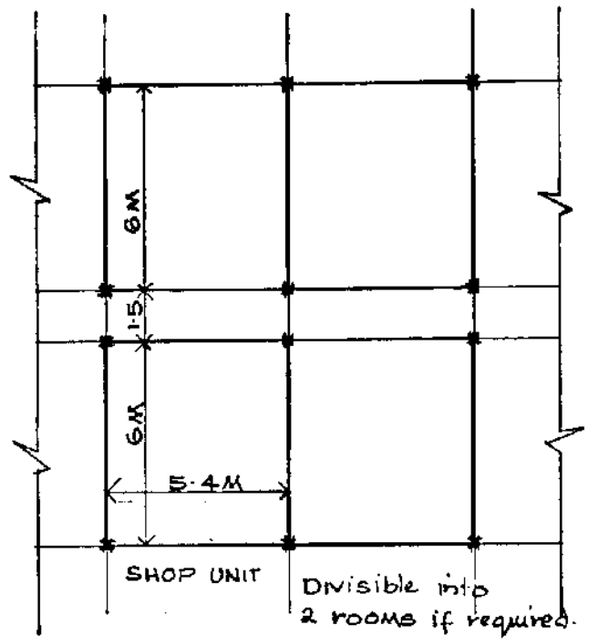

6M
1·5
6M
5·4M
SHOP UNIT
Divisible into
2 rooms if required.

FIG. V

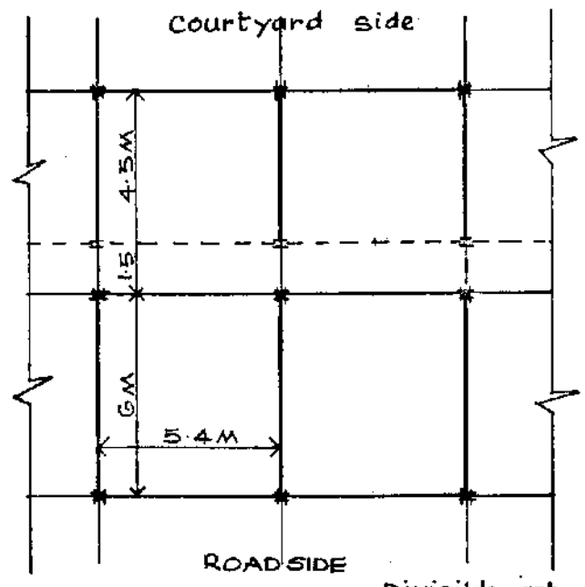

Courtyard side
4·5M
1·5
6M
5·4M
ROADSIDE
Divisible into 2
office rooms.

FIG. VI

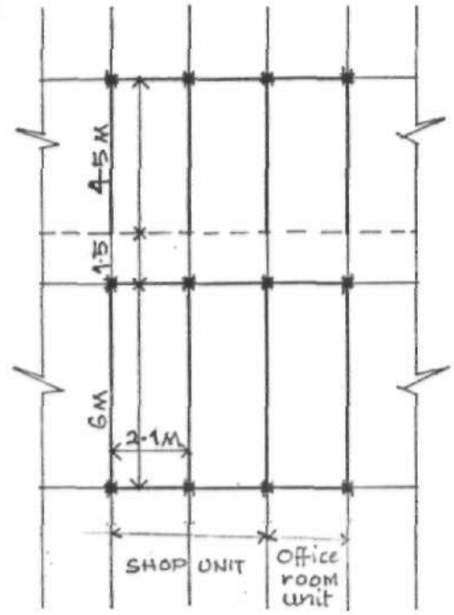


FIG. VII

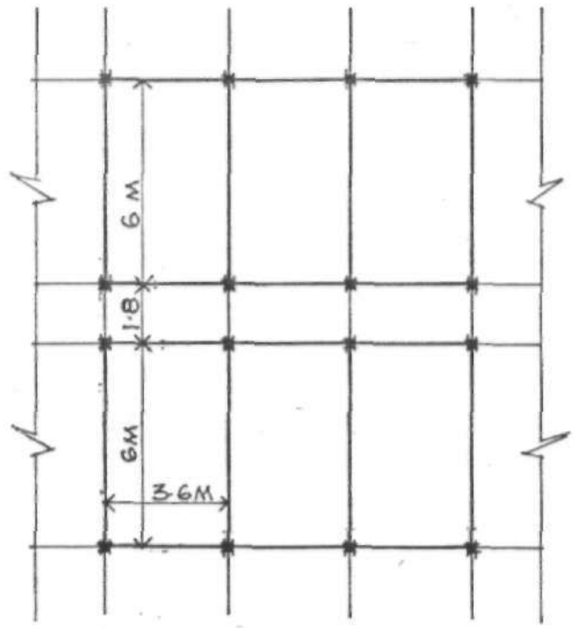


FIG: VIII

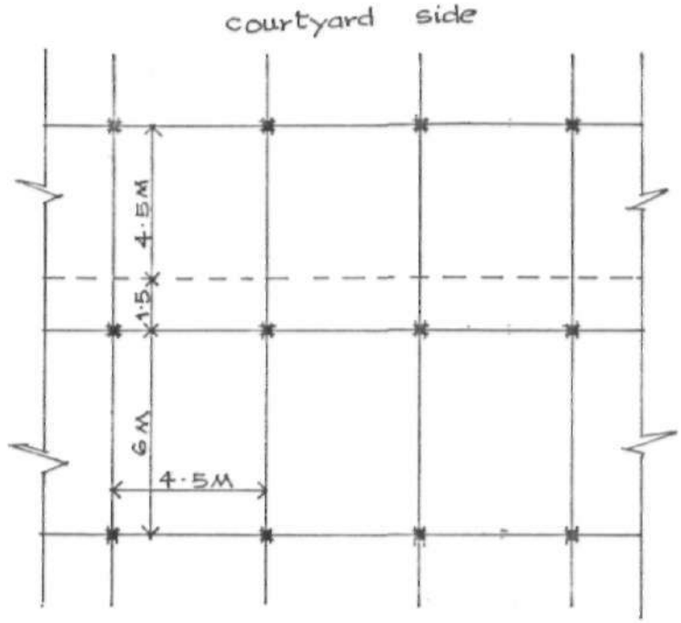


FIG. IX

unless courtyards or light walls are of unusual widths and the walls treated to reflect the maximum amount of light, the offices cannot be considered as having equal advantages to those having windows on external frontages.

These three diagrams (Fig: VI, VII and IX)are based on maximum depths of rooms from courtyard window wall of 4.5m instead of 6m as suggested for rooms with windows on to main frontages. These reduced room depths are also desirable for rooms on external frontages on very narrow streets. To obtain this reduced bay depth it is often economical to space intermediate supports on one side of the corridor, thus the supports are placed centrally in the block as shown in Fig: VI, VII and IX.

Figures V, VI and VII are all controlled by the provision of shops on the ground floor, figures V and VI are based on 5.4m units of frontage, but figure VII is based on units of 4.5m.

The grid principle should be maintained carefully throughout a plan, especially for lettable offices in which the ultimate division of office spaces is unknown and consequently all partitions are movable but must be capable of economical arrangement in a variety of ways to suit the individuals firms own requests.

Figures VIII and IX are based on the assumption that shops will not be required or that units of 3.6m to 4.5m can be adopted for ground floor lettings other than offices.

(ii) Constructional Grid:- This grid helps to locate and coordinate precisely such building elements as partitions and windows but with the structural grid still the overriding grid.

(iii) Services Grid:- This coordinates the services points of building such as power, points of distributions or telephone outlets.

2.6 OFFICE SERVICES

The emergence of state of the art telecommunications equipment (accessories) and office automations has greatly le to high demand for services in office which is rapidly increasing at proportions that could not be ignored. Co-axial cable access for terminals often required in most corporate offices of today. This is very vital in order to provide grid to which each work station can have easy access without dangerous trailing wires. Such grid formations are discussed below:

(i) Distribution through floor grid and this is normally at 1800 to 2000 centres and its suitability and adaptability to services requiring small diameters is highly recognised.

(ii) Another option available is the distribution through perimeter and partition walls. This is however, suitable for shallow space and services are incorporated into shells and it is quite economical.

(iii) The creation of false floor is often another dimension taking towards effective servicing in office design. The height of service duct could be between 50 - 500mm. This is adaptable to any kind of office space. The only demerit with this system is provision of double floor which could be expensive.

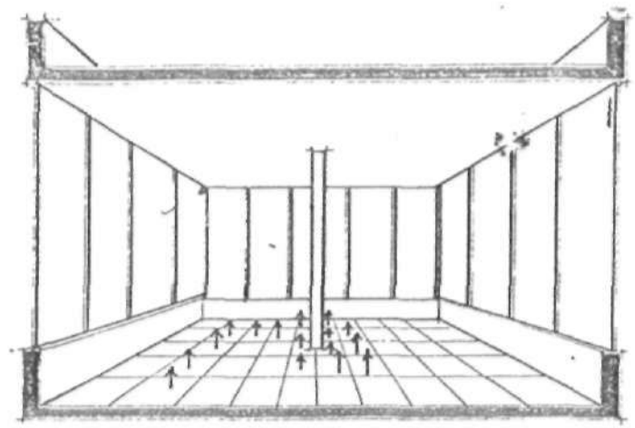


FIG X FLOOR GRID SERVICES

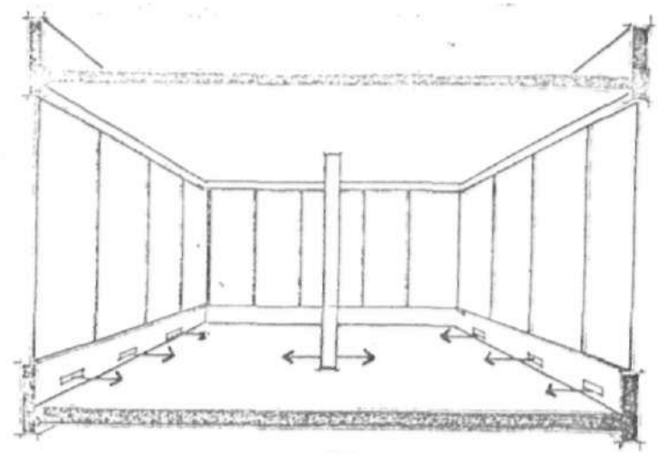


FIG XI PERIMETER WALL SERVICING.

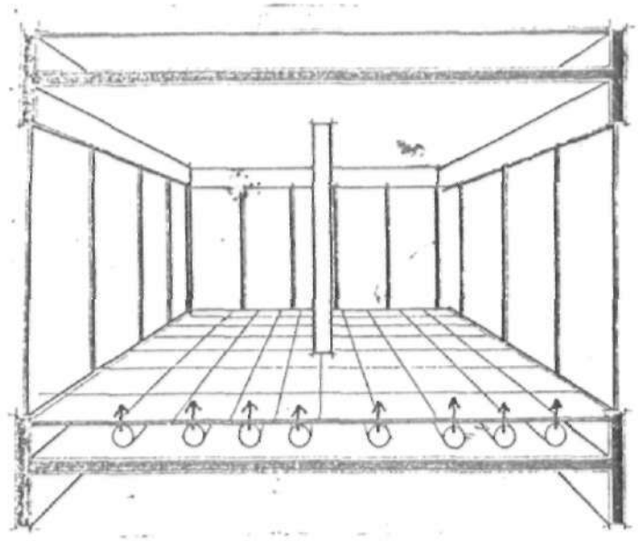


FIG XII : FALSE FLOOR SERVICING

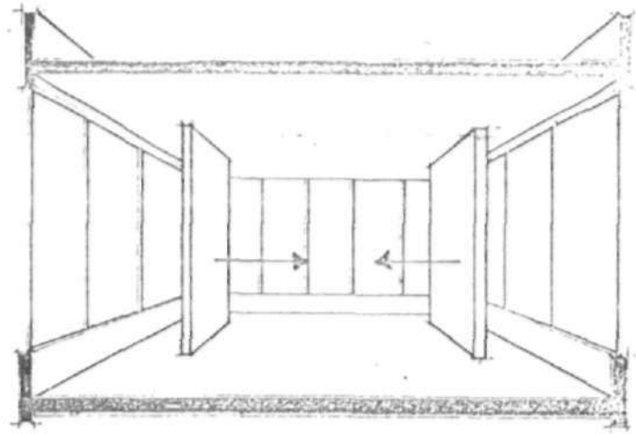


FIG XIII : FIN WALL SERVICING

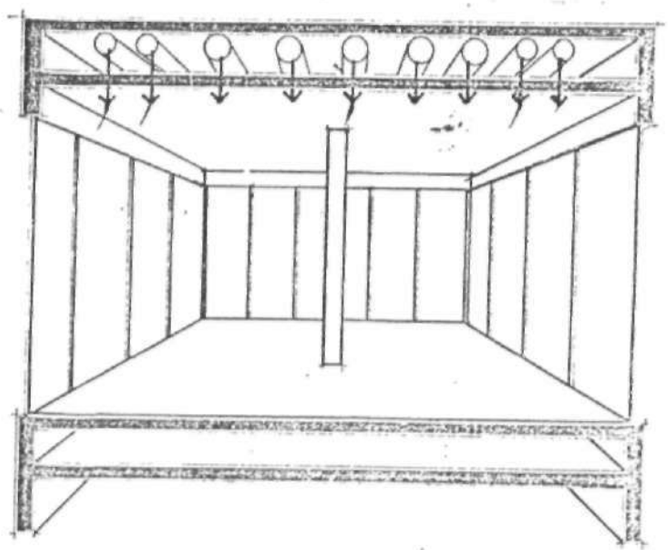


FIG XIV FALSE CEILING SERVICING

(iv) The distribution through fin walls is another common approach in office servicing. Points are at desk top height and they are suitable for people working in small clusters in a deep office space.

(v) Distribution through false ceiling is also highly practicable. In this case the mode of servicing is flexible and adaptable to any kind of space. The only problem with this system is safety if not properly detailed. This is widely used and more economical than false floor servicing.

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CHAPTER 3

CHAPTER 3

3.0 CASE STUDIES

3.1 INTRODUCTION:

Lagos is undoubtedly the nucleus of economic activit in Nigeria, firmly supported by good infrastructural facilities to enhance the realisation of its economic porcess. It houses several manufacturing concerns and enterprises. This is evident in the domineering effect and proliferation of business concerns in the financial sector;(banks,insurance companies, finance houses etc), dominating. The daily transactions of all these institutions are kept up with the global trend as seen in developed economies of Western Europe and North East U.S.A. International style was quickly adopted by the architects. This is because highrise building is viewed as architectural symbols and seen as pointer to economic accomplishment and maturity.

When approaching the central business district of Lagos and seeing the fleeting glimpse of individual buildings, the texture and color of buildings fabrics, the shape of the skyline and the ever moving composition of space and form makes a lasting impression. These buildings exhibit a bit of regionalism and mostly conceived without the users and general public in minds. Human (societal) response to building is a complex and delicate subject, as sample views of people seems diverse and level of awareness low, owing to social and economic stratification that abounds within the system.

These buildings were built in the state of the art and more sophisticated building materials and components and generally grandeur in its setting. Lastly, taking a closer look at the Lagos skyline, it tends to convey the message that financial institutions have come to capture the city and its urban city scape.

1. PLACE VICTORIA OFFICE BUILDING, MONTREAL-CANADA

Architects: Luigi Moretti with Greenspoon, Freelander and Dune.

C/Engineer; Pier Luigi Nervi

Client:

Location: Central Business District of Montreal

Description:

The Place Victoria Complex is part of the comprehensive urban scheme which covers 200 acres of the central business district of Montreal. It is situated at the north-eastern edge of the town centre. The 47 Storey high tower reaches a height of 624 feet. Fo rty-three of the floors are reserved for office purposes. The offices are placed along the periphery and are accessible from the installations core.

Design:

Place Victoria Office building has the 2 lowest basements which serve as garages. In the 2 upper basements are 35 shops, 5 restaurants, a post office and a large auditorium which can also be used as a cinema. The mechanical installation are concentrated on the 4th, 18th and 31st floors respectively.

A remarkable feature of this building is the anti-seismic reinforced concrete structure. The four corner columns of the square core of the building are linked by 2 diagonally placed intersecting concrete slabs which absorb the lateral thrust. In order to obtain additional bracing, core and

columns are rigidly joined at the 3 mechanical floors by X-shaped concrete diaphragms. In this way, even an extreme lateral thrust is safely transmitted to the vertical elements of the structure.

Services:

The service core is placed centrally and rigidly joined to this columns at the 3 mechanical floors by X-shaped concrete diaphragms. The building features 12 passenger lift and 1 good lift with 2 service shafts. There are also 2 escape stairs with the service core, inclusive also are the lavatories.

Materials:

Among the materials used are; concrete and steel reinforcement, glass cum aluminium with its continous vertical millions marble paved lobbies.

Merits:-

- The design is highly flexible and allows for maximum expansion of usable office space;
- The floor external columns at the corners are highly differentiated, which emphasised rigidity and strength;
- The strongly featured corner columns which are tapered upwards, give the appearance of a strong framework;
- Between the strongly featured corner columns, the 150 ft wide glass-aluminium skin with its continous vertical mullions is slightly convey which makes it more dramatic;
- The concept of verticality employed expresses good sense of harmony and balance.

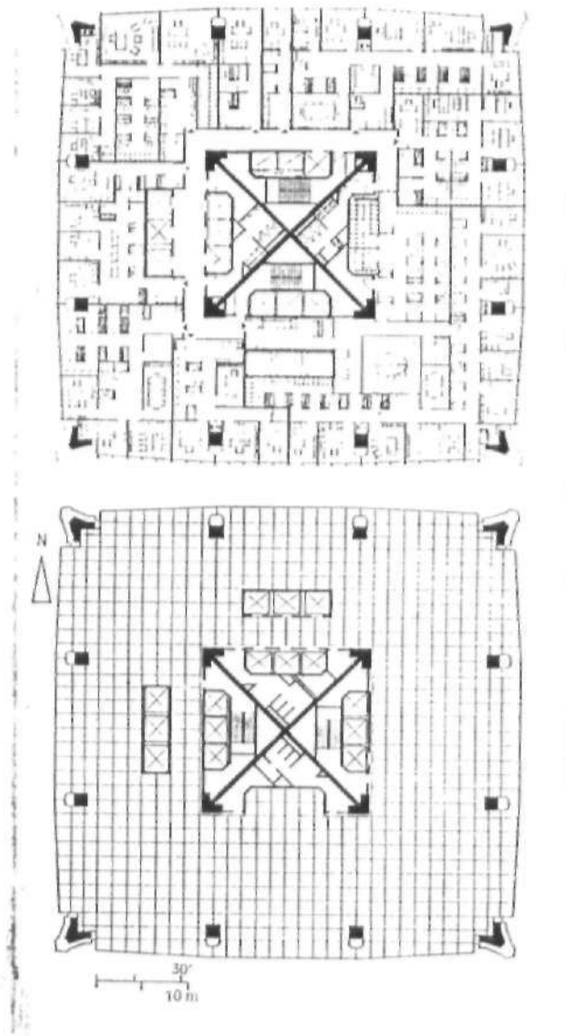


FIG XV : PLANS OF THE PLACE VICTORIA BUILDING

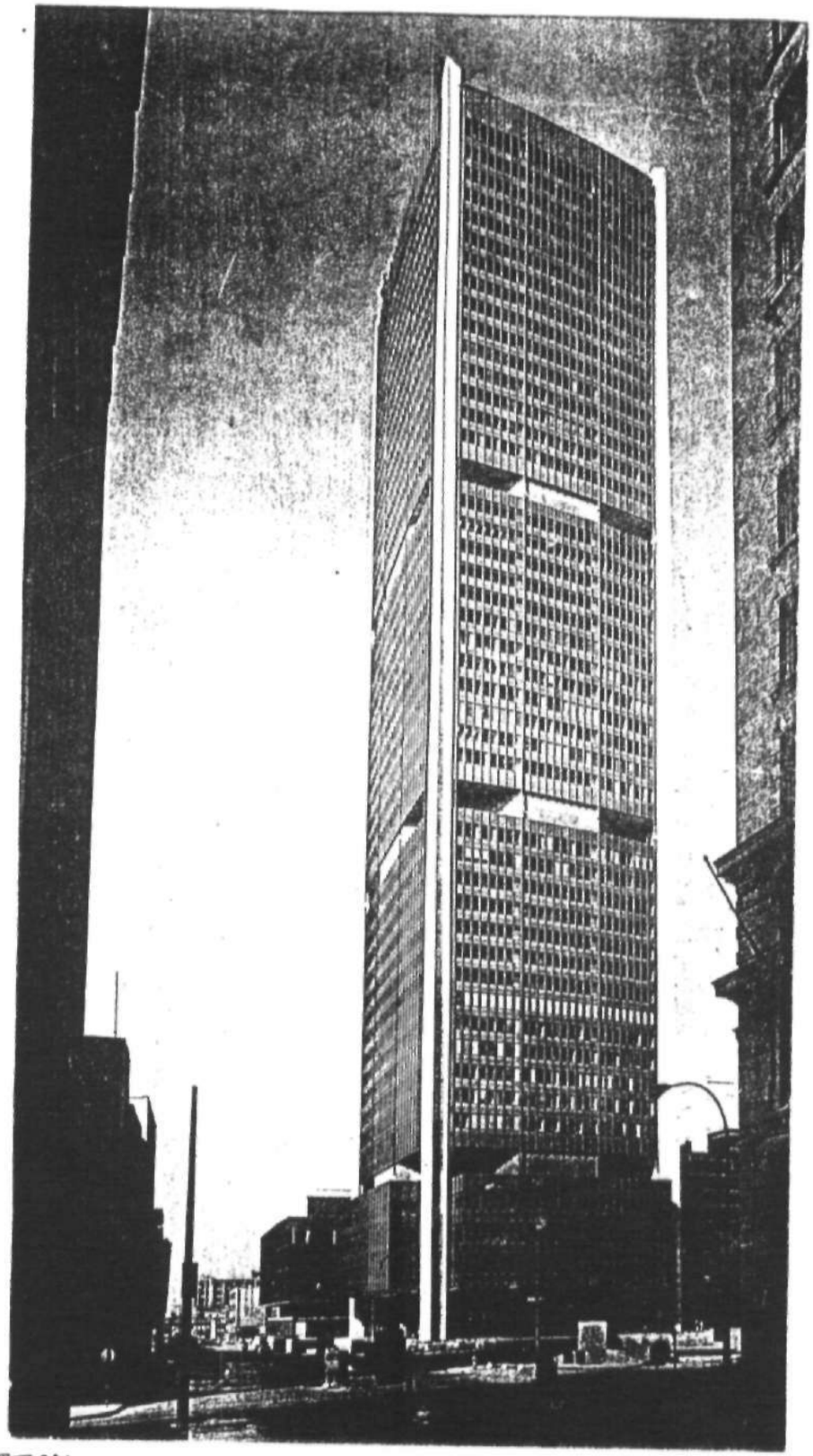


PLATE-11:
PLACE VICTORIA OFFICE BUILDING MONTREAL, CANADA.

Demerits:

The entrance into the building is not well emphasised and tends to create bit of psychological stress to the users.

- The positioning of the central core system is not too ideal for a developing country like ours where maintenance culture is seriously lacking. Maintenance will be costly.
- The positioning of the escape stair cases are highly susceptible to smokes in case of any fire hazards.
- The design expresses monotony in all its sides and tends to convey a poor visual impact.

2. OFFICE BUILDING OF THE CHASE MANHATTAN BANK NEW YOR

Architects: Skidmore, Owings and Merrill

Client: Chase Manhattan Bank

Location: New York Wall Street, New York.

Description:-

The new building of the Chase Manhattan Bank on a site immediately adjacent to their previous head office in Wall Street, provides a good example for the creative effect of a major building project on central area town planning. The project provided the impetus for the redevelopment of the entire district. The architects opted for an 800ft high tower in the shape of a regular rectangular parallel piped with continous aluminium cum glass facades. No more than 3% of the plot area, is built up above street level. The remaining 70% is used as a revised public plaza with stairs, plantations and pools of water.

Design:-

The architects of this scheme made the first 2 storey serve as a landing for the lifts. Escalators lead to the banking rooms below the plaza. The 3dr basement below the plaza is reserved for gold and shares deal whilst the 3 foundation basement lower down contain check and data processing departments and the vault which always contains about 35,000 million dollars. The floors up to the 30th are used for the banks own purposes. On the 33rd floors, half way up, is the telephone exchange. The 34th to 50th and 53rd to 58th floors are let. On the 59th floor is the "wall street club", on the 60th the executive dining suite

with a panorama which provides on all the more clamatic view of the street cayons in the vicinity of the slightly higher skyscraper peaks.

In keeping with the height of the building the steel framework is exceptionally strong. Inner columns are placed at the core. On the long sides the aluminium clad columns are outside the facade whilst those on the short sides are set back behind the curtain wall. The office floors have not entirely symmetric layout with 2 longitudinal corridors but are otherwise freely divisible.

Services:-

The service core is placed centrally and in it, it has 36 lifts serving different groups of floors. The 11th, 12th, 31st and 32nd floors as well as the roof storey contain technical installations. Within the service core are 4 escape stair cases lavatories, refuse disposal chutes, mail chutes and stores of various usages.

Materials:-

The structural framework employed here is steel, and exceptionally strong due to the height of the building. The facades are completely adorned with aluminium cum glass. The use of concrete is very minimal.

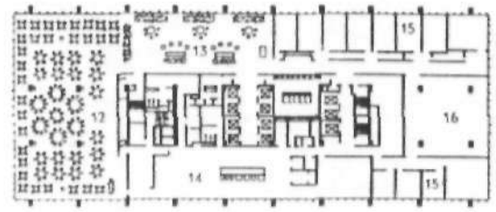
Merits:-

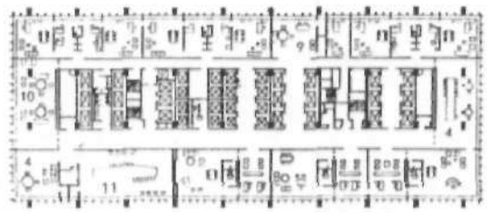
Simplicity and elegance of purpose is evident in the design of this complex

- Efficient and adequate dessimination of air and light to the office space could be easily seen in the design.



PLATE 12 : OFFICE BUILDING OF THE CHASE MANHATTAN BANK, NEW YORK.







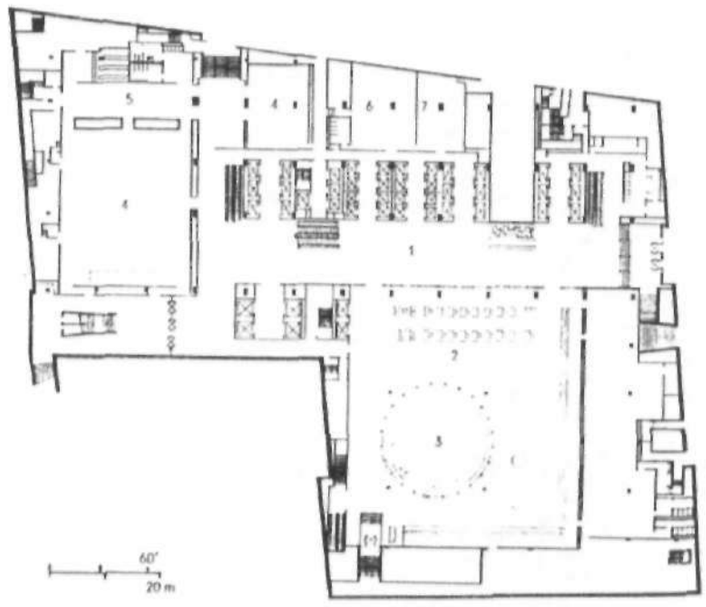


FIG (XVI) : PLANS OF CHASE MANHATTAN BANK, NEW YORK.

- Space flexibility of the design is notable and optimisation of the office space is another achievement made by the designer.

Demerits:-

- Centralised core and having offices along the whole perimeter wall derived the service core adequate ventilation
- No efficient space utilisation when the service floor area is viewed vis-a-viz the effective office space.

3. FEMI JOHNSON (BROKING HOUSE IBADAN)

Architects: Design Group

Client: Femi Johnson and Brokers

Location: Dugbe, Ibadan.

Description:-

The building is an office block completed in 1986 and wholly owned by a firm of insurance brokers and at the same time serves as the corporate headquarters of the company. The building is made up of 10 floors, with the insurance firm occupying the 9th and 10th floor penthouse respectively. All other floors are rented out as office spaces. The site is slopy with no landscape elements hence the use of pilotis to support the 1st floor from the basement car park.

Design:-

The building has a mezzanine floor being used by a popular restaurant. The structural elements are made of reinforced concrete and glazing. The curtain wall is doubly glazed and it has a special reflective power which serves as a protection against the sun. The typical floor is made of clear glass aluminium extruded sections in plaster board panels. A distinctive feature of the design is the ability of the designers to optimise the use of the site.

Services:-

The service core is well positioned and in it has the following: the air condition plant room, lavatories, vertical circulation element,

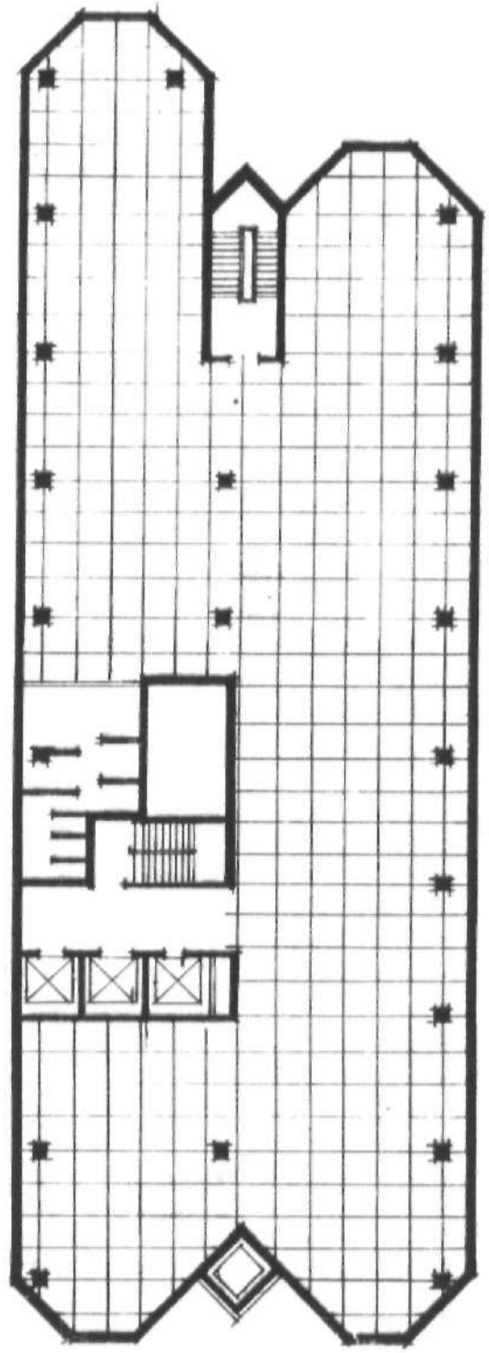


FIG XVII:

PEMI JOHNSON, TYPICAL OFFICE PLAN.

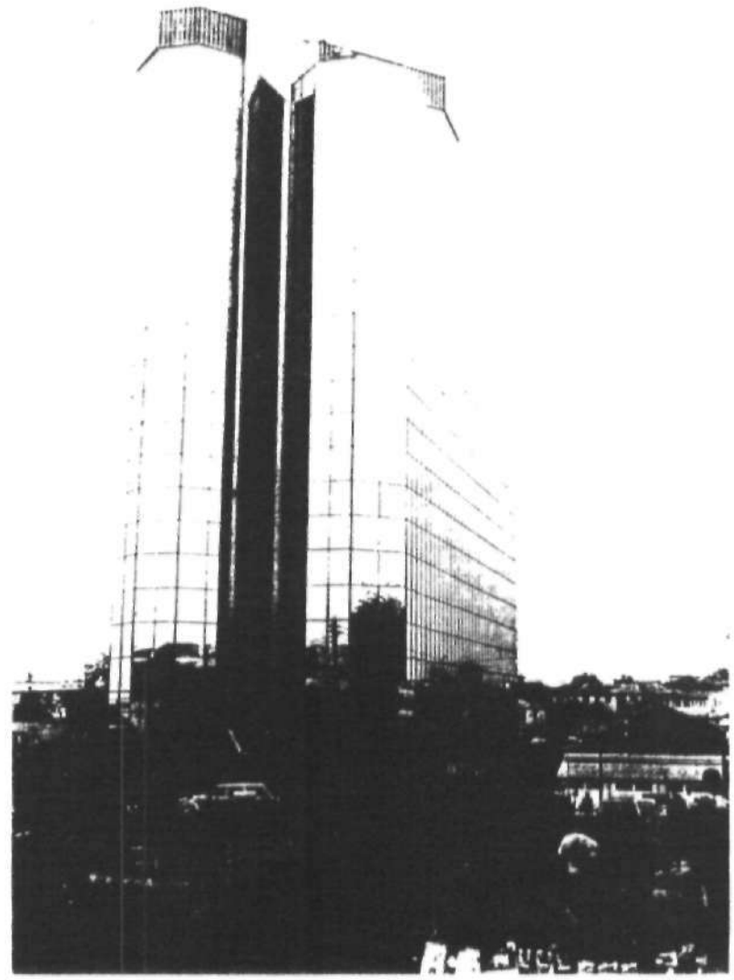


PLATE 13: FEMI JOHNSON BROKING HOUSE, IBADAN.

The central air-conditioning unit supplies air through grilled panels. The windows and sun breakers are in anodised alluminium outlets fitting on the ceiling. Water sprinklers are provided on the ceiling protection against fire.

Materials:-

There is marble finishing circulation areas round the service core and mezzanine floor. Floors are finished with rugs executive offices. Internal partition are made up of glass and textured panels. Externally, curtain wall is used elaborately.

Merits:-

- The open planning concept used by the designers enhances space flexibility;
- The column spacing employed in the design impart a sense of spaciousness;
- The service core is very accessible from the main entrance;
- There is evidence of space management and articulation owing to the form employed.

Demerits:-

- The chamfered edges lead to wastage of space;
- The form employed does not allow space maximisation;
- No provision for cars at peak periods.

4. BOOK SHOP HOUSE, LAGOS

Architects: Godwin and Hopwood

Client: C S S Bookshop

Location: Broad Street, Central Lagos.

Description:

The Bookshop house is one of the many early corporate buildings that made their footings in the central business district of Lagos. The 14 storey high building comprising a tower block of 11 storeys above an irregular shaped patium containing a car park, some office and shops on the ground floor. These offices were arranged along the peripheral space of the service core.

Design:-

The building has in the basement car parking spaces and in the podium. The ground floor houses the C.S.S. bookshop (sales and office) and the later 2 floors above it house the technical section and additional parking spaces. The lettable office spaces i.e. the tower starts from the 3rd floor upto the last floor. Within the complex is also the staff canteen.

A distinctive aspect of the design is the horizontal shading device designed and employed by the architect. This provides a remarkable decrease in the daylight infiltration into the complex. Evident in the design are vertical alluminium cladding panels that hold the shading device into shape.

Services:-

The service core occupies 15% of the entire floor space and in it are male and female lavatories, vertical circulation elements, technical installations. Within this core is the escape stair case for any eventual escape in time of disitress. The complex is air-conditioned through a centralised air condition system.

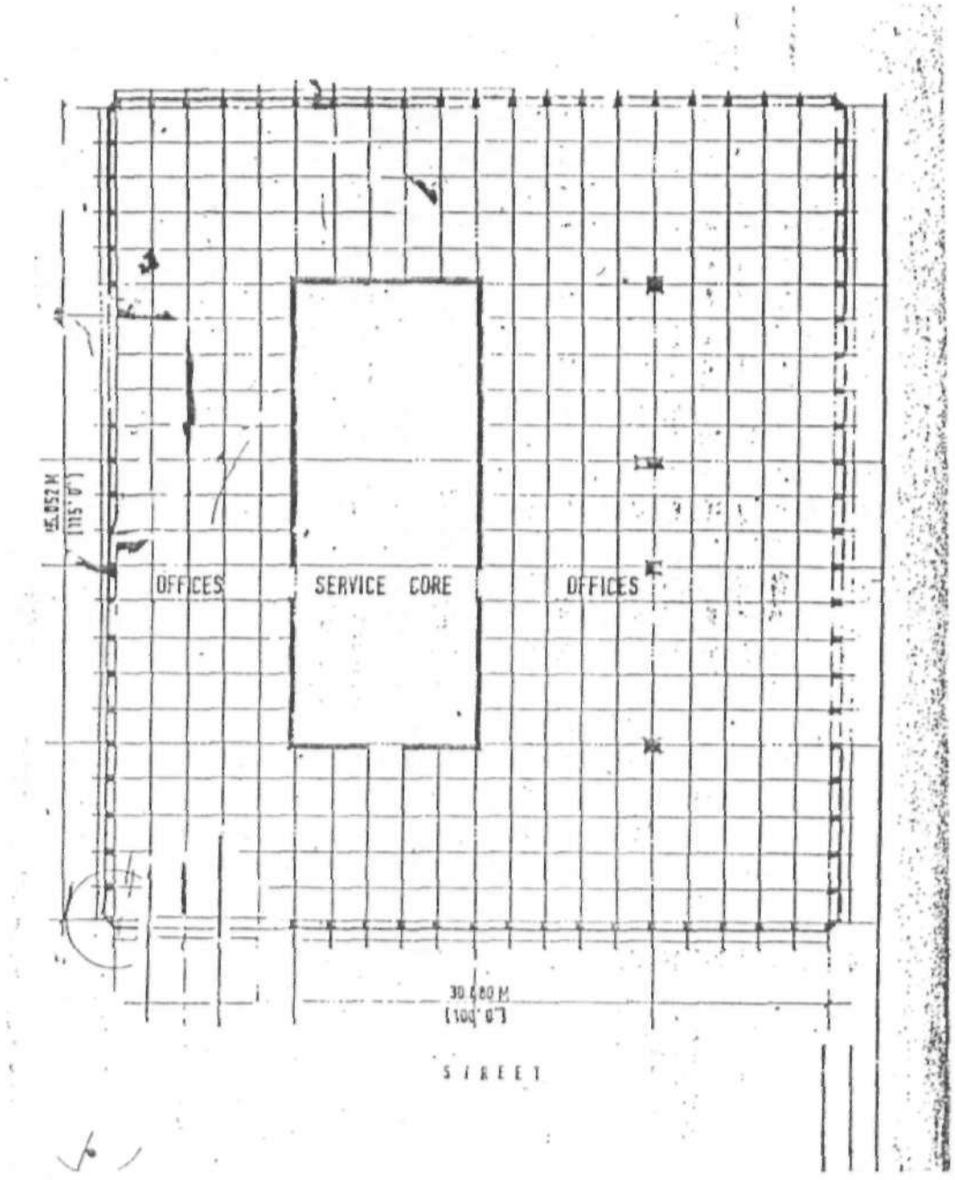


FIG XVIII : TYPICAL FLOOR PLAN



PLATE 14: BOOKSHOP HOUSE, LAGOS.

Materialrs:-

The main structural component is reinforced concrete and finished with mosaic tiles and cost aluminium cladding panels. The windows and sun breakers are in anodised aluminium.

Merits

- Sanctimony and simplicity achieved with the use of the aluminium cum glass which provide a perfect blend of the facades;
- Good sense of materials usage and the building massing shows some sense of proportionality and thus gives a good visual perception.
- There is impressive blend of forms which give room for openess and flexibility in the office space.

Demerits:-

- The location of the service core makes a bad design for this edifice. Adequate ventilation not achieved and thus stinks owing to high humidity in Lagos.
- There is repetitiveness on all facades and in contrast exists.

5. BANK OF THE NORTH LIMITED, KANO:

Architects: Ella Waziri Associates, Kano

Client: Bank of the North Ltd, Kano

Location: Nasarawa Area of Kano.

Description:-

Bank of the North Limited commissioned the firm of Ella Waziri Associates in 1976 to design a corporate headquarters for the bank due to its expanding operation. The design was also to include spaces for prospective tenants. The office complex is located at former groundnut pyramid site. The complex is accessible from Zaria road. The tower consists of a basement below a U-shaped podium, a mezzanine floor and a 14-storey slender tower with a penthouse on the uppermost level.

Design:-

The design of the bank has basement which houses storage facilities, a strong room and the bullion park. The podium accommodates a branch of the bank kitchen and some offices and the staff dining area. The mezzanine floor is used for storage and other storage needs. The tower houses the administrative and lettable offices for staff while the penthouse is used as guest house for the bank's officials. A striking feature in the design is the famous "Arewa" knot symbol used by the architects in evolving the plan of the tower, which sits on the basically U-shaped podium.

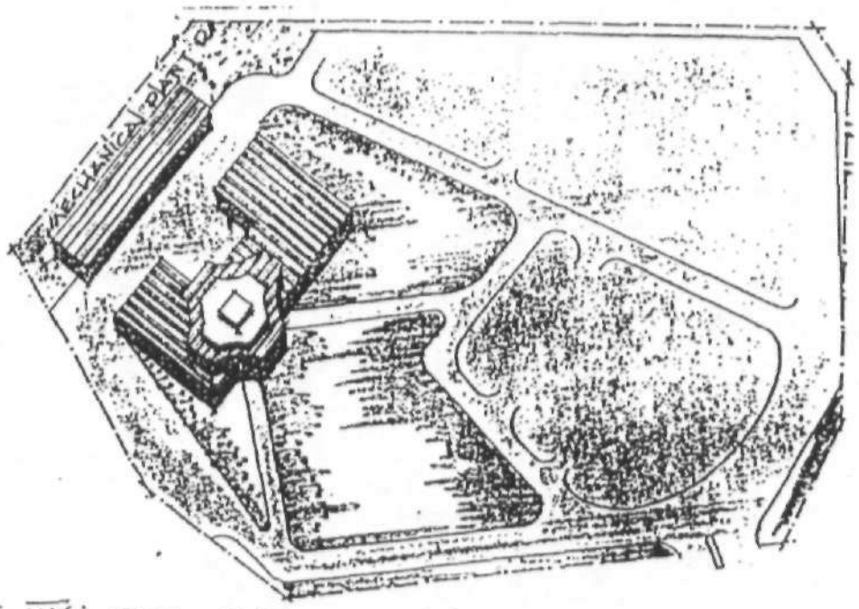


FIG XIX: SITE PLAN

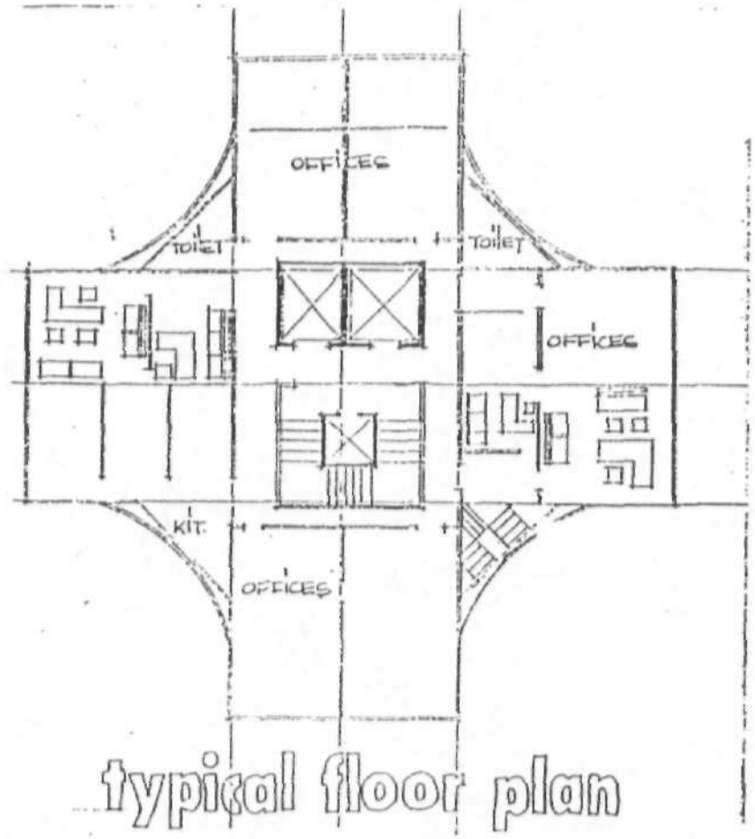


FIG XX:

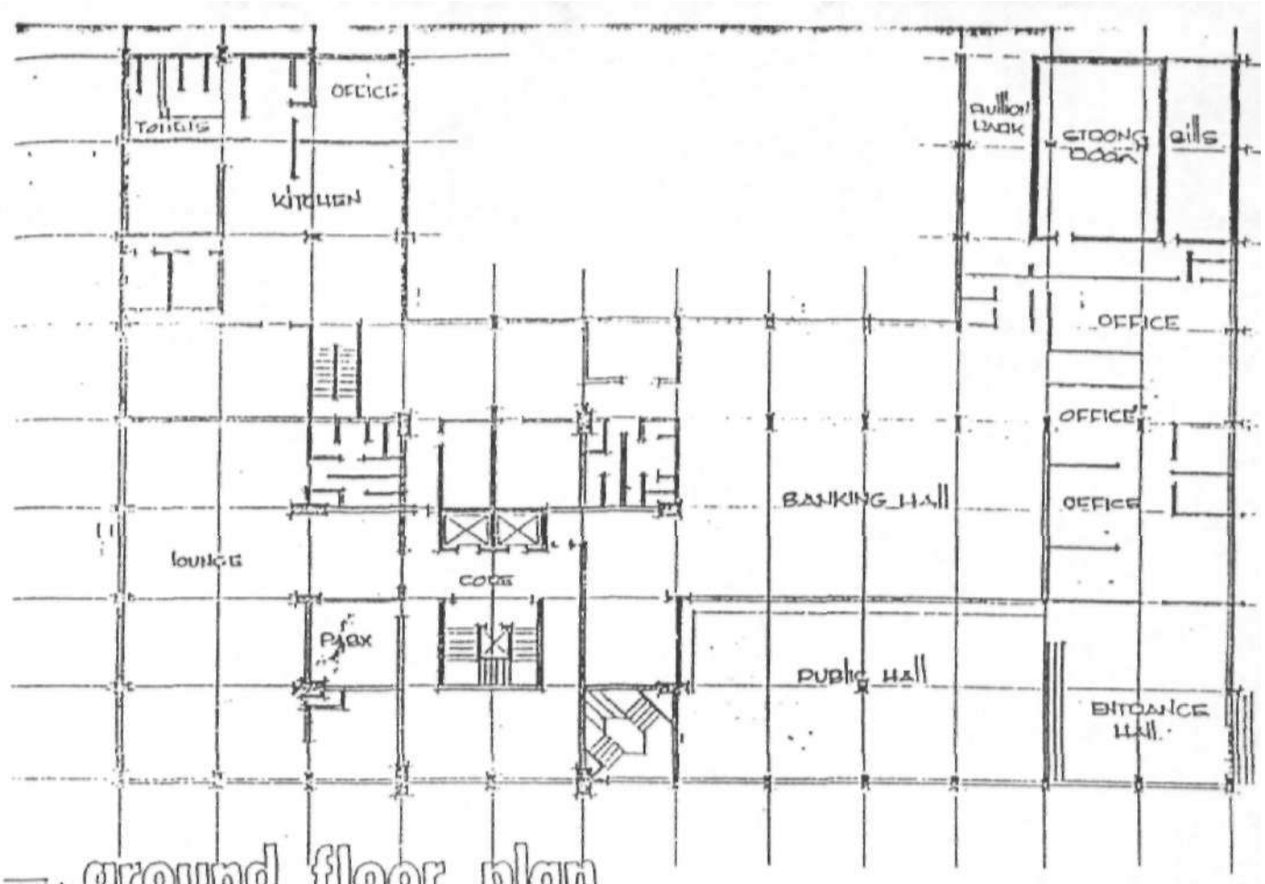


FIG XXI : ground floor plan

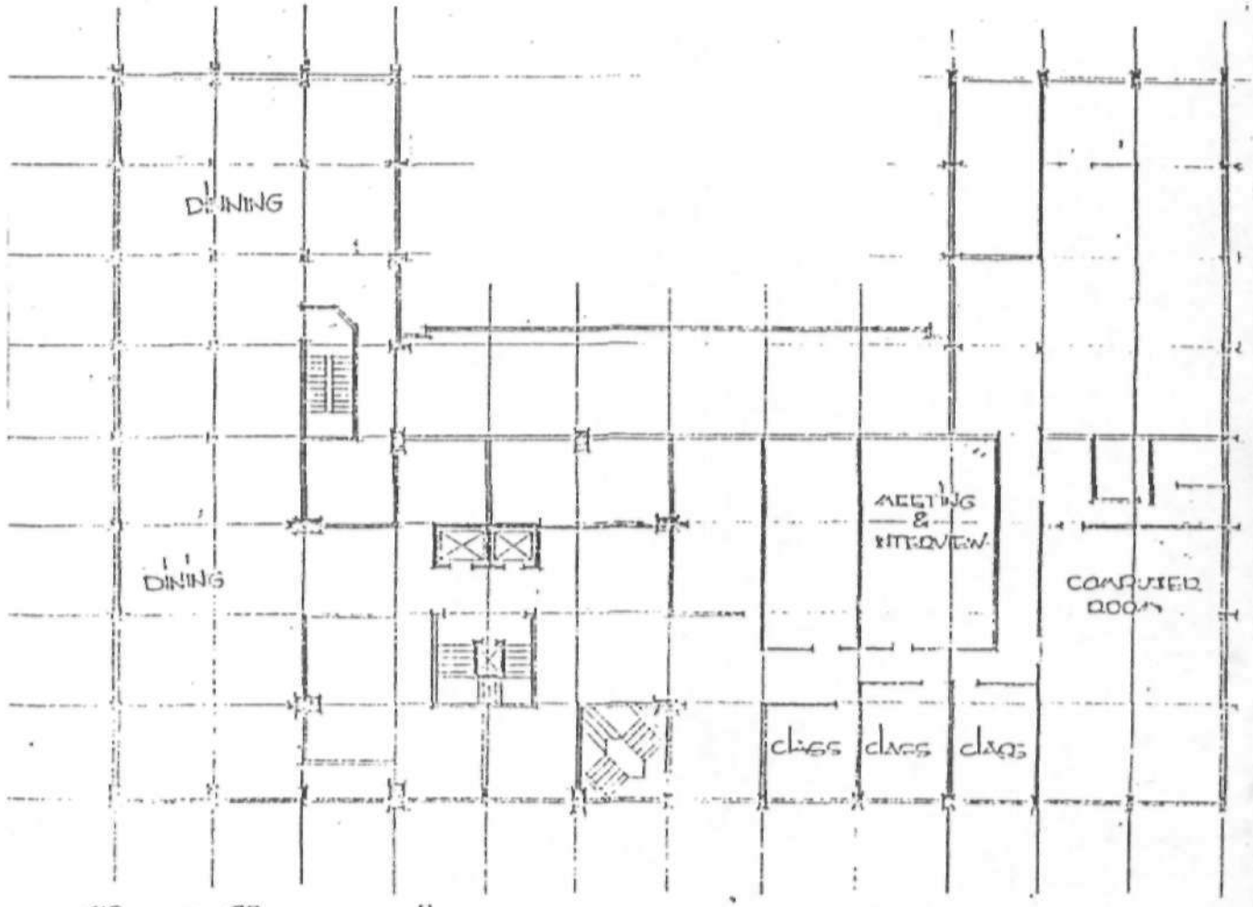


FIG XXII : first floor plan



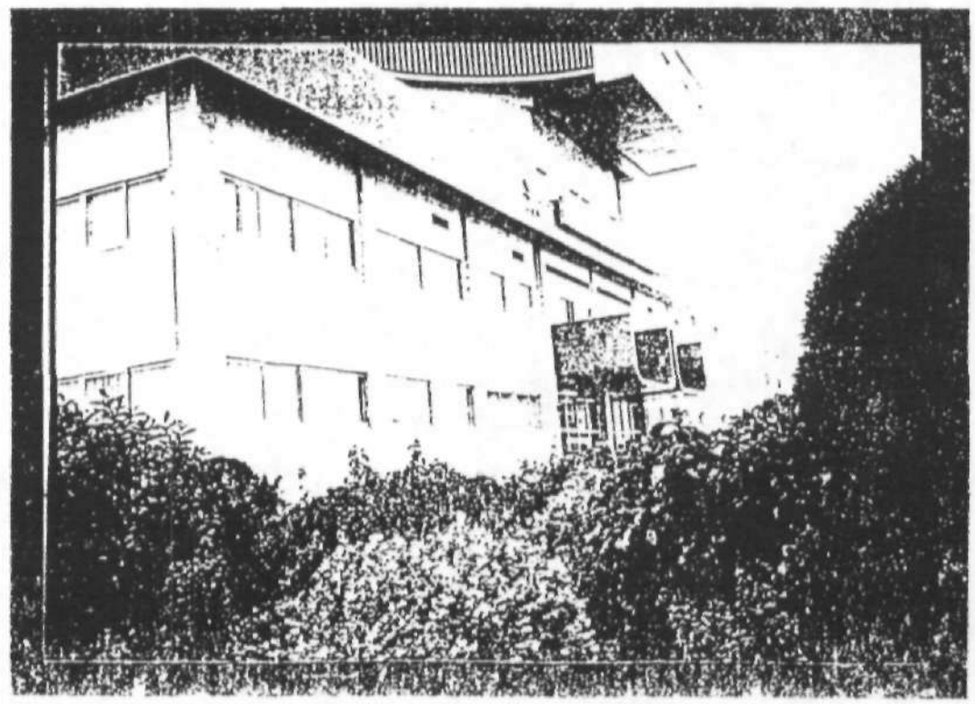


PLATE 15: BANK OF THE NORTH HEADQUARTERS, KANO

Services:-

The service core is placed centrally and it consists of 2 lifts bounded by the staircase, while the toilets and other utilities are placed at the inner corners of the building. The air-conditioned system employed in the tower is the single split system. While in the podium, central air-conditioned system is used. The whole complex is serviced by 3No 750KVA and 2No 250KVA generators.

Materials:-

Among the materials used are, square grid reinforced concrete shell and hollow sandcrete walls. Marble finishes and glass mosaic tiles used on the floors and interiors. The core is also finished with marble. The penestrations are of anodized sliding aluminium glass.

Merits:-

- There is good orientation and climatic control techniques to meet the vagaries of weather all through the year;
- There is also good interplay of form composition and spaces, which finally give allowance for multi-tenancy aggrement;
- Good aesthetics and harmony

Demerits:-

No perfect blend between the tower and the podium, a complete negation of spirit of wholeness (oneness);

- The choice of shape is trying to achieve the "Arewa" knot concept on the plan of the tower lead to space wastage;
- The case of fire escape is not well treated in case of fire hazard and distress.

3.2 CONCLUSIONS AND RECOMMENDATIONS

From the studies carried out of the office buildings of which some were built to serve a specific functions e.g. as headquarters or head office for the corporation concerned. The idea to have lettable spaces might have been necessitated as an alternative revenue source or as a result of the owner not able to take up full occupancy (as in the case with most banks).

A large number of most of the multiple tenanted office buildings have short comings in their designs which arose out of ignorance and inability to integrate the design with the local conditions. A great disparity exists between most of the buildings studied here in Nigeria and the ones in the western world. These disparities come in deverse ways ranging from space optimization and articulation to shapes and forms employed to maximise the alloted plots of the client.

In order to achieve a perfect and an impeceable corporate office design the undermentioned points must be carefully adhered to:-

a. Design objectives must be outlined and purpose or intended use of the facilities should be foremost at the designers mind;

b. The nature and forms of the buildings studied were mainly linear this ensured maximisation of internal spce usage. A good choice of grid must be made in order to reduce wastgae;

c. Appropriate design solution should be taken in the location of the service core, as a wrong placement could mar the design objectives. As what is compared to what obtain in the tropics especially in the location of toilets.

d. In some studies, the nuildings are inflexib[illegible]is could be attributed to the fact that either the construction technique does not allow for the fkexibility of the space. It could also be that exterior walls are load bearing and internal partitions are permanent;

e. In the couse of this studies, it was found out that individuals should be able to excercise control over their own immediate environment. It should be possible to control without causing discomfort to others the use of lightings, heating and ventilation requirements;

f. In a multiple tenanted office buildings proper rationalisation must be made between facilities and the occupants on each floor. For instance numbers of toilets must be equated to expected number of users of the floor;

Corporate buildings are fast deminating the majority of the urban centres skyline with financial related outfits dominating. This is an indication of a growing economy, thus a pointer to the fact that importance of office facilities could not be over-ruled in a developing economy. It is the intention of this thesis to tackle the problems and shortcomings asociated with existing corporate buildings and adopt as well as where possible, improve on these aspect that have proved positive.

CHAPTER 4

CHAPTER 4

4.0 INTERPLAY OF BUILDING SHAPES ON SPACE FLEXIBILITY

4.1 INTRODUCTION:

The concept technology is dynamic and non-static and it often makes its impacts on the built environment, notably buildings both in its design and material components. Thus there is the need to be abreast with technology which could lead to alterations or adjustment. Obvious in our midst today are offices of diverse shapes which often make both lateral and vertical extension nearly impossible owing to the design configuration (shapes and forms). As a result of this a flexible space has the advantage of being "multipurpose" as their propensity to change with technology is very high. Hence, there is the need to make office buildings as flexible as possible because of the cost that is going to be incured as a new erection would be higher. This will go a long way to save time, energy, labour and materials e.t.c.

Thus, it is the intent of this chapter to look at the concept of space flexibility in its entirety the meaning and the phenomenon and how it could be realised as well as examining the impacts of building forms and shapes to determining the best concept to achieve an optimal utilisation of any given architectural space.

4.2 PHENOMENON, CONCEPTS OF SPACE, FUNCTION FORMS AND SHAPES

4.2.1 Space:

There have been incessant interest of man in space, this is as a result of need to understand important relations in his immediate surrounding to bring meaning and order into the world he lives in. The concept of space covers a wide region depending on individual perception of the concept when restricted or otherwise or both.

Man needs a total understanding of space relations and should be able to integrate them in a space concept before he could carry out his wills. Everyday activities of man have always been carried out in association with space, for he acts in space, sees, breaths and thinks in space. Space is phenomenonally created by the architect when he gives a part of free space, shape and scale . Man creates space to carry out his intentions and wills to create identity for himself. This creation of space by him may be called expressive or artistic space, which could be said to be the concept of space that systematizes the possible properties of expressive spaces. Expressive space creation is the responsibility of specialists like builders, architects, planner while aesthetic space is studied by architectural theorists and philosophers.

When a man has a place of his choice in his environment to settle and live, he is a creator of expressive space. Another dimension to space is seen in Arnhein (1971) who sees space in an enveloping one which is a self-contained entity, finite or infinite, an empty vehicle ready and having the

capacity to be filled with things. "Once established its experience always present, and self sufficient, but the experience is generated only through the inter-relation of objects."

4.2.2 Function:

Function as the name connotes is the day to day human activity that takes place within a defined architectural space. Function is always the first to be addressed, before the creation of expressive space. This is so because, without the function space cannot be established. otherwise stated, space articulation is a function of events or functions.

4.2.3 Form:

Every architect is familiar with the phrase "forms follows function", which says the form of a building is a cover to its technical and functional requirements having explored and derivation of free space. Otherwise perceived as a cloth to a skeleton of architectural needs.

There is however, another form in architecture which does not seem to to be related solely to function. This form is a particular organisation of shape capable of arousing emotions and intellectual participation of the individual and can be described as shape derived from structure and aesthetic auras. For how can one explain an entire "glass skin" skyscraper with rugged walls to house a bank or a round building to house an office ?.

Function in itself is inadequate to define a single shape for a building. Since any functional problem can be solved by many different shapes, the choice is bound to depend on the preferences of the makers.

Architects give things shape and architects should know the nature of the guidelines and these are:-

One distinction provides help-that between shape and form. Form as we have been told follows function. Form delimits an area in which things can take -that is be given shape. Spoons, for instance, are normally devices with a concave surface for holding liguids, with a handle attached to facilitate movement of the liquid and to provide protection for human hands in case the liquid is hot. There are millions of possible shapes a spoon can take, though there is only one form. The choice of shapes will be based on various cultural and personal standards.

Of shape itself there are 3 measures: those that we all share (archetypal), those we share with a culture (cultural), and those that are products of our own memories.

Archetypal shapes depend on an ancient dialetic between columns and walls. Since mankind came out of the caves, we have erected columns and spread out walls and from an orchestration of these 3 acts we have developed the art of building.

The question that is worth asking is which of these forms communicate what and, how well ?. Knowledge of forms is the basis of a whole range of visual imagery which involves both memory of the past and imaginative explorations of the future.

There are such forms like mortar forms, earth form and even animal form but others exist too like spirit form that is not real. What is the basis of the use of these forms in architecture ?. Can a function be obvious from a form ?, and can the meaning of an architecture be truly understood by merely observing a form ?. All these are questions that should puzzle the mind of any 20th century architect. Because of ever-present form and an inescapable involvement with it, architects must always consider its implication,. While the interpretation of pure forms may be simple, that of forms meant to serve meaning appears to be difficult since it owes its imaginative experience which not everybody possesses.

4.2.4 Shape

Shape calls attention to things and their meanings. Architects give shape to things whether they mean or not and people who see or inhabit those things whether in full consciousness or not, respond to these shapes. Architects from the begining have tried to compile systems and formulate rules of proportion and composition which would aid them in evolving responses from the people who saw the shapes they made.

Some, preferences for shape are cultural. Gothic builders were excited by verticality, hence preference which was developed in their soaring cathedrals extended also to pointed windows on houses and pointed tops on boxes and chair backs. No surprise, either it was taken over whole by 19th century romantics, who were able to read moral rectitude and spiritual enlightment into the verticality of pointed architecture and only worldliness into more horizontal shapes.

Cultural preferences for one shape over another slope quite quickly into personal preferences, based partly on what we have taught, but mostly on our memories.

So in the end, what is the architect to do is the face of the endless diversity of human experience, the presence of personal as well as cultural and archtypal components to our perceptions of shapes ?.

One useful part of the response is to render unto the minds eye what is to the minds' eyes, but to take care that the images do not interfere with flexibility of human use-to keep as it were, the myth up off the floor.

4.3 SPACE FLEXIBILITY

The phenome non space flexibility could be described as the possibility or ability of a space to be contracted and extended as the use to which the space is intended to be put dictates or demands. An effective architectural space should be able to accommodate various functions designed for it.

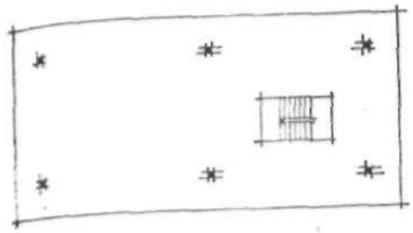
Also to relate to one another in social realm to create a suitable environment that breeds or offers the most favourable conditions for creative thinking, communications, storage of results and dissemination of information . For buildings tend to become obsolete if they are less functional and based on what the present trend in corporate architecture says, which calls for open planning where less partitional elements are used which imparts a sense of spaciousness. So to achieve an appreciable degree of flexibility needed in today's office building there is every need to take into consideration the mechanisms of achieving the spaciousness at the conceptual stage of the design. This will mean careful analysis must be done on how best to achieve this vis-a-vis the structural system to be chosen or designed.

4.3.1 Chronology of Open Planning

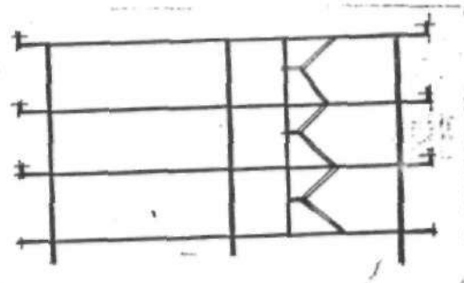
The concept of open plan which leads to effective space flexibility was propagated by one of the classical architects of our time and that was Le-Corbusier. He was among the first proponents of the open plan when he initiated and invented the Dom-Ino system. In his proponent he demonstrated his mastery in the organisation of architectural space.

The Dom-Ino system is a structural unit consisting of 3 horizontal slabs and each of the upper two slabs supported on square sectional posts of concrete while the lower level was also lifted from the ground on squat concrete blocks.

PLAN



LONGITUDINAL SECTION.



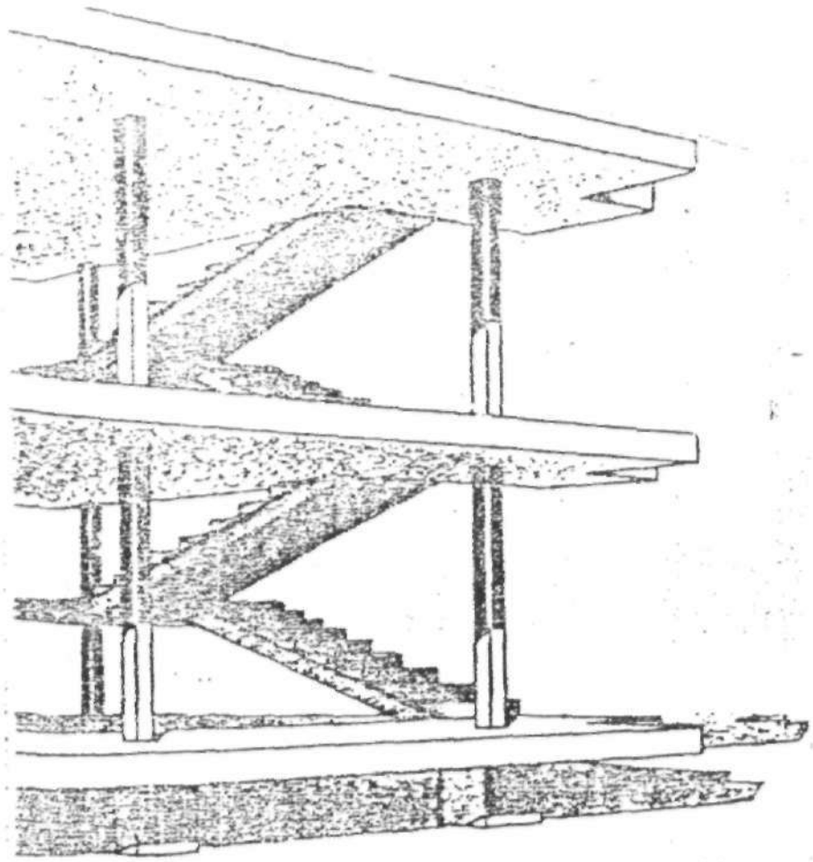


FIG. XXIII : A DEDUCED VERSION OF THE DOMINO SYSTEM.

The Dom-Ino system gave birth to five cardinal principles upon which buildings were based. These principles are:

(i) The use of pilotis (i.e. free standing columns at ground floor level);

(ii) The use of widely spaced columns and reinforced concrete slabs which ensures free space within;

(iii) Continous strips of fenestration and glass walls that allow uniform light into rooms which impart a sense of spaciousness;

(iv) The use of flat roof garden which gives way for enlarged open space;

(v) Free facade, since non-load bearing exterior walls are used thus giving way for function and aesthetics.

A comprehensive analysis of the Dom-Ino system reveals that:-

i. The use of the support of concrete columns and beams allows for new freedom and this meant to make clear the radically functional renovation of the house as an instrument of living;

ii. The cantilevered slabs express the possibility of being further extended, it shows some spirit of continuity. If need arises, which thus connotes flexibility of the space;

iii Partitions could thus be placed where it is so desired in or out of line with the grid of supports. Space is therefore saved and a new wave of functional flexibility achieved;

iv. Instead of the ordinary type of furniture, use was made partly of built-in-units, partly of standard industrial products chosen for their purist shapes, which further ensures the concept of space flexibility.

4.3.2 Plan Shape:

The design of an office should enhance flexibility, that is ability of being changed rapidly to meet the changing needs of its users. The aim of the architect is producing a conducive and integrated atmosphere for cohesive existence and comfort and this could be best achieved with the choice of plan shape. For the eventual choice affects the degree of flexibility. Usually a grid pattern or free shape is normally used, but a comparative analysis and evaluation of such design patterns or shapes was carried out as follows:

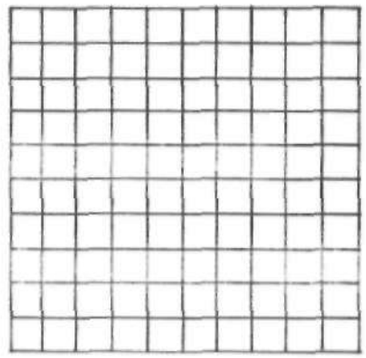
1. LINEAR:- This is most frequently used grid pattern in architectural design. The modular grid is based on the linear grid. In this system there is no obstruction to circulation space. Thus an optimal use of space is achieved with a free and direct circulation pattern. In this system the degree of flexibility is very high and partitioning walls easier with little or no loss in materials. The linear grid pattern tends to impart a sense of spaciousness which has an overall effect on the final output of the organisation as a whole and its workers. A typical example is seen in the design of NAL Merchant Bank Headquarters in Lagos, where choice of linear has brought about purity of shape and form.

2. TRIANGLE: This is rarely used in the design of public buildings unless or otherwise where the existing site characteristics necessitate this. This is because of the sharp angles that are associated with this system. Flexibility and optimal utilisation of the office space is highly reduced owing to sharp angles and circulation space seems undefined. There is eventual wastage of space and materials in the use of this pattern.

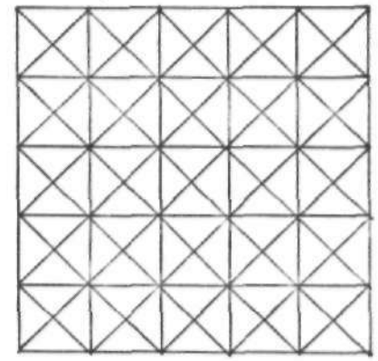
3. REGULAR POLYGON: This system creates interesting and dramatic shapes and it is normally employed in public buildings and this is a function of the architects discretions or initiatives. In this system internal partitions could also create sharp angles with a waste in partition material. The degree of flexibility is also low and often difficult to achieve.

Optimisation of space is less possible here because of the configuration of the entire floor area. A typical example of this is the First Bank Headquarters in Lagos.

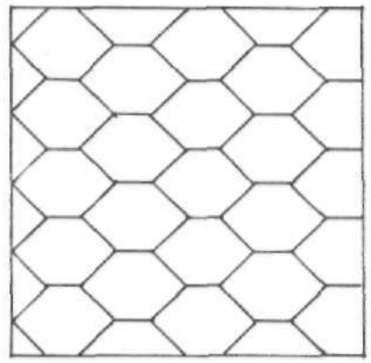
4. CIRCLE: Circle is noted for its ability to radiate which is very predominant in African traditional architecture. It is next to the linear in architectural use, This is because a module grid unit based on the linear could fit into the circle. Optimal space utilisation is less achieved with the circle and partitions which create sharp corners. But with the smaller innermost central circle increased in radius, increased space usage is possible and this removes the sharp corners as well.



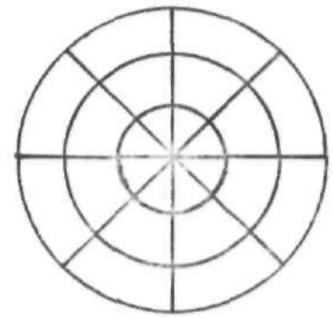
LINEAR PATTERN



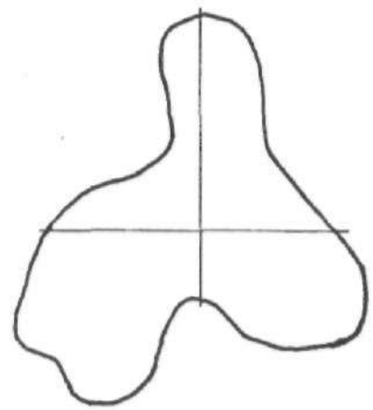
TRIANGULAR PATTERN



REGULAR POLYGON



CIRCULAR PATTERN



FREE FORM

FIG. XXIV ILLUSTRATIONS OF VARIOUS DESIGN PATTERNS

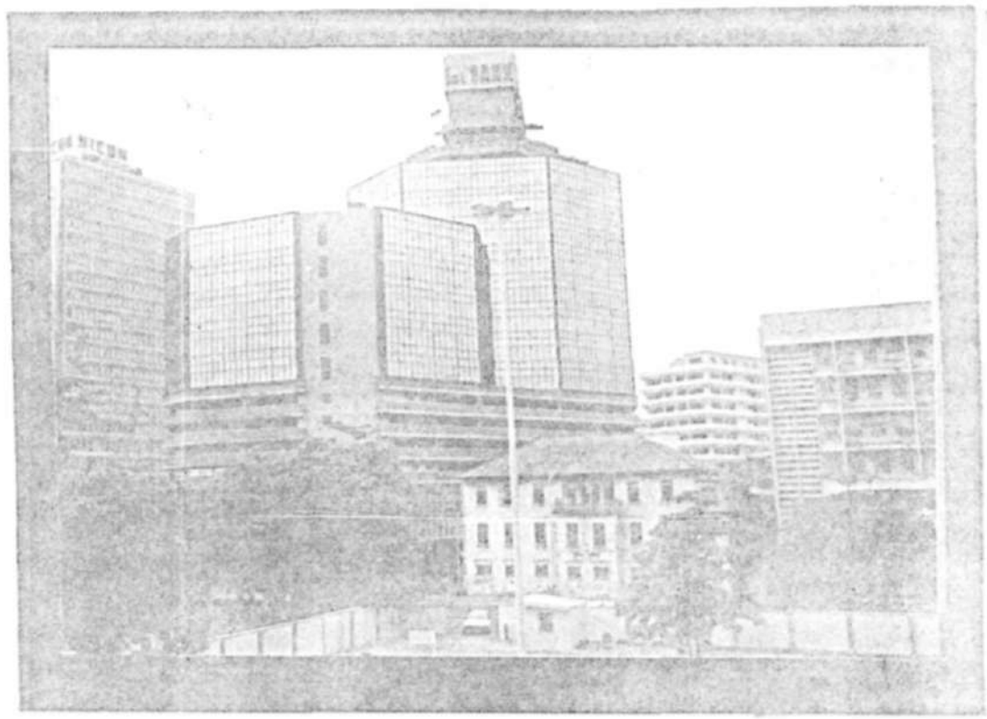


PLATE 16 : POLYGONAL FORM RESULTING IN LESS SPACE OPTIMISATION

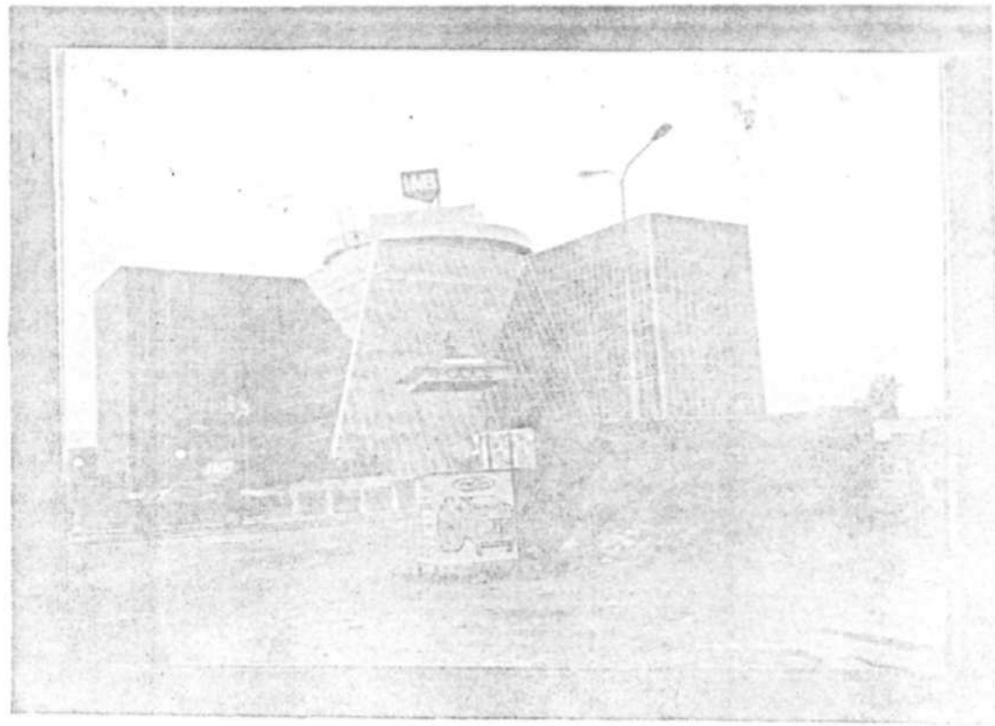


PLATE 16 : PRISMATIC AND TRIANGULAR FORM RESULTING IN LOW HEADROOM THUS SPACES ARE WASTED.

The resultant effect of this reduction is loss of materials. This pattern is seldom used in office design, a segment of a circle is frequently being used. The degree of flexibility is higher than in both triangular and polygonal shapes.

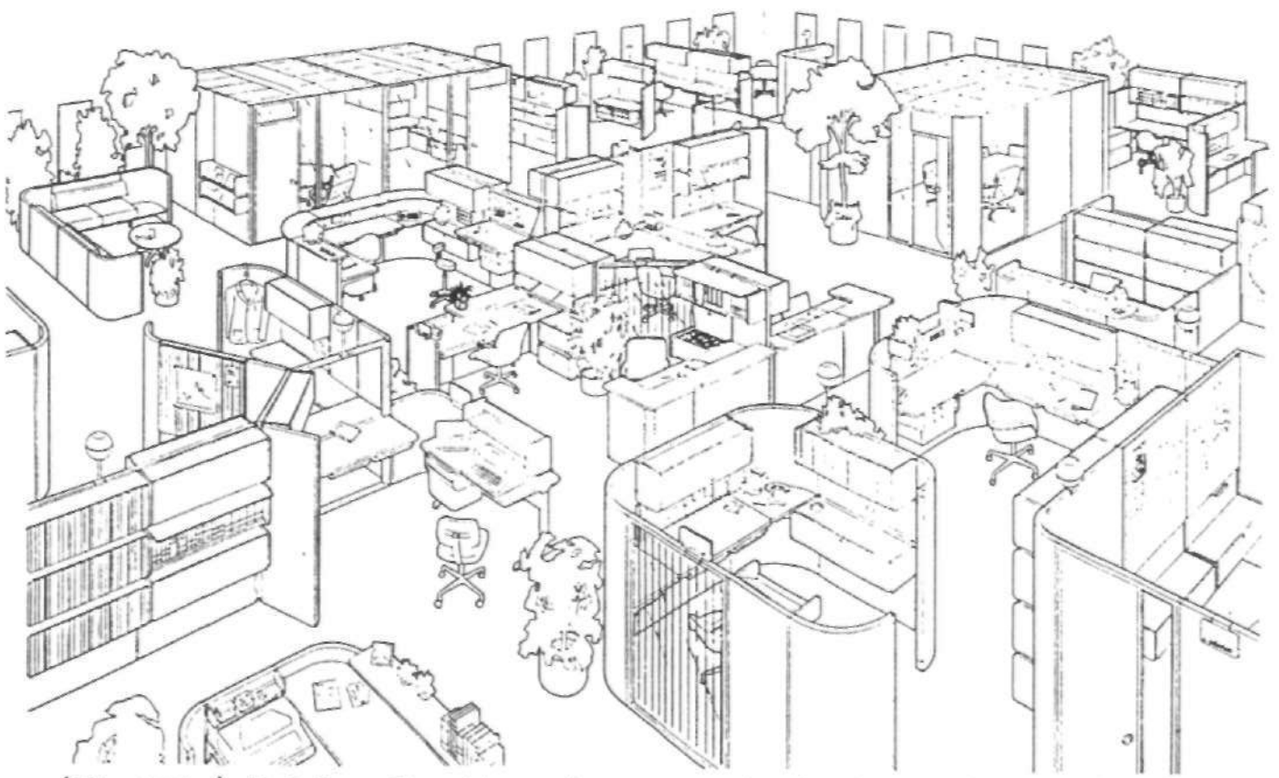
5. FREE FORM: Free form as its name implies is a free pattern not necessarily following any standard or conventional pattern. This is employed in design but rarely in office buildings unless or otherwise the site conditions dictate this. Achieving a modular grid is never possible and space wastage is imminent; Optimal space utilisation is greatly reduced and curtailed and degree of flexibility is very much limited.

4.4 INFERENCES FROM THE CONCEPT OF OPEN PLANNING

The resultant effects and the emerging trend as a result of open planning and layout of the offices are office landscaping, moveable partitions and modular furniture.

Office landscaping refers to the planning of office space free of the traditional permanent walls, corridors and private offices and of the row-after row arrangement of desks and other furniture. The concept is also characterized as using movable partitions, modular furniture and plants and foliage. To accomplish the partitioning of work areas, furniture is arranged in clusters and at various angles instead of in traditional rows.

Landscaping in its pure form, uses no private offices. Individuals receive status through their work assignments, by their location and amount of furniture they are given.



(Fig xxv) Modular Furniture Arrangement; An Approach towards Effective Space Utilization in Office Buildings.

Organisations willing to use landscaping should have a minimum number of private offices. Typical examples are Victory Merchant Bank, International Merchant Bank and NAL Merchant Bank all in Lagos.

Among the special features of landscaping are the choice of color scheme and furniture arrangement which must provide a pleasant working atmosphere. Special attention should also be given to acoustics and noise control.

The use of movable partitions in office design and layout is recommended in corporate offices of today. Partitions are available in a variety of sizes and shapes with different types of outer surfaces, including wood, metal, plastic, glass and carpet. Partitions are to be pre-wired with telephone and electrical connections, as well as constructed with special sound absorbing materials.

The type of furniture that goes with corporate office of today is modular furniture. The modular furniture is self-contained, since the unit consists of desk space, file space and storage space. It can be designed to meet specific needs of employees, resulting in greater worker productivity and efficiency and also use less space than conventional furniture.

4.5 RECOMMENDATIONS AND CONCLUSION

In view of the preceding analysis and comprehensive evaluation of the various possible shapes above, this thesis shall recommend the use of the linear pattern of plan shape.

This of course is due to its high degree of flexibility and careful observation of the linear pattern which seems to tally with the Dom-Ino system. For the linear pattern has the ability to expand, its internal arrangement altered or adjusted without causing damage to the structure of the entire building.

It is believed this dissertation shall provide a source of information towards finding solution to the problem of flexibility of most office buildings vis-a-vis the forms and shapes to be employed by the designer.

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CHAPTER 5

CHAPTER 5

5.0 SITE STUDY AND REGIONAL SETTING

5.1 HISTORICAL BACKGROUND AND GROWTH OF LASGOS

First inhabited in about 25th century A.D., Lagos grew from a small fishing and farming settlement on an island chosen for that purpose. The advent of the Portuguese in 1472, gave the island its present name of LAGOS although its native name is EKO by which indigenes still refer to it. The Brazilian Traders who came to Lagos in the 1880s settled down in the area which is still known as Brazilian Quarters.

Three important factors were crucial in the subsequent growth of the city of Lagos and these are:-

(i) The construction, in 1895, of the Railway as a very important means of linking the city with a rich interland.

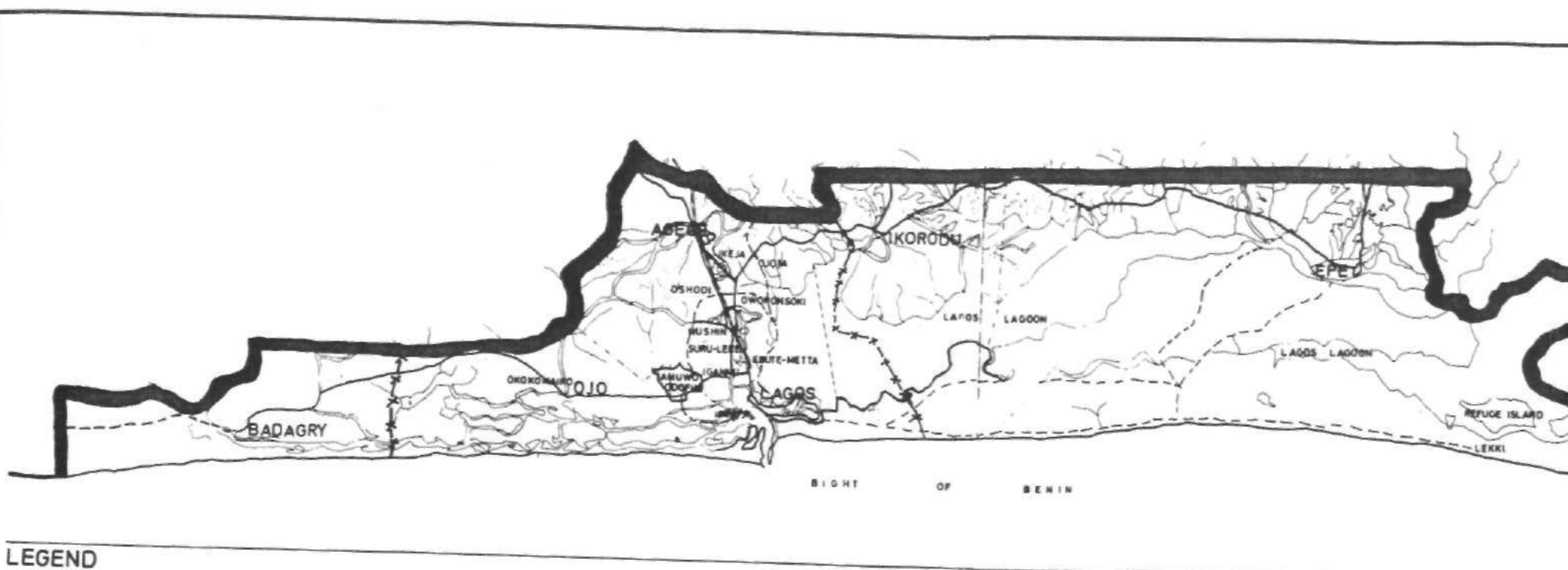
(ii) The development of the Lagos harbour into the best on the West African Coast between 1908 and 1917; and

(iii) The construction, in 1900 of Carter Bridge to link the Island with the Mainland and the hinterland.

These factors were crucial for they greatly aided immigrants, coming to settle in Lagos which had then become commercial centre and seat of government in Nigeria. Thus began the trend in rural-urban migration and the begining of a distinctive type of urbanisation.

5.1.1 Location:

Lagos Island takes 6.4% of the 32% of the area of metropolitan Lagos State. It is located on the South-Western coast of Nigeria -



LEGEND

- AREA OF STUDY
- DIVISIONAL BOUNDARY
- LAGOON
- EXISTING MAIN ROAD
- PROPOSED MAIN ROAD
- MINOR ROAD
- RAILWAYS
- CONTOUR LINE
- RIVERS

FIG XXVI : THE METROPOLITAN AREA WITHIN LAGOS STATE

along the Bight of Binin between latitudes 6^{o} and 7^{o} North of the Equator and between longitudes 3^{o} and 4^{o} East of Greenwich. It is bounded in the south by the Atlantic Ocean (Bight of Binin) in the East by part of Lagos Lagoon. On the north it is bounded by the Lagos Mainland and on its southern end by Ikoyi and Victoria Island.

5.1.2 Population:

As the population of Lagos increased, special expansion became inevitable. From a land area of 4 square kilometres on the Island, and an estimated population of 28,518 in 1871, the population of the city grew to 126,108 in 1931. By 1963, the controversial post-independence census gave the city of Lagos a population of 665,246. Presently, based on the provisional census released Lagos Island now has more than I million people as the population figure.

5.1.3 Economy:

Lagos Island to date still maintains its domineering power in terms of volume of transactions that takes place daily compared to any other part of the country. The available social infrastructures facilitate its business climate to thrive. This is however aided by the closeness to port, the large and available daily consumption and high purchasing power of its people. This is manifested in the number of highrise office complexes that house several financial institutions that dot Lagos city scape.

5.2 PHYSICAL ANALYSIS OF THE SITE

5.2.1 Temperature:

Approximate uniformity of temperature throughout the year is usually experienced in Lagos. The cloudness and heavy precipitation helps to moderate the temperature. The mean maximum temperature is about 30.6^{o}C and the maximum temperature is highest from February to April over most of the State. The mean minimum temperature is about 22^{o}C with its lower values in March and April but the seasonal variation is very low.

5.2.2 Rainfall:

Rainfall is heavy in Lagos, averaging 124.5mm a year. There is a princip al rainy season in May, June and July and a secondary rainy season in the second half of September. It is usual to have some rain in all months in Lagos. However, in some years, the rainfall may differ widely from the normal condition outlined above.

5.2.3 Humidity:

The maximum relative humidity is between 95 percent and 100 percent throughout the year and usually decreases to a minimum of about 70 percent to 80 percent in the autumn. Seasonal variation is slight but a period of a few days of very low humidity may occur in January and February.

5.2.4 Sunshine:

Bright sunshine is experienced for longer period of time of 7.5 hours per day in June than any other month. July has the

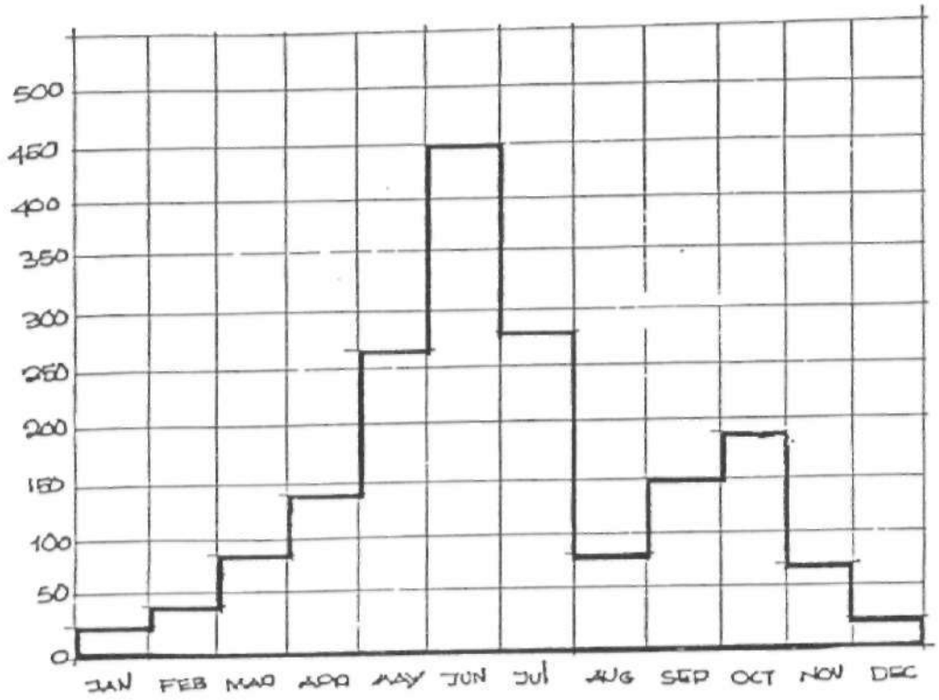


FIG XXVII : AVERAGE MONTHLY RAINFALL

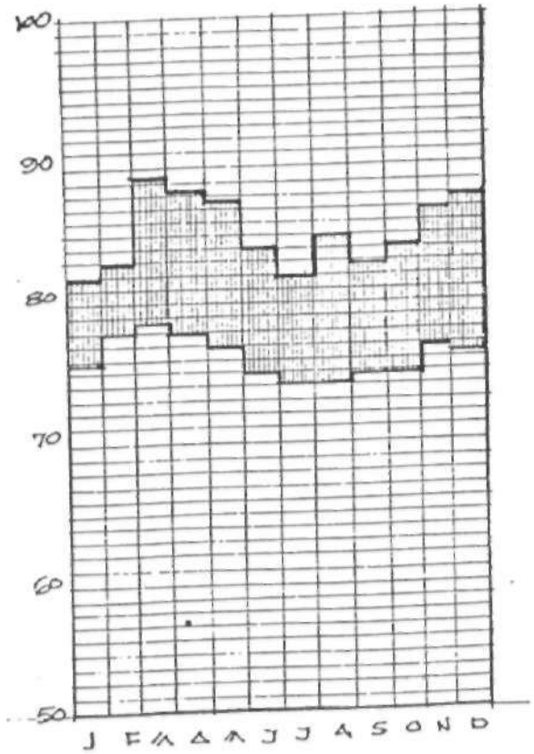


FIG XXVI : TEMPERATURE

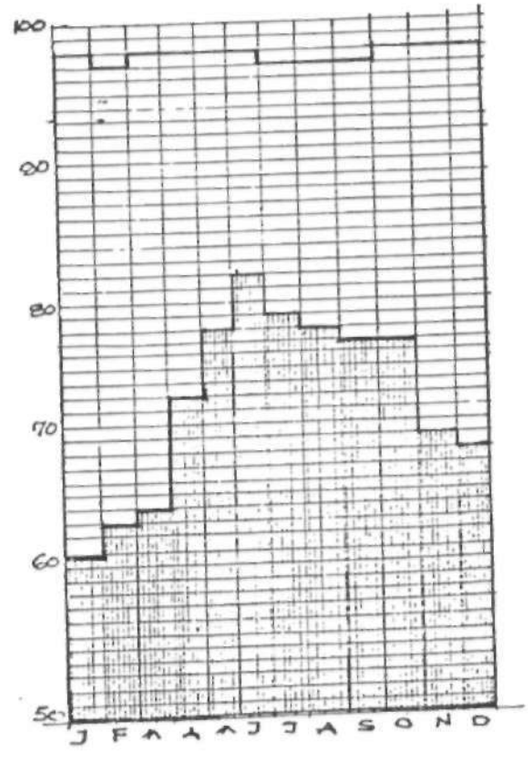


FIG XXV: RELATIVE HUMIDITY

lowest period of sunhshine of five hours.The average period for sunshine for all months is 4.5 hours.

5.2.5 Vegetation:

The Vegetation of Nigeria can readily be divided into two main and easily recognisable sections. The high forest zone which covers one-sixth of the country and the savannah. Lagos State falls within the high forest zone. The high forest zone can further be sub-divided into the mangrove or swamp and rain forest. Lagos Island is within the fresh water belt of swamp forest. A characteristic plant of this region is the raffia palm.

5.2.6 Geology:

The prominence of Lagoon fronts that occupy most of Nigeria's coast line and the rising and falling of sea levels have resulted in a heterogenous and complex set of sub-soil conditions in the Lagos area. In Lagos Island is found loose fine sand in stratified layers coupled with these is an extensive programme of land reclamation by hydraulic filling, mainly during the past 25 years.

5.3 SITE ANALYSIS (Micro Climate)

The choice of a site for the proposed office complex for Lagos State development and property Corporation was governed by the Lagos State Regional Plan (1980-2000). The development policies have played a major role under the auspices of the L.S.D.P.C.

Accessibility to the site has also been considered and socio-cultural, religious, historical factors and natural attributes have also played a role in the choice.

5.3.1 Area Description:

The area under consideration is easily distinguished for its prime location. The area is relatively a portion of land in the heart of Lagos Island. The site is bounded on its 4 sides by streets and they are North-Eastern by Nnamdi Azikiwe, North-Western by Alli Balogun, on the South-Eastern by Bread-Fruit Streets and South-Western axis by Martins Street. The four streets that bound the site and the over increasing population of the Island makes the best choice of the site.

5.3.2 The Site:

(a) Prevailing Winds:- These are essentially the north-east trade winds (dry tropical continental air), and the south-western lies (moist equatorial air). The former are dust laden, cold, dry air and forms harmattan. They are Saharan in origin and last from November to January. The latter being cool and of equatorial maritinio origin which are rain bearing. This lasts from February to October,

(b) Noise:- Vehicular and human traffic noises are imminent in this area, from all the surrounding built up areas. For there is high volume of business transactions that takes place on a daily basis.

(c) Drainage:- The site is relatively very gentle and thus the degree of slope is very minimal, but the slopiness tends towards north western axis (Alli Balogun).

(d) Views/Vistas:- There are interesting views on all sides of the site. Most of the views are towards architectural edifices and consist of buildings making up the central business district of Lagos - the financial live wire of the country.

(e) Topography:- The site being generally low lying. The natural ground cover consisting of bare sand and no trees exist on site. So the natural terrain tends to absorb temperatures and does not stabilize conditions due to its bareness. It is generally found out that temperatures over bare surfaces on summer day are about 10^{O} to 14^{O} hotter than those cover with grasses. Site is to be further improved by layout windbreakers and shade trees arrangements.

5.3.3 Criteria For Site Selection

- Government policy statement on urban renewal efforts and the site as strictly meant for development of office, shopping complex and hotel facilities.

- To employ the natural endowment of the site interms of human traffic and high business transactions that thrive in the area.

- The location of the site within the central business district (C.B.D) of Lagos is an added advantage.

- The site being bounded on all sides by streets greatly help out in its accessibility.

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CHAPTER 6

CHAPTER SIX

6.0 DESIGN BRIEF

6.1. FUNCTIONAL REQUIREMENTS

The main purpose of this thesis is to come out with a beffiting design that would boost the alternative revenue source of the client. In the formulatory stage of any brief, there are many requirements and parameters that come into play. This mean all heads (Directors) meet where individualized influences and dispositions are to be considered: politics normally associated with board room meetings and deliberations. An architect is often invited for judgement and instructions, and he brings his own initiatives and know-how into play, to bring out the final brief for the client.

The process of brief formulation involves given priority to the clients basic requirements over all other things and rest parameters gotten from studies of similar projects and the clients futuristic expectations.

6.1.1 The Brief

The design brief for this project is based on two criteria:-

- the building as an office building
- the building as having a shopping mall

(a) The building as a lettable office building. This aspect of the building dictates the requirements of the basic facilities of a lettable office building.

For instance, the freeness of the building from traditional wall partitioning of the offices into small offices. Secondly, the communal use of facilities e.g. the service core, lobbies and the lavatories.

(b) The building having some parts for shopping facilities. This proposal is based on the fact that the site is within the central business district of Lagos. In addition to office space in multiple-occupation, there are a number of other possible sources of revenue, each dependent on a variety of circumstances. The demand for shops on ground floors - at least on a main street frontage is very high in C.B.D. of Lagos, coupled with the high rental value usually greatly in excess of that of offices while costs (maintenance and outgoings) are smaller.

The brief is therefore based on these two requirements to achieve a functional and economic design that could take care of the client's needs of letting out office and shopping accommodation, with the aim of justifying its establishment as a property and investment division of the Lagos State government.

6.2. FACILITIES:

For any corporate establishment of today to function effectively it becomes imperative to provide it with facilities that would sustain it as an ideal working environment. The facilities to be provided for this project are all to be based on the state of the art technology in the building and construction industries respectively. Provisions are also to be made for advancement in technology which is dynamic.

- ENTRANCE HALL

This is a transitional zone between the upper floors and other axis of the building. The entrance hall should provide space for lifts, main staircase, porter's box and often in addition notice boards, a letter chute and a staircase to basement, where communal services such as heating are to be controlled by the porters

One entrance only to lettable offices is sufficient (although, of course, there will be service entrances or escape exists in addition). Reduction of the number of entrances economises porters and lift attendants, and generally assists proper supervision of all persons entering and leaving the building.

- RESTAURANT

In Corporate buildings of today, recognition is given to provision of restaurant for the staff. Provision should be made for varying grades of staff such as directors and management staff and other general staff; these several rooms should be served from the same kitchen which should be so placed that easy access is provided to all rooms, but those designed to serve the greatest numbers should be given the most direct relationship.

- MEDICAL SERVICES

As part of the staff welfare scheme, the client requires a well designed industrial clinic. This is to enable prospective tenants staff avail themselves to the primary health care programme with the view of boosting their morales. Consulting rooms for doctors and

- LETTABLE OFFICE SPACES

In today's Corporate office, the design has superseded just provision of space for working in. Provision should be made for conducive atmosphere so that all management services and information handling could be carried out effectively. The design should ensure various user's requirement are met to a reasonable extent; to wet the appetite of many prospective tenants that abound in the state, that are jostting for office spaces within the prized C.B.D of Lagos. A minimum of 15,000 sq.m of net usable area is anticipated.

- BANKING FACILITIES

To cater for the high anticipated business transaction of the shopping mall and other occupant of the premises. It is envisaged that provision of spaces for commercial banks should be considered To cater for this volume of transaction a large banking hall is to be designed, which is the technical part of the bank where cash is paid or recieved..

- SHOPPING

A (6 x 6)m^2 and (6 x 3)m^2 (stalls) shopping area is required for any prospective tenants and provision should be made for 50 of such units. The shopping mall is to be integrated with the lettable offices and should have the power to flow into and out without much interference and disruptions. Provision should be made for its separate lavatories and vertical circulation of both the users and goods.

dentists are to be grouped around a common waiting room; the normal accommodation of a suite for these purposes consists of a waiting room, a consulting room, a private office and if possible a private lavatory.

- MEETING ROOMS

There is often a demand for rooms which can be hired by the hour or day for conferences or smaller meetings. They should seat at least 15 or 20 persons and to be furnished in manner of "Board Rooms" with large tables and comfortable table chairs.

- PORTERS/ENQUIRIES

Most offices require provision for a porter in the entrance hall usually an enclosure which can be locked; in the enclosure storage space should be provided in the form of pigeon holes for letters, racks for keys and shelves for parcels.

- DELIVERY/DISPATCH OF LETTERS

By arrangement with G.P.O a collection box may be installed and placed in the entrance hall. Postal chutes connecting all upper floors with the box on the ground floor could be installed, these should be placed, when possible in or near the lift lobby.

- NOTICE BOARDS

Ample wall - space must be provided in entrance halls for notice boards on which the names of the various firms or departments may be displayed. These space should be a well-lit prominent position near the main entrance.

- TECHNICAL INSTALLATIONS

In the general equipment and services of office buildings provisions should be made for - heating, hot and cold water lighting, power points for machines, auxiliary heating, telephones, cleaning and disposal of water. In addition other services sometimes required are communication tubes and vacuum cleaning.

- CLEANER'S STORES

A cleaner's store should be provided on every floor of the office tower. The fittings should consist of a sink, with hot and cold water, draining-board, racks for brooms and polishers and a cupboard for smaller articles.

- STORAGE FACILITIES

Storage to be provided for office supplies, old records and equipment and maintenance materials storage of records and equipments is the one that is least important interms of location near the active working area of the office.

- GATE HOUSE

To maintain effective vigil on vehicular and human traffic movements, gate houses are to be designed and these are to be located at every point of entry and exit into the complex.

- PARKING

Parking facilities for cars, lorries, truck and bullion vans is envisaged. This is to serve both the staff, customers and visitors to this complex.

- AUXILIARY FACILITIES

Any other facilities that would guaranteed the maximum comforts of the building users and the client that are however left out either by acts or omission should be fully integrated with the design in the course of design by the designer.

CHAPTER 7

CHAPTER 7

7.0 DESIGN CONCEPTS AND CRITERIA

7.1 FUNCTIONAL AND SPACE ANALYSIS

The concept functional analysis is a process in design synthesis that defines a space and established the activity to take place within it. On the other hand space analysis is a process that established the dimensional requirement of the space to cater for an established activity of a specified number of people.

Of high importance is functional analysis in any design consideration, hence there is the need to take into considerations the functions of the various units that constitute the overall complex. This would to a large extent leads to a well-coordinated and controlled flow of human and vehicular circulation in the complex. A careful analysis of these functions would revealed how they would relate to each other and to the entire complex in general. A comprehensive analysis of the various units that constitute the office development complex reveals that each unit performs complementary functions to one another and among themselves. Thus it is desirable to ensure that the various units are functionally related to ensure effective operation of the entire complex.

Thus, it is the intent of this proposal to ensure that the organisational arrangement of the various units provide direct and free flow between and among themselves. A careful functional analysis could also give an insight as regards zoning of the units towards making a whole.

7.2 ZONING

The concept zoning could be defined as the process of choosing each of the functions to be developed for proper integration to make one body. An analysis of the design brief shows some basic functions that will cater for the functional requirement of the centre. These functions can be grouped into the following units for which a zoning pattern shall be made for:

(A) A Banking unit avail the prospective shoppers of the workers within the complex.

(B) A Banking unit services to outsiders and the workers within the complex.

(C) Lettable offices - for corporate organisations.

(D) A service unit - Restaurant, A clinical centre, meeting rooms e.t.c.

The various units outlined above have been zoned into the following categories:-

7.2.1 Public Zone:

Access granted to the general public into this zone and consist of shopping and Banking units respectively. The criteria used is the frequency at which people come in and out and how accessible is it to the people.

7.2.2 Semi-Public Zone:-

A Semi private zone and a bit restricted. In this case access is granted only to the workers or people having transaction with the occupants of the office tower.

Also includes the service unit that takes care of the general welfare needs of the workers.

The analysis above has given way for the development of site concepts.

7.3 SITE CONCEPT

Site concept is the basis upon which the entire design is synthesised and has been based on the zoning pattern mentioned above which also entails hierarchy of space via accessibility and visual identity.

While discussing the problem of the site in the preceding chapter, accessibility via vehicular means was noted as being important. For the site is bounded by roads on all sides. Other factors peculiar to the site include, its positioning, in the central business district that makes it easy to influence the city vistas by a correct placement of the building.

In view of the factors mentioned above the following concept have emerged:-

7.3.1 Site Concept 1

This concept takes advantage of the area defining the road to create a composition that rhymes with the road indentations. This has a direct functional relationships between basic units and offers a high degree of space hierarchy. There is [illegible] and Breadfruit streets, both are of higher vehicular and pedestrian usages.

SIT

FOUNDATION UPON

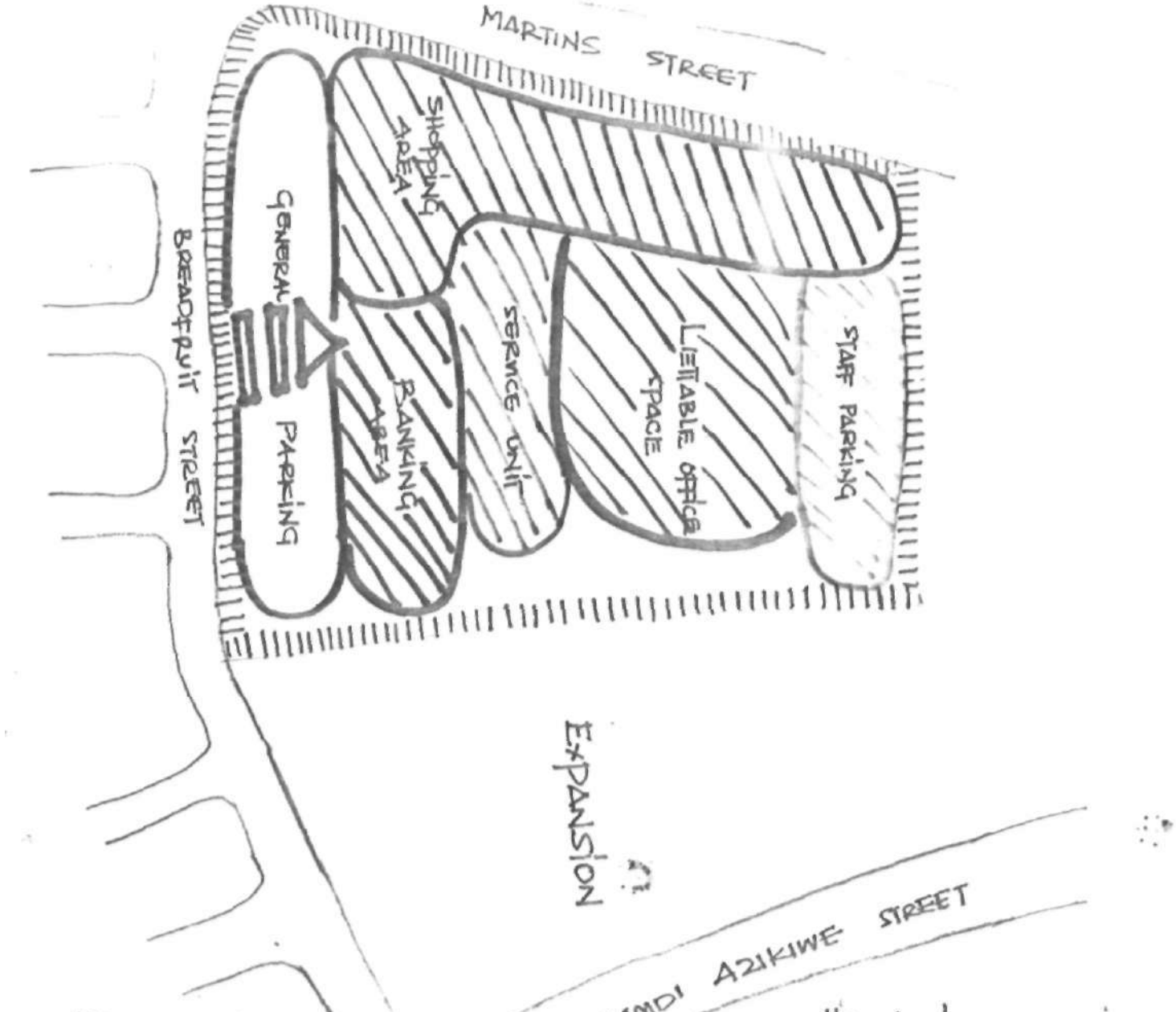


FIG. XXX : SITE CONST

7.3.2 Site Concept 2

Here the building does not take to the site configuration and it is stretched almost uniformly that it becomes possible for balancing of functions and composition of forms. The inclined access gives less emphasis to car owners and more to the pedestrians. There is also a direct functional relationships of all functions stated herein.

7.3.3 Site Concept 3

This site concept is the adopted concept and is adopted for it has the advantage of offering greater space usage which is an important consideration in this work. It also provides for a direct and free traffic and circulation flow. It also takes into consideration adequate space utilization and the centralised entrance seems satisfactory. Thus it has been adopted in the design.

7.4 DESIGN PRINCIPLE

The primary aim of any designer is satisfying the clients needs and requirements. This is an important factor in any design process The design proposal therefore aim at producing a suitable space that will encourage optimum space usage and flexibility. This is hoped to be achieved through the use of linear shapes which have been previously analysed to providing a higher degree of space usage and flexibility.

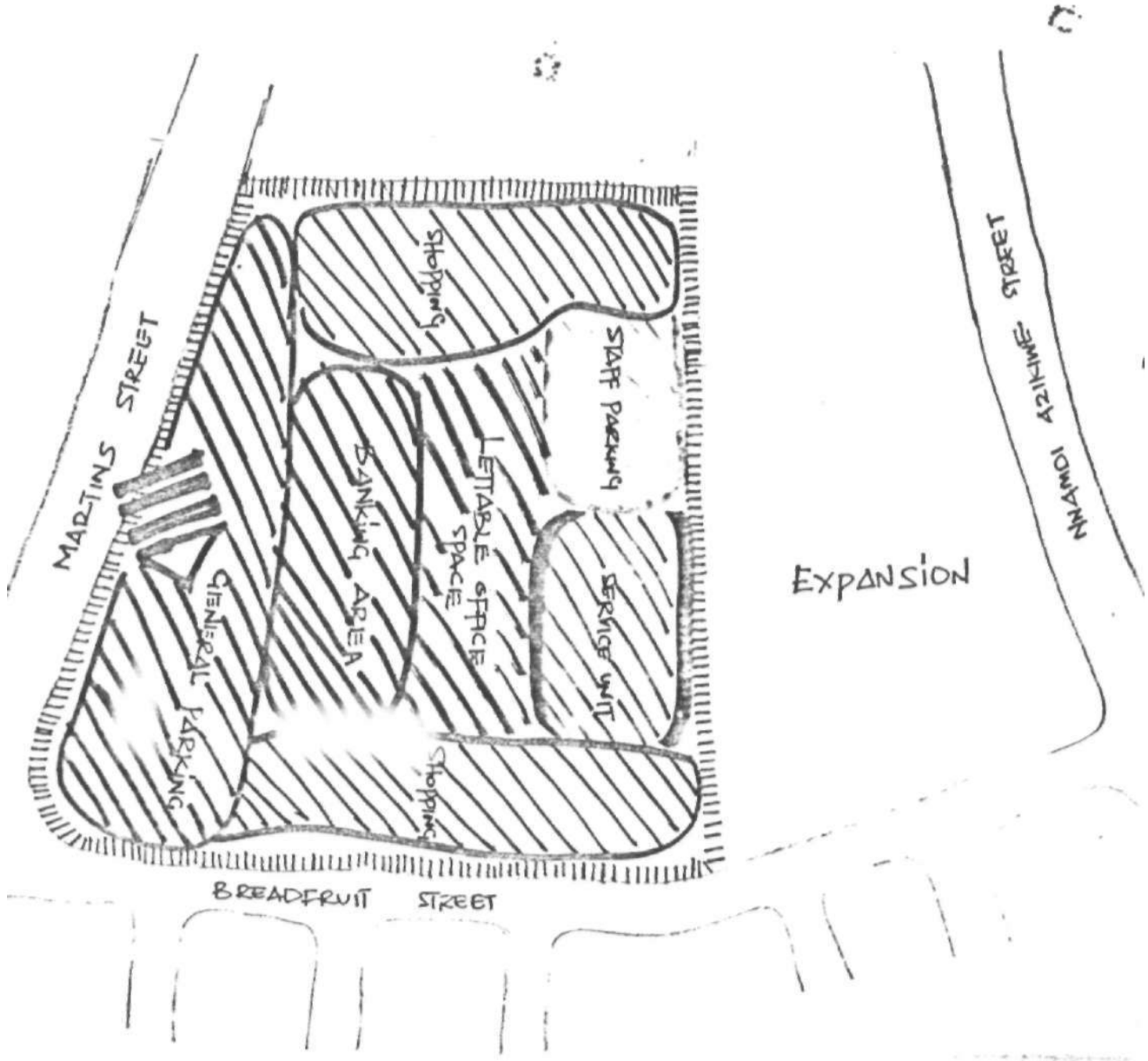


FIG. XXXI : SITE CONCEPT II

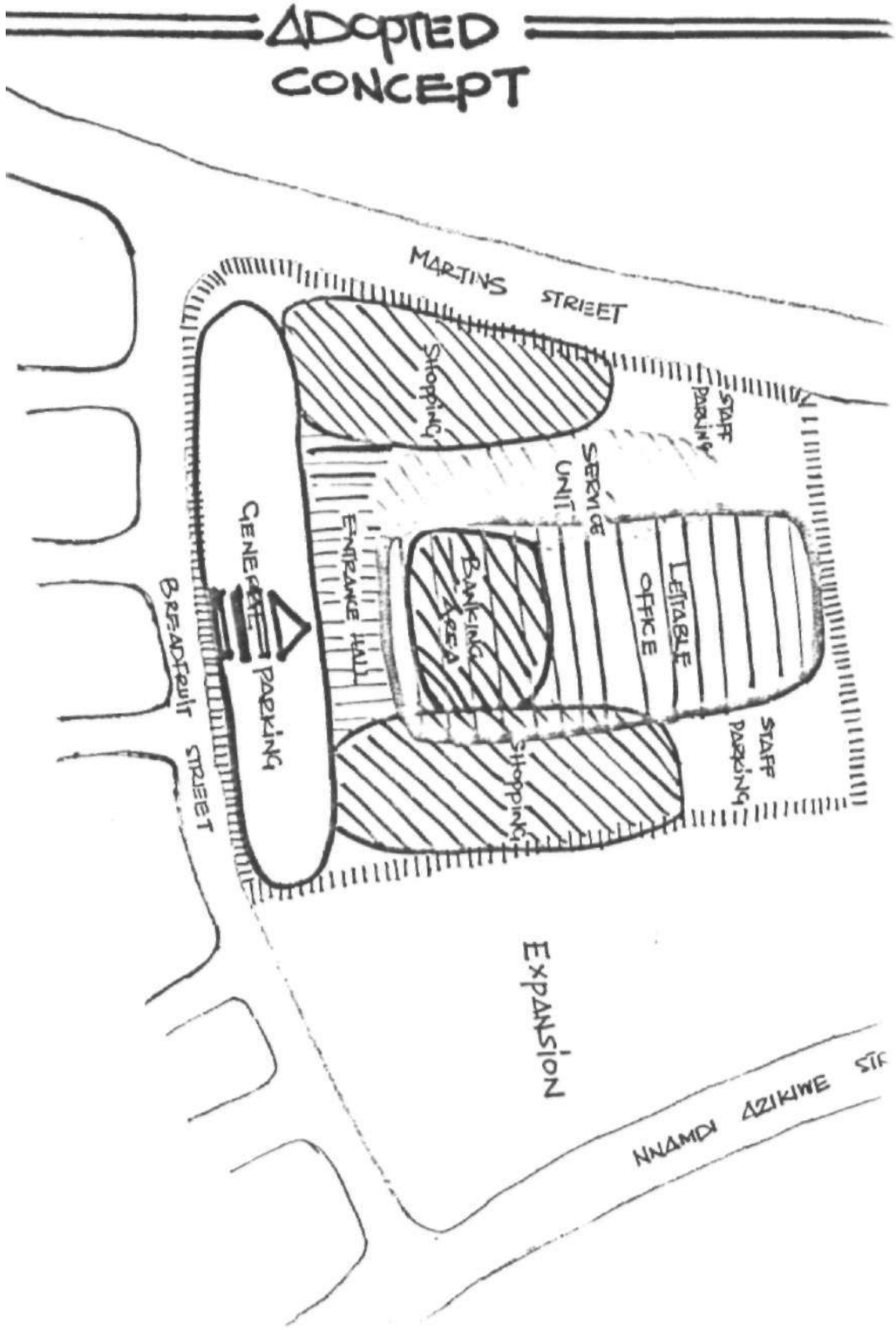


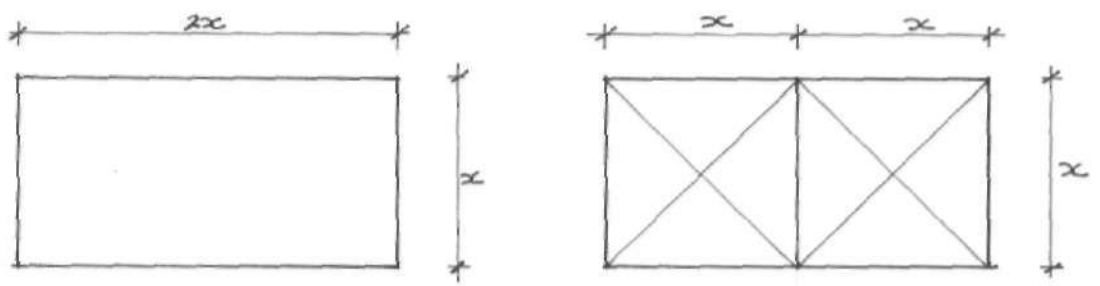
FIG: XXXII: SITE CONCEPT III

7.5 DESIGN APPROACH

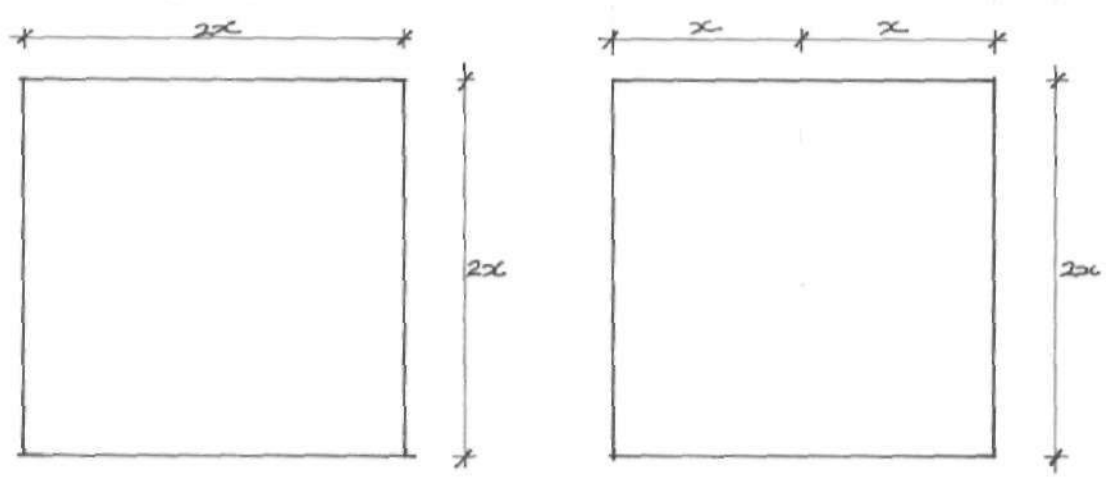
A thorough analysis of linear, circular and triangular shapes shows to a greater extent the degree to which their usage could be put in design conceptualization.

7.5.1 Linear

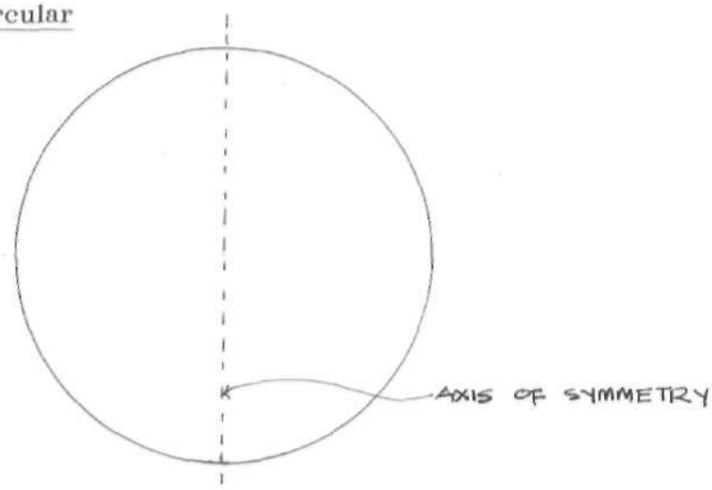
From linear shapes when a rectangular unit is divided into 2, square shapes are obtained. This being economical to use and provide optimum use of space as well.



On the other hand, when a square shape is divided into two, it gives rectangular units, which seems deep and might need extra lighting.

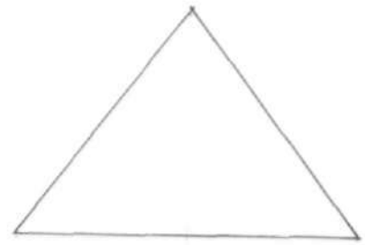


7.5.2 Circular



A circular concept makes a good shape for it exhibits some sense of continuity and flow, and could be dramatic in nature. But the probability of it being used in an office design is considerably reduced. But a segment of it could make some meaningful impacts as a contrasting element and as a style of continous movement of levels.

7.5.3 Triangle



Triangular shape is highly not workable for its resultant effect is enormous space wastage. However, it could be reflected or emphasised on the elevational projection either as a pointier to a classical style or historical movements.

This design is tended towards a long term planning use thus the use of square shape as the dominant shape, without imparing the designed space.

From the design approach above it could be said that the DESIGN CONCEPT is an abstraction and reflection of Traditional concept of design, coupled with the use of three basic primary shapes and harmonisation of these shapes towards achieving an effective space utilization resulting in purity of form and balance.

7.6 FORM CONCEPT

Of most importance is the architectural expression the designer is putting accross to the society. Form therefore, serves as a means by which space is perceived and experienced and therefore becomes necessary to assess it in any piece of architecture. Hence the anticipated form should take its roots in familiarity or identification with the scenero within which it is located, otherwise associating itself with regional identity.

7.6.1 Iconic Forms

These are forms that come to be accepted in the society as having particular meaning or identity. In the south-western part of the country the area predominantly occupied by the Yorubas. Rectangular forms with high pitched roof is the common feature among the residential developments with an array of columns adorning the varandah.

From the drawing it could be deduced that the array of columns expresses high sense of hospitality and freedom, which the culture propagates. An entrance situation that heralds a visitor into the building saying "welcome".

7.6.3 Expressive Glass Forms

It has been long in tradition that glass is regarded as a prestigious material to use in buildings. Quite a lot of examples of such abounds in our midst today especially in the corporate world Glass has a high expressive power and this is evident in the design of the following 1st Bank Headquarters Lagos, I.M.B. Plaza, Lagos etc.

Different form concepts abounds the practice today and the one mostly likely to be chosen by the designer is that which expresses the spirit of the age. Within the context of this work no abstractual form is going to be adopted, but rather the pure and ideal form. This will also complement the design shape in ensuring a flexible space and its optimum use.

CHAPTER 8

CHAPTER 8

8.0 DESIGN PROPOSAL AND REPORT

8.1 DESIGN COMPONENTS

The whole complex consists of various functional units which have been integrated to make a whole. In the subsequent paragraphs are the descriptions of each units including its compositions, its relative position on the site, building height e.t.c.

8.1.1 The Shopping Unit

The shopping mall flanks the office tower on two sides both on the west and east axis of the site. It is a 3-storeys high structure with the top decked as parking spaces. The shopping mall has 2 entrances, that herald a visitor into the complex with the next 2 serving as exits.

Within the shopping mall are double and single sized shops. There are good service bays with goods lifts to convey goods to upper floors. Other facilities are spaces for porters, lavatories, cleaners store etc. There are also ramps that help in ascent and descent of motorists.

8.1.2 Ground Floor Office Building

On the ground floor of the lettable office tower are the followings; the reception flanked on its two sides by Restaurants and an in-house medical centre. There are stalls in the entrance hall for the sales of tobacco, chocolates etc.

The office tower is accessed by four (4) passenger lifts and one main staircase for effective vertical circulation within the complex.

There is also the service lift for vertical movements of furnitures, stationery e.t.c. To take care of electrical cables and water pipes are ducts and chases leading to all floors for local distribution.

8.1.3 First And Second Floors

The first floor of the office tower houses the banking unit. Adequate provisions are made for the prospective occupant of this unit. There is the banking hall, public waiting area, strongroom, Bills room e.t.c. and a host of other spaces that are going to support the clients requirements.

The second floor houses the meeting rooms which are to be hired out by the hour or day for committee meetings and deliberations These are finished after board room and adequate facilities provided for its functioning.

8.1.4 The Tower

From the third floor are typical floors and repeated to the last floor with minimum alterations. The open planning concept was adopted for these floors owing to the crucial factor of space flexibility and openness in today's corporate world.

8.1.5 The Basement Floor

This houses the bullion park and other parking spaces available are that of high security purposes. Also in the basement is the fire hydrant room with all other technical installations inclusive. It also takes care of storage of goods and ware housing.

8.2 ELEVATIONS

On the elevational projection emphasis was placed on visual impression received by an observer. The elevational composition is basically the integration of the three primary shapes, Verticality has been fully appreciated and cuts into the horizons to give a good and beffitting visual impact.

The elevational composition is the fusion of two characters, the International style and the Regional identity, these are evidenced to portray a venacular imagery. The use of circular form as massive column at all the facades expresses solidity and thus makes a unique piece in the whole neighbourhood.

8.3 SECTIONS

Emphasis has been placed on the structural stability of the building thus the sections are taken through structural members. The ribbed floor system is well exposed and coffers created out of these ribs used as effective service area e.g. the aircondition ducting.

8.4 SITE PLAN

From the site concept adopted the complex is a approached from the Breadfruit street. Visitors are thus heralded in through the main gate and there are parking lots on either sides. The orientation of the building makes the entire complex easily noticed from many points around the central business district.

One way parking has also been designed to flank the sides of the shopping mall. There is also service entrance created for the bullion car for security reasons and the services orientation unit of the entire complex.

8.5 SERVICE ON SITE

A network of proposals for sewage disposal and water supply on the site are proposed. Trenches and gutters have been used to connect the soil and waste waters to the outlined services grid to ensure that problems of maintenance do not intefere with the flow of traffic. Sewage disposal is accomplished with the use of appropriate sizes of pipes to the inspection chambers, septic tanks and lastly soakaway pit.

Storm water collected from roofs are channelled through pipes and drained along the natural drainage course of the site to join the municipal drainage system that bounds the site.

8.6 SERVICES

Of very importance is services in any high rise development. This is a critical issue any designer must take an indepth study into, for it either makes or mar a building. This serves as a yardstick towards determining the success of the design.

8.6.1 Core Location

After a careful study of various core locations available in the design of a multi-storey office building. It becomes mandatory for the designer to choose that which suits the client's needs and one with minimum cost implications. The single zone peripheral core location was adopted so that adequate ventilation of lavatories units are guaranteed.

8.6.2 Fire Services

Stand pipes are inter-connected at the ground floor and terminated in a siamese connection near the escape stair case. A position from which they can be fed by water in the event of a fire out-break. At the stair cases and other suitable locations horse racks have been proposed for usage. Smoke detectors have been installed on all floors in sensitive areas like electricity switch room. There are also fire hydrants points are to be provided on the site at 20m intervals.

8.6.3 Air Conditioning

Air condition is to form the major source of ventilation for the offices, this will however, be supplemented by window openings. The requirement for a conditioned environment is necessary to cool down the heat-load generated by occupants, machines and radiation. Therefore a centralised air conditioning system is recommended. There is shaft that help in downward distribution. On each floor there are ducts that run horizontally for local distribution to all the floors.

8.6.4 Water Supply

Water is to tapped to the complex from the municipal mains by an 80mm service pipe that takes its origins from the municipal mains of 150mm. Water pumping machines at the basement will boost the vertical movement of the water. Risers are proposed within the building to convey water to and from a building tank located on top on the building.

8.7 CONSTRUCTION TECHNOLOGY

Materials for construction include reinforced concrete, mass concrete, steel and glass (curtain walling). The structural system is based on column lines 6 metres apart with precast reinforced concrete tee-beams spanning between them. Steel lattice trusses are used for part of the roofs. Bricks facing and mosiacs were also employed as external finish to some parts of the buildings.

8.8 MAINTENANCE AND MANAGEMENT

Properly management has became so important that it has to be addressed. Contracting the management and maintenance to professional bodies appear to be viable solution, which are recently being adopted. A periodical maintenance of the building is to be organised and specifications strictly adhered to.

It is necessary that this building takes a comprehensive insurance policy as recent events have shown enormous risks public buildings are exposed to owing to increasing cases of arson and social tension in the country.

CHAPTER 7

SUMMARY AND CONCLUSION

9.1 SUMMARY

In the course of this thesis, corporate architecture was given maximum attention considering the position it occupies in our daily transactions. It has been observed that development of office buildings are on increase to meet the increasing demands of prospective tenants. This means there are more needs for offices and thus a corresponding provision required in terms of architectural space. Owing to the increasing cost of building construction, there is an urgent need to make buildings flexible to provide for future use and for maximum space utilization.

In an attempt to realise these dreams, literature review was undertaken. An indepth study of office buildings designs and construction methodology was done. This also delves into finding out best shapes and forms to employ. To justify the optimisation of the office space. This will be the ultimate joy of the owner as an alternative revenue yielding venture.

In order to obtain relevant information required to ensure a reasonable and articulated design, an inventory of existing offices was carried out. This was done towards establishing the facilities and their relationships to one another, also checking out for the demerits in the design.

To make sure the design is in conformity with the local settings a regional and site analysis was done to make sure the design suits the local climate.

From the aforementioned position a design proposal was made, after careful and systematic design. This means an analysis which involves functional and space requirements as well as design brief.

Nevertheless, the design was made taking into consideration the client's needs vis-a-vis standard requirements needed for effective and conducive operation in an ideal office environment.

9.2 CONCLUSION

This piece was motivated by the drive to source revenue to the state alternatively. Thus there is the need for a well designed office building that would serve as a good image making edifice for its occupants. There is the necessity to design office that embodies the following:-

i. Searching and employing a suitable shape that allows for flexibility and optimal space utilisation.

ii. Making available standardised facilities that will complement each other as well as provide a result oriented environment where creative thinking could emerge.

The task of designing a project of this sort has been of immencse intellectual enjoyment producing new discoveries and possibilities. It is hoped this would serve as a reference medium in the design and search for forms appropriateness in the design of an office building.

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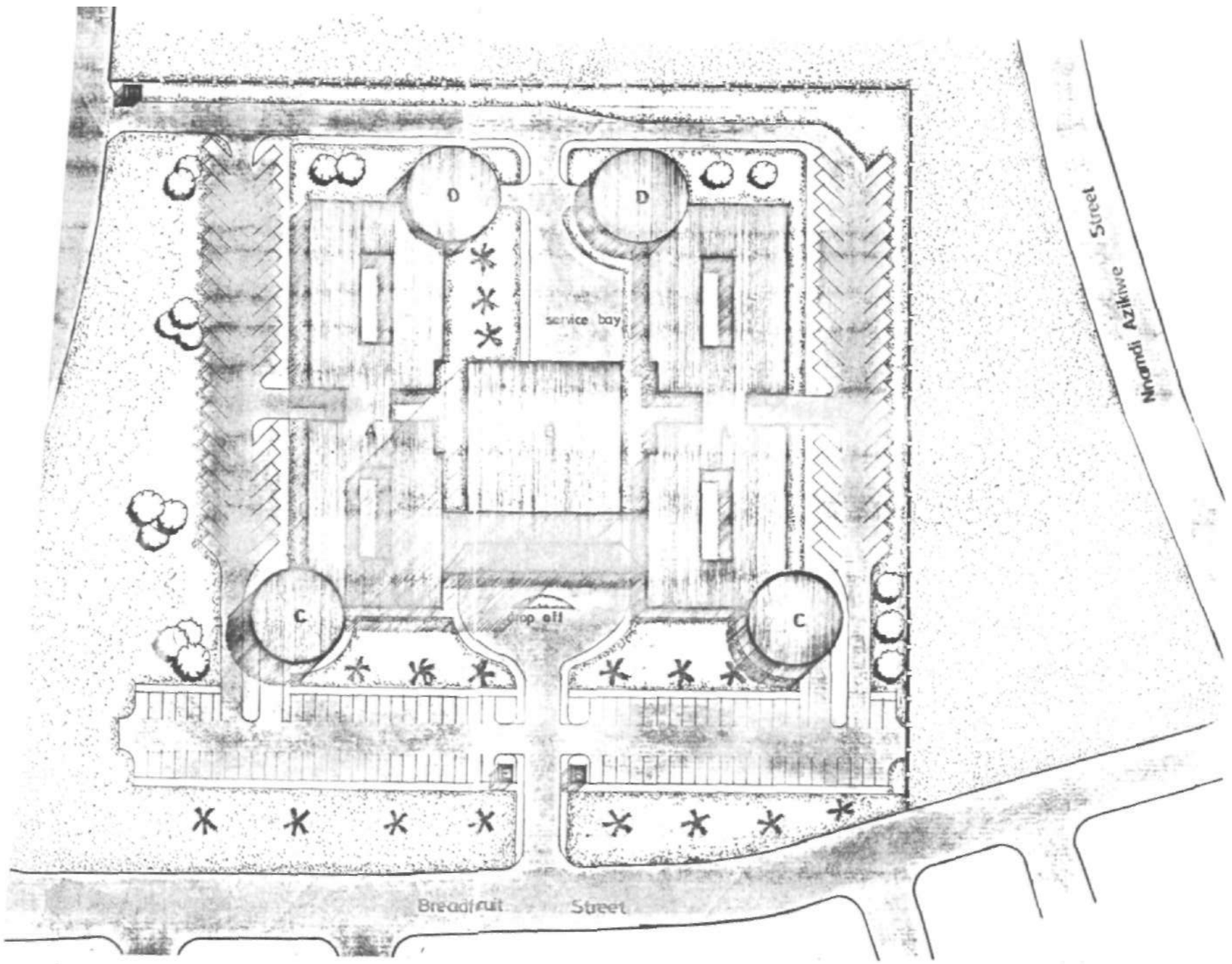
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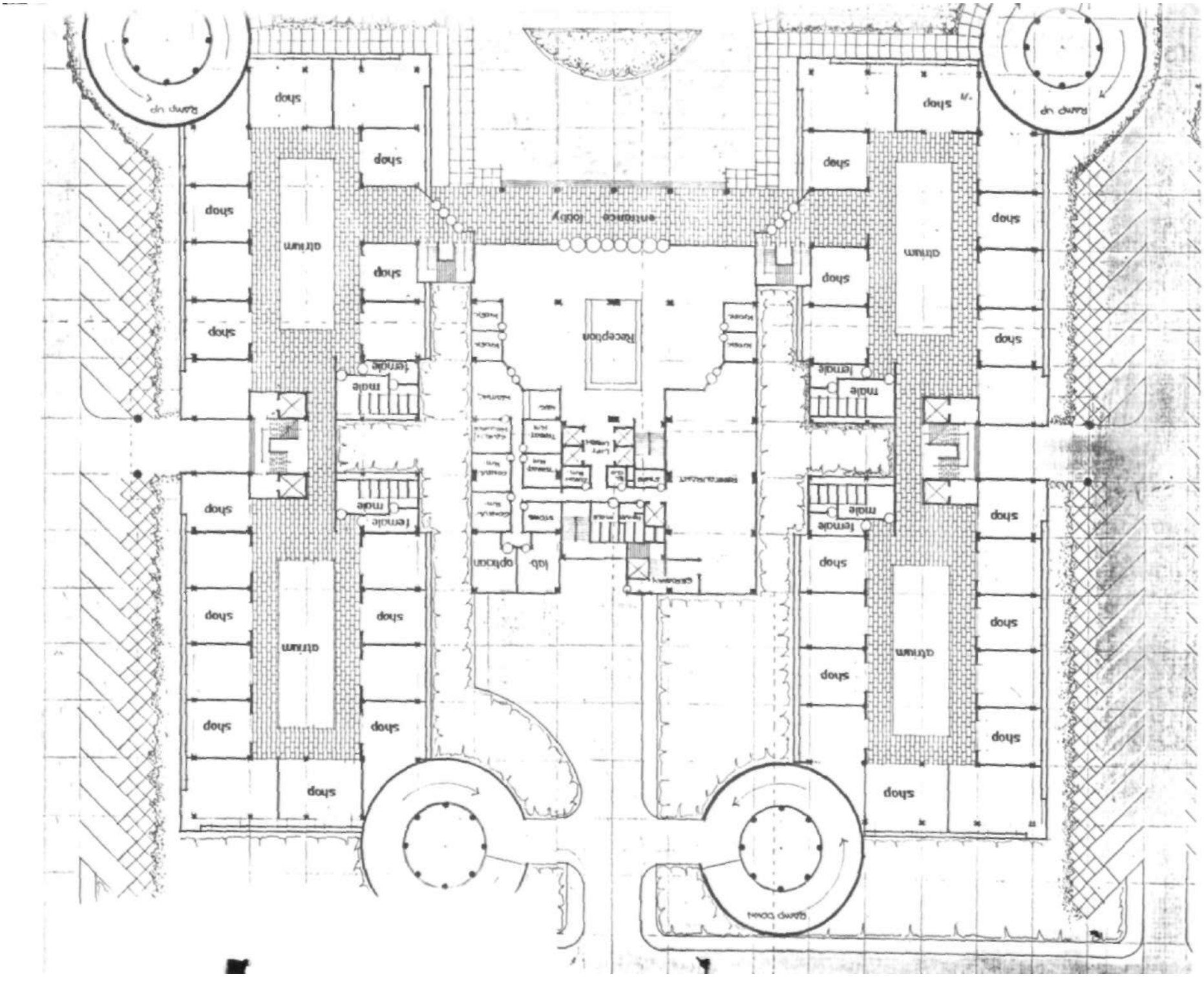
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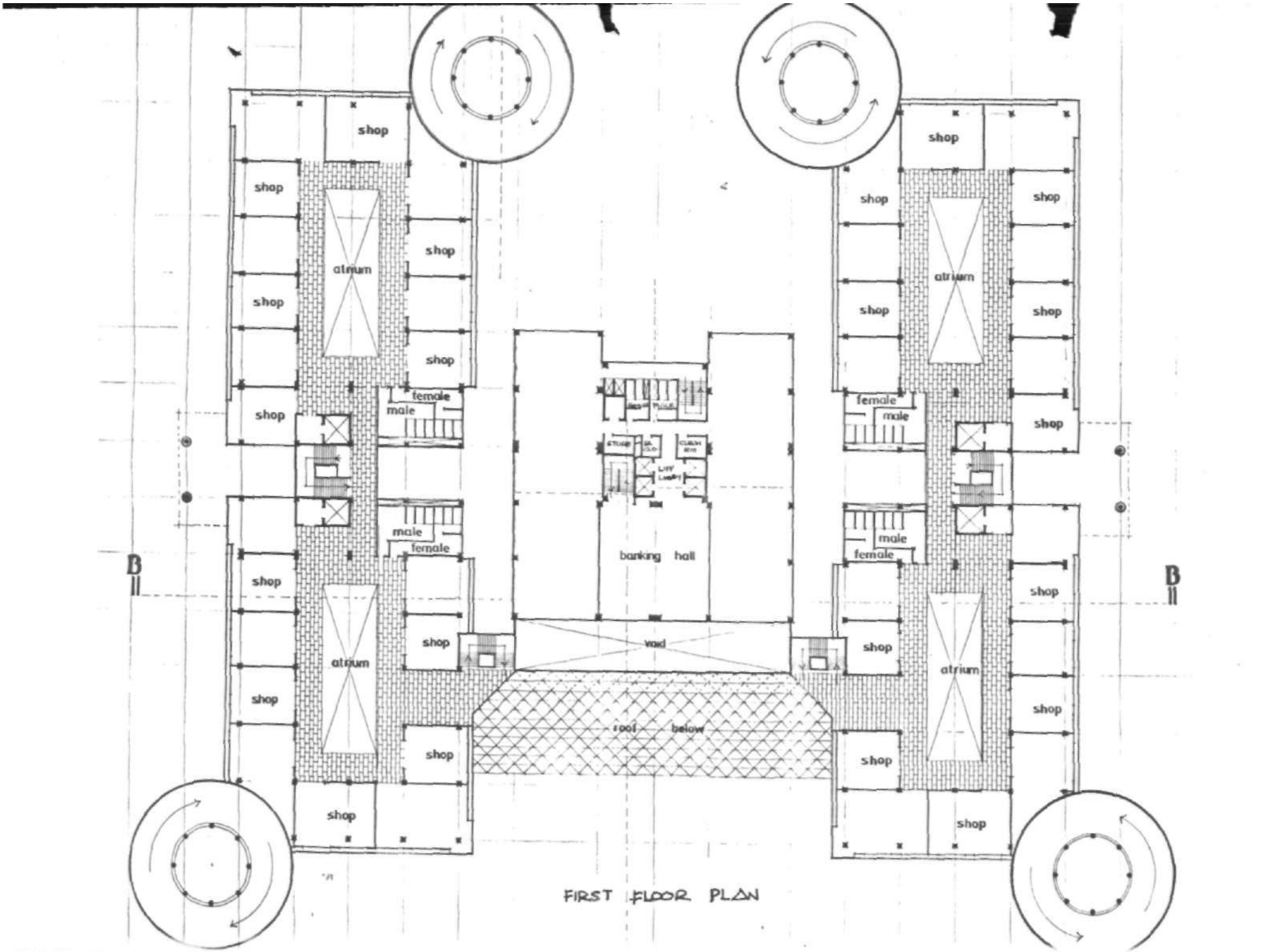
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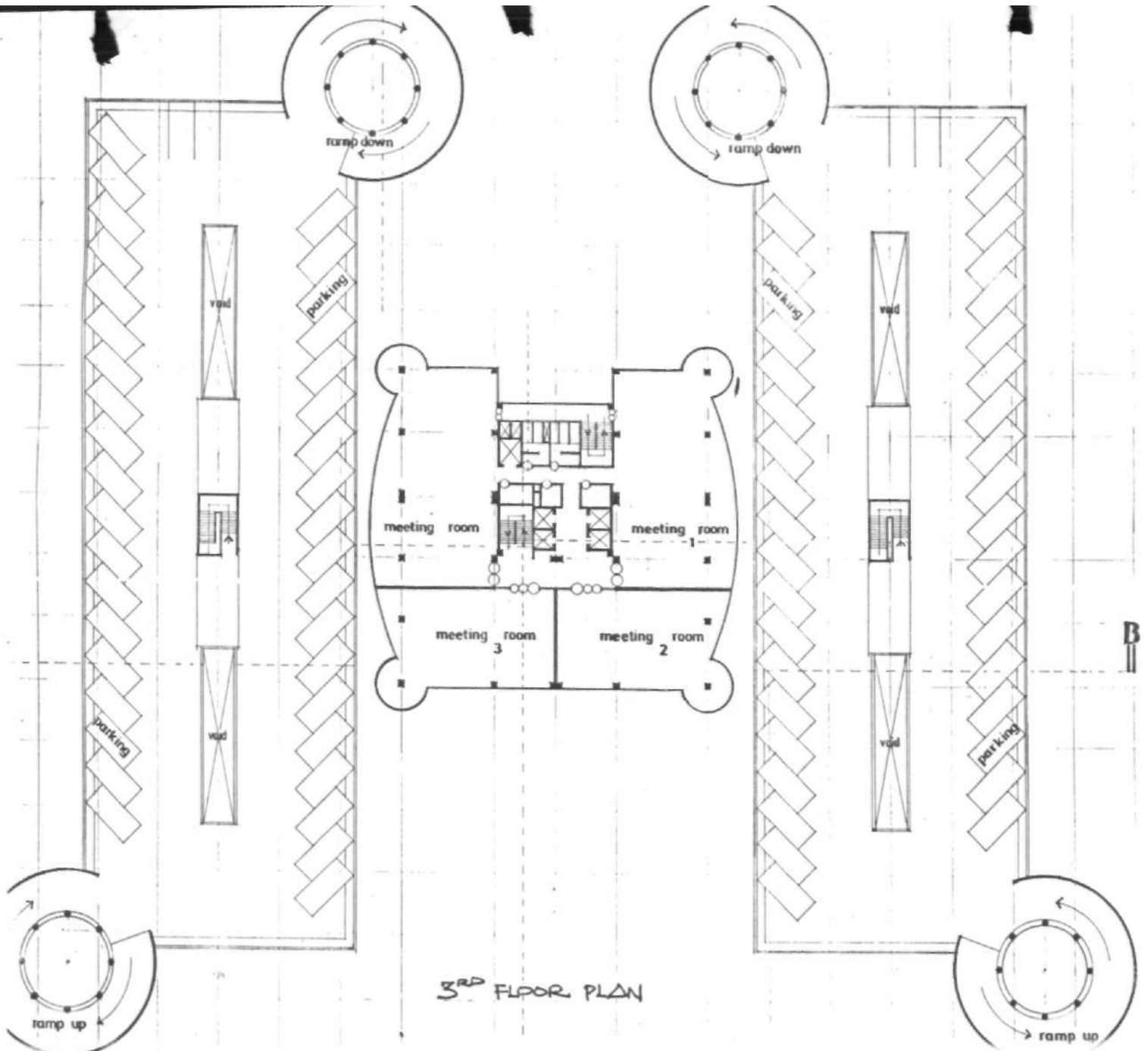
17. L.S.D.P.C. Hand Bill, 50 years of Housing and Planning Development in Metropolitan Lag


D
D
service bay
C
C
drop off
Nnamdi Azikiwe Street
Breadfruit Street

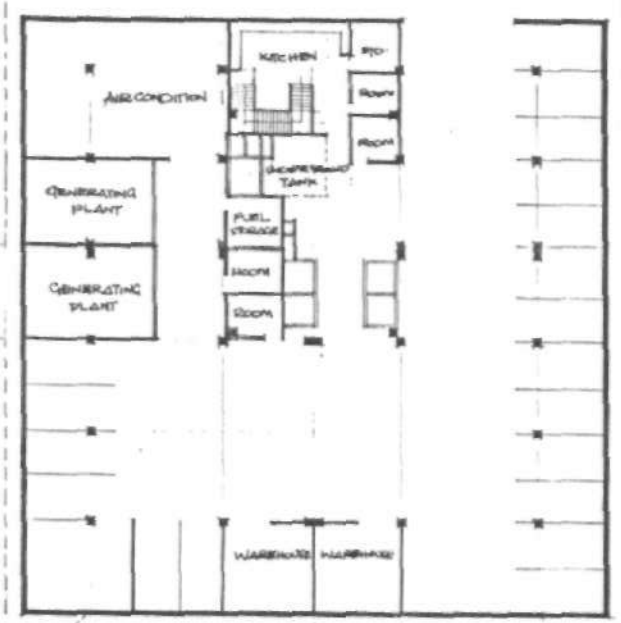

ramp up
shop
shop
shop
shop
atrium
entrance lobby
shop
shop
shop
shop
atrium
ramp up
Reception
male
female
male
female
shop
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atrium
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lab
ramp down



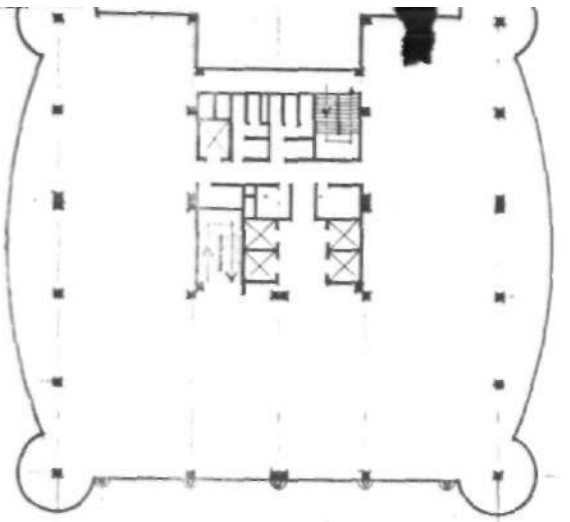
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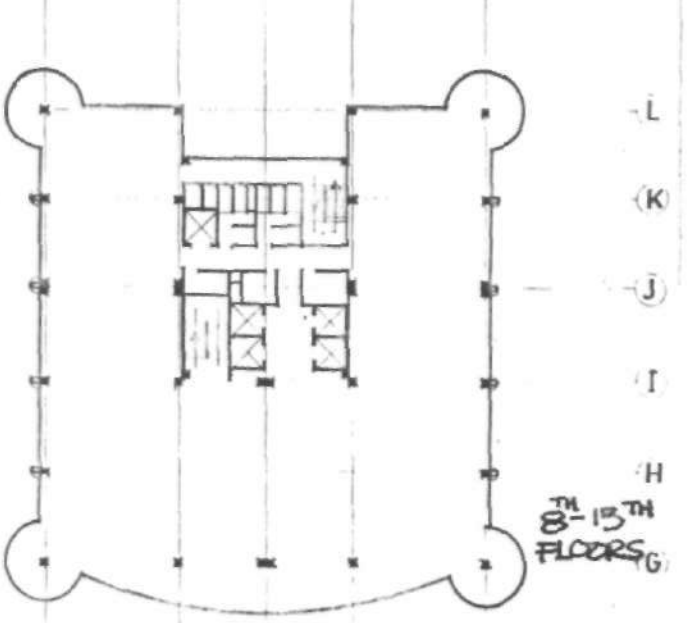
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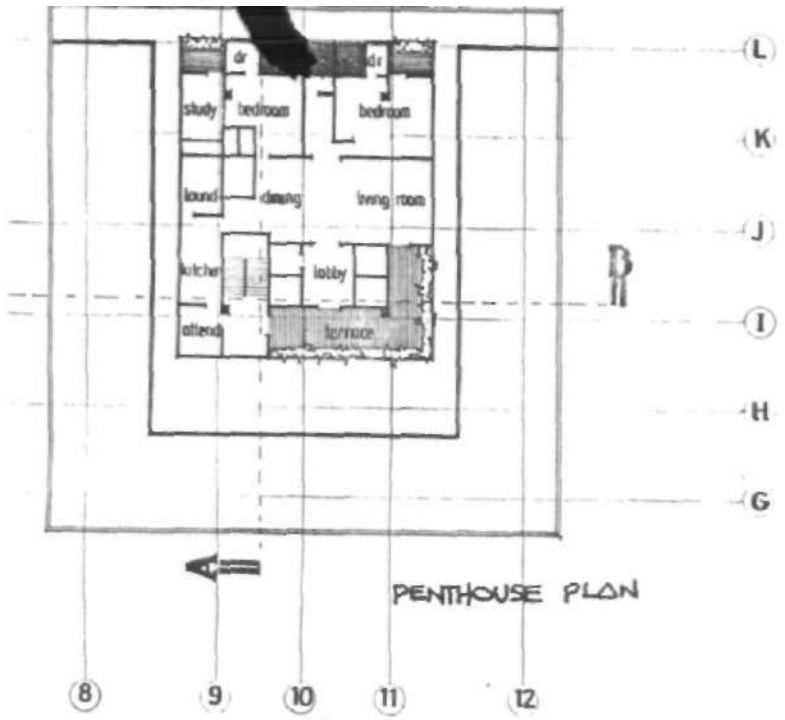
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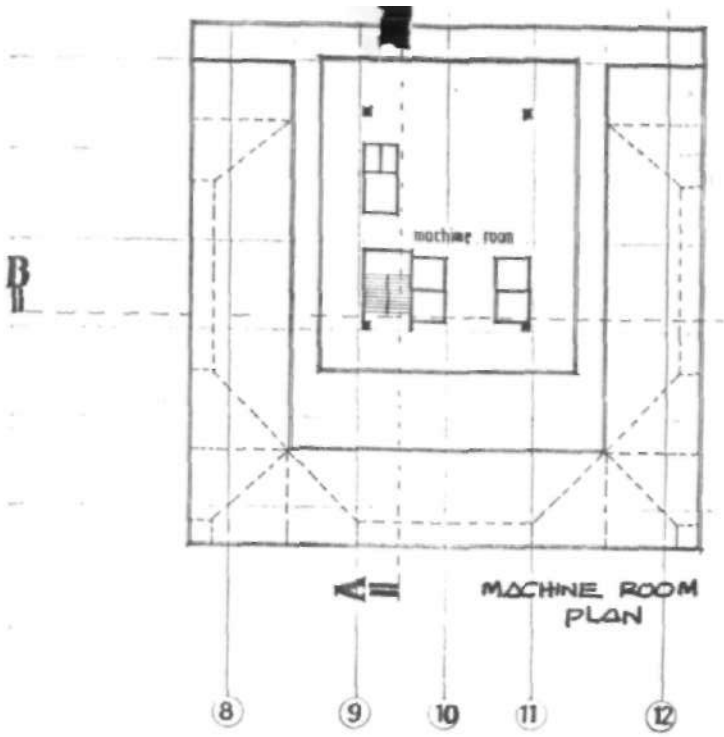
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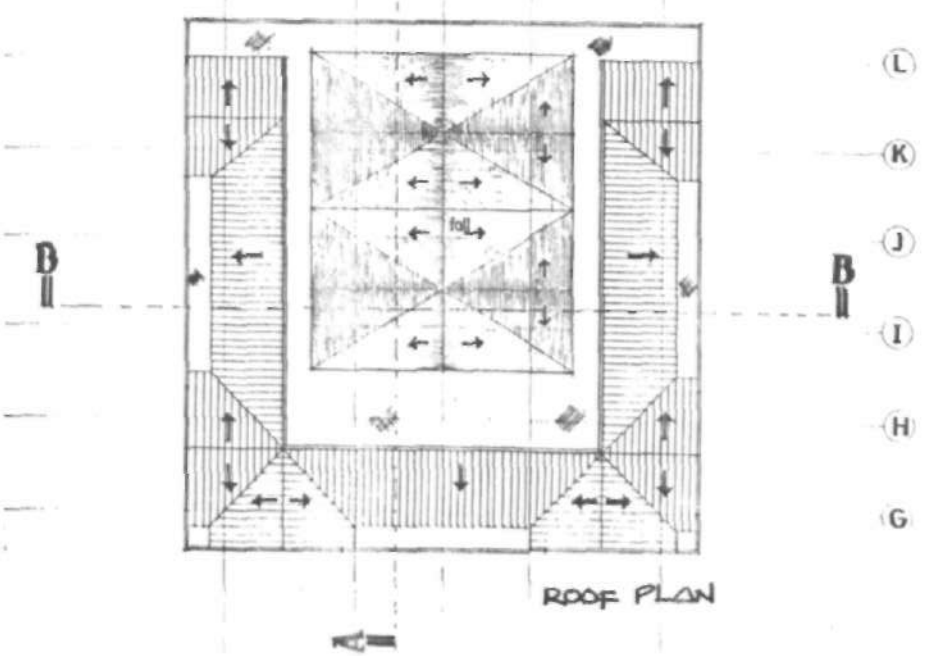
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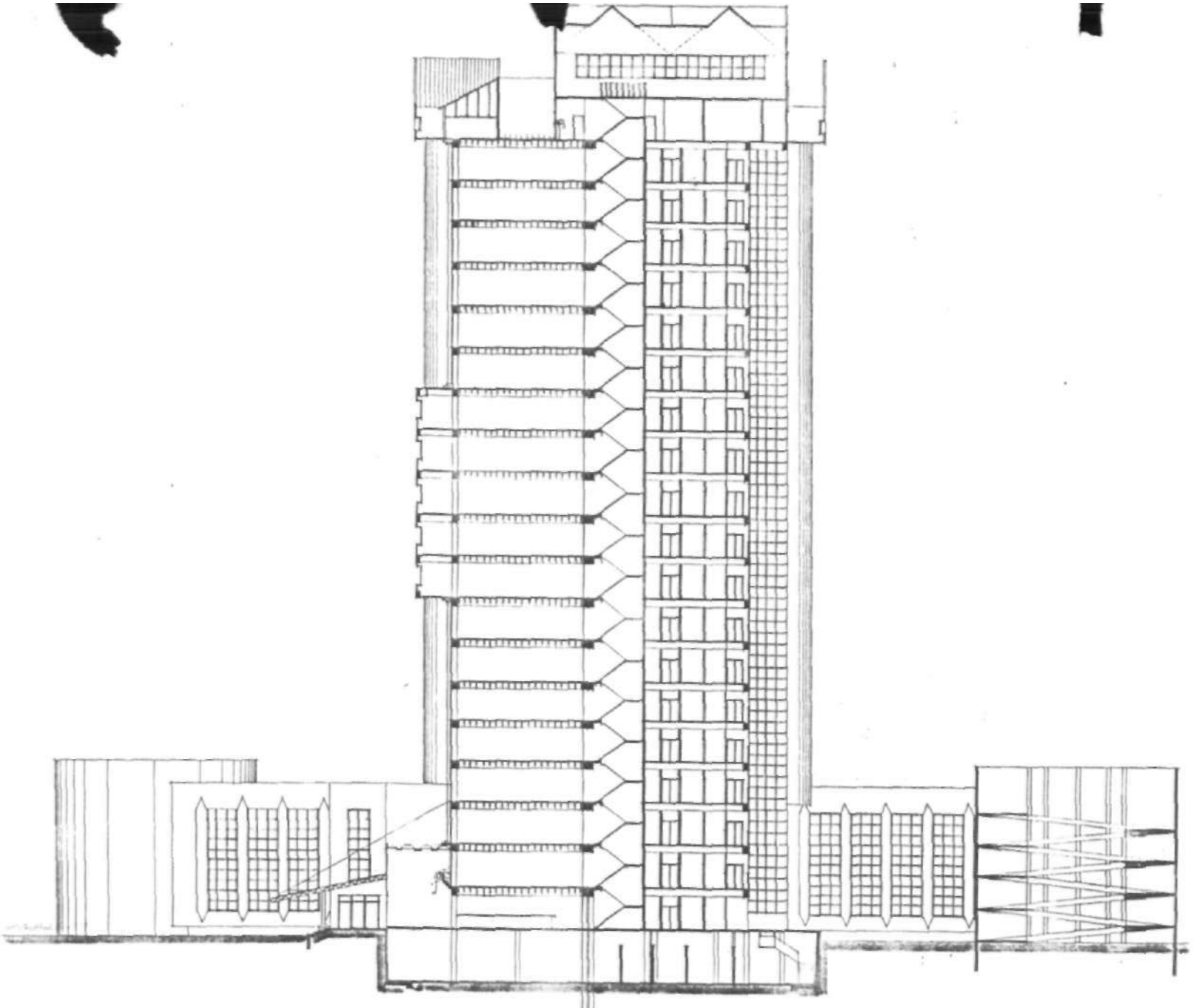
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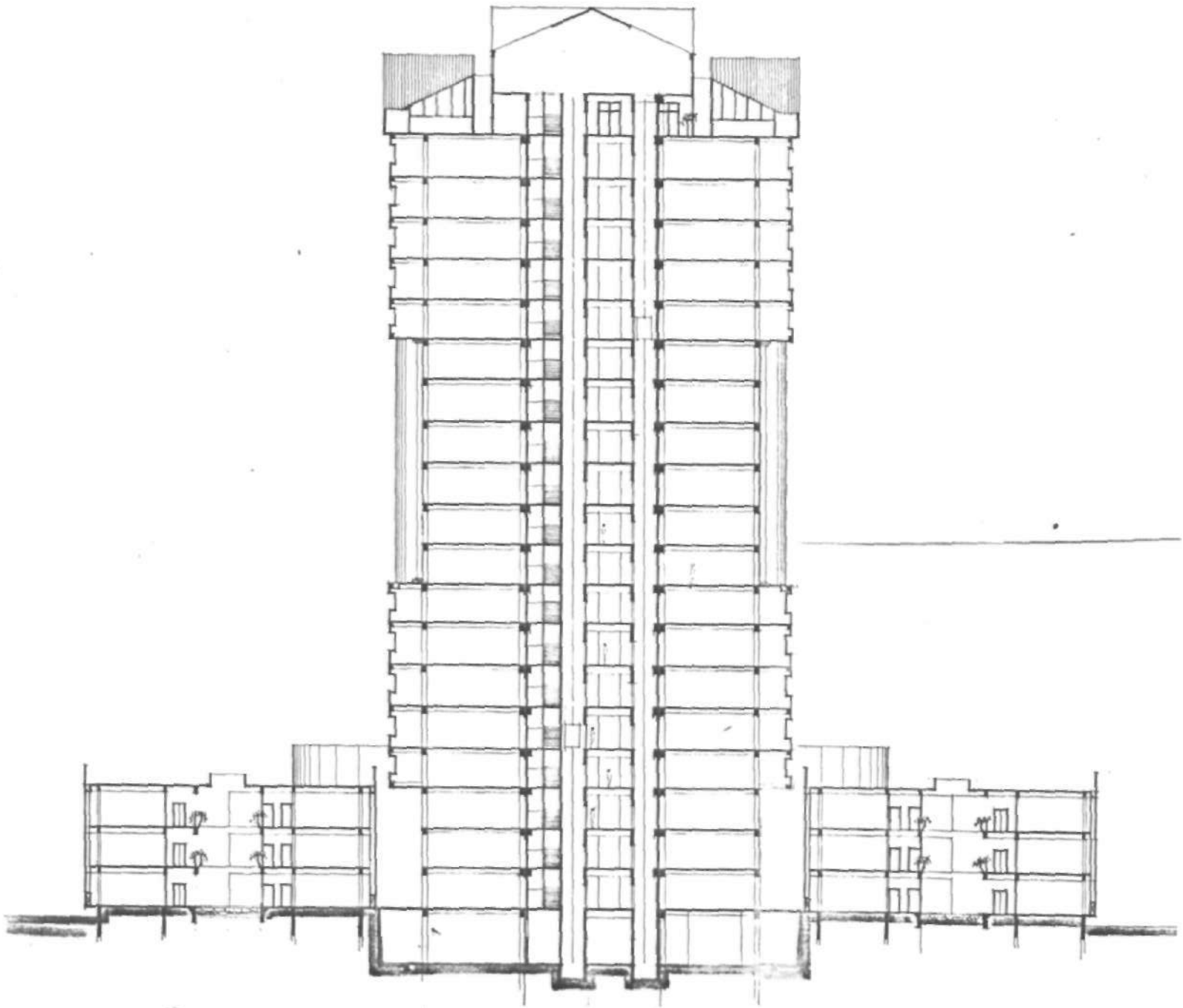
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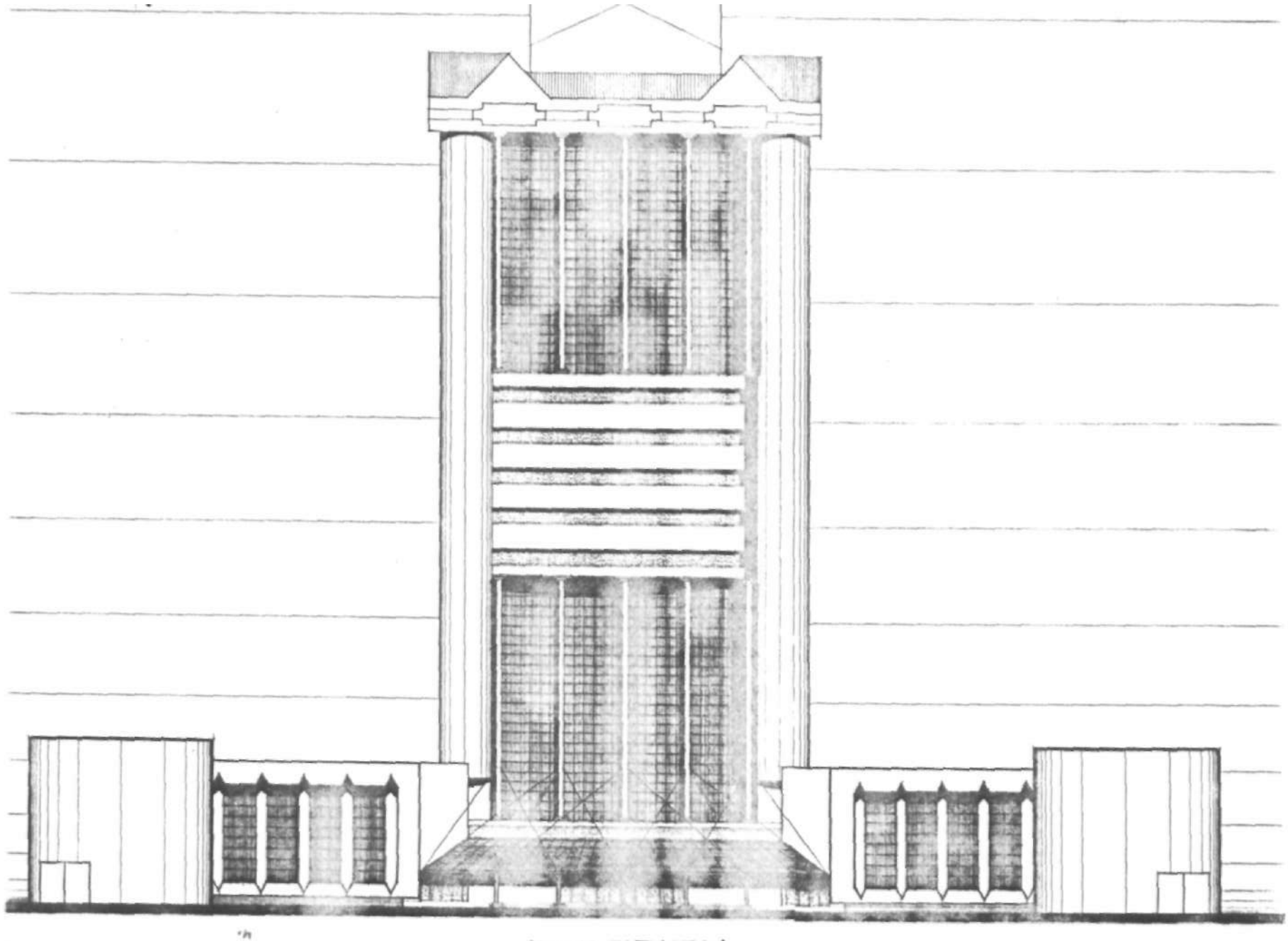
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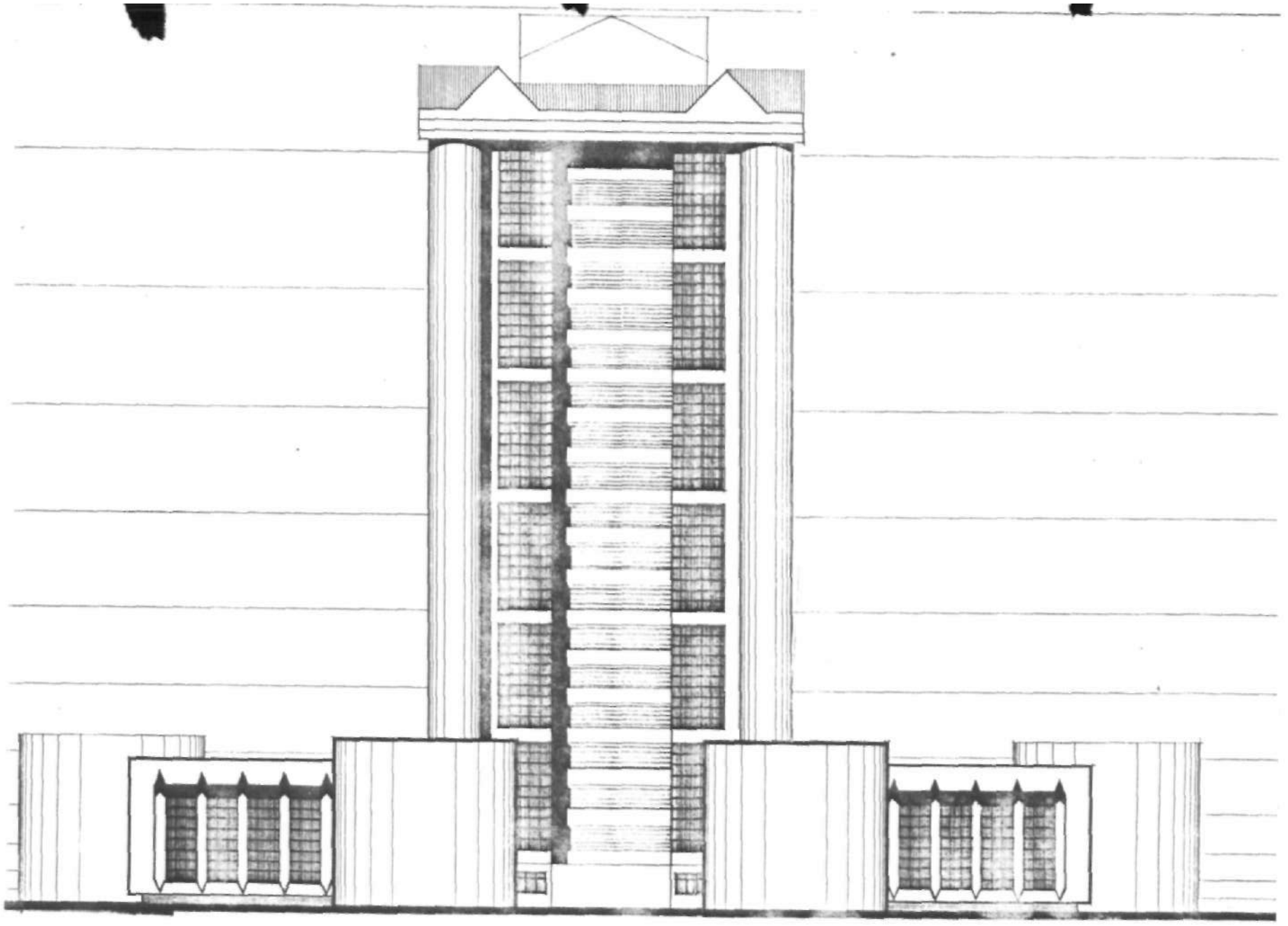
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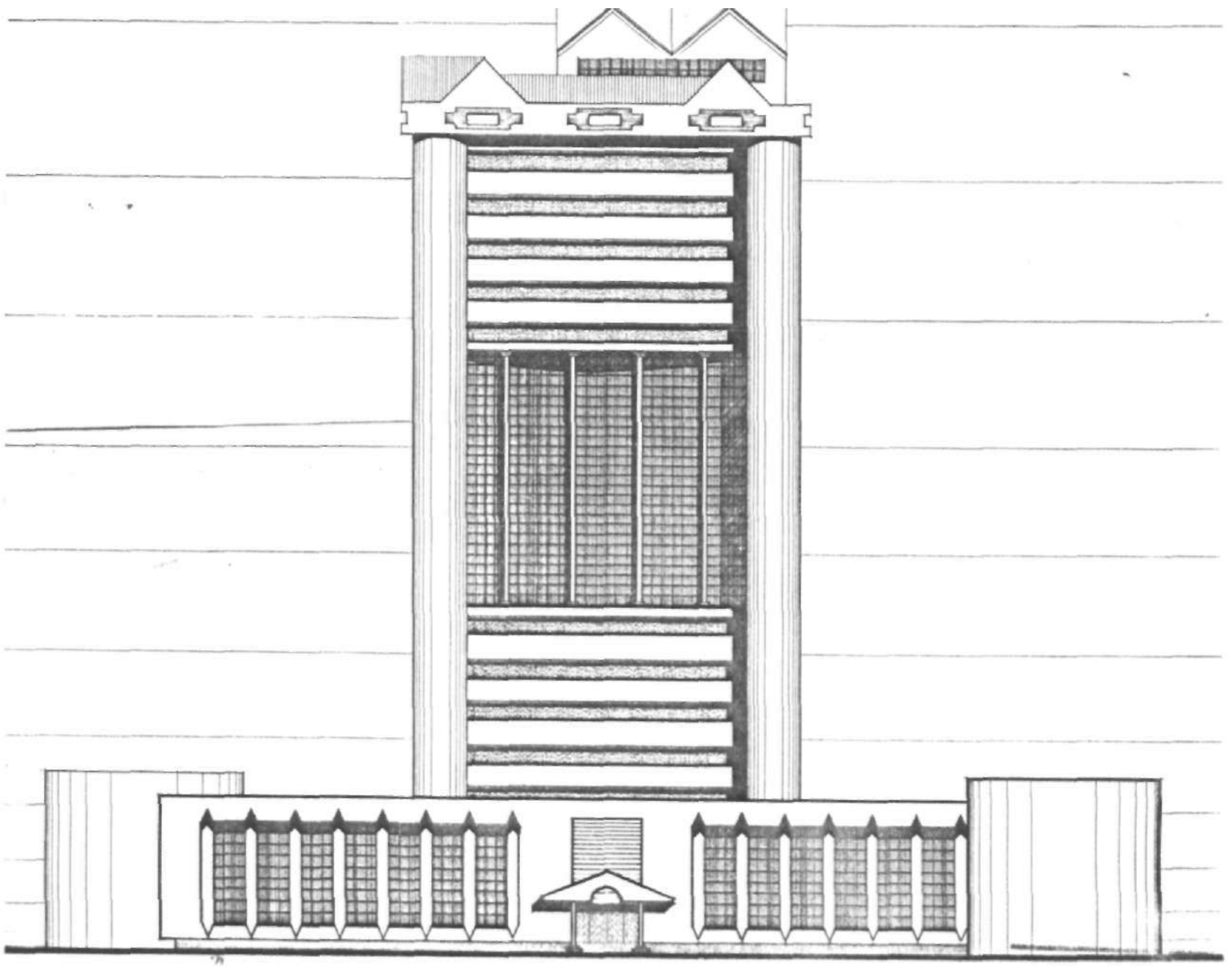
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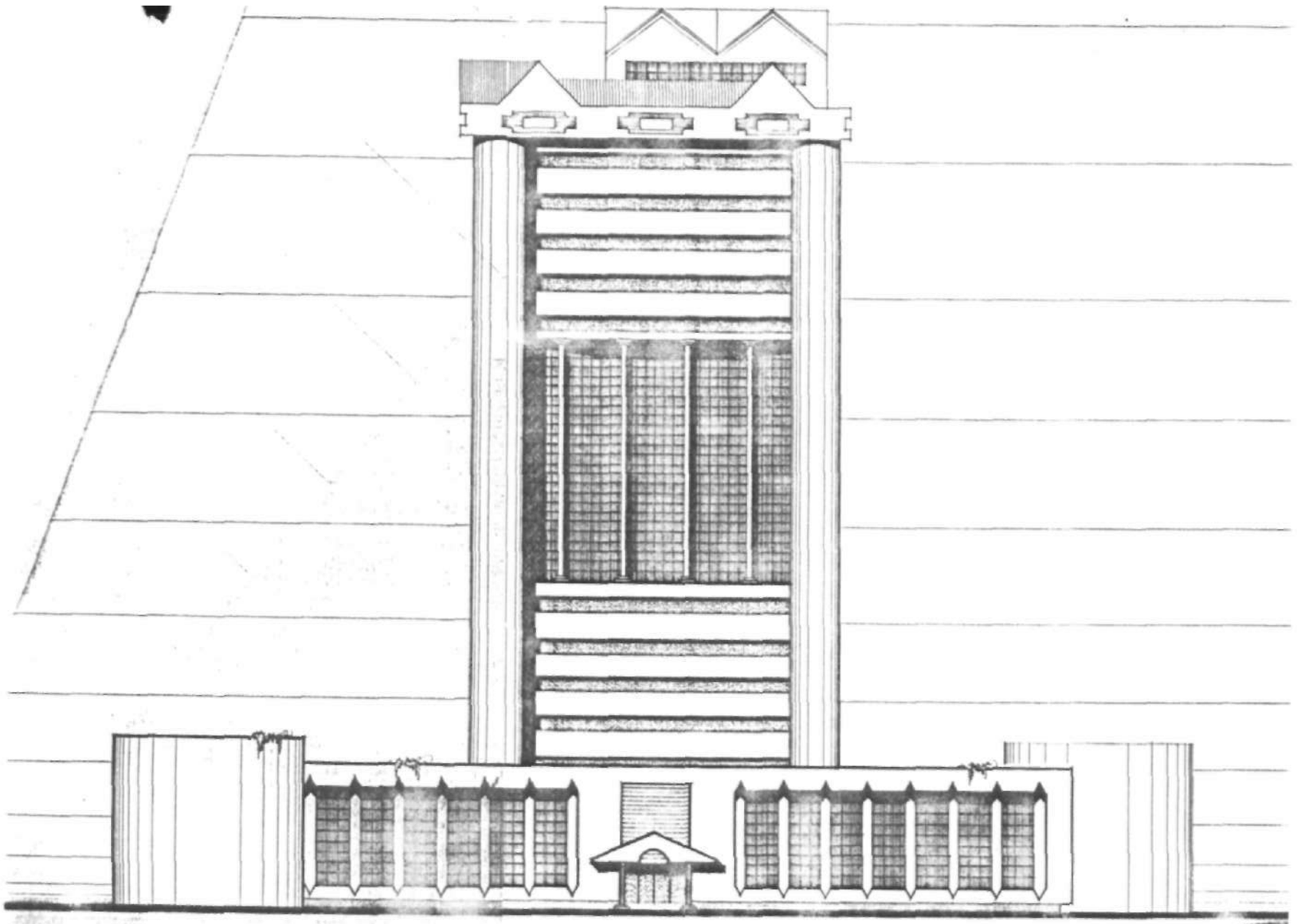
FRONT ELEVATION



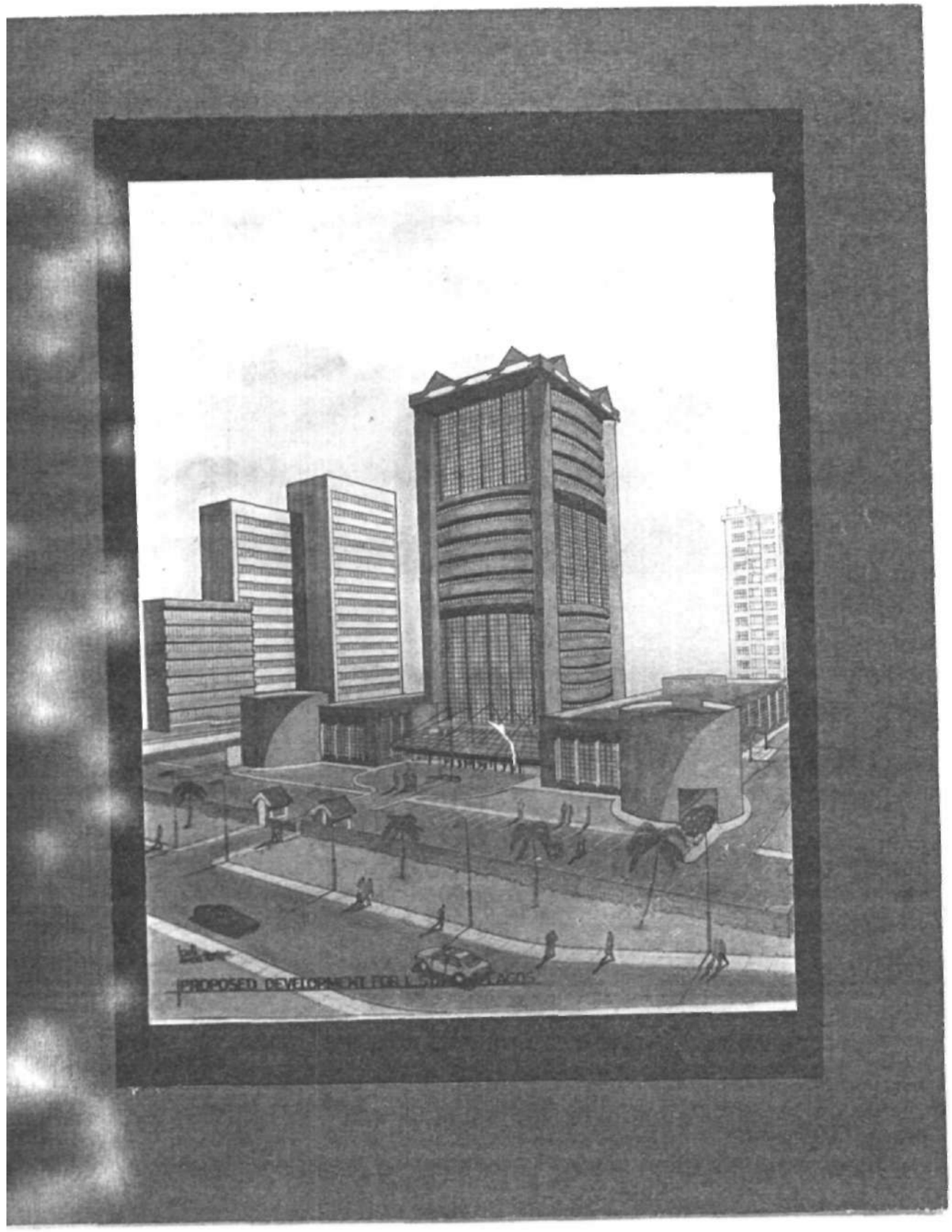
BACK ELEVATION



RIGHT SIDE ELEVATION



LEFT SIDE ELEVATION


PROPOSED DEVELOPMENT FOR L