NIGERIAN STOCK EXCHANGE BUILDING
KADUNA

(Social criteria in Business Architecture)

By

WILLIAM BARNABAS QURIX (B.Sc Hons)

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THOUGHTFUL QUOTES

"KNOWLEDGE IS OF TWO KINDS;
THE ONE WE KNOW AND THE
ONE WE KNOW WHERE TO FIND"

– LEONARDO DAVINCI

"WE HAVE REACHED A POINT
WHERE ARCHITECTS PRACTICE IN A
STYLE THAT SEEMS UNDEFINABLE
ON ANY THEORETICAL PRINCIPLES"

– BRUCE ALLSOP

DEDICATION

Dedicated to my late parents;
KABAI and BARNABAS who departed
this sorrowful earth in 1978 and 1981 respectively.

I shall see you someday.

"I am the ressurection and the life:
he that believeth in me, though he were
dead, yet shall he live.

John 11:25.

DECLARATION

I hereby declare that the information contained in this thesis is the result of an honest research undertaken by me and that no part of it had been accepted for publication in any journal or magazine.

All sources of information have been duely acknowledged by way of reference or otherwise. Direct references to texts have been quoted with sources also acknowledged.

Signature

21-7-87
Date

CERTIFICATION

This thesis entitled, THE NIGERIAN STOCK EXCHANGE BUILDING KADUNA by WILLIAM BARNABAS QURIX meets the regulations governing the award of the degree of MASTER OF SCIENCE OF Ahmadu Bello University and is approved for its contribution to knowledge and literary presentation.

Chairman, Supervisory Committee	Date
Member, Supervisory Committee	Date
Member, Supervisory Committee	Date
Member, Supervisory Committee	Date
Head of Department	Date
Dean, Post Graduate School	Date

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ABSTRACT

For the formulation of a broad economy which will be internally viable; more attention should be paid to long term investments- To mobilize the necessary long-term fund, the Nigerian Stock Exchange (NSE) according to Alile (1987) is the "Invisible hand" that can effect this.

Investigation however shows that:

I After 25 years of existence the Nigerian Stock Exchange NSE has not fully occupied its place in the country.

II While the main branch in Lagos is housed in a 24-floor skyscraper flanked by commercial offices, the Kaduna branch does not own any personal building, rather it is housed on a rented floor in an off—centred location along Kanta Road.

Ill The Stock Exchange has generally been regarded as an elitist club the activities of which are hidden to the populace.

IV Due to growing awareness in the market, it has been anticipated that by the year 2000 A.D its present facilities will be inadequate.

Goals and objectives

In view of the fact that more securities are becoming quoted on the Stock Exchange and recent steps taken by the Federal Government to enhance its function, the thesis shall seek to:

I Identify those facilities that may be necessary for its function and propose a design to suit this function.

II To identify the reasons that may be responsible for the unpopular view held against the Stock Exchange and thereby use architectural means in their redemption.

III To integrate the building to the environmental context of its site.

Theoretical aspects of the NSE shall be de—emphasised but emphasis will be given to operational aspects that affect the architecture of the building.

Conclusion

Architecture still finds a place in advertisement, the thesis intends to use architectural means, symbols and language in sparking a greater awareness of the activities of the NSE.

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Definitions

Dealing members = Include the stock brokers, jobbers and specialists

Ordinary members = Those who buy and sell shares on the stock market

Social criteria = What is based on public opinion

Imagery = Formation or improvement of a reputation

Other words that do not appear above but are in the text have been defined wherein.

CHAPTER 1

1.0 INTRODUCTION

1.1 Theoretical Background

In these days of economic crunch when many proposals are being made as to what the Nigerian economy should be, many developing nations that depend on only one or two trade commodities like, Zambia, Cuba, Mauritius are denied the income stability that goes with more diversified economies such like the United States, Japan, Britain, etc [1].

For the formulation of a broad based economy, attention should be paid to long-term investments which lay the foundation for industrialization and economic development, this will require long-term funding and the Nigerian Stock Exchange (NSE) is in the words of Alile[2] is the invisible hand that can effect this.

The Stock Exchange is not just a forum for trading in shares but it also serves as an institution for the implementation of policies relating to banking, its role therefore in the development of economies cannot be over emphasized.

Today, the Stock Exchange is 26 and the market can still said to be shallow. Nevertheless, reasons advanced for its shallowness include among others: stringent listing requirements, cost of public and the fear of losing ownership.

Research has shown that many Nigerians are becoming aware of the market, for instance, 19 securities were listed on the Exchange in 1961, the number rose to 153 in 1980 and today, there are about 180 securities listed on the

Exchange[3].

Furthermore, measures have been taken like the introduction of the Second-tier Security Market (SSM) and the privatization move by both States and Federal Government all in bid to get more securities listed.

1.2 The Stock Exchange and Architecture

As should be expected of any institution, the Stock Exchange requires certain facilities to operate effectively such facilities include, the call-over room, Library, Offices, etc. These normally are housed in a Stock Exchange building.

In a typical Stock Exchange building the following can usually be found: The Stock Market(s), Offices for intermediaries like Banks, Issuing houses, Stock broking firms, Corporate lawyers, Advertising companies and Postal agencies.

Investigation however shows that:

I While the main branch of the NSE in Lagos is housed in a 24-floor skyscraper flanked by commercial offices, the Kaduna branch does not own any personal building, rather it is housed on a rented floor in an off-centred location along Kanta Road.

II The Stock Exchange has generally been regarded as an elitist club the activities of which are hidden from the populace

III Due to growing awareness in the market, it has been predicted that by the year 2000 A.D its call-over room, offices and the Library will be inadequate for its effective function.

Architecture has been used in the past as a strong weapon for altering public opinion about business institutions of which the Stock Exchange is one, here in Nigeria financial houses lead in the use of this vital tool. One just needs to look around Marina, Lagos. The design is however being proposed for Kaduna whose environmental context will be crucial.

1.3 Goals and Objectives

Having established the phenomenon of the Stock Exchange and its relevance to the Nigerian economy the thesis shall for the Kaduna Stock Exchange seek to:

I. Identify those facilities that may be necessary for its effective performance and thereby propose a design which recognises both present and future needs. While doing that, the size of the market by 2000 A.D shall be in focus.

II. To find out reasons that may be responsible for the unpopular view held against the NSE and thence find out the place architectural language can take in their redemption. Here an indepth study of firms will be made to realise which which may be relevant to the site of the project. Such a form should identify with the environment. Architectural signs and symbols will also be used so that on the whole social criteria in the design will be given emphasis.

III. To make use of location advantages of site to create an environment of awareness and experience with both the building and its function. The prominence which the building receives with respect to other buildings surrounding it shall be examined in this case.

1.4 Methodology of Research

As this involves a special facility the composition of which is not likely to vary much, the thesis shall rely on case studies of already existing Stock Exchanges in the formulation of the design brief, reference will nevertheless be made to relevant literature. Photographs will play a great role in the documentation of relevant offices to be studies and questionnaires will be distributed to such offices to assess the present level of office, accommodation, where possible dialogues, interviews and examination of literature will be done to assess public opinion about business buildings in the formulation of a social criteria for the design. The research shall therefore comprise of data collection, data synthesis and a design proposal.

1.5 Scope and Limitations

In view of the nature of the project, theoretical aspects of the stock exchange shall not be emphasized, emphasis will however be goven to the operational aspects that are architectural determinants such as, mode of trading, administration, etc.

Case studies will be taken from both Nigerian and abroad, these will form the basis of the brief though not absolutely as any relevant literature would be used.

The office building survey will be concentrated in Kaduna and Lagos considering that the two stock exchanges are located there, yet if necessary, reference will be made to other offices outside these towns.

The thesis shall as much as possible follow the Kaduna City Centre development plan proposed by the Kaduna State government but shall not hesitate to make suggestions of relocation or otherwise if necessary.

1.6 Financers

As the stock exchange comprises of wealthy Nigerians whose aim is to realise capital and the building being a corporate building that is expected to be leased to tenants will be adequately financed by its owners who include bodies, individuals and governments. This is possible when one realises that the development of the City Centre itself is being undertaken by companies, individuals and governments some of which are members of the NSE.

1.7 Thesis Structure

The first chapter of the thesis is concentrated on establishing the relevance of the stock exchange to the Nigerian economy and its relationship to architecture, this is followed by a detail study of cases and an examination of relevant literature after which a conceptual framework is drawn. Chapter three deals with architectural problem of the NSE as formulated in the preceding chapter. In chapter four an outline of concepts to be used has been made and is followed by the actual design in chapter five. Chapter six is the summary and conclusion.

1 Brandt, W. et al., (1980). Commodity trade and development Anthony, S. (Ed. adviser)
North South: A programme for survival - Pan Books London, pp 141-159.
The report of the independent commission on international development issues.

2 Alile, H. (1987). On the stock exchange after 25 years in "Behind the headlines", Radio Nigeria Lagos programme highlight of problems of the stock exchange in an interview.

3 Ibid (1985). On the stock exchange at 24. Management in Nigeria. pp 8-11.

4 Nduka, A. (1986). On the Nigerian Stock Exchange, 24 years after. The African Guardian - 29(5) pp 9-31.

CHAPTER 2

2.0 CASE STUDIES

The importance of case studies to this thesis has already been stated in the preceding chapters. In this chapter, three classes of case studies will be examined viz: Stock Exchanges, Financial houses and other relevant offices, the conclusions drawn herein will be a basis for the formulation of a conceptual framework within which further arguement will be presented.

2.1 Relevant literature

Much of the writing that has been done on the stock exchange is about its operational aspects. In his book about the Nigerian Financial System its structure and growth, Okigbo, P.C. (1981) outlines the functions of the stock exchange and the different methods of trading on the exchange floor. Similarly, Fider, K.R. (1973) enumerates the rules, practice and procedures of the then Lagos stock exchange, he states the detail procedures involved in buying and selling and the functions of the different groups involved like the brokers, jobbers, etc. Morgan, E.V. and Thomas, W.A. (1962) writing on the history and functions of the stock exchange, traced the origin of stock markets and early forms of trade, a detail history of the London stock exchange has been given from the original house at Throgmorton Street through the coffee houses to its present location, at each point giving the number of actors or members involved.

Recently the Director-General of the NSE, Alile, H in

his book "The Nigerian Stock Exchange its operations and functions" explains the present situation of the NSE and expresses optimism about its growth in the future. Many other books like "The Stock Exchange", Berman, H.O. (1971), Rix, M.S. (1954), etc. have been written but less is mentioned about the stock exchange building itself. A different set ot others however exists who although do not write about stock exchange buildings, discuss business architecture like, banks, insurance houses and other corporate houses. Such authors like, Sexton, R.W. (1928), Barr, F (1895), Montgomery, S. and Gibbs, K discuss the use architecture has served to this corporate houses in the manipulation of public opinion about them, the same are said to be built with a consciousness of instilling confidence in customers and users.

It is worth noting that the stock exchange fits into this category of buildings and like any other financial house seeks to potray a quality of confidence, sanctimony and business.

In the thesis many other relevant writings and existing Stock Exchanges will be discussed.

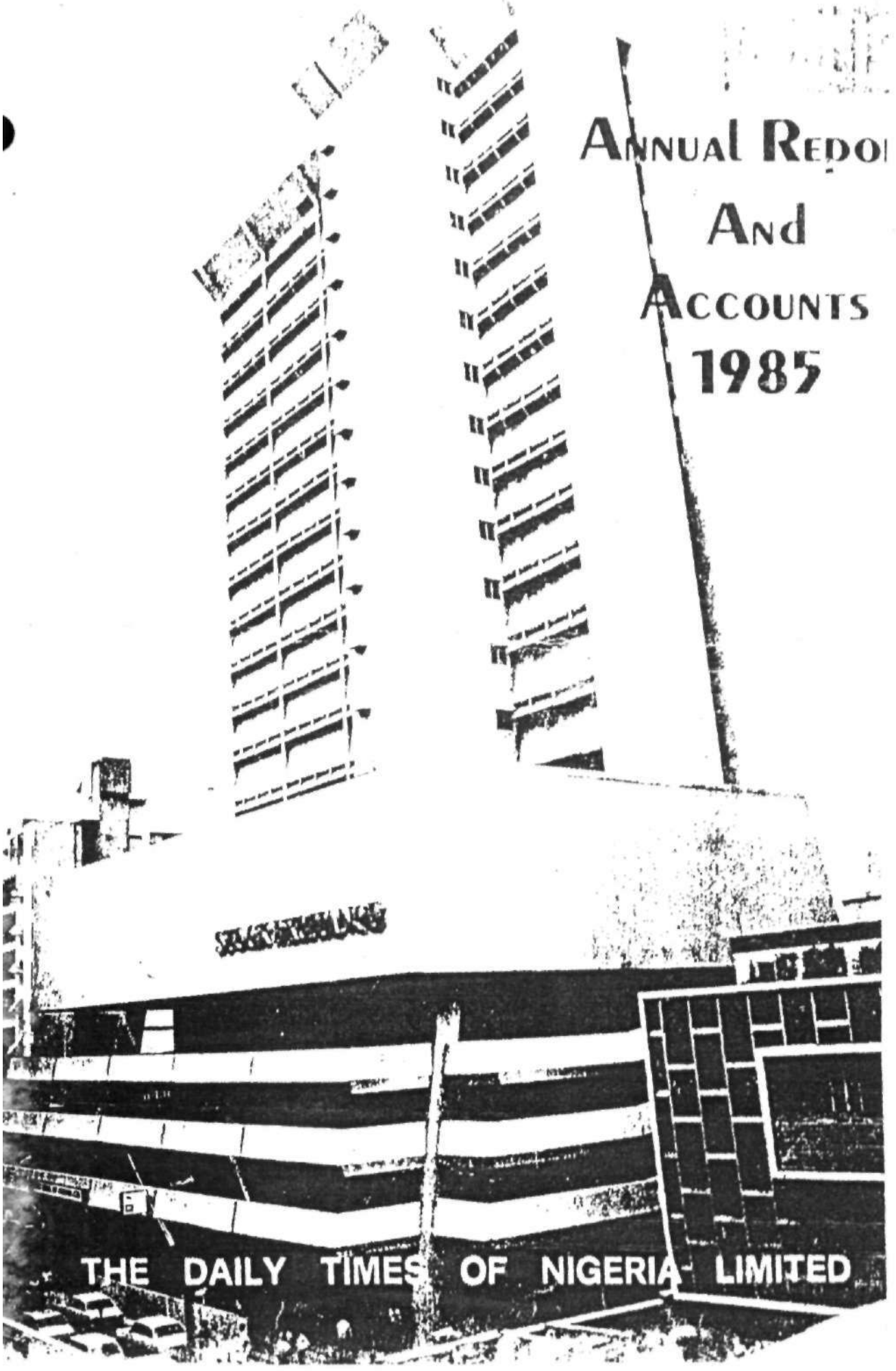


Plate I, The Lagos stock Exchange.

2.2 THE LAGOS STOCK EXCHANGE

2.2.1 Historical brief

Before 1961, there was no resale market for securities and the transfer of government bonds was done by the Central Bank.

The Lagos Stock Exchange was incorporated on 15th September, 1960 and dealing started on 5th June, 1961. The market has since grown over the years both in capitalization and activities (See Fig. 1).

Following the rejection of the Okigbo Financial Review Committee Recommendations the Federal Government established a Nigerian Stock Exchange with branches in Lagos, Kaduna and Port-Harcourt[1].

2.2.2 Operations

The initial intention of setting up the Lagos Stock Exchange was to cater for the Lagos Zone of transaction which includes, Ibadan, Ilorin and neighbouring towns. The operations of the Lagos Stock Exchange have a direct bearing on its architecture. In Lagos the following functions are performed:

I. Administration - Its entire function is controlled through an administrative unit headed by a director, who is surbordinated by managers and other staff. Because of the need for some privacy the managers are housed in an executive floor (See Fig. 2). The Intermediate and Junior staff are housed on another floor with adequate office facility to cover a number of about 24 (Fig. 3).

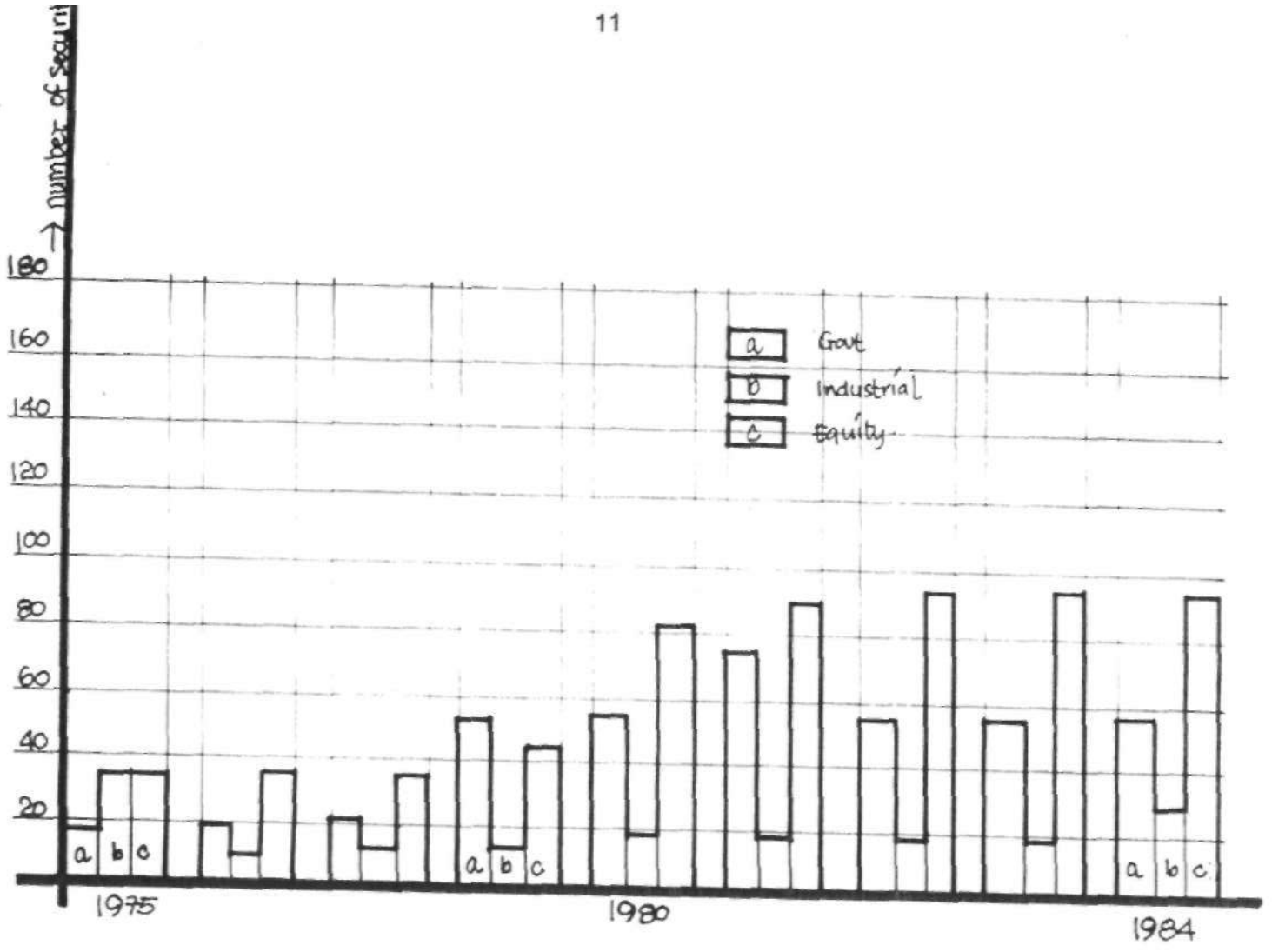


Fig 1. Growth in number of securities
Source: Stock Exchange Market report, 1985.

II. Research and Publication - This unit is concerned with all matters of reseach and publication as related to the affairs of the stock exchange. This section is headed by a top executive, a manager and other eight members, no special facility exists for this as typing and other necessary works are done within the offices.

III Quotations - This deals with the listing of securities and the like, it is headed by a top executive and six others. Other sections are, accounts and auxilliary services. Below is a breakdown of staff

Trading on the exchange floor

At the present level of the market, about 40 brokers attend a call-over session in a 7 by 10 metre room. Trading on the floor begins at 2.30 pm everyday except on Saturdays, Sundays and Public holidays. During trading sessions, only members of the exchange, their accredited representatives and clerks are allowed into the exchange room, others are by specific permission. At the trading sessions, members remain seated in their places (Plate II), and a stock exchange official announces the securities to be traded on one after the other while trading proceeds amongst brokers and jobbers, this system is called the call-over and is suitable where the securities are not many. As the securities are called if any broker has an order from a client to sell or buy, he indicates and quotes two prices the lower one for buying while the higher is for selling, another member who has been instructed by his client to buy or sell a security strikes a bargain if the price is acceptable to him. On the whole no vigorous movements are involved, rather brokers remain seated until the session is over[2].

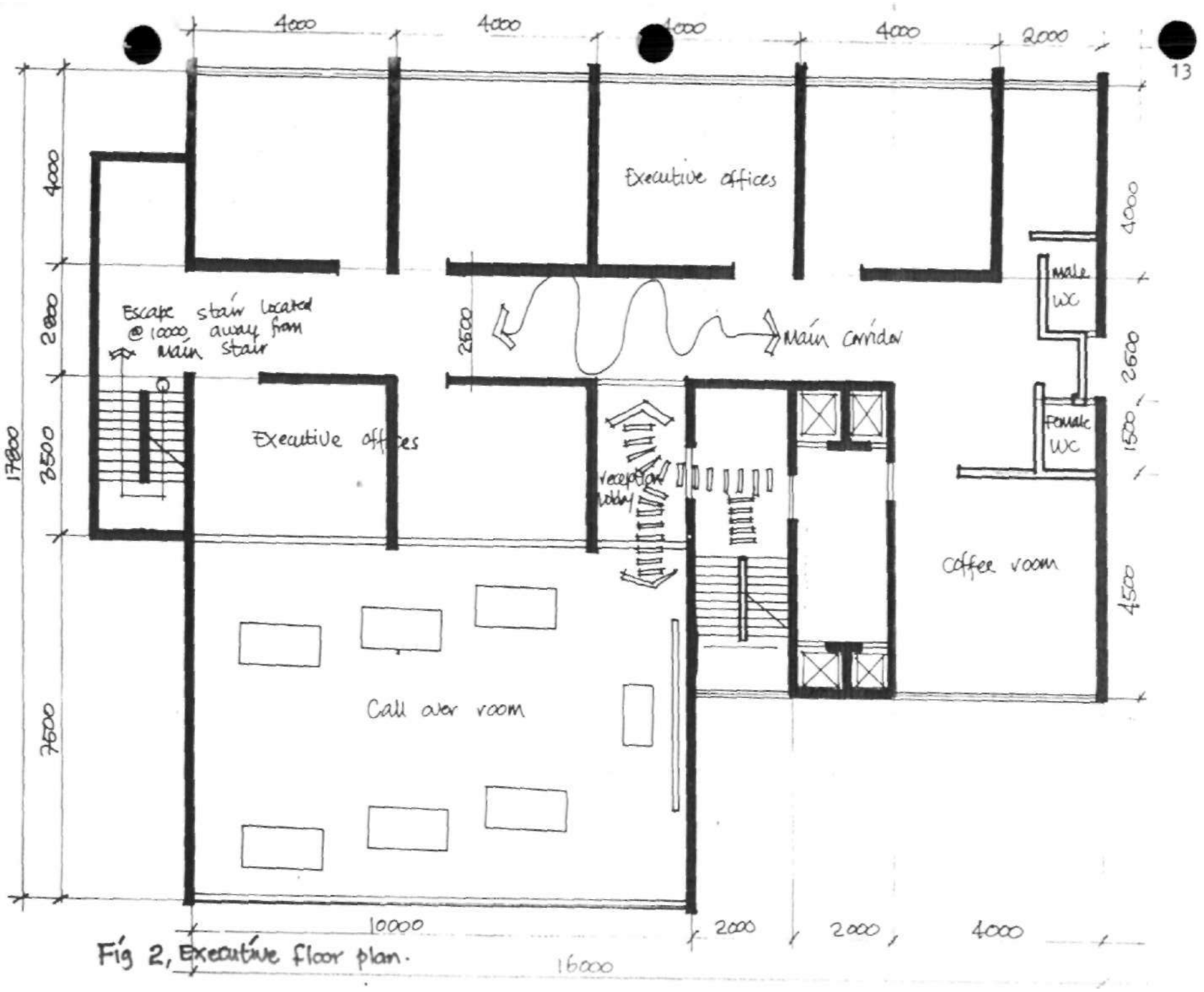


Fig 2, Executive floor plan.

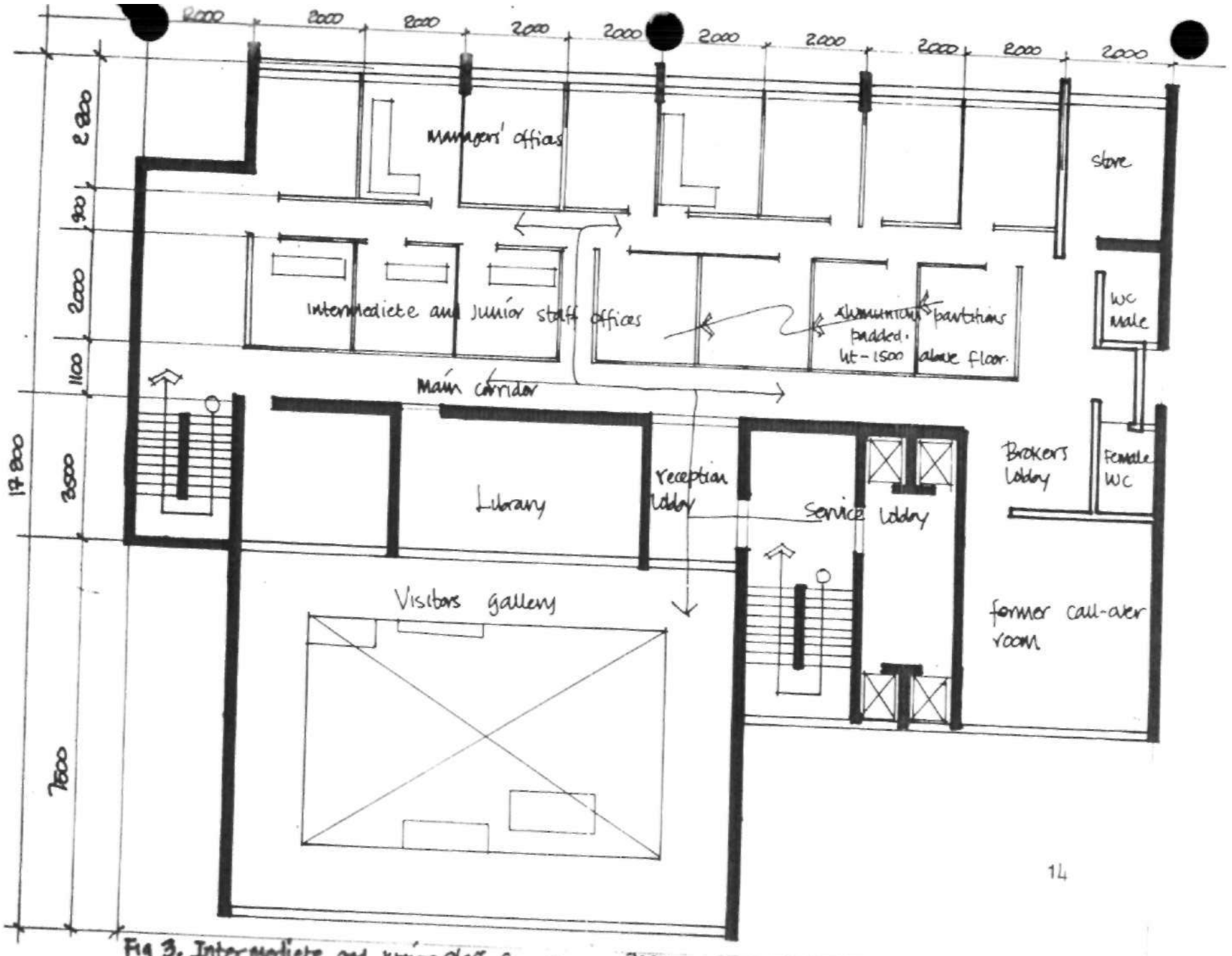


Fig 3. Intermediate and junior staff floor plan. 2000

Table 2.1 Breakdown of staff at the Lagos Stock Exchange

Unit	Top executive	Managers	Senior staff	Intermediate/ Junior staff	Auxi lliary	Tota
Administration	2	1	3	8	6	18
Research and publication	1	3	2	4	–	10
Quotations	1	2	–	4	–	7
Accounts	C o m b i n e d W i t h A d m i n s t r a t i o n					
Second-tier securities	1	2	1	3	–	7
Others	(Council members)					at le 30
					Total =	72

Category of Members

The following categories of members exist:

I. Council Members - They include, chairman, deputy-chair man and at least five others drawn from both ordinary and dealing members, the whole council meet in the exchange room from time to time. They are about thirty.

II. Ordinary Members - These are persons or firms whose applications are acceptable to the council of the exchange for registration.

III. Dealing Members - These include brokers who transact business on behalf of client, jobbers who deal on their own account and specialise in groups of securities[3]. There are 21 dealing member firms stationed in various parts of the country.

Visitors to the Exchange

Initially visitors were not allowed to the Stock Exchange because of the secrecy with which the affairs of the exchange are handled, reasons adduced to this can be suggested when one considers the fact that public finance is involved, the excerpt below explains further:

> There are three basic reasons for this trading restriction, first trading on the stock market involves a relatively complicated technical procedure which could turn into chaos if any outsider merely wandered into the market. Secondly, the stock exchange deals in peoples' savings which must be protected from fraudulent or ignorant manipulation[4].

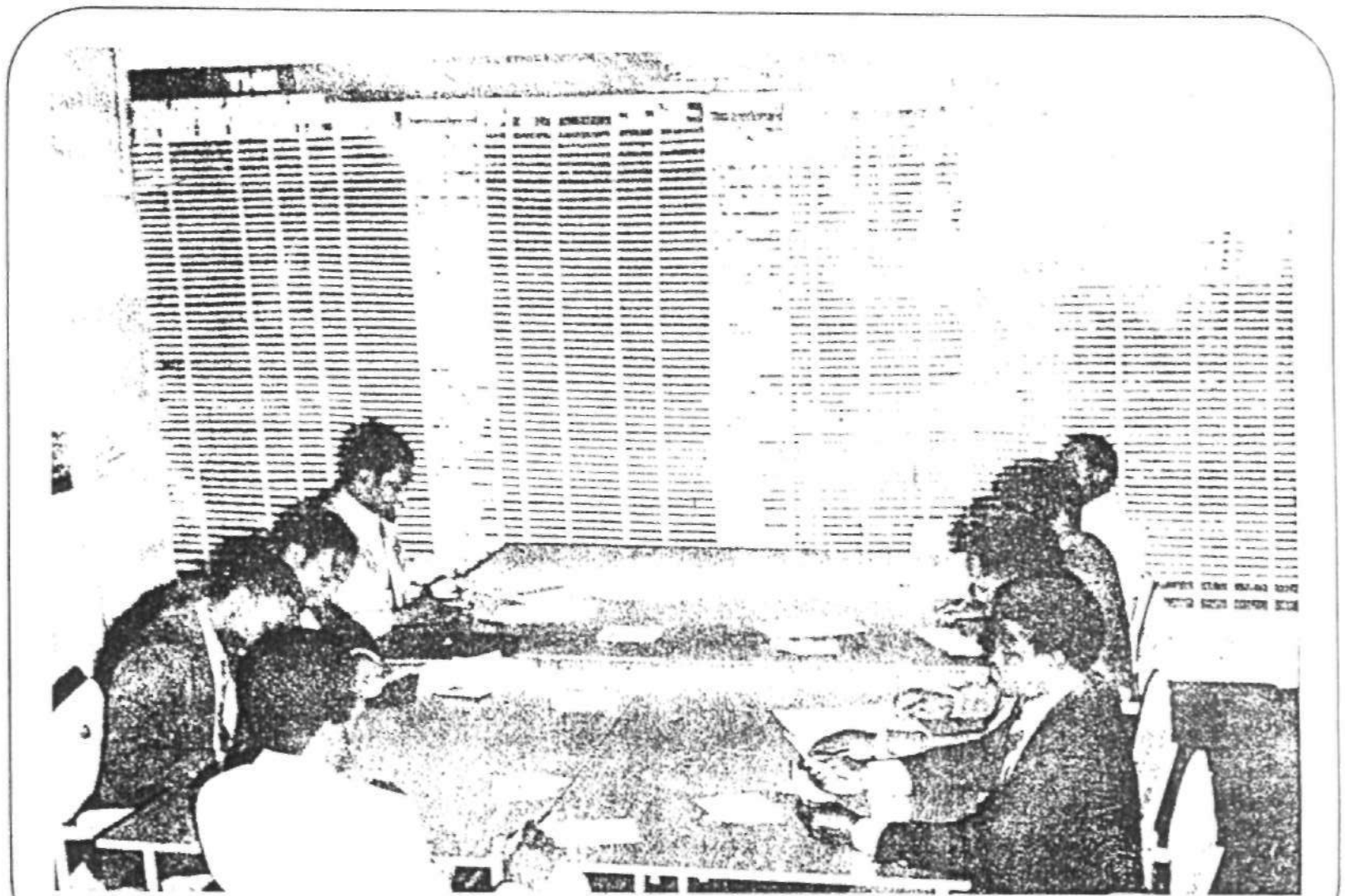


plate II Callover session at the Stock Exchange.

It is therefore no wonder that visitors were restricted. Presently a visitors gallery exists where visitors although kept away from the transactions can have an over view of the trading sessions. This innovation is an attempt to bring the public into the picture of what happens at the exchange and to disabuse the minds of those who may think that stock exchange is a cult.

2.2.3 The Architecture of the Stock Exchange

"Those whose business is to business in the exchange come complete with designer suit, silk ties, choice shoes and the distant sanctimonious posture associated with the exalted business of investment"[5].

Located in the commercial heart of Lagos, The steel and concrete 24-storey skyscraper exudes the characteristic confidence of the world of big capital. The stock exchange occupies three floors of the stock exchange building in Marina, whose interior treatment is elegant, for not only are expensive aluminium partitions used for demarcating offices, the offices themselves are well furnished. Other office spaces of the building are leased to banks, broking firms and other corporate bodies. Parking spaces have been provided for the office users, this is to be appreciated considering the location of the building. The architecture of the Lagos Stock Exchange is thus not accidental but it is logical to the satisfaction of both users and owners (See Plate I).

2.2.4 Conclusion

The aspirations of a client are normally reflected in the design of an edifice. The Stock Exchange building exudes elegance, confidence and sanctimony normally

associated with the world of financial business. Beyond this architecture of special requirement is a conscious attempt to manipulate the mind of an observer.

2.3 The Kaduna Stock Exchange

As stated earlier, it is one of the branches of the NSE situated in the North.

2.3.1 Location

The Kaduna Stock Exchange which does not own any personal property is housed in a rented space in Turaki Ali house, a corporate structure mainly occupied by business firms. Its location is disadvantageous in a sense that it is not easily noticeable, however it enjoys the advantage of the presence of financial firms which have bearing on it since they act as intermediaries between the public and the stock exchange.

2.3.2 Operations

Being a branch of the NSE, the operations of the Kaduna Stock Exchange is similar to those of the Lagos Stock Exchange. The facilities available include: the call-over room, library and two offices commensurates with the size of the market. Twenty stock brokers attend a call-over session and are seated as shown in Plate II. About 60,000 shares change hands weekly

2.3.3 Future Outlook

The withdrawal of millions of naira from circulation by the Federal Government and the privatisation of firms by State Governments are moves that are expected to boost the activities of the Stock Exchange[4]. Although accurate

growth rate cannot be established.

It is much anticipated that by the year 2000 A.D the strength of the market should increase by 7 to 10 times considering a historical growth rate of approximately 12 times in 25 years, in which case the present staff strength of 8 should also grow to at least 60, but the fact cannot be neglected that with the introduction of modern processing equipment an increase in the size of the market may not attract a directly proportional increase in the member of staff.

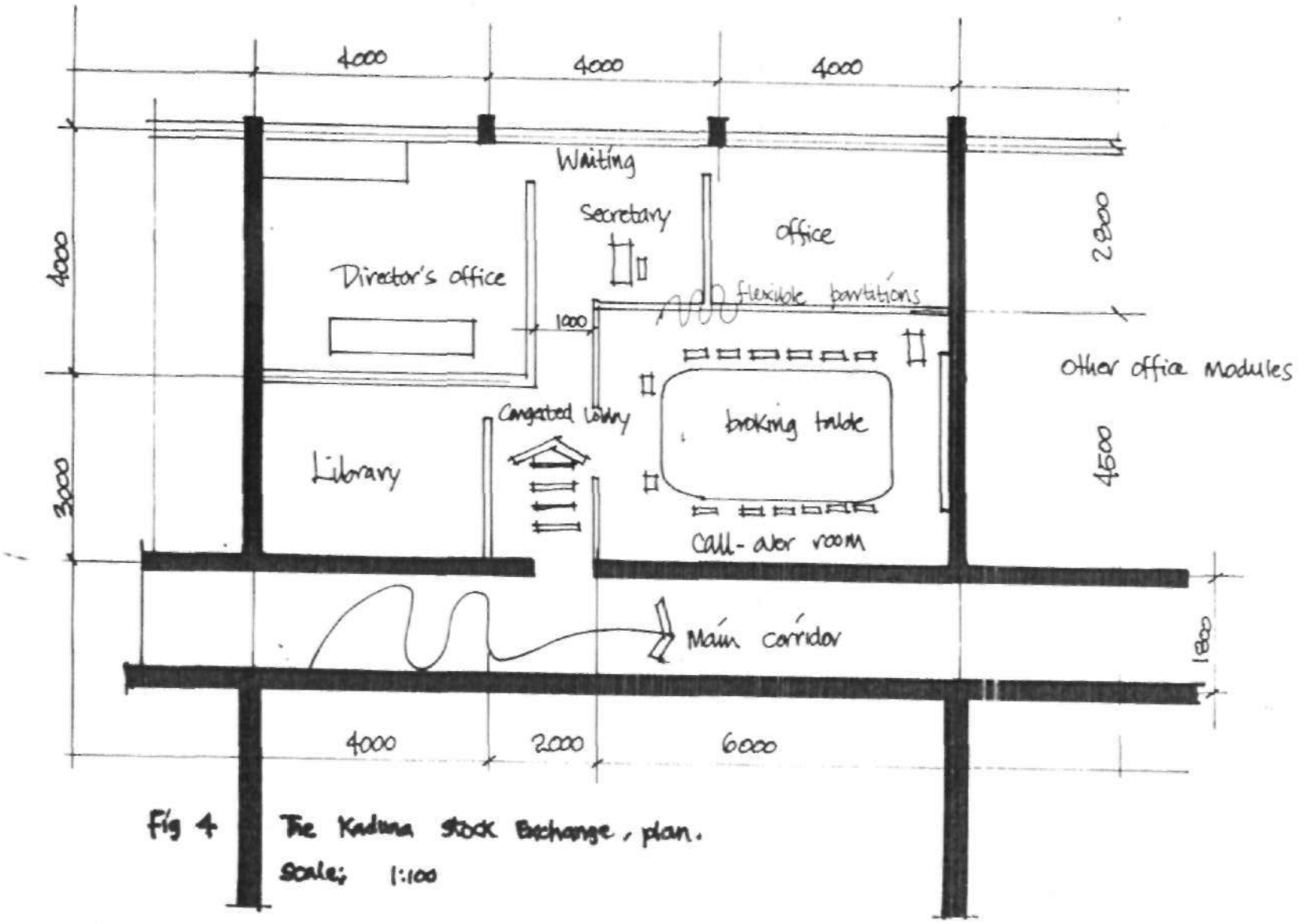


Fig 4 The Kaduna Stock Exchange, plan.
Scale; 1:100

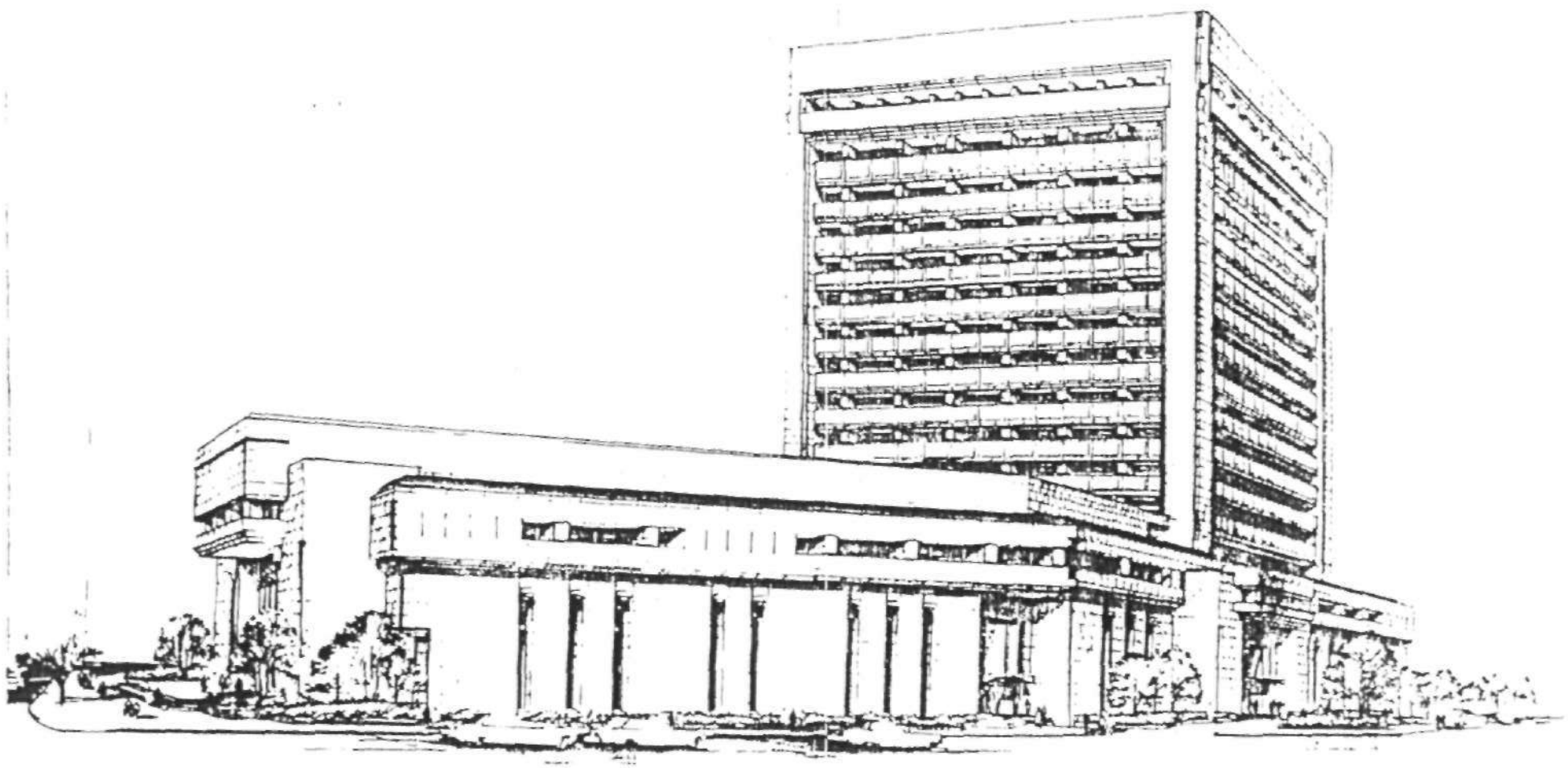


plate III . The Tokyo stock Exchange, Japan.

2.4 THE TOKYO STOCK EXCHANGE

2.4.1 Stock Broking in Japan

A dozen broking houses are listed on the first section of the Tokyo Stock Exchange the bigger being, Nomura, Daiwa, Nikko and Yamaichi. In 1985 stock broking firms made a pre-tax profit of 1.2 trillion Yen or 6.7 billion dollars out of which four earned 1.0 trillion Yen[7]. Stock broking in Japan for brokers is indeed a means of livehood. The market has continued to grow, the graph below shows a growth rate in the Bond market.

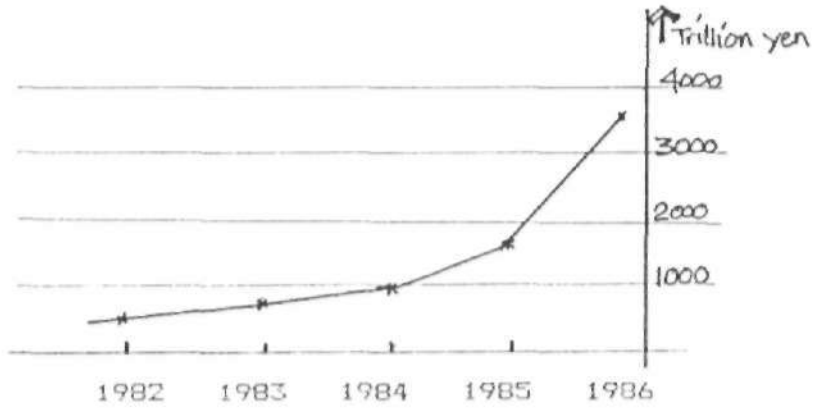


Figure 5. Growth rate in Japanese Bond Market.

Source: Bank of Japan, The Economist 14(6) p 75.

2.4.2 Operations of the Market

A computerised system of trading is used in which prices of securities are flashed on screens and dealing with members is then accomplished through the computer. This system which is best for large volumes of securities relies on telephones for communication with clients who are normally outside the exchange vicinity. A process of clearance and settlement of accounts usually follows a transaction. The brokers can be seated in rows or in cages to their convenience. About 16,000 shares change hands daily[9].

2.4.3 Architecture

The building which is 5,150 m^3 has a total floor area of 48,386 m^2 and has a parking capacity of 147 cars. A typical floor area is 1, 634 m^2 and has a maximum floor height of four metres. The main span is 12.3 x 6.7 m and the trading floor has an area of 34 m x 6.5 m the overall height of the building is 78 m from ground floor and includes three basements, 15 storey and 2 penthouses. The building is of steel frame and reinforced concrete which is finished in traditional Japanese brick tilling to give it an identity. Available facilities include: Offices for leasing, technical rooms like mechanical and electrical, galleries for visitors, exhibition halls to attract people and specialised trading floors.

2.5 THE STOCK EXCHANGE, LONDON

2.5.1 Historical

Up to 1698, stock brokers congregated at the Royal Exchange for business, as their business grew in size, they needed a specialised centre and thus began to meet in the coffee houses, in 1773 a group of 150 brokers assembled at the Jonathan's. By 1802 a new building had been constructed which could still not contain the rapid expansion of the market. In 1884 another building was further erected and thus a new stock exchange had been built. The markets were grouped into specialities (See Figure 6). Today not only is the building large enough to contain its functions, it has been built to use modern paraphernalia in stock exchange business[9].

2.5.2 Operations

There are about 46 broking houses in London that participate in the trading business. The Stock Exchange Automated System of Quotation (Seaq) is used, an electronic means flashes prices of securities on 10,000 screens and capable of transacting 46 deals each second[10]. Trade volume is between 25,000 - 26,000. The following units can be found: Administration, shares and loans, settlement and official list. The staff strength is between 800 - 1,000.

2.5.3 Architecture

The building has a total of 31 storeys with a net usable area of 244,090 m. The structure is of reinforced concrete faced with precast panels around a central core where services are centralised. The above concept although allows for easy access to work areas does not permit "free

THE STOCK EXCHANGE

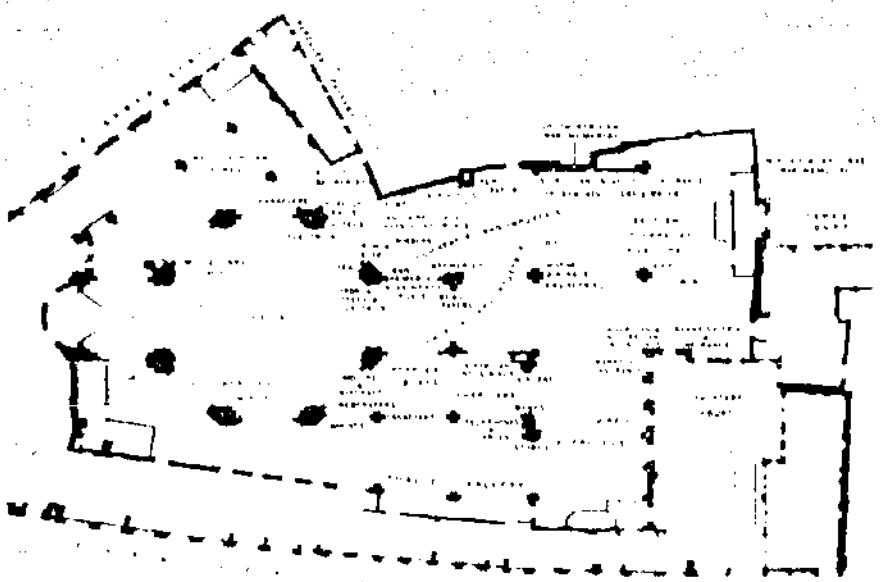


Fig 6 market groups in London stock Exchange at Throgmorton.



plate IV Stock brokers at the London stock Exchange after a computer break down.

usage of natural light and air. Tenants in the building include, banks, insurance companies and advertisement agencies.

Having said much about stock exchanges and their operations the thesis will now direct attention to the changing architecture and the question of business imagery or social criteria in business architecture in financial houses of which the stock exchange is one.

2.6 Traditional Bank Design in Nigeria

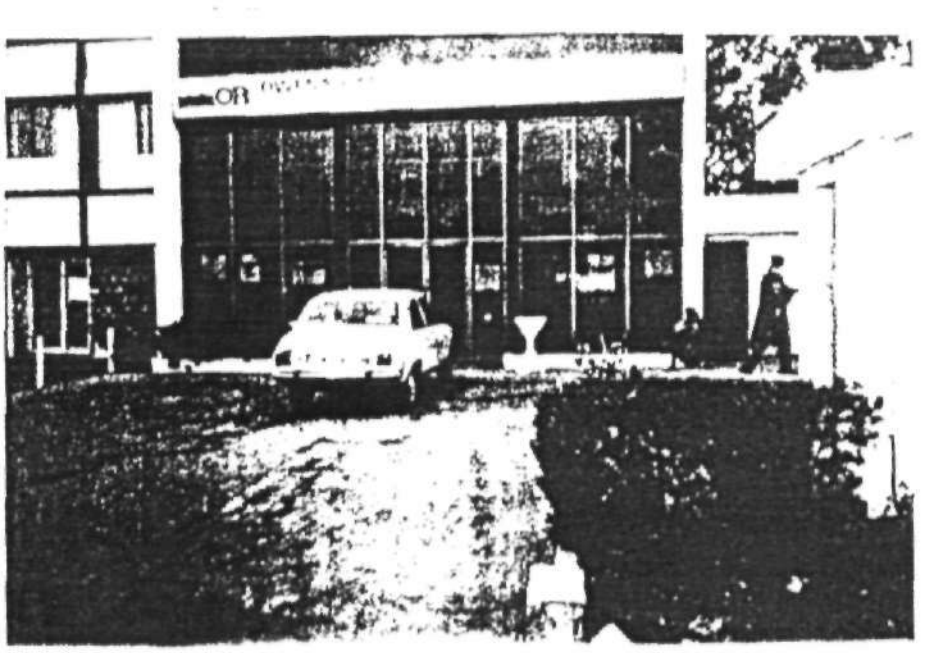
Plate V is an example of what banks have been until 1970s. A bank generally was regarded as a utilitarian building where emphasis was placed on function. Other group of buildings in this category are insurance companies which virtually rent any building provided that it serve their need and was at least well located, this architecture had been within the limits of our technology and probably financial capability, however interaction with foreigners by way of partnership in design or otherwise, exposed us to a new architecture, an architecture that is unprecedented and yet seen to have found its footing in parts of Nigeria, particularly Lagos.

2.6.1 The "New Architecture"

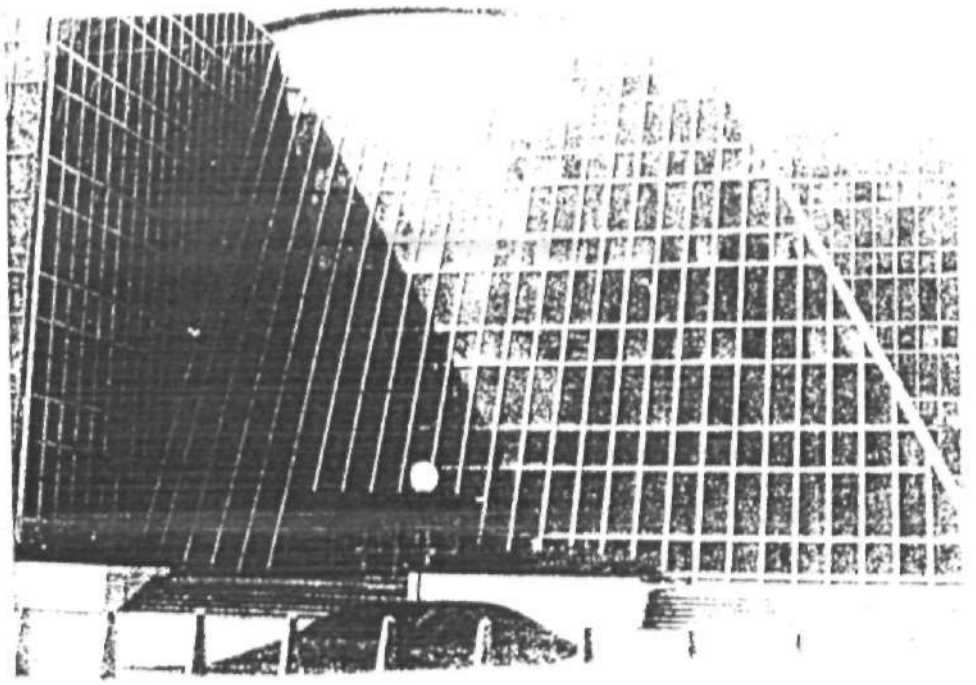
It is no coincidence that the said architecture seems to have engulfed financial houses and as expensive as it may be, these banks are willing to accommodate. Plate VI, reveals a new use of glass in skyscraper design in Nigeria, glass has a traditional high taste amongst many, especially elites and the psychology behind this glass skin is that it possesses an attractive image formed in the minds of observers which is more or less intuitive as one does not



Bank of Credit and Commerce International NIGERIA LIMITED, Kaduna.
Here residential building is being used for commercial purpose.



Owena Bank, Kaduna.
plate V



The IMB plaza, Lagos



Hasiya Laila house, Kaduna

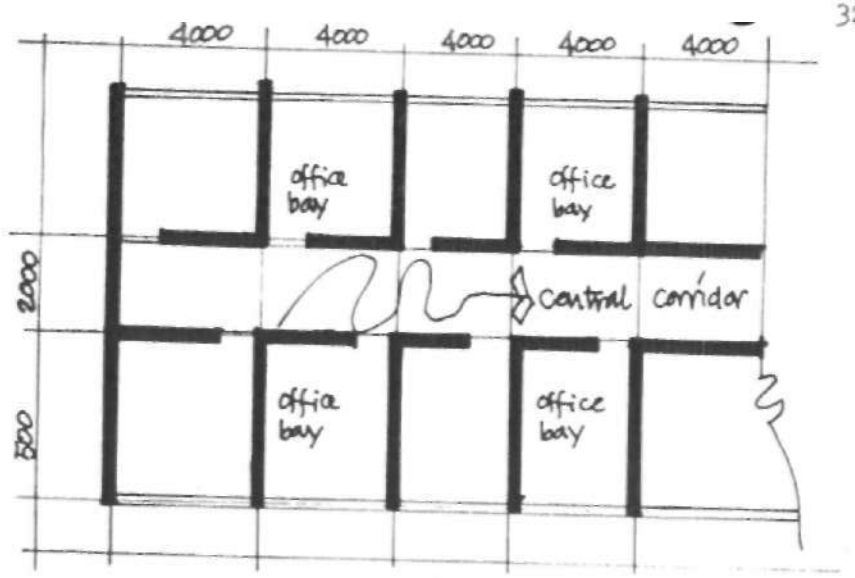
plate VI

need indepth thinking about the architectural quality of glass. The new architecture can be seen in Kano Bank of the North headquaters where the driving force seems to be the exploitation of the structural possibilities of reinforced concrete and the composition of a form that does not seem congenial with the environment. What is to note is that as expensive as these buildings may be to maintain, they satisfy their users' motives though the element of identity with respect to environment is often missing.

2.7 Office Accommodation in Kaduna

This is worth mentioning in view of the fact that the building under examination is essentially offices. A number of offices can be seen along Ahmadu Bello Way the design of which is based on the double bay concept (See Figure 7). The number of them are concentrated between Wharf Road Round-about and along Hospital Road Junction. Between these offices are located "modern skyscrapers", Northern Nigeria Investment Limited and the Chase Aluminium building amongst others. The rate of occupancy of these buildings is however low between (45-55 %) and a space of 11.8 m^2 is allocated to each person in that an average of 40-50 persons exist on each floor. Ground floors are more expensive and the cost of other floors decreases upward. This new offices are however based on the open plan concept, (See Figure 7).

To asses the general opinion of occupants about their offices, a questionnaire was distributed, a sample of which is attached below, answer survey of office anthropometrics was carried out, similarly a general inspection of office visitors book was done to find out the number of visitors received daily but this was concentrated on tall buildings within the same domain as the proposed building.



scale: Drawn to proportion.

double bay office concept in Gidan Ahmed along Ahmadu Bello way.

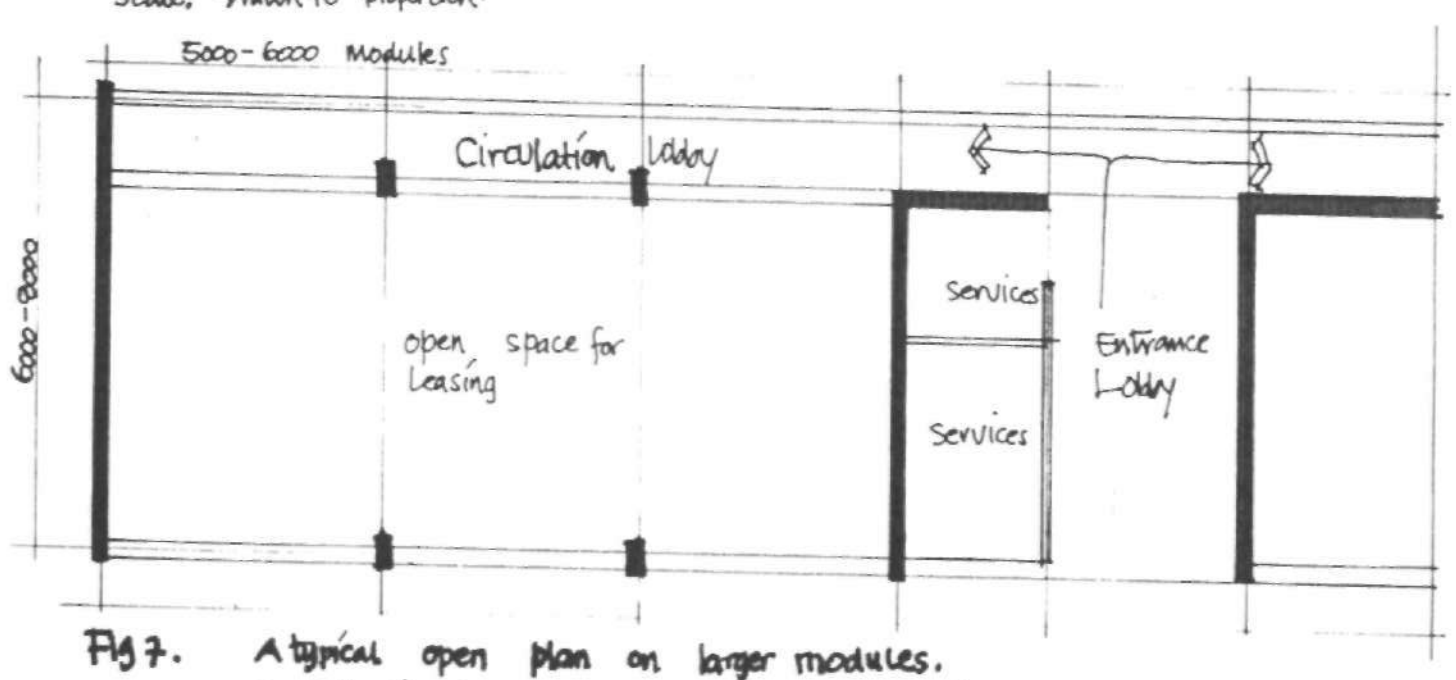
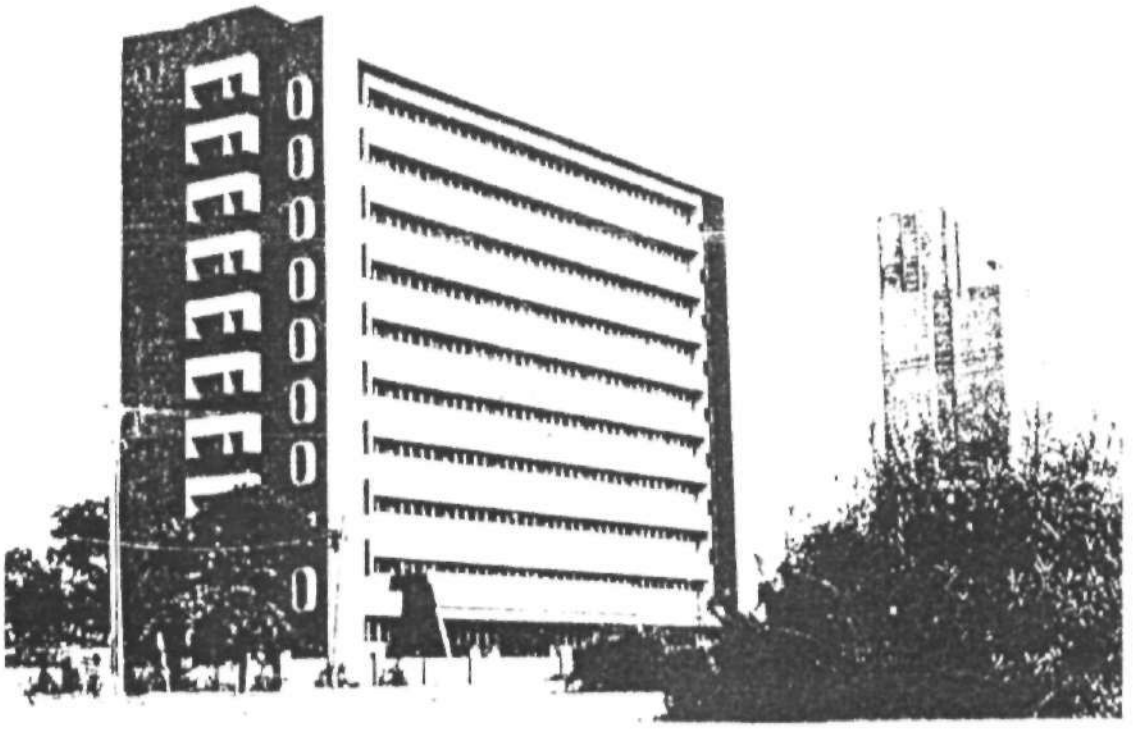


Fig 7. A typical open plan on larger modules. partitioning is done by tennants according to need.



N.N.I.L Building along Wharff Road, Kaduna.



The Savannah Bank and Nagulamatse buildings on Ahmadu Bello Way, Kaduna.

plate VII

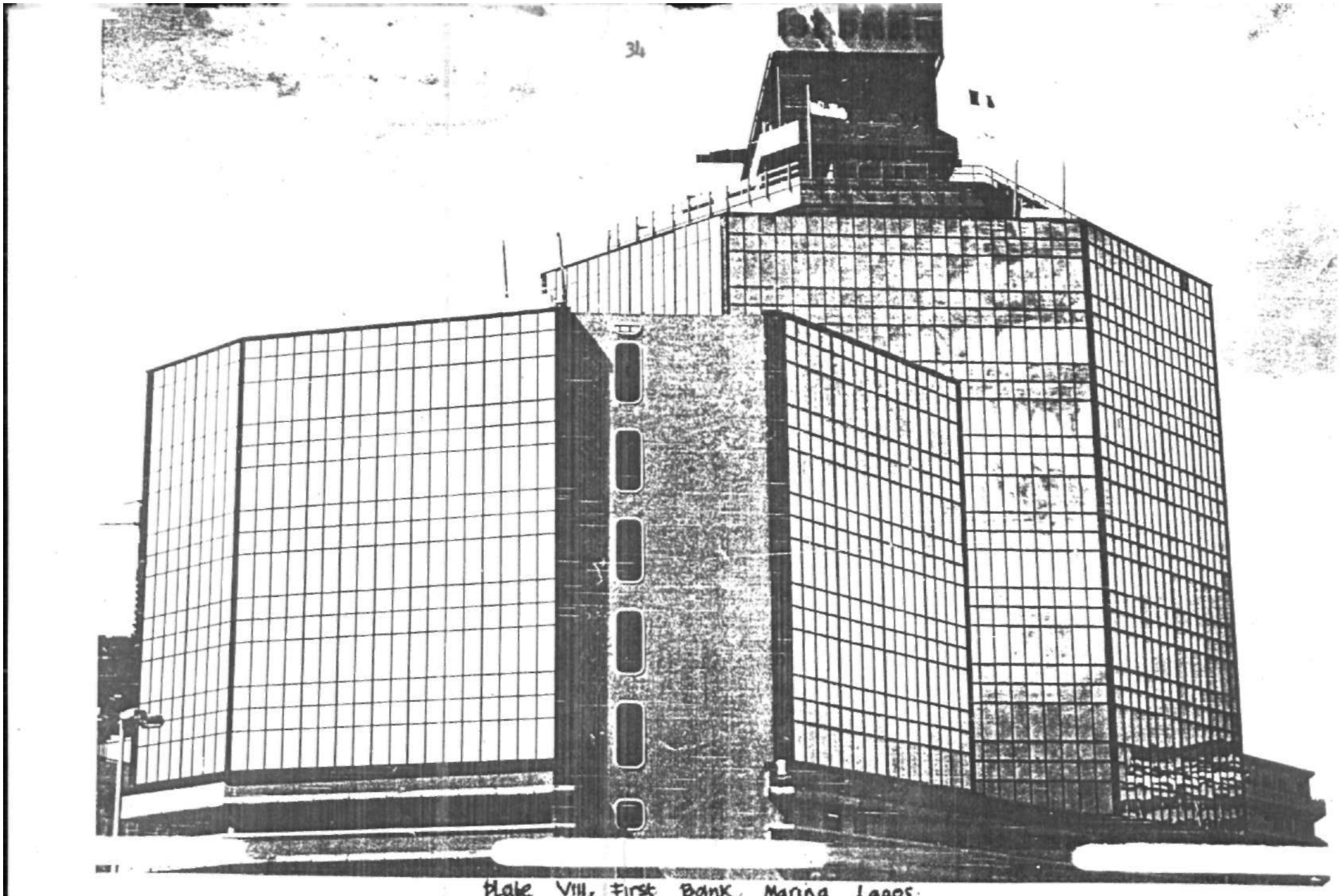


Plate VIII, First Bank, Marina Lagos.

Table 2.2. Office Rental Data Around Kaduna Business District
May, 1984

PROPERTY	RENT PER SQUARE METRE (IN NAIRA) PER ANNUM/FLOOR								
	Ground	1	2	3	4	5	6	7	8
N.N.N.D.C Ahmed Talib House	180	175	170	170	165	165	160	160	140
Turaki Ali House	175	170	160	160	155	155	-	-	-
Investment House	-	194	194	194	194	-	-	-	-
Chase Building	250	200	200	180	180	180	-	-	-
N.A.C.B. Building	215	-	-	-	-	-	-	-	172
N.N.I.L. Building	210	210	199	199	188	188	177	177	-
N.I.D.B. Building	240	<10	-	177	177	166	166	155	145
SAVANNAH Building	-	-	170	170	170	165	165	155	-

Source: AICO Kaduna.

AHMADU BELLO UNIVERSITY

M.Sc. ARCHITECTURE THESIS RESEARCH FINDING

SURVEY OF OFFICE ACCOMMODATION OF FINANCIAL AND ALLIED ORGANIZATION IN KADUNA

What are the functions of your Organization	a. b. c.
Is this office a Head Office	Yes No
How many Branch Offices do you have in Kaduna?	
Can you estimate the number of customers you attend to at peak period	
Was this office initially Designed for you Organization	Yes No
Do you consider it adequate for a function like yours ?	Yes No
If No Why ?	a. b.
Is the site location of this office suitable to its Bussiness ?	Yes Fairly No
How do you find the operation of both Administrative and Bussiness functions together under one roof ?	Condusive Fair Not Condusive
What aspects of your Bussiness when sperated from the rest or re-located may improve your performance	
Does your Bussiness need some laising or advertising of any form to improve its services	Yes No Not Necessary Can do without
How would grouping your Bussiness with Other allied Bussiness affect its performance	Improve it Not Affect it It Canter productive
	Name of Organization

AHMADU BELLO UNIVERSITY
M.Sc. ARCHITECTURE THESIS RESEARCH FINDING
KADUNA - OFFICE SURVEY

No of Floors								
Total height above street								
Floors above ground/Basement								
Floors Occupied								
Area of big Office								
Area of Small Office								
No of Floors with open Plan								
Width of main Corridor/Length								
Width of minor Corridor/Length								
Average clear height								
Total Office Space per Floor								
Traffic Area per floor								
Number of person per Office								
Total No of Persons per floor								
Number of cloak rooms								
Number of W.C's								

From the above surveys the following inferences were made:

I. Office occupants tend to be satisfied with their present accommodation due to location, suitability and the flexibility in their design.

II. The present occupancy rate can be put at 50 people per floor or one person to 11.8 m^2 in the tall offices.

III. These same offices receive 80-100 visitors daily.

IV. Dimensions of certain elements like corridors, floor heights, lobbies, etc were established at 0.9-2.5 m, 4.0 m, 5 m^2 per person, etc respectively.

V. Floor areas are consistent from ground to topmost floors

VI. The older offices seem to have been designed strictly for utilitarian offices while the newer ones like Nagwamatse House and NIDB building appear to have a touch of beauty both in material usage and composition.

2.8 Summary and Conclusion from Studies

Although there is still a low awareness of the activities of the stock exchange, it is expected that in the near future there will be much improvement, nevertheless attempt is now being made to bring the public into the picture of activities of the stock exchange and architecture is a strong means of achieving this end. While most financial houses seem to be engaged in a competition in making business impressions by their architecture, much is yet to

be explored in the field of form with respect to environmental context a dimension which when added to these architectures should aid in achieving the desired goals.

2.9 Conceptual Framework

It is clear that financial houses are in the business of image making. The stock exchange will henceforth be visualised as a financial house that is faced with the problem of rectifying a dented image and is seeking address in the field of architecture.

2.10 Towards a "new" Skyscraper Architecture

In Section 2.6 two main issues have been brought to light about offices in Kaduna that; the occupancy rate is between 40-50 per cent. A spokesman for AICO Kaduna Mr. Sunday further adds that the occupancy rate never goes beyond 70 per cent as tenants come and go in search for cheaper, better located and otherwise accommodation. The rents per square metre per annum decrease from ground floor upwards to about fifty Naira (N50.00) less for each 10 floors and to between N25 - N30.00 for other floors. Meanwhile, the floor areas are consistent upwards and cost about N400.00 per square metre to build. The following however are know facts about skyscrapers:

The cost of maintenance rises with increase in height and when transport becomes entirely vertical rather than partial vertical and partial horizontal more than 20 per cent of the floor area is likely to be used up for services[12].

In view of the factors above, it becomes necessary to investigate the possibility of a new architecture that exploits the benefits of a skyscraper which include, high

returns on less land, socialization of business contracts and prestige, while the disadvantages of maintenance, idleness of space are reduced.

2.10.1 A Scientific Approach

A set of three variables appear to be playing a leading role in the determination of amount of space for rentage viz: the unit rate of construction which is between N350 - N400.00 at the moment, the average unit rent of N210.00 which decreases by N50.00 for each 10 floors per annum almost steadily and the maintenance cost of 8 per cent for the first 10 floors, 12 per cent for the other floors after the first five years. This however rises to 30 per cent in 20 years of the total premium. At the moment only Ahmed Talib house spends approximately 15 per cent of its returns for maintenance according to an unofficial source.

The relationship between amount of space available and maintenance cost are investigated in Appendix A.

From the graphs it becomes clear that the amount of money wasted on maintenance is 15.22 - 14.57 = 0.65 N/m^2 or 65N/100 m^2, this represents a percentage of:

$$\frac{0.65}{14.5} \times 100 = 4.48\ \%$$

which also represents the percentage of loss of space so that in effect the following relationships can then be obtained;

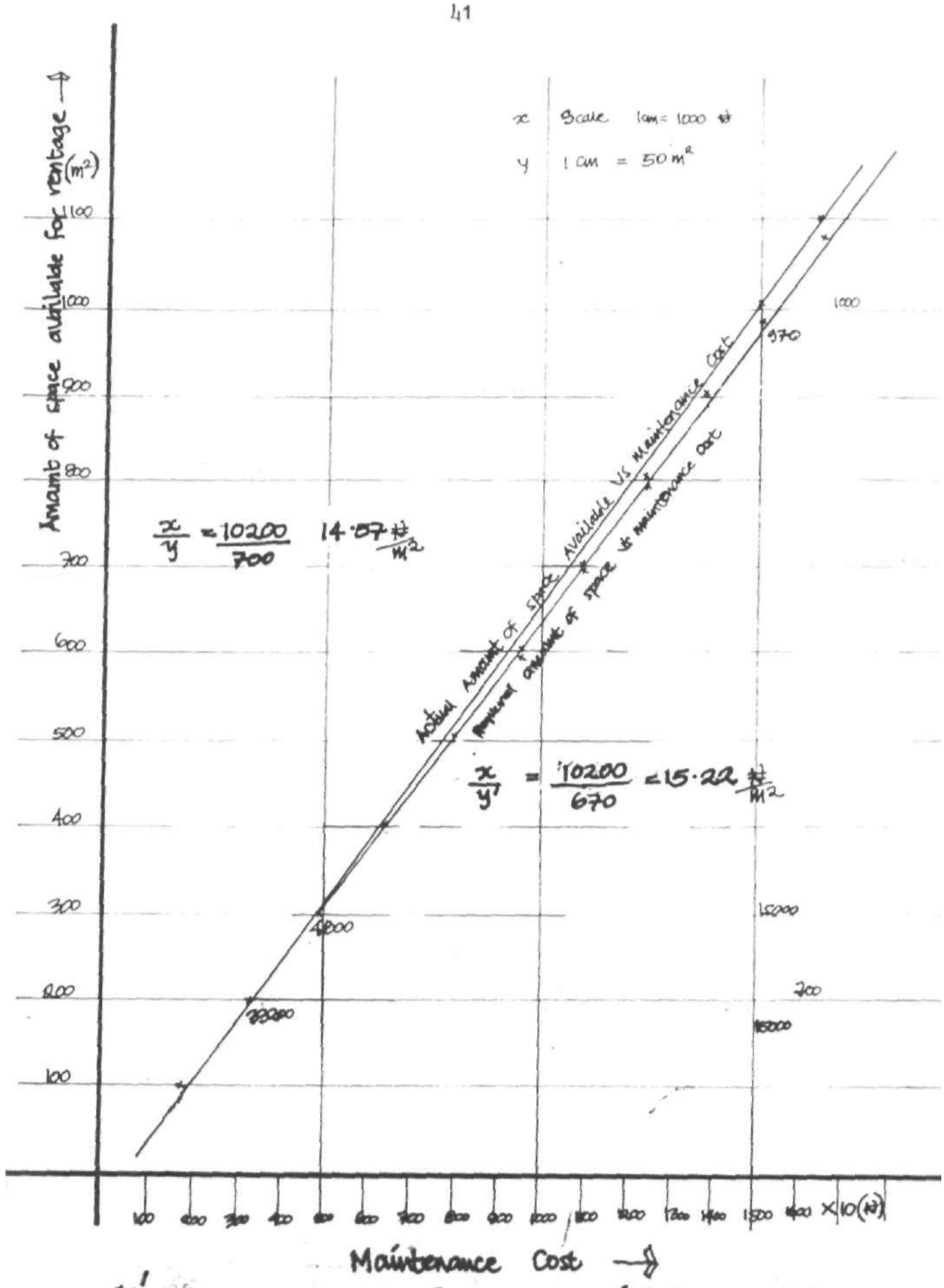


Fig 8. Amount of space Vs Maintainance Cost

Table 2.3 Graphical results

No. of Floor	Amount of space	Cumulative	Required space	Cumulative space
Ground	100	100	95.5	95.5
1	100	200	95.5	191.0
2	100	300	95.5	286.5
3	100	400	95.5	386.0
4	100	500	95.5	477.5

Following the same line of arguement it can be estimated that the building will realise its cost in 2-3 years as below:

	Naira
Unit rate	= 400.00
Cost of 100 m^2	= 40000.00
Rent per 100 m^2	= 21000.00
Maintenance cost	= 1680.00
Effective rent	= 21000 - N1,680.00 = N19,320.00

$$\text{Number of years} = \frac{40{,}000}{19{,}320} = 2.07 \text{ years}$$

However, many other factors like tax and insurance come to play increase this to say 10 years. Nevertheless the graph covers only 10 floors for other floors different results are obtained.

Note: - The above calculations are based on empirical data and cannot be taken as absolute but they do form a good basis for arguement.

In the design the priority will be on the facilities required but question of form will be emphasized. The above empirical data will be utilised in the creation of a suitable office environment.

1 Okigbo, P.N.C. (1981). Nigerian Financial System, Structure and growth. Longman pp 195-219. Special Committee appointed by Federal Government.

2 Onoh, J.K (1982). Money and Banking in Africa. Longman, London.

3 Fider, K.R. (1973). The Lagos Stock Exchange; Rules, Practice and Procedures. pp 21-24.
Jobbers are important in sustainning weak markets by virtue of their ability to uphold securities that may be weak until they are demanded for.

4 Stores, L.S. (1986). On Second-tier Securities Market and the Nigerian entrepreneur. Paper presented at the meeting of the Manufactural Association of Nigeria. 15 September (typewritten) pp 2-3.

5 Nduka, A. (1986). On The Nigerian Stock Exchange After 25 years. The African Guardian - 29(5) pp 11.

6 Chuba, K. (1986). On SFEM. Business Concord 22(8): p 5, 3.3 million naira withdrawn, Stock brokers express optimism

7 Anonymous (1986). On stock broking in Japan. The Economist - 25(10), 1(11): p 79-88; 80-83.

8 Ibid.

9 Morgan, E.V and Thomas, W.A. (1962). The Stock Exchange its history and functions. Elex, London pp 11-12; 259-264.

Berman, H.O. (1971). The Stock Exchange. Pitman, London (sixth Ed).

Rix, M.S. (1954). The Stock Market - Pitman, London.

10 Briston, R.J. (1975). The Stock Exchange and Investment Analysis - George Allen and Unwin Ltd.

11 Ibid, in The Economist.

11 De Chiara J and Challender, J.H. (1980). Time Saver Standards, for building types. McGrawhill, New York (Second Ed).

CHAPTER 3

3.0 Architecture and Public Opinion

Amongst reasons that have been advanced for the skepticism about the stock exchange are: stringent listing conditions in that small business firms hardly qualify for listing. Fear of loss of ownership as the average business man is conscious of sole ownership of assets a situation that makes the stock exchange to be conceived as an elitists cult and is further compounded by the general lack of awareness of the activities of the stock exchange. This case of public opinion about the stock exchange is what the chapter intends to address, for unlike homes and warehouses, corporate architecture functions in a public arena in which questions of opinion and imagery assume proportionately greater importance.

3.1 Means of mass communication

Corporations which deal with the public must establish prestige, reputation and confidence, this image making is directed primarily to customers, shareholders, executives and workers of the company and architecture has since been recognised as a strong weapon for this purpose. In 1880s when the methods and goals of business were held in high regard the "Tall office" building functioned as a carrier of ideas and as a means of symbolic expression.

The greatest decade in the development of the Chicago school office blocks coincided with the re-direction of capital from rail roads to estate speculation, about this time the Metropolitan Life-insurance Company became the world's largest insurance company the same year it moved into the tallest office building in the world,[1] thus both

in times of prosperity and business criticism an imagery has served a useful purpose of defence or re-assurance. Although general refuge was taken in the configuration of the office block, the aesthetics were carefully handled with a detail use of material and form composition. Charles E. Jenkins commenting on the Portland block said,

> "The portland block was a radical departure from the then prevailing sytle in Chicago. Heretofore all the principal store and office buildings had been faced with stone. The portland block was pressed brick with elaborate stone triminings much like the Guernsey office building in New York[2].

It is significant to mention here that departure from convention was the psychology that was been worked with, suffice it to say that qualities and design elements found in the portland block became essential to the imagery of Chicago business structures for a period of 20 years. The Western Union and Tribune buildings were given overt representation of ideas in architecture by means of symbolic sculpture and paintings, their architects received inspiration from the nature of modern business and therefore dared to give these buildings unconventional treatment.

3.1.1 Aesthetics as a mean of communication

Even in architectural circles it is not uncommon to find the term aesthetics being marginalised to "visual awareness".

In its true sense, aesthetics is a state of total response of the body and perception of its external,

physical and internal environment[3] (i.e.) an observer of a building cannot assess accurately its aesthetics unless he becomes a "participant" in the building.

Generally, it is the state of the body's physiology that establishes the levels at which sensory stimuli function, the level of one's judgement of a building is affected if one's physiology is not balanced. Personal idiosyncracy and socially conditioned value judgements come into play secondarily, aesthetic values are substantially modified by non-sensual information and experience of a phenomenon, (e.g) it is our faith in antiseptic measures that make the immaculate white nurses uniforms and sportless sheets of a hospital so reassuring, similarly it is our knowledge of cost that exaggerate our visual effects between diamond and crystals, between glass and aluminium and between metallic paint and ordinary[4]. Aesthetics is therefore beyond vision, it is beyond a mere mental image formed in an observer's eyes but it is a result of ideas produced by some stimulus to the imagination of one, derived from social experience overtime and determined by the state of physiological balance of the entire body.

3.1.2 Form, Elements, Identity and Imagery

Form

The sullivan aphorism of "form follows function" is well known between architects, its perception however varies. The relationship between form and function is by no means a single one, the one mostly recognised is that the form of a building is a cover to its technical and functional requirements. It is after the required spaces have been determined that one goes on to provide a form for the building. Building under this category are mostly

utilitarian like Hospital, offices where maximum utilization of space is required, here form is perceived as a cloth to a skeleton of architectural needs.

Another interpretation of the aphorism is that the physiognomy of the building is an indicator of its function thus a theatre will look like a theatre, a church like a church, etc. This suggests conventional methods of design but of course recognises the speciality in the facilities involved, since these facilities determine the spaces, structure and possibly the materials usage. There is however another form in architecture which does not seem to be related solely to function, this form is a particular organization of shape capable of arousing emotion and intellectual participation of the individual and can be described as shape derived from structure and aesthetic aura[5], 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? Nevertheless those form may be "pure" (national) as in the case of a potatoe, folds of a hill or may depict an activity like, a drummer, farmer etc, the round arched bank[6].

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 includes both memory of the past and imaginative explorations of the future.

There are such forms like mountain 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 truely understood by merely observing a form?; these are questions

that should puzzle the mind of any 20 Century architect. Because of ever-present form and our 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 significance to human capacity for its imaginative experience which not everybody possesses[7]. Initially the interpretation of meaningful forms may be subjective of pre-canonical, as time goes on culture establishes a framework within which certain forms can be interpreted, the forms can then be said to be canonized, at this stage assumptions are no longer made. An example of this was the Bardona pavillion designed by Mievs Van de rohe, initially architectural historians were skeptical about it, 40 years later it was accepted as the cornerstone of modern architecture, below are some excerpts:

> "Here is the spirit of New Germany: Simplicity and clarity of means and intensions - everything is open, nothing is concealed. It is a piece of work honestly done without arrogance. This is quiet home of a peaceful Germany"[8].

Elements

Those ingredients of architecture that are directly related to the form are regarded as elements of architecture, they range from signs and symbols to parapets, arches and configuration. These elements appear to be more contextual and readily understood than forms, for instance, it is easier to recognise a minneret in a mosque than perceive its entire form based on the concept of the Ka'aba;

mosaic paintings on walls to depict certain motives are more easily recognised than the meanings of the forms. Where a form cannot be readily understood elemental compositions serve a useful purpose in the identification of certain structures. In buildings that are culturally biased like, cultural centres, civic centres, etc elements tend to communicate faster and are easily recognised by non architecs and artist. Paints are another kind of elements that constitute a strong weapon of communication and are about the most readily recognised. Certain paints like white, black and red have motives attached to them for instance a building painted in white signifies high class, so also metallic colours painted on panels. Similarly other kinds of elements exist and a careful composition of any in a building can form a very good basis of communication.

Identity

This has a bearing to forms and elements discussed above. Identity could be regional, local or even inter-national. An active composition may appear to carry no meaning, for instance, what is the essence of having an office design based on the concept of a fruit or a market design based on calabash? There appears to be a central theme in these designs, that of giving the structures identity or a sense of belonging either to its region or locale. Whether an identity is enough to define an architecture is a delicate line of arguement but the thesis submits that architects have to look for a way of recon-cilling form, function and meaning or relevance in architecture since not all forms and symbols used have relevance to a piece of architecture. Even when they are significant and relevant they have no meaning and this in

the thesis opinion is responsible for the inability of structures to convey the "messages" they are meant to.

Generalisation

The importance of form, elements and impression in architecture cannot be over emphasised, as mentioned earlier architecture functions in a public arena and the ultimate aim of a designer is to satisfy first users and observers. If a form is significant and not relevant it is likely to move time to perceive, already existing buildings like the national theatre based on the concept of the "military head" is both meaningful and relevant considering the Nigerian political experience. A form or symbol when wrongly used can destroy an intended meaning.

The following generalisations are made in this light:

I. Where many functions are involved like in a cultural centre, school or any other multifunctional structure it may be difficult to convey a single meaning by an entire composition of forms.

II. The corollary is true for (I), and further, it is difficult to convey more than one meaning on a composition that is unifunctional and forms when used must be limited.

III. Where many forms are involved, meaning tends to be lost to relevance for instance, in a design that involves the use of many local forms, while the forms can be readily understood, the overall complex may convey no meaning.

IV. Signs and symbols tend to be more readily understood by

non designers than forms but a mixture of the two conveys a faster message.

V. Small structure tend to be easier handled in the aspect of farm and meaning than big ones.

VI. Motives tend to be easily expressed using elements on buildings that are culturally biased like, churches, mosques, cultural centres, etc.

3.1.3 Architectural Philosophy and Meaning

A piece of architecture has meaning not only dependent on itself but also on the system within which it is considered[7].

Adeyemi (1980), agrees with this when he said that "In a system where architecture means concrete, glass and steel, mud and azara may not possibly be considered as any architecture. If the system changes however the position of things should also change, unfortunately our experience is not necessarily so in Nigeria, the relationship between architecture and cultural realities has been greatly distorted, a look at Marina, Lagos confirms this".

Bonta (1979), asserts that architecture generally falls under the classification of four systems: Function, typology, historical and affinity with environment. Typology of a building refers to its kind, whether it is residential, a warehouse or an office. Historical precedence deals with the relationship between the structure and historical movements, styles, etc. While affinity with environment means the response of an architecture to its natural context. Frank Lloyd Wright (Flw) once said that "nothing is complete as the part is merged into the larger

expression of the whole".

Precurssors of modern architecture had practiced under philosophies that were gradually been set aside and treated with less enthusiasm at the birth of the international style. In this 20 Century abstraction, the artist does not conform to representational conventions, he uses less of natural appearances so that his architecture is reduced to a system of geometric shapes or patterns, lines angles and colours that depict an abstract image. The following schools of thought characterised the course of modern architecture:

Expressionism

This recognises the world as being divided into two systems, subjective and objective - emotion or reason. Architecture is conceived to be a mixture of the two, architecture that has more emotion is classified under expressionism. The use of symbols discordant colours and disorted shapes is prominent, expressionism is like the frosting of the cake which in most cases adds cost, it is thought that expressional architecture succeeds functional architecture. Banta opines that architecture of the future will regress from the peak of functionality and pursues expression.

Neo Primitivism

This is a conscious adaptation by some sophisticated architects of authentic specimens of primitive forms and objects.

Abstrctionism

Architecture that has more reason or is more of objectivity falls under abstractionism such is mostly utilitarian like industrial and commercial architectures.

Non-objectivism

That architecture has no literary associated meaning outside itself i.e. the circumstances that surround a piece of architecture may not be the same and for each, a new expression has to be found.

Cubism

This started as a two dimensional painting on walls and books, but painters like Maholy Nagi of the Bauhause who were also architects introduced the aspect of three dimension. The movement supposes that architecture and art are impositions of nature of geometrical forms derived from the mind rather than the imitation of nature. It was characterised by the interplay of planes and angles.

Futurism

In his 1914 manifesto Antonio Sant Elia visualised life as being super machanised where man was reduced to a "cog" in the wheel of mechanical progress". Futurists envisaged a future ideal society where everything was dynamically related so that art and architecture was bound to contain this dynamism.

Dadaism

This was an attempt to wipe out civilization that existed before World War I which were thought to have been responsible for the war. Humor and Iconolasm was used in

the clearing of the post war atmosphere.

Surrealism

Based on pure psychic automatism by means of which one sets out to express verbally, in writing or any other manner without control by moral or aesthetic reason[10]. Although it may not be entirely correct to say so, the thesis believes that present day architects pay less attention to the question of schools of thought with respect to their purpose in the achievement of architectural goals, but present day practise is a continuation of the old and the knowledge of these schools of is pertinent.

3.1.4 Business Imagery in Nigeria

The architectural profession is relatively young in Nigeria. With the birth of the Nigerian Institute of Architecture in 1960 efforts were made to contextualise the practice of architecture to Nigeria. In the 1960s and 1970s architecture was inevitably that of function and little efforts were made to create deliberate impressions by clients, as time went on, architecture was recognised as a strong tool in altering public opinion about businesses and prominent in the lead are banks and financial houses. The excerpt below is an expression of esteem by a bank in Nigeria:

> "Since 1894 First Bank Nigeria Limited has been responding to the financial, Economic and social needs of the Nigerian nation. Today we continue evolving new skills, adapting to new challenges and modifying established practices all in an attempt to deliver our services more efficiently. Today First Bank is a new bank that has

> changed for the best with renewed team spirit. That is why you shoul change for the best".

Suffice it to say, the new glass house was born ex-abruptu the same period of this publication. In 1982 International Merchant Bank (IMB), Lagos asked architects Victor O. Otolorin and Kitoyi, I. Akinsan to design a "unique" building for their banking operations, when the design was completed a spokeman, Stanley, N. Ngoa asserted that "the design meet our specification, our purpose is fulfilled and no regrets whatsoever"[12].

Similarly, the First Bank building designed by Edward Moore is said to be performing well, (see Plate). According to Moore, they reflect heat and thus save the cost on cooling and air conditioning. These buildings are nontheless very costly, below are the cost of some of these modern offices:

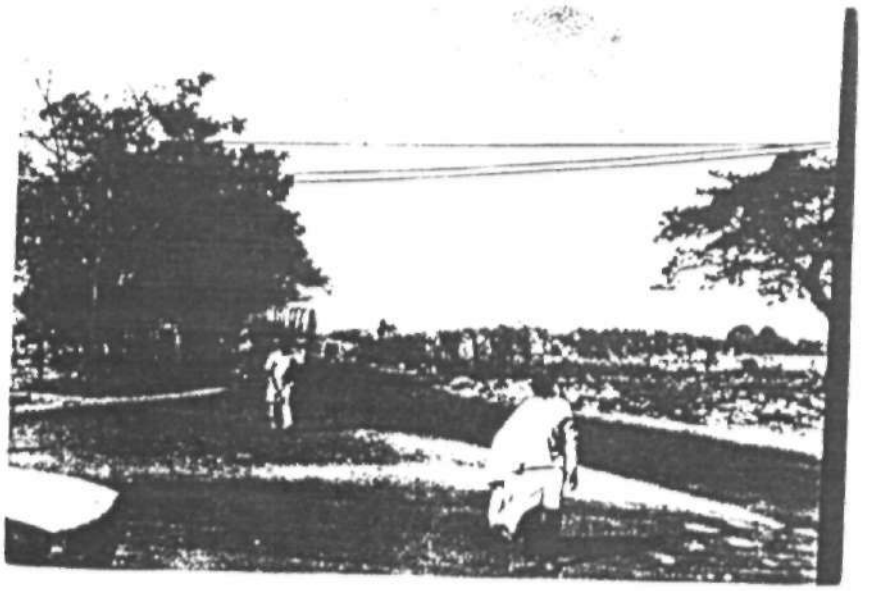
International Merchant Bank Lagos = N12 million
Challerams Lagos = N16 million
First Bank of Nigeria, Lagos = N17 million
Broking House Ibadan = N10 million

From the above, it is impossible to divorce social criteria from the architecture of these buildings. Not only is the art of imagery visible in Nigeria with banks, it is fast spreading to other institutions.

Having discussed the architectural subject matter of the thesis it is necessary to address the site itself for it plays a very important role in the realization of the project.



Present area on site used by lorries as Garage



Hospital Road leading to Tudun Wada, the road is less Congested than Ahmadu Bello Way.

Plate IX

3.2 About the Site

3.2.1 Environmental Context

Located between latitude 10° 27′ North and longitude 7° 27′ East, Kaduna is the most strategic place for both administration and military convenience in Northern Nigeria.

It is a junction of many forms of communication like, roads linking it to Zaria by its north, Jos by the east and Abuja by its west. Similarly, railways link it to other parts of the country like Kano, Lagos and Port-Harcourt, at the moment, it has the highest concentration of industries in the North (See Figure 9 and 10).

3.2.2 Geology

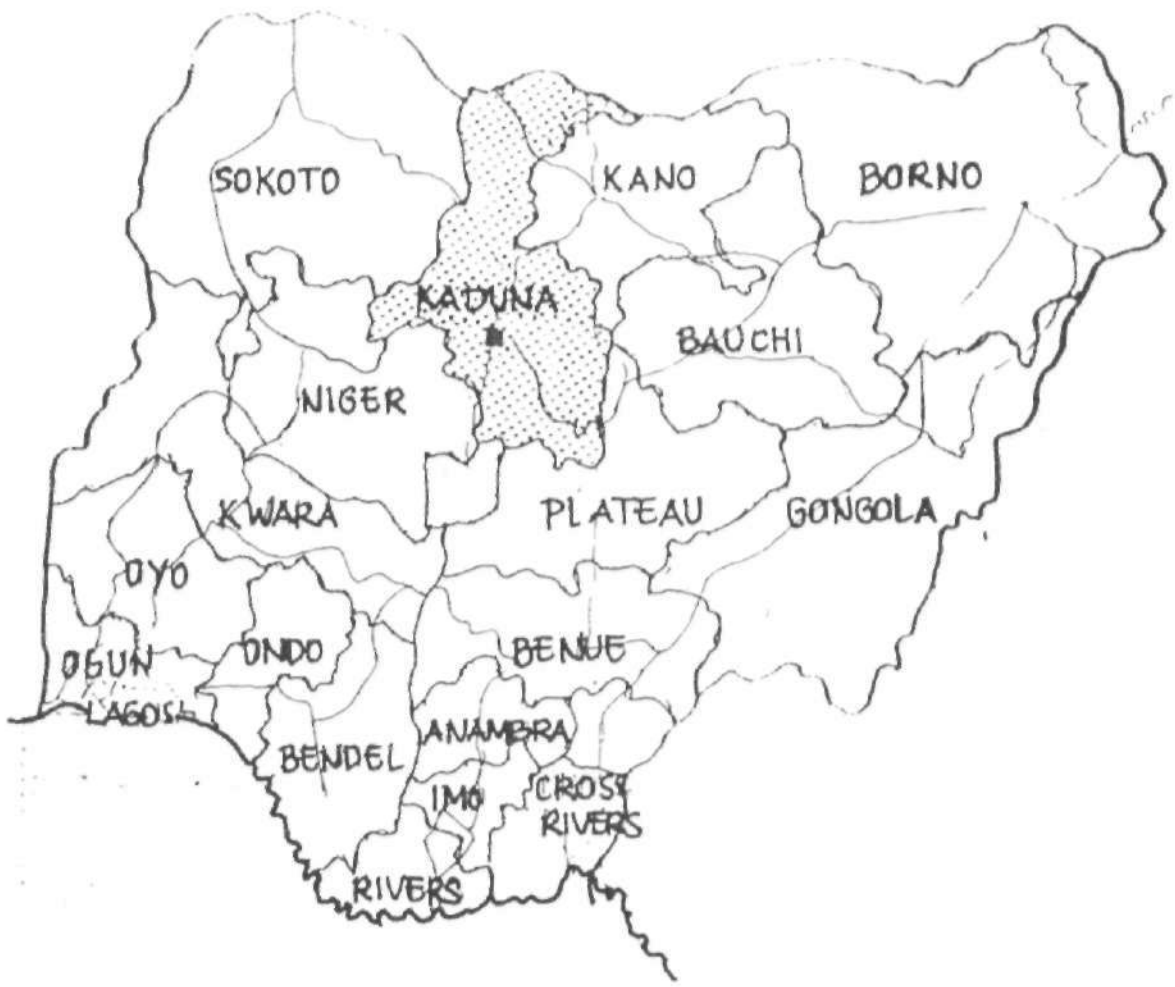
Typical of the region is magnatic mixed streaky rocks, granite in parts with darker and softer bounds. Amidst a rolling terrain, a little relief situated around 600 metre rises above sea level to the east and south terminating in the Jos plateau in form of solid granite inselbergs. Never-theless most of the area over the surface has decomposed to laterite.

3.2.2 Climate and Vegetation

Four climatic seasons are quite noticeable in Kaduna viz: dry season from November - Febuary; hot season from March - April; thunderstorms season from May - June and wet season from July - October. The harmattan wind in the dry season is normally strong and cold, blowing a haze. The dorminant wind direction is north-east, south-west in the dry and wet seasons respectively. Rainfall is between 40 - 60 inches (100-150 mm) and has its peak from July-September.

In its natural state, the vegetation is made of a

THE NATIONAL CONTEXT



KEY

- FEDERAL CAPITAL TERRITORY
- INTER STATE ROADS
- NATIONAL BOUNDARY
- STATE BOUNDARY
- KADUNA STATE

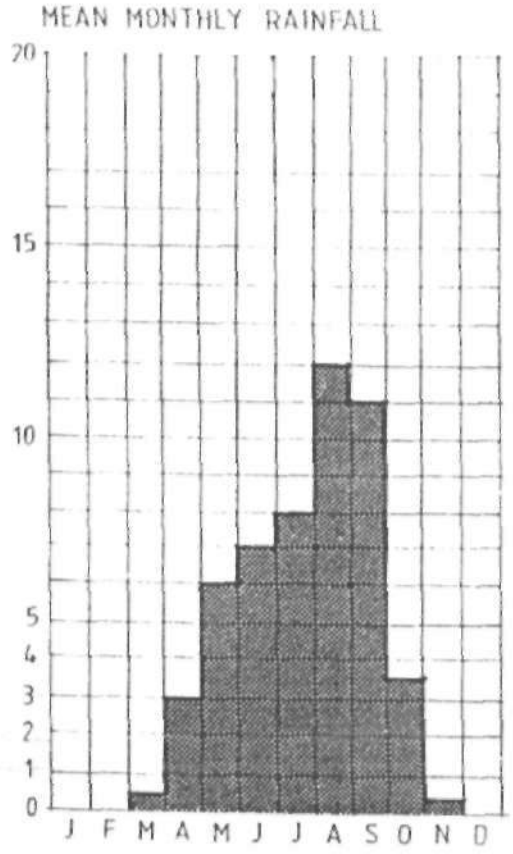
Fig 9. Map of Nigeria Showing Kaduna.

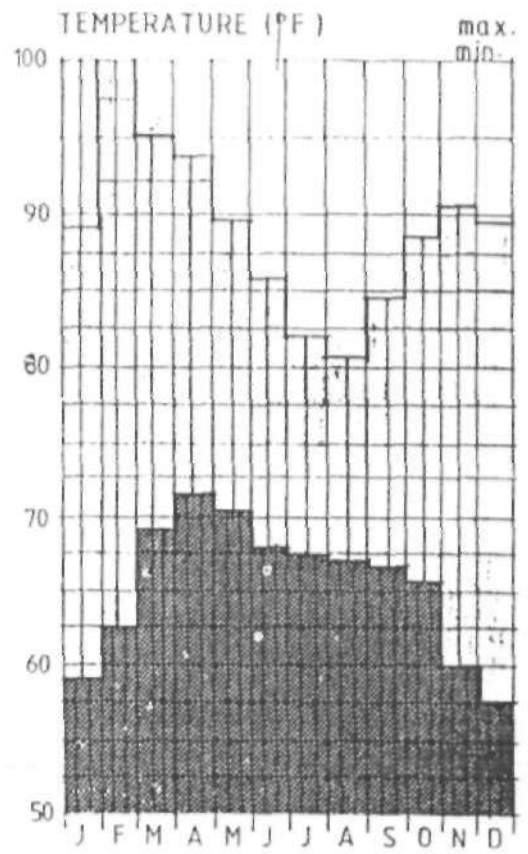


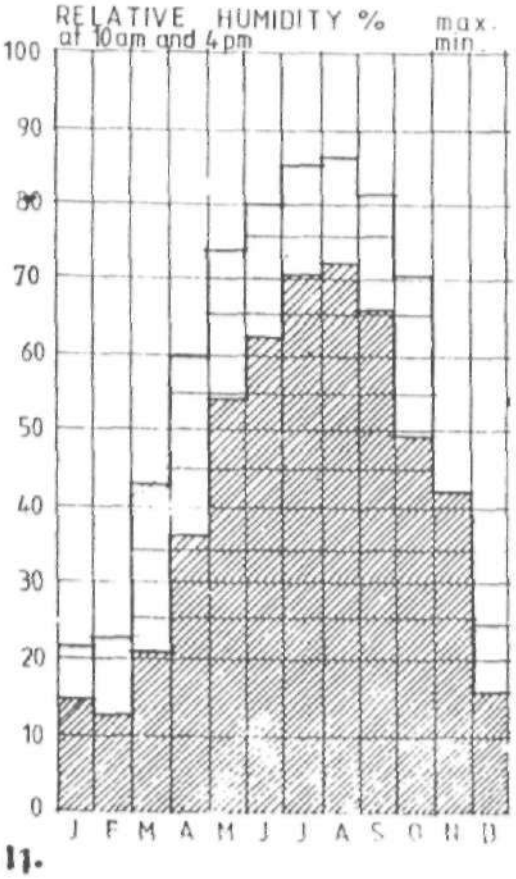
Fig 10. Map of Kaduna Metropolis

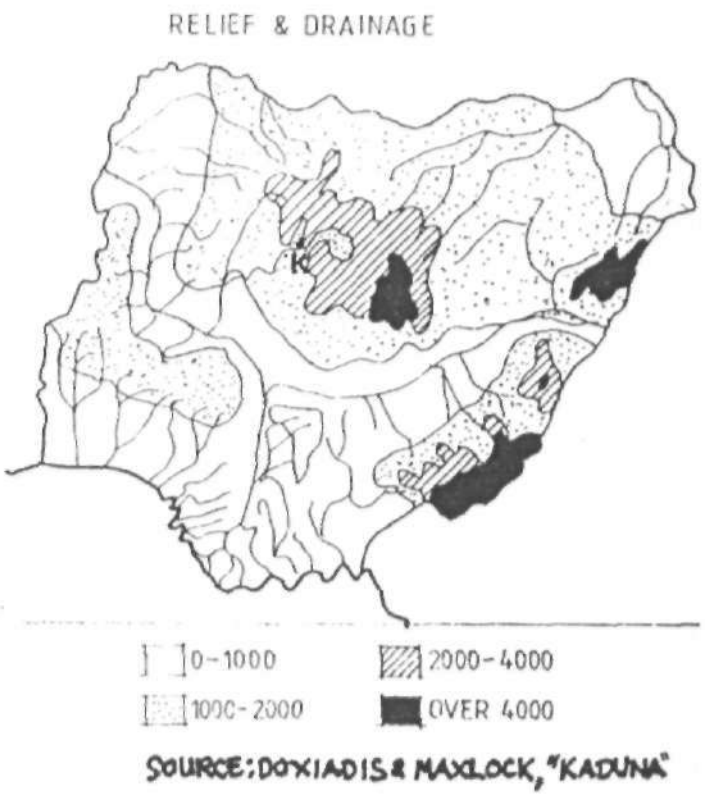
Source; Darius, I(1982)

Climate Data Of Kaduna Area









SOURCE: DOXIADIS & MAXLOCK, "KADUNA"

Fig 11.

continuous cover of well developed trees and mainly "orchid bush", trees are between 2,000 - 10,000 mm high, some trees are however taller, grass grows to a height of 900-1125 mm. Most of the area is however open due to cultivation. The cover laterite of the soil can be up to 4,200 mm and is normally water logged in the wet season but dries up to crack in the dry season. Relative humidity has a maximum of 72 per cent in August and minimum of 12 per cent in February (See Figure 11).

3.2.3 Socio-cultural Context

Kaduna represent a mixture of people with diverse cultures, from Hausas in the north to Southern Zarians in the south. These people live in wards the choice of which is influenced by earlier settlers i.e. on comers to the town look for where "their people" had settled and they join them.

The general notion of "our town" is upheld by many inhabitants who use the hausa aphorism, "Kaduna Garin kazo na zo ne" meaning Kaduna is a town where you and I just came to. The wards include; Tudun Nupawa, Tudun Wada, Nasarawa, etc (See Figure 10).

The city is reckon to have the fastest rate of population growth in the country next to Lagos, in 1978 it was estimated at 578,000 compared with 149,000 Of 1963, the growth rate of 8.6 per cent is however expected to reduce to 3.5 per cent by 1990[13].

Below is the population estimate of the town based on the expected growth rate of 3.5 per cent.

Table 3.1 Population projection of Kaduna*

Year	1978	1985	1995	2005
Total population	520,000	964,000	1,400,000	2,000,000

* Source: Bestarc International (1982) UNDP.

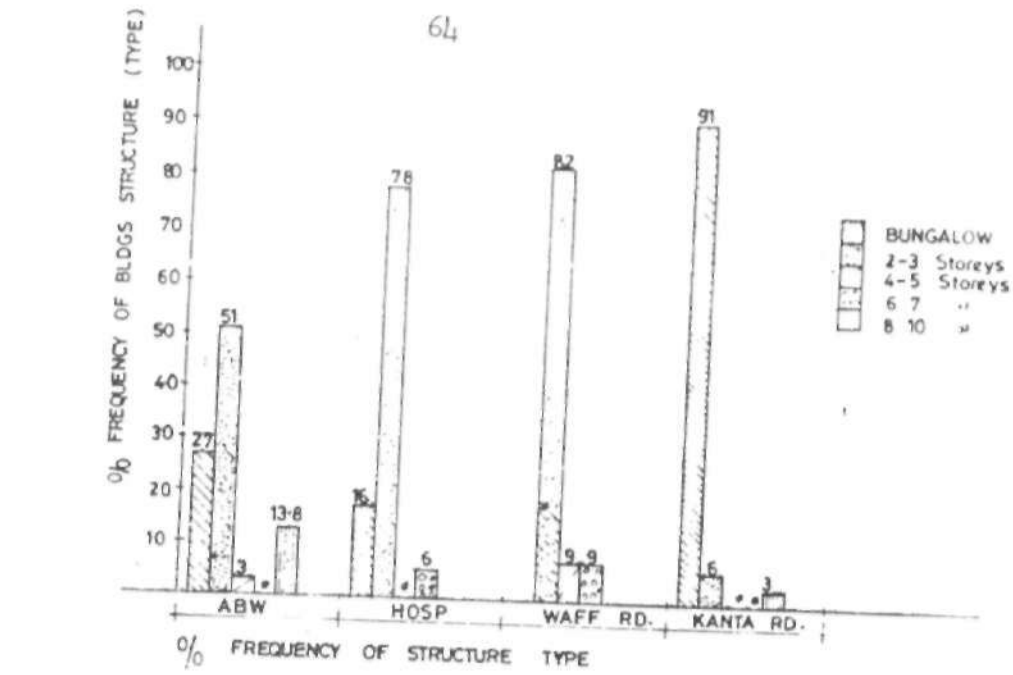
3.2.4 Industrial and Commercial Growth

Availability of good infrastructure is responsible for the rapid growth of industries in Kaduna which include, Textiles, Glass, Fibre and recently the Oil refinery. The industrial growth in the area will increase commercial business in form of super markets and chemists and this increase is very much anticipated in the near future.

3.2.5 Architecture of the People

No distinct architecture exists in the town mainly because of its urban set up and partly because no dominant group seems to exist. However, reminants of colonial architecture are noticeable in public building like Governor's office, Lugard Hall among others. A "new" architecture seems to be coming up at the GRA where residential buildings are designed with "northern motives", similarly along Ahmadu Bello Way, tall structures designed in modern context are noticeable, they include, Chase Bank Building, NNIL, Savannah and The New Nigerian Office complexes.

A general shortage of parking spaces exists around the central business district as cars are normally seen parked along the road. office buildings now dominate Ahmadu Bello Way, Hospital Road and Kanta Road with low rise commercial



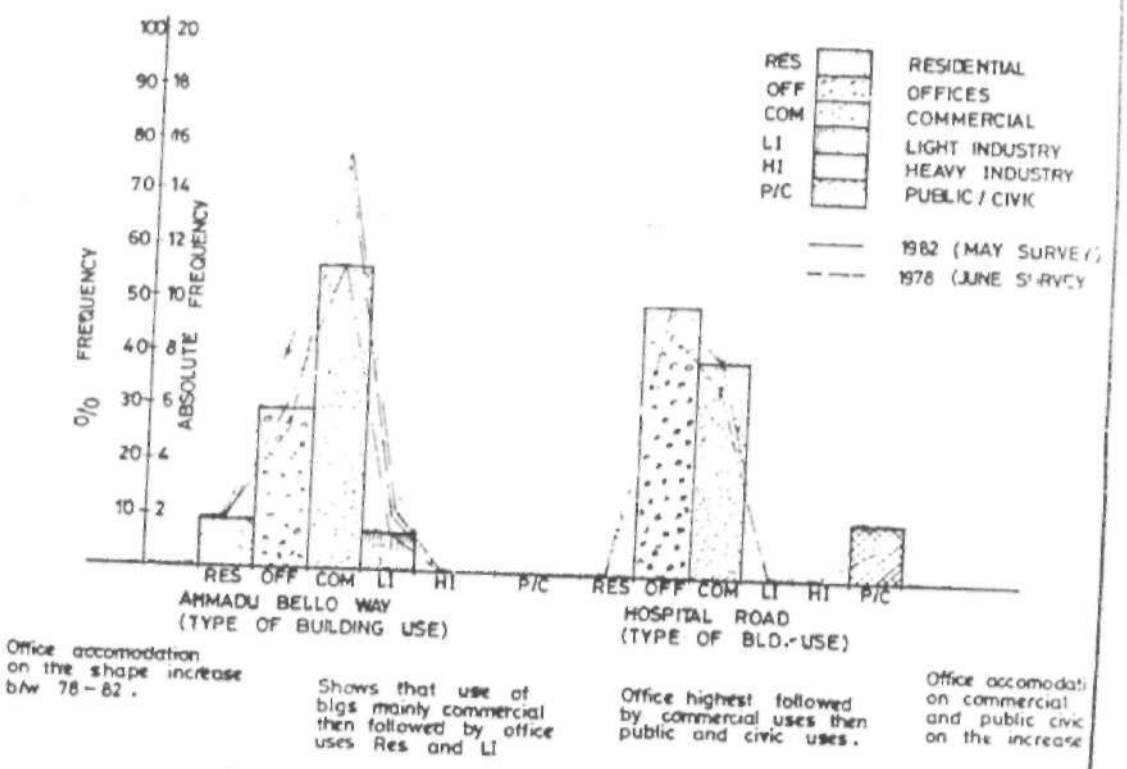


Fig 12. Source; Bestarc International (1982).

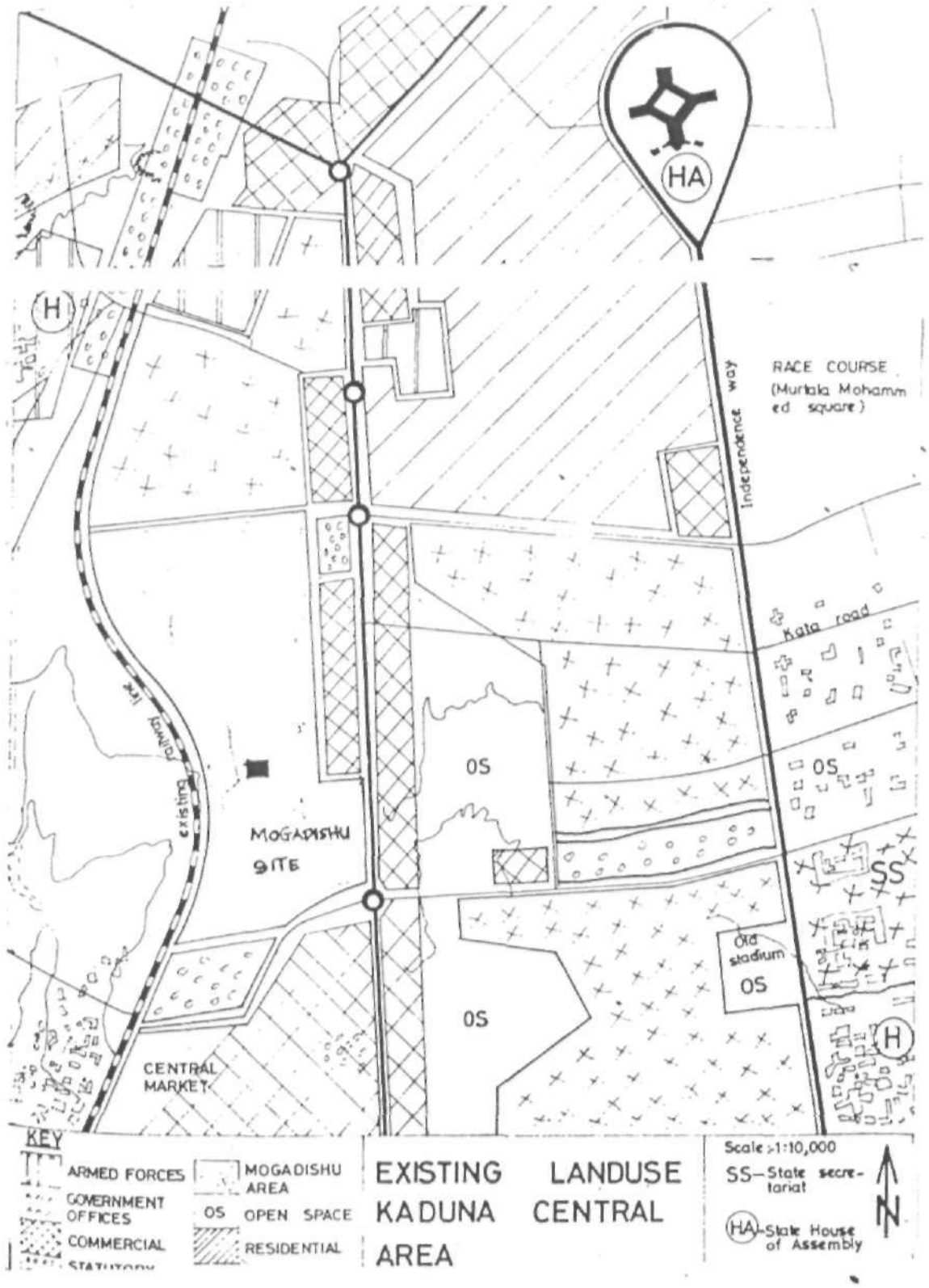


Fig 13 Source, Danus, I (1982)

blocks interposing them (See Figure 12 and 13).

3.3 The Mogadishu site

Bounded by Wharf Road in the north, Ahmadu Bello Way in the east and the railway line in the west the Mogadishu site is in no doubt the heart of Kaduna. Estimated at 128 hectates the site is inadequate for the development of a city centre normally put at 320 hectares abuot 800 x 400 metre (See Figure 14).

3.3.1 Site analysis

Access

The site is readily accessible from Ahmadu Bello Way or Hospital Road. At the moment, vehicular access is only possible through the existing Army barracks on Wharf Road and the area used by lorries as garage on Hospital Road. (See Plate IX).

The area witness a severe traffic hold-up on Ahmadu Bello Way a situation that makes motor traffic access from Ahmadu Bello Way difficult. A traffic survey carried out by Darius (1982) reveals that all traffic goes through the central area and the abscence of east-west roads makes traffic circulation along Ahmadu Bello Way difficult (Fig 15).

Landscape

The site is a flat low lying strip of land with less than 1 per cent slope rising towards the northern side of the site. No outcrops exist but in the rainy season, the area is covered within a thick bush of elephant grass and few trees, the soil is nevertheless visibly hard laterite.

KADUNA CITY CENTRE

development plan PROPOSED

scale 1:500

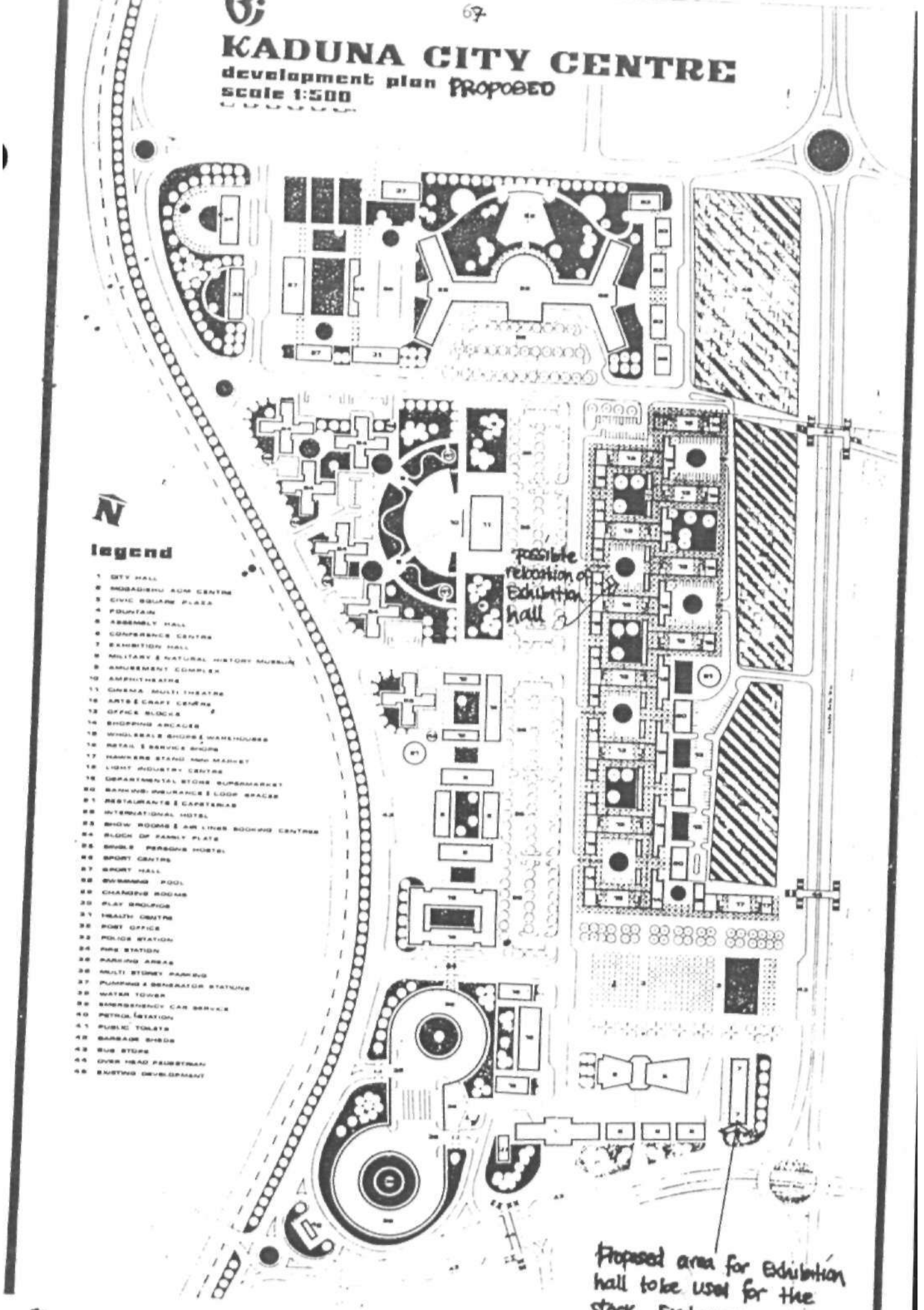


Fig 14

Source; Bestarc International (1982)

Microclimate

The absence of any natural wind breakers allows a free movement of air, the following wind speeds are recorded the year round:

Table 3.2 Microclimatic data of site

Wind speed (m/s)	Month(s)	
1.13 - 1.5	Oct, Sept, Aug, March	Comfortable
1.60 - 2.0	July, Nov, Feb, April, May, June	Very comfortable
2.15 - 2.5	Jan, Dec	Very comfortable

The following can be said of the site microclimate:

Temp and humidity	Uncomfortable for most time of the year 35-40% open spaces should be allowed or use mechanical ventilation.
Wind speed	*Uncomfortable* Sun brakers could also serve as wind brakers. Vegetation could act as wind breakers.
Building configuration and orientation	Orientate long surfaces perpendicular to prevailing winds
Windows	Minimise direct sun on windows and expose to prevailing winds. minimise glass areas.
Interior solar control	Avoid blocking prevailing winds with blinds and drapes.

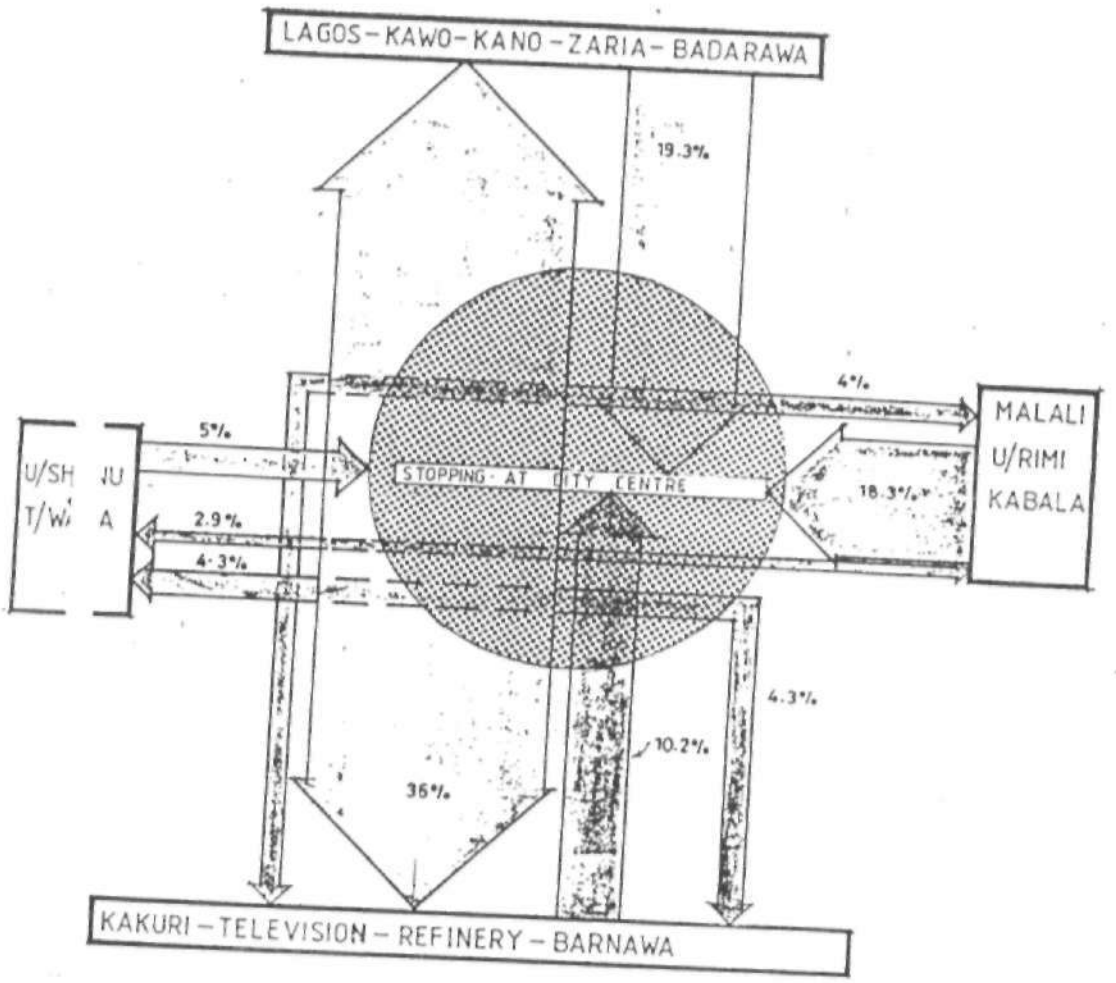


Fig 15. Source; Darius, I. (1982)

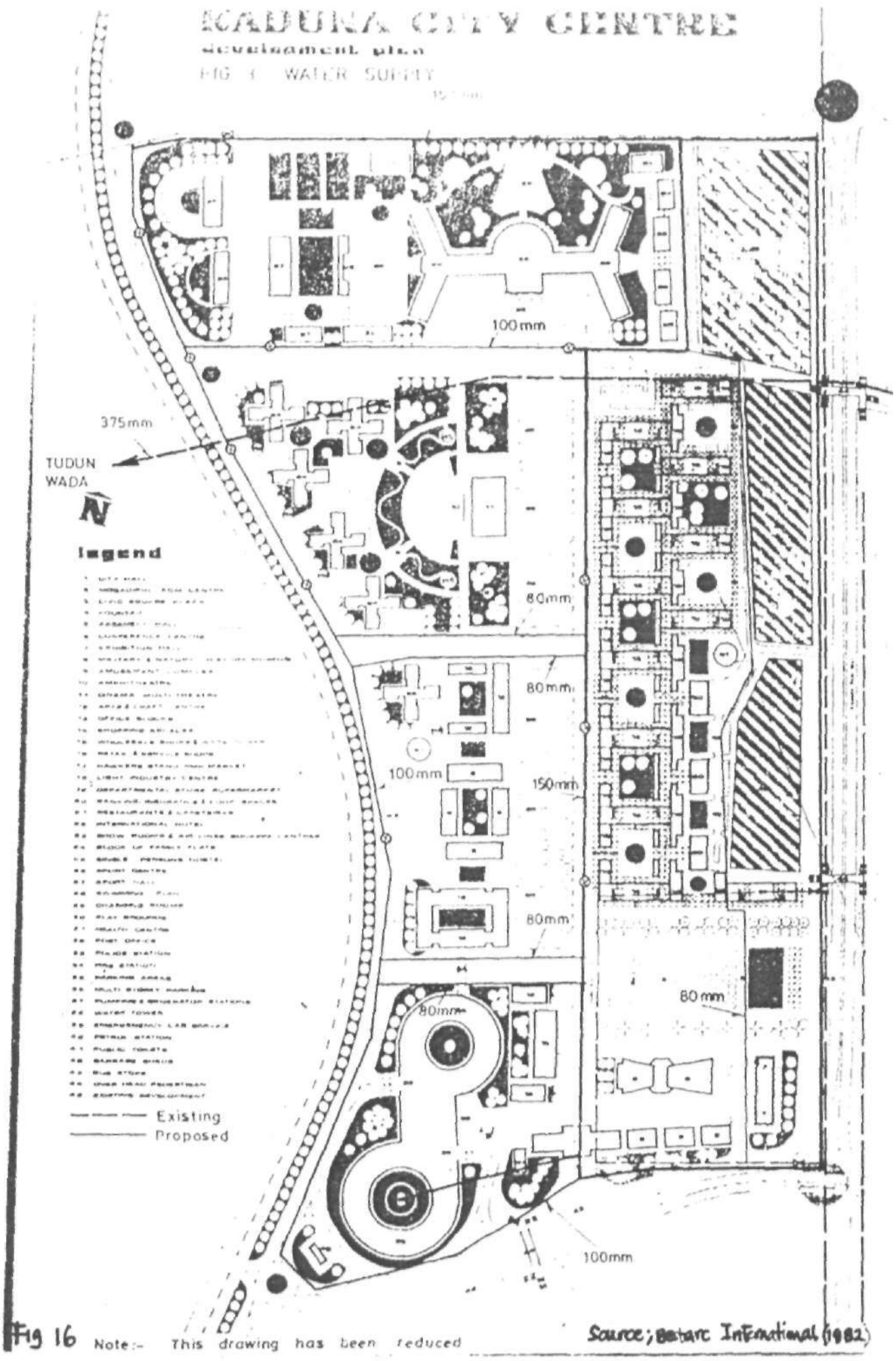


Fig 16 Note:- This drawing has been reduced

Source; Betarc International (1982)

KADUNA CITY CENTRE

development plan

FIG 1 PROPOSED SEWER LAYOUT AND TREATMENT PLANT

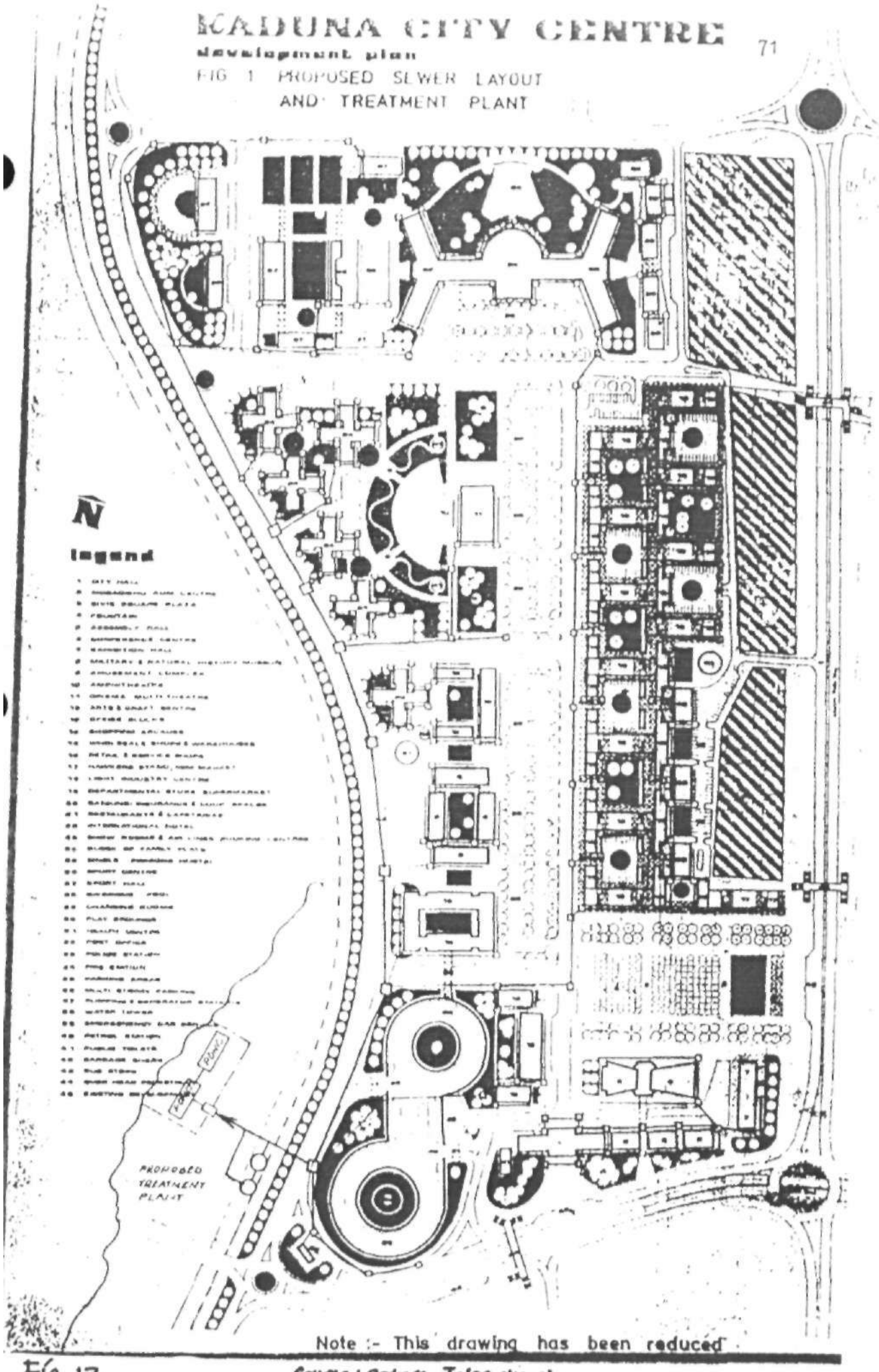


Fig 17 Source: Bestarc International

Peculiar traffic problem

Presently, a pipeline runs along Ahmadu Bello Way bounding the site on its east, this carries water supplied to Tudun Wada area. Electric and telephone lines can be seen flanking the site on both its western and eastern end. A general proposal of a distribution network of services is proposed in the development plan and it is expected that services should not pose any difficulty to development on site (See Figure 16 and 17).

3.4 The Mogadishu development plan (MDP)

This plan is the approved document for the development of Mogadishu site along Ahmadu Bello Way.

3.4.1 Location of the Stock Exchange and the Economy of substituting the Exhibition hall

In the MDP the proposed location of the Stock Exchange has been scheduled for an Exhibition hall, the thesis however based on the following reasons considers the proposition not suitable, that:

I. Land at the fringe of a city centre is very expensive and its value can better be derived if functions located there are more profit oriented.

II. Considering the attitude of the people to exhibitions in that not only are people reluctant, they prefer to attend exhibitions in multi-functional areas or where other social functions can be performed, and since the exhibitions will not hold always, more so that other possible social activities have been proposed else where on the site, it is opined that the building of an exhibition hall may not be economical.

III. Most of the offices and functions located on the site will normally have their exhibition spaces.

VI. City vistas created by raised skyline due to construction of the Stock Exchange is desirable.

The thesis suggests instead that the exhibition hall be not build or if at all it is required it can be located somewhere within the offices (See Figure 15).

The MDP has the following desired goals:

I. Harmony, to achieve harmony with existing developments.

II. Function, like functions are to be grouped together.

III. Beauty, as much as possible the city centre should be attractive and inviting, it should create a delightful and lasting many memory in the minds of any visitor.

VI. Flexibility, to allow changes that may occur in the course of implementation and also in the event of expansion.

V. Circulation, to achieve a separation of both pedestrian and vehicular traffic, ample car parking spaces should be provided. In the light of this development plan but as much as possible shall explore its own initiatives.

1 Gibbs, K. (1976). Business architecture imagery - Ann Arbar, Michigan USA, p 210. Author is talking about American skyscrapers

2 Gibbs, K. (1976) Ibid - pp. 212-213.

3 Fitch, J.M (1972). The aesthetics of function, people and buildings, Gutman R. (ed) - Basic books, Robert Inc. London pp 2-20.

4 Ibid.

5 Graham, C. (1963). Form, space and vision - Practice hall Eagle Wood, New Jersey, pp. 59-66. Here architecture is understood as a union of utility, technology and expression.

6 References is been made to the round form Bank of the North office design located in some parts of Northern Nigeria, the design is a good fusion of modern into traditional architecture.

7 Graham, C. (1963) Op. cit.

8 Bonta, H.P (1979). Architecture and its interpretation - Lund Humphries, London, Pp. 156.

9 Ibid.

10 Fleming, W (1963). Arts and Ideas - Holt Rincholt and Wiston, New York.

11 Back page advert by First Bank on many Nigerian magazines like African - Guardian, Newswatch, etc.

12 Austen, O (1986). On a house of glass, Newswatch, 7(4) p 38.

13 Bestarc International (1982). Kaduna City Centre development - unpublished proposal for the city centre design.

CHAPTER 4

4.0 DESIGN CONCEPT

4.1 Site concepts

While discussing the problems of the site in chapter three, accessibility especially vehicular was noted as being important. The constant traffic hold ups along Ahmadu Bello Way makes it difficult to create vehicular access from it, more so that the site is located just about the Hospital Road round about. Other factors peculiar to the site include, it positioning in the city centre that makes it easy to influence the city vistas by a correct placement of a building and the absence of natural sun and wind breakers makes it imperative to use slopes, podium or other means of wind breaking.

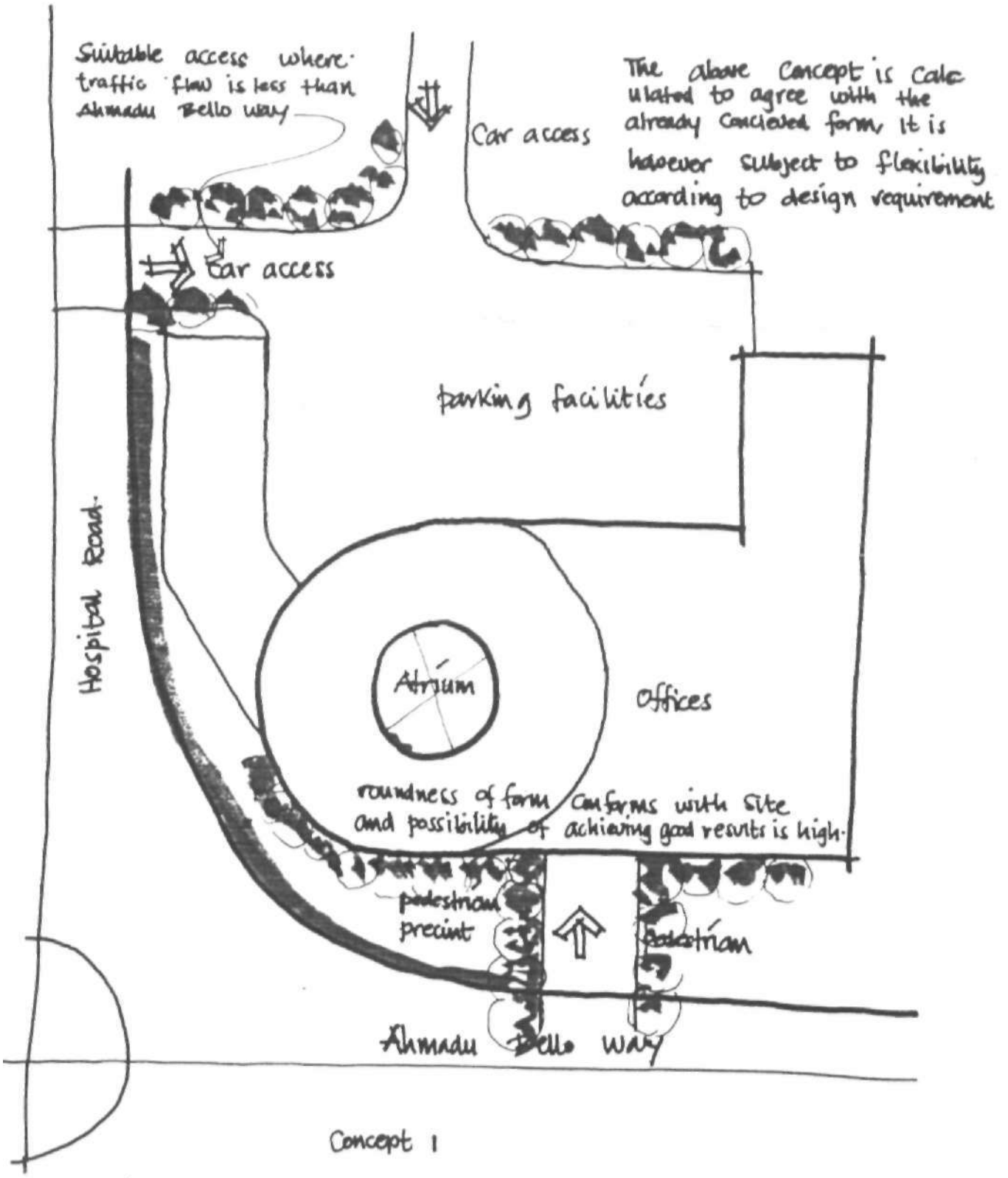
In view of these factors mentioned above the following concept have emerged.

4.1.1 Concept I

This takes advantage of the arc defining the road to create a composition that rimes with the natural environment. Two major access exist on the site: pedestrian from Ahmadu Bello Way and vehicular from Hospital Road so that there is a good degree of pedestrianization, this the makes it possible to devote the frontage of the building to planting (See Figure 18).

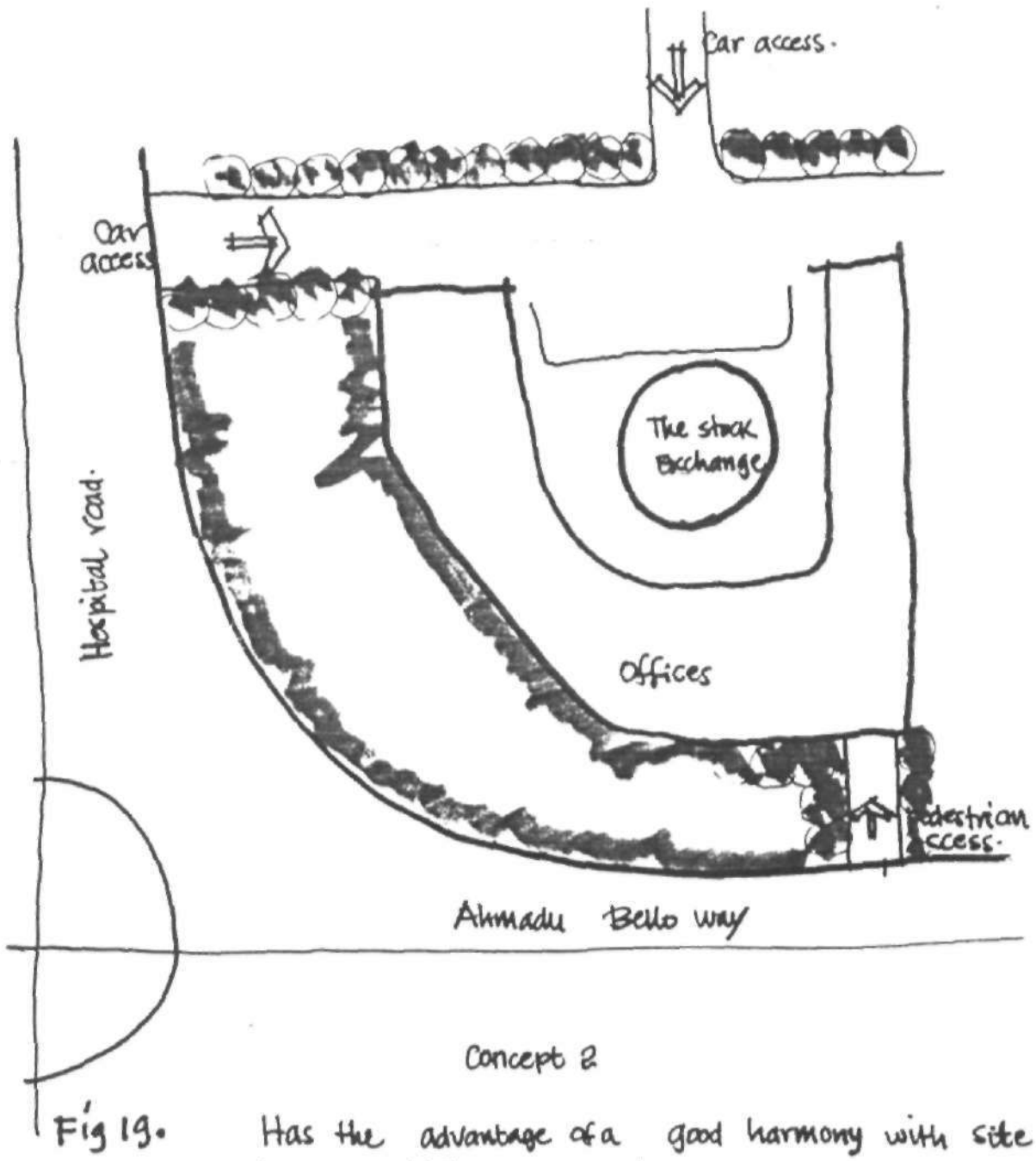
4.1.2 Concept 2

Here the building also rimes with the natural setting of the site but is stretched almost uniformly that it becomes difficult to achieve the desirable composition of



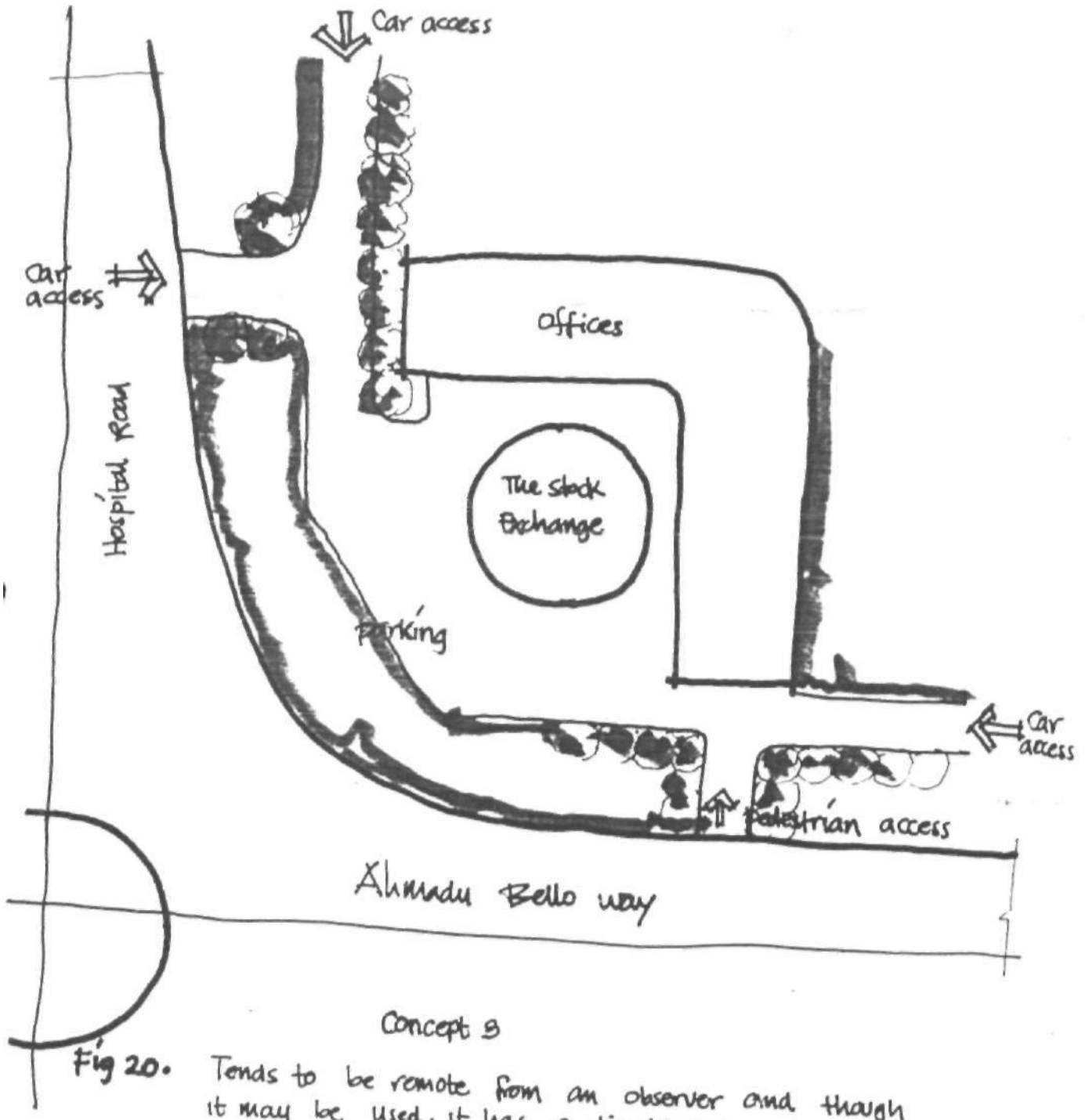
Concept 1

Fig 18. Has a high potentiality in realising a good composition of form.



Concept 2

Fig 19. Has the advantage of a good harmony with site but possibility of achieving the proposed elements is low since more prominence appears to be on one side ie the side where there is car access.



Concept 3

Fig 20. Tends to be remote from an observer and though it may be used, it has a disadvantage of allow elements like cars to take pre eminence.

forms. Emphasis is now turned from the pedestrian access way and given to the car access way (Figure 19).

4.1.3 Concept 3

Instead of rimming with the arc of the road, the buildings now contrasts it. The composition can be good as more than one form at a time can be noticed, however as opposed to the desired objective, cars are given prominence instead of pedestrians..

Considering the points raised above, concept I has more potentials of creating an environment of awareness and freedom of circulation since vision is possible from many points and a good separation of car from pedestrians routes.

4.2 The search for a suitable form

Form has been described as the delimination of space the most mysterious and perharps intangible concept in architecture[1]. It serves as a means by which space is experienced and therefore becomes necessary to asses it in any piece of architecture.

Before late 1890s architectural practice was without philosophical bias but rather based on materials as in the case of Godfree Semper, structural integrity as in the case of Violette - Le-Duc and analogies with nature like John Ruskin[2]. Form has since become an object of philosophy, contemporary architects realise its implication in any design.

To look for a suitable form to carry out any architectural expression it is necessary to outline what the expression is. The situation of the stock exchange is more of that of impact on the public who may or may not have the ability to perceive form in its manifestations, hence the

necessary form should take its roots in familiarity or identification with the scenero within which it is located, while not overlooking the fact that contrast in itself is effective as identity.

4.2.1 Iconic forms

These are forms that come to be accepted in the society as having particular meaning or identity. In the northern part of the country the area predominantly occupied by the hausas, forms like dome signifying heaven, minnarets and arches connoting elegance are regarded as close associates of the north. A careful composition of one or more of this elements is likely to be readily identified with.

Case I

In the first case, Figure 21, the dome and arch have been given prominence, they accord a feeling of elegance at the entrance and the composition behind which looks contrasting though is suppose to potray the age of our times.

Case II

The arches are extended to cover the roof at a reduced depth, a minnaret treated in vertical glazing, a treatment often noticed in mosque is placed immediately behind the main entrance dome, the entire composition looks more congenial but there appears to be a missing compliment of the dome (See Figure 21.1).

Case III

Windows are now scattered in patches like in a typical domestic construction, the circular window is introduced and the entrance dome retained but they appear to be functioning

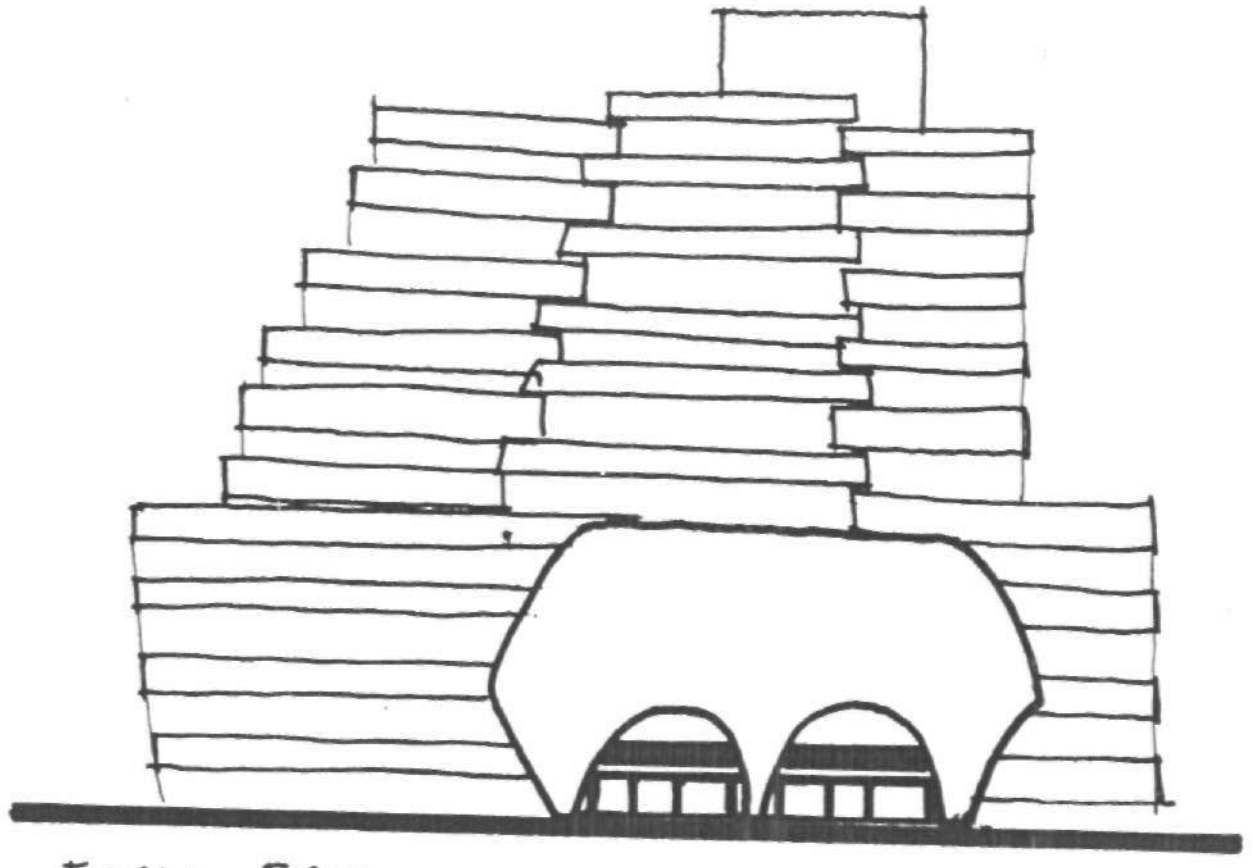


Fig 21.0 FORM 1.
The dome, arch and minaret are easily noticable.

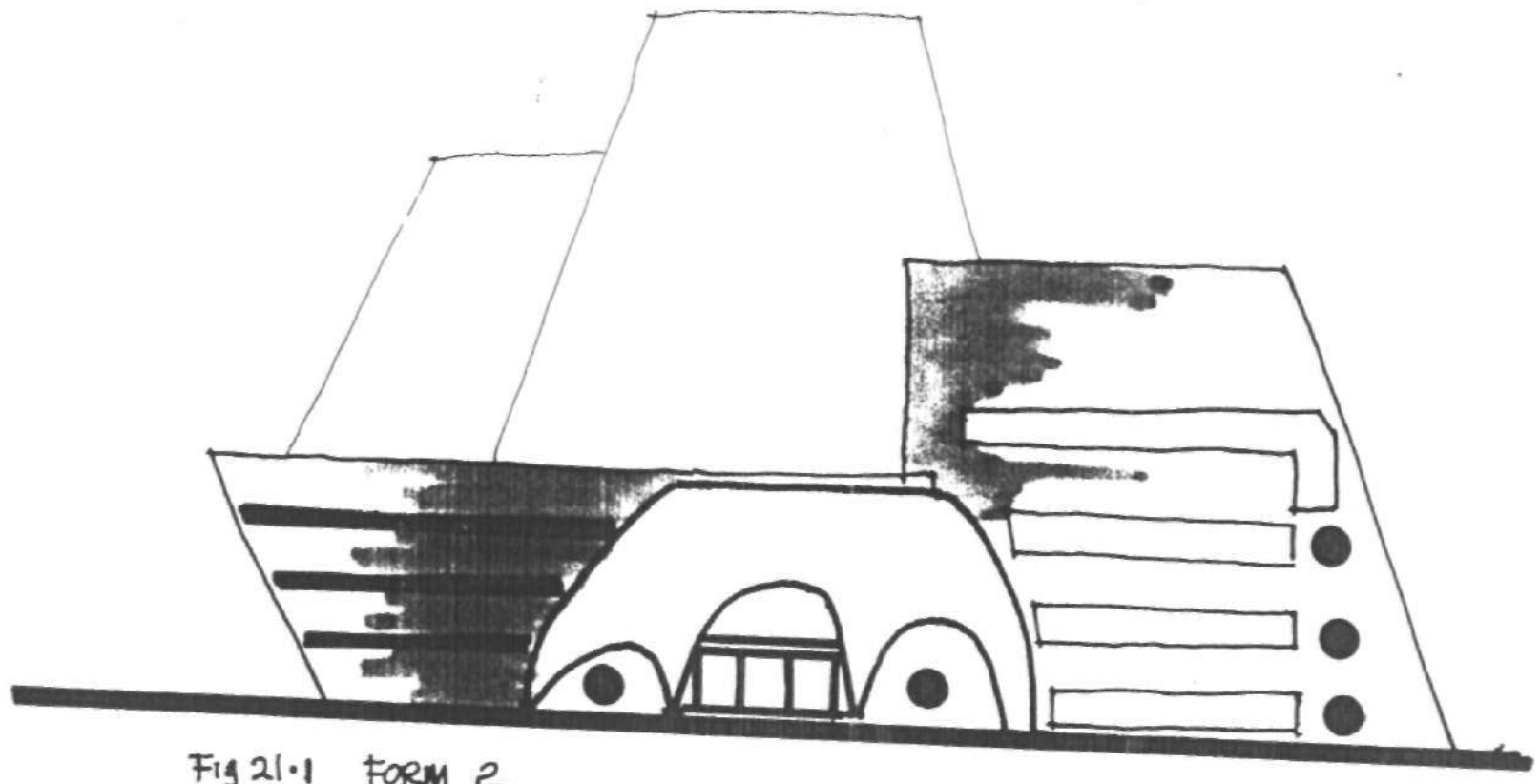


Fig 21·1 FORM 2,
Windows are scattered, the circular window is introduced
The entrance is still emphasised.

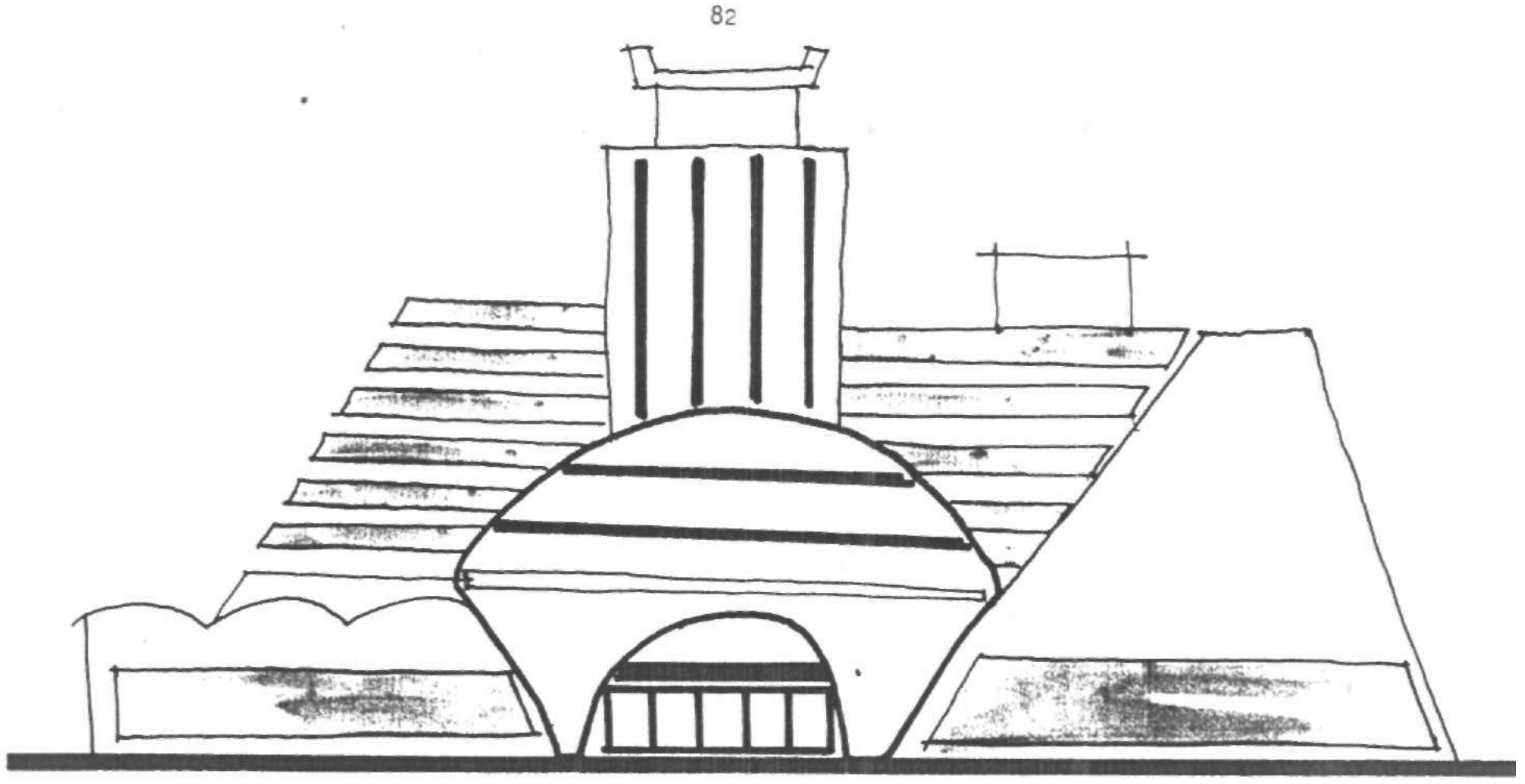


Fig 21.2 FORM 3
Arches are extended, Dome is retained and narrow vertical glazing introduced.

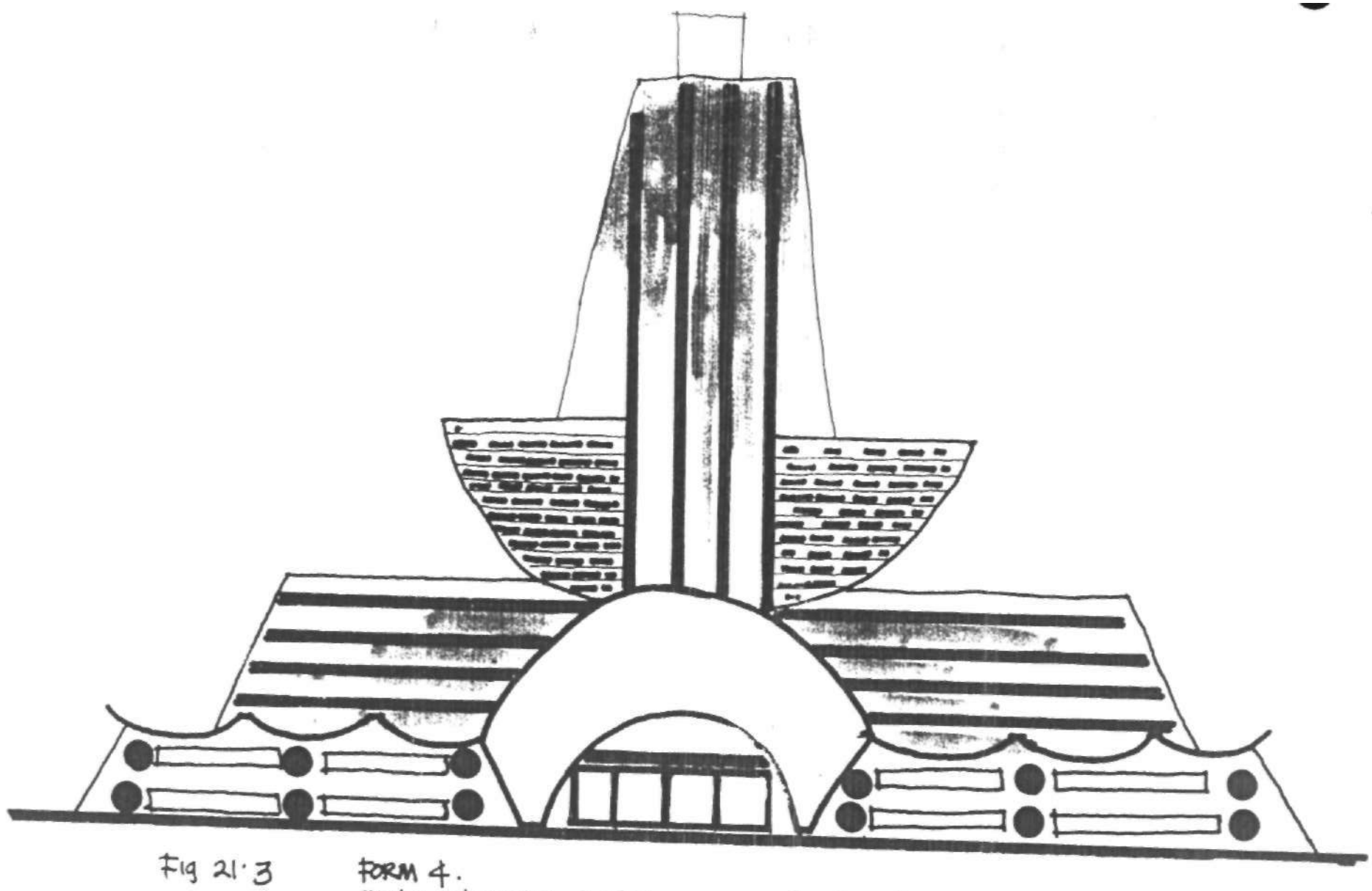


Fig 21·3

FORM 4.
Major elements include; Domes, small windows and minnaret, Entrance is emphasised.
The above form forms a very good basis of design.

in distinction.

Case IV

Two major domes or "calabashs" are used with one complimenting the other, the narrow windows are retained, but streched horizontally along the facade.

The composition is harmonious and contains a fusion of many elements like the dome, minnarets, small windows and the calabashes which are rounded and can easily be painted in many motives. It is worth noting that the calabash has different meanings in almost all the major ethnicities in the the country and in that capacity can serve as a good focus in the design. Case IV has more advantages which makes it a likely alternative.

4.2.2 Conventional expressive forms

These are forms that seek expression in the use of modern materials or finishes based on the psychology that certain materials like glass, paint, etc. are regarded in high esteem.

Expressive glass forms

Traditionally, glass is regarded as a prestigeous material to use in buildings, this is typical of financial and oil companies, examples of such in the country include, the First Bank, IMB plaza and recently the black house of the African Continental Bank in Lagos (Figure 22.0).

Conventional concrete forms

They have long been in use and can be very functional but have a low expressive value. Examples include, the Zaraudah Hotel in Bauchi, The Stock Exchange, Lagos and

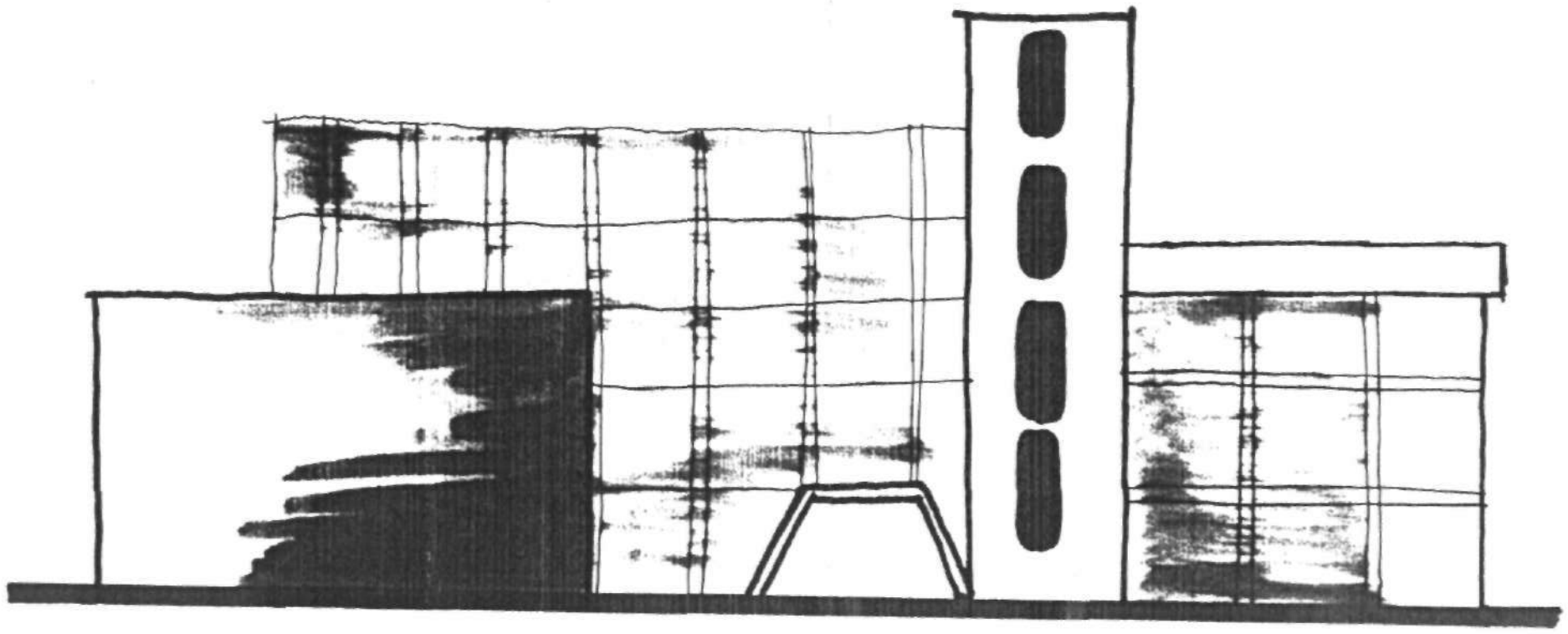


Fig 22.0 EXPRESSIVE GLASS FORMS

Traditionally, glass is vegarded as a prestigeous material to use in buildings, this is typical of finamial and oil companies. In Nigeria the use of these forms Include; The IMB plaza, First bank and Union bank in Lagos amongst others. These forms have a high expressive value but can be very expensive especially in maintenance.

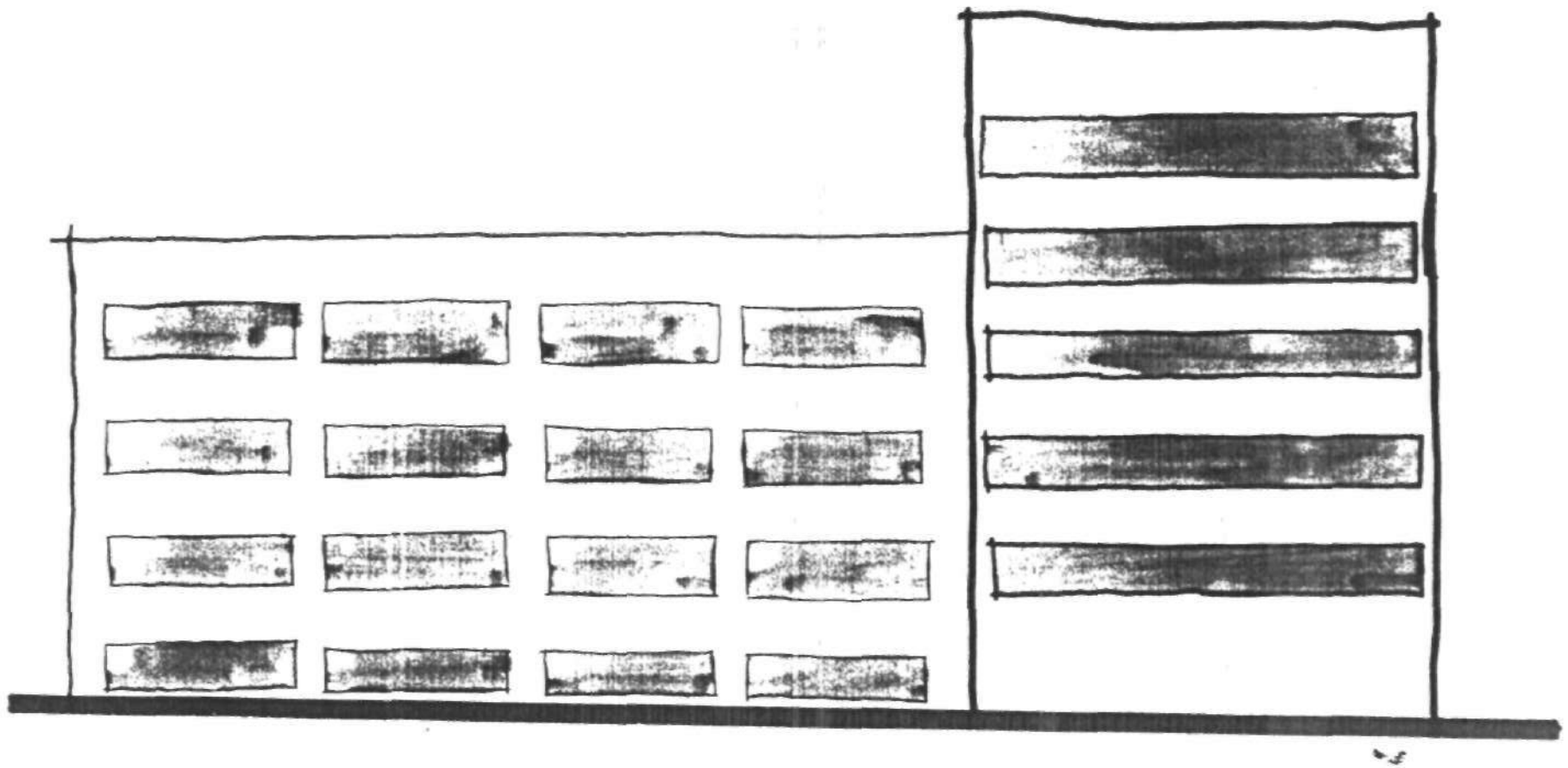


Fig 22·1 CONVENTIONAL CONCRETE FORMS
They have long been in use, they can be very functional but have a low expressive value.

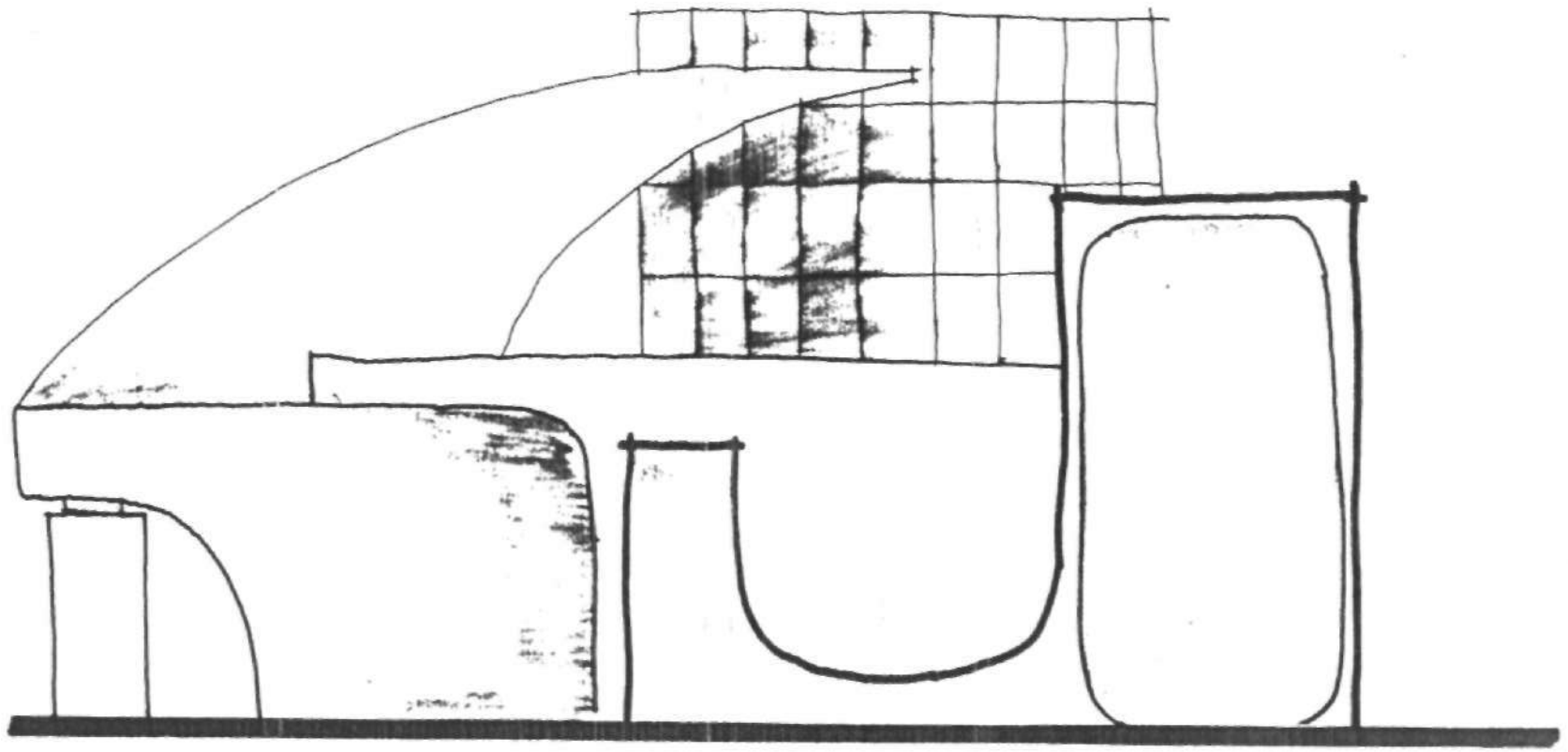


Fig 22.2 CONCRETE SCUPTURAL FORMS

They have a high expressive value but when not properly handled, they can incurr a lot of wastage of material. they have a law potential to potray identity interms of their architecture

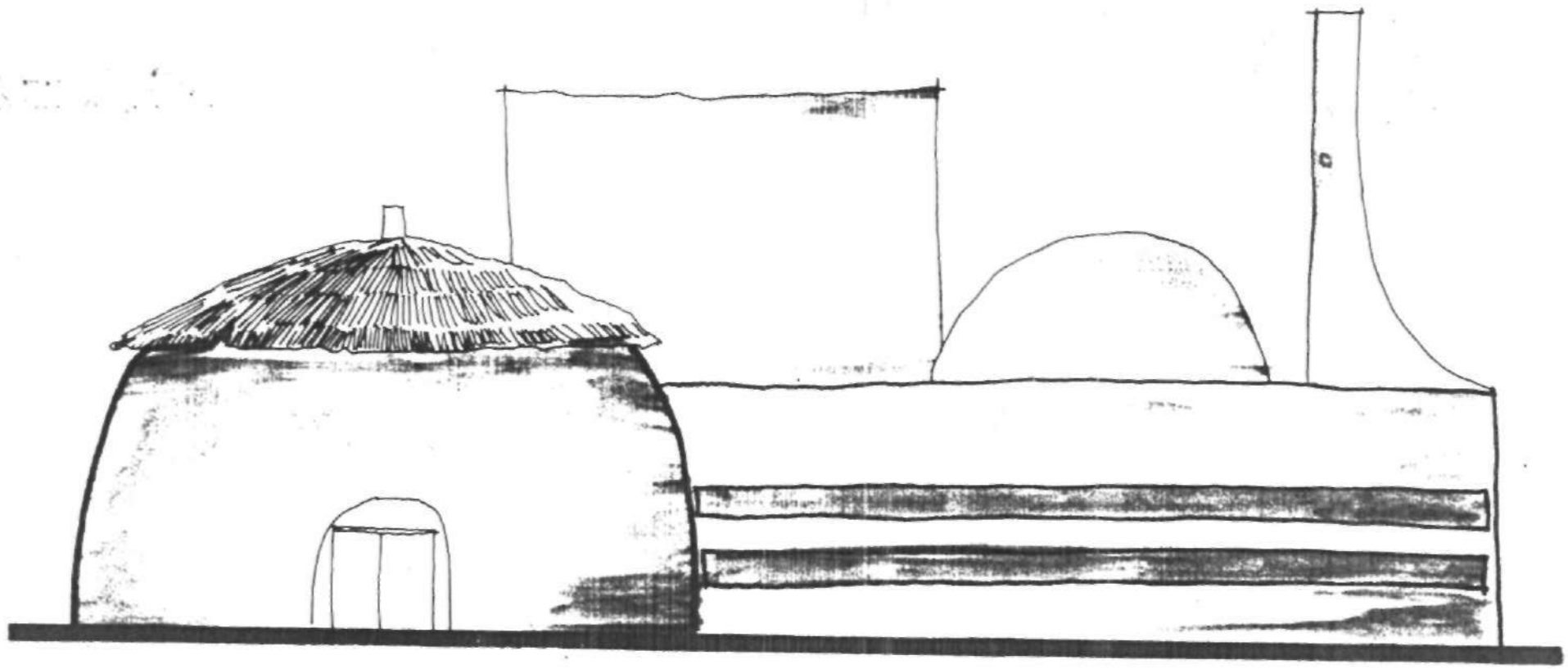


Fig 22·3 MIXED FORMS.

Sometimes expression is found by the composition of more than one form especially when a complex of diverse functions is involved. While form may follow function, an overall meaning may be difficult to make out.

others (Fig. 22.1).

Concrete scuptural forms

They have a high expressive value but when not carefully handled can incure a lot of wastage of material (Fig. 22.2).

Mixed forms

Occasionally, expression is found in the composition of more than one form especially when a complex of diverse functions is involved. While form may follow function, an overall meaning may be difficult to make out.

1 Van de Ven, C (1978). Space in architecture. Van Gorcum Assen/Amsterdam

2 Ibid.

CHAPTER 5

5.0 DESIGN PROPOSAL

This chapter concentrates on the actual proposal of the design which has addressed the issues raised in the preceeding chapters.

5.1 Design brief

The withdrawal of 3.3 million naira from circulation by the Federal Government and the privatization of firms by the state governments are moves that are very much expected to improve the activities of the stock exchange as mentioned earlier. Although accurate growth rate cannot be established for the Kaduna stock exchange but in view of the fact that over the last 25 years the stock exchange has grown 12 times, it is anticipated that the market strength should have grown to ten times by 2000 A.D during which the staff strength of the Kaduna Stock Exchange should have grown to 40 from its present number of 8 and the number of stock brokers should have grown to between 40-45. However in making these predictions, it is noted that the overall economic atmosphere which the stock exchange relies on cannot be accurately forecast since it depends on many factors, like Gross Domestic Product, World market, etc.

5.1.1 Facilities

The call-over room - It is the place where the main activity, the bidding takes place, it is expected to accommodate at least 45 people but should be flexible enough to allow another addition of 15 others.

The stock exchange offices -Three categories of offices will be provided:

I. Executive offices - To offer privacy to their occupants. Required number should be 10.

II. Managers - To provide minimum privacy by the use of low partitions.

III. Intermediate and Junior staff offices - Should be open and 20 in number, low partitions may be used.

Library

Should contain a book stock and an area for casual reading.

Research and Publication unit

This should be an open office with a typing pool, the dimensions should be such that four people can be accommodated.

Visitors Gallery

To allow visitors a view of the bidding activity. It should overlook the call-over room.

Plaza/Exhibition hall

As part of the measures to bring the public into the building, a plaza will be introduced and will contain a fountain, an exhibition platform and public facilities like, photocopiers, telephone booths, etc.

Parking spaces

Since the number of floor is likely to be ten, a parking provision of 1:6 is being made, additional spaces will however be provided for visitors.

Social facilities

These include: audio visual, musicals, restaurant and shop, the aim of which is to attract tenants and to provide a forum for their socialization.

Speculation officer

Open plan offices will be provided for speculative purposes they will constitute 70 per cent of the overall building complex.

Technical rooms

These include a water treatment room, a generator house and an electrical workshop.

Other functions

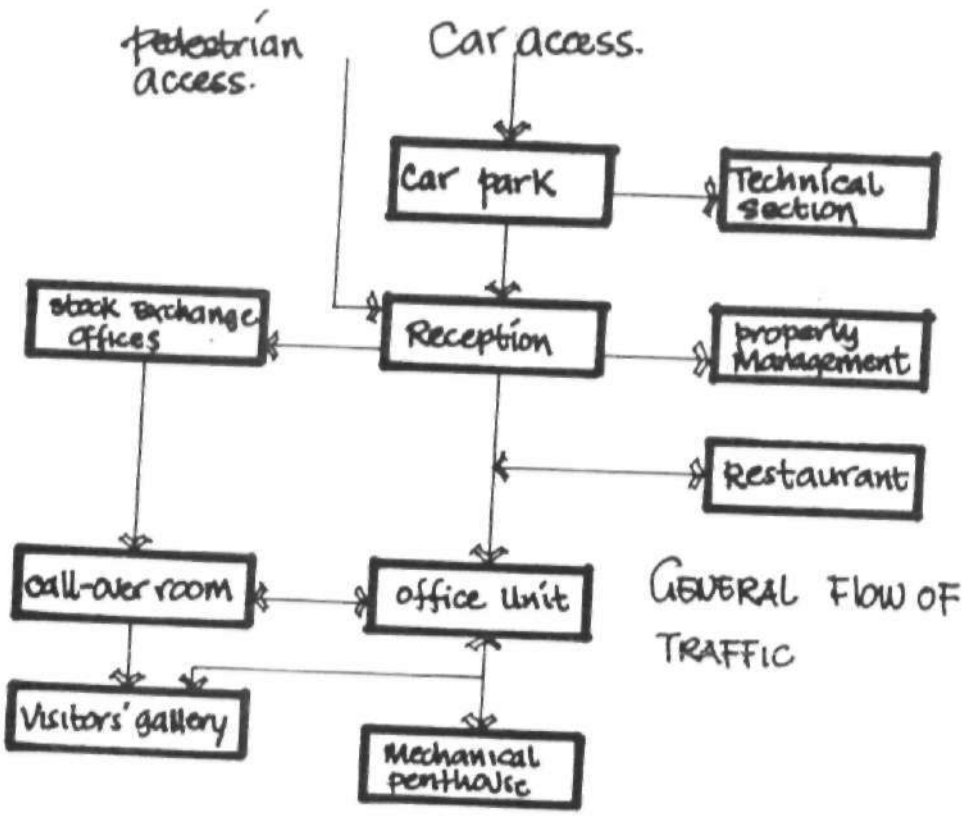
Any other functions that may enhance the desired objective of imagery of the stock exchange shall be given consideration.

5.1.2 Space requirement

The criteria for space requirement is based on the fact that the required space for a function fluctuates between the recommended standard and that which is convenient due to practical experience. In this respect the importance of case studies in the formulation of the required spaces cannot be overemphasised. A schedule of space is given in Appendix B.

5.1.3 Planning principle

The building has been zoned into two major parts viz: The Stock Exchange and speculative offices.



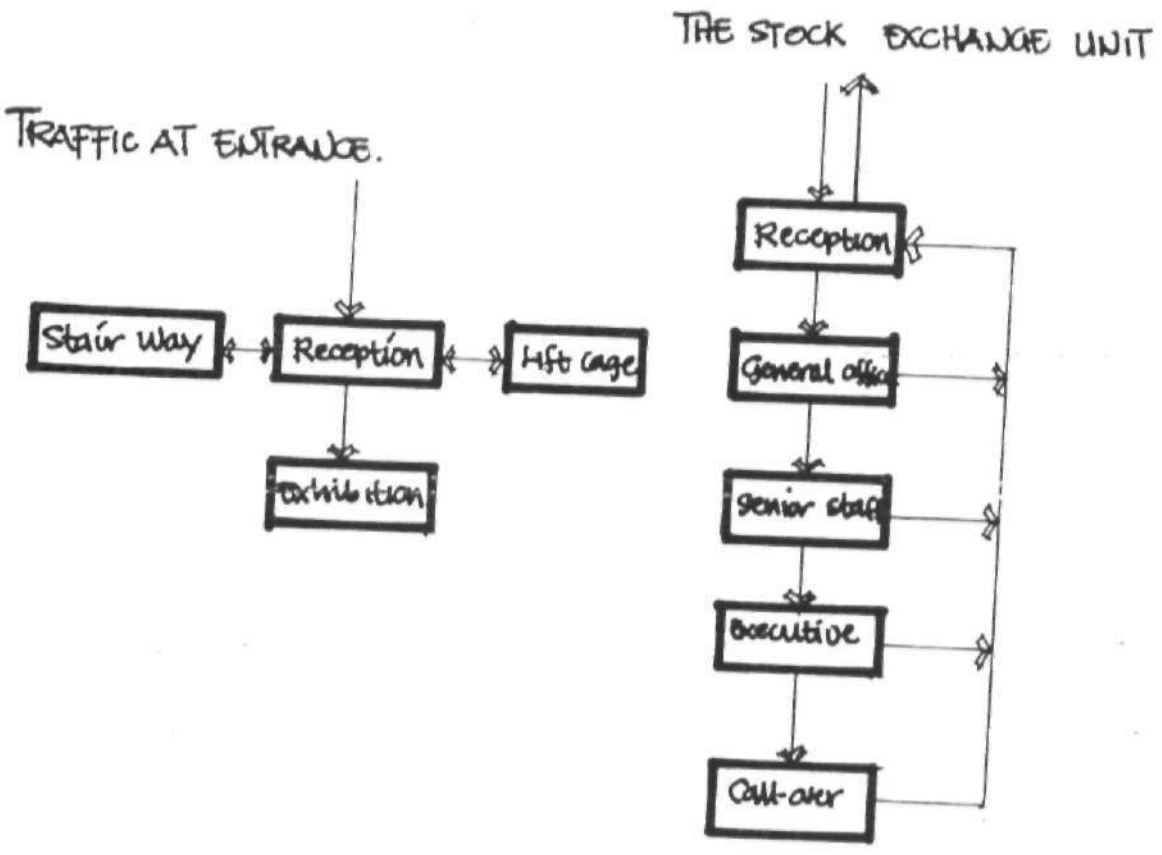


Fig 23 Circulation flow diagram.

The Stock Exchange

The offices on the first floor belong to the owners that is the stock exchange, this also houses social facilities for public usage in bid to bring the public close to the stock exchange.

Speculative offices

They are rental spaces provided and based on the open plan concept, the last two being given executive treatment.

Traffic flow

Upon entry to the complex, on a vehicle, a central point exists through which every vehicle passes - in front of the workers entrance, serves as a drop-off point from there vehicles proceed to parking space. The parking is distributed round the building in such a way that adjoining developments can share in it (See site plan). Pedestrian access is however tapped from Ahmadu Bello Way. The various relationships between the units have been represented graphically in Figure 23.

5.1.4 Structural Concept

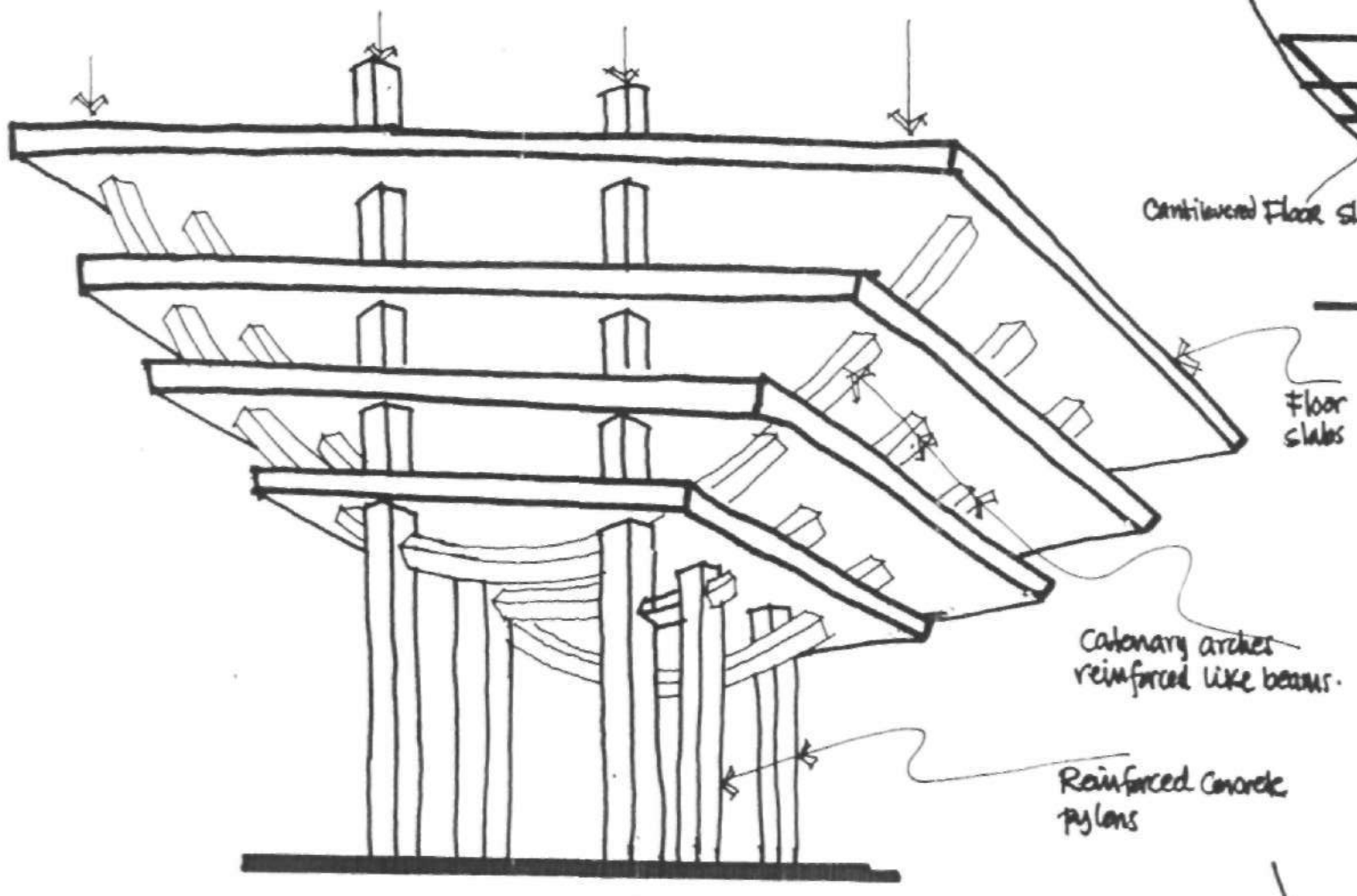
The emerging form in Chapter four has the calabash and the concrete frame as two major elements.

The Calabash

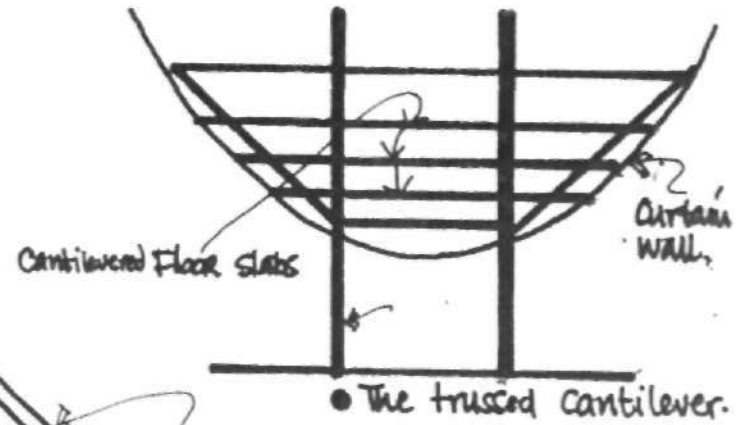
Three main structural principles have been considered:

I. The Catenary arch: which entails concrete arches reinforced like beams to obtain maximum stiffening, floor slabs are then considered (See Figure 24) up to 3500 mm cantilevered has been realised.

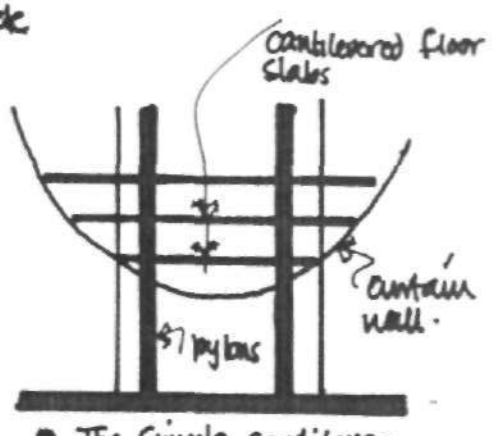
II. The Trussed Cantilever: It is easier to construct and



• The catenary arch concept.



• The trussed cantilever.



• The Simple cantilever

Fig 24 structural concepts.

when steel is used, quite large spans can be realised, the alternative has not been utilised.

III. Simple Cantilever: It is easier to construct and is also cheaper, but covers less spans. Curtain walls are easily fitted on this, secondary columns may or may not be necessary.

The Concrete frame

The reinforced concrete grid will be useful in compositions that involves small spans. Spans are not more than six metres to economise the use of reinforced concrete.

5.1.5 Site plan

It is developed almost directly from site Concept I. A clear separation of traffic has been achieved and the entire composition makes the building easily noticed from many points around the city centre. Landscape planting has been devoted to the pedestrian precint and provides a good link between the Ahmadu Bello Way and the building.

Service on site

A network of proposals for sewage disposal and water supply on the site exists, these have been utilised to the benefit of the design, gutters and pipes have been used to connect the waste and soil waters to the proposal services grid with care to ensure that problems of maintenance do not affect the flow of traffic. Storm water collected from roofs is channelled through pipes and drained along the natural drainage course of the site to join the natural drainage course of the site to join the existing storm drainage gutter on the boundary of Ahmadu Bello Way (See Figure 25).

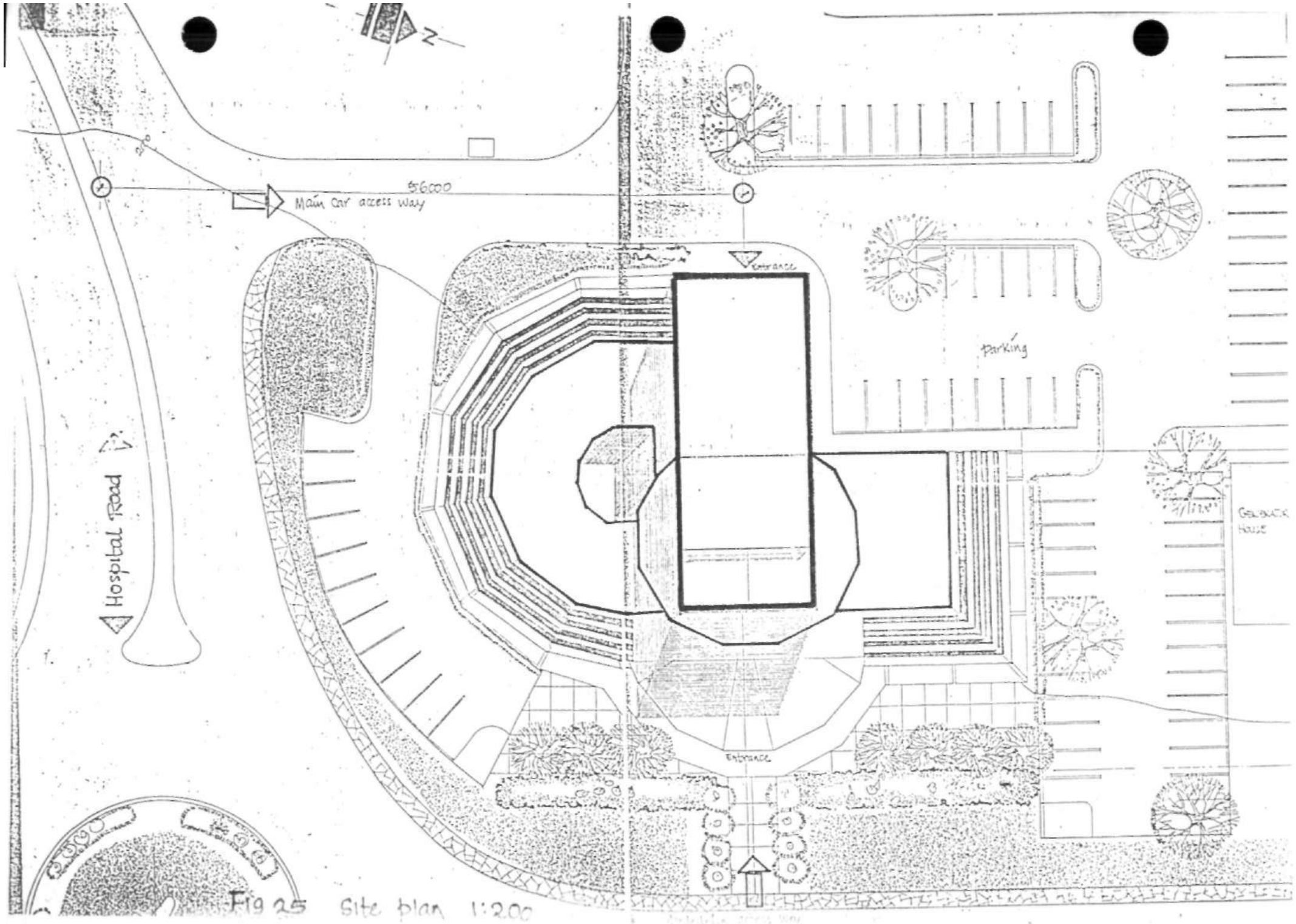


Fig 25 Site plan 1:200

5.1.6 Floor plans

Located on the ground floor is the maintenance section, offices and public facilities like, photocopiers, typewriters and a fountain. Two entrances, the pedestrian and workers entrance are located on two opposite sides where they are easily noticed. The overall ground floor coverage is 1300 m^2 approximately out of this 10.7 per cent that is 150 m^2 is used for services.

First floor

This takes the pattern of the ground floor but finds its difference in the location of functions. A restaurant is located here with a capacity of 50 people, serving only two meals. The kitchen is located on the north eastern end and has two sides exposed to north east and north respectively. The first floor flushes the ground floor over a row of columns at the vehicular access way. The overall floor coverage is also 1300 m^2 approximately.

Second floor

The Second floor witnesses a decrease in floor area of about 8 per cent of the second floor mainly due to the tapering design in cognisance of the analysis of required space the overall floor coverage is 1200 m^2 approximately.

The call-over room

Located on the fourth floor, the call-over room is a 12 sided polygon carved out of a circle to make it easy to construct. Facilities on the western extension include a council room and a computer services unit. Access has been provided from the call-over room to archival storage rocks located immediately underneath it by the use of a ladder.

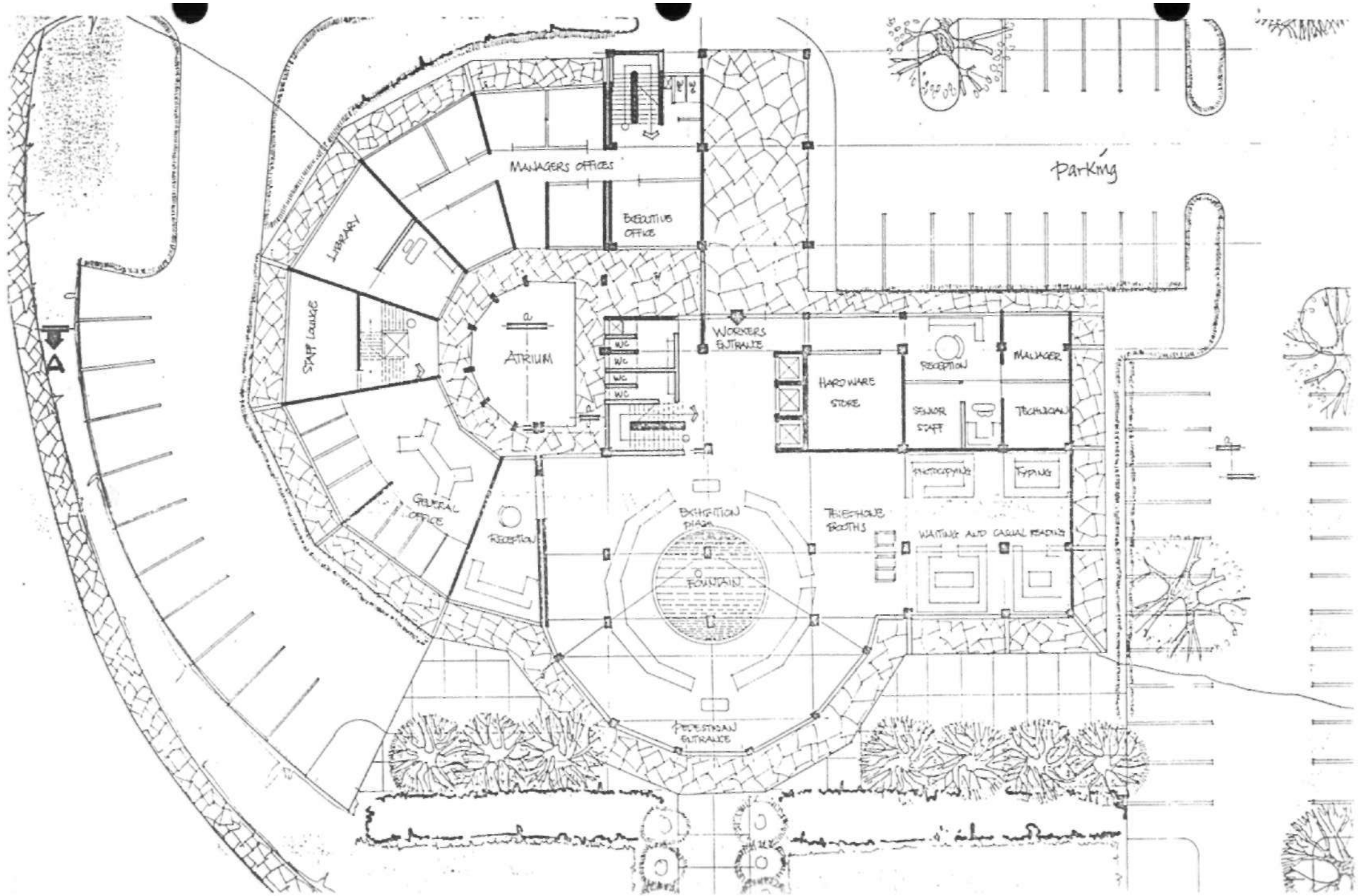


Fig 26.0 Ground Floor Plan 1:200

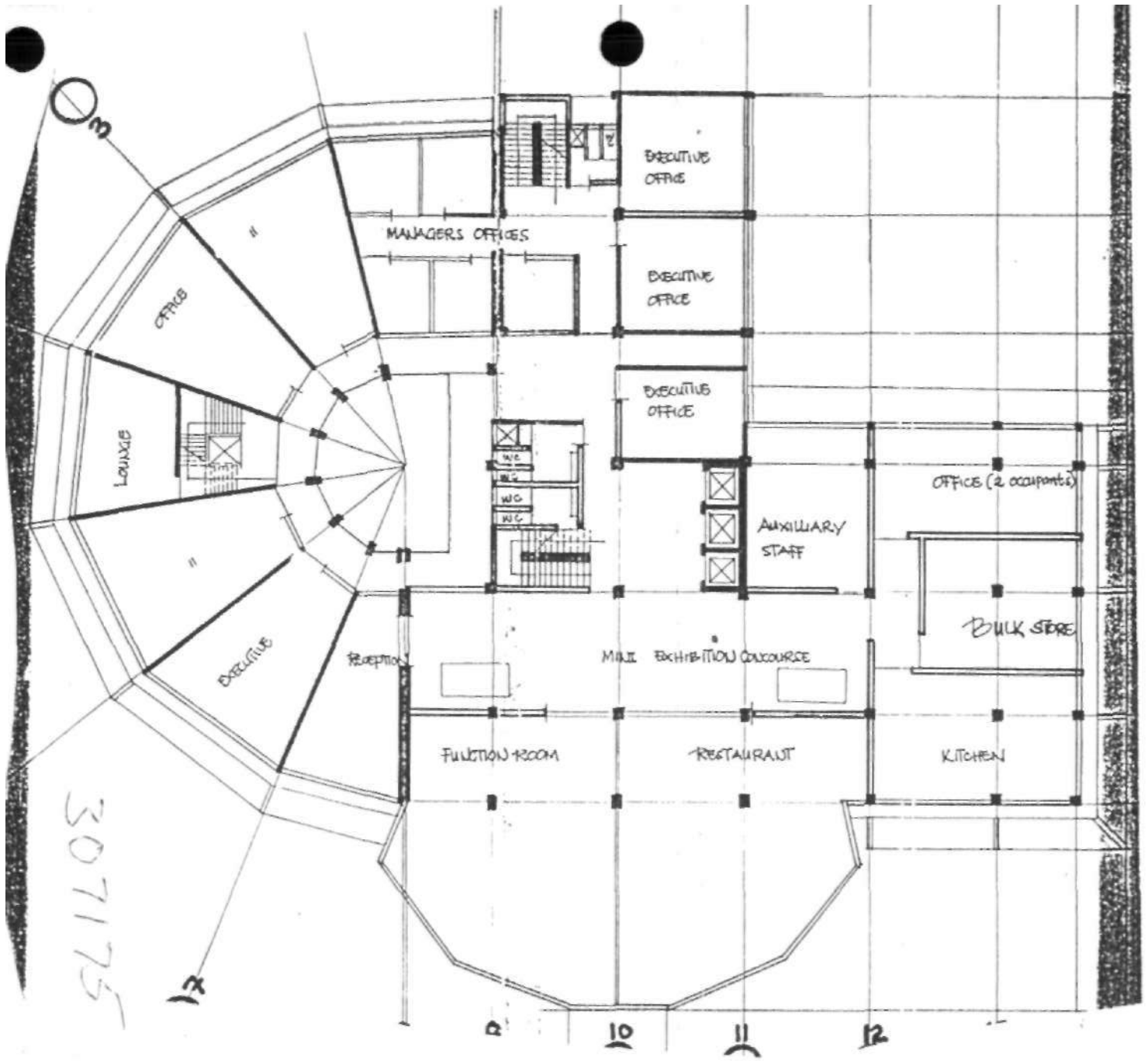


Fig 26·1 Second floor 1:200

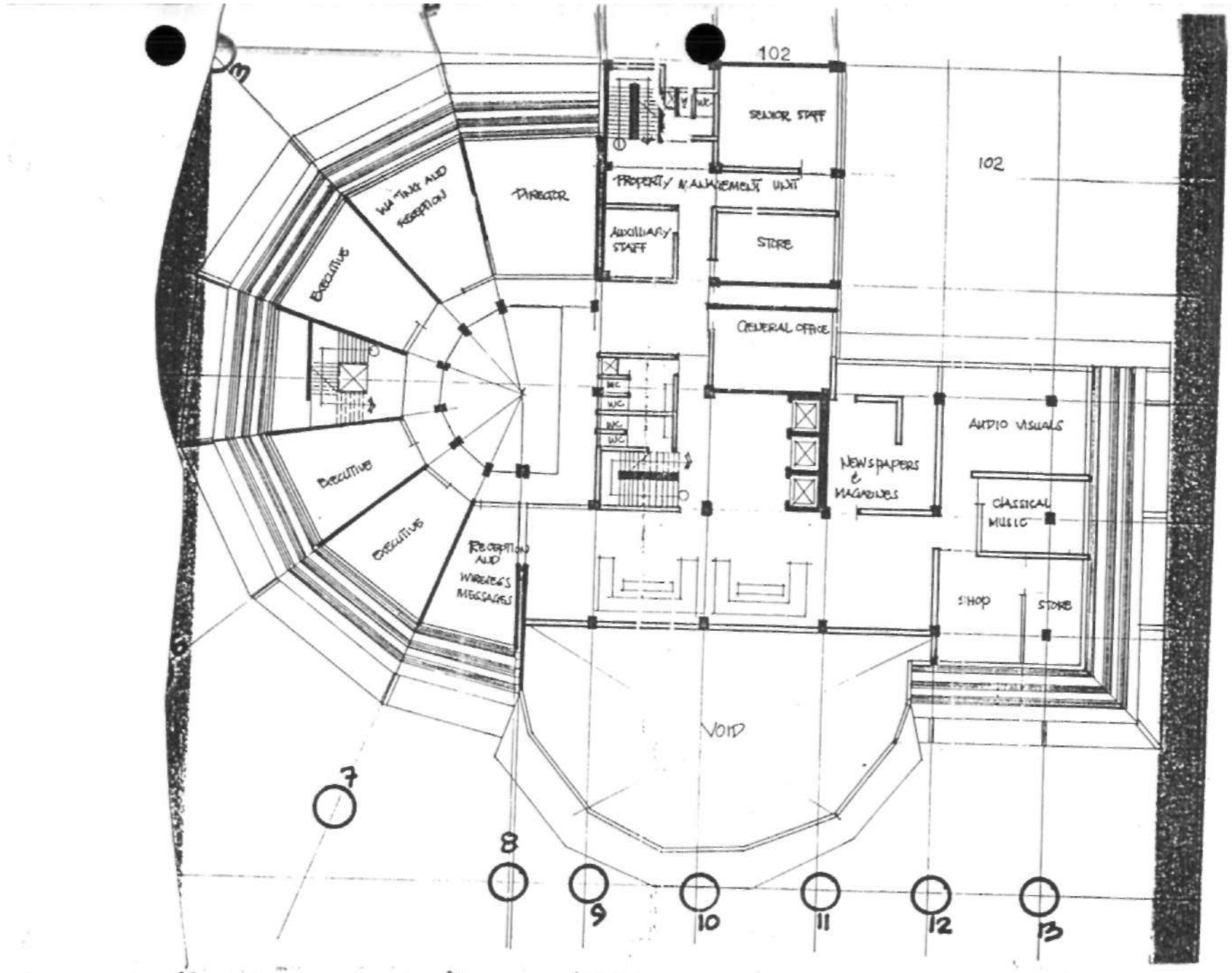


Fig 26·2 First floor 1:200

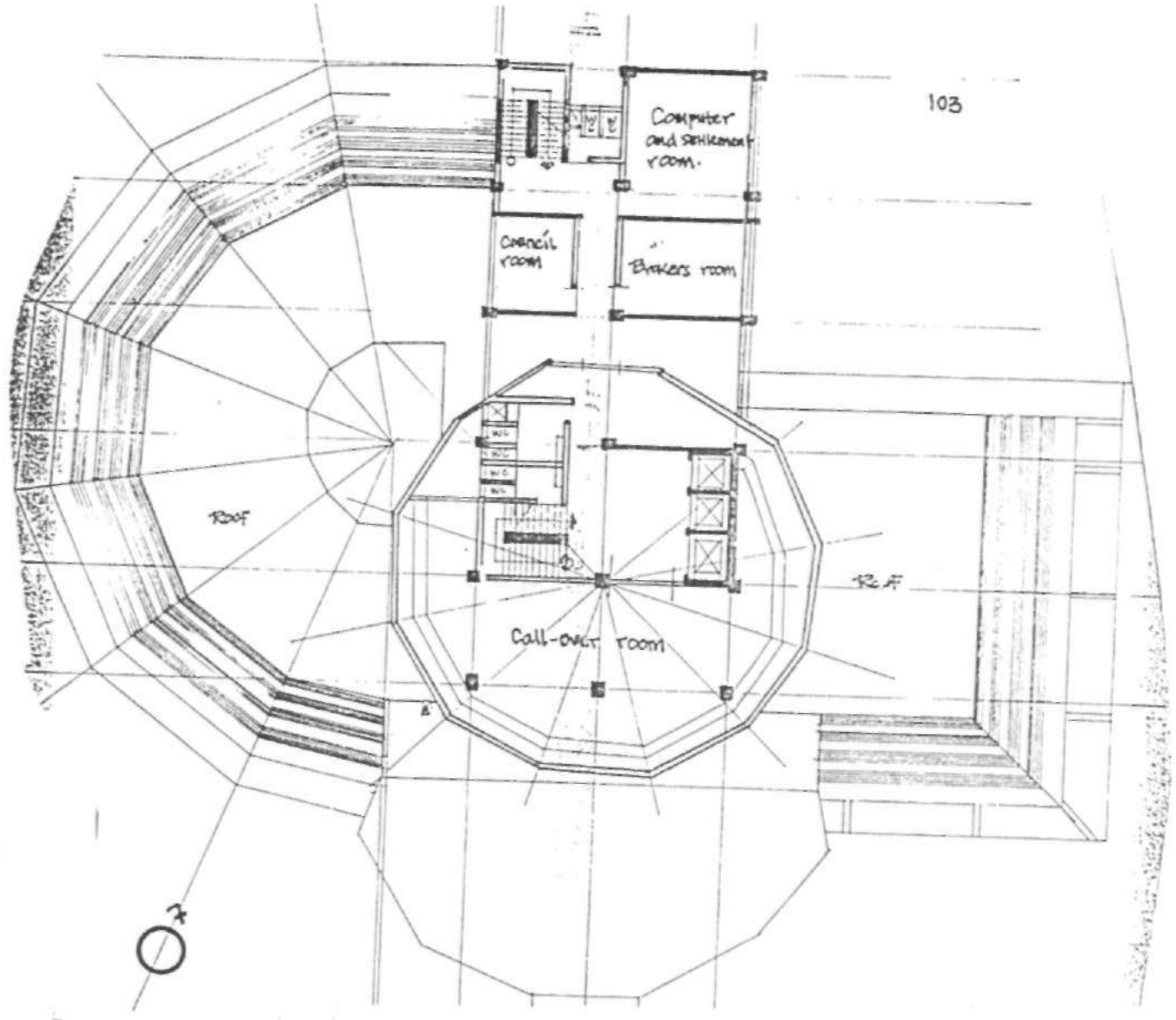


Fig 26·3 4th floor; 1:200

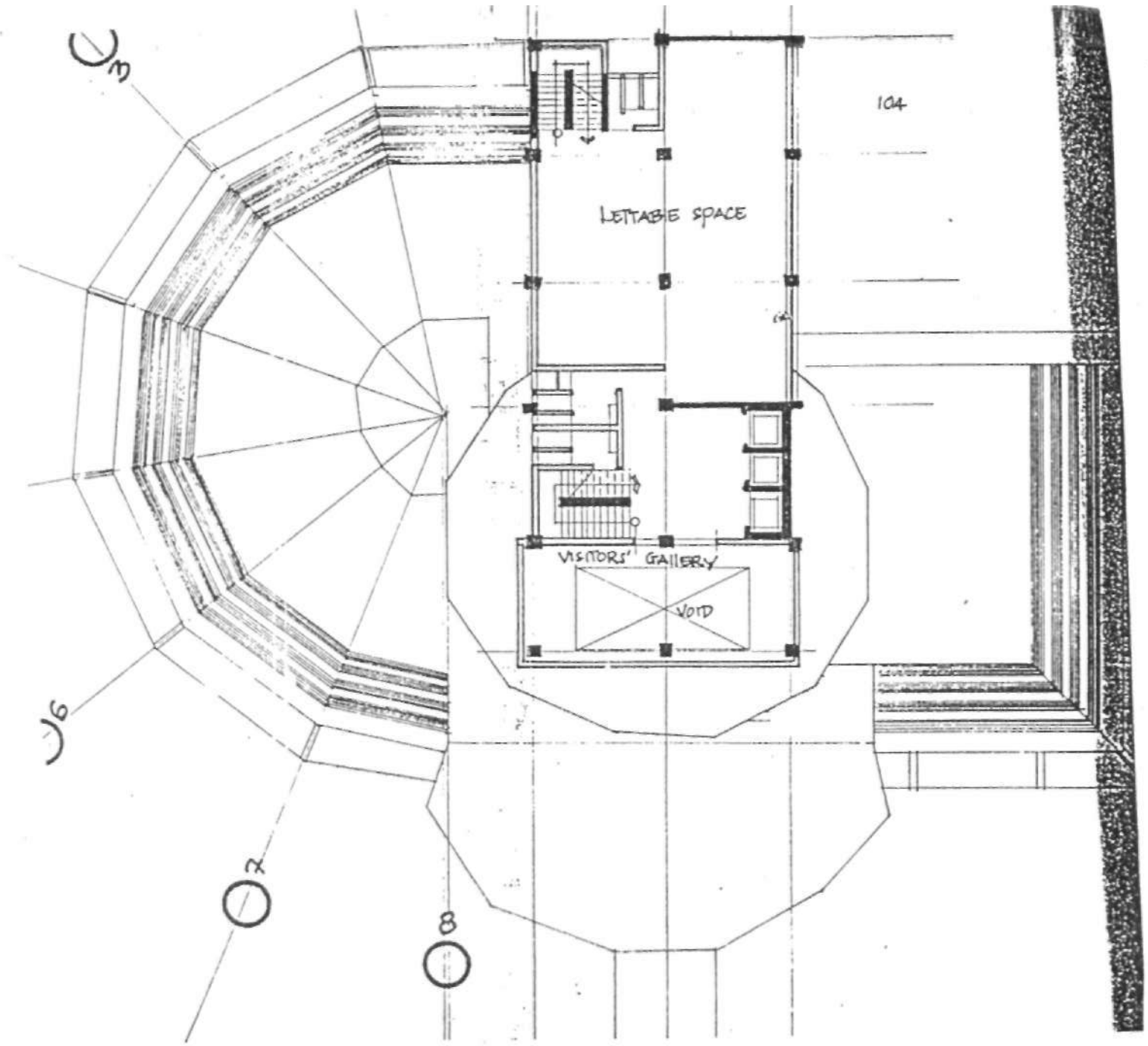


Fig 26.1 5-10th floor 1:200

5.1.7 Speculative offices

About six floors are devoted to speculative offices the last two inferences made from the analysis of space, the floor areas remain constant this is due to the abrupt decrease in space from the fourth floor to fifth floor which necessitates a compensation in the subsequent floors. The total area built is 10270.0 m^2 and initial construction cost should therefore be 400 x 110270 = N4.1 million

Sections

In cutting the sections, emphasis has been placed on the structural stability of the building in which case the sections are taken through structural members. The ribbed floor system is well exposed in section B-B and apart from the purpose of adding strength, the coffers created out of this ribs can be used to house ceiling luminaries (See Figure 27).

5.1.9 Elevations

In designing the elevations emphasis is placed on kinetic vision or the visual impressions received by an observer at different points.

The composition of the elevations take two main forms, the slope sided cuboid and the calabash, a rather contrasting form. To reduce the "aggressiveness" due to the columns. The concrete panels on the facade have been flushed with the columns.

North Eastern elevation

The entry point to this elevation is defined by a cantilevered concrete slab that springs from the first floor. This facade faces the Ahmadu Bello Way and at a

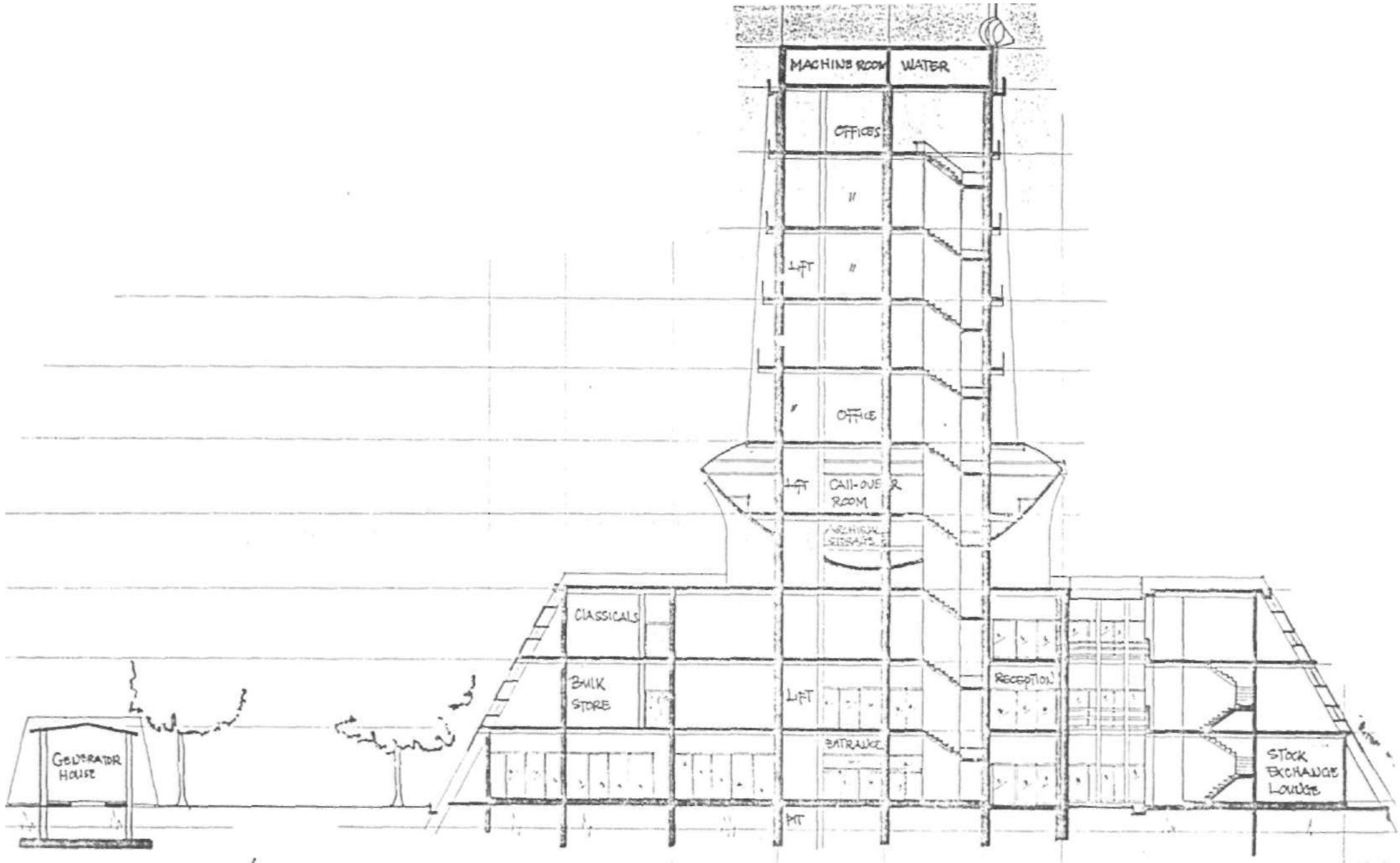


Fig 27.0 Section A-A 1:200

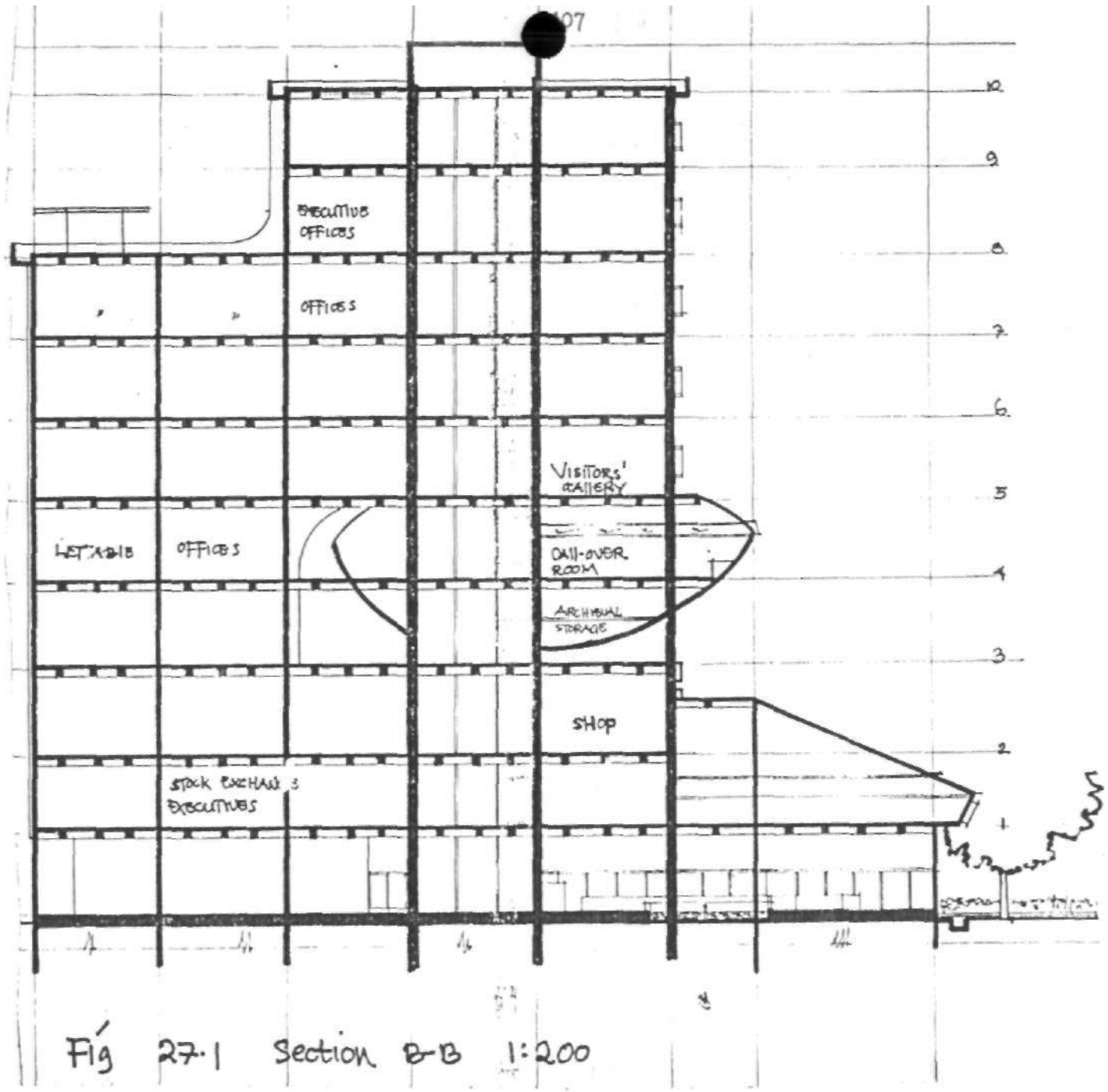


Fig 27.1 Section B-B 1:200

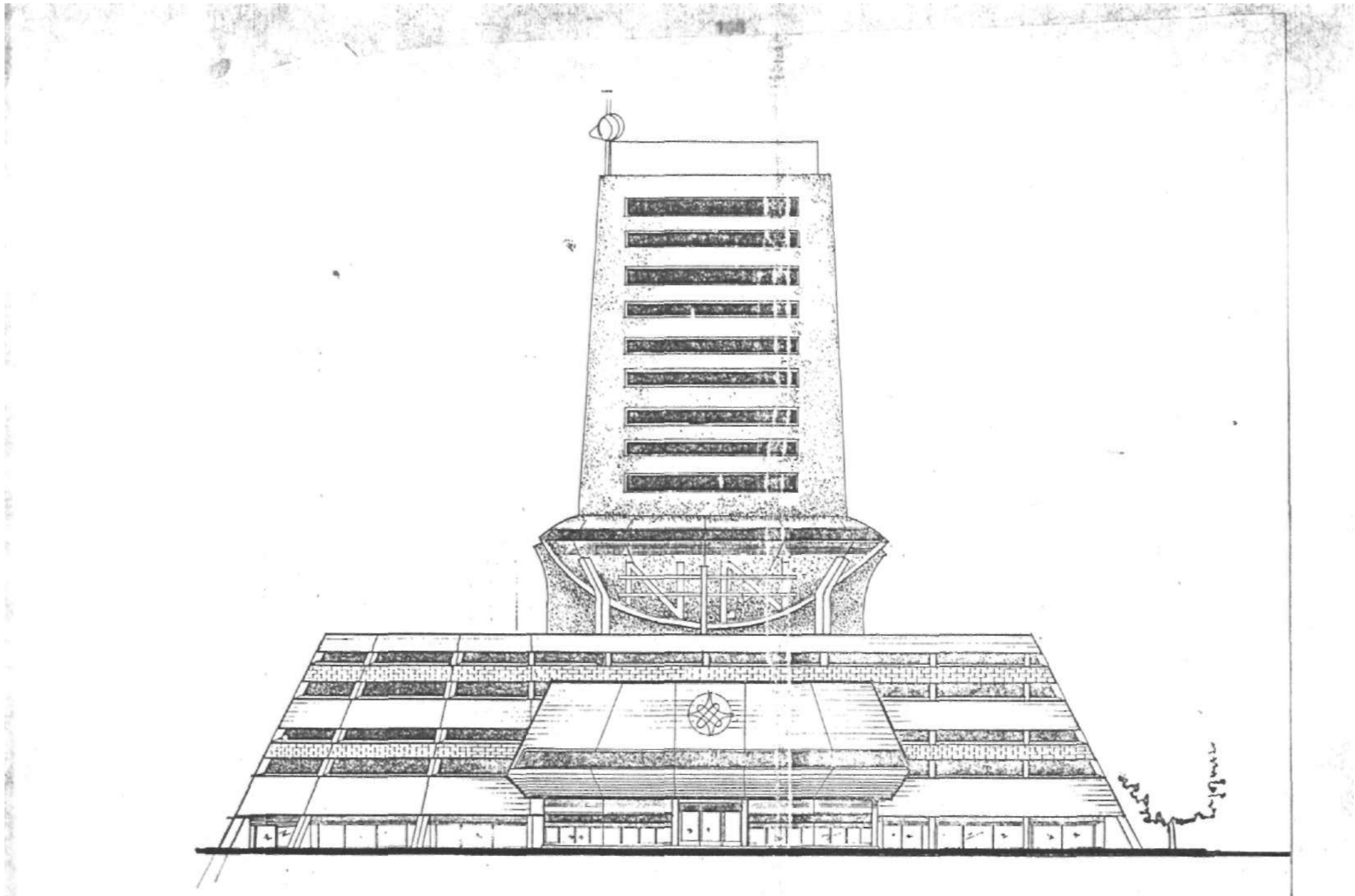


Fig 28.0 North-Eastern elevation 1:200

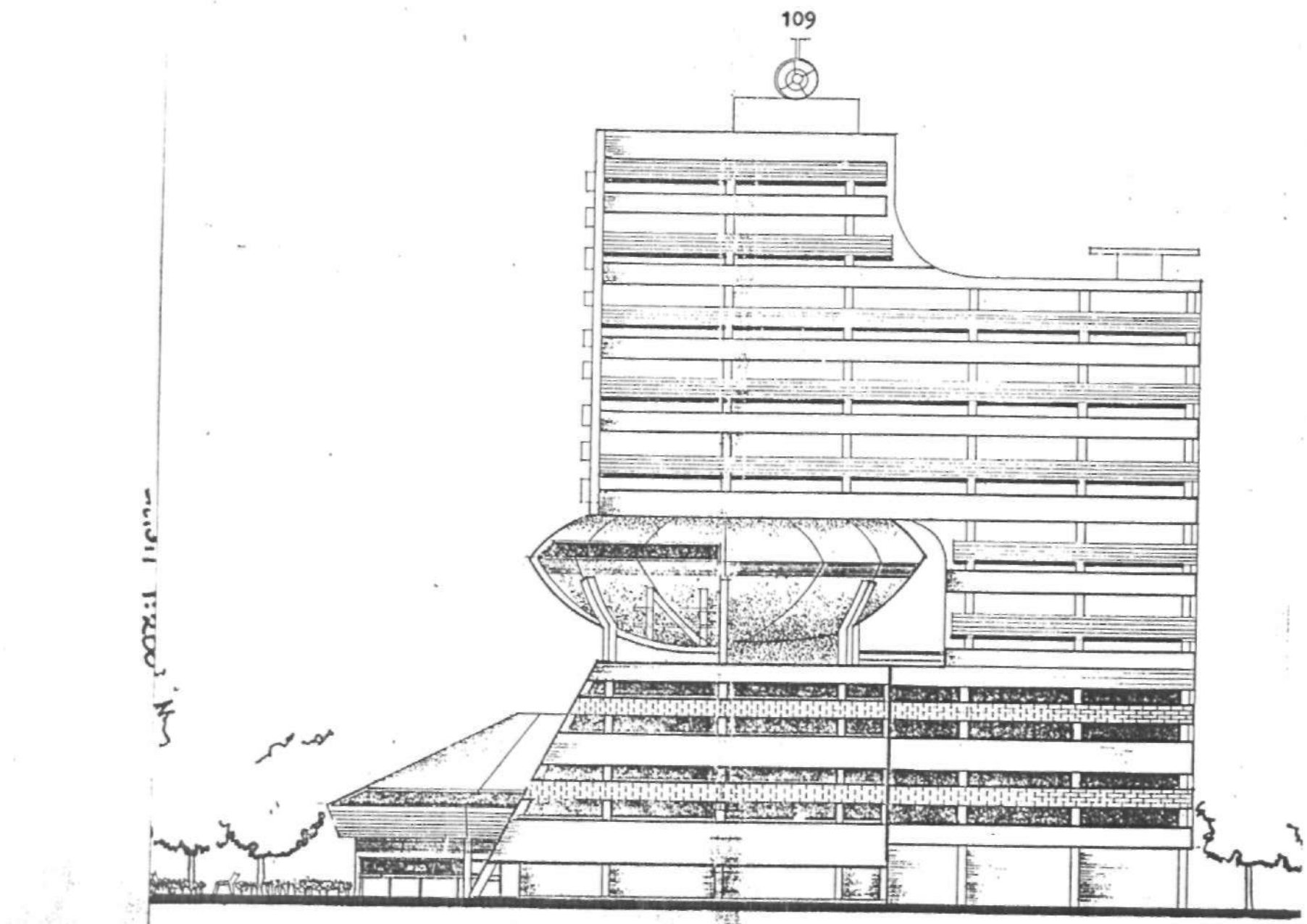


Fig 28.1 North Western elevation, 1: 200

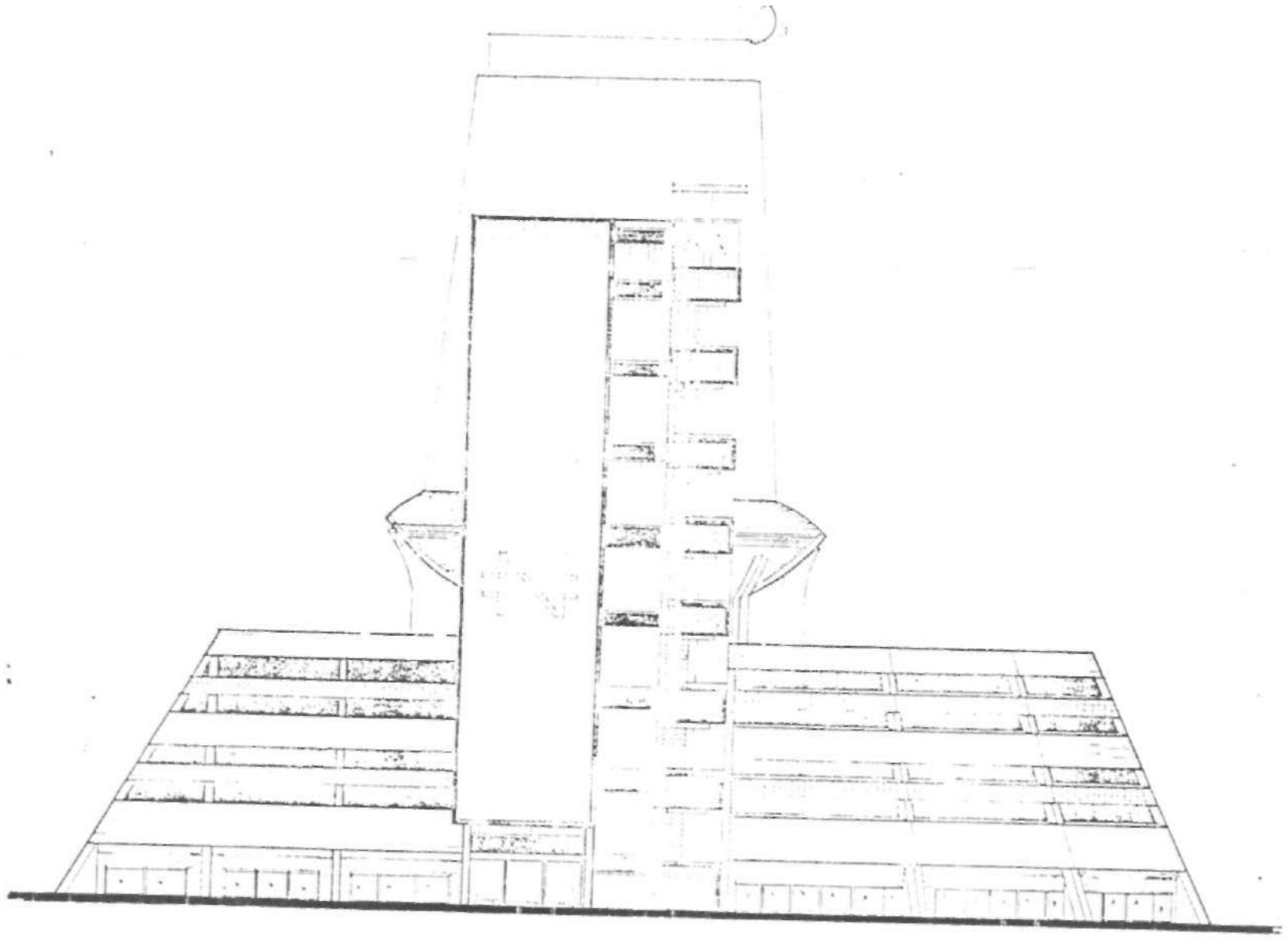


Fig 28.2 South-western elevation 1:200

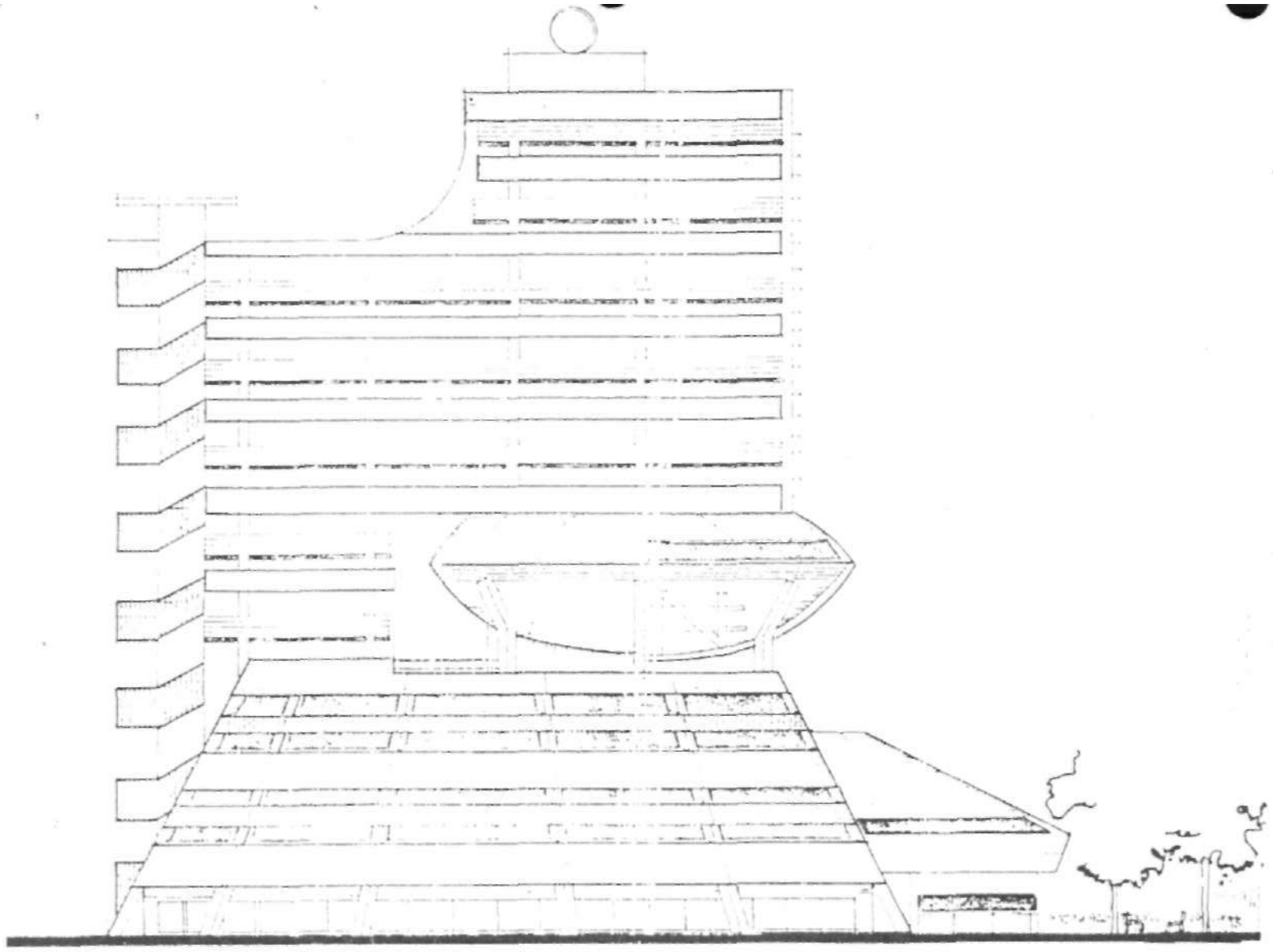


Fig 28.3 South-Eastern elevation 1:200

close range, the prominent features are the concrete slabs and the landscape which give pedestrian a feeling of belonging shading on this elevation is achieved by the use of projecting concrete panels on the fifth to tenth floor and flushed panels on the ground floor to third floor. The symbols of the Naira on the calabash is noticed from any point along the facade.

South western elevation

The calabash is easily noticed once again with its full effect also experienced, however when access is made from the adjoining development on the south west the frontal composition impedes the full view of the calabash but the exposed staircase gives the facade a mechanistic look. Openings have been considerably reduced to only the ground, first and second floors being that the facade is the one most affected by the sun. Nevertheless the shading takes the form of the one on other facades to avoid conflict in composition.

North west and South east elevations

These are the side elevations, they are closely similar, again the main elements of the design are noticed including the slop sideness of the podium which conducts an observer like a Bethoven Symphony.

Sewage disposal

A network of proposal soil piping has been proposed this is connected to the existing inspection chambers on the site for onward transmission to the sewage treatment plant (See Figure 29).

Water supply

The main water supply pipe is tapped from an 80 mm service pipe that takes its origin from 150 mm main water supply pipe. Risers are proposed within the building to convey water to and from a building tank located on top of the building. Nevertheless, problems of water shortage are not anticipated as the water head is well above the overall building height.

Storm water drainage

Pipes adjoining structural members collect storm water from roof gutters to a bottom channel covered, this in turn conveys the water to convenient outlets where it is drained into the main storm drainage gutter banding the site.

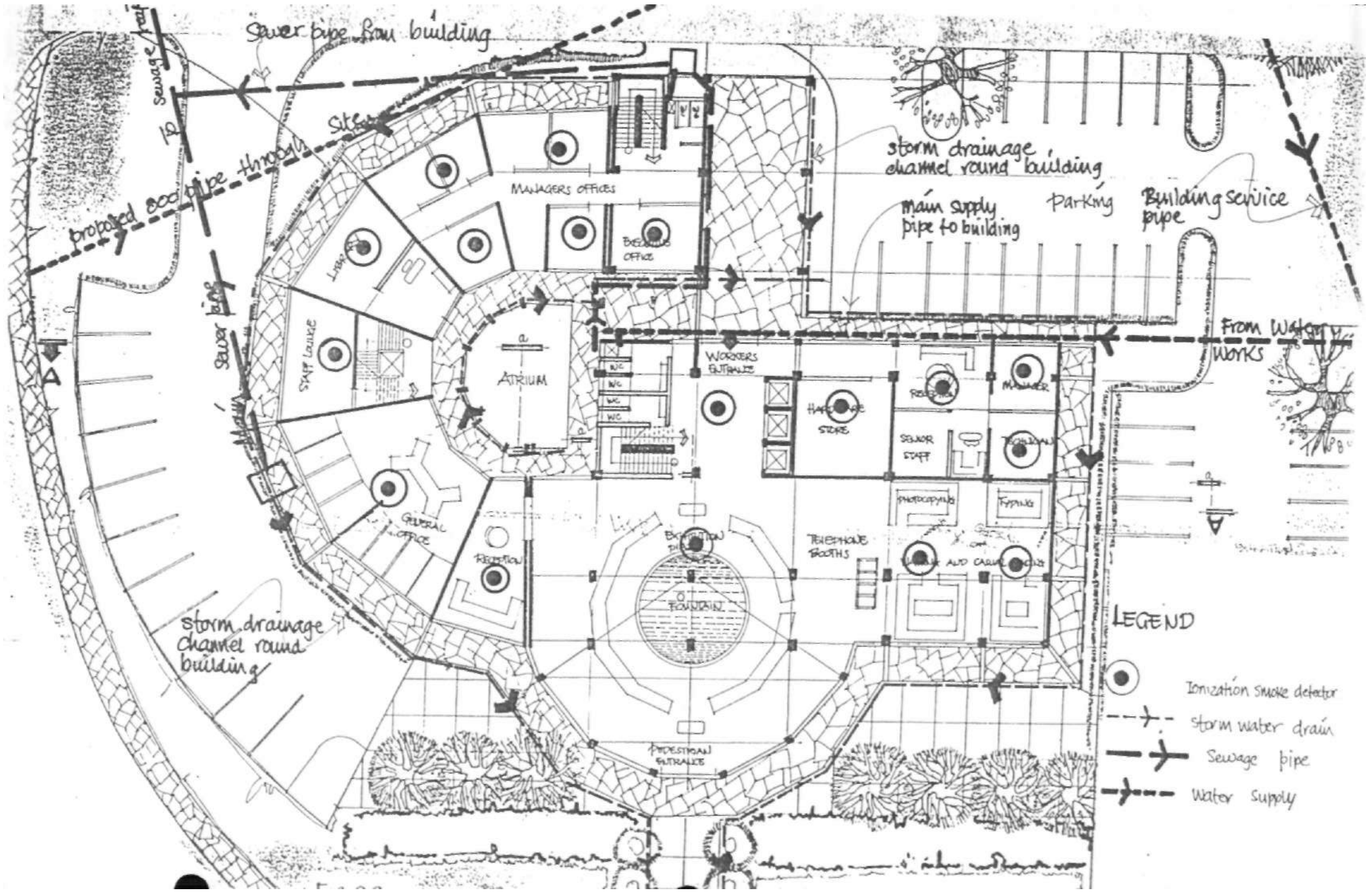
Fire services

Stand pipes have been installed at strategic positions where they can readily be reached by firemen, these pipes are inter-connected at the ground floor and terminated in a siamese connection near the external staircase, a point from which they can easily be fed by water in the event of a fire outbreak. At the staircases and other suitable locations, horse racks have been proposed for usage. For early detection of fires, ionization smoke detectors have been installed on all floors.

Air Conditioning

Air conditions will form the major source of ventilation considering the uncomfortable weather recorded in Kaduna, they will however be supplimented by window openings on at least one side of each office.

Adjoining vertical pipes to columns carry service wires


Sewer pipe from building
To sewage farm
Sewer pipe through site
storm drainage channel round building
main supply pipe to building
Parking
Building service pipe
From water works
Sewer line
MANAGERS OFFICES
STAFF LOUNGE
ATRIUM
WORKERS CLOTHING
HARDWARE STORE
SENIOR STAFF
MANAGER
GENERAL OFFICE
RECEPTION
TELEPHONE BOOTHS
FOUNTAIN
PEDESTRIAN ENTRANCE
storm drainage channel round building
LEGEND
Ionization smoke detector
storm water drain
Sewage pipe
Water supply

to required floor heights. On each floor, there are ducts that run horizontally to convey the service wires to the box installed at convenient places on the walls and are carefully shielded from outside vision by concrete panels or exterior Venatian blind as the case may be. The box units are favoured to the central air conditioning because of expensive maintenance and the fear that a fault in any part of the system may affect the whole units.

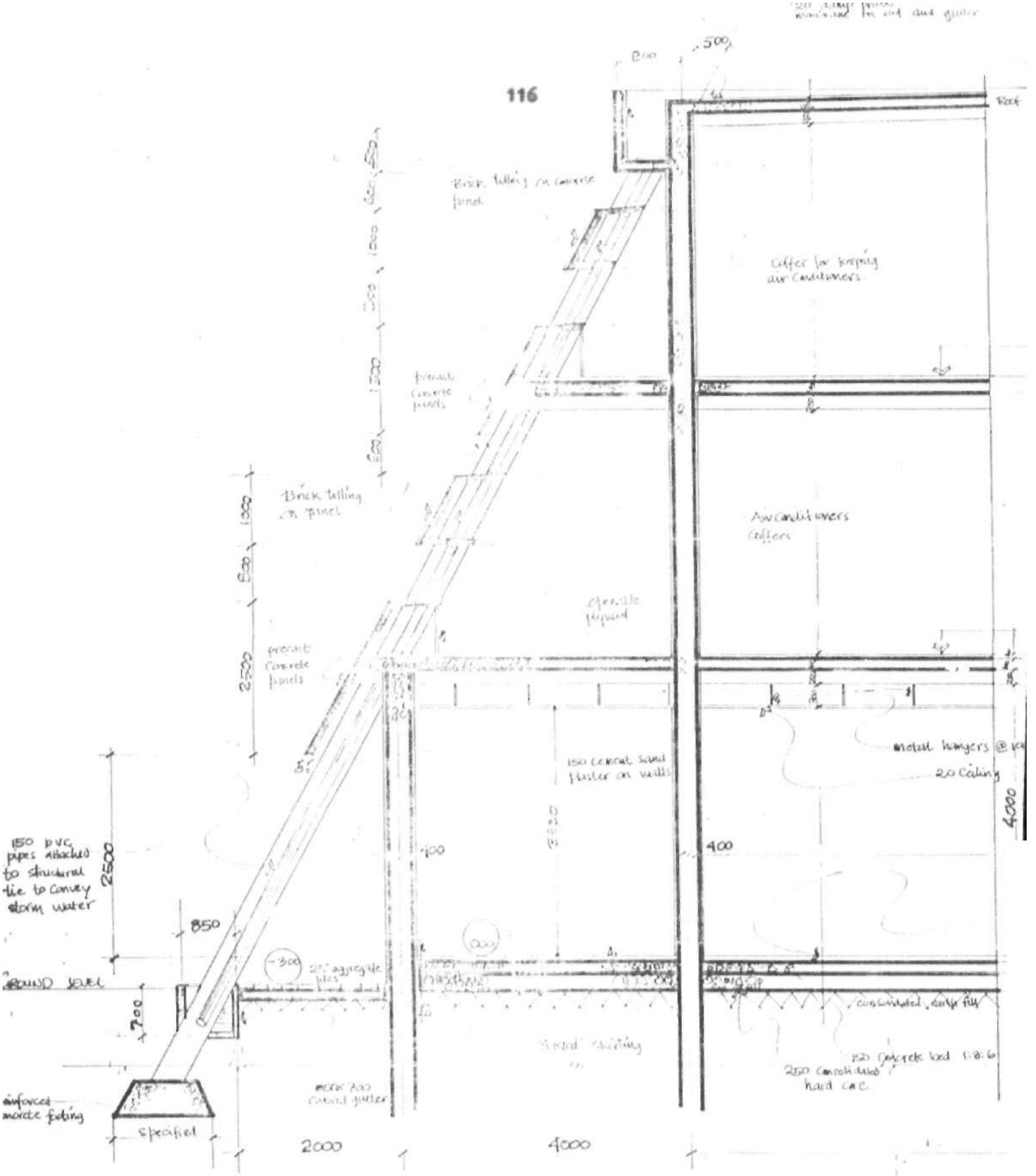
5.2 Construction Methodology

The main materials for the above construction include: reinforced concrete, mass concrete and steel. Writing about the plastic richness of concrete caste in place, Nervi states that "from an architectural point of view the initial fluid state of concrete and its monolithic nature became an inexhaustible source of static, construction ideas and plastic possibilities"[1].

As a matter of fact, the construction possibilities of reinforced concrete are so numerous and what often is the problem with construction is the inadequate details. The thesis recognises this need and has therefore outlined the following details which reveals the constructional usage of materials.

5.2.1 The concrete panels

By concrete panels, reference is made to the panels that appear on the facades for shading purposes. Because of their thickness of about 50 mm which is difficult to achieve on site the thesis recommends the precasting of the panels using a double layer wire mesh reinforcement, special attention is to be paid to joints and it is hoped that the economy of scale, the precasting should be more economical



detail of Section A-A 1:50

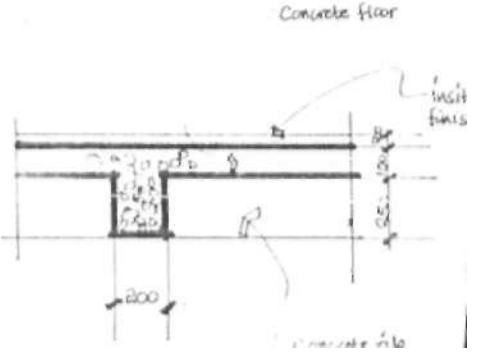
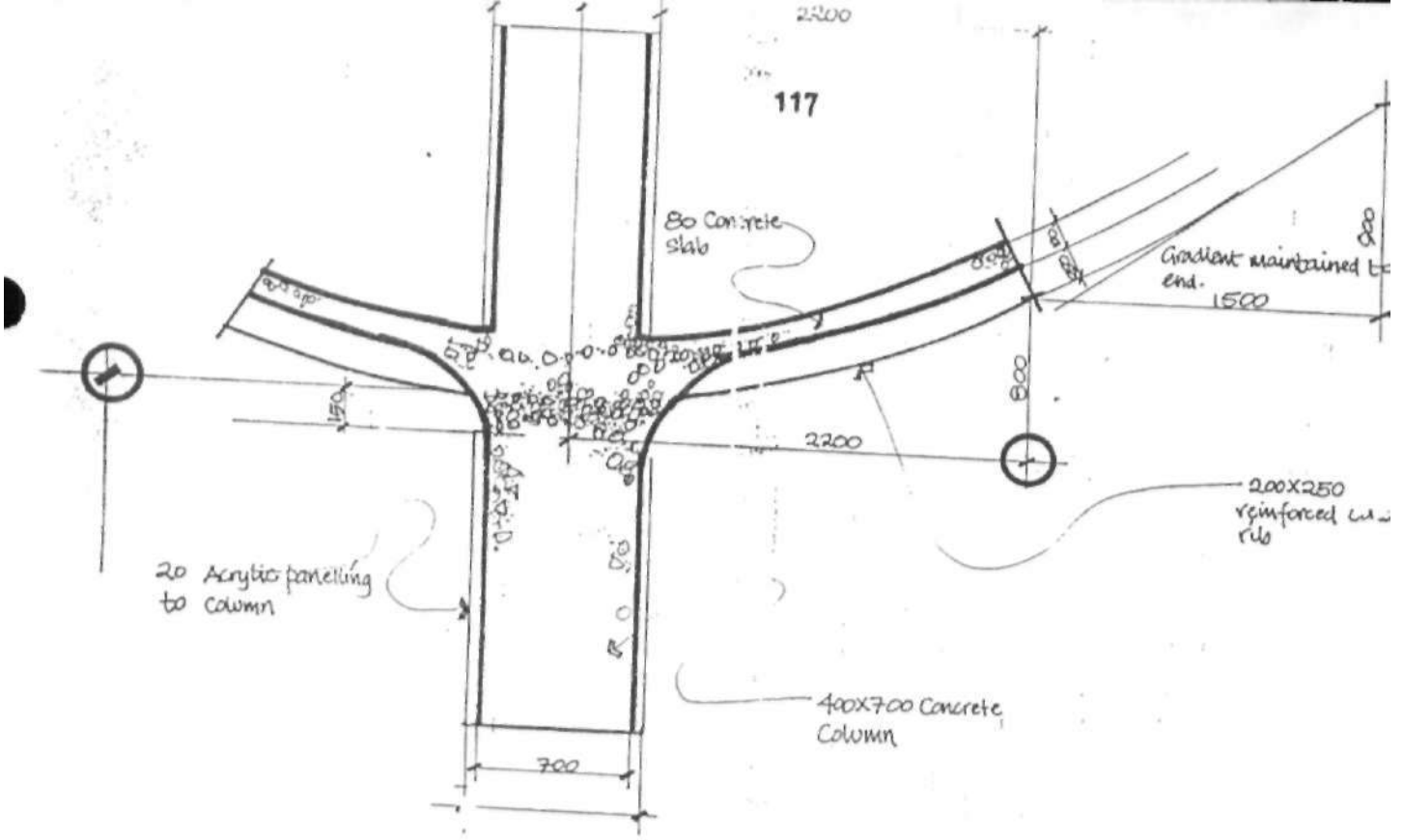


Fig 30, Concrete panels 1:200



Column B 1:25

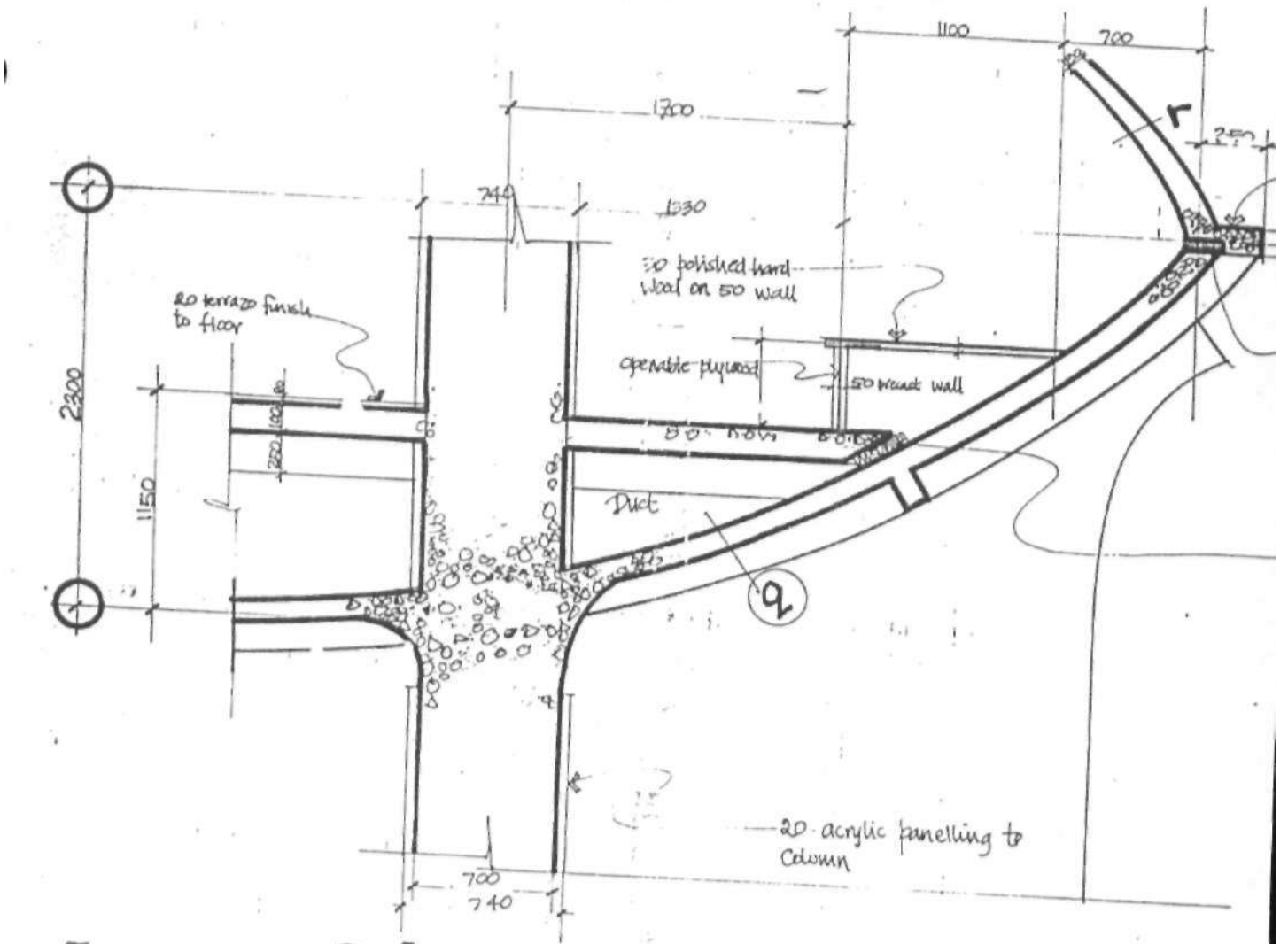


Fig 31

Column C 1:25

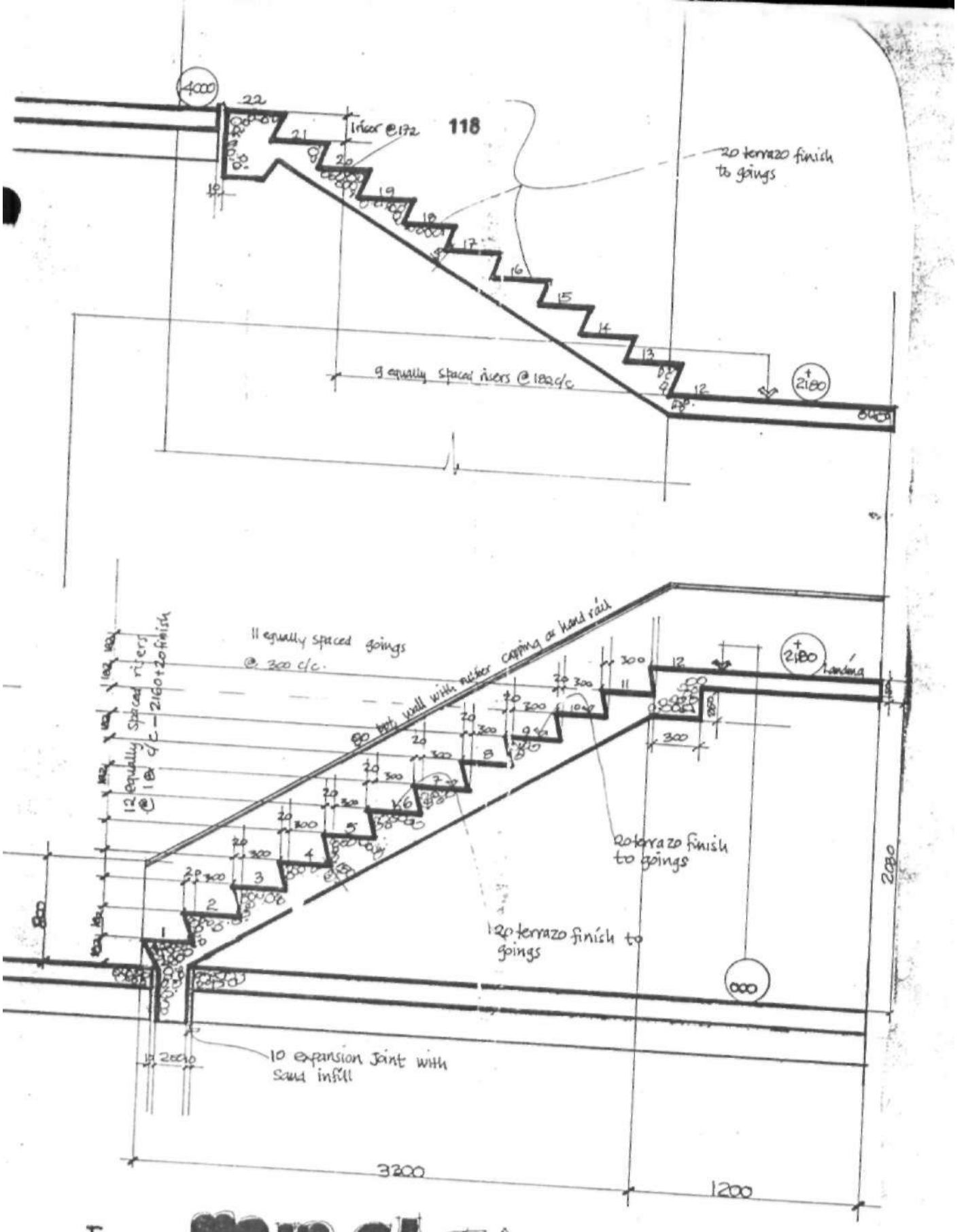


Fig 32 **main stair** 1:25

(See Figure 30).

5.2.2 The calabash

The elements of the calabash include, the 250 mm reinforced concrete ribs to be caste in situ. A 80 mm concrete slab will then be cast round the ribs to form a tensile structure that carries a two-way reinforcement. The cast should be monolithic to ensure maximum strength. At the joints between the ribs and columns the steel reinforcement should be welded.

5.2.3 Main stairway

The main stair is a cantilever which springs from a reinforced wall. The construction of the wall and the stair should be monolithic (See Figure 32).

5.3 Cost Control Measures

Cost control measures in buildings with large area is based on the economy of scale and this has been the case in the design. The reduction of floor areas as the building advances up thereby reducing the idle space is considered a cost saving measure but this tends to negate the fact that the ratio of floor to walls increases and thus an increase in cost[2] but this is cancelled due to the "open plan effect" of the design. The selection of the 6 x 6 m grid economises the use of reinforced concrete. Except for the call-over room, cantilevers have been substanti-ally reduced to less than one metre.

5.4 Management Policy

Property management has become so important that it becomes necessary to address it. Recently public buildings

have witnessed increasing cases of arson in the country and most of the problem being attributed to poor management, for instance the Nigerian External Communication building fire outbreak as suggested by critics could have been averted if there was an adequate security check system which extends beyond more guards but a comprehensive one that involves intelligence service.

In a similar vein most of these public buildings have poor services especially the older ones. In Kaduna, tenants move out of Turaki Ali house partly because of long walks to toilet facilities according to the quantity surveyor of Home Departments, Kaduna.

Contracting the management of tall buildings to professional bodies appear to be a viable solution which most new tall buildings are adopting since it assigns a legal responsibility to parties and security services in addition to this management should be contracted. It is necessary that each of these buildings takes a comprehensive insurance policy which although may appear uneconomical in the short run has ardent advantages in the wake of unforseen circumstances.

1 Nervi, P.L (1966). Aesthetics and technology in building. Harvard Universirty Press, London.

2 Ferry, D.J and Brandon, P.S (1980). Cost Planning of Buildings. Granada, Frogmore, London. pp 194-195.

CHAPTER 6

6.0 SUMMARY AND CONCLUSIONS

6.1 Summary

The thesis began by establishing the phenomenon of the stock exchange and its relevance to the Nigerian economy, by the use of data and statistics and to also show that the market is prosperous in the country in chapter one. A general survey of the stock exchange buildings was then conducted with the review of relevant literature at the end of which the building was conceived from two perspectives: as a stock exchange faced with the problem of image formation and inadequacy of facilities and as an office building where the question of services is becoming increasingly important. It was then thought necessary to review office accommodation both in Kaduna and other important cities, the survey being bias towards financial houses and corporate houses in view of the fact that the stock exchange was essentially all of the above. Generalisations concerning the architecture of these corporate buildings which are mostly storey buildings were then made and the site where the project will be located was also studied with its peculiarities brought out to the advantage of the design. It was then followed by a design proposal with attention paid to the construction methodology in chapter five. Chapter six is the summary and conclusion of the work done.

6.2 Conclusions

The intent of the thesis was to examine the social basis behind business architecture with particular reference to the stock exchange. It is clear that business architecture takes the form of corporate buildings most of which are storey buildings and financial houses are clearly in the lead in the proliferation of this architecture. An examination of motives of theses financial houses reveals that behind these elegant buildings is a desire to win public confidence and favour a desire that is so strong that despite the cost incurred by these buildings they are favoured by financial houses, nevertheless the architecture has continued to be essentially that of materials and elements like in the cases of IMB plaza, First Bank, The Black house, NIDB Kaduna, amongst others.

The thesis has demonstrated though with empirical evidence that a shift in the traditional pattern of design in which all floors take the same size should save some cost if only maintenance cost, furthermore, the use of forms rather than materials is very effective especially when the rich materials cannot be afforded or when weather does not permit their usage.

On the whole, it becomes clear that public interest is of primary consideration in business architecture.

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APPENDICES

Appendix A. Relationship between rent, amount of space and maintenance cost*

Amount of space available for rent		Rent/m^2/annum	Maintenance cost cost/m^2/annum	No of floor
Actual	Required	(Naira)	(Naira)	
100	100	21000	1680	Ground
200	200	20500	3320	1
300	300	20000	4920	2
400	395.7	19500	6480	3
500	491.4	19000	8000	4
600	587.16	18500	9400	5
700	682.88	17500	10920	6
800	778.6	17000	12320	7
900	874.32	16500	13680	8
1000	970.04	16000	15000	9
y	y_1		x	

Notes - Maintenance cost is 8 per cent of rent.
Rental data is from AICO, Kaduna.

Assumption: 100 m^2 is available for rentage for each floor first three floors are fully occupied while other 7 floors experience a decrease of 30/7 per cent each, since maximum occupancy is 70 per cent.

* Source: Author's survey.

Appendix B. Space requirement

Facility	Dimensions from: standards	Dimensions from: case studies	Adopted	Number	Required space m²
Call-over room	2.0 m² per pers(pp)	1.8 m² (pp)	2.0	1, expected to accommodate 40-60 persons	100
Brokers lobby	1.5-2.5 m (width)	2.5 m	2.0	length cannot be accurately focused	
Visitors	0.9 m² pp	1-2.5 m²	2.5	A length of 6.0 metre is reasonable considering the call-over room	15
Exhibition	1.5-2.5 m width		2.5	length cannot be accurately focused	
Library		1.2 m² pp	1.5 m²	1, library expected to seat 20 persons	30
Librarian office	4x5 m²	incorporated into library	4 x 5	1	20
Store	10-15 % of space	irregular	2 x 2.5 (m²)	15 % of 30 = 4.5	5
Typing pool	2.7 m²pp		2.5m²pp	1, for 3 allow for expansion	7.5
Plaza	varying		60		60.0

Appendix B. Space requirement

Facility	Dimensions from standards	Dimensions from case studies	Adopted	Number	Required space m^2
Fountain			D = 5.0		18.5
Exhibition hall	1.2m^2pp	1.5m^2pp	1.5	30 persons 80-100 visitors may be received daily	45.0
Executive offices for space is stock exchange	36.0m^2pp	15-20m^2	20m^2pp	10 offices space is generous due to nature of business	200
Managers' offices (senior staff)	9-18 m^2pp	10 m^2 pp	15m^2pp	10 offices	150
Intermediate and Junior staff	5 m^2pp	5.0m^2pp	5.0m^2pp	20 offices	100
Speculative brokers offices	1.5m^2pp	2.0	2.0m^2pp	10 offices with 10 employees each	200
Speculative insurance offices	1.5m^2pp	2.0	2.0m^2pp	10 offices with 8 employees each	160
Restaurant	32 m^2p 40 pers if 2 meals will be served	50.0		1 space should pers if 2 meals be flexible	50
Kitchen	40% of dinning area	20.0 m^2		that is 40x50/100	20
Kitchen senior staff	9 m^2 pp	9m^2pp		2 staff	18

Appendix B. Space requirement

Facility	Dimensions from standards	Dimensions from case studies	Adopted	Number	Required space m²
Kitchen Auxi-lliary staff	5m²pp		5m²pp	2 staff	10
Cloak room	0.4 m²pp		0.5 m²pp	7 staff	3.5
Bulk storage	30-35 % of kitchen		35 %	1 store	10
Telex and computer rooms		3.0 m²pp	5.0 m²pp	2 offices with 2 staff each	20
Generator room	20 m²pp		20 m²pp	1	20
Electrical room					20
Water works					20
Audio visual	0.9-1.0 m²pp		1.0 m²pp	1 room for 15 perons	15
Newspapers			12.0 m	1 room including 1 worker	12
Provision shop	12 m²pp		12 m²pp	1 room including 1 worker	12
Music		1-1.2 m²pp	1 m²pp	1 for 15 pers nature of music is classical	15
Main corridor	1.5-2.0 width	2.0	2.0		

Appendix B. Space requirement

Facility	Dimensions from standards	Dimensions from case studies	Adopted	Number	Required space m²
Stair	2.14 (width)	2.4	2.4		
Lifts	2.32x1.32 Hoistway		2.32x1.23	3 lifts estimate based on similar buildings	85
Office occupation rate in Kaduna	3.1 m²pp			offices have 40-50% occupancy at present	
Speculative offices	70 % of total space 2948 m² = non speculative space			70/100x6878 = 9826	
Total space	9826 + 5 % for unforseen functions = 491 + 9826				10317
Site area	3200 m²				
Available site area	3200 x 2/3 =	See Gazzetier of northern Nigeria cap 135			2133

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