A DESIGN PROPOSAL

FOR

CYBER CENTER ABUJA – RESEARCH AND ANALYSIS OF CYBERSPACE IN ARCHITECTURE

BY

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CERTIFICATION

This project entitled, "CYBER CENTER, ABUJA," by JIBWU O.A. meets the regulations governing the award of a Masters degree in Architecture, of the Federal University of Technology, Minna. And is approved for its contributions to the development of knowledge and literary presentation.

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DECLARATION

I hereby declare that this thesis is a complete work done by myself and it goes as a record of my own research work. It has not been accepted in any previous application for a higher degree.

All sources of information are specifically acknowledged by means of reference.

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DEDICATION

This project is dedicated to God for giving us love, hope and an opportunity for eternal life.

And to my parents Mr. and Mrs. K. Jibowu for their understanding support. My brother Mr. Remi Jibowu and my sisters Dr. Fuke Jibowu and Mrs. Toyin Adedeji, for all their support and contributions.

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ABSTRACT

Architecture can be regarded as that aspect of human activity that relates to man's need to be in a suitable environment while recognizing human and social needs, and through application of suitable strategies and techniques of design, which are now integrated and translated into buildings that are both beautiful and functional.

Suitable spaces are required for shelter (dwelling), work-space, recreation and many other necessary functions to satisfy man's desire for a life of comfort. However, these suitable spaces are not that easy to find in the urban areas around the world due to unavailability of urban land, thanks to our ever increasing population. In addition, the migration of individuals and businesses to capital cities (economic centres) have put enormous strains on land use allocations. The cyber center, Abuja,is proposed to offer its services in good proximity to workers in government ministries, government agencies, and other private organizations to have access to computer use and information exchange, within Nigeria and through out the world, for a token fee.

This thesis will concern itself with the development of a good functional computer center within the Abuja metropolis to satisfy the demand within its populace. And hope to provide flexible space to take care of immediate and future usage.

It will also analyse an extensive research into Architecture, which will lead to the propagation of a theory for a new frontier in Architecture through information technologies on the internet – "E – Architecture" (electronic Architecture) with the use of more Architects.

The methodology for developing the design guidelines to allocate certain problems has also been discussed in detail like documentation of case studies, literature reviews on the relative subject matters, construction details and material finishes.

Within its chapters are discussions of specific design issues and problems, with specific possible design responses.

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CHAPTER ONE

INTRODUCTION

In the last decade, technology has blossomed through some significant developments. Especially in the aspect of information technologies, which has been defined as, 'the phenomenon created by the convergence of the technologies associated with computing, communication and office systems.'(Carr J.G 1987). 'Internet', is the preferred transportation mechanism, for all telecommunication applications. Mobile communication technology has expanded exponentially and is rapidly embracing multimedia. High-speeds of access are being forced out of the operator and expansion of the range of serious and leisure drivers for more advanced communication technology is growing, at just a-quick-apace. Bit transformation technology has had to develop, to support entirely new applications at a much-reduced cost. Hence, the modern architect can be in the field or on site with a client. And on a 'lap-top,' computer with the aid of the latest 3D-auto CAD visual software, can make spatial arrangement of open spaces and simulate the functions of the building, both indoor and outdoors. Thus the metamorphosis of the traditional architect into a mobile one.

The consequences of these changes, which are based on market pull, is to generate entirely new industries. New applications and services require new solutions. As Internet becomes mainstream, there are many new problems to be solved, and new type of industry and service organisations are being established. Some will be concerned with the development of infrastructure, some with application and some with management and the organisation of services. These range over the whole spectrum of modern life.

Cyber cafes; centers and villages are modern tools for providing information and communication transfer as a service, A service, which this thesis will propose for Abuja and its populace.

1.1 WHAT IS A CYBER CAFÉ (CENTER OR VILLAGE)?

The word Cyber is coined from the word cybernetics, which is the art and science of control and communication in animals, machines and organization A United States mathematician, Norbert Weiner in 1946, coined the world 'Cybernetics; And was influenced by, and has influenced the information from one information source to a destination and with controlling error in transmission.

This has been widely used, in the computer world, to develop the 'INTERNET'; with the ;Information highway; which is a wide-area network; or a wireless communication link between computers, all over the world. Which has led this vast planet Earth, to become a ;Global-village'

Thus the term 'Cyber-village; which is an information center or a village of computers; which performing Internet functions through the aid of cybernetics. This 'village' is a 'center', which is a collection of 'Cyber cafés' A Cyber café; being a place where the general public can come, pay for and digest, computer functions and Internet services, as they relate to specific fields or areas of interest. And the word café; connotes a public place where beverages and snacks can be procured, thus being a function of the service provided in a 'Cyber café'.

1.2 AIMS

The aims of this project are:

- To design a befitting edifice to accommodate, cater for and satisfy related functions and services, through carrying out extensive case studies on existing cyber cafés or villages, noting merits and demerits thus, attempting to improve on such, in application to the proposal.

- To make computer use and information exchange, on the Internet, in the reach of the 'communication' affordable in Abuja. As this who cannot afford to buy their own systems and subscribe for Internet services, can go into the 'Cyber center, Abuja' and use these services for a token fee.

- It will enable student within Abuja metropolis, carry out extensive research. Carrying out research work for Nigerian student is very difficult due to inavailability of materials, which when available are, difficult to reach and, outdated. The 'Cyber center, Abuja' will give them an opportunity to use this Internet service to, 'surf the web', and enter various university libraries all over the world to source for information.

- This center will provide E-mail services to people in Abuja, who don't own a computer and don't have Internet services to provide E-mail service. One can create an E-mail address 'free of charge' and go to the center to receive and send mail for a token fee.

- It will serve as a source of recreation and entertainment to people in the capital city. Through the ability to go there and down load music, movies and games from the Internet.

- This thesis will attempt to propagate a theory on the future of Architecture, as it will relate to the Electronic age.

1.3 RESEARCH METHODOLOGY

The method used to carry out this thesis is predominantly the descriptive survey method. This is by ensuring adequate data collection, through conducting related case studies from existing projects to determine merits and demerits of the related structures. Thus arising at deduction to produce a near perfect design of good aesthetics, planning and functional qualities. Also, through the collection of relevant information on cyber villages and Cyber cafes from magazines, journals, texts, Internet. Issuance and collection of questioners, questioning, direct interview and enquiries, visits to existing similar projects, consultation of maps, books, journals, newspapers and periodicals.

1.4 MOTIVATION

This project is born out of the need for Nigerians, in Abuja, and the country as a whole, not to be left behind in the fast developing world of computers and computer information dissemination.

In third world countries, like Nigeria, the cost of purchasing a computer and providing accessories, with Internet facilities, thus empowering the people with an information communication technology is very expensive. Thus, making it only affordable, thus accessible to the 'Elite' of these societies.

Therefore this proposal will help bridge the gap, by proving these facilities to the 'common man,' for a token fee per usage. This will go a long way in developing the psyche and intellect of the people these societies.

Inadvertently, the developed world will go so far, so fast in technological advancement of information communications that the third world will be unable to catch up or eventually even communicate with them. Thus, the need for this technology to be available and accessible to everyone.

1.5 SCOPE AND LIMITATIONS.

The scope of this project may be defined by its physical character, because its functional character is limitless. Thus, existing no barriers in research concentration area and findings. However, this project will focus on having the following facilities, designed for:-

ADMINISTRATIVE SECTION

RECEPTION AREA

DIRECTORS OFFICES

DIRECTORS TOILETS

DIRECTORS SECRETARIES

MANAGERS OFFICES

MANAGERS TOILETS

MANAGERS SECRETARIES

ACCOUNTANTS OFFICES

ACCOUNTING CLERKS

CYBER SERVICES

EDUCATIONAL RESEARCH CAFÉ

ENTERTAINMENT CAFÉ

GAMES CAFÉ

BUSINESS AND FINANCE CAFÉ

CAFÉ FACILITIES

WORK STATIONS

SUPERVISORS

CASHIERS

ATTENDANTS

LOUNGES

SERVER ROOM

A RESTAURANT

PUBLIC CONVENIENCES

AUXILLIARY FACILITIES

GENERATOR HOUSE

WATER TANK

BORE HOLE

SECURITY POST

MAINTENANCE UNIT

CAR PARK

The inavailability of cyber villages in Nigeria is an obvious limitation in conducting case studies.

1.6 IMPORTANCE OF STUDY

In essence, this project is of relative importance to subsequent aspiring architects or architectural students interested in designing cyber centers, cyber cafes, or Internet center, Internet café, cyber villages and other computer related facilities. It will serve as an indelible source of reference, as there is a lot of vital information in this thesis report that will prove difficult to get at, for research purposes. In inclusion the burke case studies documented in this report, literary and functional exposes, which will prove very useful especially for those who wish to, future, design a cyber related facility.

There is a 'stream-lining', or restriction of students to projects that have been over flogged, due to the great difficult involved in acquiring information in Nigeria on a new topic. This restriction can only have a negative effect on the architectural industry of the future. As an

architect, not exposed to a specialized project of this nature, will find it very difficult to do a thorough professional job due to his unfamiliarity with this type of project.

1.7 DEFINITION OF TERMS

COMPUTER: - this is an electronic device/machine composed of switches, wires, buses, and integrated circuits and micro chips. Which, when given input data, by a device, processes it at an amazing speed to solve a particular task.

CYBER: - derived from the word CYBERNETIC, it has been defined as the science of communication and control in man and machine systems. It might also be described as being concerned also with exceeding complex systems. Such systems are said to adapt continually. A human being is a very successful cybernetic system, cybernetic is based on the principle of feedback; where information on event is feedback into the system which the reacts accordingly.

DATA: - These are facts based on measurement and recorded.

INFORMATION: - Data communicated before or after processing. A communication of instructive knowledge.

(Oxford English dictionary)

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT): - this is the advancing, science of transport mechanisms for communication applications or information exchange.

MANAGEMENT INFORMATION SYSTEMS (MIS): - a system in which data are collected, processed and communicated to assist those responsible for the use of resources.

LIMITED-ENTRY (DECISION) TABLE: A form of decision table, in which condition entries are limited to 'Y'(YES) 'N' (no) or action entries indicated only by x in appropriate positions.

MODEM: Diminutive of modulator. A device for encoding/decoding binary data and analog signals in data communication systems.

ON-LINE PROCESSING: A way of processing data {wholly or partially as soon as its input into the computer.

WORK STATION: A term for a keyboard and Visual Display Unit (VDU) in one unit.

3D AUTO CAD: Three dimensional automated computer aided design. A software package or programme used for design purposes.

CYBERSPACE: The Cyber/computer technology or the on line world, of virtual reality.

(CIMA STUDY PACK ON INFORMATION TECHNOLOGY MANAGEMENT 1987)

E-MAIL: Electronic mail

E-Architecture: Electronic Architecture

E-commerce: Electronic commerce.

CYBER CAFÉ: This is a place where the general public, can come and pay for, digest the use of computer functions and Internet services, as they relate to specific fields or areas of interest. As well as have a beverage and a snack.

'SURF THE WEB: The act of looking for information from a particular web-site or page by moving from one web-site to the other, on the Internet.

CHAPTER TWO

2.0 LITERATURE REVIEW

The project is basically all about the design of a facility to provide Internet facilities as a service to the people of Abuja.

First one should have a clear understanding of computer and what the Internet is really all about.

2.1 COMPUTER

This is a machine that handles information with amazing speed. It works with such information as names and addresses, book titles, lists of items sold in stores, mathematical problems, and weather forecasts. A computer handles information in the form of numbers. It solves problems dealing with words by changing them into problems dealing with numbers. The fastest computer can do millions of problems in a few seconds.

Computers have eased up protocols and procedures in the business world as they are used for book keeping and accounting. A computer keeps tracks of sales, customer payments and the amount of stock in warehouse. It figures out employee' wages and prints their paychecks. Most banks have computers to record the amount of money deposited or withdrawn by each customer. Architects and Engineers use computers to design buildings, ships, dams and bridges. Pilots and Astronauts to keep the aircrafts and spaceships on course.

In today's world with the technologies available they are used for all forms of communication, electronic mail, 'choice over' telephone calls, facsimile and even shopping.

In some industries, computers control machines that make products. A computer turns the machine on and off, and adjusts their operations when necessary. Machinery controlled by computers is used in making bakery goods, chemicals steel products, paper, petroleum products and many other items.

Computers have been called "electronic brains" terms. But a computer cannot think. A human operator must put data, - facts and figures -, into a computer. Then he must instruct the computer on what to do with the information.

A computer has a memory that stores information, and an arithmetic unit, which performs mathematical operations. These parts contain most of the electronic equipment that makes the computer work. A computer is connected electrically with tape machines, automatic typewriters and printing machines that record the information it produces.

A computer operator sits at a desk unit called a console are tiny lights that flash when the computer is operated. They tell what operation the computer is performing at any moment. A computer mostly works noiselessly. Although same high speed printers almost sound like the "clapping" of a typewriter when in operation, and can print as many as five pages of a telephone directory in one minute.

Computers may be classified according to the jobs they can do. A general-purpose computer can perform many kinds of jobs. General-purpose computers may be used in banks, department stores libraries, or schools.

Whereas a special purpose computer is designed far only one job, such as helping to guide a space vehicle. Computers may also be classified into two types according to how they work, digital and analogue computers.

DIGITAL COMPUTERS

Solve problems by counting digits (numbers). These machines can add, subtract, multiply, and divide. Electronic digital computers differ from adding machines and other ordinary figuring machines because they can automatically do many problems, one after the other.

Before a digital computer can solve a problem it must be given two hinds information. First it must be given all the data parameters. Then secondly, it must be given a set of instructions called a programme. Both information are stored in the memory of the computer. And most digital computers are general-purpose computers.

ANALOG COMPUTERS

Solve problems by measuring one quantity in terms of some other quantity. Most well known instruments operate on this principle. For instance an analog computer might use electrical hook ups to represent the speed and direction of an airplane and to measure the effect of wind

on the plane, the computers electrical hook ups act as an analogy of the flying airplane. The analogy gives an analog computer its name.

Quantities such as electrical voltage cannot be measured exactly. As a result analog computers are not so exact as digital computers, which work with numbers digit by digit. Most analog computer are special purpose computers. They may solve their special problems faster than a digital computer could.

2.2 WHAT IS INTERNET?

Internet put simply, is a global network of numerous computer and computer network all over the world, allowing one to access information over the network and enabling information exchange by following standard protocols for development of software in hypertext mark up language (HTMC) and transmission control protocols (TCP) interned protocol (IP) for date communication, as well as business transactions. Specific websites are located by using the universal resource location (URL), which is a unique address.

In essence, this set is really no different from any other computer network, whether it is the multi-user, muiltitasking operating system network at a university or two personal computers connected to each other. As long as two computers share a common protocol, they can exchange information. And that is what the Interned is all about -information exchange.

It is possible to put information related to one's activities on the Internet, making the dream of a world without frontiers a reality. The Internet facilitates the speedy sharing of information.

among research and education communities. Advertising on the Internet is another phenomenon that has caught on in a big way. All this is leading to a more efficient style of working and an improved quality of life in general.

2.2.1 IMPORTANCE OF INTERNET

Internet is an important tool for all professionals. Why is it important? Here are a number of arguments.

- Electronic mail which was until recently considered only an internet mechanism . Its quickly becoming the telephone of the future. The ability to communicate with someone in an easy and effective way has tremendous advantage for both sender and receiver. It is also an excellent way to communicate with a number of people simultaneously, and to route or forward information to others.
- The ability to exchange visual information on readable and reversible formats – such as chats, figures, tables, images, databases, software code – open up possibilities for collaboration at the global as well as local levels. With the trend for specialization, the ability not only to communicate but also to field scattered all over the world makes long-distance collaboration feasible.
- The resources for online research are multiplying at an outstanding rate. Search cable databases, library holdings, alerting devices, preprints and other information system are all changing the way research is done. And it is not only the research community that is responsible for this. Library shelves are overflowing with journals and reviews, and with acquisitions budgets receiving deep cuts; a likely situation for the future, -which is already happening with some universities in America is one in which libraries archives

electronically share holdings, and become information clearing houses instead of closets.

2.2.2 INTERNET DEVELOPMENTS

The Internet, or simply, the NET, is growing day by day and several networks as well as new websites are being added to it every hour. There is so much of information on the Net that we need search engines to locate the relevant appropriate websites for specific subject- related information

Multimedia and graphic features at applications have added a new dimension to distance education, entertainment, marketing and business transactions

This global networking of computers with its underlying communications infrastructure has created what is popularly called the information domain availability through the network is often formed as "CYBER SPACE". Internet is bound to have a dramatic impact on the way we think, live and work.

Metaphysically, the Internet is a inter national community connected by computers of every size, shape and form. It is a cooperative effort on the grandest scale, and it would grind to an ignominious half without the voluntary support of millions of people all over the world

The primary mission of the internet is communication of ideas, work play-you name it . Everything else is a means towards that end.

The first thing to remember is that being "connected to the internet can mean a whole range of possibilities-anything form sending a simple electronic mail message to a friend across the street to logging into another computer halfwa8y across the world in order to search and retrieve sounds, graphics and even movies.

There fine basic function one can do on the Internet:

- Communication
- Document or file transfer
- Interactive browsing
- Reading and posting to topic-specific bulletin boards
- A combination of two or more of the above which may lead to a business transaction corresponding directly to these one
- Electronic mail (e-mail)
- File transfer protocol (FTP)
- Telnet
- Usenet
- Applets

Over the years some new tools have emerged that expand upon these basic activities. These do not really fall into any one category, but they integrate many Internet process in ways that can be simplify and enhance the activities like the World Wide Web (www). The World Wide Web (www) is the fastest growing Internet function. It is an ingenious front end too much of the information on the Internet using the concept of Hypertext to link information. Hypertext refers to a system of "point and Click" connections between information that allow the user to jump from one information source to another on the internet without even thinking about it.

The technical aspect of moving from computer to computer is hidden, leaving the researcher free to explain without interference.

2.2.3 OWNERSHIP OF THE INTERNET

No one owns the Internet. Any single person, service, corporation, university or government does not found it. Every person who makes a connection, every group whose Local Area Network (LANs) becomes connected, owns a slice of the Internet.

From being used to the model of centralized, cooperating utilities, such as the phone companies and the electric companies, we can comfortably compare the Internet to a utility. for example, if you want a phone line you contact your local area service, phone company (NITEL). The local service provider, provides a hook up from your residence or business to , the service network. The person needing the phone line provides the phone set and cables within his residence.

As long as calls are being placed are local calls you do not need anything else. However, if you want to place a call to someone in another area, you need to purchase service of a long distance service provider for International direct dialing (IDD). The local network into the long distance network. This avengement allows you to connect to telephone almost anywhere in the world. Moving about networks of computers is much the same 8way, which is not surprising since the telephone networks-that is the physical copper cables- are uses to connect computers.

(CMC INTERNET MANUAL 1997)

CHAPTER THREE

3.0 RESEARCH AREA

3.1 CYBERSPACE IN ARCHITECTURE PROJECTION

This topic arises from the need to find the missing link between the physical spaces, we know and cyberspace in computer communication. At the moment, most of the architecture world is in search of architecture in cyberspace and looking into technology as a tool for creating realism in architecture.

For now it seems the current technological development will make architecture either obsolete or with some minor modifications and improvement, will remain fundamentally unchanged.

This thesis takes a different approach. It focuses on the presence of cyberspace in architecture instead of architecture in cyberspace inc ['-0ludes a critical evaluation for the justification of cyberspace in architecture, which is done through different view points. It is a quest for the essential qualities, through the application of the cyber technology and a response to human perception of cyberspace.

The role of cyber technology in architecture is examined through an understanding of cyber technology and the lifestyle of 'cyberians' or cyber inclined people. With society and the individual is studied.

The projection attempts to explore the realm of cyberspace and its relationship with architecture. If also attempts to deny the possibility of the death of architecture due to the

expansion of cyberspace and replacement of the physical space. It will also propagate a theory for 'E-Architecture.

3.2 CYBERSPACE AND PHYSICAL SPACE

Cyberspace- "A new universe, a parallel universe and communication and sustained by the world's computer and communication lines. A world in which the global traffic of knowledge, secrets, measurements, indicators, entertainments and alter human agency takes on form: sight, sound, presences never seen on the surface of the earth blossoming in a vast electronic light" (Yang Li 1999)

The physical space is what sir Karl Popper one of the centuries greatest philosophers of science, sketched in world '3' in the " Three Worlds frame work in 1972. This world , he said , is the world of objective, real and public structures that are the not- necessarily –intentional products of the minds of lining creatures, interacting with each other with the natural world. Popper also noted that many aspects of this are abstract, purely informational. That is, forms of social organisation, or patterns of communication. Here, the entities and spaces are things that can be examined, evaluated, criticized, extended, explored and indeed discovered. Although Popper included cyberspace as the latest stage in accordance with the laws of evolution and no matter how far it is developed, cyberspace will not replace the earlier elements of the "Three World". It will not replace but displace them finding and defining its own niche and causing the earlier elements more closely to neither define theirs too nor will virtual reality replace "real reality".

3.3 WHAT IS CYBER ARCHITECTURE?

The world Cyber is derived from cybernetics and relates to anything, Internet or computer related. As it is there are many way of interpreting the term architecture. Cyber architecture refers to architecture that is related to CYBERSPACE. With the introduction of electronic equipment and computers to one's life, perception have change. from playing with primitive self made toys, modern children now play with Nintendo games, play station and transformer toys. Electronical and mechanical components now become a necessity in one's everyday life. from the classical architecture order of the shiny titanium, sky scrapper, structures with projected screens.

The relationship between architects and virtual reality are not new. Since using perspective drawing to using bits and bytes in computers,, architects have been striving towards and trying to achieve a more realistic pre-view of the build design. The perception of the design immediately changes after viewing the projected image, to a more realistic one. So Cyber Architecture in this chapter looks at the change in architecture as regards cybespace. How will the end product differ as we move into a more easily communicative form of architecture

3.4 CYBER ARCHITECTURES EFFECTS ON PHYSICAL ARCHITECTURE.

Websites can be related to homes or offices in CYBERSPACE, as an electronic billboard from, and are doubling every two month. A new home page comes on-line every four seconds. Each of them simulating and providing a service similar to those in real life and

same even other more services. Cybercates, electronic magazines, electronic video on demand, electronic books are growing in numbers all over the world.

Definitely, cyberspace is going to affect architecture. The whole society is gearing towards computerization with the computer doing all the monotonous and tedious tasks of calculation.

This chapter aims to study the viewpoint of some 'cyberians' of cyberspace replacing physical components of architecture. It hopes to find out whether human perception will change till there is totally no desire to physically touch feel or be there. If that is the case, then there is no longer a need for architecture, old buildings will be kept and new buildings designed as boxes with all necessary electronic gadgets, thus leading to the death of this chapter 1 hope to prove this notion wrong.

3.5 THE VIRTUAL ENVIROMENT

In order to analyses this one has to have an understanding of how the virtual environment works, both in the technological and organizational aspect.

Prior to the introduction of the Internet, users existed in their own cyberspace. Each one with little or no interaction with. Without the element of interactin, it thus had little effect on society. These cyberspaced servec just as a source of information and were thus a one-way communication. Perhaps, today the greatest invention of man is the Internet has to offer and do so, is rapidly expanding and its applicatin are amazing. From sending a mail via e-mail to performing an operation0 for a patient from thousands of miles away via e-medicine.

3.5.1 INTERNET

It was not until 1993 that phrase turn the 500 channels became an information age catch phrase. Before that, old computer network was primarily, used by university scientists and the computer professionals.

The key to the sudden growth was accessible to information. It all started with the text based message for communication (BBS) and small file transfers. The internet, is like a global street carnival or bazaar with thousands of conservations that make p Usenet and Iternet-Rlay-Chat (IRC).

Other more substantial articles are posted in News groups (Electronic articles with common interest) through electronic mail E-mail. Alternatively, browsing through the World Wide Web (www) using hyperlinks allows one to the Internet (net) multidimensionally and with multimedia capabilities. Like reading articles with fully coloured pictures, listening to real-audio in read or recorded time down loading video chips and watching then later doing a virtual work through of a house or a museum or even playing cards or chess with people from all around the world who are 'connected over this wide are network. The ability to communicate to people all around the world is what makes it amazing. Users communicate as they would with any telecommunication means, though on-line copper wires in telephone lines. The more advanced networking is by using of fiber optic cables that send information bits atlight speed through air separated by different band widths and also through space by satellites. All one requires is a computer, a modem and a telephone line. In addition to these, in order to create a more realistically virtual environment, video camera, microphone, scanner, virtual goggle, virtual glone and so on could be added.

3.5.2 CYBERCITIES

In cyberspace, there are cybersities that are virtual cities that perform functions parallel to those of a real physical city. A cybercity is an area where common interests and ideas are shared and exchanged. Computers become a fundamental to life. Many of the political, social, economical and cultural actions have shifted are shifting into cyberspace. These cybercities actually demarcate groups of users by either location or interest. Each user will have an account given by his home server from then onwards he can travel to other servers though the information highway. The information is delivered in bits and transferred from one connected point to another.

An increased number of jobs can be performed through cyber space, mainly with the help of E-mails replacing the use of the normal, slow, mailing systems. Therefore modern designers are going through a radical reformation, the same applies to architects. A good example would be the Marina South in Singapore, where the entire city is planned integrating both the physical world and the cyber world. The modern cities no longer consist purely of commercial buildings but integrating work, play and lining all in one place.

In cyber space, codes and password is the law. This rule includes anything in the computer constructed world, from video games, desktop publishing, word processing, automatic tellet machines (AIM'S), chat rooms, entrance card readers, missile launchers and so on.

Yet there are limitations and boundaries to these cities. That is no matter how advanced technology can be developed or invented, there are real physical limitations. For instance one

can never taste or smell food in cyberspace although he may see it eventually. In the end, cyber cities are limited to information exchange.

3.5.3 USERS ON THE INTERNET

Some places attract people because they represent a certain status or allow users to perform certain tasks and activities. For example driving a Mercedes Benz s-class to a discotheque, attending a Rotary club function, going to an expensive place for dinner, or play Golf in a prestigious club. In order to perform different tasks, one has to go to different places. In order to discuss certain topics, the most immediate method is to meet face to face at an appropriate forum.

In cyber space, users congregate at News groups allow users to post articles and sometimes with graphics too. Other readers can collect new headlines from a particular ground and then choose those that he wishes to read in detail. The articles posted up range from enquries, requests, responses, news items, announcement, guides and other various topics. There is a sort of umpire to co-ordinate all these. The internet-relay-chat is a more immediate discussion group whereby users log in to the different servers and choose the channel to join. The difference being that one cannot read past articles as in News groups. It is more of an on the spot conversation.

In some channels users meet once a month to exchange ideas and software, thus changing the path to the end result. Formerly, the gathering place of a forum like this, would be a real

physical space itself, now the gathering place is in CYBERSPACE. From cybespace,then to the physical space, which could somehow relate back to the CYBERSPACE.

3.5.4 WORLD WIDE WEB

In an urban environment, spaces have been linked mainly by transportation as well as communication network, from beginning of passage ways traditionally, to lift shafts, to pedestrian walkways, to roads, bridges, to all of integrating toward a whole network system.

In CYBERSPACE there is what is called a web user. There are different browsers connected to the world wide web {www} servers located throughout the Internet. These provide, text, graphics, video, sound, or animation. In these pages are hyper-links where the page links itself to other pages elsewhere on the web. In trying to locate a service or information, a user is not limited to one location but from all over the world. It is like a worldwide directory or yellow pages.

In using these hyperlinks, we jump from place to place, like taking a bus to virtually anywhere in the world. Reading these articles from pages 1 to 2 no longer becomes a direct process. There may be 20 hidden hyperlinks in the first page and in the second hyper-link page, there may be again 10 hyperilnks. So reading from page 1 to 2 can be smooth or infinite. It is like walking through an endless corridor where before one corridor ends others will appear.

3.5.5 CYBERRIANS AND THEIR WORLD

A cyborg is defined by Webster's new unabridged dictionary as " A person whose physiological functioning is aided by or dependent on a mechanical or electronic device".

Contrary to our beliefs and misconceptions, most of us are all cyberians or in some ways cyborgs, but we need not look like Annold Schwazenegger in Terminator 2. It is more about the integration of humans and machine. In fact, cyberian culture is a depiction of the integration of technological systems with social system. A culture that is constantly evolving and changing in every second, a culture that has little relationship with the physical environment, a culture whose faith lies in the development of computer software. Cyberspace is a social system that consists of individuals and whole, wide, variety of interests, capabilities and values. It depends on the context set by the technological system. With the aesthetic dimension to human relationship, the possibility of cyberial culture matters.

There isn't a strict definition to the lifestyle of a cyberian, the number of types is equivalent of the number of catergories of interest on the net, - infinite. Other terms that have been given to this category of people are cyber-addicts, electro-yippies, or teleworkers.

The term cyberian generally refers to a person who cannot live without a computer. He needs to be in constant contact with his virtual world. A cyberian will be one who uses his computer to perform his major duties, mainly for work and play. According to a time magazine (April 2000) poll a cyberian spends about 30 hours a week in front of his computer.

With the advancement and development of newer technology, more jobs can be and will be computer based in nature. At the moment examples include, computer programmes debuggers, computer engineers, reporters, writers, editors, bankers, stock brokers and so on.

The types of jobs that are mentioned above are all in one way or the other information related and most of their titles come after the word computer. Thus, aren't most professional jobs not information related? That also means that the job could be performed practically anywhere in the world, provided the user is connected.

A doctor, a lawyer, an architect, an accountant and an engineer are all information related jobs. Although some form of physical content is necessary.

A lot of people wish for easier lives, life one world not like to travel to work, one would not like to travel one hour to school for a two hour lecture and then travel back another one hour back home, and so on thus necessitating, or making relevant the cyber culture. On the contrary, however, some traditional employers as well as employees will not accept this idea because of lack of human touch and supervision, as well as a great amount of "technolophobia".

Never the less putting the negative side apart, the idea may work. There is already an architectural firm in Singapore that has set up a branch in the Philpines since 1994. The main task of the branch is to churn out AUTO CAD building plans, drawings and constructions details. Sketches of the design are being fixed from the Singapore office to the Phillipine

branch. There a group of Architects who are AUTO CAD literate will work out the drawing on the computer and send them back to the Singapore office though modern. How does the big boss in Singapore know if his employees in the Phillipines work the entire eight work hours? All he needs to know is that his employees in Phillipines produced the work at about the time his draftsmen could have, but for a cheaper rate.

However the Singapore office will still need to keep draftsmen to do minor ammendments and correction on the drawings. Over all, the idea worked! Thus the cyberian work attitude is that cyberians in the end product and not the process.

3.5.6 CYBER SPACE RECREATION

Cyberians typical recreational activities include, computer games, chatting in the internet relay chat rooms, sorting the net for music, movies, comics, and news articles. A common phenomenon for a new internet user, is clocking up hundreds of hours in the first few months and spending most of the time in front of the computer. That is because the Net provides so much to learn and play that it becomes never ending. Users are able to down load everything that they can see or hear. From an article to games to midi music to movies. Almost all their recreation is done in cyberspace.

The fact that there is so much to do and the 'Net' does not mean a total replacement of the physical equivalents. A user who has just completed a 3 hour marathon race on the computer, can only loose a few calories from his fingers punching the keyboard as opposed to if he had run the race in reality.

3.6 CHANGING THE FACE OF ARCHITECTURE

As we are being transformed from real human beings into cyborgs, the space we inhabit, the buildings and the entire urban environment are also transforming. Circulation systems are being replaced by the telecommunication systems. Traditional building types become obsolete. Office floors raised, old copper wires dug up and replaced by fibre optical cables, as catalogue shelves in libraries are replaced by computer terminals and so on.

Traditionally architecture played an important role in organizing the functions and relationship between activities. Landscape affects the interaction between spaces. For instance the Berlin wall in Germany was a dividing line between East and West. Some years ago, to get money from a bank one must travel physically to the bank to do so. To give/attend a seminar or a lecture, one may have to travel and even fly for almost a day. The fare there is a close relationship between the physical environment and us. As Winston Churchill once pointed out, "we make our buildings and our buildings make us". Today spaces in general are being taken up by telecommunication and computer systems. Book shelves and catalogue shelves are filled with computer discs and CD-ROM. The digital, electronic, virtual side is increasing taking over the physical. Instead of flipping through a dictionary, one would prefer to use micro soft word 7.0 spelling thesaurus and grammar check. To transfer money from bank to bank, even across states, I can now use electronic money transfer and do it in minutes, other than waiting, the former, 21 working days.

Although schools can be replaced by virtual campuses, book shops by a bit store, museum reading rooms and library stocks and catalogues replaced by servers, galleries replaced by

virtual museums and theatre replaced by entertainment infrastructure. It has not happened yet. The idea was not new in the 1980's, with electronic banking and books like Aluin Toclers, the Electronic cottage (Hamlyn 1984). The success of technology is flawed when it does not address the social issues surrounding this kind of living. The repercaution of cyber technology is isolation; which has been illustrated by E.M. Foster, as a time where there is no desire to touch or feed another human being, a time when the physical element is boring and reinterpretations of what is considered as "interesting" and reinterpretations of the interpreted are considered "even more interesting". (The machine stops) A time whereby information is paramount and physical form redundant. Unless the society has be drastically transformed to this, and social aspects become so different, only then will Architecture become obsolete.

3.7 RECOMBING SPACES IN ARCHITECTURE

Efficient delivery of data into domestic space will collapse many of the spatial and temporary separations of activities. Many activities could be done at one location. Diffusing the boundry between workplaces and working hours, theatres and performance times, at home and at one's own time. The switch time between different activities becomes almost immediate. Free time and work time become flexible and interchangeable.

The perception of spaces differs because the functions of these spaces are now combined. The living room with the screen will become a work place, an entertainment space and recreational space, all of which could be controlled by opening up windows by a simple click.

All these instabilities and ambiguities in space also challenged traditional ways of representing social distinctions and stages of socialization. Especially in advanced societies where there are well-defined spaces for different activities, for men and women, for family members and guests, for adults and adolescents. On the urban scale there is a separation between quiet space for academic activities and noisy place for discos and performances, for the rich and poor, sacred places and common areas, restricted and public areas. These places are loosing their identity in cyberspace.

The definition and description of these spaces will change with time.

3.7.1 PROGRAMMABLE PLACES

For other building types the story is much the same except some change of use. The function and circulation of the original spaces will not change drastically. When we enter a library to look for the physical embodiment of knowledge, the book, the process is still the same although it could also be available on an electronic web page. Viewing something virtually will not completely erase the need to see the real thing. It will only decrease the number of visitors visiting physically and increasing the number of virtual visitors. Just look at the main page with the counter and imagine how many visitors less would there be if it is on a bounded copy. When it is possible to substitute face to face contact most of the time, the spatial links for those activities loosen, they can potentially relocate and rearrange themselves in new logics. Perhaps we will find compelling advantages in putting together spaces.

Buildings nowadays not only have to relate the urban context but also to the cyber context. Instead of huge roller coaster rails they will be replaced by rooms with excellent audio and video facilities, with mechanisms to defy Newtons law of gravity like the star tournat Disney land in California, U.S.A and the Batman ride at Moure world in Australia. Rooms and buildings will hence forth become the link between the body and bits.

Building those spaces is not about putting in fibre optic cables because these equipment will decrease in size everyday. In the end the only obvious piece of equipment is the keyboard and the mouse. Display devices and effectors will multiply. In the end, buildings could become the computer interface and vice-versa.

Humans will still sit on the chair and not in cybersapce. Having a sumptuous mean in cyberspace will never fill our stomachs, therefore architects will still continue to shape, arrange and connect spaces. Though architecture may not really remain the same due to the change in the interface and modern futuristics perceptions.

3.8 CYBERSPACES REALITY

The definition of a home for a cyberian has a different meaning. It is not about the physical living space with tables and chairs, bed sofas. It is about the interface between the physical space and the cyberspace.

The door to cyberspace is open cyberspace will require constant planning and organisation. The structures proliferating within it will require design and the people who design these structures will be called cyberspace architects. In the book, "cyberspace" Benedict (1991)

explained the evolution and meaning of architecture. Beginning with displacement and exile to creative response to climatic stress, with the choosing of advantages for settlement, the internal development of social structures to meet population and resource pressures and so on. All this carried out in terms of time, materials and design and construction expertise of what it used to be and the self dematerialisation of architecture.

In modern times, after a century of industrial revolution, the turn of the twentieth century saw the invention of high tensible steel reinforced concrete, and of high strength glass. Under economical pressure to do more with less, architects seized and celebrated the new vocabulary of architecture.

Towards the end of the twentieth century saw a need to relate cyberspace to architecture, thus finding new meaning for architecture.

3.9 VIRTUAL ARCHITECTURE IN CYBERSPACE

Virtual museums, virtual/cyber cities, virtual shops, computer modelling, are examples of virtual architecture in cyberspace. The vital ingredients of this architecture is the use of virtual reality. Using cyberspace as a tool to present or imitate an organisation of the actual physical self. Architecture in this space remains fundamentally changed in the sense that it is no longer concerned with the design of physical parts and looking into the joints and the response to the climate and other related factors. What is termed building construction in cyberspace is not about brick and mortar but the programming language.

Cyberspace architects will design electronic edifices that are full as complex, functional, unique involving and beautiful as their physical counterparts, if not more so. Especially through logic.

Architecture is the design of meaningful spatial environments. It is created by transforming the existing social, cultural and technological world through theoretical skills. There can now exist an equivalent realm situated in an entirely new context through computer simulation.

An analogy can be drawn from architecture works presented in cyberspace. But this does not mean that there is also architecture in books and in cardboard models. They are just presentational tools. Virtual architecture in cyberspace serves as an advanced tool for paper architecture.

Drawing is a form of representation of architecture. As drawing is a testing ground before actual construction, so is cyberspace.

3.10 REAL PHYSICAL SPACE USING CYBER TECHNOLOGY

With the advancement of cyber technology, physical components for creating this cyber environment could be introduced into physical space. An example of how this may be found in the cyber scrife at century plaza listed in Kuala hampour Malaysia with it comes along all the latest available cyber technology. Most of the cyber technological equipment that is known is being injected into this scrife. Including cend keg system, micro camera and

intercom, "Butter in a Box" plasman screen technology, Net TV, Internet access, internet video on Demand and video disc recoder.

Projects related to cyberspace are not many but they are increasing in number. The reason is that more business organisation are moving towards computerization, therefore cyberisation.

With increased exposure to cyberspace, the perception of the building users is being tamed towards cyber technology. Constant up-grading and changing parts become common activities. Thus architecture instead of creating something that is monumental and can withstand the ageing of time, now deals with relatively more temporary and easily reconfigurable. The city is seen as an immense mode of communications, a messy nexus of messages, storage and transportation facilities, a massive education machine of its own complexity. Its idea of the modern city is not new.

In the late 1960's 'Archigram' dreamt of a city built: itself unpredictably, cybonetically , which did not resist television, telephones, air conditioning, cars and advertising, but accommodated and played with them made up of instable buildings on rails, buildings like giant experimental theatres with video cameras gliding like sharks through a sea of information.

Although Archigram's dream city did not become a reality, traces of this city can be seen from some modern projects.

Like the D.E. SHAW AND COMPANY, offices in New York, United States of America which uses sophisticated mathematical models running on sun work stations to make high volume trades in global markets. Steven Holl was asked to design the office to create an environment that represented the spirit this high tech trading firm.

In this project, Holl uses planes and the reflection of light as a metaphor for reflection of information. Natural light and artificial light enters the space from concealed windows and fixtures after being reflected from surfaces painted in brilliant colours. The painted colour surfaces are invisible and thus rendered mystical in its sourcelessness and the effect is of a anteroom to the realm of high finance.

Holl's design uses light in some of its many manifestations. He uses the projected diffused colour to impact the intengible nature of the clients business. Which relies on computer links to telephone lines and satellites.

Here, behind a fluorescent green façade in the sky, computer scientists and mathematicians monitor and respond day and night to electronic transmissions of minutely fluntuating numbers.

In this project, Steven Holl used cyberspace as a metaphor in architecture and thus combines both elements to produce a kind of cyber architecture.

(Yang Li, 1999)

3.11 A PROPOSAL FOR ELECTRONIC ARCHITECTURE

(E – Architecture)

With new developments in cyberspace, processions and how their professionals proffer their services has evolved. Thus giving birth to on line services like electronic mail (e-mail), Electronic commerce (E-commerce), Electronic medicine (E-medicine), Electronic Banking and finance, E-Banking and finance, just to mention a few.

Electronic services in cyberspace means easier and faster delivery – if need be – by the best professionals/consultants in the world and sometimes for a cheaper rate. The profession of Architecture should not be left out. Though there already exist several Architectural tools in cyberspace, there can also be a total electronic Architecture service encompassing these tools.

3.11.1 CURRENT ARCHITECTURAL TRENDS IN CYBERSPACE

There are several software applications/tools that aid Architects in the work, both designing and supervising the construction of a building. In designing, there have been several Computer Aided Design (CAD) software application in the last decade and a half. Although the initial "AUTO CAD" programs were for engineers, they were later formulated to suit Architectural applications, thus leading to the development of "ARCHICAD" software. Today we are on the sixteenth modification of "AUTOCAD" software alone, and there are so many different types of Architectural computer aided design, the latest probably being the "AUTO DESK 2000".

The computer Aided Design helps you to plot out designs and select from a wide variety of options, different types of fenestrations and finishes. Most will even solve basic structural problems for you.

There are also several 'Extranet services' provided on the internet for Architects supervising projects, and need to collaborate with other professionals, not in the same vicinity as the project. This technology allows Architects, designers and even engineers, working in their base to communicate easily with outside contractors and consultants and retrieve information when at home or in the field. Thus specialist consultants can view designs make their inputs, from outside, and the modified designs are circulated to other consultants and the Architect or designer can commence on the project, without their presence.

The Extranet is a marked out storage space on the internet having project related information that can be accessed and modified electronically by any of the consultant at any given time during the project. They are temporary fixations, usually only for the duration of the project.

There are also several Architectural related web sites that offer a variety of Architectural services and information. Websites life – www green architect. Com supplies information on computer Aided Design (CAD) software developments, web tools, and what's happening in the Architectural industry generally.

www e-builder.net. provides information www Architecture.com, provides information on past projects of note, Architects of note and general information on the industry.

3.11.2 "E-ARCHITECTURE – THE SERVICE"

For a totally encompassing Electronic Architecture service there will have to be an integration of the already existing tools.

A client anywhere in the world should be able to click on his system, log on to the internet and locate an "E-architecture" website. The programme on the website will have a limited entry decision table, to determine:-

- The type of building (residential, industrial or commercial)
- The configuration of the building like, how many bedroom, living rooms, bathrooms, kitchen and dinning room.
- The sizes
- The location and size of plot
- Whether if in a temperate or tropical region

There would be different installed parameters which would determine orientation and other design factors like ventilation lighting and scan control.

- Data of preference as regards aesthetics would be a computer aided design (CAD) application, which could be categorized based on different Architectural styles or periods. Like, Gothic concept to Renaissance, to Baroque Architecture, Romanesque, or Elizabethian to Georgian and so on. It could be further sub-divided to suit the

traditional or local elements. For instance different cities of the world have Architecture characteristic to them.

- Various options would be suggested relative to the project with various cost implications, therefore the client can settle for the best design for him as regards affordability
- After the sketch is completed, for the client to print it out, he would have to pay into the websites account ,via reading in a credit card number into the system. The billing will be for 'stage one' sketch design, programmed on a two way decision table in JAVA, so that the number is automatically called in and checked before the sketches are unblocked to be printed out.

The client can then take the design to a local Architect in his area to produce working drawings and subsequently to supervise the project.

In event of the client requiring more services outside of what is available or inability of client to interpret land use map of his site or any other bank documents. He could request to correspond directly with an architect and fax or scan these documents to him/her for proper information. The Architect on line can now take the clients brief better as it is now on a one on one basis. This service will attract a consultancy fee payable as in above.

This would begin the advent of 'E-Architect' but will however require "web-architects" who will be on line twenty four hours (24 hrs.) in a shift basis, to consult and assist clients on line.

All service in E-architecture will be conveyed within the ethics of the profession.

people could view the 'E-Architecture' as taking work away from the conventional architects. However 'E-Architecture' has to be viewed objectively, for the industry to move with the times. In the sense that it will open a new field of Architecture with web-architectures' professionals with computer training and knowledge of how to work within limited information from the client. And the ability to expand your service to every home, office or person with interned service all over the world. Imagine being in Minna designing a home for a family in japan. This will breach all frontiers limiting Architectural service.

3.12 CYBER ARCHITECTURE; TWO SCHOOLS OF THOUGHT.

With the different scenarios described in this chapter there are two basic interpretations, with regards to the search for the meaning of Cyber Architecture; one being Cyber architecture in CYBERSPACE which is a view of cyberians, leading to the other dematerialisation of Architecture as we know it and its eventual obsoleteness. And on the other hand my view point of Cyber architecture and justifying it in physical space, defining what architecture is and giving a limitation or boundary thus justifying its presence in physical space.

3.12.1 CYBER ARCHITECTURE IN CYBERSPACE

Architecture seen for its symbolic content or 'message system' has taken on a life of its own. not only have architecture drawings generated art markets in their own right as illustrated conceptual art, buildings have started becoming arguments in architectural discourses about architecture, as propositions, narratives, and that happen also to be inhabitable.

The modern movements interest is neither a building as an object of beauty nor inhabitation. Architecture becomes an object of information, a collection of codes and 'moves' junctions and disjunctions, reversals and interactions, and so on, all to "read".

Cyberians believe that Architecture in its physical form is no longer such an important issue, the meaning or what can be read reigns supreme. Would the next stop of cyber architecture in cyberspace be a logical approach? Furthermore, cyberspace can protect all the time, that is to build a castle in the air without being contained by gravity.

Architecture in cyberspace however, provides an opportunity for architects to explore and test out an idea before actually building it. It allows the user to do walk-throughs and provides a more realistic view of what it would be like in real life. It allows different professionals to interact and stimulate an idea and concepts to be realized and explained even with a physical body and thus generates newer ideas never thought possible. It is like paper architecture, but should not be viewed as much more due to its physical limitations.

Fundamentally, the idea or architecture perse as a ground for discourse and theorizing works fine. But the question remains whether there is architecture in cyberspace.

Cyberspace architecture can be easily related to a physical parallel. It is like the museum in real life and a model in cyberspace. But buildings in cyberspace are constructed from programming language and not bricks and mortar and are therefore not real and habitable.

Although there is so much hype about cyberspace in the media, how cyber can Architecture be? An article recently posted to an internet newsgroup called Alternative Architecture stated that after all, internet is just an electronic bill board. "The author said that users were becoming irritated by animations which took up considerable time when down loading web pages . he wrote "just get to the point!" This also applies to cyber architecture, if the design remains in bits and bytes they are irrelevant to a client.

3.12.2 CYBER ARCHITECTURE IN PHYSICAL SPACE

In relating to cyberspace, architects like Steven Holl instead of proposing a scheme in cyberspace chose to use it as a metaphor in physical space. Using work performed in cyberspace and translating it to the elements of his architecture as a metaphor. Holl endowed meanings into physical parts of his architectural works simply because one cannot live in cyberspace.

Although cyberspace can try to imitate the physical space, it can never be real. Comparing a cybercafe in physical spare and one in cyberspace, one cannot taste a cup of coffee in cyberspace. Even in the science fiction work of E.M Foster "The machine stops" one purchases a cup of coffee by a simple click on the computer and the machine, it is still the physical components of the machine that churns out the coffee.

Cyberspace as defined earlier on in this chapter is a parallel in computer and communication forms, that which is made up of electronic bits. Although the limits of cyberspace are

constantly expanding and the capabilities of cyberspace are improving, it can be switched off in a split second. Although one can use virtual goggles, virtual gloves and so on, it is the physical components that make cyberspace present.

The fundamental justification for cyberspace in physical, as far as architecture is concerned, is defined by the limits of what cannot be done in cyberspace. As long as one cannot step through the computer screen, architecture must still be in a physical environment.

3.13 CRITISISM AND ANALYSIS FOR ARCHITECTURE IN CYBERSPACE

Although architecture can be to have been dematerialized, there is a limit. We still need to live in real architecture even as notions of dematerialisation and similar or related ideas can help to produce useful and interacting real architecture.

Having analyzed and postulated on how virtual reality could be created in the real world in this chapter with a proposal for E-Architecture. One must consider the view point of those who would think that E-Architecture is a sure way of the complete dematerialisation of architecture, as we know it. And its eventual obscurity, by taking away the functions of the traditional architects. However this is not true, as E-Architecture will be a diversification of Architecture and thus creating specialist jobs for architects, like interior décor, landscape architecture or marine architecture. It will also serve as a means to expand the reach of architectural services, as an architect in Minna, Niger state, Nigeria, can sit in Minna and have a client in Australia. Even with all the tools of architecture in E-Architecture, one cannot physically supervise the construction of a building through the computer screen so it will still be "business as usual" for

traditional architecture, and an additional field of Architecture called E-Architecture, running parallel to it.

Modernism in Architecture today could be viewed as being stagnant. The interrelationship between the activity inside and the decorative or ornamental face is non-consistent, despite its huge success in the post war period. When a society becomes more stable, and in a sense, richer, what people look for is not just a phone to line in. Icons and symbolism are sought after. That explains the success of post modernism all around the world. Although post modernism is of great popularity, it appears to have failed in Architecture as there is no progress.

As the realm of cyberspace expands rapidly, the number of people joining this cyber world is constantly increasing. Cyber architecture in a physical space may be an alternative to post modernist architecture. (Patrick YU – JIN TAN 1991.)

By proving that it is human nature not to be conservative, it therefore implies that the idea of the death of architecture is no longer valid. It is a rebirth of architecture, a rejuvenation of architecture a new celebration.

In searching for meaning for cyberspace in architecture, it is found in the physical space not cyberspace itself. But that does not deny the fact that a lot can also be done in cyberspace. Cyberspace provides a ground for testing and visualizing the physical space, provides a ground for realization. Thus instead of looking for architecture in cyberspace, one should look for

cyberspace as a tool for architecture. In cyberspace, wonders could be done to architecture. Virtual walk-throughs, animation, calculation, project programming and monitoring, simulated co-ordination, real time working through internet, electronic mail and so on, are only some examples of what could be done.

The actualization of which relies on the physical built form.

The problem that most architects face is to look for architecture in cyberspace. Many find no significance or relevance in cyberspace.

Cyberspace has a complimentary role to architecture. Cyberspace in trying to create realism refers back to the physical world. Architecture, with the evolution of cyber technology begins to reflect images and meanings from it.

Therefore instead of looking for architecture in cyberspace, one should be looking for cyberspace in Architecture.

CHAPTER FOUR.

4.1 CASE STUDY ONE: NIGER CAFÉ, UNIVERISTY OF LAGOS SHOPPPING COMPLEX, UNIT 12

The Nigercafe.com Internet café was opened in 1998 by a group of four young graduates of the University of Lagos. After their service years they had an innovation of providing an Internet access, service to students in the university of Lagos campus.

After a year of starting upon a small scale they realize the potentials of the business and sought financial investors and private loans ir order to expand their services. And acquired corporate registration with the corporate Affairs commissions.

Niger café is located at unit 12, University of Lagos, shopping complex opposite new hall. And at present have twelve workstations open to the general public. Providing services, which include Internet access, e-mail, software programming, word processing and voice over Internet phone calls. They have staff strength of about 20 people.

4.1.2 ORGANISATIONAL STRUCTURES

Nigercafe do not have very well defined organizational structure, buttressed by the lack of office space for management staff. However their organizational structure comprises, of company directors including a managing directors and technical director, accounts department and operators.

4.1.3 DESCRIPTION

Niger café office is situated within a 20-unit office block in the University of Lagos shopping complex. The block consists of fine paints of 4 unit shops each part demarcated by a corridor. Thus the entire length is in two rows. Nigercafeis house in two units, 12,13 the back now and thereby have exposed the corridor.

There are other units in the complex on entering into the complex, the building are spread along the perimeter thus giving a horseshoe shape. To the left of the gate, along that perimeter is a block of lock up stall. Adjacent to this at the end are two blocks of shop spaces. The first block being where Nigercafe is located.

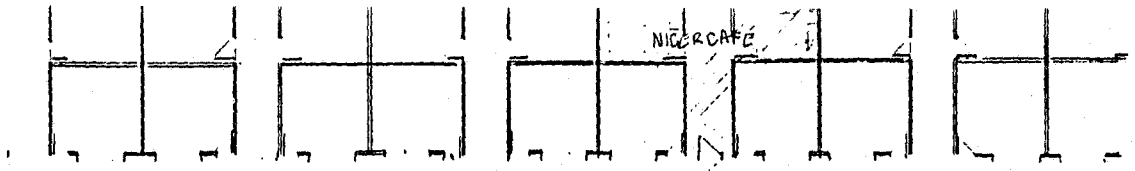
On the opposite side of the entrance one an office block and next to it on its right a pharmacy /supermarket.

The capital clearing contains a roundabout and the remaining space is used as a car park.

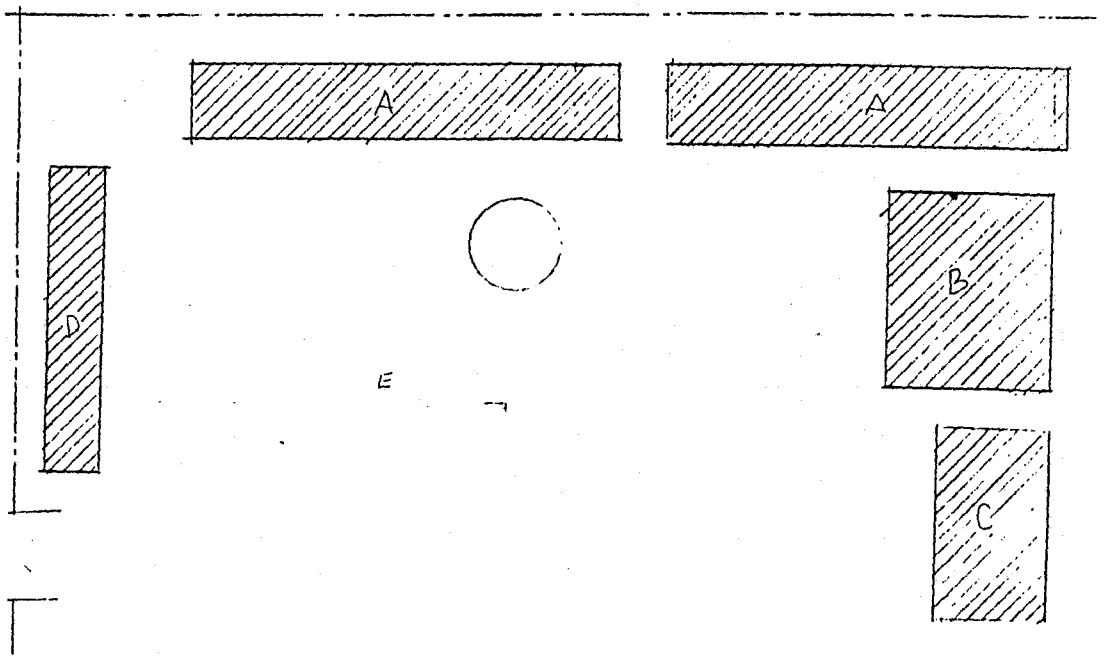
4.1.4 CONSTRUCTION MATERIALS

The block of shop spaces which houses Nigercafe is of very simple work construction. It was designed and built by University of Lagos consultancy services (UNILAGCONSULT).

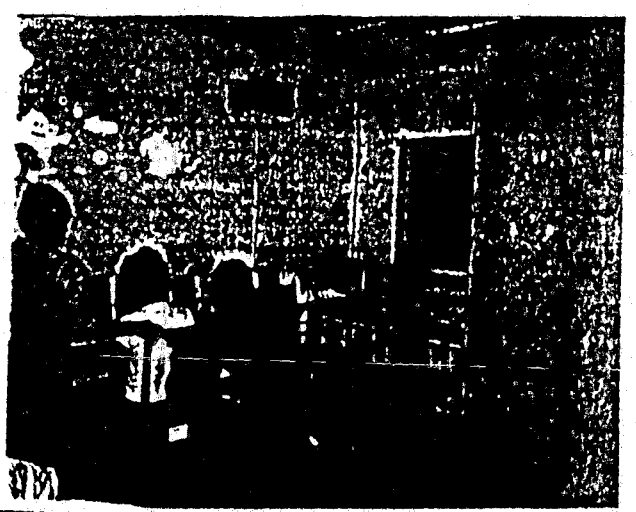
The external walls are of 225mm sancrete blocks and the internal partition walls are of 150mm-sandcrete block.

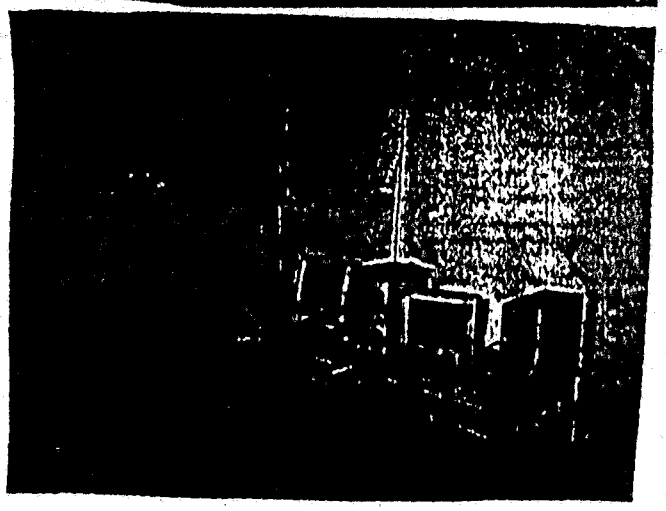


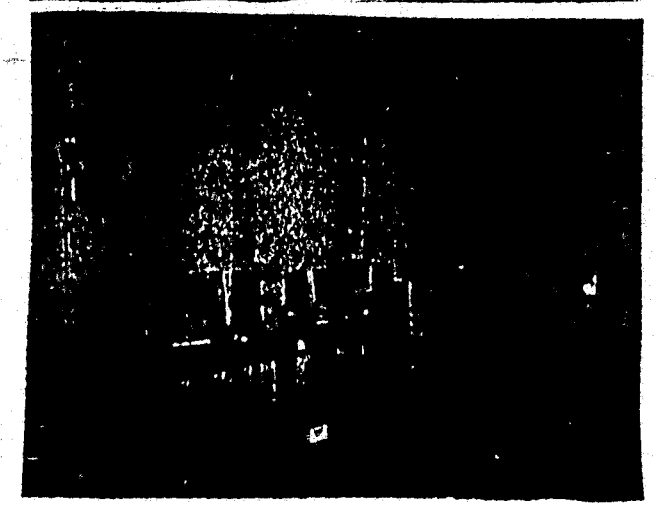
SHOPPING BLOCK A.



SITE PLAN.







The server, office is of plywood partition. And the internal doors are 900mm flush doors external doors are 900mm panel doors. With a simple gable, galvanized iron roof.

Merits

- Nigercafe has an excellent location being in a large university environment.
- The café has adopted good visibility considerations.
- They offer very efficient services.

Demerits

- There are not any considerations for retirements.
- The interior furnishing of the café is poor
- The original office was not designed for café purposes
- There is poor utilization space.

4.2.1 CASE STUDY TWO: URBAN CAFÉ N0 36A ISAAC JOHN STREET G.R.A IKEJA LAGOS.

The Urban café G.R.A. is a new Internet café in Ikeja, which started in April 2000. Incepted by the due of Biola Awal and Ayo Oteldola, who started an information technologies company, Urban Technologies, in 1997. Urban Technologies for the information exchange of the Ikeja populace, through computers using the Internet.

The café enjoys good patronage, even though it is relatively new, though it has not lit its together dientelle. The majority of its users are youths sending E-mails and not working class executives sourcing for information in their respective fields.

However, form all indication, Urban café has all it takes to be a useful internet café.

4.2.2. ORGANISATIONAL STRUCTURE

Urban café has a well-apportioned organizational structure, with customers services and technical services departments. Customer services to cater far the internet services supplied and the accounts department. And technical services, for both their computers and that of their customers.

4.2.3 DESCRIPTION

The Urban café office is along Isaac John Road Street in G.R.A. Ikeja Lagos, parallel to old airport road Lagos.

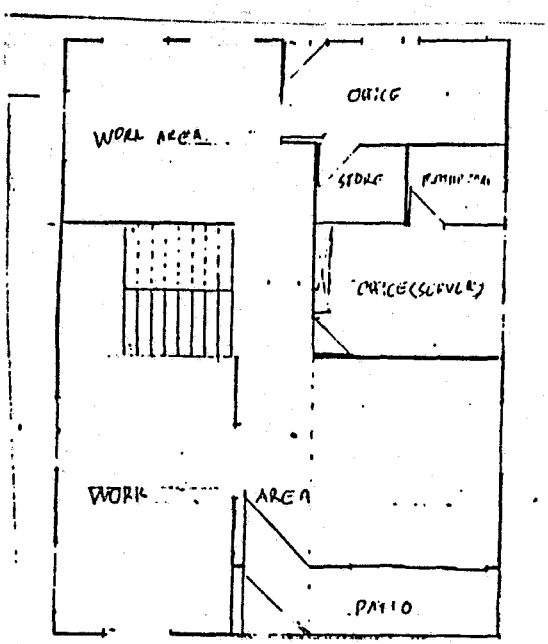
The building was originally a residential duplex on a plot with a party fence wall. It has however been well converted from its present purposes

The garage on the façade has been sealed up and an archway opening into the living room, from it has been created. Thus converting the garage into a work space. The verandah on the other hand has not been converted but maintained as a verandah. There is easy utilization of space inside the building, and a lot of space for parting in the compound. Though there is only one entrance. The boys quarters are located behind the building and is being currently used as a store.

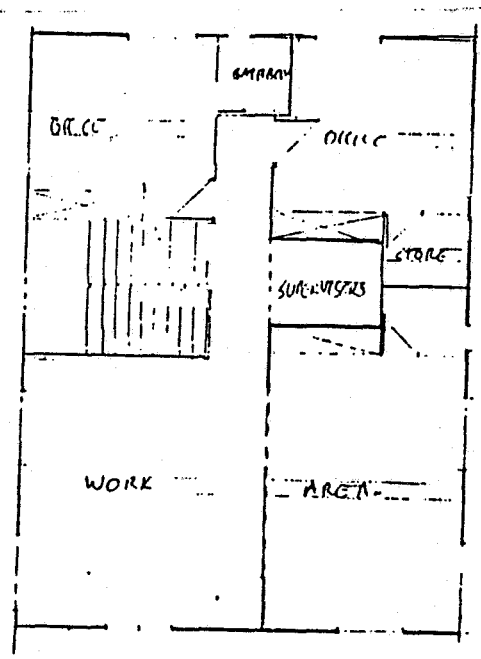
4.2.4 CONSTRUCTION MATERIALS

The building is of block work construction, with some facial bricks used at strategic locations on the façade.

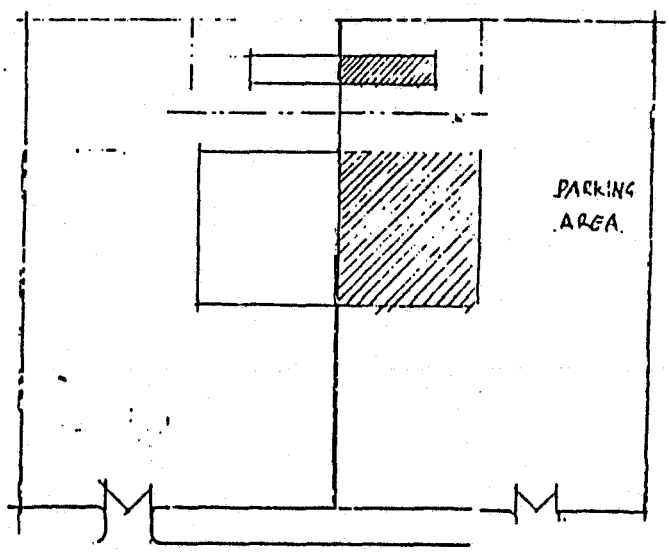
URBAN CAFE, NO 36TH ISAAC JOHN STREET GRA IKEJA LAGOS.



GROUND FLOOR PLAN



FIRST FLOOR PLAN



The external walls are of 225mm sandcrete blocks and the internal partition walls of 150mm sancrete blocks. The verandah is covered by wrought iron, bent and welded bars on its perimeter, with critical hope folding doors leading off it into the main building. The main door is a big 1500mm pane door, and the internal doors are flush doors. A lot of the thorough serves are archways and the windows are aluminium sliding windows.

4.2.5 MERITS AND DEMERITS

From the above case study merits and demerits were observed.

Merits

- There are a sufficient number of workstations
- There was adequate consideration for interior arrangement in terms of circulation space
- The parting space is quite adequate

Demerits

- No provisions were made for refreshments
- There is an obvious conversion of the use of building from residential to cyber café.
- It is not located in a very viable area.
-

4.3.1 CYBERIA INTERNET CAFE UNITED KINGDOM

Cyberia Internet café is a small Internet café in the Isle of Man, Ireland. Conceived by lawrence O'Donnel in 1996. It was designed to serve the Internet service needs of the people of Douglas a small town in the Isle at man.

The entrepreneur's initiative was to stop people who needed Internet services but could not afford it from travelling to neighbouring towns to buy Internet time. Thus he has good patronage in Douglas, though not as much as he would have gotten in larger less sleepy towns like Dublin. But satisfactory considering the nature of the town and people.

Cyber Internet café staff strength is less than five.

4.3.2 ORGANIZATIONAL STRUCTURE

It is very much a one man business, a sort of a"cottage industry" and thus the management does not have a specific pattern. There is the owner who oversees the general running of the place, someone who prepares the snacks and sell them with beverages. Ten there are two attendants/operators.

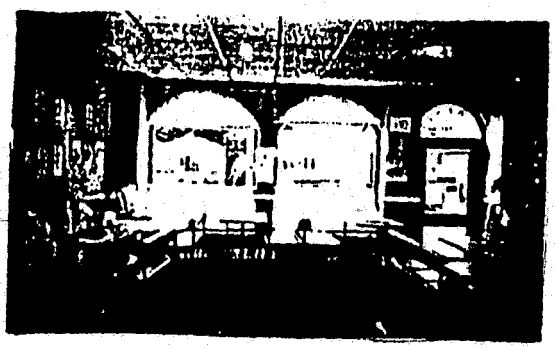
4.3.3 DESCRIPTION

The café is part of a building block on North Quay in Douglas, Isle of man. It is just a unit comprised of a large open space for eating area and service points., a born at the end, an inner office top the left and a kitchen behind that. There are about eight service points or workstations.

4.3.4 CONSTRUCTION MATERIALS

The building is characterized by block work brick reinforced concrete.

CYBERIA INTERNET CAFÉ, ISLE OF MAN, DOUGLAS, THE U.K.



The façade has sandcrete block fillers and reinforced concrete frame of column and archs over the fenestration. The inner partitions are of burnt brick and laminated wood. The wood is finished with wallpaper.

The ceiling of is of cellotex type on an aluminium frame.

The façade has a wooden framed glass doors with an arched transoms. To its right are two large 1800mm arched windows.

4.3.4 MERITS AND DEMERITS

From observations made the merits deduced are:-

The partioning available to the dcafe is very adequate. There is availability of refreshments.

Thus a well arranged interior space or easier utilzation and work.

And the demerits are :-

There is inadequate number of workstations.

- Bar and eating are at opposite ends of the building thus cutting through the work area.
-

4.4..1 EASY EVERYTHING, INTERNET SHOP, TRAFALGAR SQUARE LONDON, ENGLAND.

EASY EVERY THING, was founded early in 1995 by Astralcommaications limited, at Trafalgar square London. Out of the need of Astral communications to break into the filed of information Technologies and at the same time provide public Internet services to the people of London.

Its initial frame was later expanded to what it is presently in 1997, and is arguably the largest Internet café in London. Two additional branches have subsequently been opened in London. And is touted as having some if the best pastries at £ 1 apiece, along with a cup of tea or coffee. They also provide twenty-four hour access.

4.4.2. ORGANISATIONAL STUCTURE.

Easy every thing operates two Strategic Business Units (SBU) normally:- co operate services and works. Each unit is further sub- divided into functional divisions. For instance, work services comprises of Engineering, maintenance services, customer services and Information Technology consultancy. While corporate services comprise, human resources, marketing and finance.

4.4.3. DESCRIPTION

It is located in the heart of the city of London., next to Trafalgar square and opposite charring cross. It is a typical English commercial block, of bean and columns with a stony Victorian façade and arched windows.

Easy everything is characterised by open spaces inside, for work stations, a terraced eating area upstairs, over looking the work area and has multiple entrances, but only one is normally used.

On entering, there is a lobby leading to the reception area to the right are vast rows of work station tables, like library tables. It the end is a staircase leading to a terrace with a counter for snacks and beverages. There are offices on the upper floors of this building (see fig 4,I,J,k,h)

4.4.4. CONSTRUCTIION MATERIALS

The case is about three units in a block, and is symbolised by precast concrete and reinforced concrete beams and columns. The approach has a lot of glazing on the around floor and normal arched windows on the first floor and windows without the transoms on the two upper floors. And there is the use of Aluminum framed doors at the entrances.

The floor is of polished wood. The conduits and central air-conditioning are concealed behind a celotex ceiling on an aluminium frame.

4.4.5. MERITS AND DEMERITS

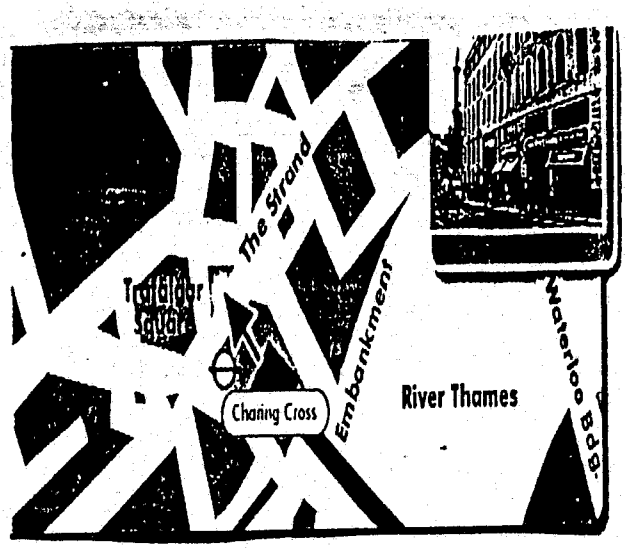
The deduced Merits are:-

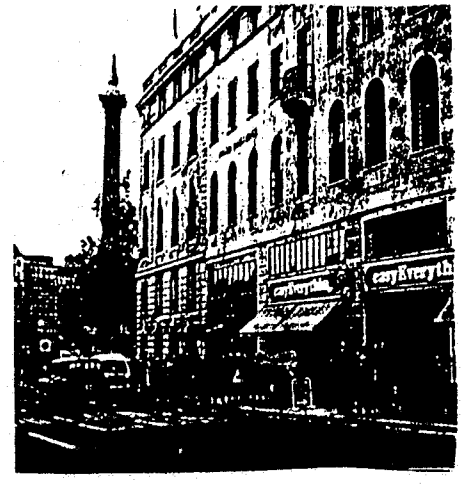
- The number of service points available are very sufficient as regards customer traffic.
- The general flow patters and circulation spaces are quite good.
-
- The conversion of the building to its cement function was excellently done

And the DEMERITS are:

- The parking space available in insufficient.
- There is inadequate security as regards public usage
- k area, as not be sectioned or partitioned. Thus there is no privacy when working.

EASYEVERYTHING'S INTERNET SHOP, TRAFALGA SQUARE LONDON ENGLAND.





CHAPTER FIVE

5.1. SITE CLIMATIC CONDITIONS

The climate of Nigeria is basically monsoonal in character and like all monsoonal climates it is expressed as a contrast between a dry season and a wet season. These two regimes of the climate are very dependent on the prevailing air masses blowing over the country at different times of the year. The dry north eastern air waves blowing from over the Atlantic. These two air masses, blowing from nearly opposite meet at a zone of discontinuity stretching east-west across west Africa called the inter tropical convergence zone (ITCZ) or the international discontinuity(ITD)

MABOGUNJE {1977}

The classification of Nigerian climate into dry and wet season provides a rather simplified picture which depends on a consideration of the rain element as the only meteorological elements namely weather ,cloud amount ,cloud base and type visibility temperature humidity and wind are considered. At least four zones of definite weather patterns each different from the inter tropical discontinuity (ITD) are observed in Nigerian

A comfortable living environment will depend on maximizing the aspect of the environment which reduce heat and the effects of humidity and protect from rain and dust. Thus planning in accordance with climatic conditions is very important to attain a functional and successful design. There you'll find this proposal for "Cyber Center Abuja," is as much as possible oriented in a north -south direction. In order to make the shorter ends of buildings, facing the direction of the sun rays.

5.2 RAINFALL

Annual rainfall in Nigerian is highest in the coastal areas and decreases to the lowest as we go higher to the Northern boundary of the country.

Rainfall in Abuja records a mean annual of one thousand three hundred and thirty four millimeters (1334mm) taken from a long period of records of observations. The highest mean monthly rainfall is recorded in september with ones 400mm (fig5.2i}about 180-200days (fig 5.2ii)

The early rains in April are characterised by wind storms and slight drizzles byut those cease by the end of may. By late October when the rainy season is ending the dust storms return followed by rainstorms and slight drizzles, but those cease by the end of May. By late October when the rainy season is ending the dust storms return followed by rainstorms and lightening. Consideration of these factors are employed in the roof types to be used especially with regards to their shapes as well as the roofing materials. The mean monthly rainfall distributions for this area shows the need for drainage systems that can handle large volumes of water very quickly. In considering this, adequate and durable construction methods will be used in the construction of draingae pipes and drainage channels around the perimeter of the buildings and eastward of the site into a main drainage along the service route towards the front of the site and into the main sewage channel

RAINFALL: NUMBER OF RAIN DAYS 1:1 RR ³ 0.3mm

	JAN	FEB	MAR	APR	MAY	JUNE	JUL	AUG	SEPT	OCT	NOV	DEC
1995	0	0	2	4	13	9	19	22	18	15	1	1
1996	0	0	1	8	17	18	17	23	17	11	0	0
1997	0	0	2	5	17	14	18	20	18	17	2	0
1998	0	0	2	6	12	15	18	20	21	20	0	0

Fig 5-20

RAINFALL MONTHLY TOTALS IN MILLIMETERS (mm)

	JAN	FEB	MAR	APR	MAY	JUNE	JUL	AUG	SEPT	OCT	NOV	DEC
1995	0.0	0.0	26.7	56.3	118.9	114.5	221.3	198.9	417.4	153.5	1.4	0.0
1996	0.0	0.0	2.5	70.5	238.0	172.5	215.7	235.1	326.9	140.0	+RACE	0.0
1997	+RACE	0.0	27.6	76.5	166.6	166.6	186.9	225.0	247.7	198.3	9.5	0.0
1998	0.0	28.7	9.9	86.5	102.1	102.1	310.0	181.4	196.1	322.0	0.0	0.0

Fig. 5:2 (ii)

5.3 TEMPERATURE

The mean monthly temperature is highest in March at thirty seven degrees centigrade(37^0C} and lowest in August at thirty degrees centigrade{30^0 C}. There is a drop in temperature during the raining season due to the cloud cover increase and blossoming vegetational cover and cooling evaporation . The effect of trees and shading devices for the building are given great consideration. Paint finishes and rendering techniques employed in this design will be selected based on their reflection of solar radiation as well as comfort, visual perception and psychology, and their ability to blend with environment.

5.4 HUMIDITY

The months of February and march are very hot and humid, thus these months are very undesireable for human comfort.

These hot and humid conditions are taken into consideration in the architectural design by utilizing tress on the site to create a microclimate and by making provision for cross ventilation.

5.4 SOLAR DATA

In Nigeria there is a general increase in the total hours of sunshine further north from the Atlantic coast. The amount of sunshine ranges from a minimum of one thousand three hundred hours (1300hrs) in the Niger delta to three thousand two hundred hours (3200hrs). in the extreme northeast area of the country. The Abuja area which is central, is exposed to two thousand five hundred (2500hrs) sunshine hours. (Mabogunje 1977).

RELATIVE HUMIDITY MONTHLY PERCENTAGE

		FEB	MAR	APR	MAY	JUNE	JUL	AUG	SEPT	OCT	NOV	DEC
995	40	38	55	163	80	81	86	87	85	83	65	54
1996	46	51	56	64	79	83	86	87	87	87	57	53
1997	48	27	49	71	80	83	86	86	84	85	76	53
1998	44	40	37	61	77	81	86	88	85	84	67	52

Fig 5.4(i)

SUNSHINE HOURS: MONTHLY MEANS IN HOURS AND TENTHS

	JAN	FEB	MAR	APR	MAY	JUNE	JUL	AUG	SEPT	OCT	NOV	DEC
1995	xx	xx	xx	xx	Xx	6.1	4.2	3.9	5.4	5.7	8.1	8.9
1996	7.2	7.4	8.6	7.7	7.5	6.1	4.2	3.7	4.5	6.8	8.4	8.9
1997	8.7	xx	xx	7.7	7.4	Xx	4.4	xx	6.1	xx	7.9	8.4
1998	6.1	5.7	5.1	7.1	7.2	Xx	xx	xx	xx	6.5	8.6	7.9

Fig 5.2(i)

During the dry months (November to April), the monthly variation in the amount of sunshine follows the general trend of an increase from over two hundred and seventy five hours (275 hrs) in the area. As the rainy season approaches the trend is to increase cloudiness. The decline in sunshine hours becomes more intense as the rainy season progresses and reaches its lowest value in the month of August.

The solar data that takes into account both the sun and the cloud is considered in the design. When the sunshine is higher it is controlled in the buildings and on the site by the provisions of roof over hangs and eggcrate sunshading devices especially on the southern orientation, and the presence of trees to absorbs solar radiation and provide cooling by their evaporation process and shading effect.

When sunshine hours are low during the raining season, the courtyard openings and adequate fenestration's in the design take maximum advantage of available sunshine.

5.6. GEOLOGY AND TOPOGRAPHY

The geology of Nigeria reveals that the rocks at the various units of the geological succession, range in age from the Pre-Cambrian to the Quaternary. The pre-Cambrian rocks are referred to as the "Basement complex".

The basement complex constitutes of the oldest exposed rocks in Nigeria and they have a very long history during which they suffered varying degrees of alternation of heat and pressure, where folded and crumbled, raised into mountain ranges then eroded.

Underlying the Abuja area are undifferentiated basement complex rocks. These rocks will not present any major geotechnical constraints to the type of structures proposed as the majority of them are of medium to high strength.

Nigeria being a country with a great variety of land forms, has its land surface classified into three broad physical units. (the major relief features) Namely:- The plains highlands, the troughs and river valleys. Within each of these could be identified features of lower order.

The area is topographically typified by gently undulating terrain. The variation between two heights is about fifty meters producing, in the immediate surrounding short views of less than one kilometer. These views are further shortened by the characteristic park savannah vegetation.

The undulating, slopping, terrain and the out crops on and around the site will be harnessed where possible for greater scenic value.

The soil underlying the area is fertile and majorly a sand and gravel mixture . The soil is self draining but is about ten feet (10ft) above the city's drainage level and is deep enough for reasonable landscape to be assumed on the site.

5.7 SOCI0-CULTURAL FACTORS

Abuja, land of very dramatic hills jotting skywards like many fingers pointing to the creator in the heavens, was about two hundred and fifty square kilometers 250km^2. It is originally

constituted ethnically of the Gwarris (64.9%), Koros' (8.3%) Gwadaras (7.(%), Gada (6.5,
Hausa (4.9%), Fulani (4.6%) and other groups totaling 2.9%). These are the original settlers
who make up the majority of the population in the four area councils of the territory, while the
new dwellers dominate the city, that is :- the fifty area councils referred to municipality
However the philosophy of the establishment of the new city lies as provided by the lat
General Murtala Mohammed area that is not in control of any ethnic group in the country,
virgin land, for all Nigerians, a symbol of oneness and unity.

The political status and Administration according to a past President General Ibrahim Babangida would be in such a manner as to avoid the political constitutional and administrative confusion which had been capital. However, as the administrative capital of Nigeria, it would also accommodate some of what is in Lagos and even more because it woul serve as a beautiful tourist center to enhance Nigerias image abroad.

The geopolitical entity known as Abuja came in existence by decree number six (No 6) of February fifth (5th) 1976.Until the creation of this new Federal capital territory, Lagos had remained the capital of Nigeria, since the amalgamation in 1914. With time, the increase in tempo of economic activities, and in flux of people into Lagos ,were not matched with corresponding increase in the level of infrastructural activities and services. Thus, the city w over burdened ,and its facilities were stretched to breaking point.

In 1975, the Federal Military Government under the late General Murtala Mohammed set up panel under the chairmanship justice Akinola Aguda to examine the issue of relocation of the federal capital.

Concrete is quite strong in comparison but has tensile strength.

iii. REINFORCED CONCRETE

This a mixture of sand cement, water, coarse aggregate and strengthened with steel rods. The mixture ratio is usually 1:2:4. This makes up for its low-tensile strength andis extensively used in this facility for, columns, beams, wahligrid floor slabs, intels and staircases.

iv. TIMBER

This is a two types, (a) Softwood (b) Hardwood. These do not however indicate the hardness or softness of wood.

(A) Softwood are gotten from evergreen with need le like leaves found in temperate zones also well known as conifers.

(B) Hardwoods are form deciduous as broad leafed trees.

As a construction material wood outers, good strength, light weight, easy workability, natural beauty is good to the touch.

To resist typical tropical conditions the wood used here has been treated with chemicals (solignum) topresent rotting and termits.

In the construction of form-works, will be used for this project. While hard woods used structurally for roofing menses, furniture and interiors and facing

v. GLASS

The use of glass in the past has been limited to sheets for windows, to provide for more natural day lighting into factories mices schools and domestic dwellings. But today however

the types and uses of glass for buildign purposes have increases considerably from windows to structural purposes.

Glass is a super cooled liquid, that is glass is shaped at very light temperature and then allowed to cool, unlike other ceramics. It can also be reheated and shaped again.

Glass products generally be divided into three categories.

(a) Sheet glass used for transparent, translucent filler structures.

(b) Facing glass is used for decorative.

(c) Structural glass or heat insulating glass products used for structural elements to carry some weight and can be for heat insulation.

Generally glass is characterized by transparency brightness, hardness, tensile strength, compressive strength and varied chemical compositions.

In this project there is an extensive use of glass for glazing, windows and framed doors. Laminated, tinted glass and multiple glass units are specified, to avoid, it from shattering and flying away on the impact of a sharp force. And foshield sun rays respectively.

vi. ALUMINIUM

This is a product of bauxite which is now obtained in form of latteric-one. It is white metal soft and highly resistant to corrosion due to its thin layer at oxide filu over its surface. It could be casted or extracted, that during the production process, always in site or thereby feet (30 Ft) which are malleable, ductile out could welded as riveted.

It is used in this facility, for window (paned) frames, roofing, doors frames and some horizontal sun shading devices.

vii. STEEL

This is rated as the most widely used metal and is produced in three grades: Mild-steel, Medium-steel, Hard-steel. The most important to us is the mild-steel used in the construction of buildings, as structural steel particularly used for reinforcement.

High tensile steel is also applicable in construction reinforcements.

Steels, extensively used on this facility for drainage pipes, sanitary waves, staircases, reinforcements in concrete an sheet metal, slabs beams and columns.

viii. Terrazzo granolithic concrete and marble floor

Terrazzo:- This is an insitu floor finish whichmeans it can be mixed on site laid influid state allowed to try and set to form a hard jointless surface it is a decorative form of concrete, usually made from white Portland cements and crushed marble aggregate added to it in a mix or 1:2, and may be pre-cast (brought to site already set).

In-situ terrazzo can either be laid with all the aggregate incorporated in the mix or a mix where the time aggregate is then sprouted on the surface and beaten on trowelled in.

Terrazzo should be allowed to dry out slowly atter about four days, the surface is then ground and polished.

It is attractive in appearance, hard weaving easily clean, but it is noisy cold and expensive.

It is used on the ground floor of the administrative block the cyber centers, the archade center and the fine station. The first floors of the cyber centers also have terrazzo floors.

The maintenance unit has a similar floor type but instead of marble clippings as aggregate. It has granite chipping as aggregate and is called granolthic concrete. While it is

layered in-situ, ebonite strips are used between for expansion of the concrete, and this helps in the maintenance unit flooring

viii. MARBLE

Is a metamorphic rock, which is an aggregate or combination of minerals composed of inorganic chemical substances. It is usually from hard limestone it is it is quarried, cut and polished to a high lustre finish. It has adequate compressive strength. It is hard, durable and aesthetically beautiful. But it is very expensive. It is however, recommended for use in this project in the first floor of the administrative building

ix. PAINTS

This is a solid colouring matter mixed with oil or any other liquid, to thin it out, giving colour to it as a surface finish, for aesthetic purposes. As a building material it acts as a shield or barrier for the building structure from those elements that are able to adversely affect or deteriorate it.

It is very beautiful aesthetically due its ability to come in many varying shady and tones. It is not very durable and can easily be stained. A fresh coat should be applied every four years (4 yrs).

The use of paint in this project is very extensive as it covers almost all walling surfaces.

Types of paints used are, Emulsion, Texcote and gloss.

Iron and sometimes-wooden building or furniture materials are given several coats gloss paint as a preservative and for aesthetic purposes.

7.7.2 CONSTRUCTION

SITE INVESTIGATION

The site has to be secured to determine the preliminary works to be done. It will also reveal the following:-

- Access roads
- Drainages
- Nature of soil
- Vegetation on site
- Site boundaries
- Adjacent buildings
- Topography

This site does not have much to clear but shows grass and small trees.

1. FOUNDATION AND STRUCTURAL SYSTEM.

This is the substructure, bearing the vertical loading and resting vertical soil moment. It transmits and spreads head and live loadings to a sufficient area of ground level of adequate bearing capacity. This is to avoid boundries settlement due to failure of sub-soil.

The soil type on this site is sandy thus requiring a pad or stripe foundation.

The use of two-dimensional structural system of beam and column, skeletal frame is emphasis in this project.

Expansion joints are used in building with lengths exceeding twenty-five meters (25m), so that no part more than between eighteen meter (18m) to twenty five meters(25m).

2. FLOORS

The ground floors are very solid of a layer one hundred and fifty millimeter (100mm) thick reinforced concrete, called the German floor, set on a hard care bed of at least three hundred millimeters (300mm) depth. The hard care compacted layers of fifty millimeters (50mm) to seventy-five millimeter (55mm) and blinded with twenty five (25mm) of sand to present cement gross loss from super imposed layer of concrete. There might be a damp-proof membrane between the two to stop damping. A layer of cement and sand creed is then layed on top, of 1.3 ratio not loss then nineteen millimeter (19mm).

The upper floor is of minimum of one hundred and twenty five (125mm) millimeter thick, steel, reinforced emerede grid deck. Heldul on ring beams and major beams on columns A 225mm thickness.

3. WALLS

These are a prominent feature in the building and they define enclosed space.

In this facility they are mostly load bearing of sand area block two hundred and twenty five millimeter (22mm) thickness and partition walls of one hundred/one hundred and fifty millimeters (100mm/150mm) thickness.

4. DOORS AND WINDOWS. (FENESTRACTION)

Windows are openings in building, for the purpose of lighting, heating and ventilation of the interior space of the building.

Doors are for accesses into and out of a building or enclosed space within a building.

For this project, Aluminium framed doors, flush door and panel doors are used where necessary.

The windows are mainly of tinted glass caservent windows and Aluminium framed sliding windows.

5. CEILING AND ROOFING

Ceiling:- This is the overhead of the interior of a building and should have thermal in elating properties.

The Roof is the upper most part of a building which encloses, from the top, the building and protects the interior from harsh weathering elements it should have the ability to be water proof and drain rain water, and to heat resistant.

In this project mainly long span Aluminium roof covering are specified, over timber (hardwood) trusses with a celloex ceiling attached to timber ceiling nogging of mostly 70mm +50mm thickness. And cellotex ceiling on a suspended aluminium frame.

However, the maintenance units is of concrete north lighting bare vault, covered with layered felt and a reflective surface.

CHAPTER EIGHT

8.0 DESIGN SERVICES

8.1 ELECTRICITY AND LIGHTING

The electrical power on the site is drawn from eleven kilomolt, thirty three kilomolt transmission lines taking power of the National grid of three hundred and thirty kilomolts, four hundred kilomolts 330 lv/400kv. There is a substation on the main access road toward the site, stepping down the voltage to four hundred and fifteen volts (415v), three place lines, drawn to the individual sites. This is the power supply from the national electric power P.L.C. There is a recommendation, however for three one hundred kilo voltage/Ampere (100 KVA) generators, to act as stand by, to the north-west of the site.

Lighting at appropriate levels of illumination, to enhance visual charity and facilities all activities has been provided. To enhance the feeling of spaciousness, uniform indirect lighting on perimeter walls and ceilings of external have been used.

Artificial lighting system to simulate characteristics of natural lighting such as its colours, lack of flicher and variation in direction and intensity has been designed, using the human design for lighting.

8.2 HEATING COOLING AND VENTILATION

In areas of more temperate climates, heating in buildings will be a major design focus. However, here in tropical Nigeria, cooling, ventilation and humidity reduction are the focus.

This project intends to use artificial and convective cooling to enhance the comfortability or thermal comfort in the buildings. In the maintenance unit, the adoption of Bernoulin effect, with the use of north lighting roof to ventilate it, is used. Through start effect, the hotter more dense air is sucked out at the top.

The ventilation of these building is aimed at achieving maximum cross ventilation by trying to have dual openings either opposite each other or adjacent to each other on adjoining walls. Inlets and outlets should be the same site if this fails to be achieved, then the inlets should be smaller than the outlets to maximize velocity. The use of courtyard system in my Administrative block helps to enhance cross ventilation in the building.

8.3 WATER SUPPLY

The whole of Abuja (phase 1) is piped to the regulatory water (public utility) authority. The site currently has one major access running at the front of the site, which could be tapped at two points. These will now be drawn into the site and distributed through the buildings.

There is provision for private supply through a bore hole and a reservoir. There will be a submersible pump in the borehole pumping water into the reservoir and subsequently pumped into the buildings.

8.4 DRAINAGE AND SEWAGE DISPOSAL

Storm water is collected in roof gutters from roof strains and piped by 'P.V.C. pipes to the ground and from roof slabs to the ground where there are drainage networks to collect storm

water. These drainages pass or flow this storm water through underground channels into the main drainage system outside the fence by the main access road.

All the water closest pipes and winds are drained into the central sewage system and sinks and water also into the central sewage system have inspection chambers located for easy access by evacuators.

8.5 REFUSE DISPOSAL

There will be provided large plastic waste bins, to be collected and emptied daily, from around the site, by a garbage van for onward disposal at a dumpsite.

Each corridor has its own waste bin, each office can empty their waste paper basket and dustbins into the larger waste bins on the corridors.

8.6 ACOUSTICS

This is the analysis of sound and characteristics, which affects the hearing of sound. Acoustic conditions depend on the room shape, the occupants use it the room, and the absorbtive characteristics of the surfaces of the room. The point of importance is to help reflected sound or reverberation at a minimum.

The capacity of sound absorbed is defined as time taken for sound decay by a decibel and varies for half a second (0.5 sec) in an ordinary living room to twelve seconds (12 Sec.) or more in bigger rooms.

CHIEF CONSULTANY TOILET	4.05		
CHIEF CONSULTANT SECRETARY	14.6		
MACHINE ROOM	12.4		2
WEB ARCHITECTURE OFFICES	20.25	8	
SYSTEMS ANALYSTS	18		8
MALE CONVENIENCE	15.75		
FEMALE CONVINIENCE	15.75		

III	MAINTENANCE UNIT			
	GENERAL OFFICE	18		2
	MAINTENANCE OFFICE	13.5		2
	MALE RESTROOM/CHANGEROOM		8.25	2
	FEMALE RESTROOM/CHANGEROOM	8.25		2
	STORE	30		2
	WORKSHOP	90		2
	MAINETANCE OFFICE TOILET	3		2

IV.	FIRE STATION			
	CHIEF FIR OFFICE	20.25	1	
	CHIEF OFFICES CHANGING ROOM/TOILET	10.25	1	
	RECEPTION	21		1
	COMMUNICATION ROOM	18		1

	GENERAL OFFICE	48		1
	EQUIPMENT ROOM		15.25	1
	MAITENANCE ROOM	25		
	GARAGE	85		1
	MALE RESTROOM/CHANGINEROOM	30		1
	FEMALE RESTROOM/CHANGEROOM	30		1
V.	AUXILIARY FACILITIES			
	CAR			
	GENERATOR HOUSE			1
	SIT OUT			3
	GATE HOUSE			2

7.5 SITE ZONING AND LAYOUT

The site zoning of this site is based mainly on the zoning criteria for each unit with the utilities zoned towards the back of the site.

The three cyber center building arching around from the base of the administrative block, is zoned with the most public functions baffered away from non-public function, by the semi-public function. As the Ground floor and first floors have the workstations, for customers and their individual management offices. The second and third floors are lecture rooms and lecture offices which will accommodate for less tradic than the ground floor, thus baffering the public zoned ground floor from the non-public consultancy offices on the fourth floor.

The administrative block situated in the front part of the complex, has the public facilities of internet service providers offices for customers interested in acquiring internet services in their hones or office

The maintenance unit has thie workshops zoned to the back of the building and the stores and conveniences buffering the public area of offices for the maintenance staff.

The site layout is also zoned in a since that the children architect is likely to be noisy and is located to the left and the frontal area of the site near the car park. The maintenance and fire service posts are quiet zones to the back of the site and the right.

The accesses, site orientation and noise disturbance potential are also considered.

7.6 GENERAL PLANNING

The planning of this facility is such that the administrative block houses managerial, administrative functions, the offices of Internet service provider, and some junior management offices.

The ground floor on the approach has a large opening in the center which is the main access into this facility. This lobby has a reception, moving forward to the right and to the left are corridors perimetering two separate corridors for adequate ventilation. Progressing down the lobby you reach two access staircases to the first floor. On the ground floor this access lead into the opening enclosed by the three blocks of cyber centers. The first floor of the administrative block is accessed from the ground floor through the central two staircase and two at the extreme ends of the building. The first floor takes the same pattern of the ground floor with two hoids over the courtyard on the ground floor with a corridor circulating it.

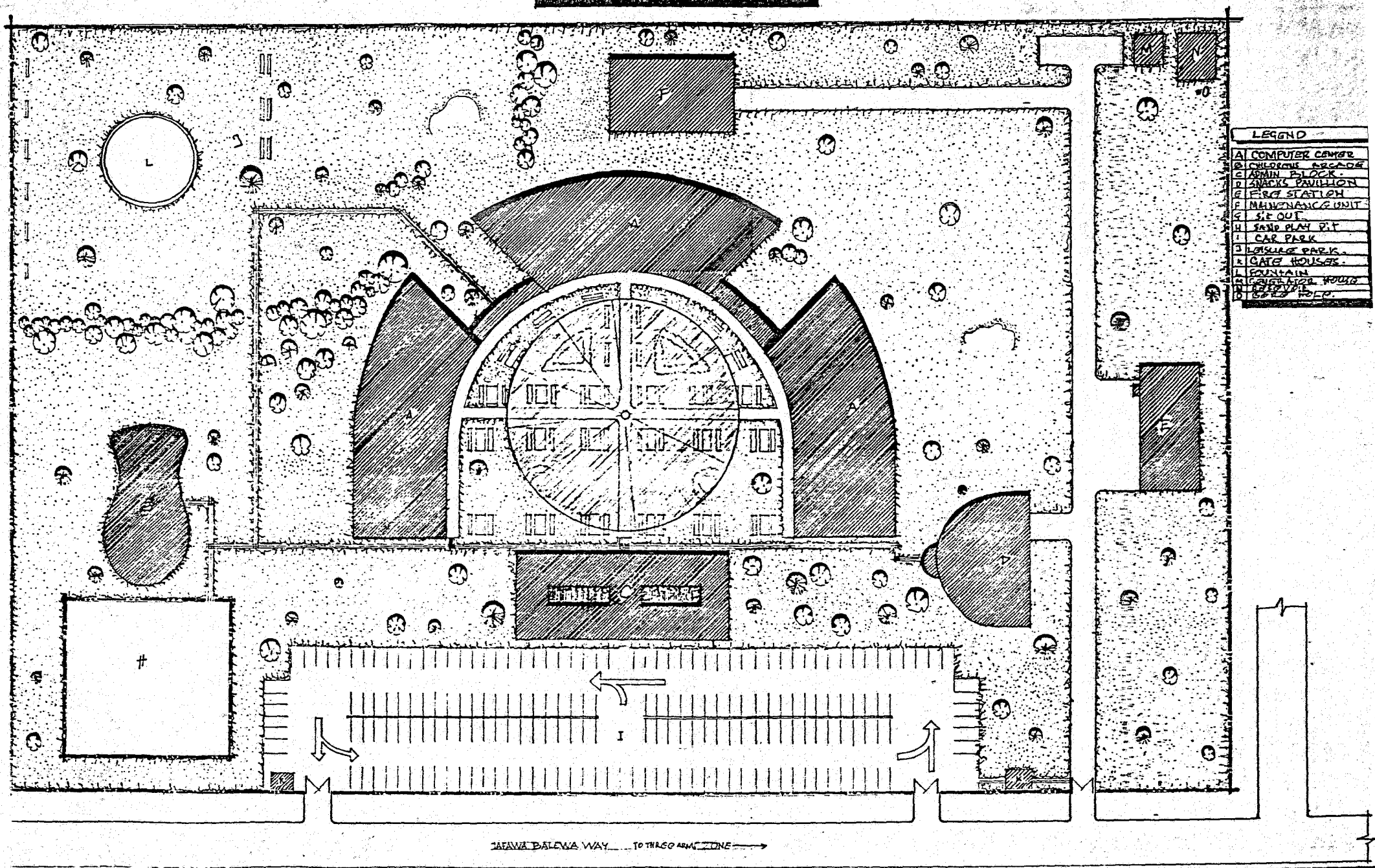
The cyber center have a corridor running on the frontal part of the buildings within central access into a lounge. To the right and left on the lounge are the workstations, in frontal on the lounge is the reception. The extreme ends of the buildings have two staircase with lifts on the inner side the first floor is a mezzanine floor overlooking the workstations and covering the cafes management staff.

The second and third floors have a central corridor running across the floor with lecture rooms on frontal part and offices and convequences on the side.

The fourth floor is similar to the second and third floors with a corridor running across the floor with a central are from the front to the vain one in the central two on the outer ends of the building betare the lifts and staircases from the center corridor to the back, for adequate air circulation. This floor houses the consultants offices.

On the approach from the administrative block there is walkway catting across the site from tonight. The left terminates at he children arcade which is put away from the left of the site to control noise levelson the site. The right terminate at his snectes parillion.

SITE PLAN


LEGEND
A COMPUTER CENTER
B CHILDRENS ARCADE
C ADMIN BLOCK.
D SNACKS PAVILLION
E FIRE STATION
F MAINTENANCE UNIT
G SIT OUT
H SAND PLAY PIT
I CAR PARK
J LEISURE PARK.
K GATE HOUSES.
L FOUNTAIN
M GENERATOR HOUSE
N RESERVOIR
O BORE HOLE.
JAFAWA BALEWA WAY TO THREE ARMS ZONE

The car park is at the front of site with a servie road so its right leading to the back of the snactes panillion the fire station to its right and the maintenance unit at the back.

7.7 MATERIALS AND CONSTRUCTION

7.7.1 MATERIALS

In this facility the material chosen were very carefully selected, based on their functionality, maintenance potentials, durability and fire resistinity qualities.

The current trends in building construction show the detects and poor longevity of a building could be avoided in the design and construction stage. So careful consideration was given to the following materials chosen.

i. SANDCRETE BLOCK:-

These are man made units or sand, cement and water, moulded into modulus units hardened, through drying. They can be one hundred millimeters (100mm) or one hundred fifty millimeters (150mm) thickness extension used for partition walls in this project or two hundred and twenty five millimeters (225mm) thickness used for central and load bearing walls. They are joined together by sharp sand and cement monter.

ii. CONCRETE

This is a mixture of sand cement, water and coarse aggregate. It could very due o the characteristics units constituent fine aggregate and the ratio of their mixture, it is usually 103.6. The curing time is also of importance as it could lead to structural defects. A minimum of ten days is required for curing concrete.

5.8 ECONOMY AND COMMERCE

Like other places, commerce in Abuja covers business, household and personal services required to supply goods and services to the population. Abuja's commercial environment consists of retail establishment and traditional forms complying with the Governments policies on provision of spaces, infrastructure licensing patterns of entrepreneurship and goods distribution nationally and locally.

The city is arranged as to provide market areas and other shopping areas for each district. Traditional markets of two types exist in Abuja today, Wuse served by truck access from the peripheral highways. And within walking distance of the transit spine. The second type is a local facility located in each district center of the city. The final scale of commercial services comprise of informal trading and services industries.

5.9 DEMOGRAPHIC DATA

Three key characteristics of the year 2000 population projection were developed to determine such planning factors as number of housing units required, services, facility requirements such as schools and health facilities these characteristics are , age and sex distribution, the number of households and the anticipated income distribution for the year 2000 population. In determining these characteristics, the extra populations were based on the latest available statistics.

5.10 TRANSPORTATION AND TRAFFIC FLOW

There are two main categories of transportation services existing in Abuja, to ensure it meets its obligations as an efficient commutable national capital.

In this facility, the noise from the power generating plants will be taken care of by housing them away from the complex, buttered by trees, but connected to the other buildings through underground cables.

The conference room in the administrative block has wood paneling on the walls to the acoustic quality of the room.

The children's arcade is also zoned away from the main complex, to help excess shrieks of the children away from people concentrating on serious work.

8.7 FIRE SAFETY

The primary aim of fire precautions are to safeguard life and property and this is achieved by:

i. Reducing the incidence of fire.

ii. Controlling fire propagation and spread

iii. Providing adequate means of escape for occupants of the complex.

Most building fires are man-made as a result of error or negligence on the part of the users For the purposes of this project, fire safety will be undertaken in the following ways.

CLEAR INTERNAL SPACE ORGANISATION

This is achieved in this complex by using a simple understandable layout of one access opening out into an open space. The introduction of central courtyard and sit outs in the

complex is a clear intention and understanding of helping people within the complex maintain orientation.

USE OF FIRE/SMOKE DETECTORS

At six meter (6m) intervals, I have a combination of thermal and infra-red fire detectors on the ceiling, of all the floors including the maintenance units which sound alarm within the complex and fire post when sensitized.

Other forms of fire detection may not be suitable in Nigeria. For instance, smoke detectors are activated when the light in the room reaching it is blocked by smoke from a fire. Thus requiring constant lighting in the room. This may only be suitable in institution with constant lighting as a result of task or security like hospitals or banks.

THE PROVISION OF FIRE FIGHTING EQUIPMENT

Modern buildings require not only a means of escape, access for fire brigade and structural protection, but also "first aid", fire fighting equipment.

There are fixed apparatus in this complex for fire fighting which include stand pipe and hose system in recess, located at either edge of the buildings in the complex.

However dry chemical fire extinguishers are recommended in the cyber cafes, located at reasonable intervals.

Sprinkler system, installations have an advantage over the others due to the automatic nature and do not require the occupants presence for operation.

They usually consist of a grid of water pipes fixed above the ceiling with delivery heads on a three-meter square grid ($3m^2$). Water is prevented from spilling or emerging, by glass or quartzoid bulbs containing liquid designed to expand and break the bulbs under high temperature. Bulbs are available which break at 60°c to 180°c. A spray of water is then delivered over an area of about ten meters square ($10m^2$). This is however not suitable in the cyber cafes, due to the heavy presence of electrical appliances.

8.8 SECURITY

This is a very difficult facility to secure, as it is a very public facility. However, the site is secured by guards at the gatehouses monitoring the entrances and exits, as well as directing, for proper packing. The most effective form for this type of facility is a foot patrol around the site.

There is a service entrance for staff and the maintenance unit and fire station. This easily separates traffic of people into the complex. Though the administrative staff share the main gate and compare with visitors to the complex.

The buildings have a security manager, with closed circuit cameras, monitoring activities in the building, and relayed to the security managers office.

5.8 ECONOMY AND COMMERCE

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5.10 TRANSPORTATION AND TRAFFIC FLOW

There are two main categories of transportation services existing in Abuja, to ensure it meets its obligations as an efficient commutable national capital.

The first deals with the provision of facilities to accommodate the daily functions of the capital city itself, they are roads, streets, public transport services, and a pyramid of auxiliary facilities and services required to provide for the diverse movement of people and goods, essential to the operation of any major urban area.

The second category of transport services are those required to allow the new capital city to interact with the rest of Nigeria as well as the rest of the world in the fulfillments of its National and International functions. Air services, inter regional highways, railways, and tracking services are the major elements of this components of the transportation system. These few categories of transport overlap in terms of facilities, services and function to form a pattern of transportation services for Abuja and its environs.

In the first category there is the use of linear and spine/feeder system which makes possible a series of entrances and exits to allow buses to loop off the spine and to provide district services to a district and then return to the spine

The street pattern allows maximum flexibility in transit services within the sectors through the transit spine have been developed to accommodate projected transit demand.

5.11 EXISTING LAND USE AND FUTURE TRENDS.

The master planning process which shaped the Capital City programme centered around the objectives and issues of the Capital city, which led to the definition of basic organizational structure for the city. They meant: A new national capital city design as a visible urban environment for the national government and the full range of supporting and complimentary facilities.

An overall land use pattern contoured to a crescent shaped site defined by developable land above elevation, 12,000 feet in the Gwagwa plains below the escarpment, surrounding the outer are of the crescent, including the bold promontory of the Aso hills. There are

currently estimated to be almost three hundred thousand (300,000) people resident in villages, most of the smaller settlements have no roads, access and are totally without services.

Relocation is recommended on the capital city site. The game reserve area, the reservoir of water, shades the Airport area and key the Federal capital access points from the remaining settlements. A special strategy has been suggested.This strategy is based on the following principles

- Reinforce the existing larger and more accessible villages and town areas as Gwagwalada, Rafia, and Dagara as satellite towns and services provisions.
- Establish a zone for economic development with controlled land use along A-Z (Arterial) in conjunction with a diversity of agric, forest, extractive and construction industry activities
- The national consolidation of smaller and less accessible villages by strategic distribution of services and infrastructures and relocation of polity.
- Provide an improved standard of public services.

At present however the major uses of the Federal capital include:

- The seat of government
- Central business district/Commercial core
- National Cultural institutions zone
- High density residential community
- National sports complex
- Transportation center
- Foreign embassies zone
- Central area plains and squares.

CHAPTER SIX

6.0 SITE SELECTION

The cyber center Abuja is proposed for Abuja, seeing that it is the new Federal capital of Nigeria and most Government ministries and parastatals have moved there. This has caused other businesses and organizations auxiliary to government and necessary for the commercial development of Abuja, not only as a capital city or political center but also a commercial hub, to take off there.

Therefore creating the need for a service to support the people in this environment, in terms of a mechanism for all telecommunication applications. A service that provides for information exchange, at an available cost to meet the rising demand of electronic professionals, taking over the field of commerce today.

This the provision of such a service, gave birth to this proposal so, the cyber center, Abuja a place where people can come and pay far, and digest computer functions and Internet services, as they relate to specific fields as areas of interest.

6.1 CRITERIA FOR SITE SELECTION;

The site has to be in a in close proximity to the central business district, in order for the facility to service the civil savants who are mostly housed in Federal secretariats in the ministries zone south of the three arms zone. And close to the residential districts as well. This the site of choice is in the central business district (CBO), Between Wuse and Garki, area eleven. It is on the Tafawa Balewa Way, adjacent t the Central Banks Headquarters National center for Woman's Development and the Raw materials Research Institute, all along the Tafawa Balewa Way.

It is a very commercial complex this justify its presence in the this vicinity a business district near commercial/residential areas.

6.2 LOCATION OF SITE

As said above, this site is in the central business district, along Tafawa Balewa way in the Federal Capital Territory.

There are some considerations the development authority must have taken in to consideration before locating the site little.

(i) Availability of site from land grant office.

(ii) Indicative planned use with respect to current and regional master plan of the growth center of the city.

(iii) Accessibility from the nearest growth caters of the city.

(iv) Availability to main electrical energy supply.

(v) Proximity to postal and telecommunication services.

(vi) Size of the land.

(vii) Shape of the land.

(viii)Topography

(ix) Extent of annual crop cultivation.

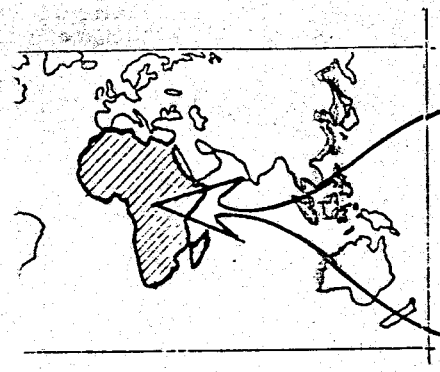
(x) Indicative incidence of permanent structures (number and quantity)

(xi) Extent of planned development on the same land by other government or private organization.

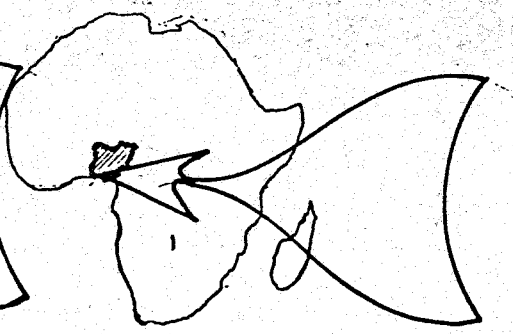
6.3 SITE CHARACTERISTICS (INVENTORY)

The site is barren of any structural development (there are no existing structures).

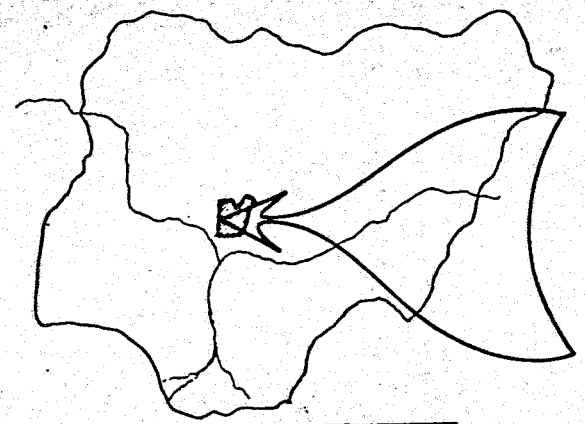
LOCATION MAP



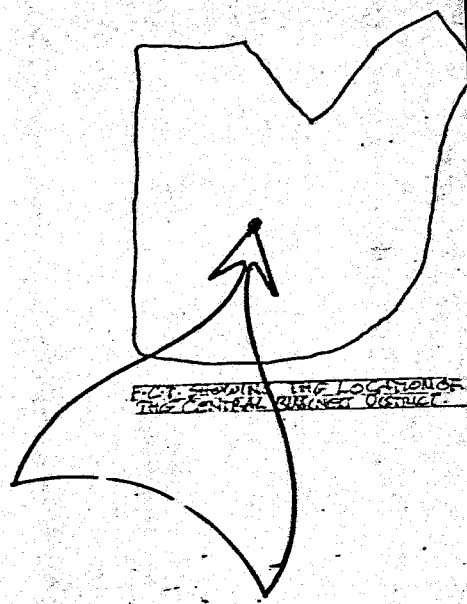
THE WORLD SHOWING THE LOCATION OF AFRICA



MAP OF AFRICA SHOWING THE LOCATION OF NIGERIA

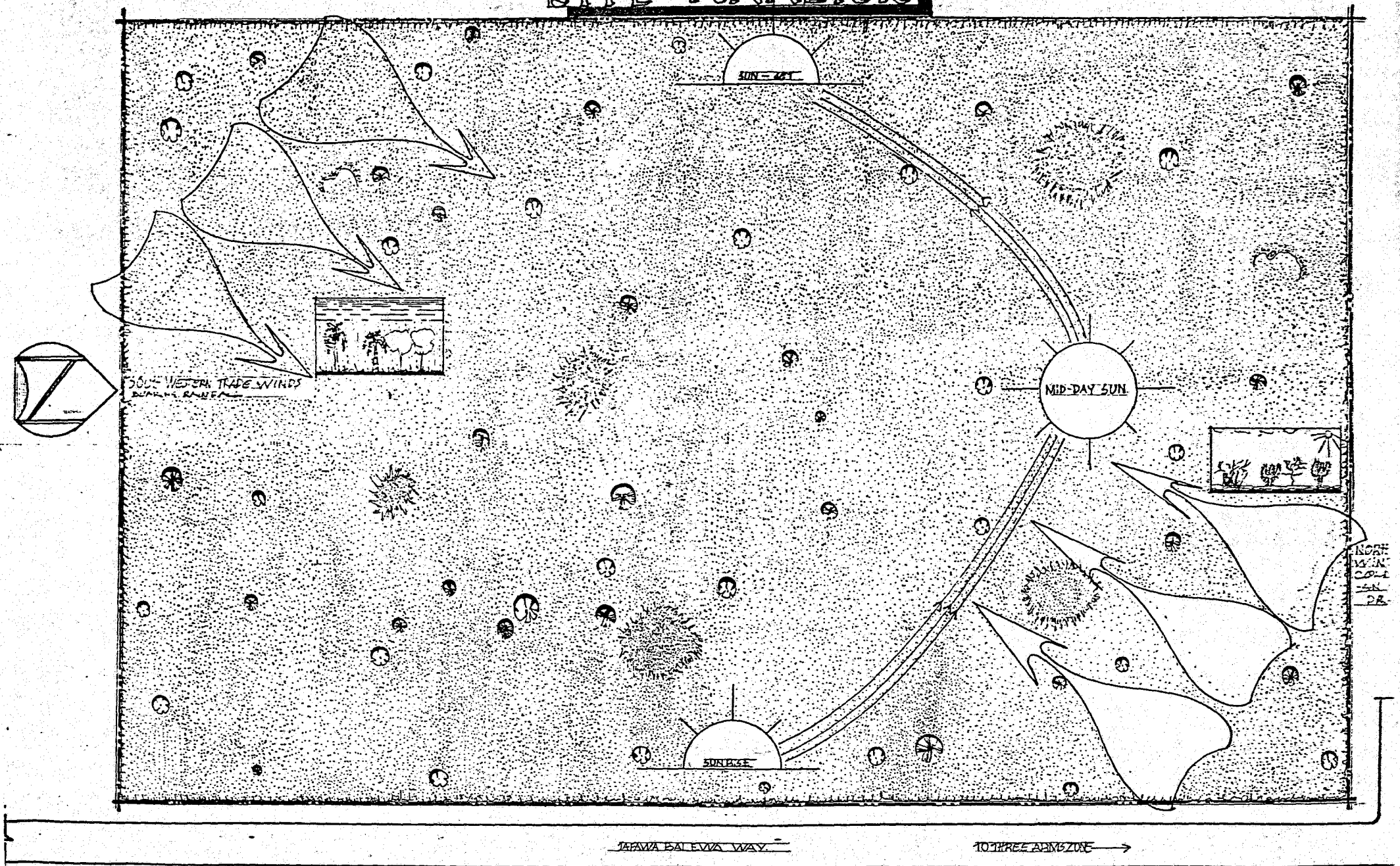


MAP OF NIGERIA SHOWING THE LOCATION OF THE FEDERAL CAPITAL TERRITORY



FCT SHOWING THE LOCATION OF THE CENTRAL BUSINESS DISTRICT

SITE ANALYSIS



The site slopes upward from front to back or from east to west of the site and would therefore require some cutting and filling and some sand filling.

It is characterized by some shrubs, grasses and few trees

6.4 ACCESS AND CIRCULATION

The main proposed access is from the Tafawa Balewa way right-off-center, into a large parking lot, circulates and exits left-of-center. There is no vehicular access right into the rest of the site. From this parking lot, there are pedestrian accesses through the administrative block into the actual centre.

There is a service route to the extreme right of the site , leading to service the snacks pavilion, fire station, maintenance unit and staff quarters .

6.5 UTILITIES.

The site has four separate points that can be linked to main service pipe running along the Tafawa Balewa way from the water authority mains.

this proposal will ensure all drains and gutters on site drain into one main channel going into the main city sewage system at the eastern end or front of the site, along the Tafawa Balewa way.

the complex will be hooked up to the National Electric Power (PLC) secondary transmission lines along the Tafawa Balewa way-eleven kilovolts, thirty three kilovolts (11kv/33kv)-, which will then be stepped down to four hundred and fifteen volts three phase and two hundred and twenty volts (220v) in three phases.

There is easy access to telephone lines as there is a network point at the Better life street, junction to Tafawa Balewa way, just across the road from the site.

6.6 SCENERY/MAN MADE FEATURES

This is not a very scenic area or eventful in terms of civic structures. It is a very natural site typical of undeveloped site, sloping towards the back, upwards. It only gets busy when the Centre for Women Development is having a programme. This will get a little more busy when the Central Bank headquarters is completed.

6.7 EFFECTS OF TRAFFIC

The area is currently devoid of human or vehicular traffic except on days that functions are going on at the Women Centre.

Traffic is however expected to build up when the Central Bank headquarters is completed and in use. Thus, the proposal of a very large car park, so as not to add to the expected existing traffic.

With time the rest of the roads would be developed, causing it to be quite busy. However, one dos not envisage too much traffic building, due t the road flow pattern and the width of the road-it is dual carriage-. This will aid the commercial viability of this project.

CHAPTER SEVEN

DESIGN CONCEPT AND CONSTRUCTION

7.1 DESIGN BRIEF

The brief in this chapter is the synthesis of the projects scope described in one of the earlier chapters.

The physical character of the project defined by the functions suitable for the services to be provided.

Fundamentally the cyber centre Abuja is to have four internet cafes for surfing of the internet for research, electronic Banking and finance, Electronic mailing, childrens games entertainment. There will be facilities for those who want to take computer classes. And offices for people who need Web Architects and Information Technology consultants. Supported by auxiliary facilities.

Based on these requirements a comprehensive design brief has been drawn up to accommodate:-

(i) Administrative Block:- With the following facilities:-

Ground Floor:- Eight internet providers offices comprising, a display room a store managers offices and system analysts office,

few offices few system Engineers,

A reception Area,

Male and female restrooms,

Janitors office,

Ground mens office,

Transport officers office

Security managers office,

First floor; management flow comprises four directors offices, with the secretariat and conveniences, a general managers office his secretary's office, his shower, fore programme officers offices, A chief programmers office and a secretary and convenience. A bound room, a server room, fow accounting clerks offices two accountants office. One chief accountant his shower and toilet and secretary's offices.

(ii) CYBER CAFES:- Three typical blocks or units with one specially for children's architect games. The children's architect centr has,

GROUND FLOOR:- A reception area, a large two stares, two cashiers office, are server room, male and female conveniences, an entrance lobby and partitioned spaces for a reception sixteen.

First floor: Comprises a manager secretary shower and W/C, offices. Attendant and supervisors respective offices. An office for accounting clerks. Male and female conveniences.

The three typical blocks comprises.

Ground floor:- a reception area, a house, partitioned wants stations, male and female convenience, two lift shafts, two cashiers offices, a server room and two stares.

First floor:- A manager, his shower W/C and his secretary's offices supervisors office, attendant office, accountants offices accounting clerk convenience.

Typical second and third floors comprises five lecture rooms, a store, two lift shafts male and female conveniences, one co-ordinators offices and three other lectures offices.

Fourth floor comprises chief consultant, his secretary and his toilet, male and female conveniences two machine rooms, two lift shaft five offices for Web Architect and eight offices for information technology consultants as system analyst.

(iii) maintenance unit:- Comprises General Offices, maintenance officers offices, male and female convenience. Stares and workshops.

(iv) fire station:- Comprises chief five officers office, his changing room and wash room, reception, communication room general office, male and female convenience changing rooms equipment room maintenance room and garage.

(v) Auxiliary Facilities, borehole reservoir, generator houses, car parks, sitouts and café houses.

7.2 DESIGN PRINCIPLE AND APPROACH

In carrying out a design one of the most important factors to consider is the satisfaction of the user. From this premises, and in actualizing the aims of this project within the context of this work, the design proposal aims at providing a suitable space that will encourage optimum usage and express its representational nature. It will also encourage flexibility and simplicity of form to successfully enter for the present and future requirements of the clients. All functional requirement of a cyber village can center have been considered.

In analysing linear shapes we see that when a rectangle is subdivided into units, square shapes are obtained which are generally economical to use and provide optimum use of space and at the same time ensure flexibility of space, its usage and simplicity. However, it is worthy of note that curvi:lin ear shapes, under analyst, when dividede form segments and sectors that

if properly subdivided could be quit as efficient. As seen in the actual design of the cyber center. This type od design approach used is analytical.

7.3 DESIGN CONCEPT

The basis of any design is the plan, it is the fundamental from which the entire design is developed, and helps to form the site plan. In the conception of the architectural plan and site plan, more emphasis laid on fundamental relationship of the different parts the complex and electricity.

When one hears, 'cyber' center the first that come to ones mind is computers. As a result the concept of this design neuohes about a Desktop computer with its accessories. The site plan portrays this.

FIRST FLOOR

MANAGERS OFFICE		24.30	1	
MANAGERS SHOWER/CHANGEROOM		4.05		1
MANAGER SECRETARY		15.75	1	
SUPERVISOR OFFICER		20.25	1	
ATTENDANT OFFICE		20.25	1	
ACCOUNTING CLERK OFFICE		20.25	1	
STORE		20.25	1	
LIFT SHAFT	15		2	
MALE CONVENIENCE				
FEMALE CONVENIENCES				

TYPICAL SECOND AND THIRD FLOORS

LECTURE ROOM		81-25	5	
STORE		20.25	1	
LIFT SHAFT	15		2	
CO-ORDINATORS		25		1
LECTURERS OFFICES		25		3
MALE RESTROOM		31.5		
FEMALE RESTROOM		32.1		

FOURTH FLOOR

CHIEF CONSULTANT OFFICE		22.95		

The panel submitted a report recommending the area of the present, Abuja for being among other things centrally located with easy accessibility from all parts of the country by road rail And air.

The name "Abuja" is derived from the most important settlement within the territory known today as Suleja. Abuja was grafted from Niger, kwara and Plateau states. It has a total land area of approximately eight thousand square kilometres (8000km^2).

5.7.1 POPULATION AND PEOPLE IN ABUJA

Before the creation of the Federal Capital, the Gwagwa plains which now constitutes 'Abuja was sparsely populated. The population was put at about '100,000' in 1963 and 125,000 in 1977.

However since 1980 when physical development of the city and other parts of the territory commenced Abuja has experienced considerable increase its population. Results of the national population census put the population of Abuja at '328,671'. The rapid growth will continue in the foreseeable future having regard on the on going programme of moving the seat of Government and governmental bodies from Lagos to Abuja. The population projection expected a population of '1,642,000 in Abuja', and a total of 3000000 including satellite towns by the year 2000 AD.

As mentioned earlier, the significant local ethnic group are the Gwarris, Gadas, Koros and Gwandaras. But with the influx of immigrants from the different parts of the country and

beyond, the structure, ethnic composition and socio economic characteristics of the population of Abuja have been affected tremendously.

5.7.2 SOCIO-POLITICAL STRUCTURE

Abuja is the Federal Capital of Nigeria, Abuja was selected for its centrality and tribal neutrality consequently to its cutting through Niger state, Kwara and kogi states, Plateau state and Kaduna state, Abuja occupies the ancestral land of as diverse ethnic groups as the Gwaris (dominat), the Igbiras and the Idomas, toward the south. The Nupe, in the west and the Hausas, the fulani and Kunuku people to the North and North-west respectively. Then the Kateb and the Angas to the east.

As the capital of Nigeria, Abuja is the seat of the Federal Government and as such accommodates numerous institutions and others international bodies. Abuja's people are consequently in Majority Civil servants with at present many construction workers whose numbers have been reducing and will still reduce further as the numerous projects in the Federal capital territory get completed as implementations move to the finish.

The planning and construction of Abuja was made in accordance with most urban planning principles in mind, to produce a viable capital territory capable of with standing the pressure of political activities and burden of constant international focus above all, the requirement of a modern urban dwellers and workers including markets medical facilities, social amenities like pipe borne water electricity and municipal waste disposal. The present stage of Abuja's development has provided the city with a good transportation network to allow for easy movement across country and interstate. An international airport and the various headquarter of federal ministries achievements to make the **true** political axis of Nigeria.

7.4 SPACE REQUIREMENTS

ADMINISTRATIVE BLOCK
GROUND FLOOR

UNIT AREA/M^2	TOTAL AREA/M^2	Quantity
PROGRAMMER OFFICERS		4
CHIEF PROGRAMMERS OFFICE	25	1
CHIEF PROGRAMMER SECRETARY	14	1
CHIEF PROGRAMMER TOILET	3	1
A BOARD ROOM	90	1
SERVER ROOM	40.5	1
ACCOUNTING CENTRES		4
ACCOUNTANTS OFFICE	25	2
CHIEF ACCOUNTANTS OFFICE	14	1
CHIEF ACCOUNTANT SECRETARY	3	1
CHIEF ACCOUNTANT TOILET		
CYBER CAFES		
(CHILDRENS CAFÉ)		
GROUND FLOOR		
RECEPTION AREA	43	1
DORMGE	76.5	1
STORE	12	2
CASHIER	10.5	2
SERVER ROOM	24.5	1
MALE	31	
FEMALE	32	
ENTRANCE HOOBY	31.5	
ARCADE POINTS/FISETNESS.	136	
FIRST FLOOR		
MANAGER OFFICE	32.5	1
SECRETARY OFFIC	12	1
MANAGER TOILET/CHANGE ROOM	4.5	1
ATTENDANT	20.25	1
SUPERVISOR	21-125	1
ACCOUNTING CLERK	14	1
MALE CONVENIENCES	13.30	1
FEMALE COVENIENCES	15.75	1
TYPICAL CAFÉ BLOCK		
GROUND FLOOR		
RECEPTION AREA	24	1
LOUNGE	56	1
WORK STATION	570	1
MALE CONVENIENCES	31.5	1
FEMALE CONVENINCES	32.1	1
LIFT SHAFT	15	2
CAHSIER	31.5	2
SERVER ROOM	31.5	1
STORE	40.5	2

8.9 COMMUNITY

This project is a sort of community service facility. As it proposes to render a service of providing computer services and computer related functions, for a token fee to the community. Thus the community gains from its presence a service, and the facility gains from the community, patronage which is essential for its survival.

Based on this and justifying its presence in the Federal Capital territory is the growth of the capital city. Due to the movement of the seat of Government and Government parastatals, including offices and industries supporting them, to the capital city.

And the growth of communication technology such that, in order to be relevant in any field, one must be current, thus the need to constantly have access to information. Which is supplied by this facility at the click of a button.

It is community friendly, considering the ease of blending into the hustle and bustle of

8.10 MAINTENANCE

This complex has been designed for easy maintenance of certain components of the building. For work to be undertaken in order to keep, restore or improve every part of a building, its service and surroundings to a currently acceptable standard and to sustain the utility and value of the facility.

In this complex the intention is to ensure the safety of occupants, visitors and the general public, by ensuring during the design and construction that to a professional standard.

And to mention just a few hazards due to poor workmanship or construction supervision, hanging of doors properly and ensuring roof coverings are effectively fastened so as not to be blown off.

- To maintain services likes air conditioning, lighting, lifts and alarm system by running routine preventive maintenance checks on them. To maintain decorative surfaces and carry out adequate cleaning. This could be in the form of sweeping mopping and polishing, terrazzo, granolithic and marble floors in this facility. And by painting wall surfaces every four years {4 yrs}.

- To prevent or diminish significantly deterioration of fabric. This can be achieved in some instances by laying three layers of asphalt felt on the bed of root gutters and roof slabs to prevent eventual seepage through the concrete and rusting of the reinforcement rods.

Then finally, a proper maintenance Programme will be developed to service the entire complex.

8.11 SOLAR CONTROL

The federal capital city is exposed to two thousand five hundred sun hours {2500 hrs} annually {Mabogunje 1977}.

During the dry months of November to April the monthly variation in amounts follows the general trend of an increase from over two hundred and seventy five hours {275 hrs]. on the city site. The sunshine hours are lowest in value in the month of August.

To this effect there is a lot of solar radiation getting to this facility. Thus on window surfaces there is extensive use of tinted glass with eggcrate sun shading devices over them. The interior spaces are finished with light absorbent materials or colours, to reduce uncomfortability.

In general this facility has been designed to take advantage of natural possibilities for environmental control.

CONCLUSION

In the demarcation and enclosing of floor spaces to suite creative and operational functions in this project, one has to be careful not to allow rigid functionality to overshadow the potentials of the buildings. As a beautiful environment is a conducive one which gives room for creative thinking, learning as well as enhancing work output, due to its serene nature. And should therefore strike a delicate balance between aesthetic and functional qualities. Since it should be capable of arousing ones intellect and interest without being too conspicuous.

In response to these requirements, the functionality was married to the aesthetic characters like the tinted glazing, sun shading devices, landscape elements used (earth moulding, stouts ledges and lawns). These are going to help relax the customer and create a way conducive atmosphere for assimilating knowledge and various information sourced.

This project has succeeded in providing befitting edifice and designing a serene atmosphere to carry out the functions of information exchange and various functions of computer packages. Like, internet use: E-mail, voice over internet phone calls, shopping on the Net, visiting chartroom, playing games, watching movies and listening to music. Learning about information technologies and the latest advancements in information technologies. Designing web pages and consulting with web architecture.

REFERENCES

CIMA STUDY PACK(1987),Stage 2 "Paper 1" Published by, Financial Training Course Limited. pp.11,12,392,400,411.

C.M.C. Limited (1997). Internet Educational Training. Published by C. M. C India.

I. P. A. (1979). 'I.P.A' The New Federal Capital of Nigeria'. The Master Plan for Abuja. Published by I. P. A. pp. 52, 53 (Fig . 2 - 16, 17 and 19) 58, 59 and 60

SMITH D., (2000).'Advancements in Information and Communication Technology'. The Master Plan for Abuja. Published by I .E. E. U. K. pp. 154

The NEW World Encyclopedia (1979). Published by Field Enterprises Educational corporation. USA. pp. 740, 761, 7421, 7421, 743, 744.

BIBLIOGRAPHY

Abuja Hand Book, (1998)Published by Nigerian Biographical Center, CEDDI Towers

BENEDIKT, M. (1997). Cyber Spaces; First Steps, published by M. I. T. Press

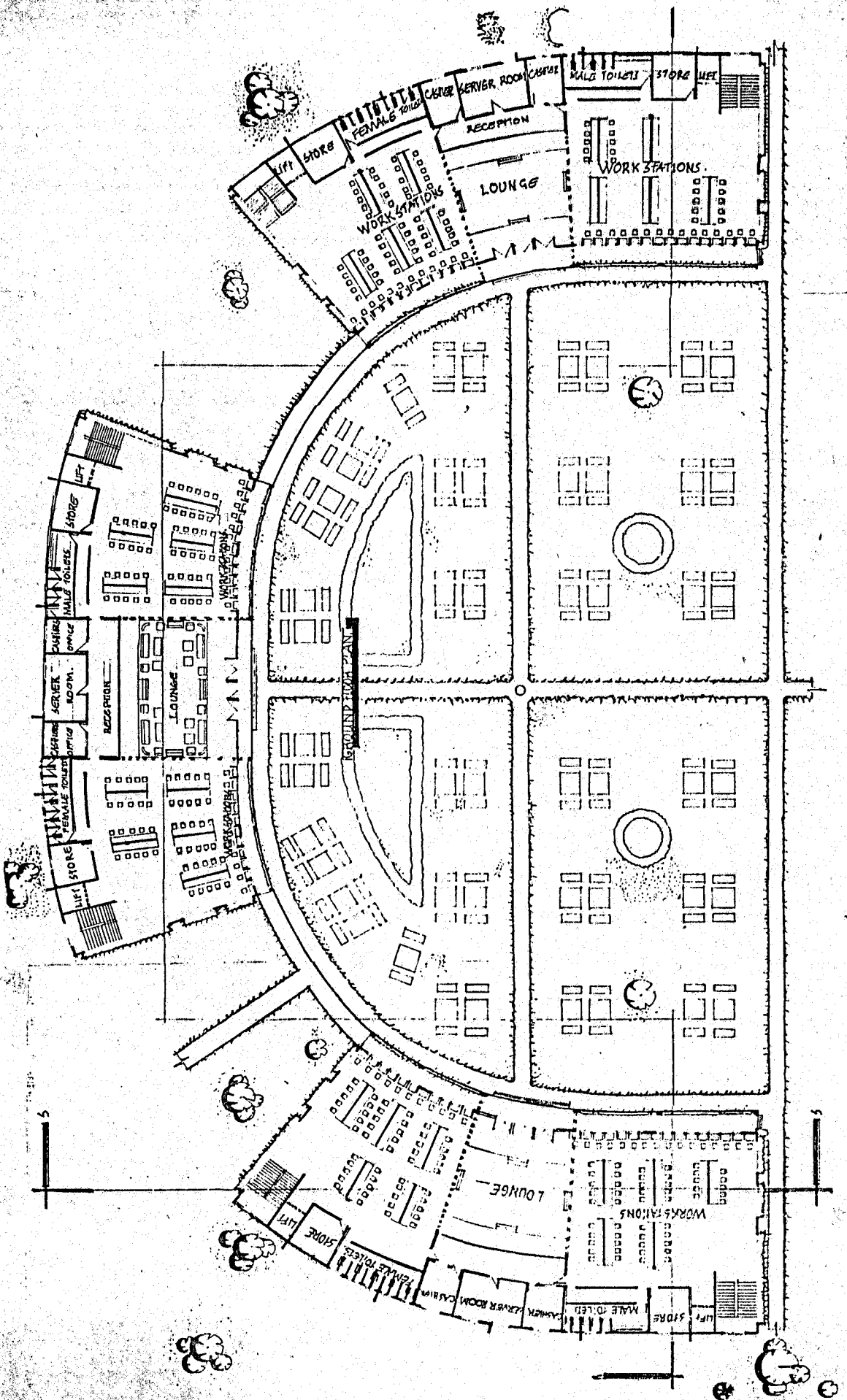
C. M. C. LIMITED, (1997), Internet Educational Training, published by C. M. C. India

COPLAND D. (1998). Microserf Published by Harper Colins Publishers Inc.

MEGROWITZ J.(1985). No sense of place: The impact of electronic Media on Social behaviour Published by Oxford University Press.

YANG LI,(1999). 'Cyber culture and the impact on man at the turn of the Millennium', A Study into Cyber Technology Online planning Journal.

APPENDIX


LIFT
STORE
FEMALE TOILETS
CASHIER
SERVER ROOM
RECEPTION
MALE TOILETS
STORE
LIFT
WORK STATIONS
LOUNGE
WORK STATIONS
LIFT
STORE
MALE TOILETS
PUBLIC OFFICE
SERVER ROOM
RECEPTION
LOUNGE
WORK STATIONS
GROUND FLOOR PLAN
LIFT
STORE
FEMALE TOILETS
LOUNGE
WORK STATIONS
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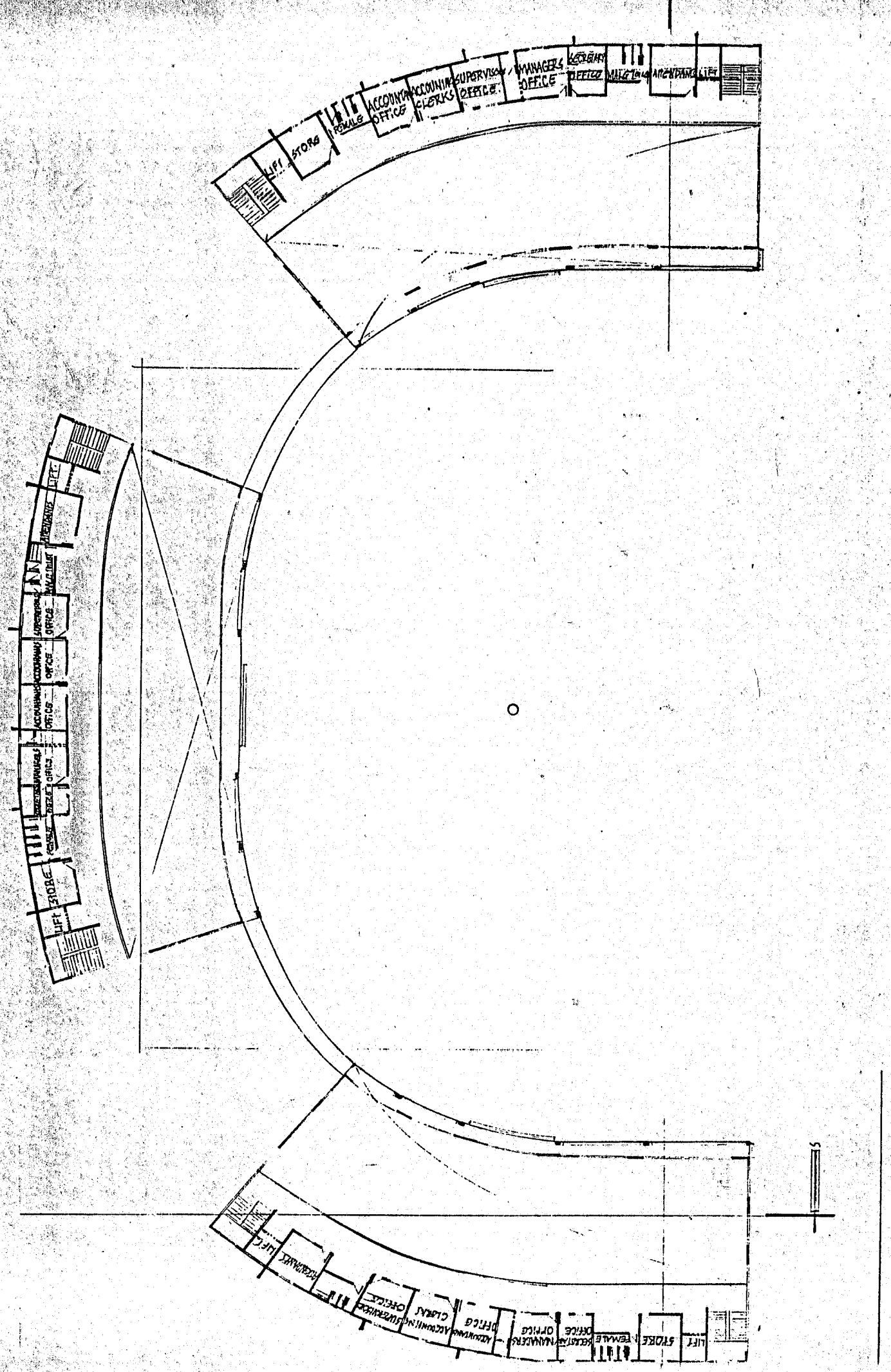
FEMALE TOILETS
CASHIER
SERVER ROOM
MALE TOILETS
STORE
LIFT


LIFT
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ACCOUNTANTS OFFICE
ACCOUNTANTS CLERKS
SUPERVISORS OFFICE
MANAGERS OFFICE
SECRETARY OFFICE
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ATTENDANTS
LIFT
LIFT
STORE
FEMALE
ACCOUNTANTS OFFICE
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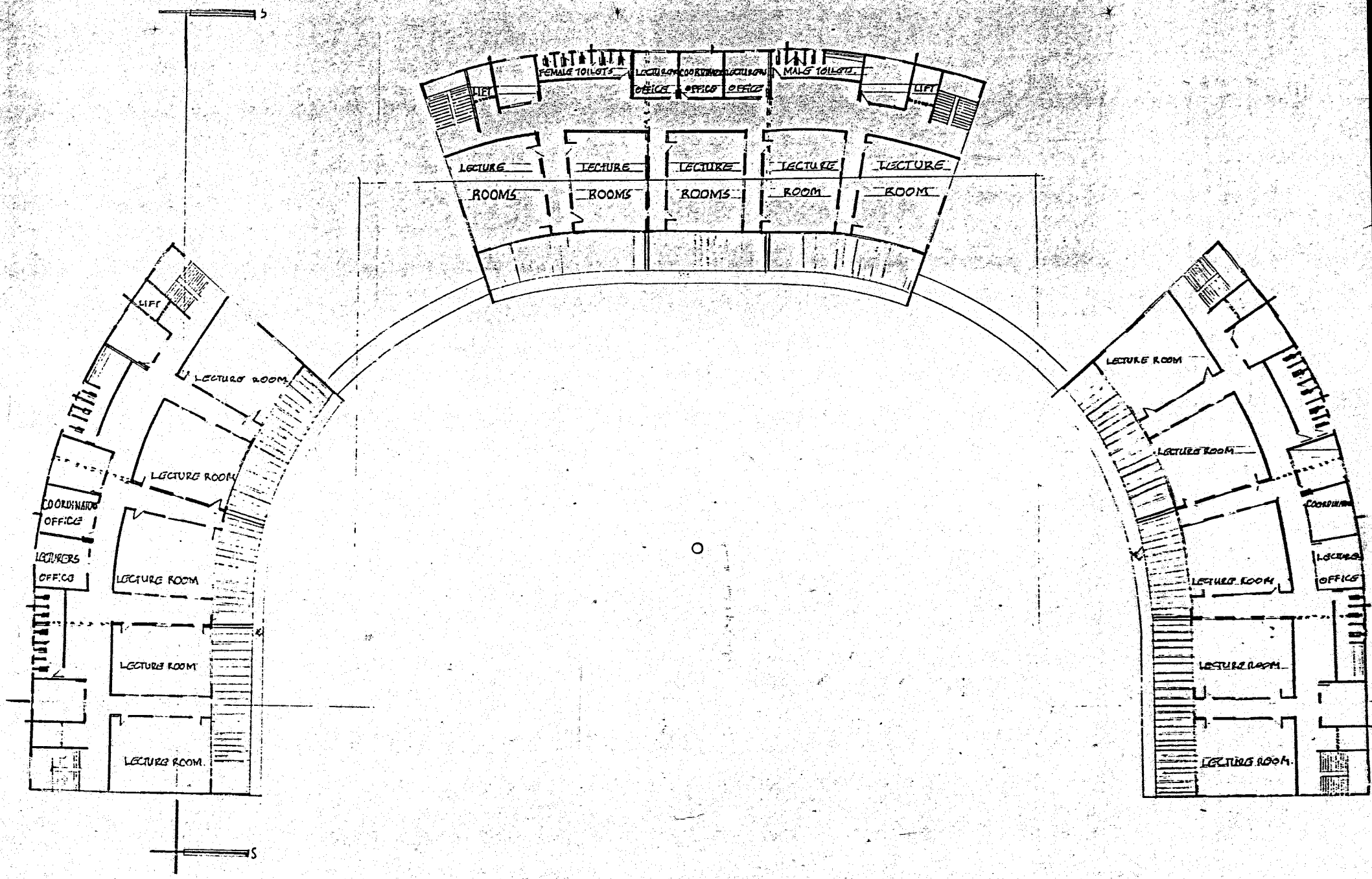
SUPERVISORS OFFICE
ACCOUNTANTS OFFICE
MANAGERS OFFICE
SECRETARY OFFICE
FEMALE
STORE
LIFT


FEMALE TOILETS
LECTURERS COORDINATORS COMMON ROOM
MALE TOILETS
OFFICE
OFFICE
OFFICE
LIFT
LIFT
LECTURE ROOMS
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LECTURE ROOMS
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COORDINATORS OFFICE
LECTURERS OFFICE
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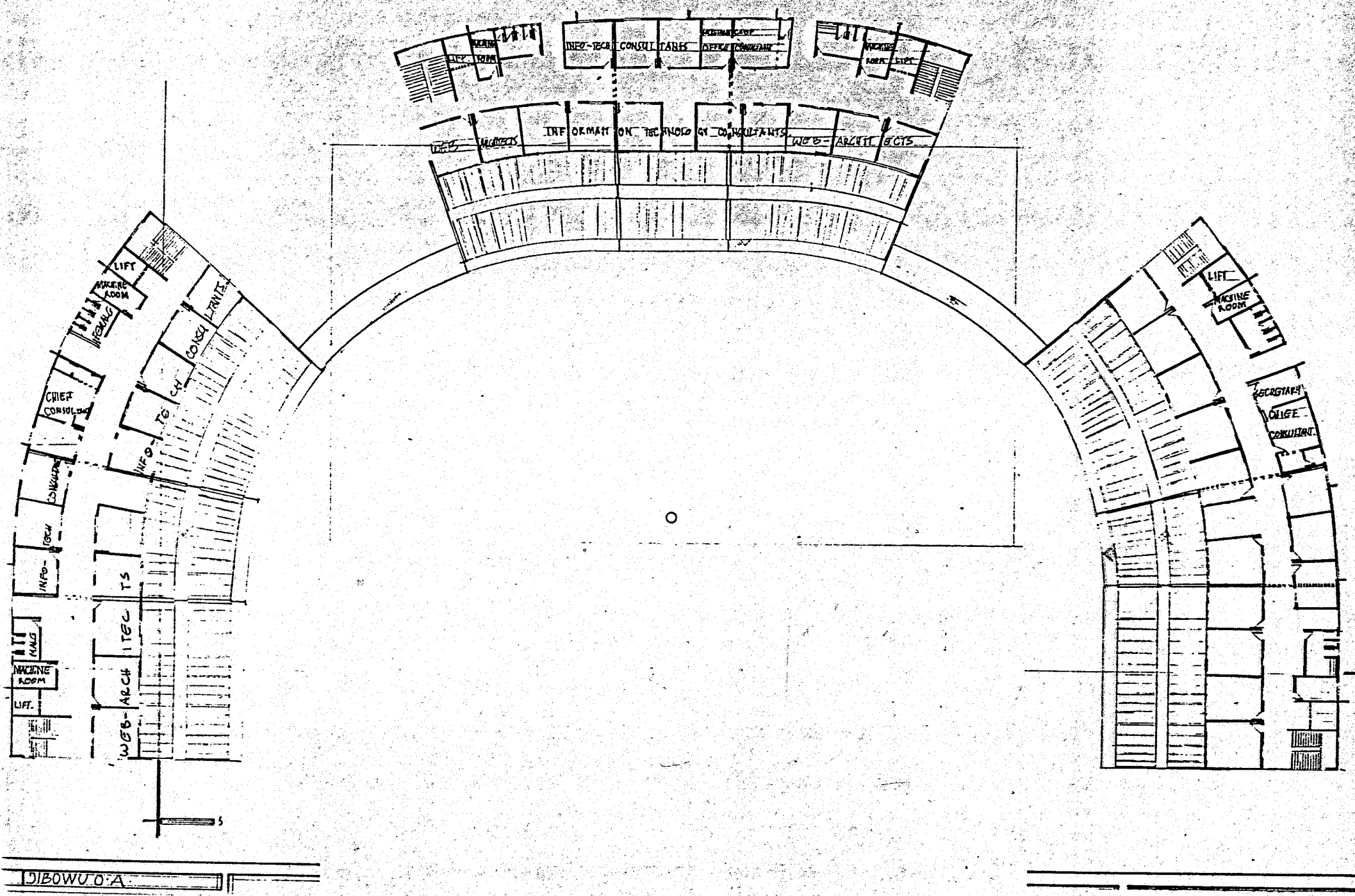
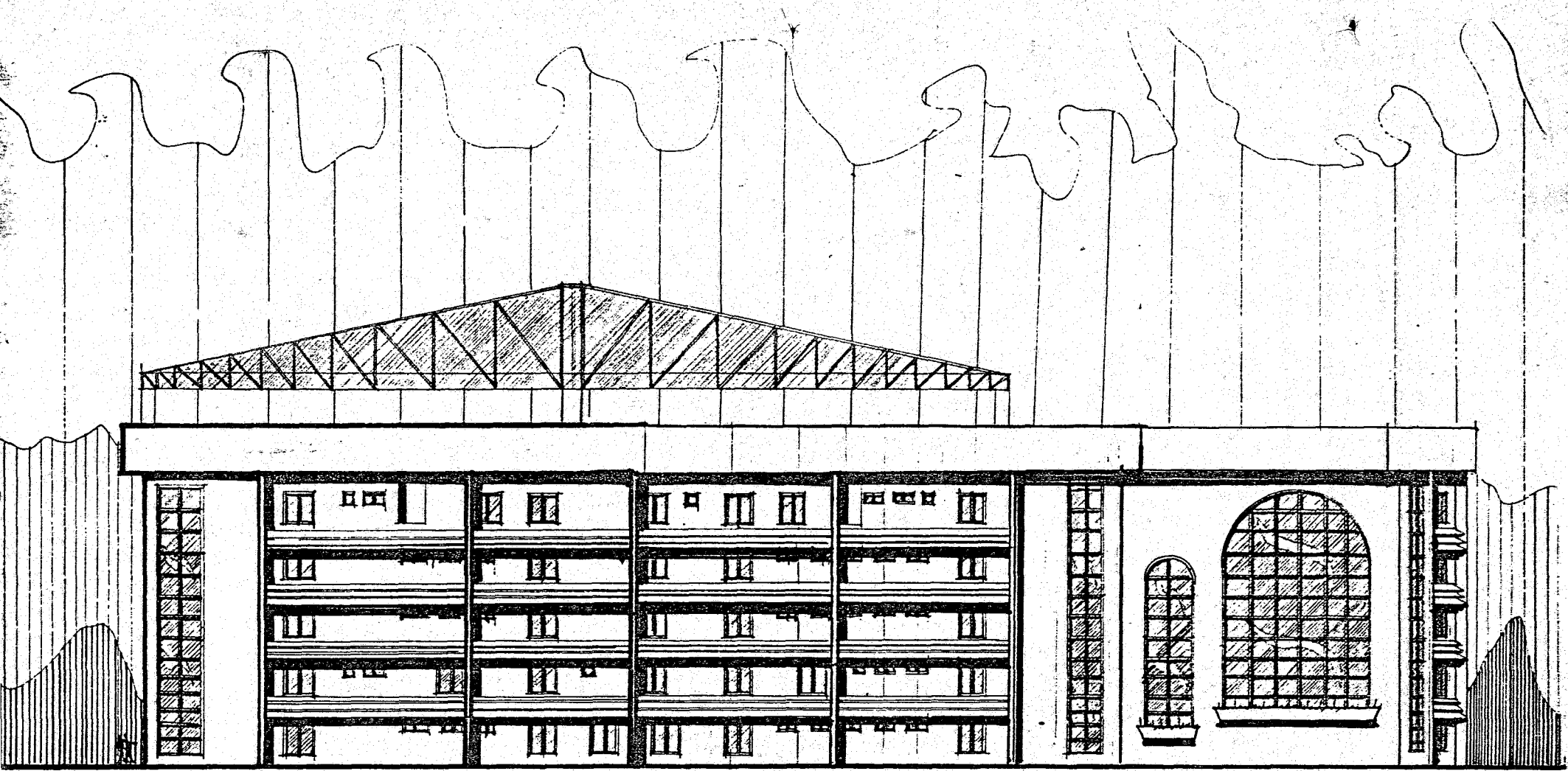
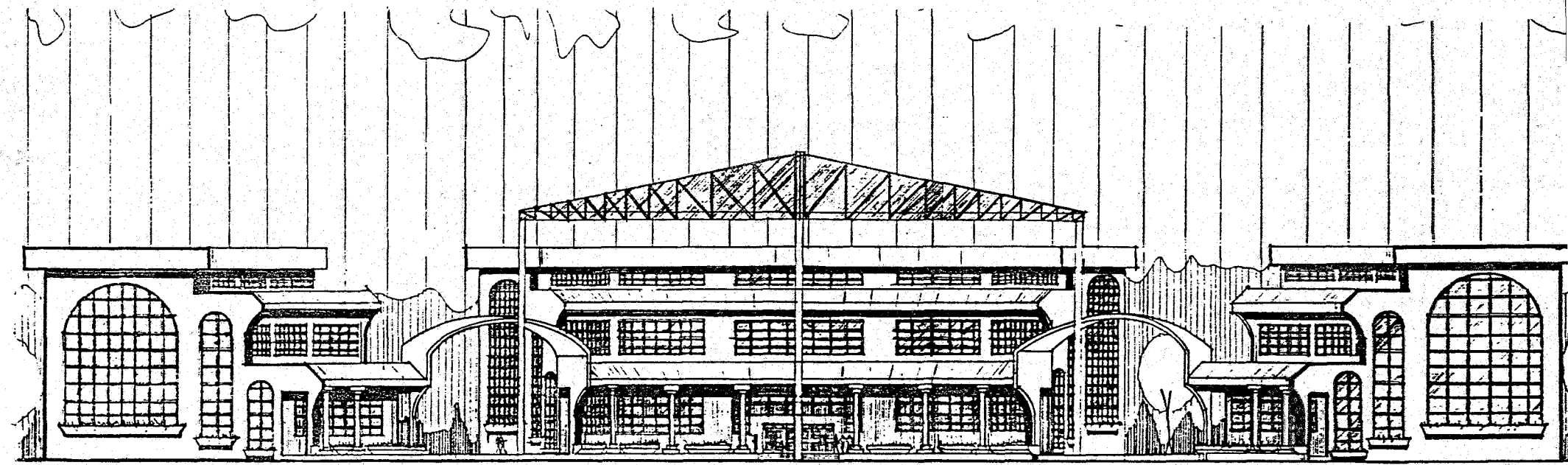
LECTURE ROOM


INFO-TECH CONSULTANTS
INFORMATION TECHNOLOGY CONSULTANTS
WEB-ARCHITECTS
LIFT
MACHINE ROOM
CHIEF CONSULTANT
INFO-TECH
WEB-ARCHITECTS
SECRETARY
COLLEGE CONSULTANT
DIBOWUO·A



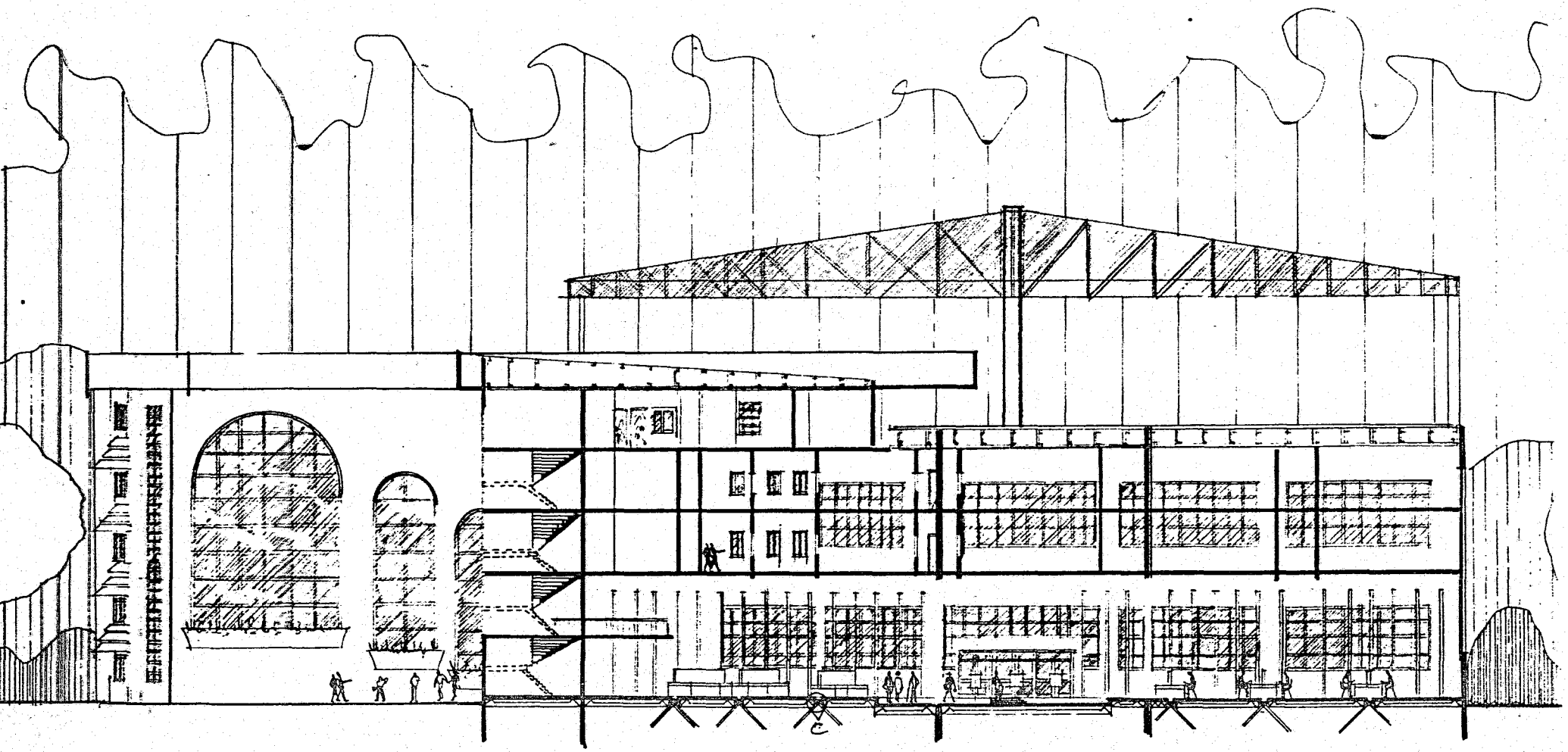
RIGHT SIDE ELEVATION

CYBER CENTER ABUJA.



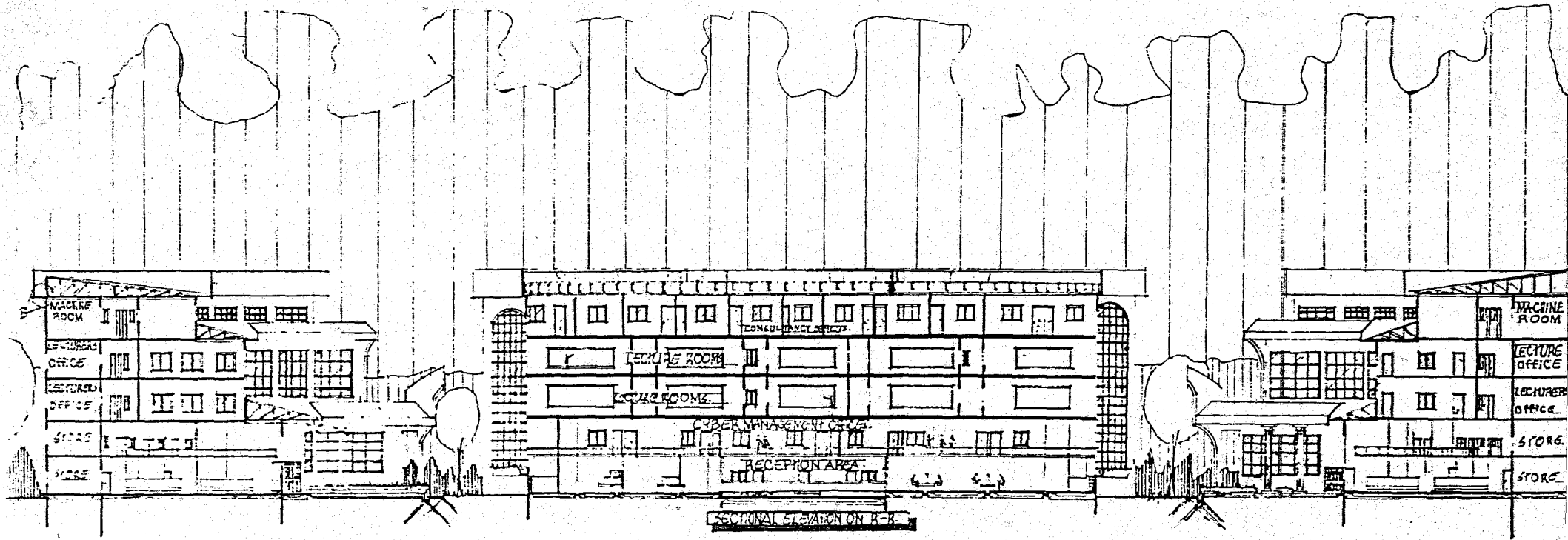
FRONT ELEVATION

SECTIONAL ELEVATION ON K-K.

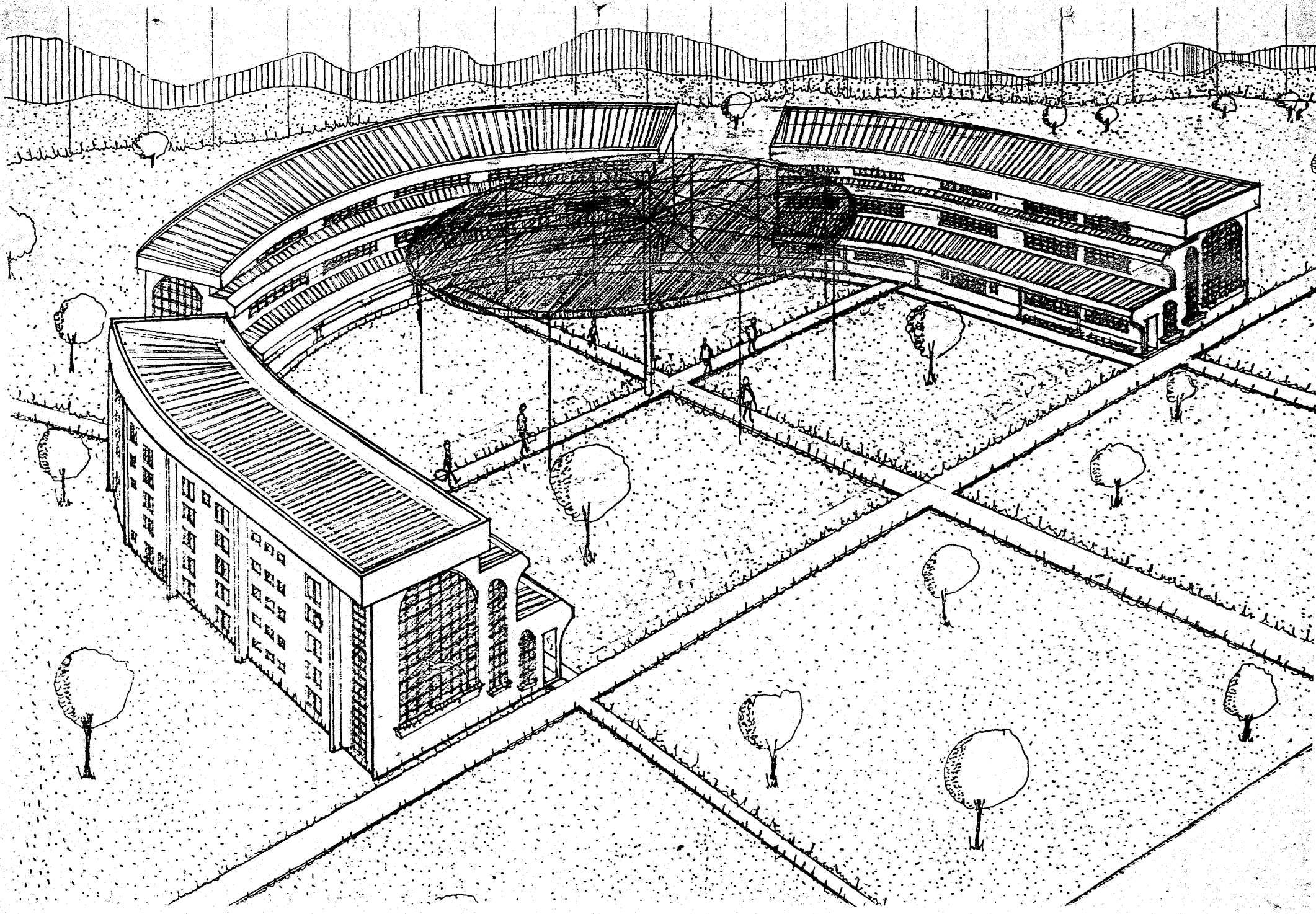


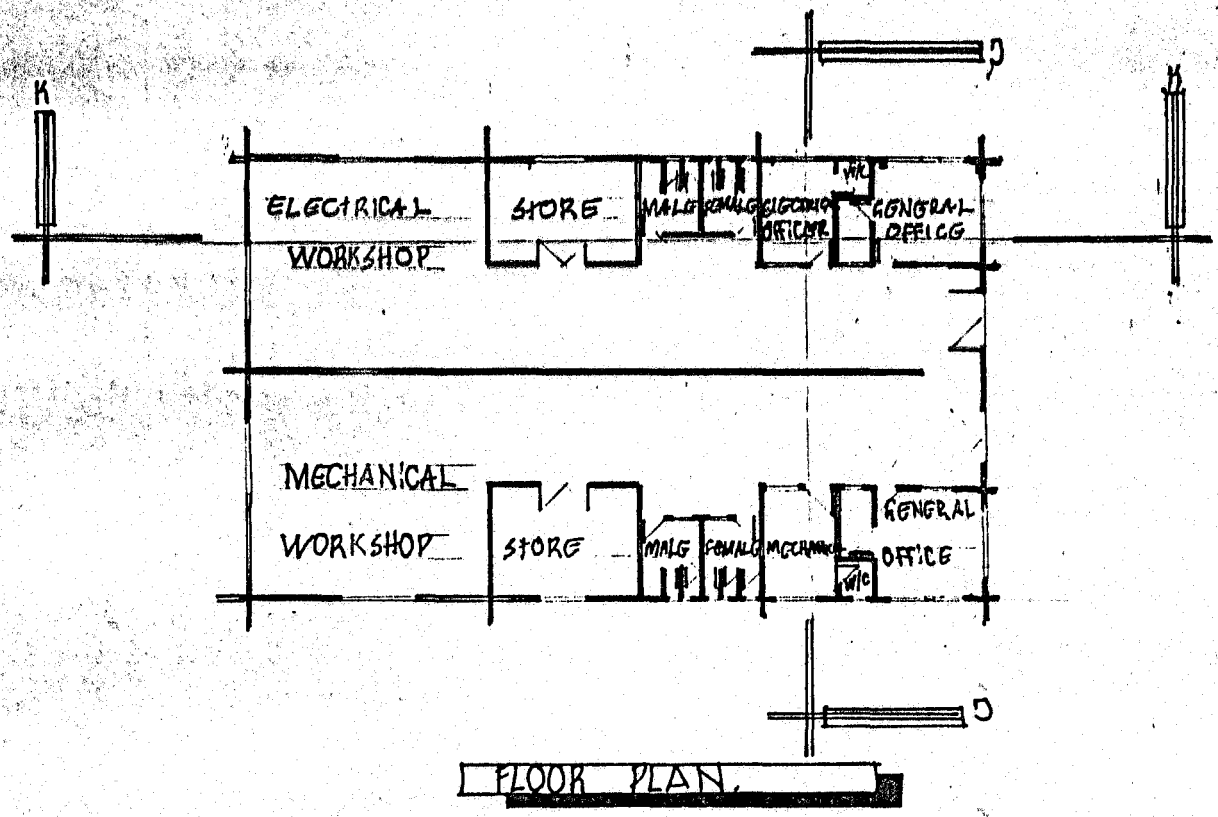
SECTIONAL ELEVATION ON S-S.

CYBER CENTER ABU.

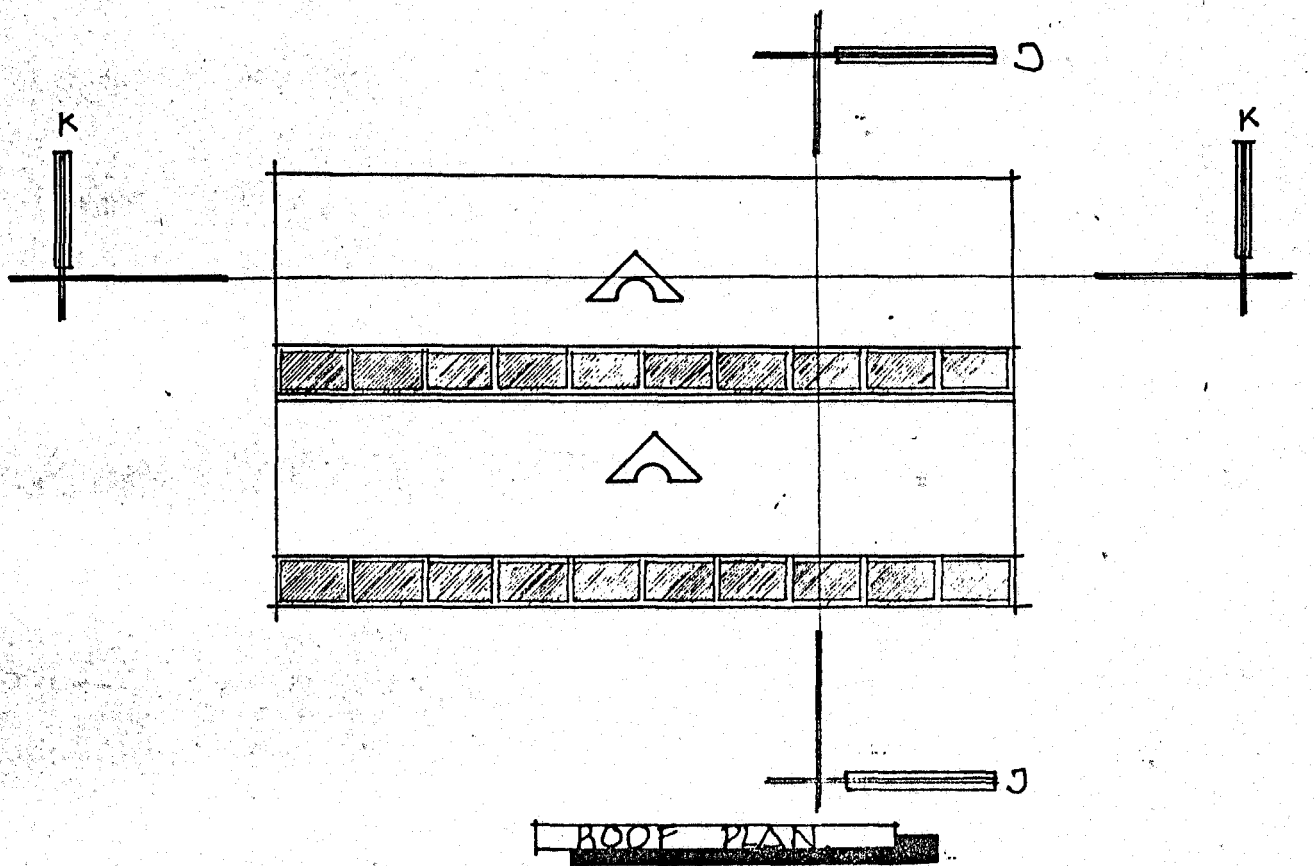


SECTIONAL ELEVATION ON B-B

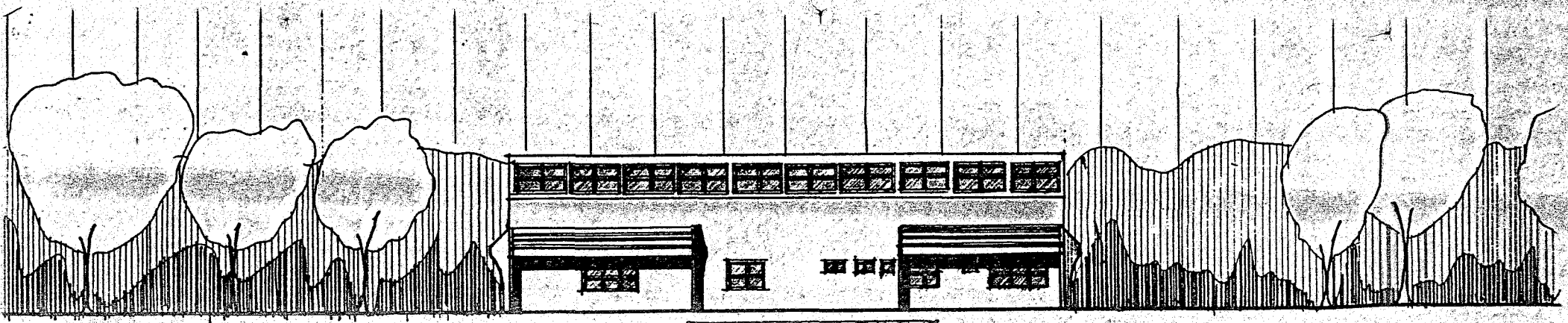




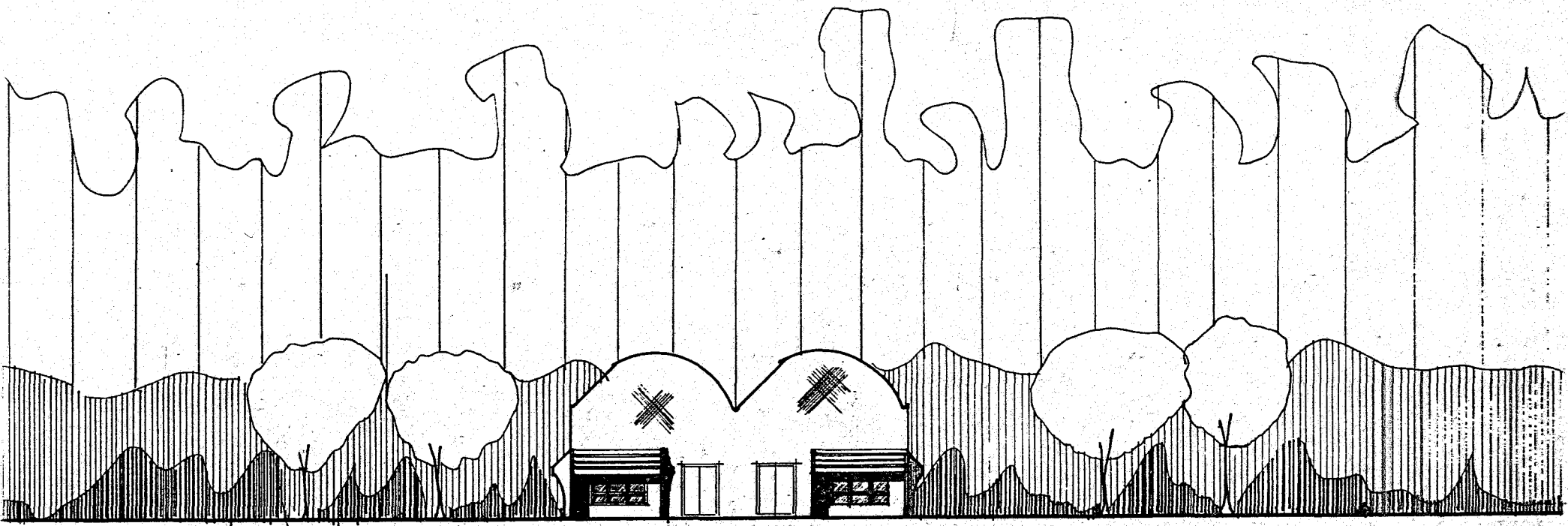
FLOOR PLAN



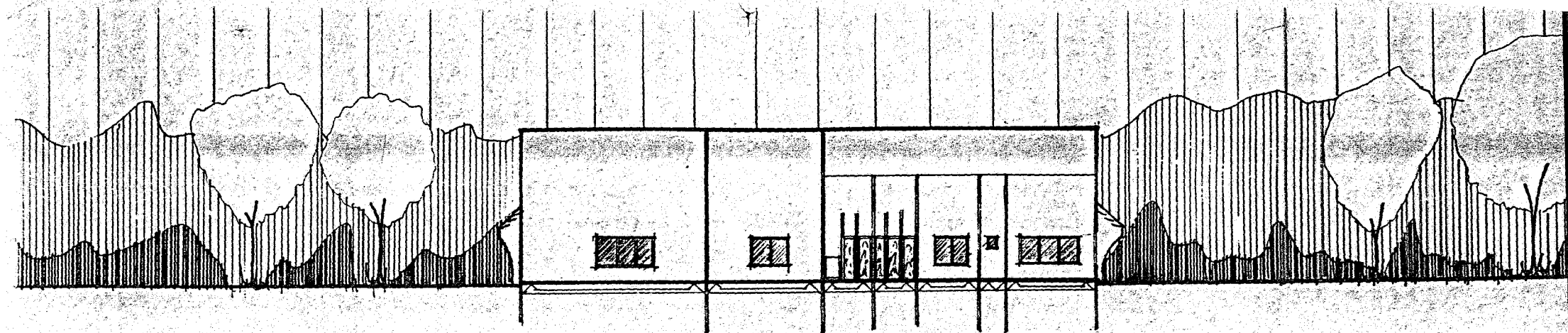
ROOF PLAN



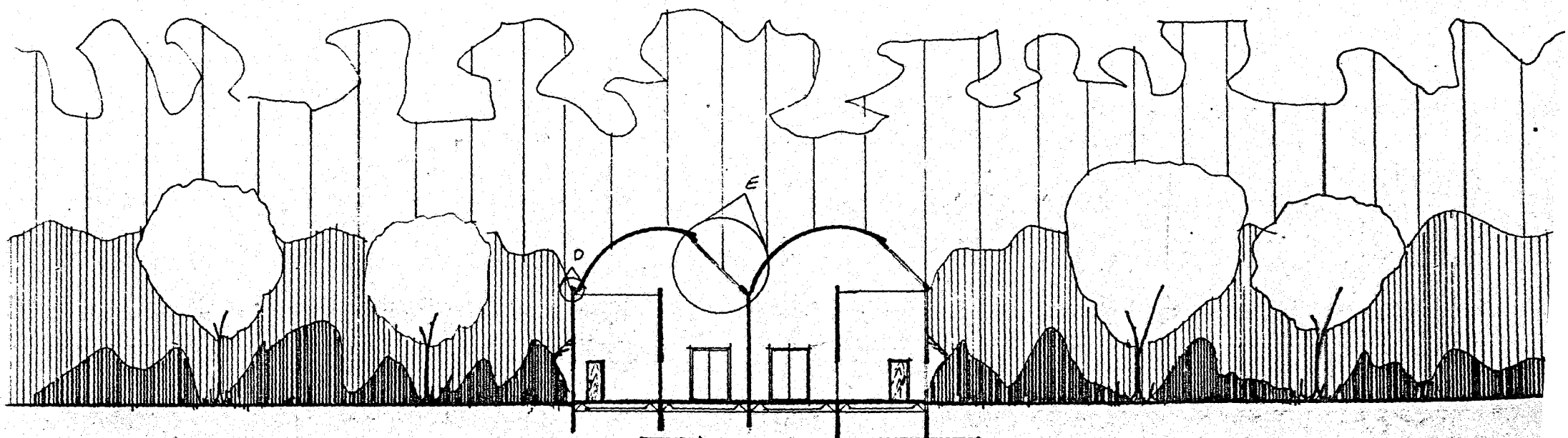
LEFT SIDE ELEVATION



APPROACH ELEVATION.



SECTIONAL ELEVATION ON K-K.



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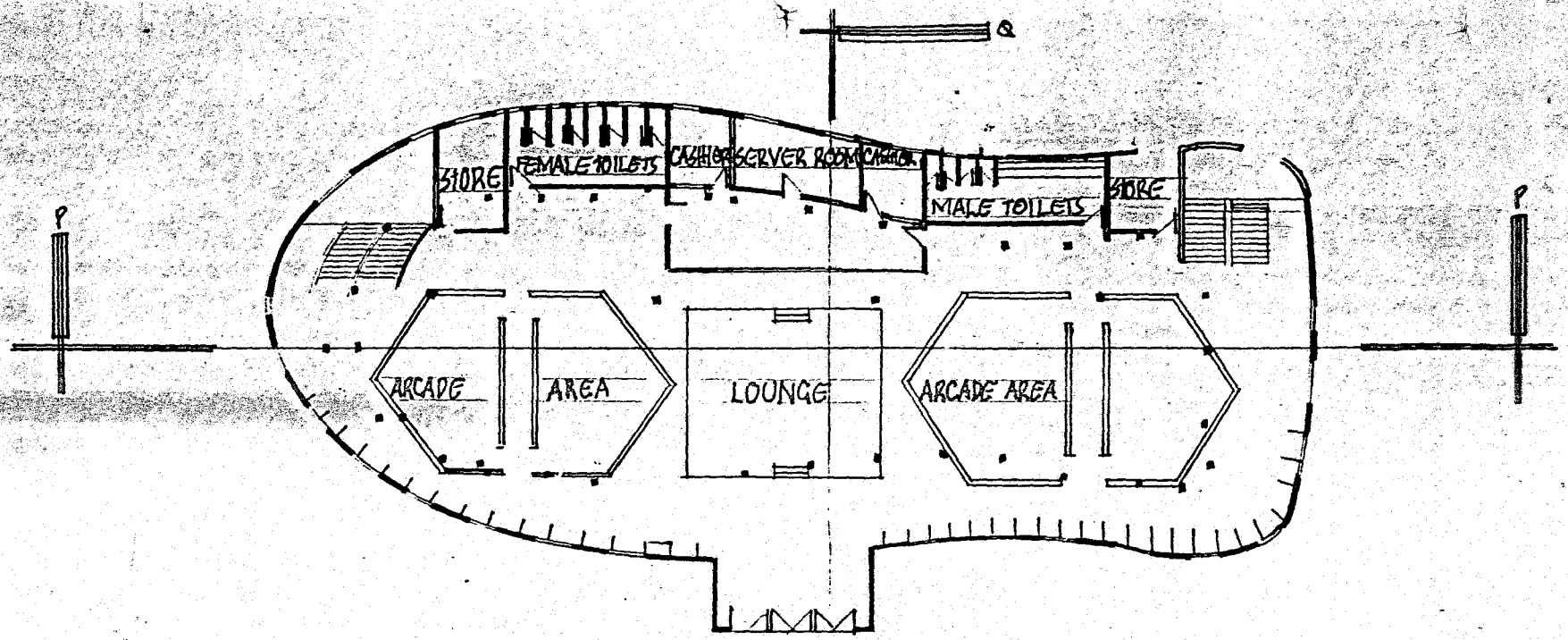
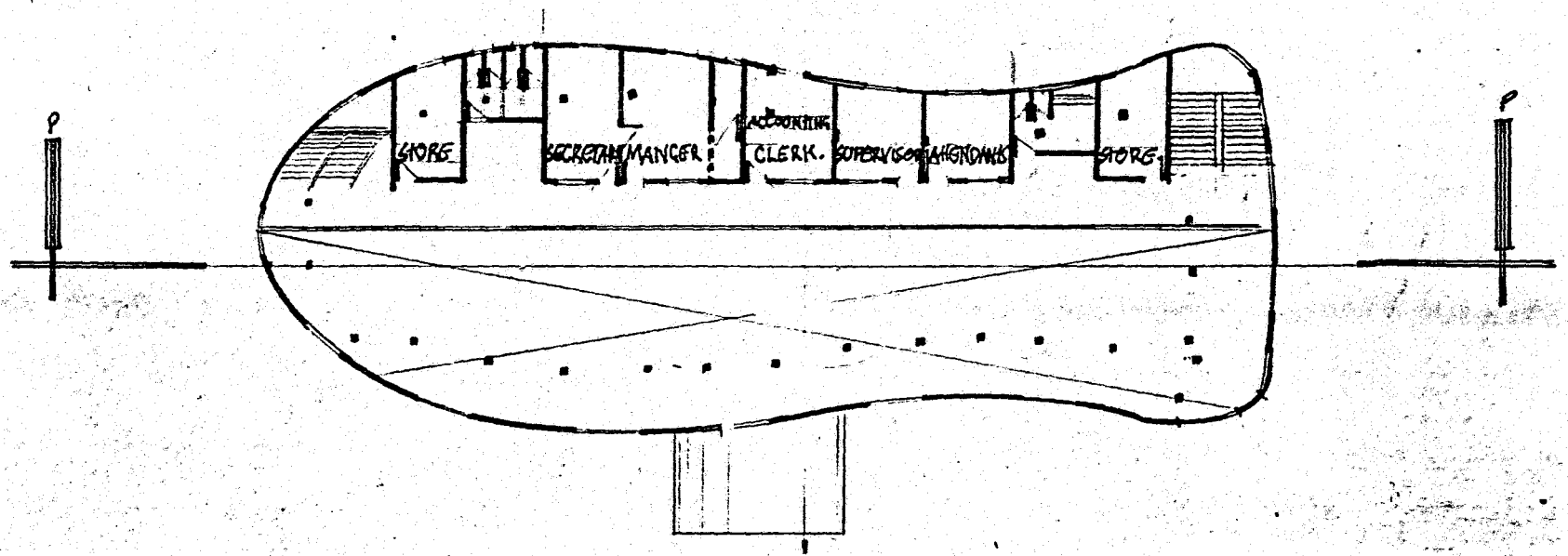
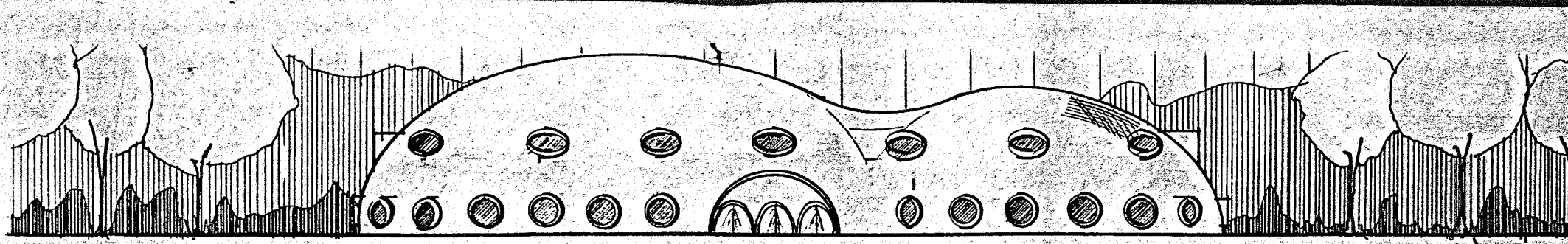
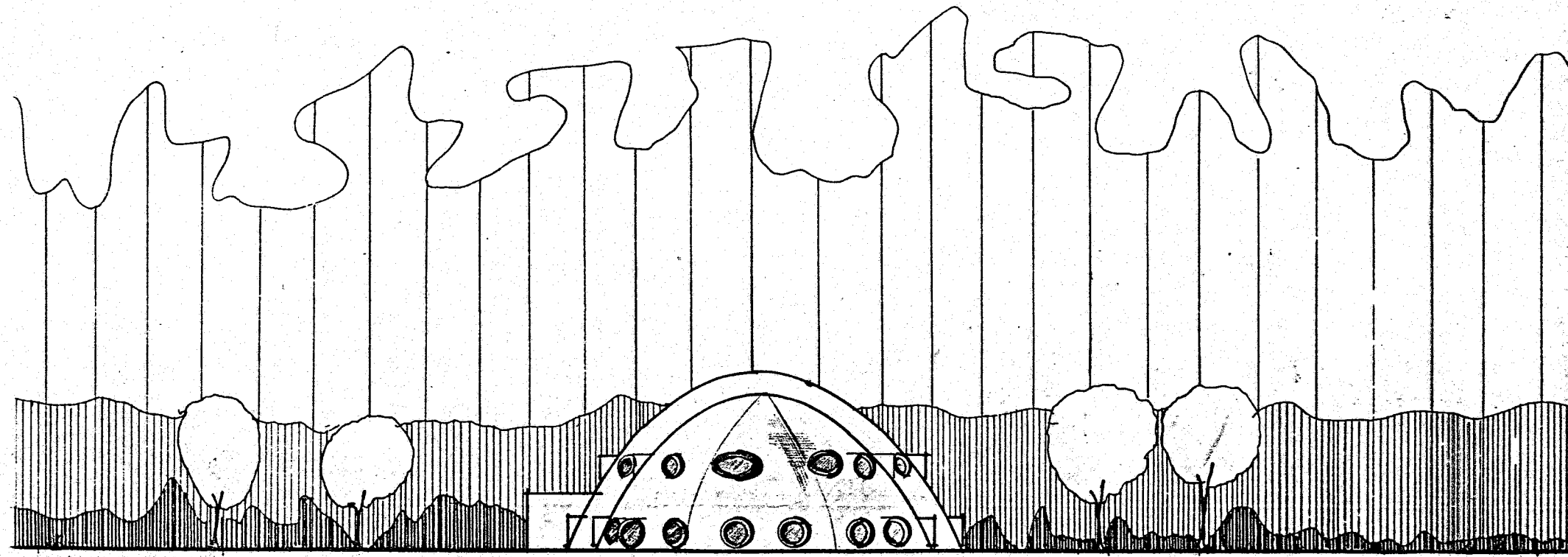


GROUND FLOOR PLAN

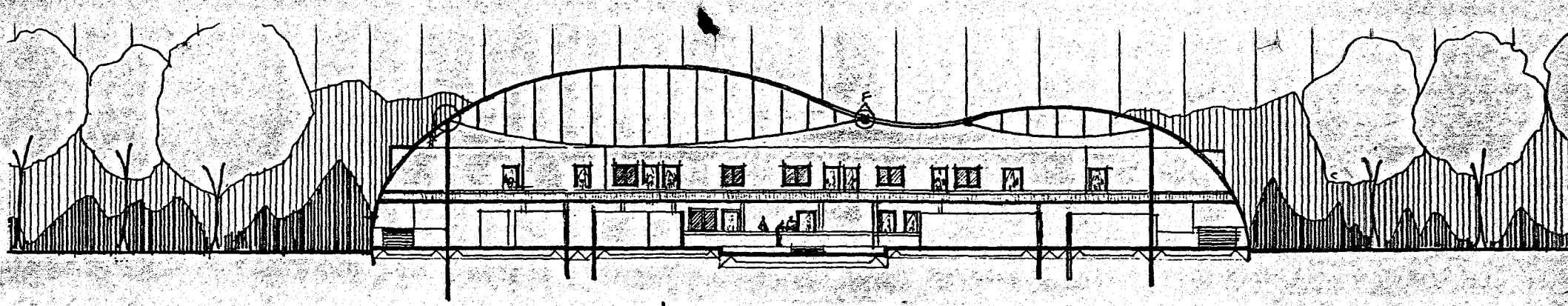




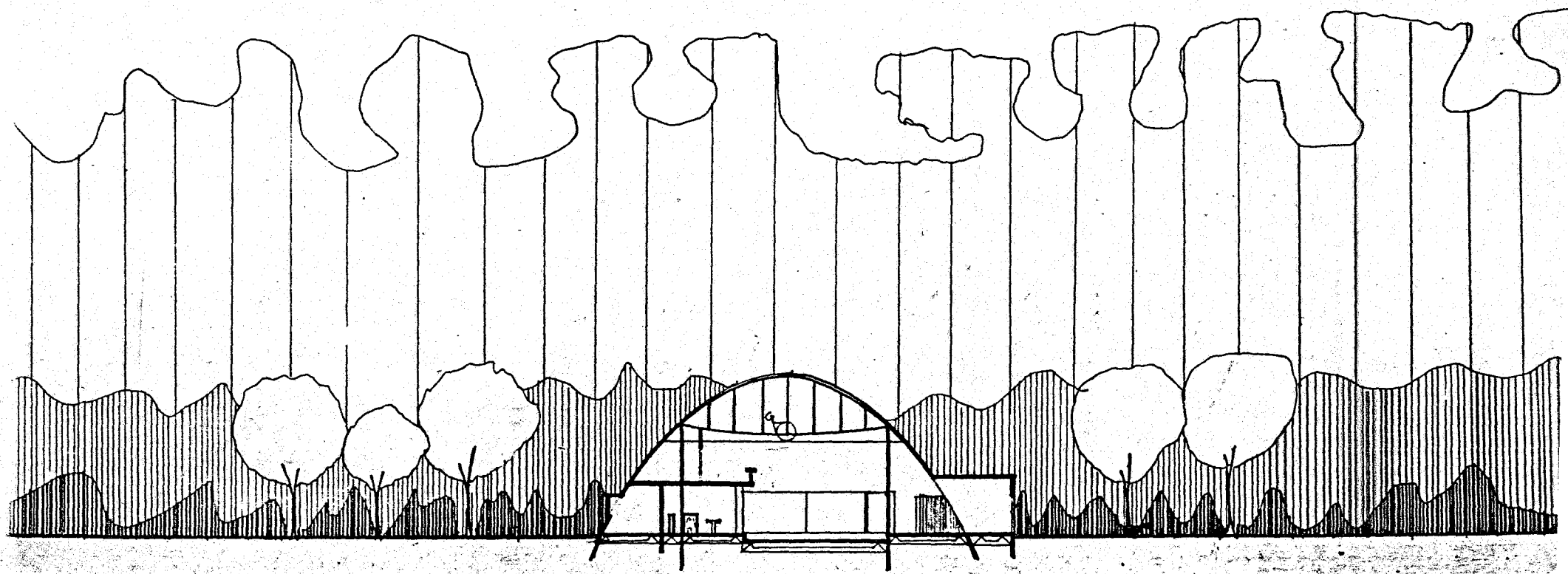
FRONT ELEVATION

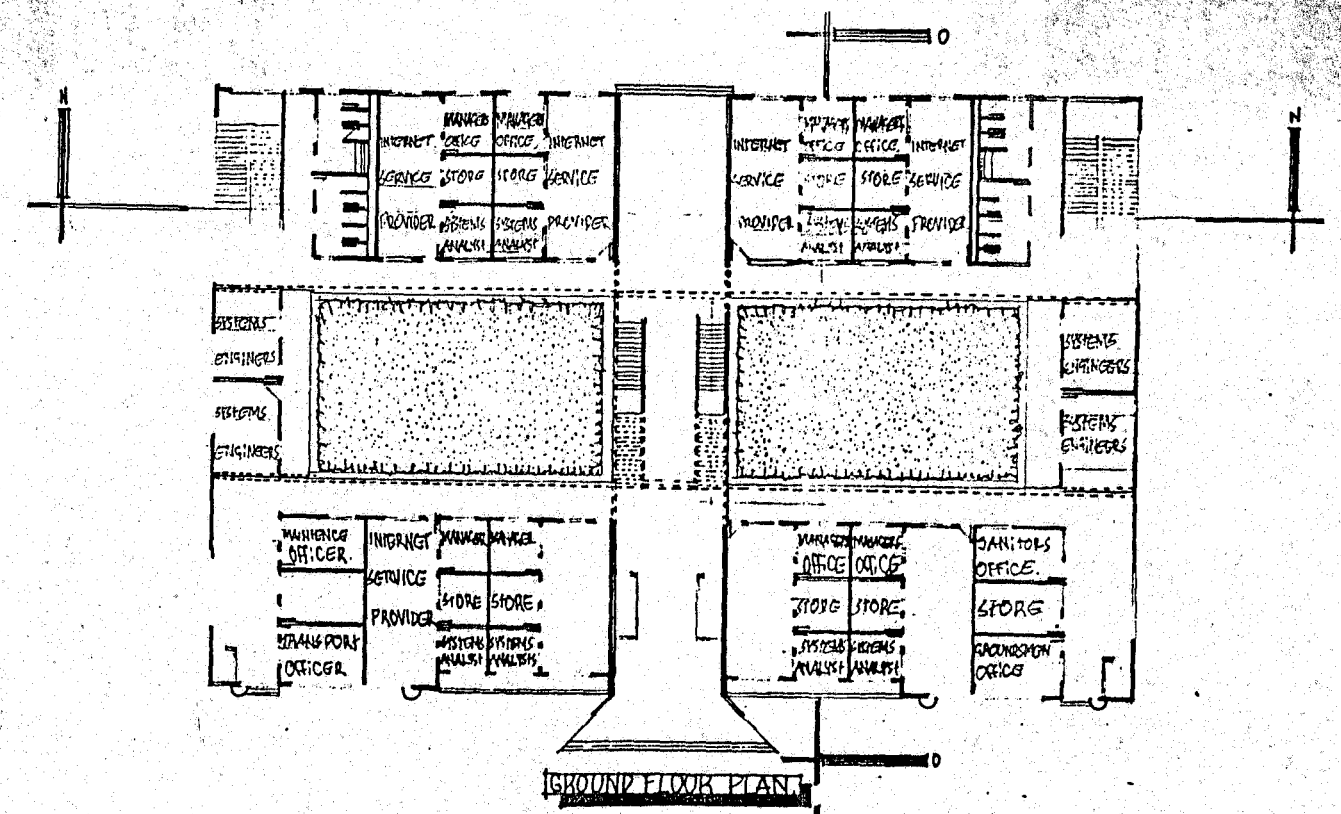


RIGHT HAND SIDE ELEVATION

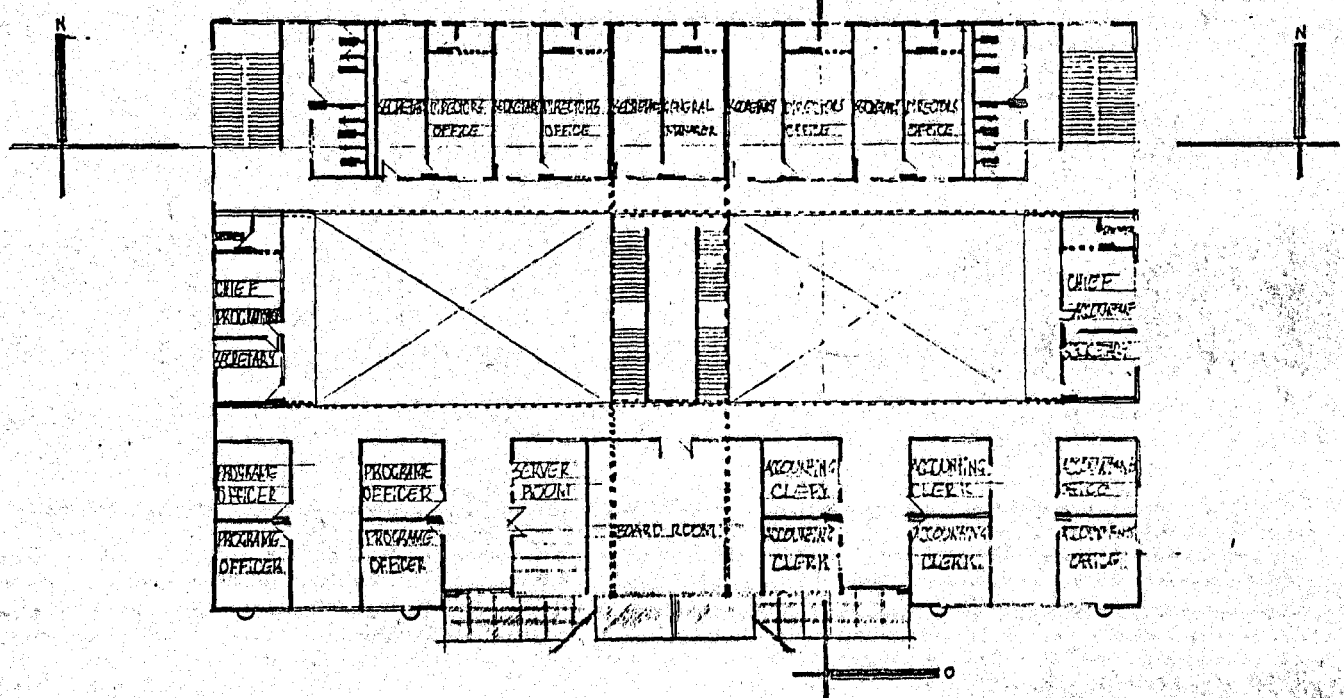


SECTIONAL ELEVATION ON P-P.

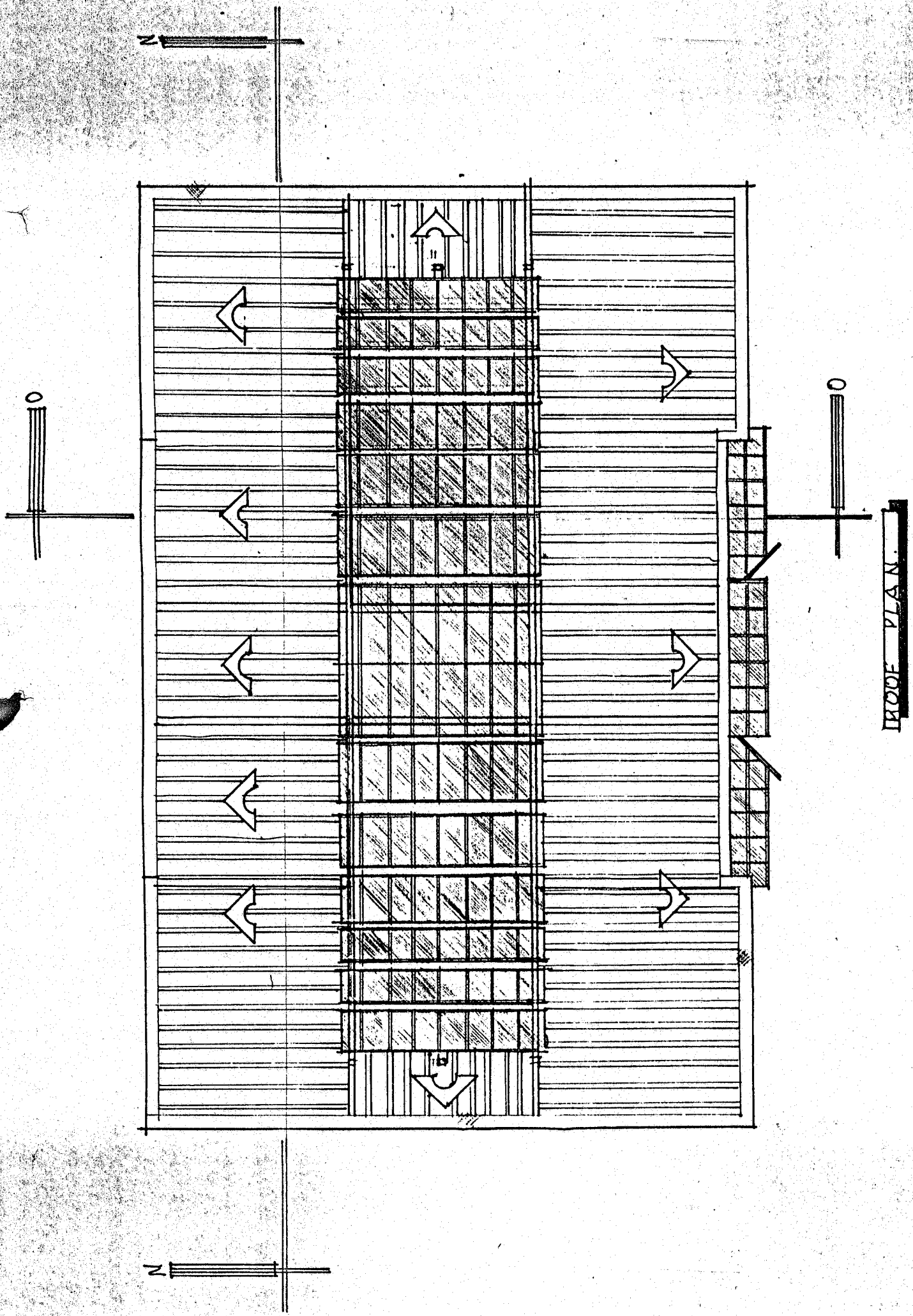


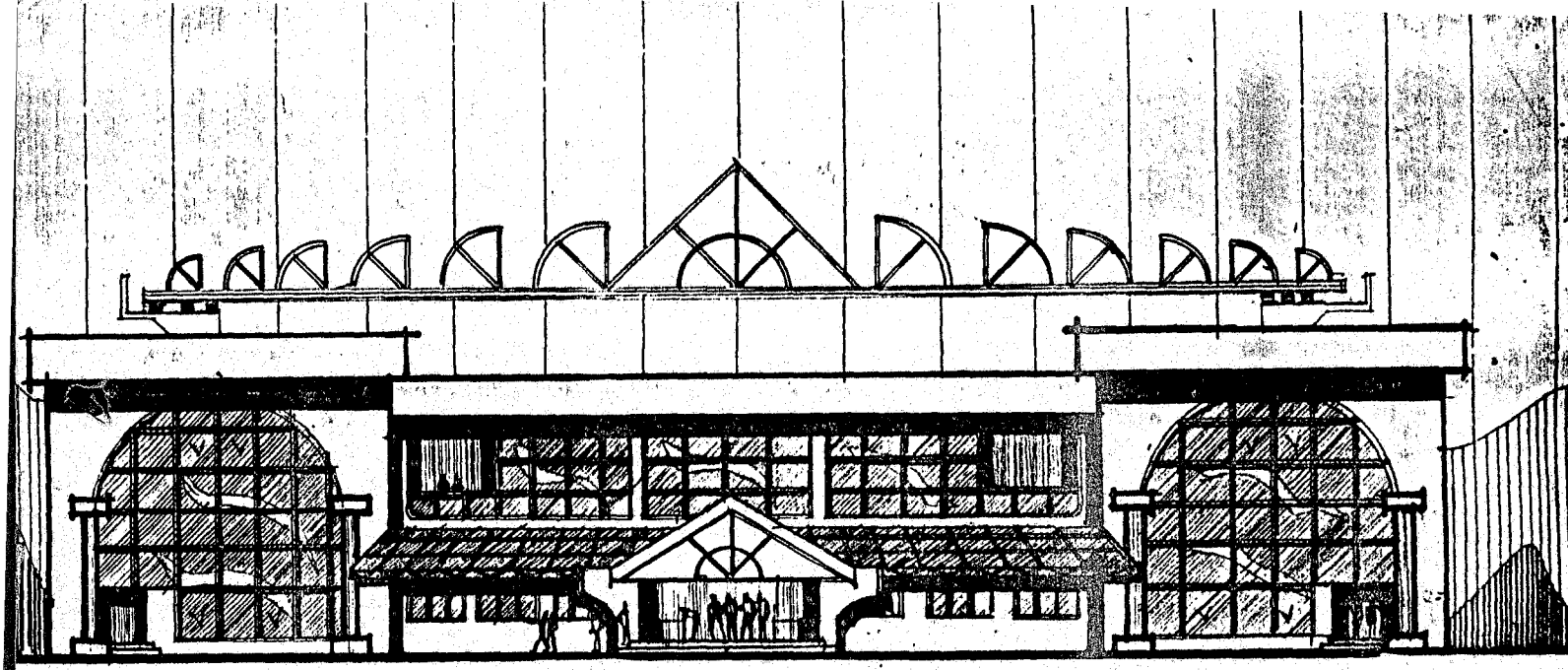


GROUND FLOOR PLAN

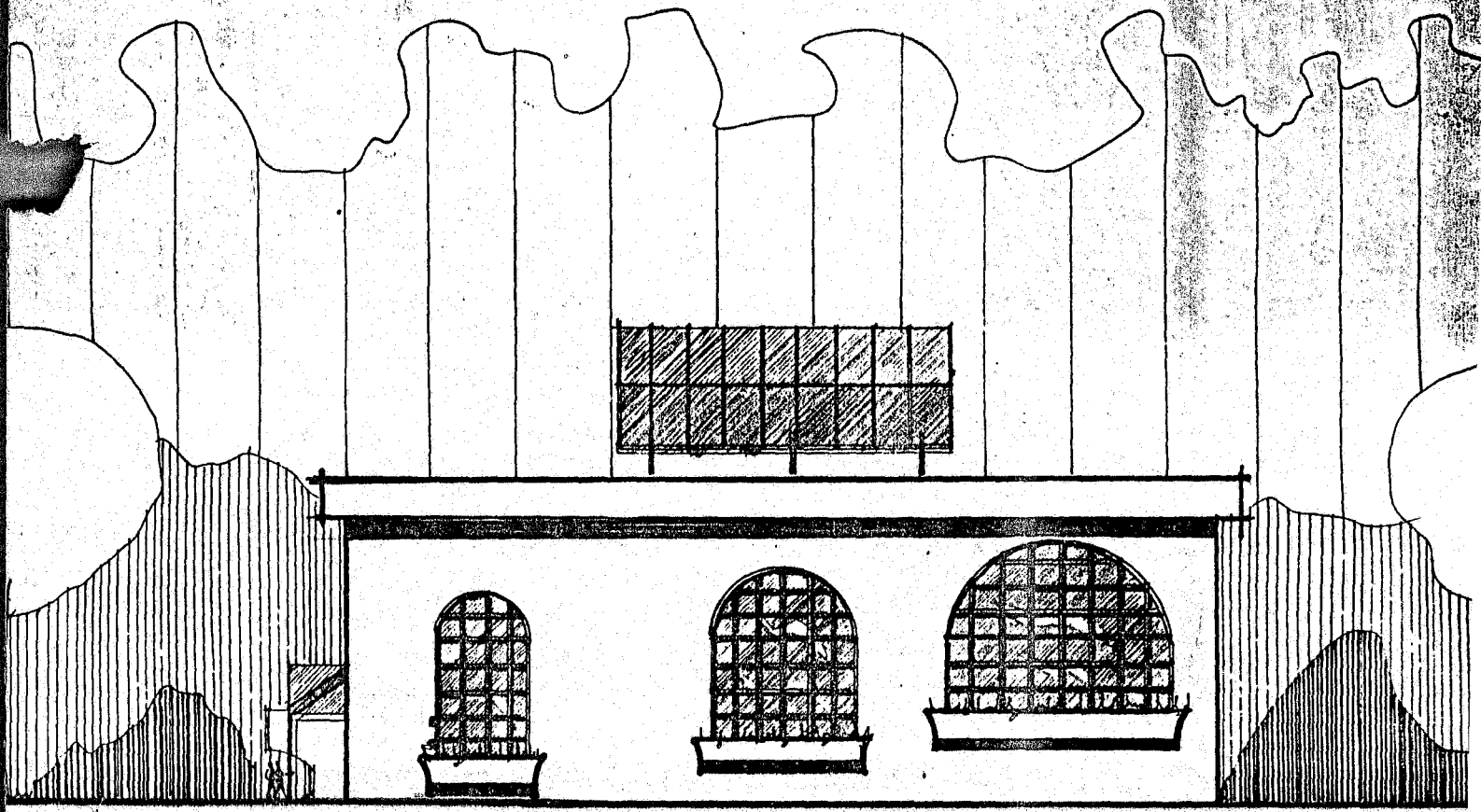


FIRST FLOOR PLAN


ROOF PLAN.

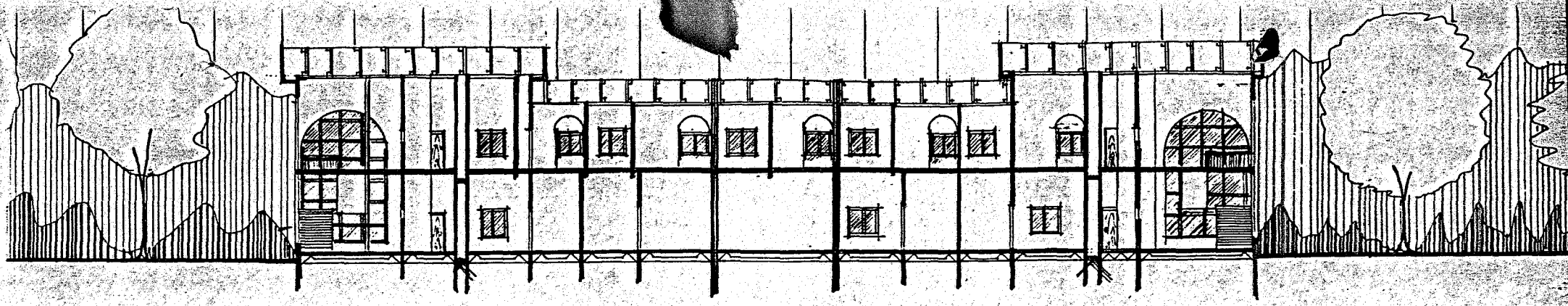


FRONT ELEVATION.

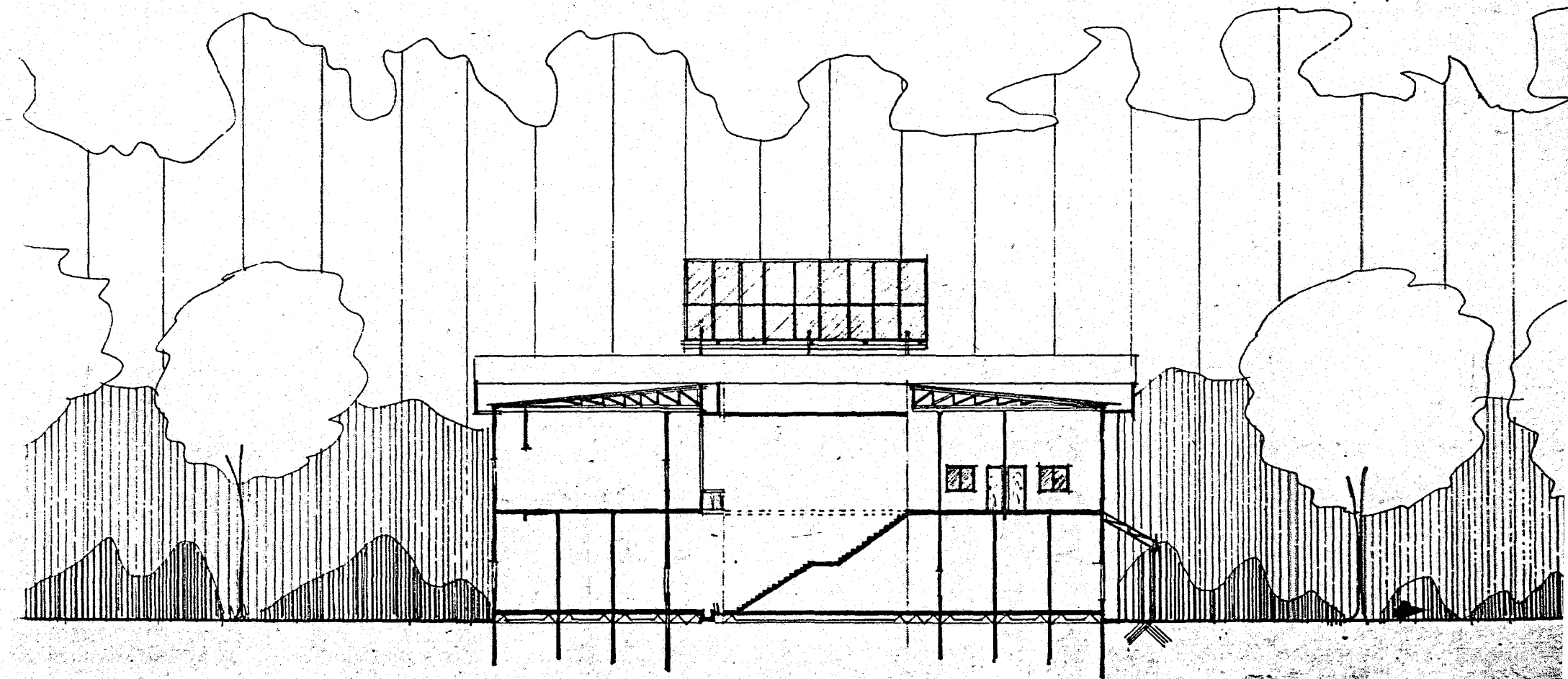


RIGHT SIDE ELEVATION.

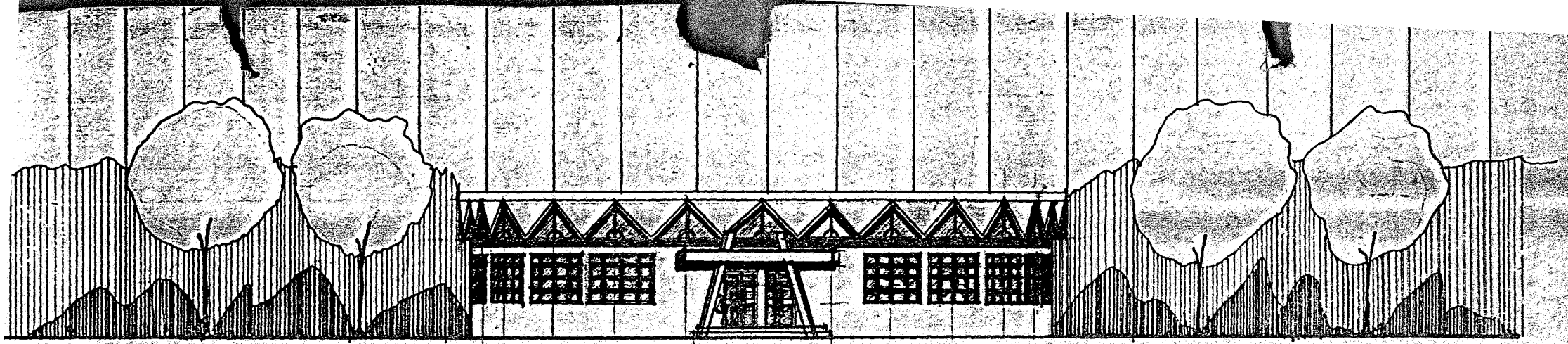
ED CENTER AR



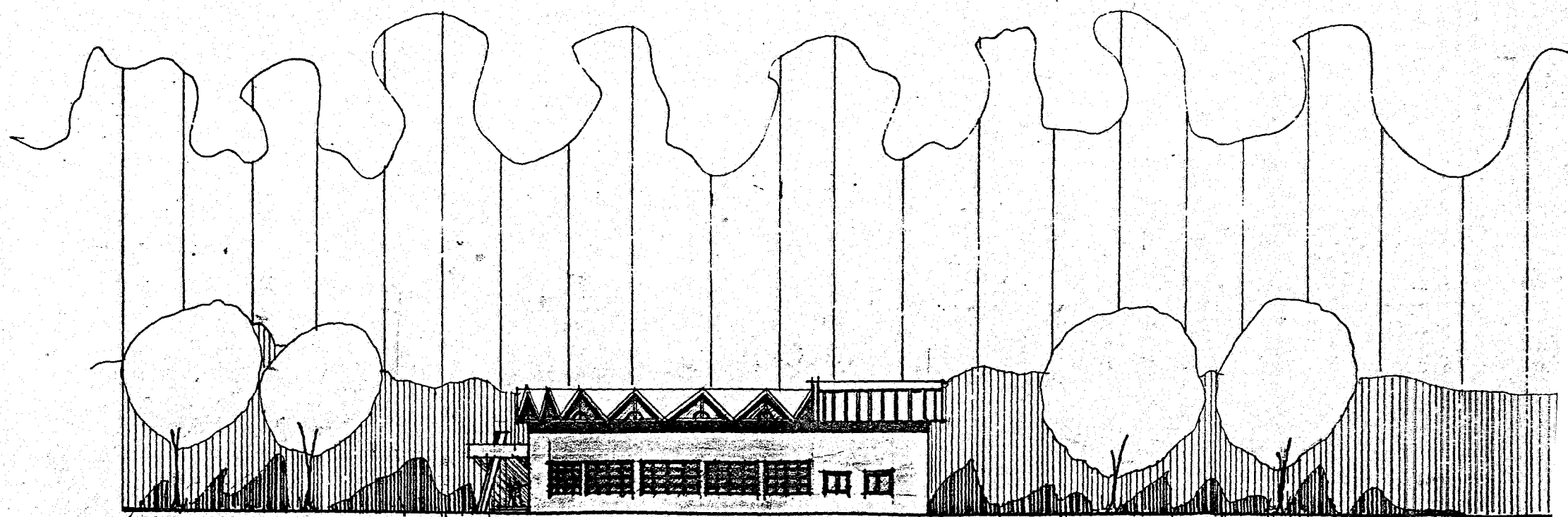
SECTIONAL ELEVATION ON N-N.



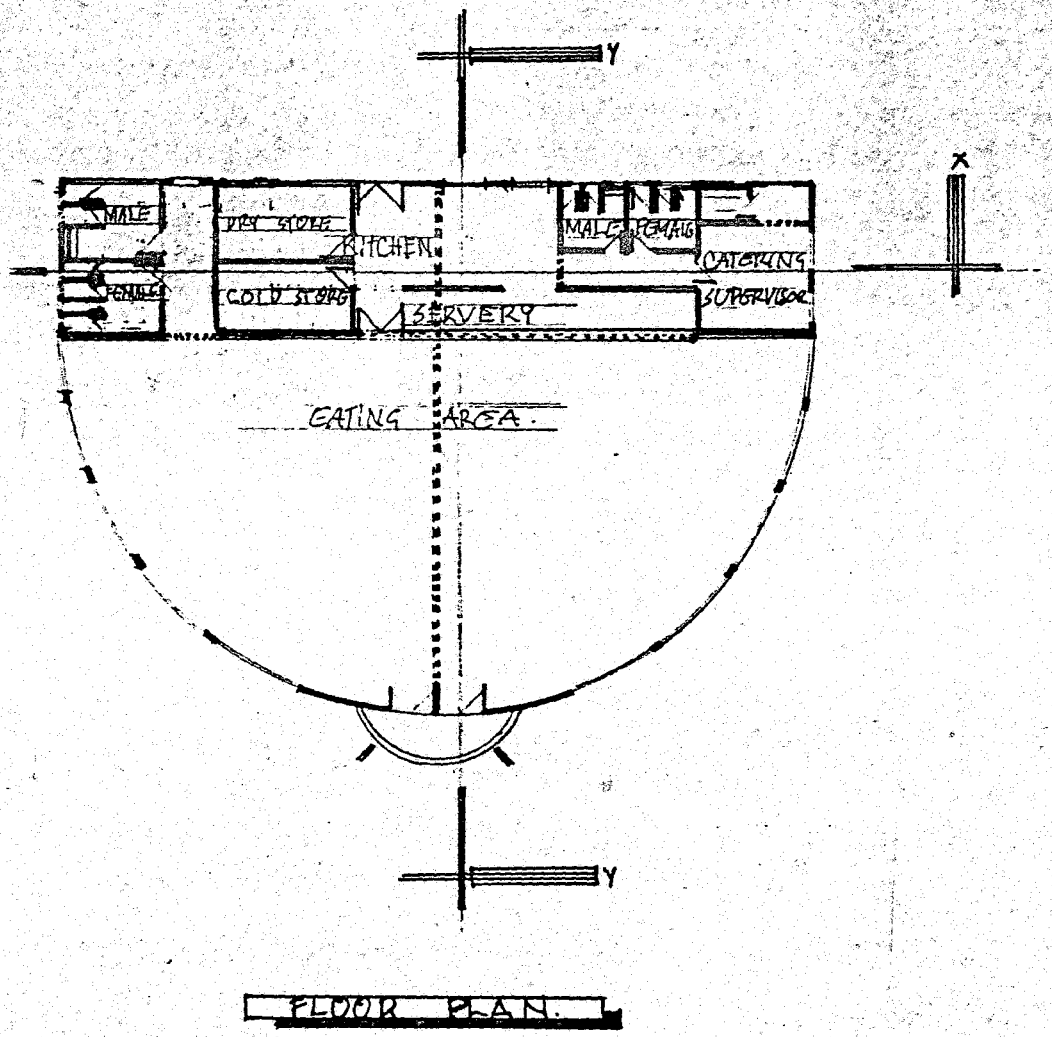
SECTIONAL ELEVATION ON P-P.



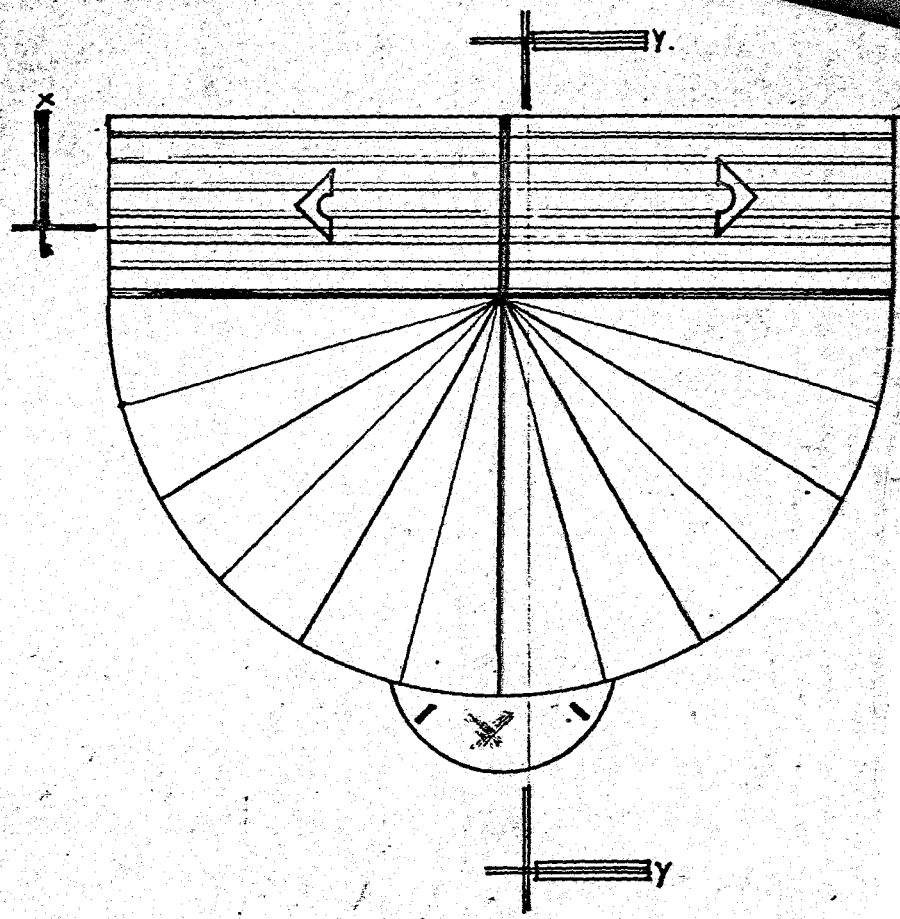
FRONT ELEVATION



RIGHT SIDE ELEVATION



FLOOR PLAN.



ROOF PLAN.