

CHRISTIAN YOUTHS TRAINING CENTRE, MINNA

NIGER STATE

**IMPROVING ON
LIGHTNING AND SITTING
ARRANGEMENT IN CHURCH BUILDINGS**

BY

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DECLARATION

I HEREBY DECLARE THAT THIS THESIS HAS NO BEARING TO ANY WORK DONE BY ANY PERSON OR GROUP OF INDIVIDUALS WHICH HAS BEEN PRESENTED AND ACCEPTED FOR A HIGHER DEGREE. IT HAS BEEN COMPOSED BY ME AND IS A RECORD OF MY OWN RESEARCH WORK. ALL QUOTATIONS ARE DISTINGUISHED BY QUOTATION MARKS AND THE SOURCES OF INFORMATION ARE SPECIFICALLY ACKNOWLEDGE BY MEANS OF REFERENCE.



GIMBA KAZAH COSMOS

(MARCH, 2000)

CERTIFICATION.

THIS THESIS REPORT ENTITLED CHRISTIAN YOUTH TRAINING CENTRE MINNA
MEETS THE REGULATION GOVERNING THE AWARD OF THE DEGREE OF MASTER OF
TECHNOLOGY (M. TECH.) IN ARCHITECTURE OF THE FEDERAL UNIVERSITY OF
TECHNOLOGY MINNA, AND IS APPROVED FOR ITS CONTRIBUTION TO KNOWLEDGE
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DEDICATION

The thesis is specially dedicated to "GOD" who is my Alpha and Omega in every thing I do. with love and respect.

And to the Educational motivation and acquisition of my former H.O.D. Prof. Sholanke.

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"I do not count myself to have won the race, but this is one thing I do, forgetting those things which have passed and reaching for those in the future. For I am able to do all things through him that strengthens me"

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ABSTRACT

A Multi-disciplinary approach to study of human problems and consequently the design of solutions to them has gained prominence in recent years.

No longer can the Christian youth centre be seen as a place for worship alone. It also serve as a centre for learning for the Youths.

The research work shows how a youth centre could be designed to ecourage individuals participation, in various activities of the centre.

This is an attempt at exploring a full range of exciting possibilities for stirring the youth back to full life and on the road to success

The process begins with an evaluation of past work and a formulation of hypothesis. It strongly considers the interaction of the centre with it's surroundings and growing prospects for cooperation within the centre and society as realities for youth centre mission now and the future.

CHAPTER ONE

INTRODUCTION

1.1 The Christian faith started almost 2,000 years ago. It develops gradually without altering radically, its form of worship.

The earliest Christians were found in the catacombs [underground cemeteries] developed by the faithful to serve as hiding places during persecution.

Christian doctrine and beliefs regardless the denomination is hinged on a common faith the mediator.

The conception of these centres is to bring changes in mode and pattern of worship and expression. Some of these Christian groups with their peculiar ways of expression includes:

- a. The Roman Catholic:- which hinges on the doctrine of "priesthood of all believers"
- b. The Evangelical which emphasizes on the preaching of the gospel through crusade, film shows, outreach etc.
- c. Church of England which is characterised by the directional east-west orientation in which main liturgical action is removed from the congregation.

This disharmony in the Christendom is therefore the focus of the movement. Ecumenical which basically encourages church unity.

The design task, therefore is to present a powerful and comprehensive modern feeding, a response to the need of the faith and society in this modern era.

Today Christianity has its expression in three distinct views, the Roman Catholic, the Protestants and the Pentecostal.

1.2. MOIVATION

This project is motivated in order to create awareness of the different ways in which unity could be encouraged and maintained among christians, in the community and the society at large through morals.

1.3. AIMS AND OBJECTIVES OF STUDY

1.3.1. AIMS

The aims of this design proposals is three folds:-

- a) Assisting the christian youth centre in the puisuit of it's sets goals, some of which include
 - i. Providing worship centre for a growing congregation.
 - ii. Provision of an ideal environment for the development and increase in the christian faith especially among the youth.
 - iii. The research, training and educating interested individuals /students in the doctrines of the christian faith.
 - iv. Providing a conducive atmosphere for the training of christian youth into various craft that will enable them be self employed.
 - v. Providing a condusive atmosphere that will being togetherness among the christian youths.
 - vi. Providing boarding facilities for users and travellers.
 - vii. A common building for all christians to come together.
- b) It aims at meeting the needs of the church as it concerns full participation of individuals and cooperation.

8	State Museum	UK Bello Theatre Minna	Chanchaga
9.	Masaga Brassworks	Bida	Bida
10	Tswata Mukun Glassworks	Bida	Bida
11.	Ladi Kwali Pottery Centre	Suleja	Suleja
12.	Zugurma Park	Zugurma	Wushishi
13.	Shiroro Hydro Electric Dam	Shiroro (Zumba)	Shiroro
14.	Mungo Park's Cenotaph	Jebba North	Mokwa
15.	Nagwamatse Tomb	Mamba	Magama
16.	Mayanka Water Fall	Suleja	Suleja
17.	Lord Lugard Colonial Ruins	Zungeru	Wushishi
18.	Dutsen Mai Nono	Kagara	Rafi
19.	Dagida Games Reserve	Mokwa	Mokwa
20.	Kusherki Magnetic Hill	Kusherki	Rafi
21.	Kutigi Weaving Centre	Kutigi	Lavun
22.	Makwalla Dyeing Centre	Auna	Magama
23.	Liko Mystic River	Salka	Magama
24.	Awuru Rapid falls	Awuru	Borgu
25.	Gidan Abubakar Iman	Kagara	Rafi
26.	Kainji H.E.P. Dam	Kainji	Borgu
27.	Regge Hill	Bassa	Shiroro
28.	Wild Life Games Reserve	New Bussa	Borgu
29.	Pissa Kabe	Pissa	Borgu

Source: Niger State Tourism Board, Minna.

TABLE 4

CHAPTER SIX

6.0 SITE ANALYSIS

6.1 SITE SELECTION CRITERIA

The selection fo the site was based on the availability of enough lane that can contain such a project.

The following factors are major consideration:

1. The character and stability of the site environment.
2. Accessibility of the site for the membership and visitors.
3. Relationship to the high way.
4. Provision of simple parking spaces
5. General conour of the site
6. Soil characteristics
7. The climatic factors
8. Availability of utilities
9. Possibility of water source

6.1.1 SITE CONCEPT/PLANNING

A seed is used, carefully applied to a willing site is allowed to develop organically. In mutual adapta-tion to the natural and planned environment. For a meaningful development of both structure and landscape, none can be conceived without the other. It is thts relationship of structure to site, structure to structure and site to structure that give meaning to all.

It therefore follows that, the need for relationship among various elements is important. The site needs to be developed as a body, with many members, fitly joined together in a matrix well.

The site is developed as a body, signifying unity among the various units. The site takes the shape of a "chalese" used to contain the bread that is congregated to the body of Christ.

The body of Christ is the "symbol of unity." Here it consist of many members which are fitly joined together, each member with its unique characteristics yet not isolated.

6.1.2 SITE ZOOING

To adequately plan this project and its structure in relation to the land areas consideration were first made for all various uses to be fitted together and accommodated. This strives at providing an arrangement that is adequate for traffic flow, building orientation, location of services and parking lots. This spaces are indicated in free hand line, with the use of area of logical size and shape.

6.1.3 SITE PLAN

Having this roughed in the site use areas, the approximate Architectural elements of the project are then blocked in, tos scale.

This balance planning process is a matter of comparative analysis and refinement of detail. It is a process of creative synthesis, which is an evidence of response to all site factors, a clear perception of needs and relationship, and an expression of all components working well together.

6.1.4 NATURAL FACTORS

Just as the shape of the site is in three segments, so are the general land features. The site is mildly undulating.

6.1.5 TOPOGRAPHY AND GEOLOGY

Nigeria as a country, has a great variety of Landform, much of the country however, is dominated by plains, generally less than 609.5m above sea level. The eastern highlands which rise to about 2149m, is the highest known point in Nigeria.

The Jos Plateau in the North, rises abruptly from the general level of about 609.5m in the Hausa plains to an average level of some 1219m but reaches 1781.6 m and share hills.

Generally, the land surfaces of Nigeria is classified into three broad physical units:-

The plains, the heighlands, the troughs and river valleys.

The site lies between an elevation of 150m in the south and 340m above sea level in the northern part.

The southern and central part of the site are typified by a relatively flat and monotonous landscape underlain by biotits, harmblads, granite and granite gness with a few scattered outcrops.

The site is underlaid by undifferentiated basement complex of mainly gneiss and magmatits. The igneous rocks are mainly granite while metamorphic sediments include quartzites and schiests found mainly in stream valley.

7

6.1.3 VEGETATION

Generally the vegetation is scanty, it is largely dominated by grassland and few shrubs due to the hills or geological features, around the basement complex. Thick forest vegetation are found due to the existence of rivery and its tributaries.

The site falls within gunea savannah grasslands, the everlying grass and shrubs are richer and greener, conglomeration of existing three made up of acacia, date, palm, mango, eucalyptus trees, dictating an interesting microclimatic effects on the site.

6.1.4 SOIL

The soil is of different types found in varying proportions with three relevant capability classes; 70% ferruginous tropical soil, most frequently ferroferruginous tropical soil with abundant lithosols and soil dominated by rock outcrops.

Generally the gray humus/clay soil are associated with Minna, it is an area of with high CBR and medium CBR [california Bearing Ratio] value, best suitable for different infrastructures.

6.1.5 SLOPE AND DRAINAGE

The site slopes gently, thus, accentuating a good directional natural storm water drainage. But with respect to contour intervals, the site is relatively flat.

6.2 WIND

Minna is characterised by the North-East trade wind which arrives in October and last till March. These winds bring dust and cool dry air that starts the harmattan season.

From April, to September comes the south-west (S.W) monsoon wind that are moisture laden and brings the rain and thunderstorms of the wet seasons.

The ventillation of buildings in the centre are such that maximum cross ventilation is achieved in classrooms, workshops, offices, etc.

6.2.1 EXISTING MAN-MADE STRUCTURES

Little or no man-made structure exist on the site. There are foot paths that traveres the site and even these do not constitute any constraints.

CHAPTER SEVEN

7.0

DESIGN PHILOSOPHY AND CONCEPT

Ideas and innovations in architecture, are responses to needs and demands, which results in an important symbolic design. The derivation of these ideas and innovations as well as their development, is a result of sequence of reasoning. The nature of the environment or the function of the design, are often times, basic factors influencing the development.

The philosophy of the proposed project is to achieve the circulation and functionality of the centre, and to allow the design have characteristics similar to the natural organism and give the same impression of unity. This philosophy is one that has to touch on necessary parts of the centre in relation to the characteristics of its environment.

The philosophy here emphasis on circulation and functionality, relating to quite and peaceful environment within an institution proper for learning and research.

7.1 FORMATION OF BASIC CONCEPT METHODOLOGY

Architectural concepts are response to important symbolic design themes. Formulation of these concepts and its development is a logical sequence to response to these symbolic themes. Usually, these themes, come up in various alternative basically, natural design or self-imbud in the architectural form. In most cases, one or more concept could be combined to form a basic concept methodology.

7.1. DESIGN PROCESS

This is based on the use of a concept. To determine the functional relationship of the concept to the design as it metamorphoses.

PROCEDURE I

This involves the choice of a symbol which will later metamorphose to form the basis for the development of the building or the whole site.

7.2 DESIGN APPROACH

To achieve a full functioning environment, where training and research is geared towards full participation. To see the centre becomes a source of renewal and of courage for facing the challenges of everyday living and of immense benefit to the larger community.

The design approach takes it from the scratch, and adequate consideration is given to every aspect of the design.

7.2.1 SITE

The site is conceived in form of full intergration into a whole cognisance efforts is made, to blend the structures with its environment.

1. By utilizing the availabel natural resources:

(a) Trees preserved and used, as wind breakers, shades and landscape elements.

(b) Rock out cropping preserved and planned around.

2. Making natural beauty a major consideration:

(a) Site handled with care to preserve trees, ponds, enhanced, and slopes developed.

Furthermore, it is carefully developed, as a more relaxed, personal encounter to provide spiritual regeneration from the automation of the engineering world. This is achieved by provision of areas of infirmity and privacy in natural surroundings.

7.2.2 THE STRUCTURE

The underlying consideration in the approach to the buildings on site.

Both in planning and design, cognisance effort are made at achieving:

- (a) Welcome and open impression, that makes the users feel at home.
- (b) Flexibility in arrangement and use that ensure full participation.
- (c) Choice of form and materials that bring to memory the message of use.
- (d) Serve a humble role in a practical inspiring setting.
- (e) Building orientation to avoid morning and late afternoon sun penetration.

7.2.3 LANDSCAPING

No matter how cosmopolitan and sophisticated modern man becomes, he still retains primitive impulses. Concrete fountains are not enough, there is need for areas of intimacy and privacy in natural surroundings.

Direct expressions are given, to natural patterns of corporate and social management.

1. Small gardens with accational benches. These serve as a delight for quiet sitting. Appropriate easily cared for plants are proposed, that maintenance may be at a minimum.

c) Enhance the relationship between the church and her immediate environment and society, which include.

- i. A help to the society instead of being a nuisance.
- ii. Cooperation with nature, instead of domination.

1.3.2. OBJECTIVES

Following carefully its sets goal, this design proposals would have achieve the following at full implementation.

Create a christian youth centre which will have a church of about 2,000 to 3,000 capacity of congregation in an enclosed environment and that will be more convenient for both the design techniques to effectively meet the functional requirements of the building.

- a) Through intelligent use and location of opening in walls, and height of adjacent building, maximise daylight in the enclosed environment.
- b) Striking a balance between various functional and structural requirement.
- c) Enhance individual participation, through careful location and arrangement of the congregation seats and the usual communication.
- d) Evolving a relevant concept in church Architecture also, a ruxurious adornment of the interior through the choice of it's materials and arrangement.

It also create harmony between the church and immediate environment, through a good environmental impact assessment.

1.4. RESEARCH METHODOLOGY

The methods employed in the research for compiling this thesis includes the following:-

1.4.1. LITRATURE REVIEW

This involves studying of foreign journals and the publications on christian faith.

1.4.2. DESIGN CONCEPTUALIZATION

This is the evolution of Architectural form to depicts oneness.

1.4.3 ORAL INTERVIEW

Interviews were conducted with officials of Catholic Social Centre Kaduna, Rev.Father of St. Peters at Sabon Tasha, Kaduna, Officials of St. Monicas Church Malaki and others etc.

1.4.4. SITE STUDY

The collection of relevant data on the site was undertaken with the view to ascertain it's visibility.

1.5. SCOPE OF STUDY AND LIMITATION

Within the context of research and data's available, the design entails a study on why there is no harmony within the different denomination of the christians, and how to bring about unity among them through the youths. It will also include:

1. A study on the lighting problems in churches and how to resolve them.

2. A study on the sitting arrangement in a church.
3. The design proposal concentrate more on the Architectural solution to fundamental requirement of a church design.

This centre will include facilities like

1. Lecture hall
2. Cafeteria
3. Hostel accommodation
4. Administrative block
5. Hospital
6. Rector/lecturer's accommodation
7. Guest accommodation
8. Staff directors accommodation
9. Classrooms/workshops
10. Common place of worship.

CHAPTER TWO

2.0. LITERATURE REVIEW

This is a search for the discovery of information (and its evaluation) on church Architecture. It helps discover works already done. Including approaches adopted and the results. It also provides for non-duplication of information and identifies new areas that requires further investigation. The use of libraries of books, journals and magazines, are extensive here in order to have a sound theoretical base.

2.1. CHRISTIANITY

2.1.1. INTRODUCTION:

The central doctrine of christianity appears in the new testament. For God so loved the world, that he gave his only begotten son, that whosoever believeth in him should not parish, but have everlasting life (Joh.3:16).

Christian belief that due to man's disobedience to God, man lost God's privilages and prace of bodily immortality. The history of ancient Hebrews is viewed by christians as God's preparations for the coming of Christ. Who gives man a chance to be restored to God and his favours. This is adequately described by the inspired words of Paul; "wherefore, as by one man sin entered into the world, and death by sin, nevertheless death regained from Adam to Moses, even over them that have not sinned after the similitude of Adam's transgression, who is the figure of him that was to come.

Much more they which receive abundance of grace and the gift of rightcousness shall reign in life by one, Jesus Christ.

For as by one man's disobedience, many made sinners, so by the obedience of one shall many be made righteous, even so might grace reign through righteousness unto eternal life by Jesus Christ our Lord' Romans 5:12-21.

The death and resureation of Christ is the most important thing in the history of christianity. It is a common beleive that since that time the holy spirit guide believers into a life of reconciliation with God and neighbours.

Cristianity believe in the God Head, which as one God in the inspired letter of John to the beleivers, it stated.

"For there are three that bear records in heaven, the father, the son, and the Holy gost, and these three are one".
1John.5:7.

It is established that the son, Jesus Christ, is both God and man in flesh and that he will reappear at the end of the world, first to take away to heaven His followers, and secondly to judge all men.

2.1.2. THE EARLY CHURCH

The early christians maintained that the unity of the early church, which exhibited a vast array of institutional theological, and worship form, consisted not of an external constitutional, dogmatic and liturgical uniformity. But of a "unity of the spirit" maintained, as noted in the letter of Paul to the ephesians.

"Endeavouring to keep the unity of the spirit in the bond of peace. There is one body, and one spirit, even as you are called in one hope of your calling, one Lord, one faith, one baptism, one God and father of all, who is above all, and through all, and you all." Eph.4:3-6.

The disciples were first called christians in Antioch, around 56 AD. Thus, the term christian was used to contrast the belief and the way of life of christians.

Rome later became the centre of christianity, partly because Jerusalem was destroyed the Romans in 70AD and partly because of the tradition of the Romanist church that the Apostle Peter was the first Bishop of rome. By this time, the church was developing an organisation based on tradition and on Romas government. They began to adapt the term and ideas of various contemporary pagan regions in teaching christianity to converted pagan.

2.1.3. ROMAN CATHOLIC CHURCH

Catholicism means a way of life, a personal commitment to God through Christ with all the social and individual responsibilities that follow from this commitment.

"In order to keep the gospel forever whole and alive within the church, the apostle left Bishops as their successors, handing over their own teaching authority to them."

Vatican council, it constitution devine revelation section.

Catholics belief that the church is hierachically structured. The hierachy, or ruling group in the college of collecturity of Bishops. The message of pope or that of college of Bishop is infallible, Because those messages are digonised by the teaching authority of the Bishops, they demand acceptance.

One of the official teaching state that salvation required grace but also has to be earned by a variety of "good works" such as going on pilgrimages and fasting.

Their main services include:-

- a) Mats
- b) Baptism
- c) Marriage
- d) Burial of the dead and devotion
- e) The easter liturgy.

Other citurgical activities include blessing, dedication, consencration, confirmation and ordination.

2.1.4. PROTESTANT CHURCH

It states in Germany in 1517 by Martin Luther. Luther believes that man is saved by faith without the aid of good works and that the Bible is the supreme authority for individual Christians rather than the Pope.

Protestant is divided into "main stream" which include Baptists, awaker, holiness and pentecostal bodies.

2.2. METHODIST CHURCH

The Methodist Church originated from the church of England and a district features of this movement was the introduction of Lay preachers. The strong emphasis on evangelical preaching is rooted in the Methodist tradition. Methodism is nothing if it is not evangilical. Each of these, demonstrates a unique liturgy peculiar to the denomination to which ecumenial tends to unity.

2.3. EARLY HISTORY OF CHRISTIANITY IN NIGERIA

Christianity was first introduced through Benin and Warri areas of Mid-western states. The Missionary bodies set up in England in the 19th century, recorded success in opening Mission stations and converting Nigerians. This was the antidote needed to entrench christianity in the Nigerian society. The church missionary society (CMS) Anglican church, the Wesleyan Methodist Committee and the united presbyterian missions, all made fields in Nigeria.

Slave trade and high mortality of Europeans in the coastal areas, brought a temporary set-back, however, the abolition of slave trade in 1808 and of slavery in 1830, enable the liberated African slaves from Sierra Leone, who had been trained as missionaries, to spread the gospel among many tribes in Nigeria. These and other ex-slaves emigrants as Abeokuta, Lagos and Badagry from 1846.

In 1864, Reverend Samuel Ajayi Crowder was consecrated the first African Bishop of the Niger Diocese. This was as a result of the CMS secretary, Henry Venn, who advocated for the establishment of independent African pastorates. In 1891, the appointment of European's into this office, after the death of Bishop Ajayi Crowder, resulted in series of protests which gave rise to the founding development and growth of the African church movement from within the CMS, Methodist and Baptist church. Between 1899 and 1917, the united methodist church, and the like, came into existence. The CMS opens it's first station at Onisha interland of eastern Nigerian, between 1854 and 1857. The Roman Catholic mission arrived in Onisha in 1885 and became the strongest mission in the east. The church of Scotlan began operation in

Efile and Ibibio areas in 1846. The large number of ardent Moslems already in the northern Nigeria, couple with their very powerful leaders who were very hostile to christians missionaries, made missionary enterprise abortive. Besides, communication difficulties in a very vast area, and the unwillingness of the colonial rulers to allow christians missionaries to operate there freely, were either hindrances to the growth of the christians faith in northern Nigeria.

In 1886, the Royal Niger company with it's charter over them Niger, paved the way for missionary activity are in 1901, the Sudan interior mission opens it's first station at pategi. The mission now Evangelical church of west Africa, is the largest single mission in northern Nigeria.

The christian movement in Nigeria, opened another phase, with the establishment of the Aladura movement. These began as reform movement during the second decade of the 29th century. These incude, the diamond society in 1918, which transformed to faith terbacle in 1923 and culminated in the establishment of the Christ Apostolic church in the 1930's Joseph Babalola's renewal movement, the Cherubin and Seraphin established in 1925 by both Moses Orimolade Tunolase and Abiodun Akinsowon, and several independent churches.

The independent African churches emerged as a result of members dissatisfaction with the worship and administration in the mission churches, they wanted to demonstrate the relevance of christianity to the African way of life without undermining the tenets of the religion, or discarding their own African background tradition and culture.

2.4. MODERN HISTORY OF CHRISTIANITY IN NIGERIA

Lieutenant - colonel Ojukwu made a unilateral declaration of independence for the "Republic of Biafra" in the eastern Nigeria, in May 1967, this led to the Nigerian civil war which ended in 1970 with the collapse of Biafra. This war and the immediate years after, were the Dark Ages for Nigeria.

The civil war affected so many people and that made the survival churches more or less only interested in personal gains. By this time the spiritual climate of Nigeria was on the decline.

People had been religious, their faith was superficial and they were large and nominal, this was before the civil war. They were unable to relate Christian teaching to real life. During the civil war, life was hard. People were living under a cloud of uncertainty and under all kinds of threats. It helps in bringing stronger consciousness of God's ability and help with struggle to survive, people began to gather in groups to pray and fast.

People began to be receptive to the experience of the Holy Spirit even after the civil war, being hungry and eager for God to manifest himself and his power, it was the beginning of a new era in Christianity in Nigeria.

There began to be revivals in some churches, and this helps in spreading the gospel truth. There were also some groups, who support the churches through the Bible study ministry in the early 70's.

In 1981 there was reformation and new wave of God in some churches like the Redeemed Christian Church of God (RecG) under E.A. Adeboye in 1983 the deeper life ministry, formally became a church, in response to the needs of the people.

2.5. CHURCH AND ARCHITECTURE

Church in original Greek scriptures is "Ecclesia which means "An assembly of called out ones", whether is a hall, home or chapel formally designated building for worship.

Churches for the course of simplicity and identification in this work means the building throughout history have been design and shaped for their purpose.

A significant factor in church design is the beliefs of different groups in christianity, the vast height of brother cathedrals and their colourful half-light create a setting perfectly expressive of the mystical devotion and exaltation of medieval christianity. These would hardly serve for churches devoted to the austerities of John calvins's

Reformation belief:

The initial indication of the christian worship were formed in the catacombs, underground cemeteries developed by faithful to serve as hiding places during the period of persecution. Ambulacra, the sculptures were set in tiers to house the dead. Developed in the catacombs was the cuticula which served as funeral chapels.

In the fourth century, opportunities to model a form of Architecture was opened, as the Roman basilea was well suited to the needs of the meeting of the faithfuls. A basilea is a hall-like structure designed around a longitudinal axis. The main building was preceded by an atrium open to the sky with Baptismal font in its centre. Until a person is baptised

(an indication of acceptance into the church, he was not allowed to the main building. The main building consist of nave (central aisle) planded by aisles. The central aisle provided space for the congregation.

At this period, the exterior of the church building remained simple, but inside were richly ernamentes with marble and mosaic. This is to symbolis christian soul which should turn towards the inner life, and the sole purpose of giving the faithful an absolute impression of some supernatural few people of this period could read or write, therefore, their churches was turned to their book - the wall of their churches turned into illustrate manuscripts; a stained glass window was in effect, a large picture book.

The Bazantire loves ceremony, so that when Roman empire Hransferrel it's capital from Rome to east, a form of Architecture which made their churches a perfect setting for the ceremonies of religion, was developed. Music which was a major part of any ceremony was given prominex, as they built domes in wich the singing would solemnly re-echo.

The real creation of Byzantine Architecture was the vaulted church which was centrally conceived the central plan consisted of upola on a ring of arch. ways and surrounded by ambulatory. The central role of the church, in the middle ages, was not only physical but also spiritual, the Romanesque church, had all it's parts being united in their functions and proportions. The bay then, became the standard measurement for length and the storey for height.

The Gothic cathedral at its maturity in thirteenth century, was the most powerful and comprehensive presentation of medieval feeling. A look at the Gothic cathedral reveal a vertical movement from every law of vertical movement from which every law of gravity seems to be eliminated. Gothic expression was not deried from the material but from the negotiation of it through dematerialization.

The Gothic cathedral rose from these thedogical premise that God is a mysterious and omnipresent force, this was reflected through soaring interior spaces and pointed arches that made incorshippers feel insignificant.

The new England house of worship, believed that an individual could directly contact a personal God. The buildings are relatively small, unpretentious and simple in line and shape. The dominant visual and liturgical focus was the pulpit, which was imposingly located on a platform raised above the congregation.

CHAPTER THREE

3.0. LIGHTENING IN CHURCHES AND SETTING ARRANGEMENT

3.1.0 TYPES OF NATURAL LIGHT

Natural light may be classified into three categories as a function of the direction of the light.

- a) DIFFUSE
- b) DIRECT
- c) GROUND

Diffuse light is light from the sky. It takes the form of sunlight which is scattered by particles in the earth's atmosphere and by clouds. The important aspect of diffuse light is that it arrives at a building's envelope from all directions and that its intensity varies from 100 to 3000 footcandle, depending on the overcast quality of the sky and the altitude of the sun.

Skylight intensity varies with sky location and overcast conditions to simplify calculations, estimating methods, presented here ignores these differences. In reality, however, an overcast sky is approximately three times brighter overhead than at the horizon, whereas the reverse is true on a clear day.

Direct natural light comes from the sun. It is different from diffuse light in that it is highly directional. The sun's direction is measured by its altitude (angle with respect to the horizontal) and its azimuth (angle with respect to due south). It varies from hour to hour and from day to day. The intensity of light received from the sun may be altitude, the season and the angle of incidence with which it strikes a surface.

Both direct sunlight and diffused light strikes the ground and either objects outside a building as well as passing directly through windows and sky light. Some of this light will be reflected into a buildings interior, however, adding to the illumination level created from diffuse and direct sources.

Building designs using natural lighting should minimize the undesirable features of the source as well as maximize it's desirable qualities.

In general terms, this means that day light intensity inside a building should be distributed as evenly as possible and that interior spaces should be organized to minimize undesirable shadows and glare.

The intensity of natural light outside may be many times the level of around so footcandles, whereas the intensity of exterior light may often be 20 times that level (1000 footcandles) on a cloudy day or 100 times higher (5000 footcandles) on a sunny day. As a result, natural light level from a window, for example, will be more than adequate.

Immediately adjacent to the window. A designer develop designs for window wells which distributes natural light intensities more evenly throughout a space. Various techniques, including inverted blinds and light shelves, have been developed for this purpose. Most of these techniques rely on deflecting direct sunlight up to the ceiling, thereby relecting it more deeply into the room adjacent to the windows.

A work surface must not be subject to shadows, glare or reflection. The position of a desk and a person at the desk is critical when most of the light is coming horizontally from a source such as a window. In general a desk should face parallel to the window and perpendicular to the light direction in order to make use of natural light from a window without also receiving glare, reflections, or shadow.

To minimize the usefulness of daylight from window, it should be obstructed as little as possible. This limits the use of opaque full-height partitions to positions perpendicular to the window plane. Low-height partitions or glass partitions are of course, more acceptable for parallel - to - window positions.

In terms of skylight, a designer should be cautioned that overhead lighting from skylight may sometimes create more reflections than does sidelighting from windows. Desk should be positioned so that distracting reflections from skylight are eliminated. Typically, this means that desks should not be placed directly under skylight but rather off to the side though still within the range of natural light coming from the skylight.

Alternatively, diffusers may be added to the inside of skylight to reduce reflection and glare on work surfaces.

3.1.1. ECONOMIC BENEFITS OF NATURAL LIGHTING

The methods for estimating lighting levels permits a designer to determine the number of hours during the day when interior light levels provided by natural sources are sufficient. From this information, the designer may determine the electricity which is saved and the value of such savings.

The impact of turning artificial lights off or down has a number of consequences.

- a) Electrical consumption for lighting may be reduced.
- b) Fuel consumption for heating during the winter may be increased because of lowered lighting related heat loads.
- c) Electrical consumption for cooling during the summer may be decreased because of lowered lighting - related heat loads.
- d) Demands charges for electrical use during the cooling season may be reduced because of peak load cooling reductions.

The methods of estimating levels from natural light are limited to an assumption of on-off switches and stepped switching. For analyzing specific designs beyond the range of these estimating approaches, the designer is encouraged to consider computer simulation programs or to construct scale models, if they are oriented in a manner similar to the actual building orientation and if interior reflectances and furnishing are accurate, will yield interior lighting levels, measurement of interior lighting level in a model may be made with light meters which measure light levels in a three-dimensional model.

The designer should also be aware that lighting levels resulting from two light sources, such as window and skylights, are additive. That is one may simply calculate the lighting levels expected from each source separately and then add the two together to estimate the light level created by both sources.

The result obtained from these methods will be estimates of the number of hours of each day for various months when natural light sources provide illumination on interior work surfaces adequate to permit switching lights down or off. This result may then be used in the method described earlier for estimating electrical saving.

Most churches have done - shoped roofs, the following methods has been developed for translucent or transparent dome skylights. It does not apply to skylight designs significantly different from some designs, but clerestory designs may be analyzed by using this method for overcast sky conditions only. A modification of the method presented for estimating daylight levels from windows may also be used to evaluate clerestory design.

As a general guide for designing some skylight so that light levels below a skylight and between skylights are reasonably uniform, the width between skylights should be not more than twice the vertical distance between the work plane and the ceiling. It should be noted that other designs for skylights may well be more energy effective than a some design example a clerestory skylight which admits southlight during the winter and excludes it during the summer. External shading devices may also help to exclude the unwanted summer heat gain that is otherwise present in a conventional unshaded some designs.

The general method for estimating natural lighting from skylights is presented below. As mentioned before, this procedure is based on the assumption that when natural light levels reach an acceptable level of illumination, electric lights will be

turned off automatically by a photoelectric switching control.

The outside illumination required for a given interior illumination level must first be estimated. This answer will then allow the designer to determine the minimum solar altitude of both clear-sunny-sky and overcast-sky conditions when exterior illumination on horizontal surface meets the required level. The time intervals during each typical day in a month when the altitude is greater than the minimum required. This will be the time required when the interior lighting level created by the skylight meet or exceeds the minimum levels required and when artificial lighting may be switched off, this saving electricity. The hours of time determined for clear -sunny-sky and overcast-sky conditions may be combined by a weighted averaging process, based on percentage overcast data.

The general formula for estimating required exterior illumination to provide for adequate interior illumination, from sky light is presented below.

$$E_o = \frac{E_i \times A_r}{A_s \times C_u \times C_2^2}$$

In units

$$F_e = \frac{F_c \times F_t^2}{F_t^2}$$

Where E_o = outside illumination, F_c or lm/ft^2

E_i = Inside illumination level desired on the task surface,

F_2 = or lm/ft^2 (current standards of practice are hallways, 10 F_c normal office work, 50 F_c , prolonged office work, 35 F_c , and industrial tasks 100 F_c).

Ar = area of room Ft²

As = area of skylight, Ft²

Ct = coefficient of light loss, no units (ranging
Typically from 0.70 to 0.85)

Cu = coefficient of utilization, no units.

TABLE 1

ROOM RATIO FOR TOP LIGHTING

Room length Ft	Room width Ft	Ceiling height above floor, Ft					
		8	10	12	15	19	23
12	12	1.1	0.8	0.6	0.5		
	16	1.3	0.9	0.7	0.6		
	20	1.4	1.0	0.8	0.6	0.5	
	24	1.5	1.1	0.8	0.7	0.5	
	30	1.6	1.1	0.9	0.7	0.5	
	40	1.7	1.2	1.0	0.7	0.6	0.5
20	20	1.8	1.3	1.1	0.8	0.6	0.5
	24	2.0	1.5	1.2	0.9	0.7	0.5
	30	2.2	1.6	1.3	1.0	0.7	0.6
	40	2.2	1.6	1.3	1.0	0.7	0.6
	60	2.7	2.0	1.6	1.2	0.9	0.7
	80	2.9	2.1	1.7	1.3	1.0	0.8
30	30	2.7	2.0	1.6	1.2	0.9	0.7
	40	3.1	2.3	1.8	1.4	1.0	0.8
	60	3.6	2.7	2.1	1.6	1.2	1.0
	80	4.0	2.7	2.1	1.6	1.2	1.0
	100	4.2	3.1	2.4	1.9	1.4	1.1
	120	4.4	3.2	2.5	1.9	1.5	1.2
40	40	3.6	2.7	2.1	1.6	1.2	1.0

60	4.4	3.2	2.5	1.9	1.5	1.2
80	4.9	3.6	2.8	2.1	1.6	1.3
100	5+	3.8	3.0	2.3	1.7	1.4
120	5+	4.0	3.2	2.4	1.8	1.5
140	5+	4.1	3.3	2.5	1.9	1.5

3.1.2. NATURAL LIGHT FROM WINDOWS

The procedures for estimating hours of adequate natural light from windows is based by a method developed by J.W. Griffith at Libbey-Owens-Ford Company and documented in "How to predict interior Daylight illumination. It assumes that the top of a window is at the ceiling level and the sill at desk height, that is 3 feet above the floor level. The length of the window is assumed to be continuous. The area of the window is not officially a variable. By assuming various ceiling height ranging between eight and sixteen feet, however the designer can in effect vary window area and use this method to estimate the result.

The analysis procedure requires that the designer examine three representative points in a room a maximum point five feet from the window.

A midpoint halfway between the window and the far wall parallel to the window, and a minimum point five feet from the far-wall. Each prediction point represents a tributary floor area.

The interior light level required for carrying out the functions for which the church was designed is determined and then the exterior

light levels required to provide that illumination is estimated. As mentioned earlier, the light that a window receive comes from three sources, the sun, the sky and the ground. The estimating method described here requires that the designer make an assumption of the amount of interior light contributed by the ground; 20 percent is suggested for that assumption. A more conservation designer would, of course assume that no interior light comes from ground reflections.

The equation that the designer may then use for estimating the exterior illumination required to achieve a particular interior illumination level at each of the prediction points is presented below:

$$E_o = E_i \div (A_w \times T_g \times C_s \times K_s \times V_s) \text{ where}$$

E_o = Outside illumination, F_e

E_i = Inside illumination level desired on a task are surface,
 F_e

A_w = Area of window, excluding area of window frames and micllions,
 $F_r e$

C_s = Coefficient of utilization which accounts for room lengths and depths, wall surfaces reflections, and their impact on light distribution and intensity, no units

K_s Coefficient of utilization which accounts for ceiling heights and wall reflectaince and their impact on light distribution and intensity, no units.

V_s = Venetion blinds coefficient of utilization, which is used only if blinds are present next to the window; factor solar radiation, no units.

R_s = Transmittance of glazing no units.

Once the required exterior illumination has been estimated, the designer must determine the minimum solar altitude at which the exterior light intensity under overcast sky and clear sunny sky conditions will reach the level required inside. This is done by using graph below.

When considering a clear sunny sky condition, the designer must make an adjustment to the exterior illumination figure. The curve in the figure below represents surfaces perpendicular to the sun's rays. To determine the exterior illumination required on a perpendicular surface so that the same intensity, when subjected to a vertical surface not perpendicular to the sun, will yield the desired exterior illumination, E_o must be adjusted by the angle of incidence θ of the sun on the surface. That angle varies throughout the day, so an average angle of incidence must be used.

The following equation allows for the angle of incidence adjustment in exterior illumination requirements $E_{cp} = E_o \div \cos\theta$

Where E_{op} = Outside solar illumination on a surface

Perpendicular to the sun's rays E_c

E_o = Actual outside illumination on a window surface E_c

θ = Angle of incidence of solar radiation on window.

3.1.3. SWITCHING TECHNOLOGY FOR NATURAL LIGHTING

Day light has some qualitative benefits that are, perhaps, more valuable than its quantifiable assets. First, it changes in direction, intensity, and colour throughout the day. This variety gives the occupant of a building a constant contact with nature. This constantly changing quality, however, makes daylight somewhat more difficult to quantify and control in terms of providing minimum light levels for tasks.

The technology of artificial lighting controls, along with various design strategies, provides appropriate responses to this condition without interfering with the natural beauty of the source. For example, control technology which allows fluorescent lighting to be dimmed automatically in response to changing levels of natural light coming from windows or sky lights is now available as shown in fig..... In some hours of the day, when natural lighting is high enough, artificial lights may be turned completely off. During other parts of the day, artificial lights may need to be on at low levels to make up for insufficient natural lighting.

In general, there are a variety of approaches to switching artificial - lighting levels off or down when natural lighting is available. All will save electrical energy.

3.1.4. OPENING LOCATIONS FOR SIDELIGHTING IN CHURCHES

The brightness of the sky that can be seen through opening will determine the illuminance from daylight. For uniform illumination, the area of window opening should equal about one fourth of the floor area. To minimize reflected glare, desks and tables should be oriented so that daylight comes to visual tasks from the direction normal to the side of occupants.

HIGH

High, narrow opening (e.g. ribbon windows) can project light deep into rooms and achieve uniform distribution of daylight, but view of outdoors will be restricted, ceiling and upper walls should be high - reflectance, matte surfaces.

CENTRAL

Opening with low sills project more light onto floor and permit better distribution of reflected ground light.

END

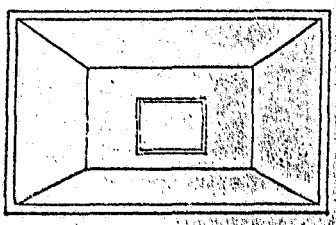
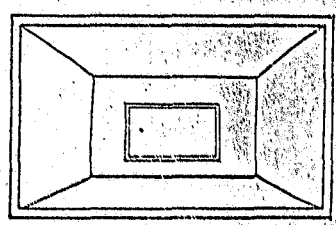
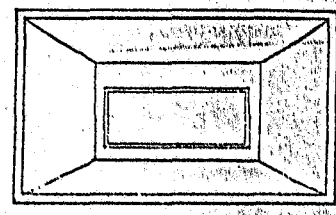
Opening at end of walls helps in understanding size and shape of rooms by defining intersections of major surfaces. End opening also can reduce brightness ratio by illumination adjacent surfaces. However, views of outdoors for time orientation and weather information will be restricted.

OPENING HEIGHT

High window placement can be used to project light deep into rooms, reduced window height restricts the depth of daylight penetration for example, under identical overcast sky condition reducing window height it from 14 to 8 ft will lower the illumination at the rear of a room by over 60%. Similar reductions will occur in rooms with bilateral opening (i.e. windows on both sides of a room), although illumination levels will be higher throughout rooms.

OPENING WIDTH

The width of the church window is normally wide to provide greater depth of daylight penetration than narrow openings. The shape of wide openings also may corresponded to the normal lateral scan-of the eyes when room occupants are seeking information on weather, neighbours, and so on. Long, wide opening generally will be perceived as less glaring than tall, narrow opening of equal area

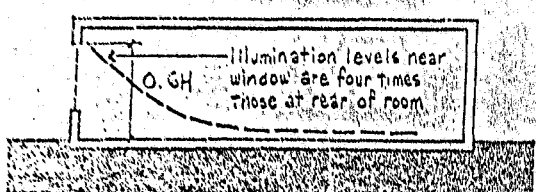
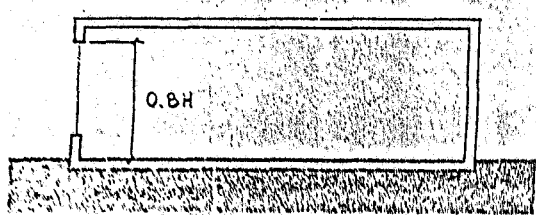
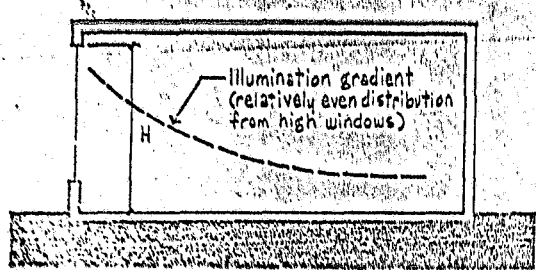


Illuminance at End of Room Opposite Window



OPENING WIDTH

FIG 1



Illuminance at End of Room Opposite Window



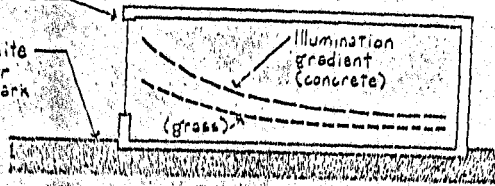
OPENING HEIGHT

FIG. 2

No Overhang

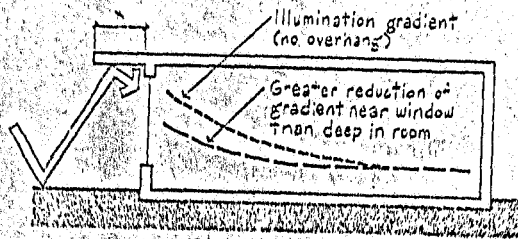
Suall window head (to allow penetration of sky light)

Concrete, white gravel, or white powders ($\rho = 55\%$) are better reflectors than asphalt or dark green grass ($\rho = 5\%$)



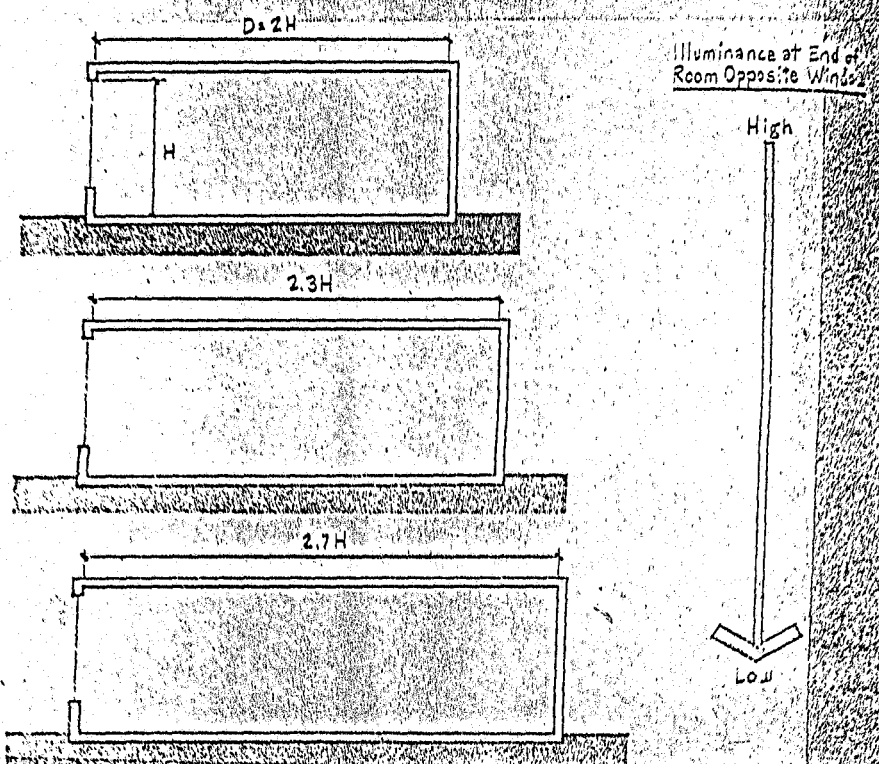
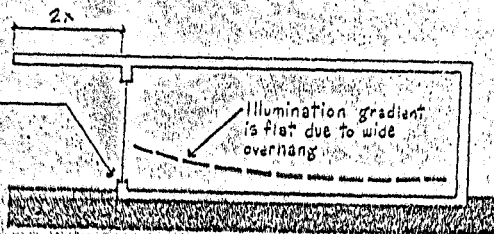
Short Cantilever

Reflected ground light



Wide Cantilever

Low sill height (to allow penetration of reflected ground light)



and luminance. In addition, occupants generally prefer wider openings when the primary views of interest are of nearby objects or activities.

In rooms with unilateral openings (i.e. windows on only one side), illumination levels at the end of the room opposite the windows are reduced as room depth D is increased. This is due to the fact that the transmitted light is spread over a greater area. To achieve effective distribution of light from unilateral daylighting, room depth should not exceed about $2.5H$ where H is window height.

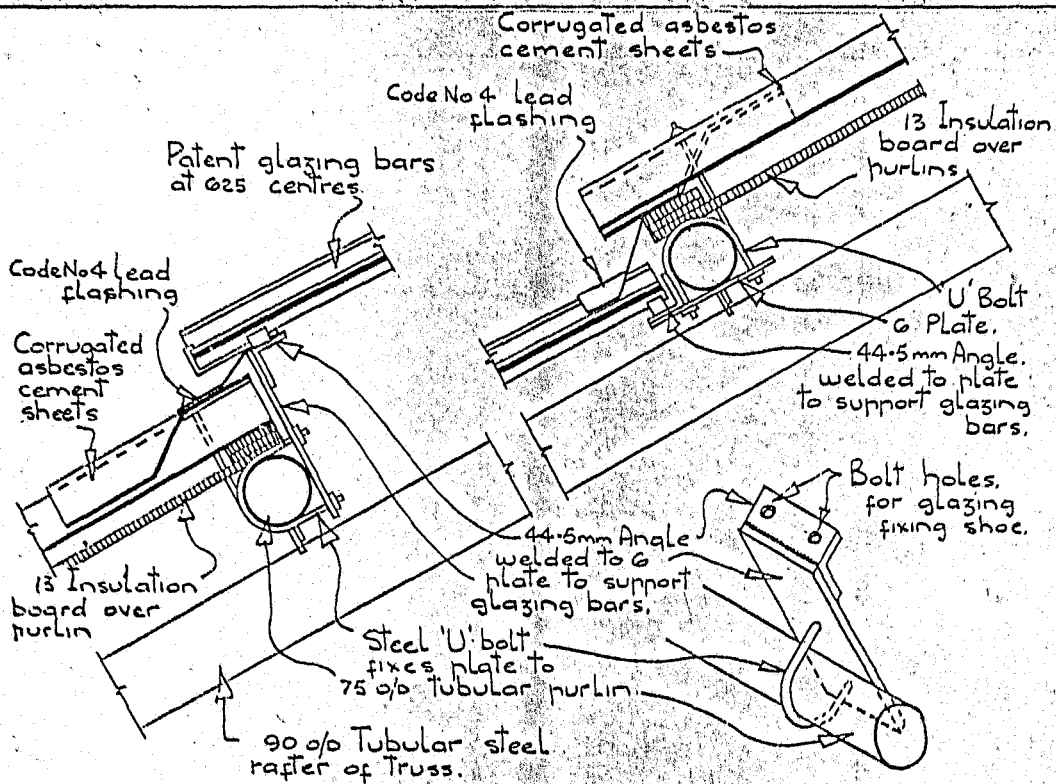
Illumination levels are reduced as the width of the overhang for sun control is increased. Although levels brought out the room are reduced, the greatest reduction occurs near the windows. Therefore, the distribution of project reflected ground light into rooms. Beyond about 40ft from the building, however, ground conditions are not significant for single story windows.

3.1.5. CHURCH SHAPES AND LAYOUTS IN LIGHTING

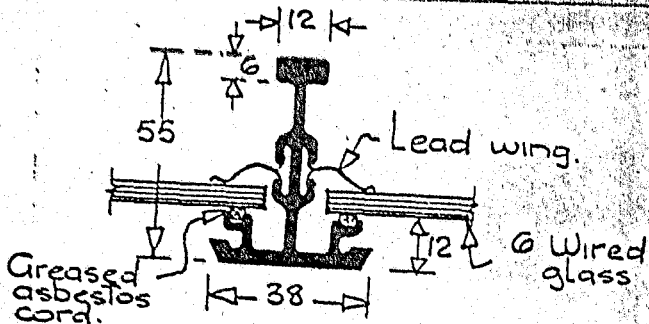
SHAPES

Church shape has a significant effect on the distribution of daylight. For example narrow building (130ft wide) can allow complete penetration of daylight, stepped sections with setback floor levels and reflective roof surfaces can project daylight into upper stories, and stepped plans, atria, or light walls can open buildings to allow deep penetration of daylight.

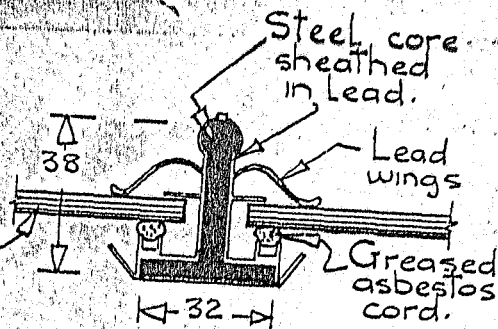
Roof Lights in Churches



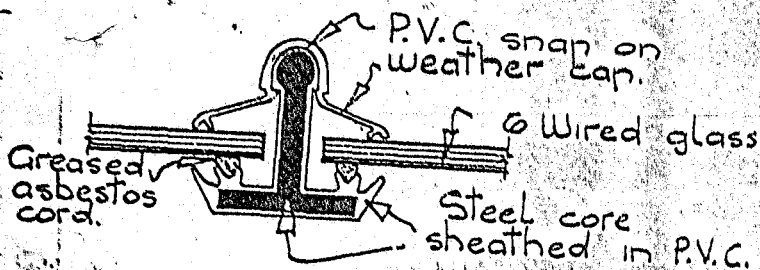
Fixing Patent Glazing to Tubular Purlins



Aluminium glazing bar for spans up to 2.3



Lead sheathed steel glazing bar for spans up to 2.3



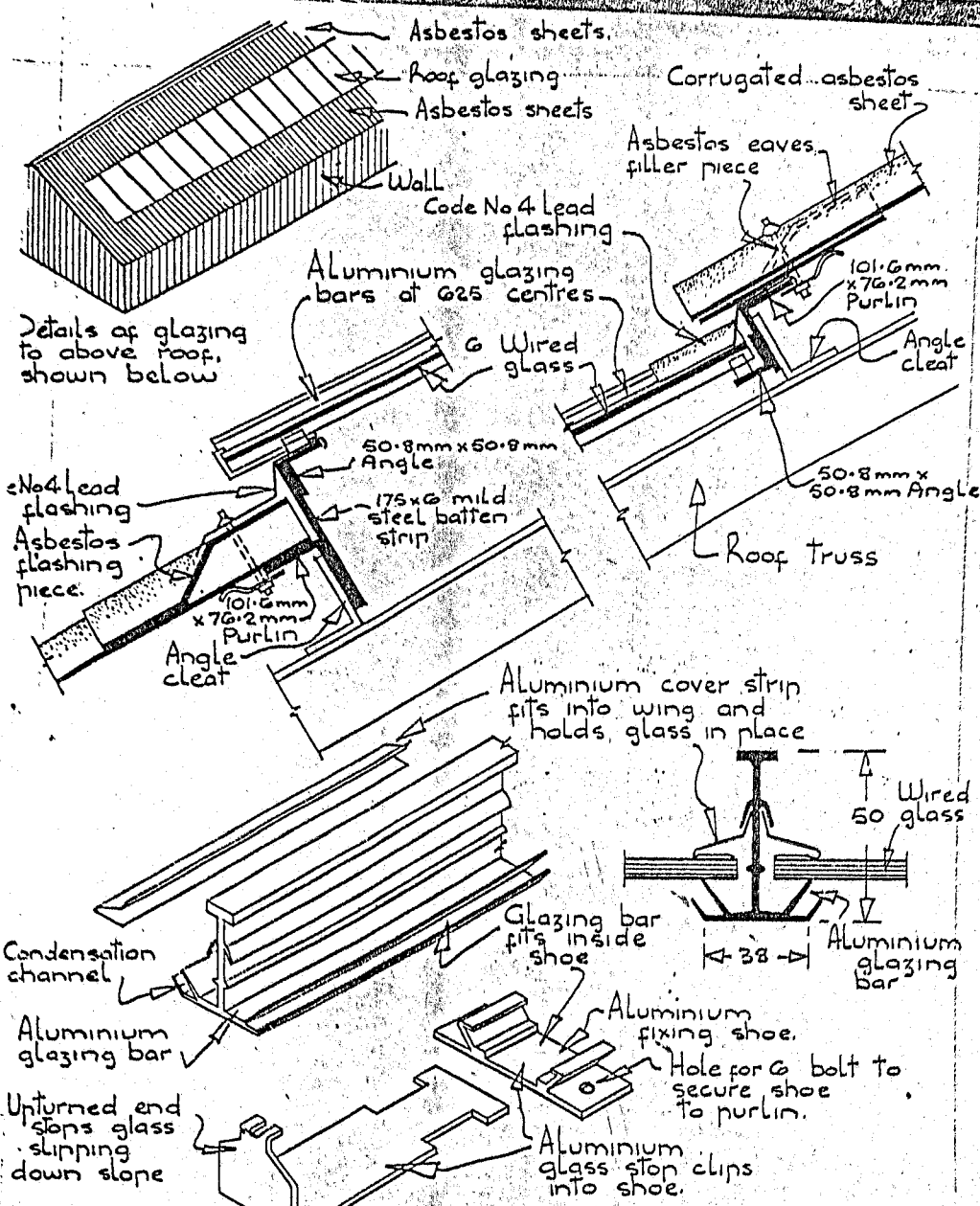
P.V.C. sheathed steel glazing bar for spans up to 2.4

Patent Glazing Bars

3.2 ROOF LIGHTS IN CHURCHES

In the church construction, there are presence of "dead lights". This are areas of glass or translucent sheeting fixed in the slopes of the roof or lens lights in a flat roof, the lights being fixed so that they do not admit air for ventilation.

ROOF LIGHTS IN CHURCHES



GLASS STOP END

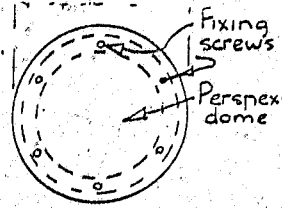
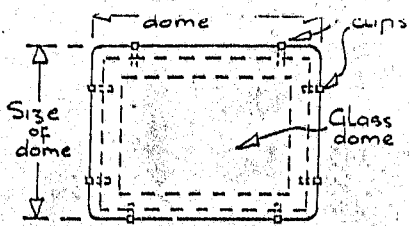
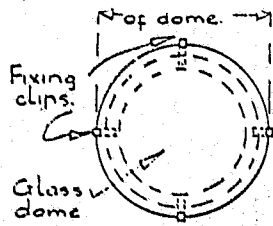
Roof Glazing.

FIG 4

Most commonly used roof lights consist of sheets of glass supported by metal glazing bars secured to roof purlins.

The earliest glazing bars were made of iron or steel which required frequent painting to inhibit rust. Later on, steel glazing bars sheathed in thin sheets of lead were produced. The lead sheet prevents the steel core from rusting and at the same time provides lead wings which are dressed over the glass as a weathering. These lead sheathed bars are still used but have long since been replaced by aluminium glazing bars. As illustrated in the figure, it will be seen that the "T" section bars have lead wings or aluminium strips which are secured to the bars and weather the edge of the glass. These aluminium bars are lightweight and require no maintenance.

A manufacturer has introduced a steel cored poly vinyl chloride coated bar with a soap on cap as shown in the figure, the steel core provides the strength in supporting the glass and the PVC sheath protects the steel from rusting and provides a weathering. The PVC sheath is inert to all normal weathering agents and will require no maintenance during the life of the building. Patent glazing bars are fitted with shoes or stop ends. The purpose of which is to prevent the glass from slipping down the slope of the roof. Glazing bars are usually bolted to steel purlins or secured to timber purlins.



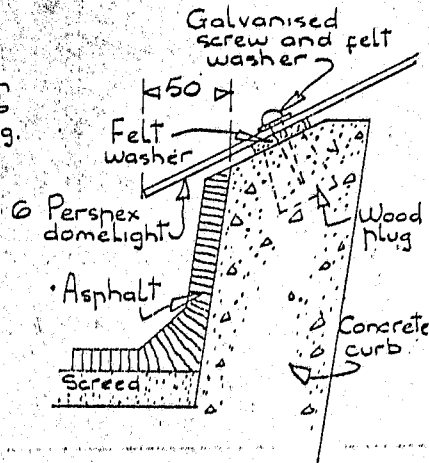
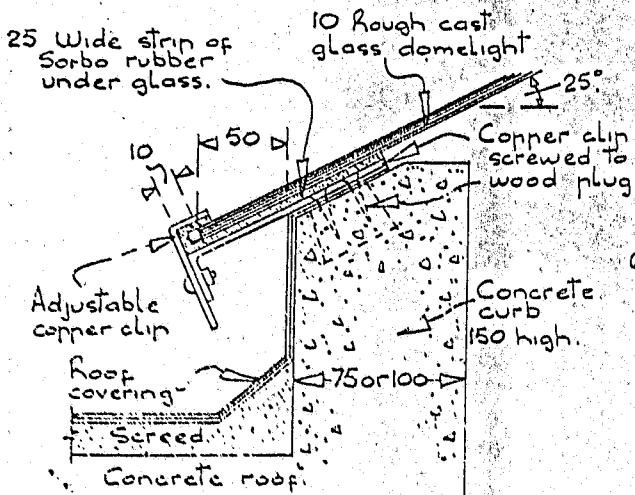
Glass Domelights.

Circular.
 Sizes. 600, 750, 900,
 1.0, 1.2, 1.3,
 1.5, 1.6, 1.8,
 Diameter

Rectangular.
 Sizes. 900x900,
 1.0x1.0, 1.2x1.2,
 1.2x900, 1.5x1.0,
 1.8x1.2.

Perspex Domelight.

Circular.
 Sizes. 450 to 1.1 in
 50 increments and
 1.1 and 1.2 diameter.
Rectangular.
 Sizes. 750x900, 1.2x900,
 1.5x1.2, 1.7x1.1,
 1.8x1.2.



Domelights.

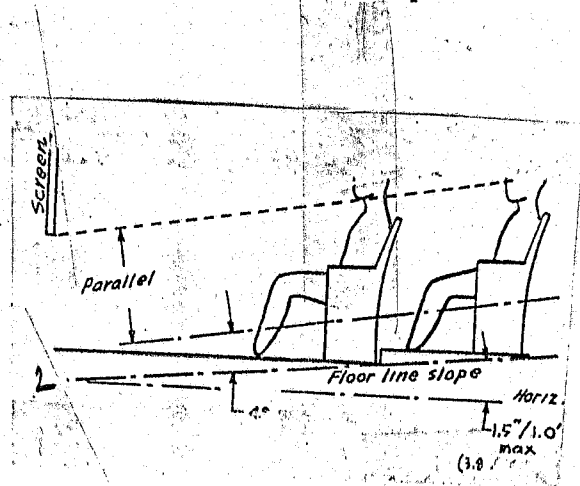
FIG 5

at 625 centres to suit 610 wide sheets of glass, the bars being either bolted or screwed directly to the purlins or through clip on shoes as illustrated in the figure.

DOMELIGHTS:

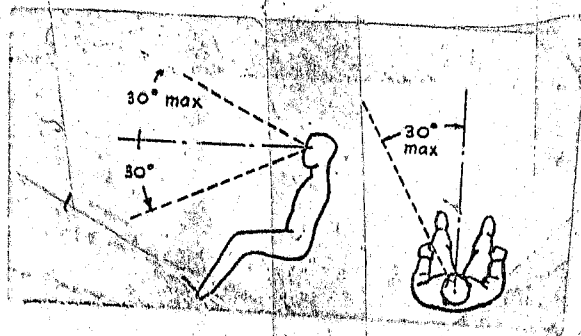
A range of standard size glass, fibres glass, reinforced polyster or plastic domeslights is manufactured for use in flat, low pitched and barrel vault roofs. Construction and fixing of these lights. Dome-lights are cheaper than lantern lights or compatable size and are commoly used today to give top light in flat roof structure

People avoid seats outside acceptable viewing angles.



ILLUS. 1

Maximize patrons discomfort (i.e. having to keep the head in awkward positions for long periods). Consider the suggestions illustrated by the accompanying sketches arrange seats so that patrons can see past patrons in front of them.



ILLUS. 2

Use a sloping floor rather than a step configuration wherever possible, but do not make it so steep that people fall down or so that persons in wheelchairs cannot negotiate the wishes.

3.2.1. SETTING ARRANGEMENT

Primary attention should be given to the positions of the worst seats in the house in terms of viewing distances and angles. Consider the following.

- I. No patron should be seated so close to the stage that he or she has to look up more than about 15° continuously (a maximum of 30°) in order to observe any performance on stage.
- II. No patron should have to keep his or her head turned continuously to the right or left more than about 15° in order to watch a performance.
- III. Surveys of where people sit indicate that they invariably avoid seats that are outside the angular range illustrated in the accompanying sketch, even though they could probably still see adequately from those seats.
- IV. Patrons in front seats on the main floor should be able to see the stage surface.
- V. Patrons seated in balconies should not have to look down more than about 30° in order to see the action at the leading edge of the stage.
- VI. Patrons in the last row of balcony seats should be able to see as much of the upper portion of scenery backdrops as required to appreciate its relationship to the stage action.

VII The angle and distance for viewing a screen from the front row should be as shown in the accompanying sketch.

There should be enough space between seats so that patrons can get in and out with minimum annoyance to other patrons.

Although a generally "fan-shaped" seating arrangement is desirable, it requires that considerable individual seat adjustment be made in order to create straight aisles.

Aisles should be large enough for two people to pass each other comfortably in the darkened church.

There should be a maximum of 7 seats to an aisles.

The minimum viewing distances to recognize a performer's facial expression is about 7.5Ft (23m), gross gestures, about 125 Ft (38m) and gross movements, about 150Ft (46m).

The relative arrangement of seating and stage appurtenances (e.g scenery and curtains) should be such that patrons see only what they are intended to see.

3.2.2. SEATING ARRANGEMENT IN CHURCH

In some churches where there is no need to made provision for congregation to kneel as well as sit, in others kneeling is done on a simple hassock (Anglican) and in some a kneeler is incorporated in bench (Anglican and Catholic).

Measurement for benches with kneelers is distance of outside edge of kneeler, when folded down, from perpendicular dropped from arm rest about 175-200mm (7.8in).

Area require per seat without kneeling rail

(0.4 - 0.5m²)

with Kneeling rail - 0.43-0.5m² (4.3 - 5.4Ft²)

DIMENSIONS OF AISLES

Cold radiation from external walls make side gangways advantageous. Central aisles is useful for processional entry and exit in lager

churches. A gangway should be provided for every 6-10 person length of bench (benches more than 10 persons long need gangway at each end).

Including gangways, allow $0.63-1.00\text{m}^2$ ($6.8 - 10.8\text{Ft}^2$) per person for standing room allow ($0.25 - 0.35\text{m}^2$ $2.7 - 3.8\text{Ft}^2$) on crowded occasions wall space and aisles at back may be used. Width of our doors and stairs must comply with regulations for places of assembly.

Requirement for pulpit vary from church to church. In Anglican churches pulpit will usually be raised with steps, but even their practice is falling away and pulpit may be on level of sanctuary or raised one step catholic churches may not now need a pulpit with advent of decisions of vatican II, it is likely to be replaced by two ambos or reading desks, one at each side. In free churches pulpit is still very important and is placed in central positions. It is essential that preacher in all churches be visible to shole congregation.

ALTERS

In protestan churches altar is placed close to rear wall of santuary and may have passage at the back in Anglican and Catholic churches, altar is now in centre of sanctuary and priest or celebrant stands behing it and faces congregation for purpose of worship. Provision in Anglican and catholic churches of a sacrement house or tabernacle (small decorated cupboard with lockable doors, bolted down and immovable, catalogues of church furnishers). Tabernacle may be in a side chapel away from main altar or on plinth behind altar, some 2m (10Ft) away. Practice of having seperate side chapel is becoming prevalent.

Front used for entry sides or people into the church, as such is best placed in or near to entry of church to show symbolism of entering through font should be one or two steps lower than, and where possible separate from, main body of church, must have room for up to 30 people to stand during baptism.

Confessional box is best placed in the aisles and has separate compartments for priest and penitent. Construction must be sound proof.

In this design thesis, the seating arrangement to be use is the sloping floor. It is not made so steep that people fall down or so that persons in wheelchairs can negotiate the aisles.

The benches have kneelers and so the area occupied is about 175 - 200mm (7 - 8in). The aisles is made wide enough for two people to pass each other comfortably.

Maximum of 7 seats is provided to an aisleless this is to avoid very long rows of seats. The altar is placed in the centre of the sanctuary and priest or celebrant stands behind it and faces congregation for purpose of worship.

CHAPTER FOUR

4.0. CHURCH, MARCO DE CANAVES, PORTUGAL ALVARO SIZA

INTRODUCTION

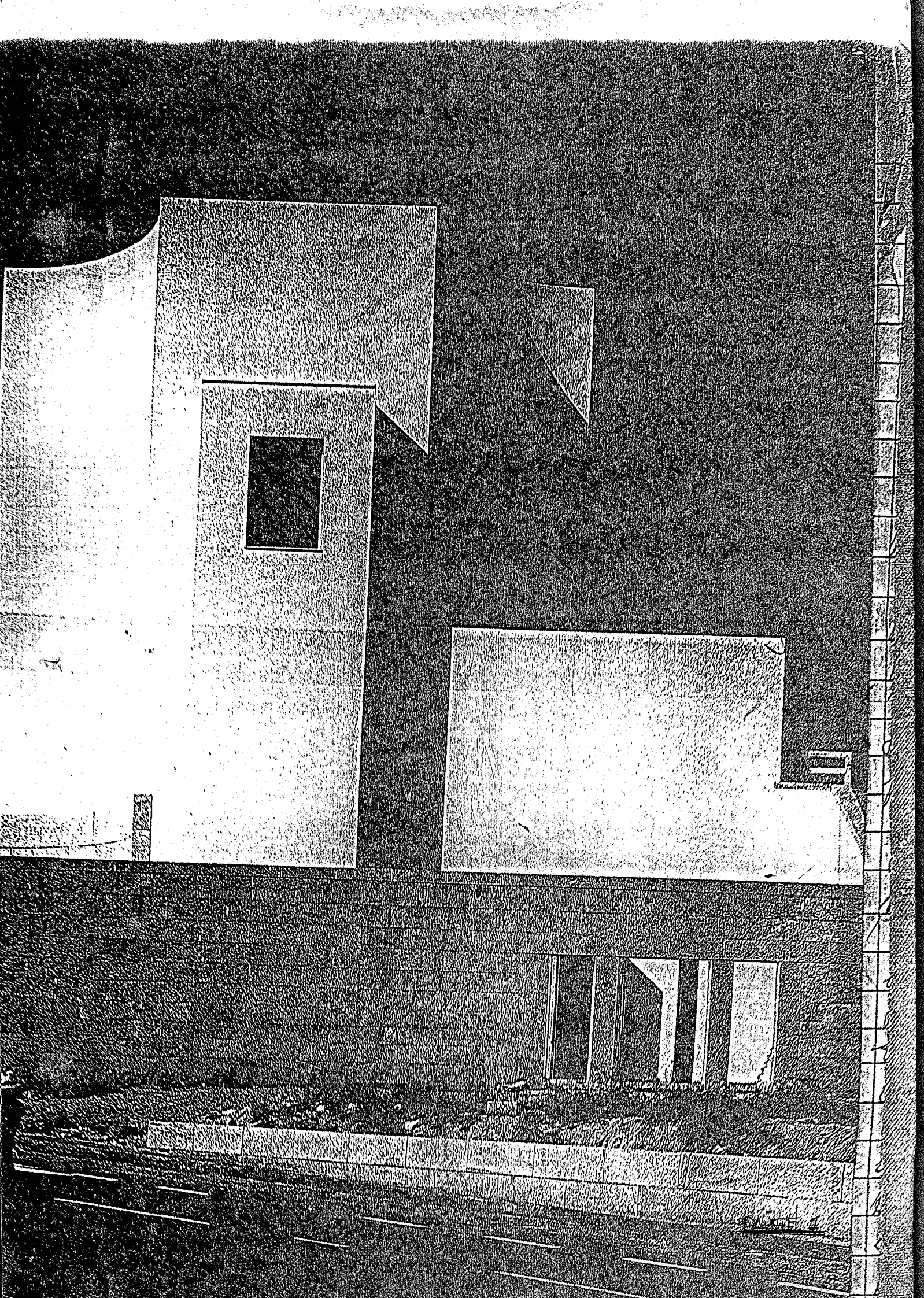
At the rear of building the facade is divided vertically into three bays. The outer areas form re-entrant quarter circles, suggesting certain affiliation with the in-curing corners of baroque churches. Borromini's San Carlo alle Quattro Fontane, or Guarni's San Lorenzo, for example. The front facade, which is hidden from view regardless of the direction of approach, reveals, upon arrival, a similar vertical division into three. Here, the flanking bays project forward suggesting the twin towers of Gothic cathedrals and Portugal's Baroque churches.

Although Siza's church seems to submit readily to the use of historical form, it is also elaborated, in ways that make clear the equivocal sentiments that the forms inspire. Even though the oblong shape of the church as a whole, the flanks at its front, and the apses flanking the altar all bring to mind traditional models of church architecture, their extreme geometrical abstraction, their minimalism and the absence of any scale-giving detail unhinge their familiar effects. The building's distillation of historic forms increases the impression that they belong to some remote repertoire removed from the more immediate circumstances of the human world.

The new church angles into the rising topography of the site. Traditionally, the monumentally palted towers would have contributed to a formal portuguese urban ansemble - facing down a principal boulevard or into a monumental square. Here, the rotation of the church, the hidden position of the principal facade (and the purposeful geometrical misalignment with the projected siting of the futue parochial school and priest's house) angender a countrast between the informal topographical structure of the surrounding city, and the more established patterns of an inherited monumental and symbolic language.

After ascending the steps to the square in front of the church, you discover a pair of colosal wooden doors 10 metres tall and three across. Facing into the church's elevated forecourt between the Flanking towers of the front facade, the doors are hidden from street view. They are clearly enormous, but given the indefinite seale of the overall church volume, they have a somewhat unexpected effect, their enlangement beyond all familliar expectations makes the rest of the church seems small like some oversized joy. As in a child's drawing where eyes are too large for surface of a house, things are simplified and reduces to their symbolic essence.

Yet while the conventionally familliar figure of the church appears to exist at some humanly incommenswate scale, evidence of human actions, of entry, of movement and of vision all work their way into the building as a kind of exceptional order. The actual primary door into the church is of ordinary height and placed at the foot of the right-hand towards inside face.



Along with the indirect approach through the site to the front of the church, the eccentric placement of this door establishes a distinction between the powerful symmetrical order of church tradition and the individuals promenade. The effects of this distinction are several. By virtue of the contrast between monumental figure and promenade, the path through the building is thrown into greater visible relief than it would have been if it has been otherwise more naturally integrated.

This further accentuates the disparity between the impersonal customary forms of the church and the marks of actual human dwelling within such forms.

MERITS

1. Good management of site
2. Maximum use of day lighting
3. The use of well planned landscape, to compliment interior.
4. Provision of Good support facilities.

DEMERITS

1. Inadequate car parking facilities .
2. Inadequate landscaping, particularly, soft landscape, elements.
3. Inadequate clear headroom in the main auditorium that render day lighting ineffective.

4.1 DAUGHTERS OF ABRAHAM

INTRODUCTION:-

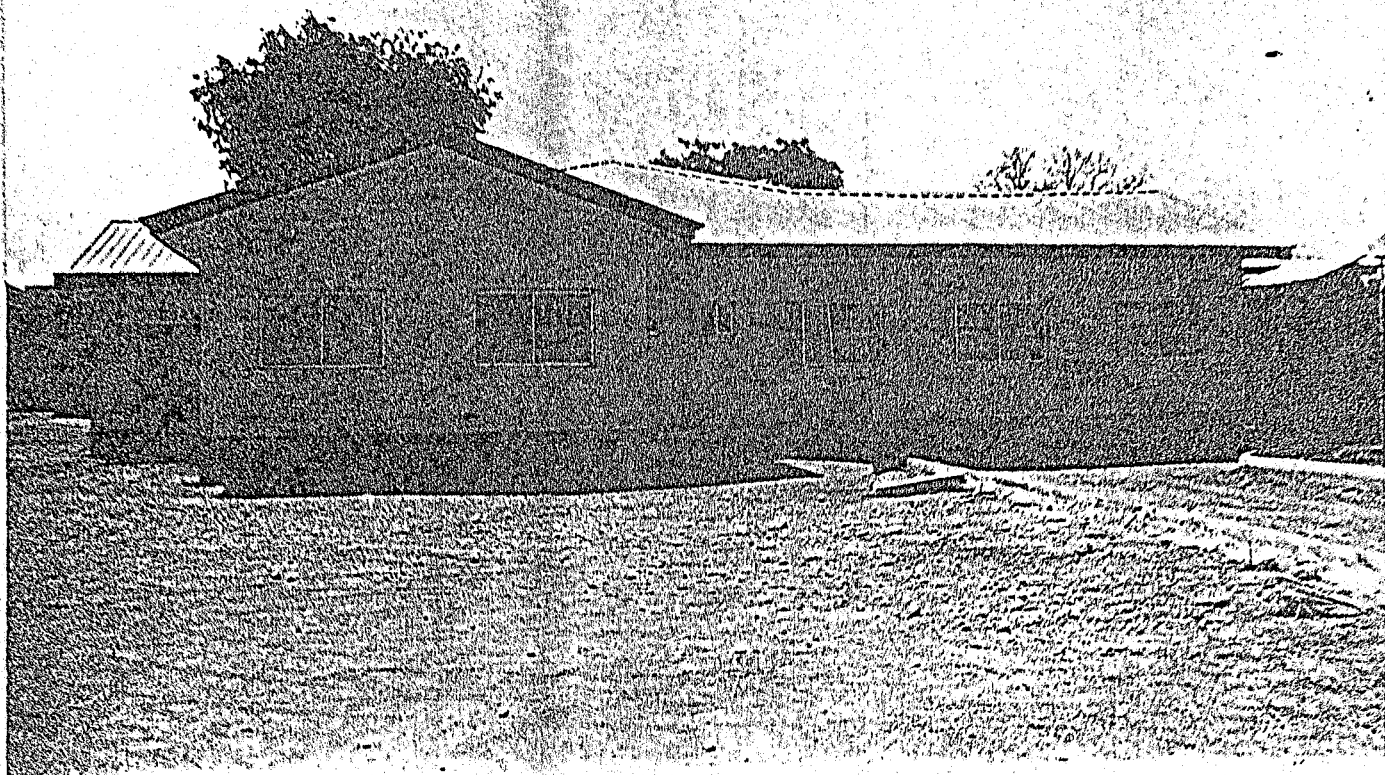
The Daughters of Abraham (DOA) Foundation is a Christian, humanitarian, non-governmental, non-political and non-profit making organization, devoted to seeking, finding and winning call girls and prostitutes to the Lord Jesus Christ.

The name "Daughters of Abraham" comes by inspiration from the Gospel according to St. Luke, chapter thirteen, verse number sixteen (Luke 13:16).

And ought not this woman,
being a daughter of Abraham,
whom Satan has bound
be loosed from this bond...

The above was a scene in the Holy Bible: a woman bound by satan for 18 years and has suffered many things in the hands of physicians with no any fruitful result met with Jesus on a Sabbath day and He called her saying: "woman you are loosed from your infirmity." This good gesture one would expect commendation by the religious leaders of old but it was not so.

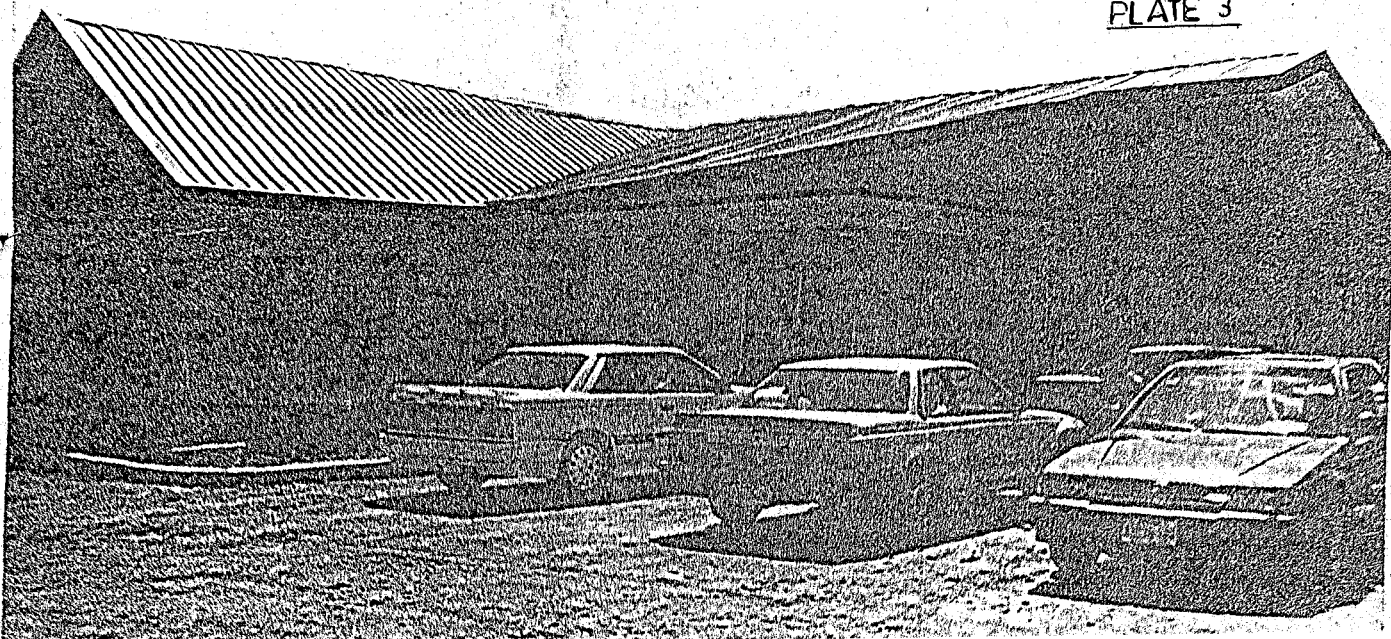
They seriously frawed at it and were determined to manhandle Jesus for healing the woman on a Sabbath day. Girls and women in prostitution are the likes of this woman whom satan has bound. For them to be loosed from their bonds, we most have the heart of Jesus willing to show compassion no matter what it will cost us.

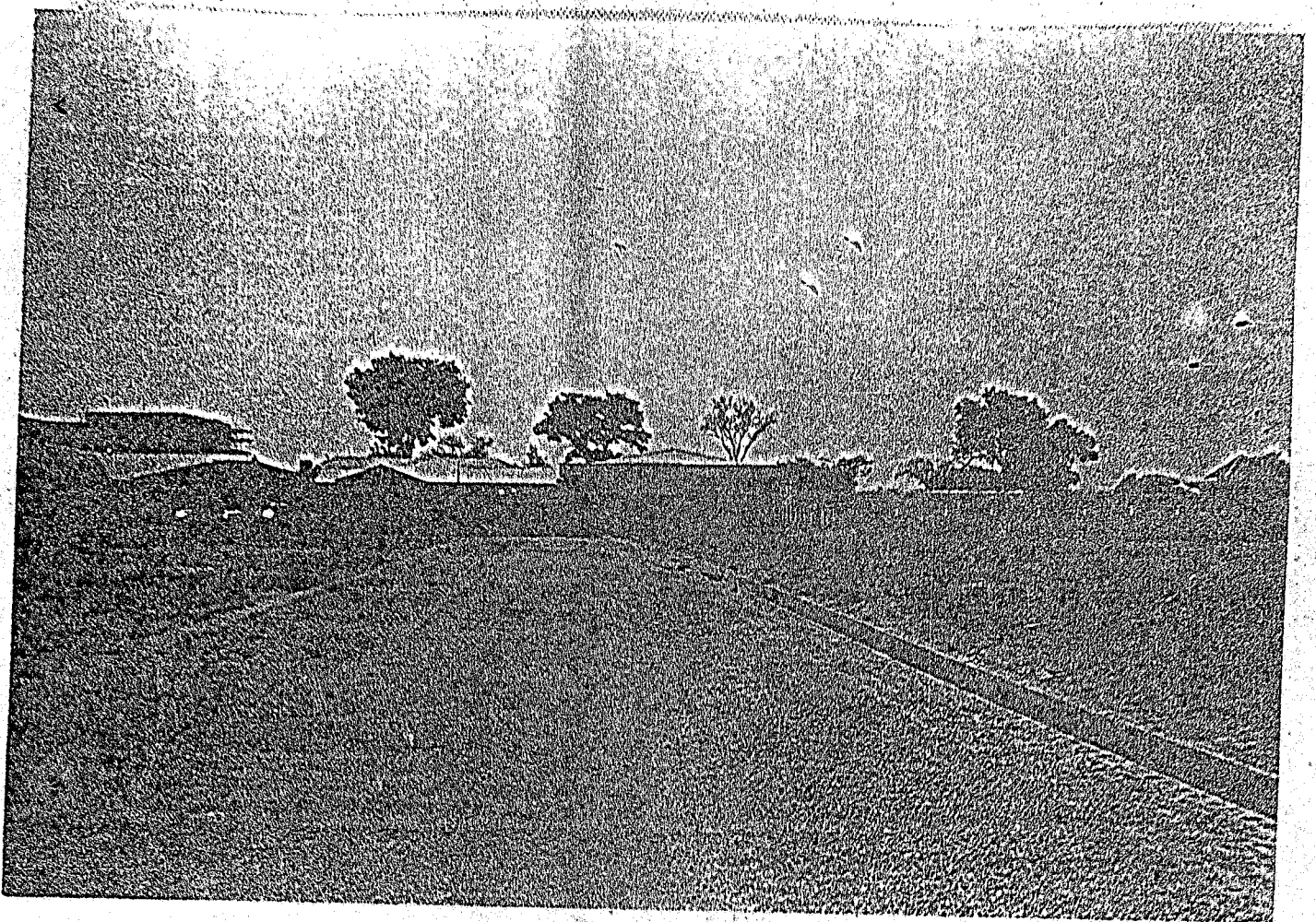


FRONT VIEW

PLATE 2

PLATE 3





FRONT VIEW

PLATE 4

The Daughters of Abraham Foundation is temporarily located at Adetokunbo Ademola Way, Wuse Phase II, Opposite Crystal Bank. It provided office and Hostel accommodation for staff and Daughters.

FACILITIES ON SITE

- (1) Main auditorium of 500 capacity
- (2) Administrative Block
- (3) The Hostels Accommodation
- (4) The Cafeteria
- (5) The classrooms Blocks
- (6) Car parking spaces

MERITS

- (1) Maximum utilization of daylighting, through the choice orientation of the building, location and number of window sizes. [Main Auditorium].
- (2) There is proper cross ventilation, through careful and well planned deliberate location of window, taking best advantage of the trade winds.
- (3) Intelligent use of windseape elements to create exciting scenes.
- (4) The proper location of the different units of building on site which creates spaces for future expansion.
- (5) The presence of parking areas.

DEMERITS

1. Unmarked car parking spaces. This may lead to riotous parking.
2. Non-proper use of Architectural elements and facade to create a welcoming and hospitable centre.
3. Absence of enough spaces in the offices and Auditorium.
4. Non-proper standard cafeteria and Bookshop or Library for effective studies.
5. Absence of enough classrooms and proper accommodation for students.
6. Absence of recreational facilities.
7. Absence of a clinic within the environment.
8. Absence of staff quarters.

4.2 CATHOLIC SOCIAL CENTRE KADUNA

INTRODUCTION:-

The Catholic Social Centre was founded by Sister Gregory in the late 60's and early 70's. The main aims and objectives of creating this centre is to assist in the training of the less previledge Christian Youths into different craft and amny hand-work so that they may become useful to the society.

The centre runs courses like catering, tailoring, carpentry and theological studies.

FACILITIES ON SITE

- 1. A main auditorium with 1500 capacity.
- 2. A cafeteria
- 3. Dry-cleaning unit
- 4. Accommodation units for students and lodging
- 5. Administrative Block
- 6. An open Altar
- 7. A bookshop

MERITS

- 1. Presence of enough accommodation units
- 2. Presence of wide range of land for future expansion
- 3. Presence of enough parking spaces
- 4. The proper linkage of different units that flows logically

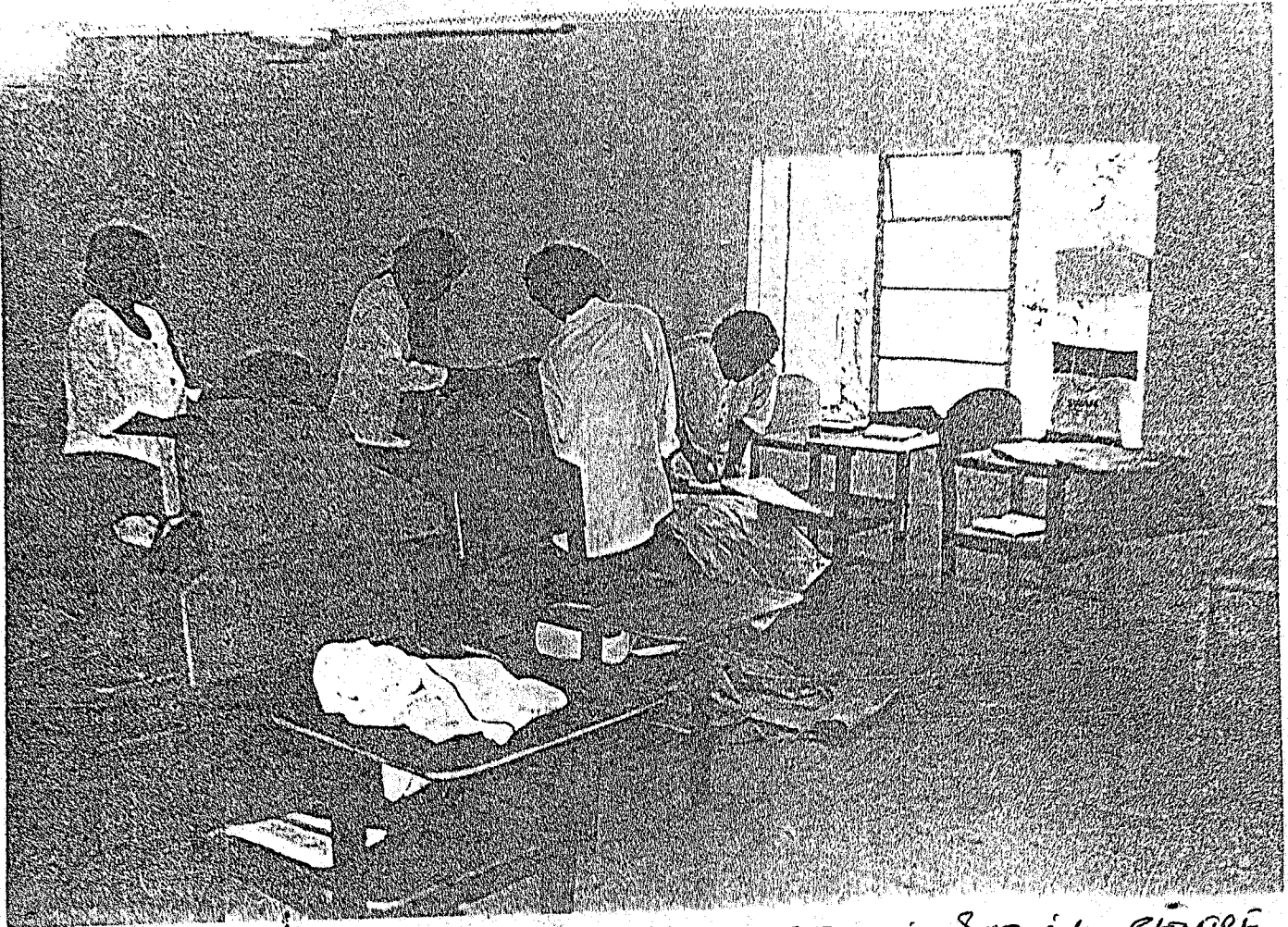
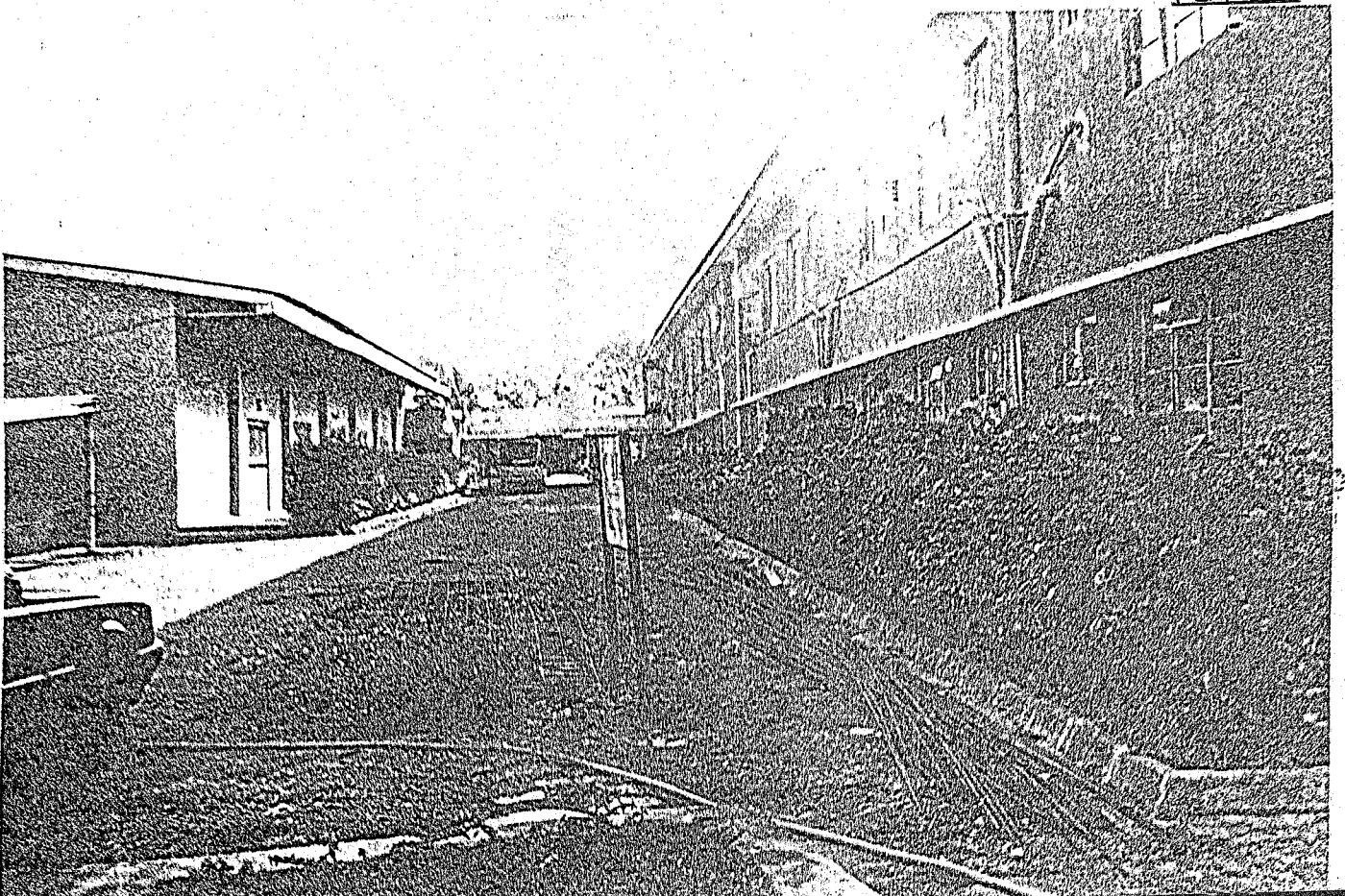


PLATE 5

INTERIOR VIEW CATHOLIC SOCIAL CENTRE

PLATE 6



DEMERITS

1. Non-proper use of landscape elements to enhance the natural beauty of the environment.
2. Unmarked car parking spaces. This may lead to riotous parking.
3. Absence of enough classrooms and library for research.
4. Absence of well defined administrative block.
5. Absence of recreational facilities.

4.3 ST. ANDREW'S CATHOLIC CHURCH KAKURI

St. Andrew's Catholic Church was build in 1969. It is located at the heart of Kakuri in Kaduna South.

It has the capacity of about 2000 people. The Architect organised the Church and it is accompanying facilities.

FACILITIES INCLUDE:

1. Main Auditorium seats (3000)
2. Bookshop
3. Rev. Fathers Office
4. Fathers Accommodation.

MERITS

1. The presence of enough parking spaces
2. The arrangement of seats is well planed with a capacity of about 2,000 people.
3. The presence of lighting facilities like, screen walls, enough windows and the building is well located to allow free penetration of light.
4. The compound is well located and has space for enough ventilation.
5. The Altar is situated in good location to allow good view of what is happening at the altar.
6. Presence of roof-lights to provide enough light into the Church.

DEMERITS

1. No outdoor facilities for social gathering and human interaction.
2. Fixed pew that does not allow for flexible seat arrangement.
3. Unmarked car parking facilities.
4. Inadequate car-parking facilities.
5. Inadequate landscaping, particularly, soft landscape elements.

4.4 CHURCH, PARIS, FRANCE

Set in a neighbourhood of rather soulless postwar tower blocks, the Church of our lady of the Ark of the covenant is an exercise in geometrical and biblical allusion. Based on the exact proportions of a cube, the main volume of the church is elevated on 12 cylindrical pilotis, representing both the Apostles and the tribes of Israel. The pilotis and the over-hanging volume form a cloister that connects with an austere landscaped square or Paris located on the north-east side of the church.

Chosen for its archaic symbolic associations [equal sides reflecting the omnipresence of a singular divinity], the cubic form also alludes to the Ark of the covenant. Both Church and Ark embody the notion of a sacred vessel or box, according to the Old Testament, the gold-plates, acacia wood chest of the Ark represented the presence of God for the nomadic Jewish people. The cube is clad in finely jointed terracotta coloured cladding panels, stencilled with the text of "Ave Maria."

The skeletal campanile marks the entrance to the Church. The calm, intimate space of the baptistry is at ground level, fitfully illuminated by light diffusing from the Church above through a partly glazed ceiling. Light falls on the heavy, marble font, the spiritual and functional focus of the space.

A single set of steel and glass stairs at the east corner leads up to the main sanctuary. The symmetrical volume of the nave is lined with dark wood panels, like an exquisitely crafted cabinet. A block slate floor reinforces the buildings austere materiality. Spiral stair cases set at the corners of the cube wind up to galleries, parish rooms and priests' lodgings at upper levels.

The Church can seat about 450 worshippers, it is surprisingly intimate seat recalls a studio theatre ceiling recesses vertically reflect and amplify the cruciform plan. At the north-west end of the nave, high altar occupies a central, dominant position. Here the external steel frame intrudes [slightly surreally] as a kind of reductionist rood screen marking the boundary between nave and presbytery, and between congregation and priest. A simple crucifix of light plays upon the curve or the plain wooden screen behind the altar. Light from a central oculus and stained glass clerestories inscribed with biblical texts gently washes through the interior.

SUMMARY

1. The cuboid volume of the church is enclosed by a huge non-structural stainless steel frame.
2. The giant frame creates a transition between the secular surroundings and the sanctuary of the church.
3. The main volume of the church is elevated on pilotis, creating a cloister around its base on the north-east side, a landscaped square leads to the street.

MERITS

1. Maximum use of day lighting
2. The use of well planned landscape, to compliment interior
3. Provision of good support facilities
4. Good management of site
5. Good landscaping, particularly, soft landscape elements.

DEMERITS

1. Lacks enough seating to occupy large crowd
2. Lacks a beautiful and a welcoming approach facade.
3. Inadequate car parking facilities
4. No room for future expansion.

4.5. ST. GERAD'S CATHOLIC HOSPITAL KAKURI, KADUNA

St. Gerads Catholic hospital was established to provide health care services to the catholic community including schools owed by the christian community. It also provide services to other christian community. It also trained nurses.

FACILITIES

1. Casualty/emergency section
2. Presence of male/female wards which has a capacity of at least 15 to 20 beds.
3. Presence of an operation room
4. Presence of athopedic section
5. Presence of opstithric/Gynecology department
6. Presence of Lab.
7. Presence of a cafetaria
8. Presence of church
9. Presence of childrens ward
10. Presence of private ward
11. Presence of utility house
12. Presence of the School of Nursing
13. Presence of a mutuary
14. Presence of an Antenatal section

MERITS

1. The site is well oriented
2. The proper location of different units on site which create room for future expansion

DEMERITS

1. Lacks a well identified mark out parking spaces.
2. It is not properly landscaped

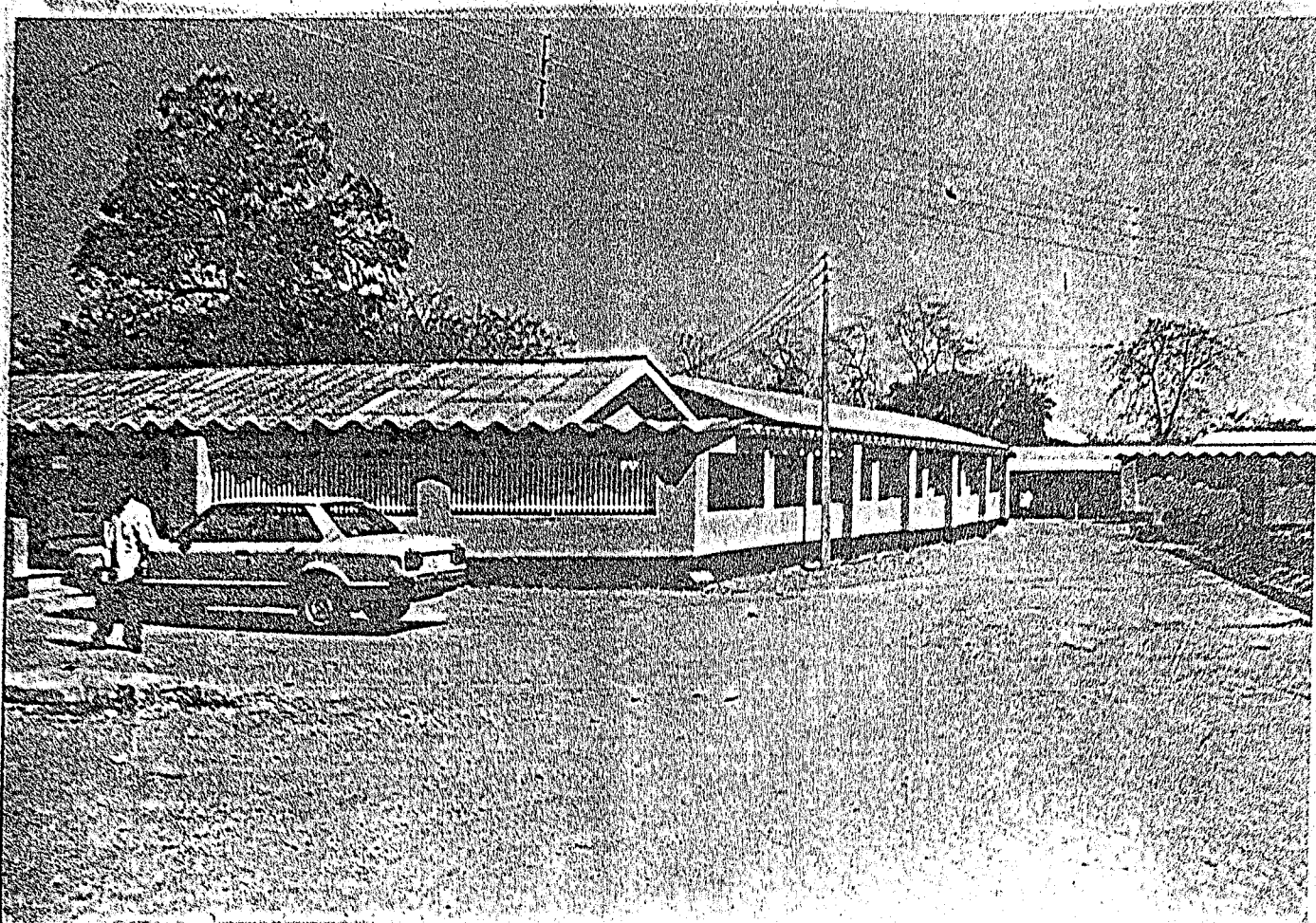


PLATE 7

4.6 KADUNA STATE REHABILITATION CENTRE KAKURI KADUNA

INTRODUCTION

The general objective for rehabilitation is to make the disabled become functional or, for those who were able at one time, to regain functional ability.

Rehabilitation programmes seek to improve the quality of life of life of the disabled, through treatment, training and resettlement. They seek to ensure, for the disabled, a means for daily useful living.

FACILITIES ONSITE

1. Catetaria
2. An adminstrative blook
3. An accommodation for the trainees
4. A residential accommodation for staff
5. Presence of a gare hause
6. Presence of a workshop

MERITS

1. The buildings are well oriented to create chance for future expansion.
2. The centre is fenced round which provides more security to the centre.

DEMERITS

1. Lack of mark out parking spaces
2. There is poor landscaping.

CHAPTER FIVE

5.0. HISTORICAL DEVELOPMENT IN NIGER STATE

Niger state belongs to the second generation of states in the political evolution of the country. In the first exercise in 1967 when twelve states were created by General Gowon, Niger state, then Niger province formed part of the North Western state, with Sokoto as the capital.

On 3rd February, 1976, the Muritala Muhammed military regime, in response to the wishes and aspirations of the citizenry created seven more states, increasing the total number of states in the federation to 19. Niger state, carved out of the old North western state was one of the seven states created in the exercise. The state, with Minna as its capital, became a functional entity on 1st April 1976.

The state is located between latitudes $8^{\circ} 20'N$ and $11^{\circ} 30'N$ and between longitude $3^{\circ}30'E$ and $7^{\circ}20'E$. It lies wholly within the physical and cultural zone of transition described as the "Middle belt of Nigeria".

5.1. CLIMATIC CONDITION

The hottest months in the year are March and April, that is just before the onset of the first rains. The main daily maximum temperature remains high throughout the year at about $32^{\circ}C$ for most of the year. There is a marked drop in temperature during the peak of the rainy season from July to early September.

5.2. PHYSICAL SETTING

5.2.1. GEOLOGY AND RELIEF

Geologically, the state is covered by two main formations, sedimentary rocks, consisting of sandstones and alluvial deposits covered the Niger trough and substantial part of Lapai, Agaie, Bida, Gbako, Lavun, Mokwa, Wushishi and Borgu L.G.As. Apart from the wide floodplains of the Niger River and its tributaries which have proved to be among the best rice growing areas in the country, flat topped mesas or residual hills with reddish brown sandstones having high iron content, are characteristic features of this southern belt.

To the north, on the other hand, the bulk of the state is underlain by basement complex rocks. The landscape in this part is characterized by granitic outcrops called inselbergs, which interrupt here and there, the vast topography of rolling landscape. Such granitic outcrops are common around Minna, the state capital, Suleja and vast areas in Rafi, Shiroro, Mariga and Gurara L.G.A.s. In general, the relief of the land bears a close relationship to the geology of the state. Two major relief regions are readily recognised. These are the lowlands within the Niger trough, where reliefs is generally below 300 metres and 600 metres above sea level. Further with this region merges into the Hausa high plains.

5.3. SOCIO-CULTURAL LIFE

5.3.1. ETHNIC COMPOSITION

Niger state is a land of diversities not only in relation to the physical setting, but also a land of diversities in terms of its peoples and culture .

The table below shows evidence of this diversity across the emirates and LGAs. It is however common knowledge that by far the dominant tribes are the Nupe who occupy mainly the southern L.G.As of Gbako Bida, Agaie, Lapai, Lavun, Mokwa and Wushishi as their homelands, the Gbahi (Gwari) who are found mainly in the eastern LGAs of Shiroro, Chanchaga, Paiko, Suleja, Minna, Gurara and Bosso/ Maikunkele and then the Hausa who are dominantly found in Suleja Mariga and Chanchaga. The remaining tribes form a mosaic of apparently small units within various L.G.A.s including Rafi, Magama, Rijau and Mriga where, collectively, at least 18 tribal units are found, other tribes such as the Igbo and Yoruba are migrants southern populations who have established some presence in virtually all parts of the state to pursue a wide variety of private and public enterprises.

One major implication of the tribal/ethnic diversity of the state is the wealth of cultural heritage of the state, but, on the other hand the situation also carries with it the implication of administrative problems, and potential social disorder/discontent which often characterise the geopolitics of power sharing and decision - making.

ETHNIC GROUPING AND LOCATION IN NIGER STATE

S/N	TRIBE(S)	LGA(S) PREDOMINATLY FOUND
1.	Gbagyi (Gwari)	Shiroro, Chanchaga, Paikoro, Suleja, Gurara, Bosso/Maikunkele.
2.	Nupe	Gbako, Bida, Agaie, Lapai, Lavun, Wushishi.
3.	Hausa	Suleja, Mariga, Chanchaga.
4.	Kamuku, Pangu	Ushama, Ingwai, Rafi.
5.	Kambari, Dakarkar, Mawuchi, Ashigini, Akimba Adebu.	Magama, Rijau, Mariga
6.	Koro and Kadara	Paikoro, Suleja.
7.	Dibo, Kakanda, Bainge, Kami, Gupa and Gana-Gana	Lapai
8.	Gwandara, Gade Koro - Poi	Bassa Suleja, Shiroro
9.	Igbo, Yoruba, Fulani	All L.G.A(S)
10.	Fulani, Baruba, Nupe	Borgu and Agwara.

TABLE 2

5.3.2. SOCIAL INFRASTRUCTURE

The provision of infrastructural services is characterised by marked concentration in the few urban centres. Minna, the state capital, in particular, has since the creation of the state witnessed very rapid physical transformation through, both public and private sector investments. The latest of these features is a carefully planned urban drainage system that may perhaps stand as a model to other urban

centres in the country. But the situation in the rural areas has not been static. Through both government investments and the spontaneous adaption of the rural population to various stimuli the development of the rural sector has been in progress. On governments part, the desire has been to extend to the rural areas the infrastructural services that have hitherto been the monopoly of the urban centres, including access roads, potable water supply, electricity, health care facilities, educational facilities et cetera. To meet these goals government has acted in recent yaars through, various agencies in addition to the traditional roles of the ministries.

5.3.3. WATER SUPPLY

In the area of potable water supply, DFRRI's programme has brought into the state by 1993, a total of 647 bore holes distributed across the 19 LGAs. The import of this aspect of development goes beyond the improvement of sheer access to water. It has also been a means of improving rural health, especially in the guinea worm-prone areas where poor water supply had in the past been the major source of infection and subsequent incapacitation of rural labour force.

5.3.4. ELECTRICITY

DFRRI also complements the efforts of the states Rural Electrification Board to execute rural electrification programme. In the first phase of this programme, a total sum of ₦6,125,000.00

was expended to extend electricity to Maikunkele, Badeggi, Lemu, Lambatta, old Rijau and Edozhigi (uncompleted). Eight other villages were also selected to benefit from the services in an ongoing 2nd phase at an initial total cost of ₦11,485,000.00. The villages are: Tunga Wawa (Mariga LGA) Nassarawa, (Magama LGA) Yakila (Rafi LGA) Kafanin Danjuma (Shiroro LGA) Pago (Chanchaga LGA) Rugan fulani (Lapai LGA) Loguma (Agaie LGA) and Muwo, (Lavun LGA).

Again the importance of the rural electrification programme in the rural development process within the state cannot be over emphasised. The programme has manufacturing outfits. The state's industrial base is therefore very weak. Indeed, Niger state is carently among the least industrialised states of the federation, accounting for only about 0.8 percent of the country's industrial establishments, about 0.1 percent of the national labour force and an insignificant proportion of the total national.

5.3.5 EDUCATION AND LITERACY LEVE

In the area of education, the state has developed network of primary, secondary and tertiary institutions for the growing of needed manpower. The setting up of a science and technical schools board in 1988, was meant to ensure sound development of science and technical subjects which had bitter to been largely neglected. Two years later a polytechnic was established in further this objectives.

Literacy level nevertheless remains generally low in the state, estimated at less than 30 percent of the total population due largely to the predominance of the rural population for whom

formal education remains an issue of low priority. With the present nations-wide-literacy drive, however, some improvement may be expected especially among the urban illiterate.

5.4. ECONOMY AND COMMERCE

5.4.1. LOCAL SOURCING OF RAW MATERIALS

The state can boast of the following local raw materials that could form the basis of agroallied industries, Rice, (Produces in Lapai, Agaie, Gbako, Bida, Lavun, Mokwa, Shiroro and Wushishi LGAs) Maize (produced all over the state) Sorghum, (produced all over the state). Groundnuts (produced all over the state but particularly in Rijau and Magama (LGAs), Millet, (all over the state particularly in Rijau, Magama and Mariga LGAs); Sheanut, (all over the state) Yam (all over the state, but particularly in Shiror, Guarara, Suleja, Paikoro and Bosso LGAs) Soya Beans, (In Suleja and Lapai LGAs) and Sugarcane, (in Agaie, Gbako, Bida, Lavun, Mokwa, Chanchaga.

5.4.2. THE ECONOMY CLIMATE

From the analysis so far, Niger state may be aptly described as a vast land of hitherto underutilised and unutilised resource potentials. Agriculture forms the backbone of the state's economy, but this is mainly in the hands of traditional, small-scale producers, less than 25 percent of the states arable land is presently under cultivation, partly as a result of the sparsity of the rural population in many areas, and partly as a result of the technological limitations of the traditional methods of production.

The bulk of the state's proven mineral resources are also waiting to be exploited. Quarrying of rock materials for the construction industry is presently the nearest activity to mining in the state.

Industrially, the state can boast of only a hand full of small to-medium-scale manufacturing outfits. The state's industrial base is therefore very weak. Indeed, Niger states is currently among the least industrialised states of the federation, accounting for only about 0.8 percent of the national industrial labour force and an insignificant proportion of the total national value of manufacturing.

The modern sector of the economy is therefore dominated by tertiary services (including the public service) and an informal sector comprising traders, transporters, artisans and small-scale processors. The bulk of these enterprises, as elsewhere in the country, are located in the urban centres and the larger rural settlements.

5.4.3. INDUSTRIAL POTENTIALS

The reports of surveys by the state ministry of commerce and industry, and Agriculture, as well as the raw materials research and development council, Niger state Branch, show that the state possesses vast investment potentials in the area of industrialisation. These potentialities include a wide variety of minerals and agro-related raw materials.

The clay deposits at Enagi Badaggi Tatiko, Suleja, are suitable for the manufacturing of ceramic products, plumbing kits, bricks, tiles, sanitary and refectory wares. Silica and sand suitable for glazing materials. Table wares, tiles and glass have been identified in Suleja and Bida. The Kyanite schist in the south-west of Minna will provide raw materials for brick making while the marble on Minna hill and at Kwatuti will provide raw materials for building construction industries.

As for the metallic minerals (gold, copper, iron, lead, cassiterite and edumbite) which are found in various locations, they are not only potentials for a vibrant mining industry sometimes in the future but also potential basis for manufacturing of ornaments and metallic coatings of different kinds.

Other potentials are associated with agro-related raw materials. They include raw materials for sugar production at Agale, Gbako, Bida, Lapai, Lavun and Mukwa LGAs, particle board factory at Gbako, Bida, Magama, Rijau and Mariga LGAs, vegetable oil at Gbako, Bida, Lapai, Chanchaga, Suleja and Shiroro LGAs, Starch production at Magama, Rijau, Mariga, Wushishi, Rafi and Shiroro LGAs, Soya bean processing plant at Lapai and Suleja L.G.As, cosmetics production at Chanchaga, Paikoro, Gurara and Suleja LGAs. and fruits juice production in virtually all LGAs, of the state.

In conjunction with, and reinforcing to these potentials is the state's vantage position as far as power supply is concerned. Having located within it the 760 MW Kanji Hydro electricity plant and the 600MW Shiroro hydro-electric power plant. Niger state is the "power state" of the nation indeed in addition to those two plants which currently command the national grid of H.E.P distribution,

plans are well advanced for a 50MW plant at Zungeru in Wushshi LGAs, as a Federal Government project.

It therefore goes without saying that the state has ample access to industrial power. Thus, by the end of 1992, 26 urban and rural settlements had been hooked on the national grid in the state. This included all local government headquarters, except two (Kutigi and Agwara). But even for these two and few other rural settlements, the infrastructural development for the extension of electricity on the national grid has reached an advanced stage.

From the point of view of power supply therefore, the setting is right not only for large-scale industries, but also for small and medium-scale rural industries.

5.5 DEMOGRAPHIC DATA

5.5.1. POPULATION STRUCTURE AND DISTRIBUTION

The preatest resource of Niger state are in its people who apply their skills, labour and training to transform components of the natural environment into goods and seruoos. The structure and distribution of this population is presented this section.

According to the 1991 national head count, Niger state had a total population of 2,482,367 people of this total 1,290,720 (or 52 percent) were male while 1,191,647 (48 percent) were females.

The table below shows the contrasts between the population size of th various LGAs, although it saysnothing about the quality of the population, judging from the sheer absolute members, however, the average density of population in the state may be put at

about 33 persons per square kilometre, which must be among the lowest in the country.

What this statistics suggest is the presence in Niger state of large expanses of land resources waiting to be developed either through carefully guided policy of induced population redistribution or technological improvement for more efficient resource utilisation, or a combination of all these.

TABLE 2

DISTRIBUTION OF POPULATION IN STATE BY LOCAL GOVERNMENT AREA

S/NO	L.G.A.	Males	Females	Total
1.	Lavun	23,647	114,665	238,312
2.	Mariga	126,220	111,790	238,010
3.	Sgiroro	108,542	104,297	212,839
4.	Wushishi	102,871	92,549	195,420
5.	Bida	87,908	82,817	170,725
6.	Chanchaga	82,568	74,591	157,159
7.	Magama	67,737	66,653	134,390
8.	Suleja	70,635	54,624	125,259
9.	Rijau	63,922	60,939	124,861
10.	Borgu	56,596	53,308	109,904
11.	Paiko	55,025	52,606	107,691
12.	Rafi	55,127	51,033	106,160
13.	Gbako	54,066	50,381	104,447
14.	Mokwa	56,277	47,608	103,085
15.	Bosso/Maikunkele	48,925	43,338	92,263
16.	Lapai	44,044	40,128	88,172
17.	Agale	43,128	42,152	85,280
18.	Gurara	22,746	23,192	45,938
19.	Agwara	20,736	20,916	41,652
	TOTAL	1,290,720	1,191,647	2,482,367

5.5.2. TRANSPORTATION AND TRAFFIC FLOW

Niger state is not just centrally located on the map of Nigeria. The state is also served with an efficient transport and communications network which enhances accessibility both within the state as well as between it and the outside world.

First, there is the road network. The state capital, Minna, is accessible to all local government headquarters through a system of good quality road interregional road alignments also tranverse the state from north to south and east to west, linking the state to all parts of the federation.

Secondly, there are the services of the Nigerian railway corporation. The Kano-Lagos line traverses the state roughly from northeast to southwest, passing through Minna, the state capital. A near-defunct line also links up Minna to the colonial river port Baro, in the south. The original plan of the colonial administration in constructing this line was to integrate rail and river transportation from the hinter land to the coast.

Thirdly, the construction of an international airport at the state capital, Minna, was completed in 1980. The airport has since then been in operation through presently only at a skeletal level.

Finally, there is an efficient digital telecommunication system which facilitates communications both within the state (essentially between the urban centres) and the outside world.

5.5.3. EXISTING LAND USE AND TUTURE TRENDS

The soils of the state bear a close relationship to its geological parent materials. Thus, within the trough of the Niger River, are ferrasols, or soil developed on sandstone formations. The soils are usually deep red and entiched with clay subsoil. Then, within the floodplan of the River itself the waterlogged (hydromorphic) soil which, being poorly drained because of high silt content, are greyish (and sometimes whitish) in colour.

For the greater part of the state, ferruginous tropical soil predominate. These are soils detried mainly from the basement complex and old sedimentary rocks. Important crops produced on these soils include, groundnuts, millet, guinea corn, rice, and maize.

Giant termite hills are a common features of the rural landscape of Niger state.

These hills are particularly numerous in the area between Mokwa, Bida and Kontagora.

The entire state falls within the Guinea (or southern) Savanna belt, which is the single largest vegetation cover in the country. Structurally, this is a vegetation type characterised by woodland of varied densities and grasslands with tall, dense species. Denser groves of taller types species occur along depressions and water caurses which also support the oil palm-tree and a feul other rain forest species.

5.5.4. TOURISM and recreation

Like many other states in the country, Niger state is yet to take advantage of its huge potentials for a tourist industry. Although a state tourism board exists, it is presently more nominal than functional in the business of tourism. The board however seems to be aware of the potentials at its disposal and has, as a matter of fact documented them. The tourist attractions are location in places like Gurara waterfalls, Zuma rock, Putsen Mainono, wildlife game reserves at Dagida and New Bussa etc, cultural features such as Tatiko Cottage industry, Massaga Brassuorks. Taivata mukun glassiworks, Ladi Kwali pottery centre, Kutigi weaving centre etc. hitorical features such as the Baro empire hills, Wushishi engine tranway No.1 Mungo parks' s cenotaph, Nagwamatse tomb.Dauda maza weaponry, lord lugard colonial ruins etc. while others are museum (e.g. at the UK Bello theatre) and special economic super-structure such as the HEP power plants.

Inspite of these potentials, however, there cannot be said to be a tourism industry in the state. Neither the necessary organisational framework nor the sheet physical development of sites has been.

TOURIST ATTRACTION IN NIGER STATE

S/No.	Attraction	Location	LG.Areas
1.	Baro Empire Hill	Baro	Agai
2.	Gurara Watr Falls	Bonu Village	Gurara
3.	Zuma Rock	Suleja	Suleja
4.	Wushishi Engine Tramway No.1	Minna	Chanchaga
5.	Nagwamatse Well	Nagwamatse	Mariga
6.	Dauda Maza Weaponry	Lapai	Lapai
7.	Tatiko Cottage Industry	Tatiko	Paikoro

2. Terraces are developed as an excellent area of focus. It also serves as a practical settings for outdoor gatherings. One major development in this area, is the main auditorium. Flow over terraces.
3. Develop small reflecting pools, as an economical and beautiful features of outdoor design.
4. The use of gardens for spiritual development such as meditation gardens, it also provides opportunity to reenact the memory of Bible history.
5. Avenue of trees gives formal route and a natural progression to the entrances.
6. Courtyards created to extend landscape into the interior and improve ventilation and day lighting in the interior.
7. Buildings screened by tree belt to reduce heat gain and cut of direct sunlight as much as possible.

7.3 MATERIALS AND CONSTRUCTION

In an enclosed environment type of worship centre, it is more convenient to effectively meet the functional requirement of the building, by both the design and constructional techniques. The requirement of these bulding include:

Dimensional stability

Thermal insulation

Sound insulation

Lighting and ventilation

Durability and ease of maintenance

Realistic spatial arrangement.

7.3.1 DIMENSIONAL STABILITY

Effort is made to ensure that the structure not only sustain itself, but also provide adequate safety for the congregation (occupier). The shape of the form is chosen in relation to the thickness of major buildings elements in relation to their height and span, and with consideration for the materials in use.

7.3.2 BUILDING STRUCTURE

Reinforced concrete column, beam and floor are mainly used here. The roof structure is of

- 'I' steel section as the rafters and Z section as the purlins.
- Space frame systems
- A roof cover of long span aluminium roofing sheets.

7.3.3 EXTERNAL WORKS

The relation of the building to its immediate environment is given an adequate consideration. Care is taken to exhibit a sense of care for landscape. Great care is taken to avoid adverse effect of erosion and also trees, flowers and shrubs, as well as water bodies.

Precast concrete elements are used as slabs and kerbs, for landscaping. The drive ways constructed of tar, and the foot path are either constructed of precast concrete paving units/stone work or natural soil. This is reflected as specified by the need of the area.

Sometimes the tree surrounds are also of precast concrete units.

7.4 MATERIALS

For any architectural project to succeed in enclosing pleasant and useful spaces, a skillful use of materials have to be displayed.

Materials are often a reflection of regional location, maintenance is another criterion.

In the choice of materials for this construction, spatial emphasis is laid on aesthetic qualities. This is important because a church should have an environment where spiritual and human experience are enhanced.

It is impossible to achieve this with a single material. However, efforts are made towards harmonizing individual material used with other aspects of the building.

Concrete is the major material in use in this project proposal. This is because of its modest cost, durability and design possibilities. Concrete has innate structure and at the same time sculptural possibilities, which is an ideal combination for creating worship space.

Concrete is chosen because it provides:

- (1) An expensive material that is both appealing and durable.
- (2) The plastic nature, that is flexible and easily adaptable for sculptural design.

The concrete surface is enhanced with the use of exposed aggregate glass panels in interesting patterns.

The admired drama of concrete structures take into consideration budget consciousness. Moreso, it is necessary that adequate supervision is given and the recommended surfaces, adhere to, in order to achieve a desirable finish.

Wood creates an atmosphere of natural warmth, it is carefully chosen use in the interior makes a well suited to the worship space. Wood is employed extensively in their landscaping of outdoor activities.

The use of screen walls and many window openings is commonly used here in order to achieve proper lightening of the church, interior.

7.4.1 SPACE REQUIREMENT

SANCTUARY

1. Seating:-

Provision of enough space for free movement and kneeling and dancing, jumping and either participatory activities.

Allow:-

Distance between rows = 900mm

Width of seat = 500mm

Area/seat required = (900 x 500)mm = 0.45m²

2. Aisles:-

For large church, there is need for central aisle which serves for easy evacuation. Seats for more than 10 persons required need aisle at each end.

For free standing 0.35m² allowed therefore.

Total area per person = 0.45m² + 0.35m²

= 0.80m²

7.4.2 FACILITIES

This includes:

- . Administration
- . Shopping mall
- * Catering services
- x Auxilliary facilities
- v Hostel
- * workshop/classrooms

The space standards arrived at through a proper analysis shall be strickby followed with adjustment and allowance made where necessary to arrive at a proper space allocation and provision.

7.4.3 SCHEDULE OF FACILITIES

(A) ADMINISTRATIVE DIVISION

For effective and proper co-ordination of all units/departments in the centre, a centralised administration unit is proposed.

It is to house the principal officials and associated subordinate necessary for proper co-ordination and management.

1. Reception and information
2. Chief security
3. Intercom exchange
4. General office
5. Computer room
6. Conference room
7. Lavatories
8. Clerks
9. Central records
10. Photocopying room

(B) SHOPPING MAIL

This are very accessible set of shops, that gives the several thousand of trainees that comes to the centre, a good opportunity to get such handy materials and services. The facilities to be provided include:-

1. snack bar
2. Stores
3. Staff facilities
4. Offices

(C) HEALTH CARE

To care for health needs, be it casual treatment, admission, emergency and even for administration purposes or visits.

1. Waiting
2. Reception/card room
3. Consult room
4. Injection room
5. Pharmacy
6. Nurse room
7. Record office
8. Dental section
9. Lab.
10. Health officer officer
11. X-ray department
12. Male/female consult

D. RECREATION

This is a vital aspect of the life of a man. It offers opportunity for social interaction and a welcome respite from the automated engineering world.

1. Out door seating
2. Football field
3. Lone tennis cord

E. RESIDENTIAL

Site planning take care of the residential need of the students in the centre

1. Lobby
2. Common room
3. Lundry
4. Kitchen
5. Bedroom
6. Toilets

F. KNOWLEDGE ACQUISITION

This emphasizes facilities for function that enhance acquisition of knowledge about God and His creator. School, and library facilities serve this purpose:

School

1. Class room
2. Computer room
3. Head teacher
4. Staff room
5. Library
6. Academic office

Library

1. Entrance hall
2. Control
3. Enquiry
4. Reading
5. Book stacks
6. Staff room

ACCOMMODATION

The planning of the area offers an opportunity and potential for expansion. To accommodate future needs. It provides accommodation space for staff and short stay guest.

STAFF QUARTERS

1. Lobby
2. Dinning
3. Living room
4. Kitchen
5. Store
6. Family lounge
7. Toilet

GUEST CHALET

1. Living room
2. Toilet
3. Kitchen
4. Bedroom

RECREATION

This is presented in form of landscape. This include, gardens, Bible walk, etc.

REFERENCES	SECTION	ROOM	FLOOR <i>Area</i> LEVEL	<i>Floor</i> AREA <i>Level</i> (m ²)	REMARKS
01	JOB TRAIN- ING	Workshops			
		Common room	120 18		2 No at 3m ²
		Kitchen	36		
		Dinning	90		60 people at 1.5m ²
		Laundry	30		
		Store	12		
		Staff room	24		2 No at 12 m ²
		Offices	24		"
		Toilet	36		6 No at 6 m ²
	HEALTH CARE LINE	Waiting		125	50 persons at 2.5 m ²
	2.	Pharmacy		36	
	3.	Consulting Room		72	4 No at 18m ²
	4.	Nurse room		18	
	5.	Record Office		18	2 clerks/typist
	6.	Reception Card room		24	
	7.	Injection room		18	2 No at 9, ²

TABLE 5

REFERENCES	SECTION	ROOM	FLOOR LEVEL	AREA (m ²)	REMARKS
	SHOPPING MAIL				
1.		Store/strong room general		18	
		Office			
2.		Managers' Office		15	
3.		Secretary		9	
4.		Assist. Manager		12	
	BOOKSHOP				
		Display Area		120	
		Book store		24	
		Office		12	
		Staff facilities		18	
	POST OFFICE				
1.		Public area		36	
2.		General Office		24	
3.		Managers Office		12	
4.		Sorting Office		12	
5.		Boxes		12	

TABLE 6

REFERENCES	SECTION	ROOM	FLOOR LEVEL	AREA (m ²)	REMARKS
	ADM. BLOCK				
1.		Lobby	01,02,03, 04	24	
2.		Information	01		
		Reception			
3.		Photocopying	01	32	
4.		Intercom	01	32	
5.		Chief Security	01	16	
6.		Clerks	01,02	12	2 No 6m ²
7.		Computer	02	60	
8.		Store	02	16	
9.		Asst. Rector	03	12	
10.		Welfare	03	9	
11.		Rector	03	12	
12.		General Office	03	30	
13.		Sec.	04	9	
14.		Typist	04	10	
15.		Conference room	04		

TABLE 7

REFERENCES	SECTION	ROOM	FLOOR LEVEL	AREA (m ²)	REMARKS
01	EDUCATIONAL				
	1.	Class room		900	18 No at 40, ²
	2.	Library		50	
	3.	Adm. Office		60	
	4.	Workshops		240	3 No at 80m ²
	CHURCH				
	1.	Auditorium		4000	5,000 people at 0.8 m ²
	BANQUET HALL				
	1	Lobby	01	60	1,000 people at 0.8 m ²
	2	Hall	01	8,000	

TABLE 8

CHAPTER EIGHT

8.0 DESIGN SERVICES

8.1 ELECTRIC SUPPLY

Electricity supply to the centre is provided by the additional Electric Power PLC. This is tapped through the main supply. In order to guarantee an uninterrupted power supply, power generating plant provided as back up to the NEPA PLC supply.

8.1.1 LIGHTING

To achieve maximum daylighting in the enclosure, the use and locations of openings in wall, and the height of adjacent buildings were carefully considered.

8.1.2 HEATING, COOLING AND VENTILATION

Every effort was made at orienting the building in relation to major wind movements and direction. This ensures cross ventilation at least cost and ensures comfortable interiors.

Armed with the fact that the behaviour of building elements may be affected by the number of people in a given enclosure and activities engaged upon at any point in time, a major consideration is given to the design and construction basic problems. Nonetheless, artificial and mechanical ventilation, are however, suggested as secondary solution.

DURABILITY AND EASE OF MAINTENANCE:

The choice of materials and efforts to maintain them, serves as a guide to ensure durability and maintenance. Where possible, this choice ensure maintenance at minimal cost.

SOUND INSULATION:-

The surface of external enclosures, the make of the elements and the volume of building, are major consideration to enhance the level of audibility as well as revibration, particularly to eliminate unwarranted echoes.

8.1.3 PLUMBING

Public water supply to the site may be a difficult task considering the site location and distance to the near by town.

The geology of the area, offers a promising record of impressive water table level.

Borehole is thus provided with over head and ground tanks as rservoirs.

8.2 FIRE PROTECTION

In the design, care is taken to respect building code requirement by the use of fire proofing structural elements and fire protection for many parts of the building. Special consideration is given to achieves, as doubl walling and fire proof rared doors recommended.

As a secondary measure the following fire service facilities are provided on site:

- a. Approved system:- The fire protection for the intercom and offices around it, shall be of Co₂ type suitable for use with electrical equipment.
- b. Sprinkler System:- Water sprinkler system shall be employed in every other area other than the technical equipment area.
- c. Alarm System:- Automatic Fire System may be installed in different areas.
- d. Fire Services System:- For a site with this enormous land area and facilities the need for a fire service station becomes necessary.

8.2.1 SECURITY

In addition to structural and environmental requirements secure access to the centre must be considered. Various security systems have been employed in the coverage of the centre to prevent theft.

At the entrance of the centre there is a security post. Burglar protection systems are also to be incorporated on the doors and windows of the classrooms and studio.

8.3 APPRAISAL AND CONCLUSION

The Christian Youths Training centre Minna is a multidimensional environment where a dynamic blend is achieved between the general yearn to further in education among the people and the need to integrate as a body, bearing in mind the socio-cultural and behavioural patterns of the Christian dwellers.

It is envisaged that this project will stand out viable in any Christian dominated setting where there is in addition a general zeal in academic furtherance among the dwellers.

Minna, the location of the proposed centre and a capital city in Niger State is cosmopolitan in its habitation. A city where people from far and wide have come to live due to the traditional hospitality which has made the town a commercial centre and site of many academic institutions even long before the nation's independence.

In planning for this centre, the orchestrated problems which goes along with the hustle and bustle lifestyle of city life is envisaged and planned for. An adequate provision for future expansion when the demand arises, is hence considered.

This centre is envisaged to be well embraced by the populace especially the less privileged ones due to their general anxiety to learn.

In carrying out the designing generally, paramount consideration that comes to mind is functional efficiency which basically ensures that the allocated spaces meet the required purposes. However, alongside this among other factors is the need for aesthetics visual admiration, and likely features that captivate the mind consciously or unconsciously.

Each structure on site has a unique characteristics in both planning, setting, general facades and accessibility. The imposing characteristic of a library for example depicts an appearance of authority. It is

such that it appears to have grown naturally from the ground. On the external facades, the interplay of recession and projection made possible by the projecting columns presents a play of light and shadows plasing to behold.

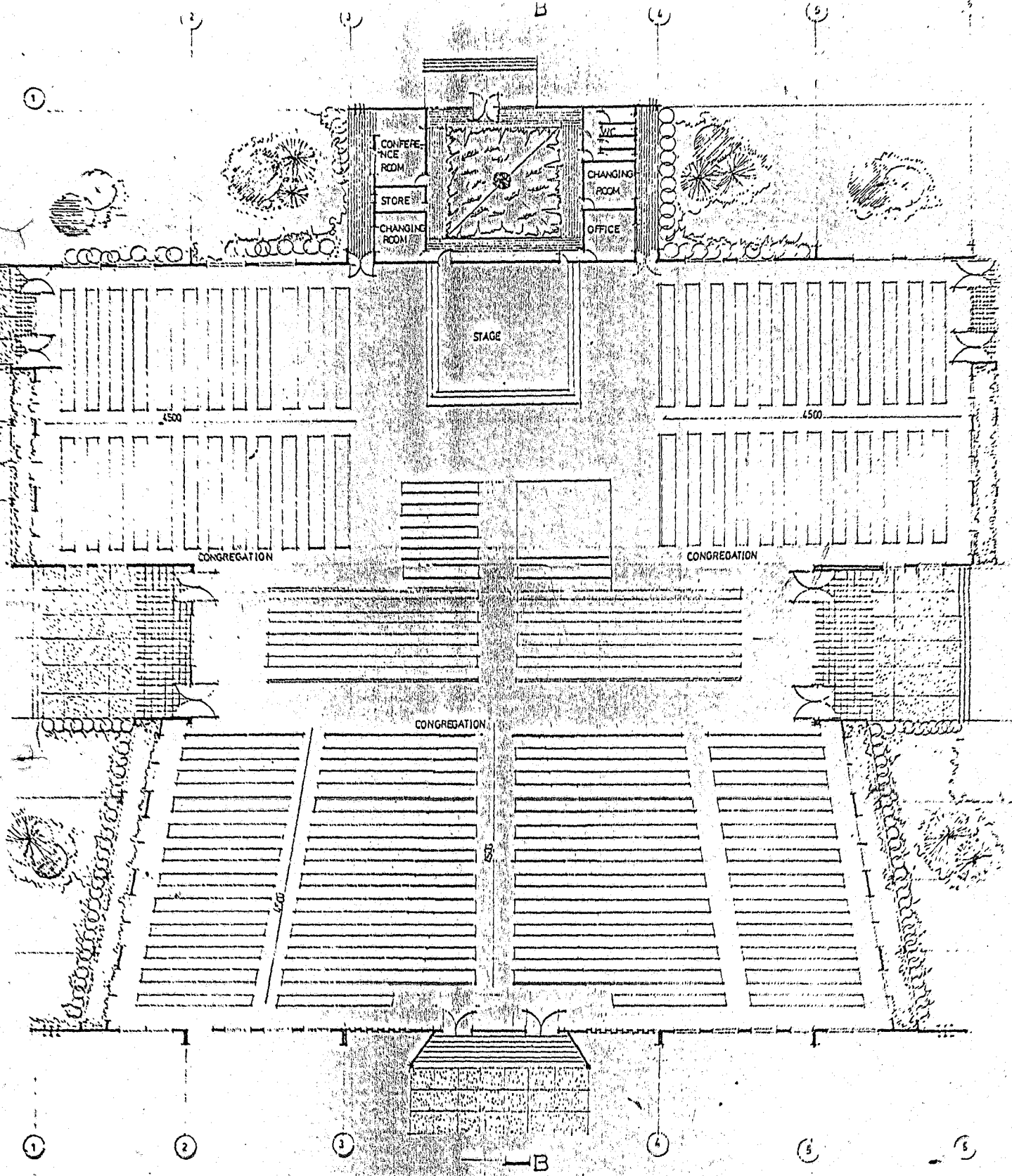
The Church displays some degrees of uniqueness both in interior decoration and external facades. On interior walls are engravements of acts and scenes form the Bible having scriptural implication which would undoubtedly appeal to individual mind during a litugrical procession.

All in all the materials for construction and finishes are carefully chosen to maintain a trend of uniformity on site and general aesthetic requirement.

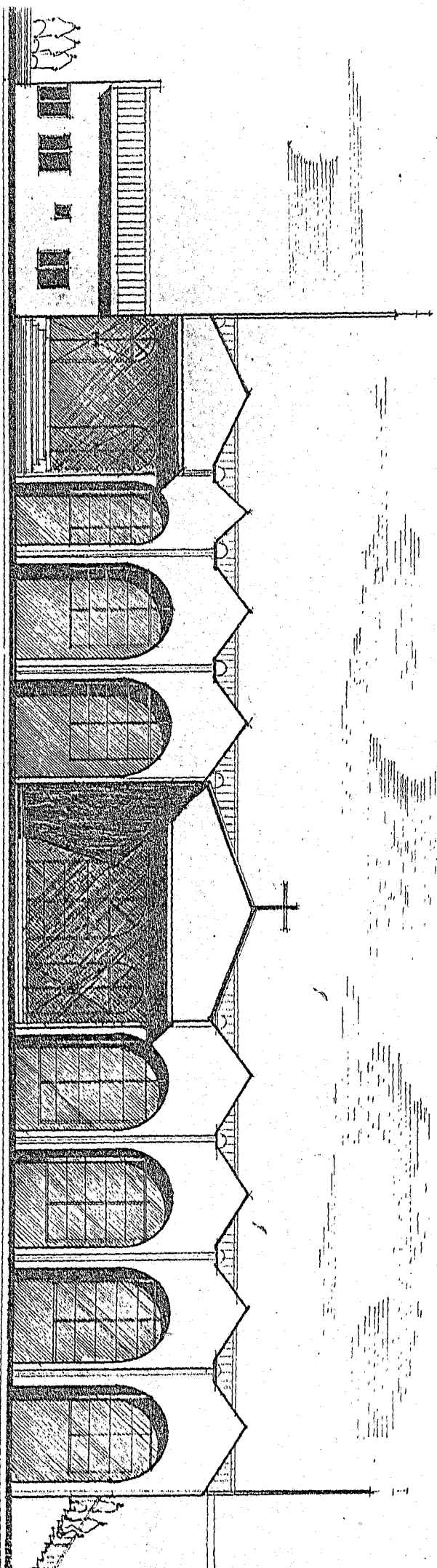
8.4 CONCLUSION

The tendency to compromise on any situation is made easier when a clear understanding and proper knowledge of the prevailing issue eavails to the contenders.

In like manner, unity is best fostered among varying Christian denomination only when an avenue for proper knowledge acquisition and enlightenment is make available to Christians. Hence it is positively envisaged that this centre when established would add to some measures in bridging the Christians unity.

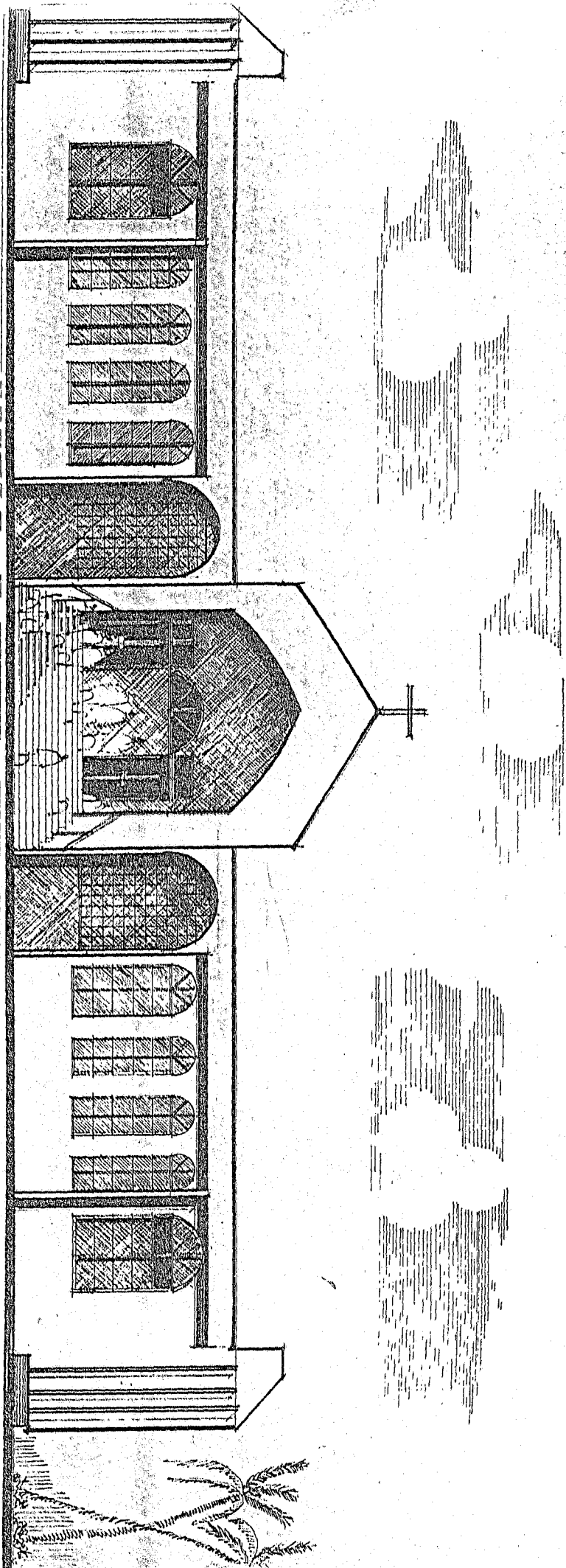


Floor Plan

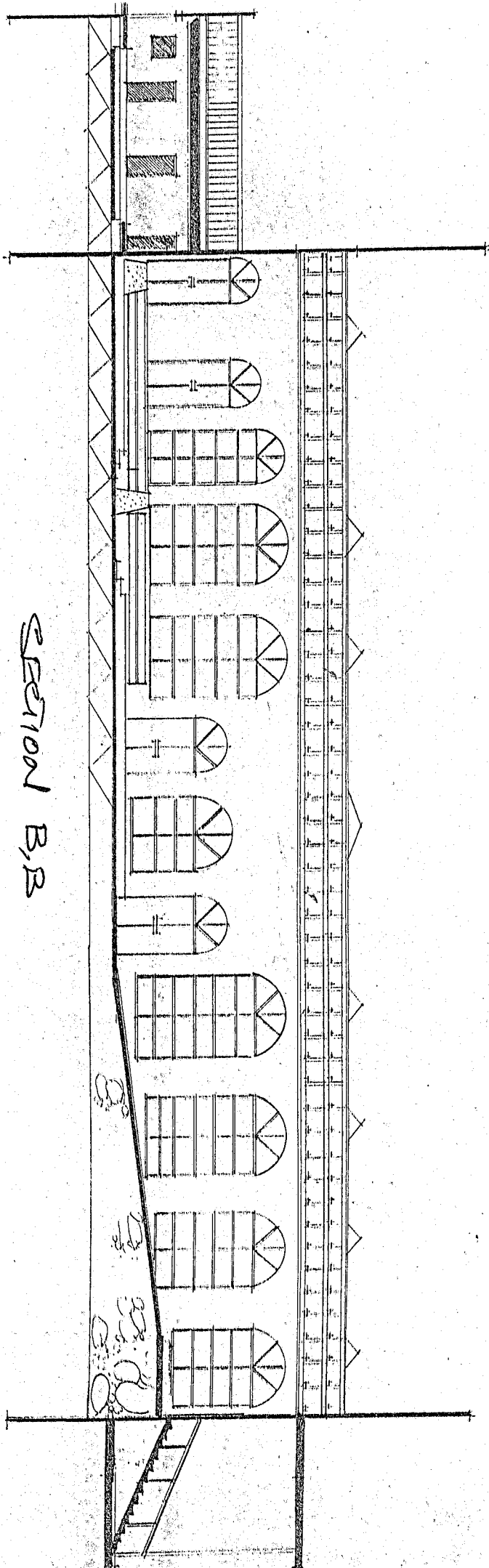


FRONT ELEVATION

LEFT SIDE ELEVATION



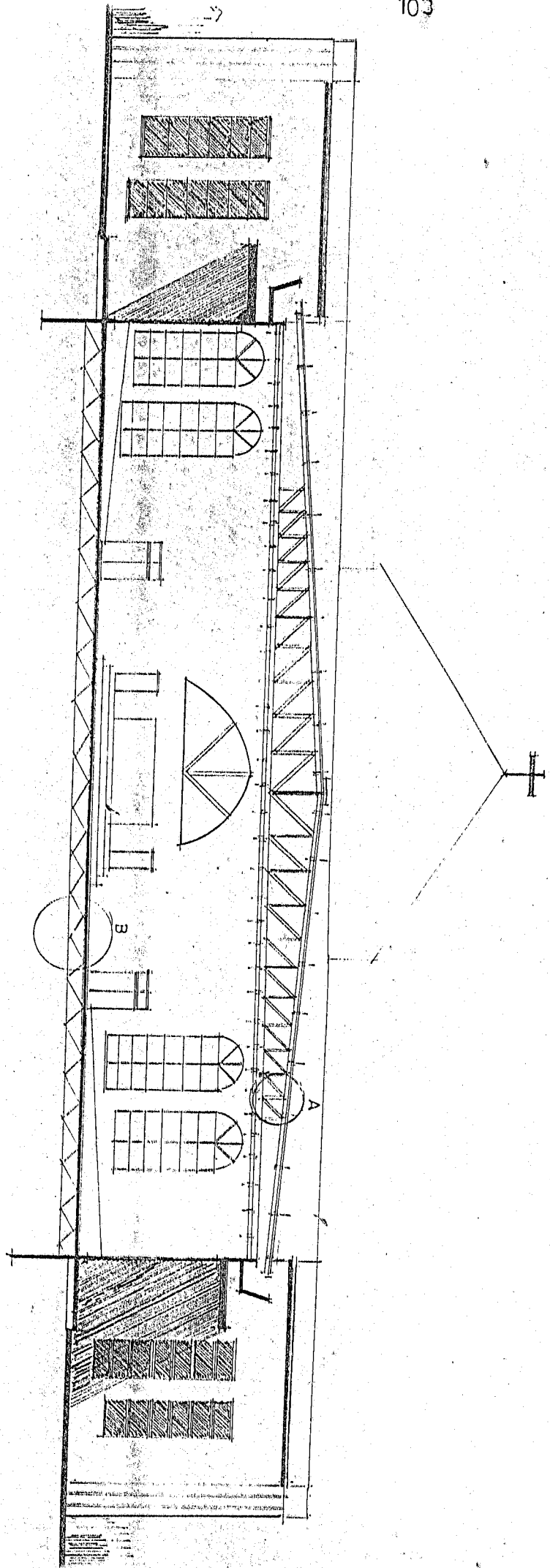
FRONT ELEVATION



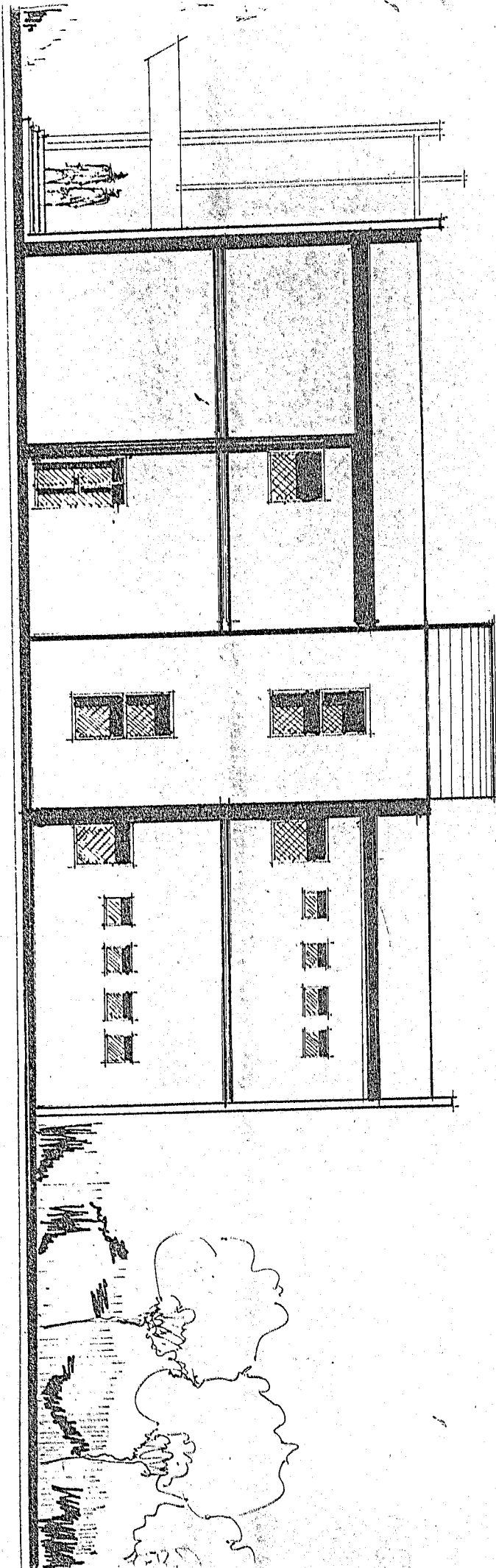
SECTION B,B

SECTION AA

SECTION

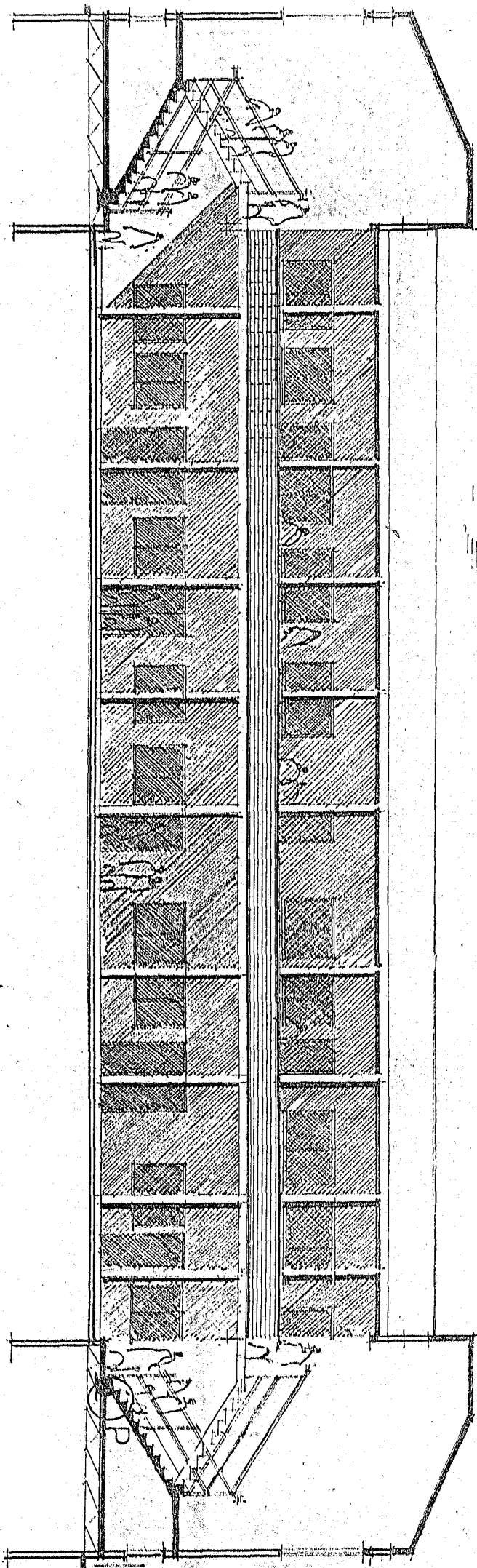


SECTION AA



RIGHT SIDE ELEVATION

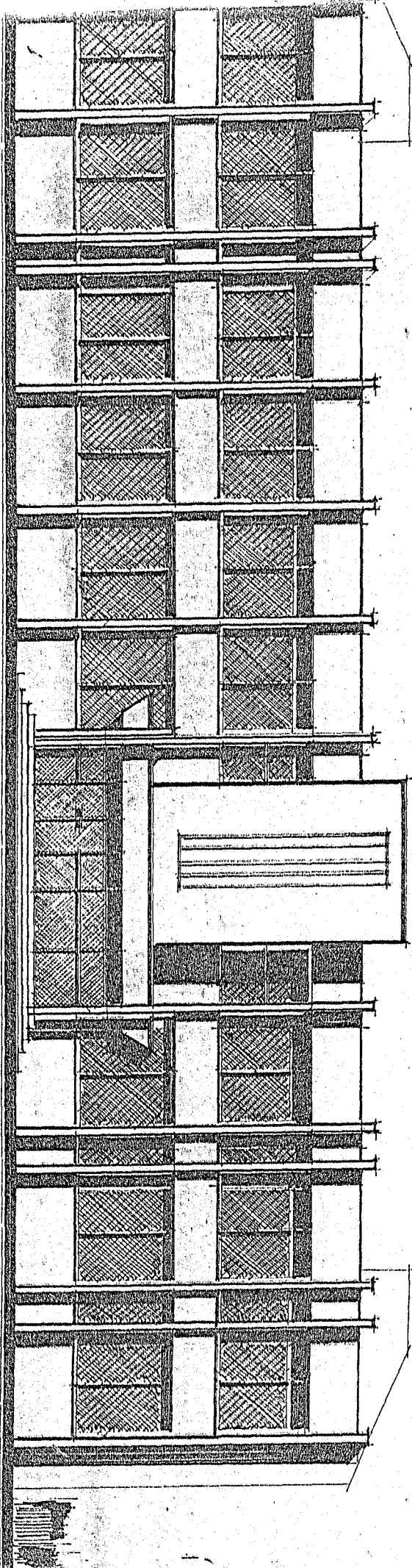
AC



SECTION EE

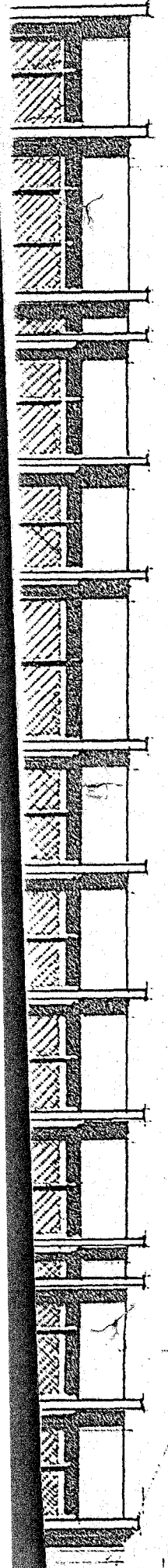
RIGHT SIDE ELEVATION

ADMINISTR

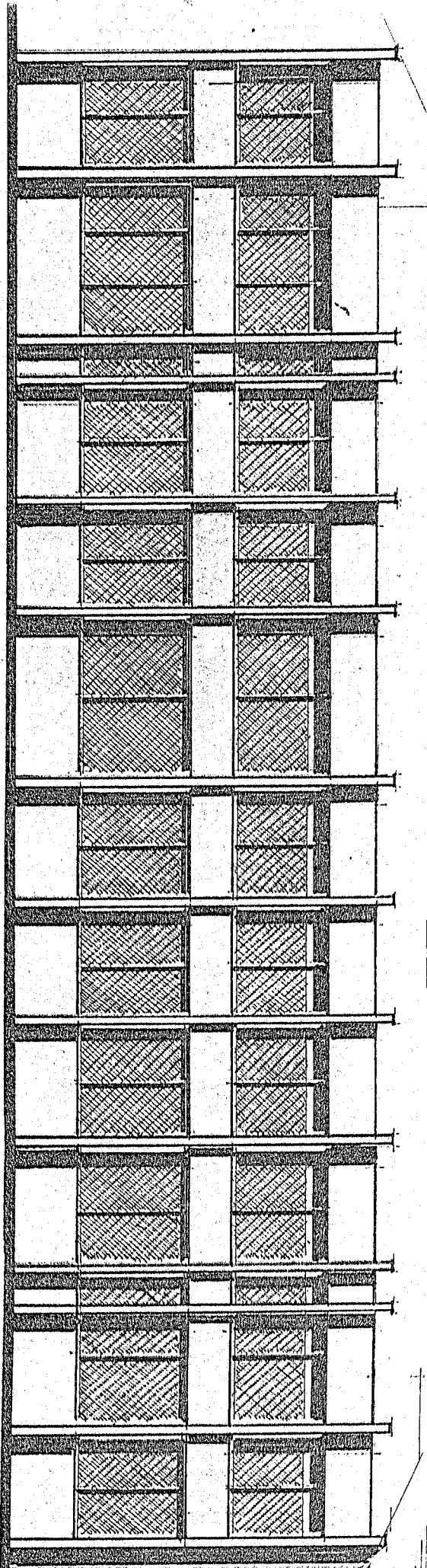


● FRONT ELEVATION

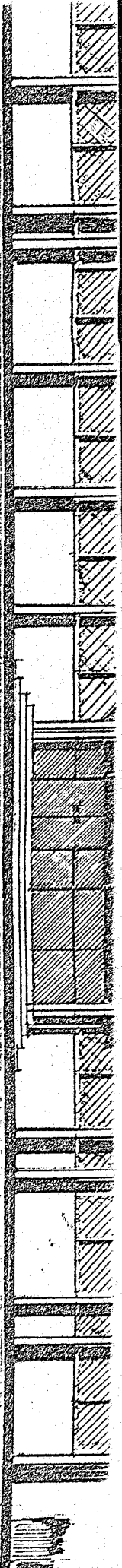
ADMINISTRATIVE BLOCK



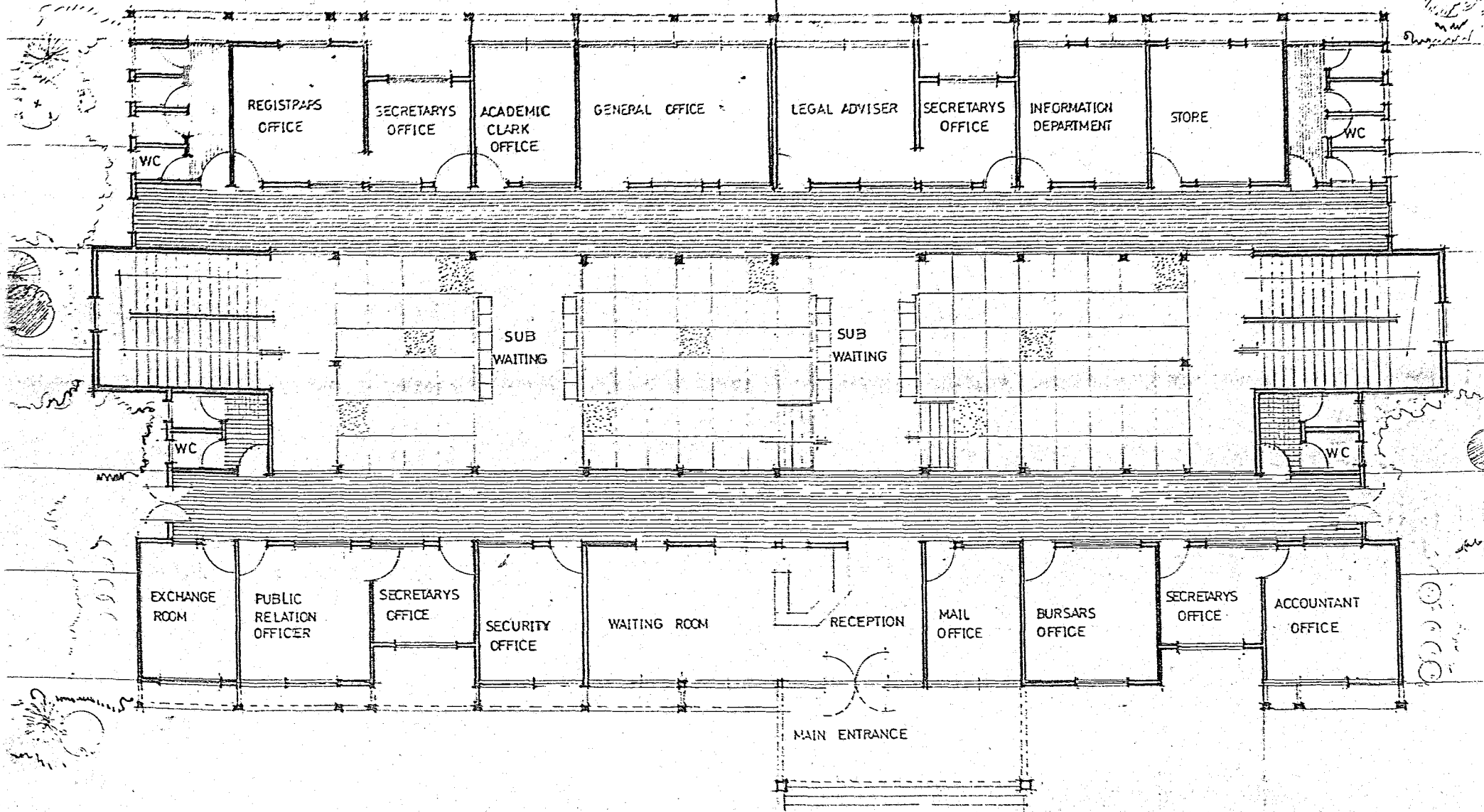
BACK ELEVATION



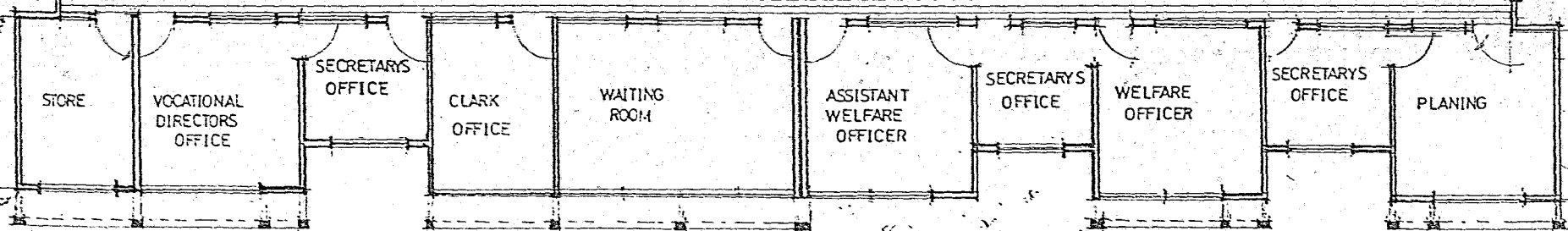
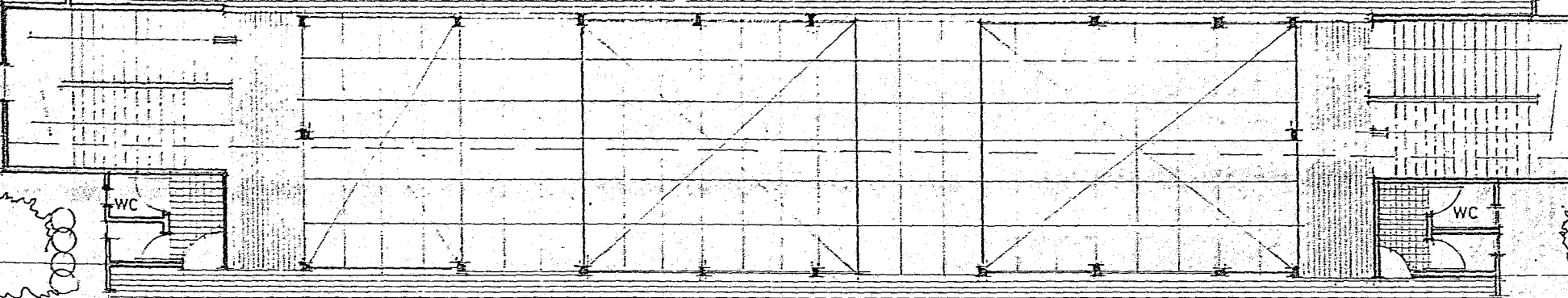
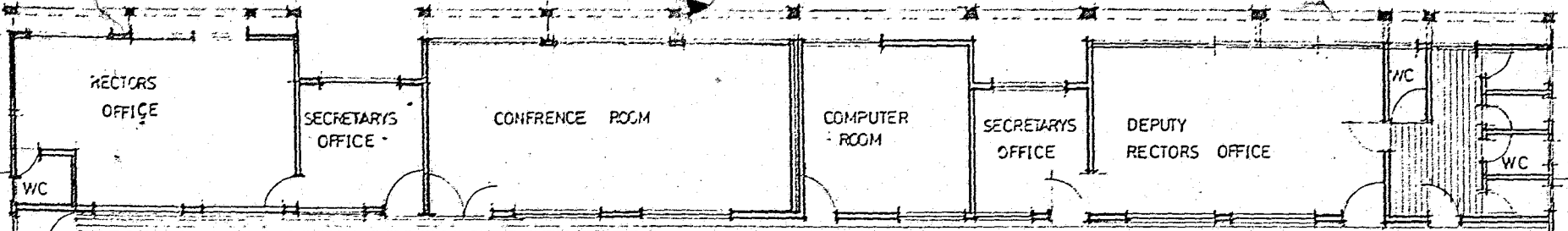
FRONT ELEVATION



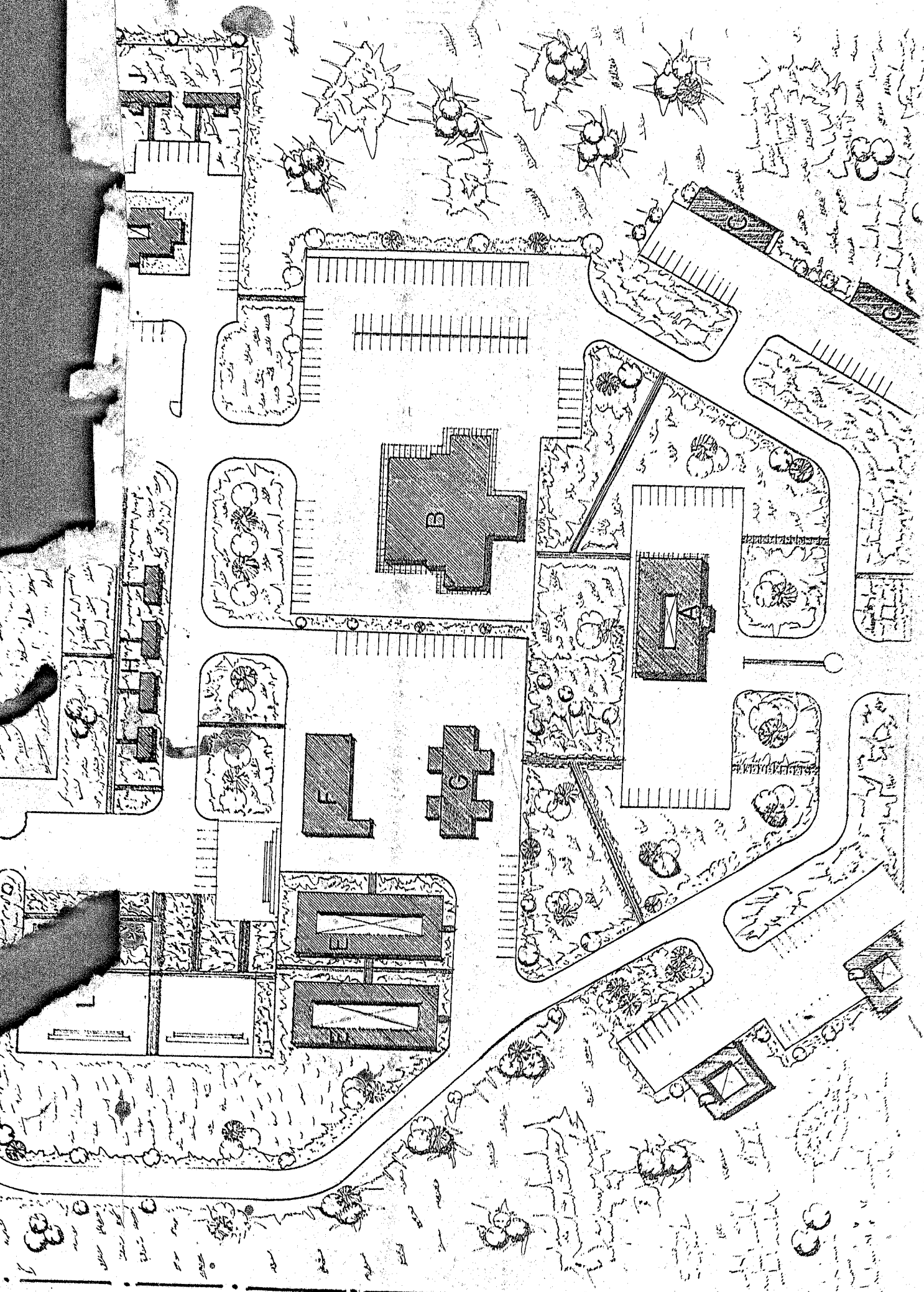
ADMINISTRATIVE BLOCK



GROUND FLOOR PLAN ADMIN. BLOCK



FIRST FLOOR



SITE PLAN

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