

LANDSCAPE DESIGN FOR LEISURE PARKS
A CASE STUDY OF PROPOSED AHMADU BELLO UNIVERSITY
LEISURE PARK, ZARIA
M.TECH THESIS (ARCHITECTURE)

BY

ABDULLAHI BILKISU ABUBAKAR (Mrs.)

(495)

DEPARTMENT OF ARCHITECTURE
SCHOOL OF ENVIRONMENTAL TECHNOLOGY
FEDERAL UNIVERSITY OF TECHNOLOGY - MINNA

CERTIFICATION

I certify that this project was carried out by me, Abdullahi Bilkisu A. (Mrs.)

Abdullahi

Student's signature

24/4/2001

Date

Pelua

Project Supervisor

20-5-2001

Date

[Signature]

Head of Department

21/5/01

Date

[Signature]

Dean of School

21/5/2001

Date

External Examiner

Date

DEDICATION

I dedicate this thesis to Almighty Allah for his numerous and endless mercies, to my parents for their understanding, to my husband for his care and support and to my baby Umar Abubakar (whom I gave birth to in the cause of this project) for the stress I put him through during the cause of his journey to the world.

Acknowledgement

My profound gratitude goes to my supervisor Arc (Mrs.) Adesina for her understanding, to the Head of Department of Architecture Arc. Dr. S. Zubairu for her motherly care and concern, to Arc. And Mrs. Anunobi for their assistance, Arc. Mrs. M. Bakaya for her moral support and to all lecturers of Architecture Department for without their assistance this programme wouldn't have been easy.

I will like to thank my class mates, namely; Halima Uimaru, Mrs. H. Aliyu, Bunmi Okunbanjo, Michael Ajufor, Odunlami Femi, Mustafa, to mention but a few. My appreciation also goes to my friends from other departments ; Mrs. Monsurat Hussain, Falilat Tijjani, Sister Asifat, Sister Yetunde, and others.

Furthermore, I will like to acknowledge the support and assistance rendered to me by members of my family, because they stood by me through my trying times with love and understanding, they include my husband Architect Abdullahi A.A., and son Umar Abubakar A., my parents Alh. And Hajjia S.A. Aluko, my brothers and sisters - Mallam and Mrs. A. Sa'ad, Mrs. Asma'u Sa'ad, Mrs. Zainab Edun, Mrs. Maryam Onilu, Mallam Isa Sa'ad, Miss Fatima Aluko, Miss Rabiya Sa'ad, Miss Sa'adat sa'ad and Miss Aminat Sa'ad.

LIST OF FIGURES

	page
Figures	15
Model of recreation.....	17a
Hierarchy of human Needs.....	22a
Leisure time schedule profile for adults.....	30a
Streams and rivers.....	33a
Pools, fountains and cascade.....	43a
Landscaping with plant.....	46a
Transwonder land Amusement park Ibadan.....	54a
University of Benin, Benin City.....	59a
Crowtree Leisure Centre Sunderland.....	63a
Student centre, University of Arkansas, Fayethville.....	68
Population of Kaduna State table.....	

TABLE OF CONTENTS

Cover page.....	i
Certification.....	ii
Dedication.....	iii
Acknowledgement.....	iv
List of figures.....	v
Table of Contents.....	1

CHAPTER ONE:

1.0 Introduction.....	5
1.1 Introduction.....	5
1.2 Aims and Objectives.....	6
1.3 Research Methodology.....	7
1.4 Scope and Limitation.....	7
1.5 Definition of Terms.....	8

CHAPTER TWO:

2.0 Literature Review.....	10
2.1 History of Ahmadu Bello University.....	10
2.2 Existing Recreation Facilities in Ahmadu Bello University.....	11
2.3 Recreation Desires and demand.....	12
2.4 Classification of Recreation Activity.....	18
2.5 Objectives of Human Leisure Inclinations.....	19
2.6 Leisure Time Schedule Profile.....	22

CHAPTER THREE

3.0	Landscape Architecture.....	23
3.1	Landscape Characters and Elements.....	23
3.2	Water as a Source of Landscape.....	27
3.3	Hard Surface and Landscape.....	31
3.4	Planting in Paved Area.....	37
3.5	Plants for Enclosure.....	40

CHAPTER FOUR

4.0	Case Studies.....	44
4.10	Nigeria Case Study.....	44
4.11	Transwonderland Amusement Park, Ibadan, Oyo state.....	44
4.12	General Hassan Usman Katsina Park, Kofar Gamji, Kaduna.....	47
4.13	Okada Wonderland, Delta State.....	49
4.14	University of Benin, Benin City, Nigeria.....	51
4.20	Foreign Case Studies.....	55
4.21	Crowntree Leisure Centre Sunderland Great Britain.....	55
4.22	Student Centre, University of Arkansas, Fayette Ville United State of America.....	60

CHAPTER FIVE

5.0	Date Collection.....	64
5.1	Climatic Conditions.....	64
5.2	Vegetation.....	64
5.3	Geology and Topography.....	65

5.4	Population Structure and Distribution.....	67
5.5	Socio Cultural Life.....	69
5.6	Tourism and Recreation.....	70

CHAPTER SIX

6.0	Site Analysis.....	71
6.1	Criteria for Site Selection.....	71
6.2	Location of Site.....	71
6.3	Site Characteristics.....	72
6.4	Access and Circulation.....	75

CHAPTER SEVEN

7.0	Design Concept Construction.....	77
7.1	Concept and Design.....	77
7.2	Materials and Construction.....	79
7.3	Space Requirements.....	80

CHAPTER EIGHT

8.0	Design Services.....	82
8.1	Electricity and Lighting.....	82
8.2	Water Supply.....	82
8.3	Maintenance.....	83
8.4	Solar Control.....	83

CHAPTER NINE

9.0	Conclusion.....	85
9.1	Bibliography.....	86

CHAPTER ONE

1.1 INTRODUCTION

Ahmadu Bello University is one of the biggest and oldest higher institutions in West Africa. It was founded as far back in 1962, which makes it 38 years this year. I was opportuned to visit Samaru Campus during my data collection, some time last year and among the places I went to within the campus was the popular A.B.U. DAM. I was fascinated and carried away with the beauty of nature I discovered on that site. At a side of what looks like a leveled highland is a water body while the other side is a dry land. The levelled highland is motorable and is about 100-150m long and about 3m wide. There is an existing garden just before the dam (i.e. BOTANICAL GARDEN). With all these potentials, the dam is in a very bad shape due to lack of proper maintenance.

An idea of creating a leisure park on this piece of nature's gift is tempting and I believe will be a centre of interest to both inhabitants of A.B.U. Samaru Campus and visitors to the campus. The Leisure Park as the name implies, will provide for recreational facilities and site for relaxation. Activities like strolling, picnic, sight seeing, swimming, fishing, outdoor games, open air eating and open air stage performance, will be provided for on the site.

This is an attempt through proper combination of element of landscaping to bring out the beauty of nature and creating an avenue for relaxing after the day's activities. And this will generate funds eventually for the institution.

Some portion of my site is a water log area, this low bearing capacity soil will be made good use of by introducing soft element of landscape i.e. planting of flowers

- (a) Creating a well-landscaped environment for strolling and sight seeing.
- (b) Provision of outdoor sporting facilities.
- (c) Maintaining the water body and its hilly bank.
- (d) Creating a soft landscaped arena for picnic and boating. This directly by the water body.
- (e) Designing an open air theatre for outdoor stage performance.
- (f) Provision of a place for fishing.

1.3 RESEARCH METHODOLOGY

I shall carryout my research adopting the following methods;

- (a) Personal visit to the site for better assessment of the site.
- (b) Personal visit to some of the existing recreational park we have in the country.
- (c) Study of journals, previous writes ups, encyclopedias, magazines and newspapers on recreation and necessary facilities needed within a Leisure Park.

1.4 SCOPE AND LIMITATIONS

For the benefit of this thesis, I shall concentrate on the following:

- (a) Snacks and drinks bar.
- (b) Open air-eating area.
- (c) Soft landscaped picnic areas.
- (d) Fishing site.

and trees. The waterside will be paved for fishing while retaining walls will be used as a preventive measure for erosion or over flowing of the river.

Another advantage my site will provide for the purpose of this design is a constant water supply for some fountains that will be located on site. To achieve a pedestrian friendly park, the motorable hilly part of my site will be converted into an outdoor eating with bars and path for strolling. Retaining walls will be used for supporting the paved areas while providing shade for the fishers and snacks bars underneath.

The amphi-theatre and restaurant will be located as close as possible to the parking lot so as to make it easier for users who might just want to come in for a show or to eat from the restaurant without necessarily wanting to explore the park.

In conclusion, this is a proposal, which I presume will transform the abandoned gift of nature into a place of interest. And at the long run provide a source of income to the institution used for routine maintenance of the Leisure Park.

1.2 AIMS AND OBJECTIVES

My major aim of designing a Leisure Park is to maintain the beauty of nature. I intend to bring people close to nature and make relaxation after days activity much easier. And to provide a place to retire to, so as to ease piled up tension and stress.

To achieve my above aims, these are measures I intend to take:

- (e) Open air theatre
- (f) Restaurant
- (g) Outdoor games
- (h) Public toilets
- (i) Parking spaces
- (j) Indoor games
- (k) Amphi-theatre

1.5 DEFINITION OF TERMS

- LEISURE:** Any portion of an individual's time not occupied by remunerative employment or in pursuit of essential activities
- OUTDOOR RECREATION:** Leisure time activities which utilize an outdoor area or facility
- PARK:** Public or private land set aside for aesthetic, recreational or cultural use
- RECREATION:** Any leisure time activities which is pursued for its own sake and the satisfaction is derivable from it, or what happens to a person as a result of a recreation experience.
- RECREATION DEMAND:** The amount and kinds of recreation opportunities an individual or population subgroup desires (latent

demand) or uses (expressed demand) in a given time, period, place or planning unit.

REACTION DESIGN: A process that relates to the form and function of a recreation resource. The use of information to create designs that relate to the existing or potential users of a recreation space or population of a planning area.

RECREATION FACILITY: Buildings and other physical features or improvements designed, constructed and managed for recreation use.

RECREATION PLANNING: A process that related the leisure time of people to space. The use of information to facilitate decision making that results in the allocation of resources to accommodate the current and future leisure of a population and planning area.

RECREATION SUPPLY: The quantity, quality and effectiveness of existing or potential recreation resources.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 HISTORY OF AHMADU BELLO UNIVERSITY

Ahmadu Bello University was founded in 1962. During the 38 years of its unprecedentedly quick development, it seats of learning south of the Sahara. The university became the largest and inherited its site and a few building from the Nigerian College of Arts, Science and Technology which was founded in 1952.

The dynamic physical expansion of the university in the first decade of its existence, unfortunately, was not guided by a general development plan, which might have provided a useful aid to transform the college into a large and well co-ordinated university complex.

Consequently, the numerous constructions of new departments and facilities were sited almost spontaneously at the nearest available place without enough consideration being paid to the overall development of the campus. Academic facilities were sited at random, without proper thought being given to their relationship with one another. Student accommodation facilities were located to adhere to an undecipherable pattern. There were no well-defined spaces for student recreation and no permanent green or open spaces – the whole development structure was amorphous.

In 1975, the project office of the faculty of environmental design was requested by the university authorities to undertake the necessary research to workout a development plan for the university main campus area. It was asked to infuse some order into the uncoordinated fumble of buildings and facilities that

constituted the main campus and to among other things, provide adequate social and community facilities in order to satisfy the requirement of the university population.

The report of the project office pointed out the inadequacy of student recreational facilities in existence then – which consisted in its entirety of common rooms attached to the respective hostels. And most of these rooms are not well equipped. The report also expressed optimism that the new sport centre and student centre, then under construction would soon be completed and that, when completed they would help the university student to continue a notable reputation in the numerous sport activities.

As the student population grows, the facilities and provision for leisure time recreation proved progressively more and more inadequate and substandard. The common rooms became, over the years, less attractive and due to ill-maintenance fell into disrepair, misuse and abuse. Some facilities like the assembly hall and the gymnastic hall attached to it were develop in an effort towards helping the sad situation but time has shown that, that was just the begging the issue, their presence symbolized a recognizance of the need rather than a solution.

2.2 EXISTING RECREATION FACILITIES IN AHMADU BELLO UNIVERSITY, ZARIA

The existing means of leisure recreation presently in A.B.U. area;

- Basketball: 3 courts, which two of them are for practice and a standard one

- Football: 2 pitches
- Lawn tennis: 4 courts
- Swimming: 1 swimming pool
- Table Tennis: 1 table tennis board
- Badminton: Shares space with table tennis
- Cricket: 1 pitch
- Drinking: Ribadu parlour and student centre
- Social club organized activities
- Private disco parties

Some of these facilities are either out of order or are in advanced stages of disrepair. Facilities where social clubs on campus can operate creditably and profitably are either inadequate or unsuitable.

The university gymnasium is much bigger and attempts were made to utilize it for bigger shows but the acoustics there is inadequate because it was designed purposely for sporting only. Although, there is a student centre presently on campus, which made provisions for business centre, games shops.

2.3 RECREATION DESIRES AND DEMAND

Recreation Desires

Two concepts are fundamental to the recreation experience and all means of users preference and satisfaction associated with this experience.

Both concepts are based on the premises that people;

- (a) Expect a pleasurable experience in a recreation facility.
- (b) Appreciate a range of choice in how and where they use their leisure and
- (c) Have social/psychological needs that can be accommodated as part of recreation experience.

These basic concepts are commonly expressed as:

Resource Quality

Objective measures of factors or conditions a visitor views as part of the permanent, natural and man-made physical element or facilities of an area e.g. scenery, vegetation, water, toilets, trails etc.

Use Quality

Objective measures of factors or conditions visitors views as constraints (negative) or inducements (positive) to their expectations and over crowding, noise, conflict, fear, embarrassment, danger or program leadership, interpretation, information, law enforcement, or food services. The concept of quality is based on behavioural approach to the recreation experience which translate basic human needs into three desires that condition user's preference and satisfaction for an area or activity. These are:

- (a) Resource Directed: Contact with a natural resource e.g. sun, sand, surf and wildlife. The degree of satisfaction depends on the quality and access to the resource.

- (b) Image Directed: The fulfillment of a desirable image e.g. jogger, sailor, or tennis player. The degree of satisfaction depends not on the resource but on the way others may view the resource, activity or user.
- (c) Leisure Directed: A pleasurable way to use leisure time e.g. window shopping, television, movies etc. the degree of satisfaction does not depend on the resource of others, but on how effectively the place or activity consumes leisure time.

User preference and satisfaction for a recreation experience can be described with following definitions:

User Preference: Is the voluntary choice of an activity or area to fulfil a desire.

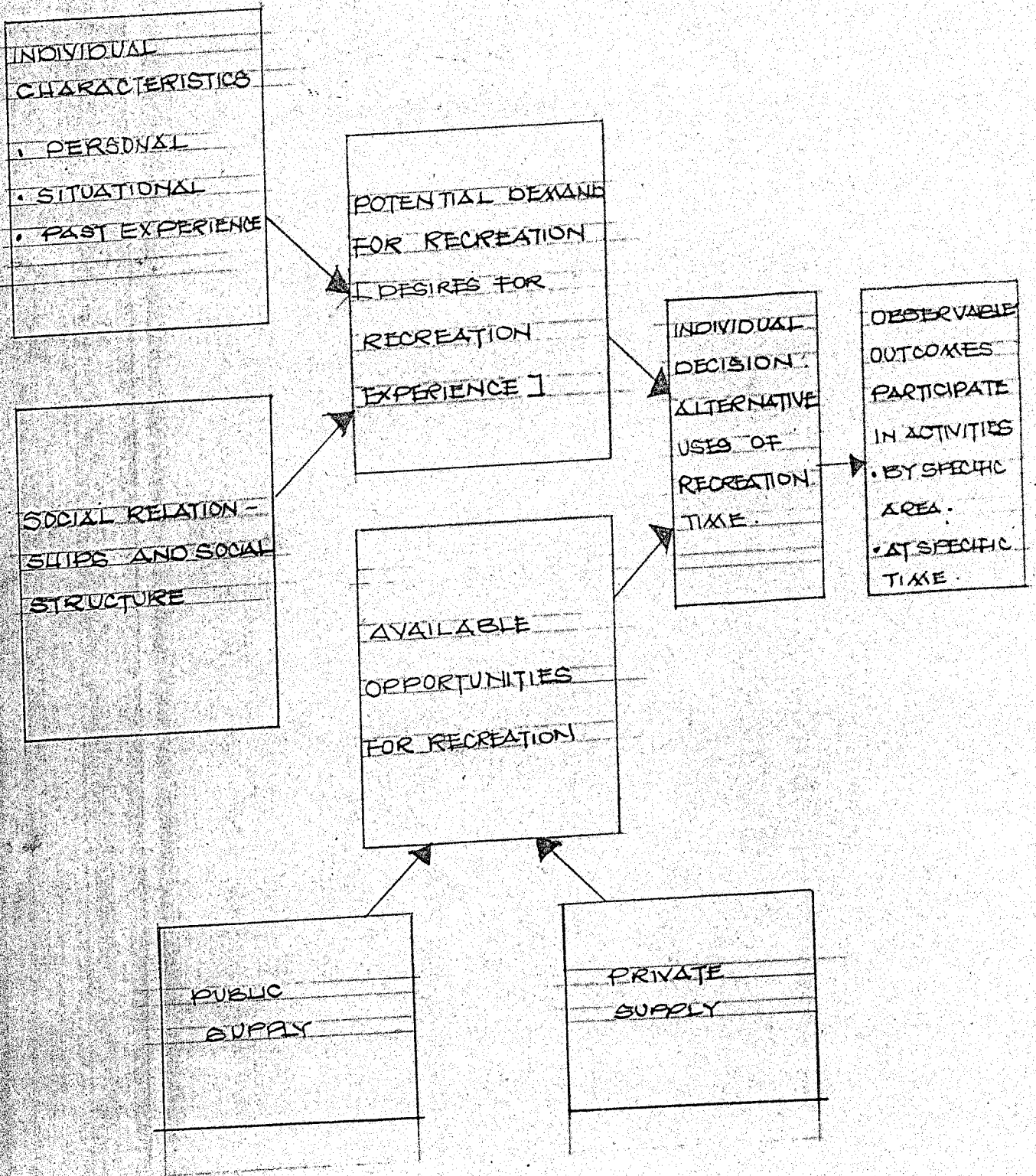
User Satisfaction: Is the fulfillment of a desire and preference which is normally conditioned by the users preconceived ideas about the area, activities available, natural setting, man-made facilities and management of the area.

In 1975, a model was developed by the national academy of science, it suggested three factors that condition an individual's decision to participate in a recreation activity;

1. Individual characteristics e.g. demographic characteristics.
2. Social relationships e.g. family or ethnic group.
3. Availability of recreation opportunities e.g. access, cost and information.

The model is shown on the diagram next page

MODEL OF RECREATION



Recreation Demand

One of the least understood and most abused aspect of recreation planning is the concept of demand. Although recent advances in methodology and sophisticated models gave improved the state of the art, the value of these models, as a basis for public policy or site-specific design is questionable.

At one extreme there is growing skepticism about the role of quantitative techniques for public decision making and design. Critics point out the difficulties of attempting to quantify, relate, and project the complex variables of recreation and environment. They assert that the decision and design process must be conditioned by judgement and those who believe in quantitative demand models are unrealistic.

At the other extreme, some regard the qualitative aspects of demand as a meaningful reflection of interest or participation in recreation. This school of thought is expressed in interpretations of "demand" as what people will or can do when given the opportunity. Proponents assert factors such as the supply or distribution of resources, cost asses and other factors can be objectively measured and projected for decision making and design. They believe models have qualifications but are useful in assessing the consequences of alternatives.

In absence of objective measures of recreation behaviour, planners have taken two approaches to oriented to what planners think people ought to do. The second tries to find out what people want to do. The gap between attempting to assess what people want to do or ought to do parallels the extreme viewpoints on demand.

Types of Demand

There are three types of demand which condition the use, design and management of recreation resources, the existing and future dimensions of each type of demand should be considered in the preparation of recreation plans or the design of projects.

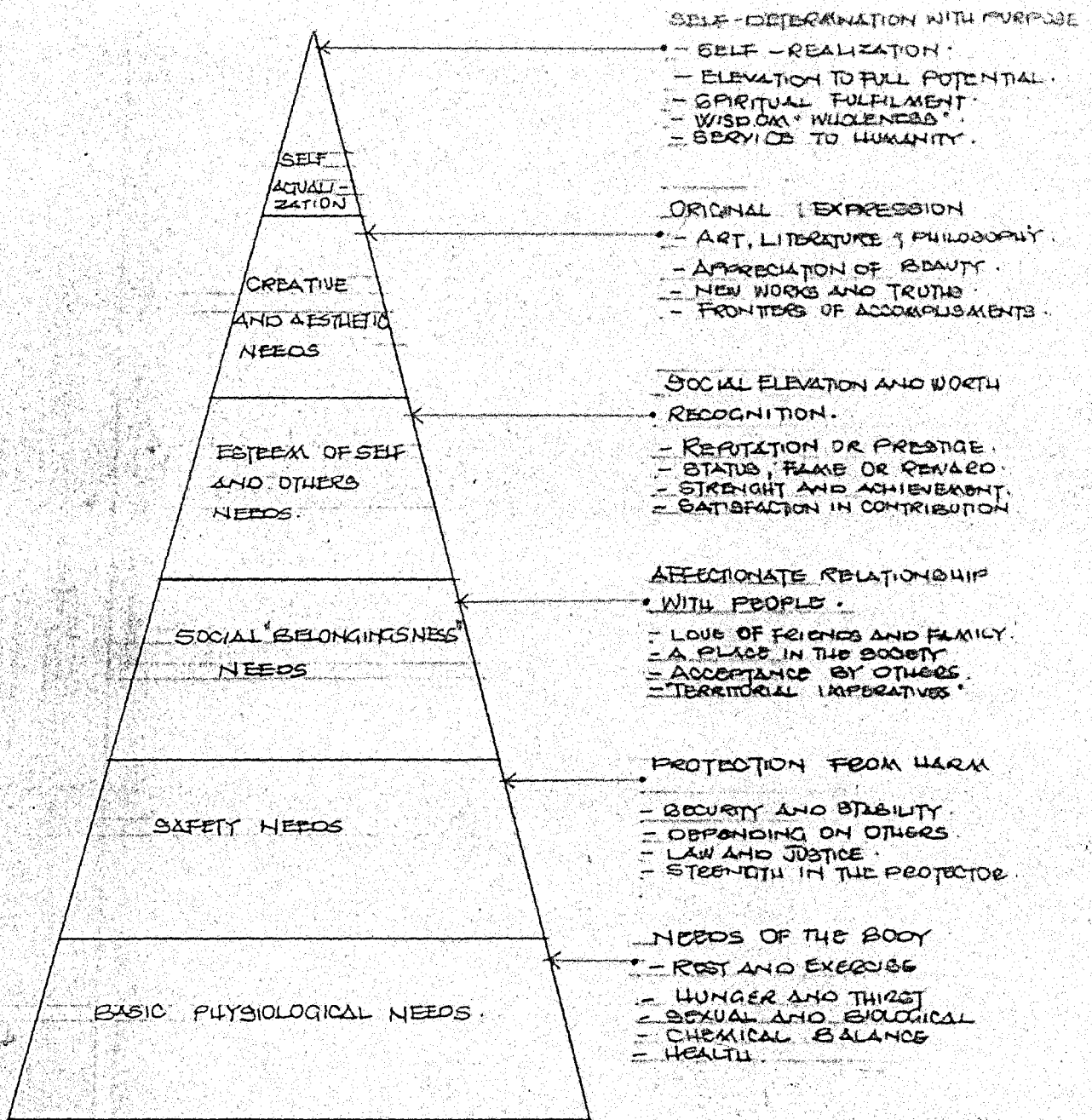
Latent Demand

Is the recreation demand inherent in the population but not reflected in the use of existing facilities, access and information are provided. This type of demand translates the hierarchy of human need (shown below) into resource, image, or leisure – directed desires that can be described with measures of user preference and satisfaction.

Latent demand is the basis for the argument that supply creates demand. This argument suggests people will use available opportunities if they are provided. The planner's role is to provide a diverse set of opportunities with the expectation of reasonable use.

Induced demand

Is latent demand, which can be stimulated by public conditioning through the mass media or the educational process. Induced demand exploits latent demand by encouraging people to change their recreational patterns.



- PRECONDITIONS FOR NEEDS SATISFACTION**
- FREEDOM FROM FEAR
 - FREEDOM TO SPEAK
 - FREEDOM OF EXPRESSION
 - FREEDOM TO SEEK KNOWLEDGE
 - FREEDOM TO DEFEND ONESELF AND OBTAIN JUSTICE
 - FREEDOM TO SEEK ONE'S GOALS AS LONG AS NO ONE ELSE IS HARMED
 - FREEDOM TO EXCEL BEYOND THE NORM OR AVERAGE

HIERARCHY OF HUMAN NEEDS

Expressed Demand

This is the consumption of participation in terms of existing recreation opportunities. It describes what people do instead of what they would like to do (induced demand) or can be conditioned to do (induced demand). The difference between expressed and latent demand can also be described in terms of participation and preference for selected activities.

Expressed demand is often the expression of latent or induced demand but not always. It only indicates participation at prevailing opportunity conditions and normally omits considerations of price, supply, access, skill, or equipment necessary and users satisfaction with the recreation experience.

2.4 CLASSIFICATION OF RECREATION ACTIVITY

The wide range of leisure activities can be classified in a way that acknowledges the concepts of quality and that is useful for the planning and management of recreation spaces.

The problem is to analyze existing recreation spaces asking, what do people expect in terms of a recreation experience and what did they receive in terms of satisfaction based on the concept of resource and use quality.

The primary task is to classify and aggregate recreation activities into categories that reflect similar components of experience and resource. A secondary task is to analyze the relationships between different activities (multiple use) environmental impact (carrying capacity), space requirement (standards) and supporting

elements (management) required for each category. Most activities can be classified into these four categories of recreation experience:

- (a) Physical Recreation: This requires exertion of physical effort as the major experience of the activity.
- (b) Social Recreation: This involves social interaction as the major experience of activity.

Cognitive Recreation: It includes cultural, educational and creative or aesthetic activities.

Environment Related Recreation: This requires use of a natural resource such as water, trees, scenery or wildlife to provide the setting out or focus of an activity.

Because the total recreation system is not outdoors based, both indoor and outdoor experiences are considered. Within each of these four experience categories, there are activityusters, which represent similar types of activities. These activities generally require the same type of resource to allow for greater flexibility in the application of standards.

2.5 OBJECTIVES OF HUMAN LEISURE INCLINATIONS

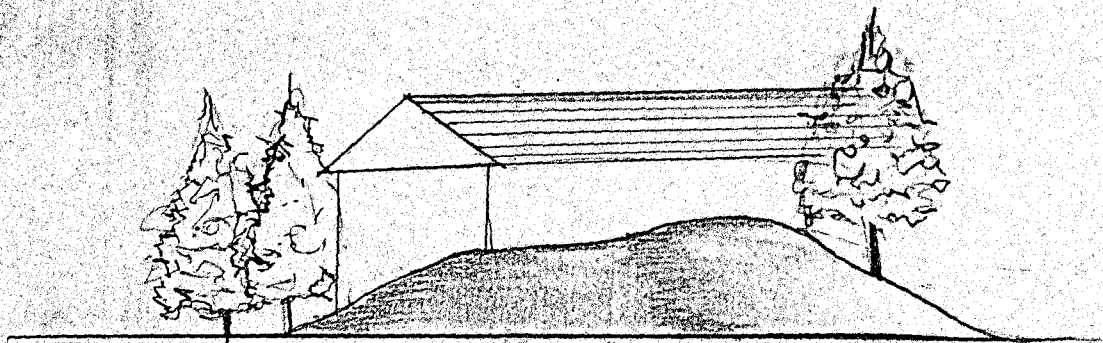
People are inclined towards leisure time recreation for any of a number of reasons. These reasons differ from person to person and even within the same person depending on the time, place, and the prevailing circumstances. These reasons can be conveniently classified under five broad categories as follows:

- (a) Physical
- (b) Psychological
- (c) Social
- (d) Intellectual/educational
- (e) Spiritual

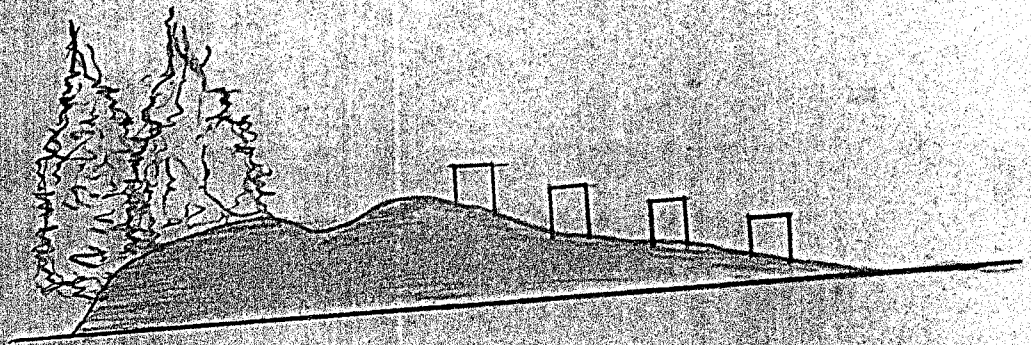
carefully preserved from change. In its undisturbed state it might better produce its group of timber, maple sap, nuts or fruits.



- (ii) Destruction of the Natural Form: A hill or knoll may be eliminated by grading, it may be split with deep highway cuts, it may be inundated by an impoundment, or it may be buried in construction. If any such treatment is proposed, its original landscape character needs not a consideration except as it poses a physical problem.



- (iii) Alteration of the Natural Form: The nature aspect of a hill may be altered or changed completely by modifying its shape through grading, construction, or other types of development. Such changes may be detrimental and result in a denuded eroded or hacked-up mound, or they may effect an improvement, as in the terraced hills of Bali, with their contoured rice paddies, quiet pools, clear trickling water and abundant crops.



- (iv) Accentuation of the Natural Form: The essential landscape character of hill may be intensified. Its apparent height and ruggedness may be increased to such a degree, for instance, that a small knoll may be made to appear mountains.

3.2 WATER AS A SOURCE OF LANDSCAPE

Water has for long provided man with the most popular types of outdoor recreation such as bathing, fishing and swimming. Along their banks and shores is found the accretion of campsites, mobile home parks and cottage houses that attest to our love of water. Human are acutely attuned to the language of water, that is

the trickle and gurgle of ice melt, the splash of stream, the lapping of water on lakeshore, the surf crash and even the cry of shore birds that can almost be heard, see head. Water bodies and streams are punctuation marks in the reading of the landscape. They translate for us the landforms and the story of the geologic formation.

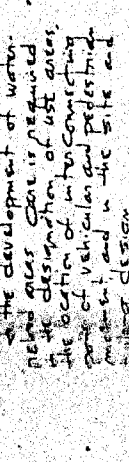
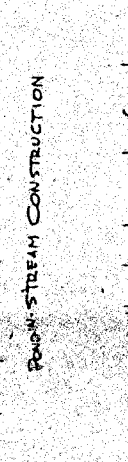
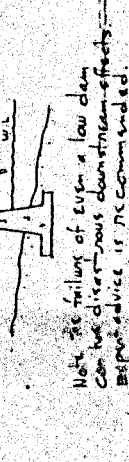
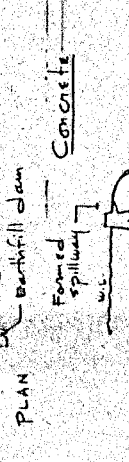
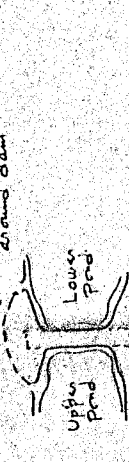
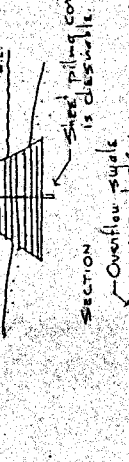
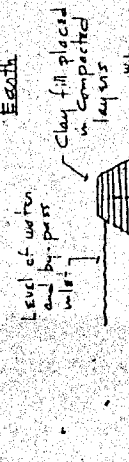
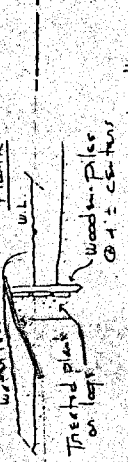
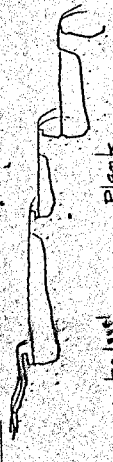
Most attributes of nature is the hills, the trees, the starlit sky-are usually taken for granted, but the vale of free water is not where it exist, as in the form of pond, stream lake or ocean, they are priced as sites for parks and parkways, for homes, institutions, resort hotels and other commercial ventures. That is why in the law of economics it states that "the closer a site to open water, the higher its value as real estate".

3.2.1 WATER-RELATED SITE DESIGN:

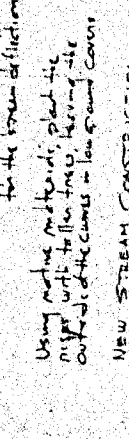
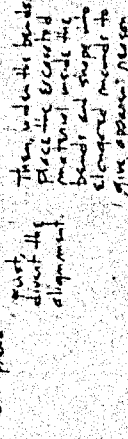
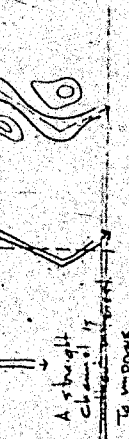
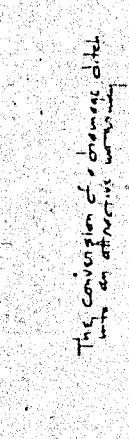
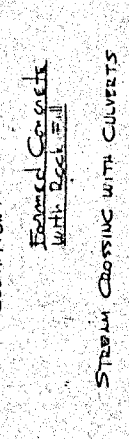
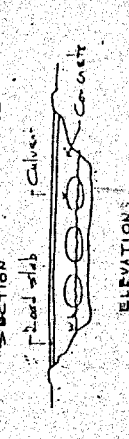
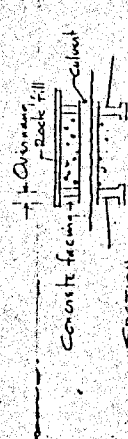
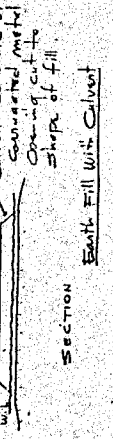
In the development of land-water holding special care is required in the declination of use areas in the location of paths of vehicular and pedestrian movement, and in site and building design:

- (a) Natural Streams and Water Bodies: Where these exist, they represent the resolution of many dynamic forces at work which are precipitation, surface runoff, sedimentation, clarification, currents and ware actions. It can be seen that to alter a natural stream, pond or lace will set in motion a whole chain of actions and interactions that must then be restored to equilibrium. It is soon learned therefore, that a first consideration in the site planning of water-related areas is to leave the natural conditions undisturbed and build up to and around them.

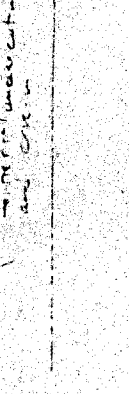
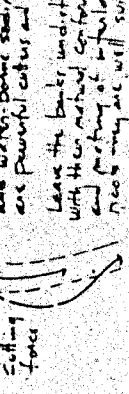
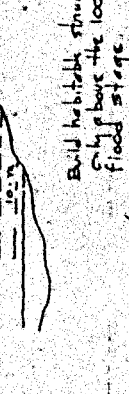
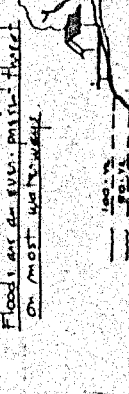
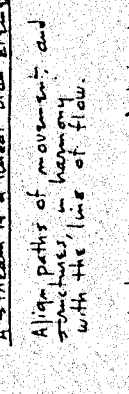
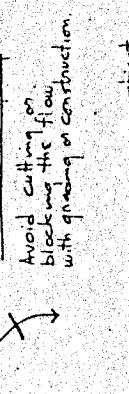
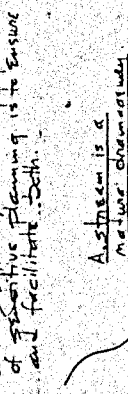
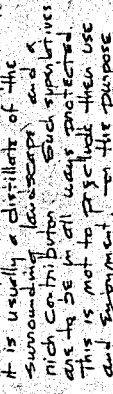
Utilize the fall of the stream to create occasional pools, rapids and waterfalls.



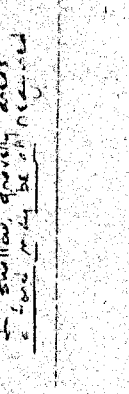
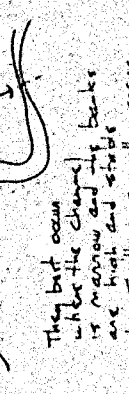
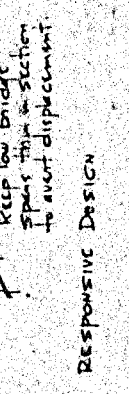
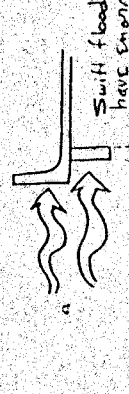
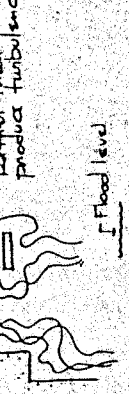
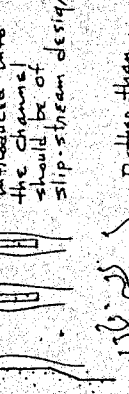
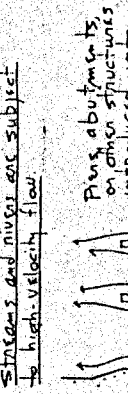
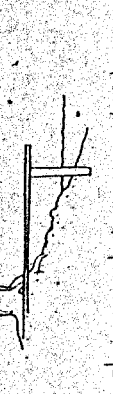
When a water feature - such as a spring, pond, stream, river, lake, or fall, must exist in a structure, it is usually a disturbance of the surrounding landscape and a rich contribution. Such structures are to be in all ways protected. This is not to preclude their use and enjoyment. The purpose of protective planning is to ensure and facilitate both.



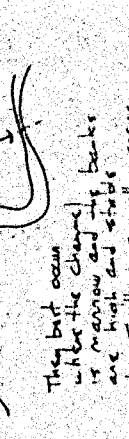
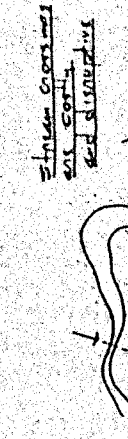
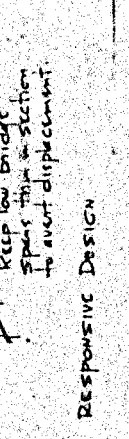
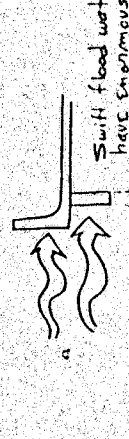
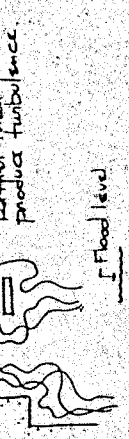
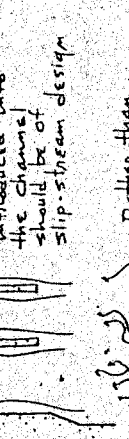
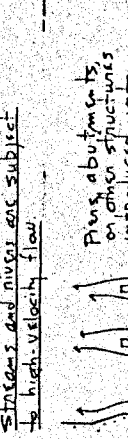
Streams and rivers are subject to high velocity flow.



Streams and rivers are subject to high velocity flow.



Streams and rivers are subject to high velocity flow.



bridges or a splashing fountain, such water features, easy to devise and construct, can yield long hours of watching and listening pleasure.

3.3 HARD AND SURFACE LANDSCAPE

Hard surfaces are important elements in landscape design, especially in our increasingly urbanized civilization. The main function of any paved and hard surface is to provide a dry, hard, non-slip surface, which will carry the required load for pedestrian or vehicular traffic. It may also have the following function:

- (a) Direction: This can be suggested by the use of smoother flags on which people naturally walk to lead them across a grassed or graveled courtyard or by the use of cobbles to deter people from wandering off route.
- (b) Hazard: Where vehicles meet pedestrians' changes in the paving material will indicate change of function. Changes in paving materials can also draw attention to changes of level negotiable by steps or ramps.
- (c) Traffic Hierarchy: It should indicate by its texture or otherwise, pedestrian or vehicular priorities.
- (d) Repose: Paving patterns can indicate subtly focal points where people pause in a paved area.

3.3.1 CHOICE OF PAVING

The choice paving will depends on the following factor:

- (i) Cost and availability
- (ii) Appearance, weathering, cleaning
- (iii) Safety, noise, light, reflectivity
- (iv) Subsoil, drainage and services
- (v) Comparative cost of surfacing materials

3.3.2 PAVING FOR VEHICLES

Common surfacing materials are concrete, bitumen, macadam, tarmacadam, cold and hot asphalt, sealed and unsealed gravel. Concrete can be especially important for pedestrian precincts with their service traffic, vehicle crossings or hard standing. Pavements corners and other vulnerable locations can be reinforced in this way.

3.3.3 PAVING FOR RECREATION

These include paving for athletics, running tracks, field events, jump approaches, throwing circles and steeple chase tracks and all all-games. Rugby, football is the only one that cannot be played on hard surfaces.

There are two types of paving for recreation namely:

- (a) Hard Porous (Water Bound) Surface: This is composed of crushed hard limestone, Winston, burnt red shale or ash, they all depend on hygroscopic action for stability. The surface can be affected by frost or frost heave while good drainage is necessary to get water away quickly. These

surfaces are common like Redgra and Dripla and relatively cheap, but require regular brushing, watering and rolling. They come in the colour of black, buff, gray red and red range.

- (b) All water Surfaces: Concrete, asphalt or coated macadam are old established examples of non resilient impervious surfaces unaffected by weather condition.

New materials for surfaces based on bitumen /wood fibre and never synthetics using acrylic elastopolymen and nylon blades grass have been introduced. These new materials have combined the characteristics of concrete asphalt and coated macadam with that of the hard porous surface to produce all weather surfaces.

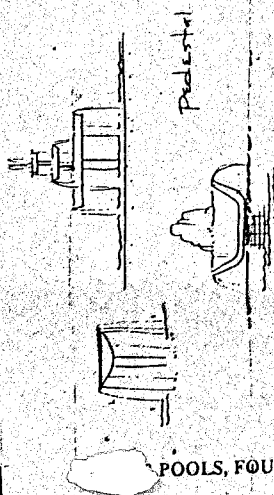
They are expensive but are becoming increasingly economic in obtaining continuous use in high price urban land situation.

3.3.4 PAVING FOR PLAYGROUNDS

Many of the materials mentioned can also be used for playgrounds. Generally softer materials are used throughout with concrete of paving slabs and other hard materials at access points and other areas of heavy pressure. Rolled asphalt (hot laid) gives good finish, being more durable than cold asphalt and smoother than macadam finishes which are too rough to fall down on.

Bitumen sealers with various admixtures have been used with mixed success. Cork chipping are good but need annual replacement. Many new synthetic materials are now available for vulnerable areas slide and climbing frames.

POOLS, FOUNTAINS AND CASCADE



Pedestal

Wall Fountain

Jet and Basin

Shape the inlet to create the desired effect.

FOUNTAINS

← SOURCE

Naturalized waterfall

With a source of water and a fall of even a few inches - a pleasant splash can be created.

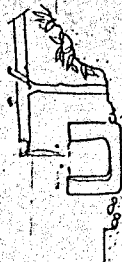
Shore spout

Cast pools and waterfalls

Step-related cascade

Falling water is aerated, aerated, and produces musical sound.

CASCADES



A water feature may be as simple as a trickle from a spring-fed tube into a brimming basin.

On a tumultuous rush of cascading water in an urban plaza.

Most garden areas would be improved by the introduction of water in some form, such as...

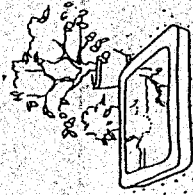


A few rough stones and simple basin...

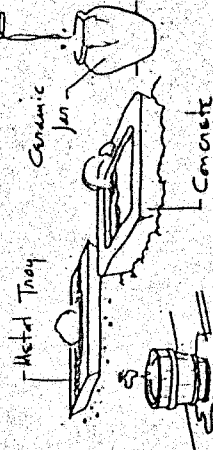
A formed pool and jet

On an overflowing an set in a bed of gravel.

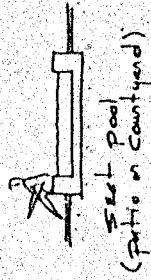
POOLS



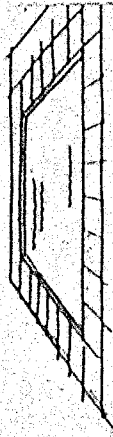
A quiet reflecting basin of any size or shape can be constructed of such varied materials as metal, concrete, brick, granite sets, or redwood. Potted plants may be grouped around. Especially if water is easily replenished with hose or watering can.



A pool can be made of many types of containers. The water source may be the garden hose, a faucet, a spring, or dripping stub of led pipe.



Flat pool (patio or courtyard)



Sunken water panel

Mainly composed of varying mixtures of rubber and or synthetic polymers they come in red, green gray and than colours.

3.3.5 PAVING FOR ROOF TOPS

Roofed or decked areas are now being increasingly used in urban areas. They require special consideration and various treatments are possible. These include light decking, more heavily modeled sculptural shapes in reinforced concrete or a treatment, which gives an illusion of normal ground by superimposing a naturalistic garden design.

3.3.6 TYPES OF HARD SURFACES

Hard surfaces are made up of:

- (a) Flexible surfacing
- (b) Rigid paving
- (c) Unit paving

(a) Flexible Surfacing: These are layers of compacted materials with no tensile strength and which spread the load directly over the soil and can be surfaced to keep water and frost from the subsoil. The materials may be laid loose or incorporate a binder.

(i) Unbound Surfaces: If laid loose consists of a base and sub base as needed laid directly on formation level without binding materials.

- (ii) Unsealed Gravel: This has an informal character and is of useful around trees as it allows their roots to breathe and avoids rigid passing lines around the trunk. It is cheap and suitable for occasional car parking.
- (iii) Cobbles and Ballast (Laid Loose): When laid directly on hogging or hardcore loose cobbles or stones provide an excellent hazard and are good by trees especially where the ground level by trees has to be raised. They can be used also as recessed trim between dissimilar materials but give rise to cleaning difficulties. Cobbles are available from beaches (gray/fawns) water worn, potteries quarries. Granite chipping and other coarse aggregates can be used similarly.
- (iv) Bound Surfaces (with water proofing binders, and/or surfacing): Surface dressing for both old and new pavement utilize hot tar or bitumen also available in emulsion form. Surfacing varies from open textures coated macadams to the smooth and more expensive black toppings of the hot and cold asphalt. The asphalt and coated macadam consist of grade aggregates that have been coated with tar or bitumen. Below is a description of the various use of asphalt.
- Cold Asphalt: This is laid cold which brings about its name; it is still used for a patching, now often laid warm for footways, roads and tracks.

- Rolled Asphalt: This is laid hot and it is a dense surfacing used on mostly city streets for heavy traffic. It is the cheapest and most common of all the hot asphalt.
- Mastic Asphalt: This is a smoother cleaner finish and a heavy-duty finish for bridges.
- Stabilized Soil base: This is a weak flexible but cheap concrete of cement mixed with earth. It can be used for roads, car parks, cycle tracks, playgrounds. It is only applicable where the ground is suitable (with gravel and coarse sand but no organic soils, while clay needs special treatment).

(b) Rigid Paving

Rigid paving structures are those which utilize the tensile strength of the construction to transmit loads to the soil, a sin case of concrete slabs for roads or pavements. The most common insitu concrete which is cheap, easy to use and popular, but it is important that the surface should be finished correctly and carefully with imaginative use of jointing and textured finishes. Even with the extra cost of these finishes joints. It is still far cheaper than many other materials. It is at its best when combined with other surfaces or trim and good detailing and workmanship are vital.

(c) Unit Paving

This is made up of large units and small units. Large units can be laid in several ways namely:

- (a) Set on 50mm Sand Bed: This is the traditional type where sand cannot be washed out at edges or through open joints.
- (b) Bedded and Joint with Mortar: This is mixed usually 1:3 (cement or lime to sand) and it should be suited to slab. Essentially for wheeled traffic but not over service due to lifting difficulties.
- (c) Laid on fine mortar dots at corners and center. It is easy to lift to access to services and to level the slabs. It is good if pavior is skilled, but not recommended for heavy pedestrian traffic.

Joints: Butt joints are best for normal paving and formal effects as they keep water from the base and discourage weeds.

Small units are particularly useful for small scale patterns as in domestic work where a change of scale is needed inside a large area or for ease of lifting over services. Many of them are relatively expensive but the small pre-cast concrete unit, often used so successfully in Europe are now generally available here. They include: bricks, paviers, tiles and mosaic setts, cobbles, timber and pre-cast concrete fire paths.

3.4 PLANTING IN PAVED AREAS

3.4.1 TREES

- (a) Existing Tree: Many established trees in paved area can exist without irrigation as they still continue to collect nourishment areas percolating through the subsoil. Where paving is lower than the tree the landscape architect should allow ample room for roots with good irrigation.
- (b) New Tress: These trees need adequate watering staking and tree guards are essential, while tree trunks should be wrapped with water-miscible plastic to prevent excess transpiration due to reflected heat from the paving.

3.4.2 CHOICE OF TREES FOR PAVED AREAS

The best way to select trees for such an area is to take a survey or study of the existing available trees how they are thriving and struggling so that the right trees are planted. Trees with excessive leaf fall, branch shedding characteristics such as elms and in clay soil should be avoided. Also trees with voracious rooting and suckering system as polars and willows should also be avoided soils have a marked influence on selection. They vary from shrinkable clays, where planting should be kept clear way from buildings and paving where drainage pockets can be troublesome to the other extreme of light sandy soil where three can be placed close to paving and services but will need extra irrigation to counteract rapid damage.

3.4.3 SHRUB AND GROUND COVER PLANTING

While other types of planting are either done in raised beds, plant boxes and containers, so that they are protected from damage and to avoid north-east winds,

raised beds with kerbs are much less vulnerable to damage and litter. With ground cover or Alpine plants, the kerb height should be sufficient to allow for plant over-hang. For dwarf shrubs and conifers, the land should be excavated to a depth of 450-600mm and back fill with good soil giving each plant 600mm square station before laying the paving with 225-300mm aperture at the plant positions. This allows room for plant feeding below the paving.

3.4.4 DRAINAGE AND IRRIGATION

A correct balance of water is needed for plants. In paving, planting is unnaturally constricted and artificial methods are necessary to ensure sound growth. Ideally water should stay long enough in the root area to nourish the roots before percolating slowly into the sub soil. Where conditions do not allow this, drainage is necessary to prevent 'Ponding' of stagnant water. In impervious clay sub soil further excavate and filling with washed ballast may be necessary. Adequate measure must be taken to safe plants poisonous substances.

3.4.5 NATURAL WATER SUPPLY

Water can reach plants from extra run-off from paving through unsealed gravel, cobbles or gravel reject. All of these form excellent paving around trees. Trees offer different problems as their catchment area extends around the perimeter of their spreads. Open joints can be left in paving or filled with weak mortar or sand, although slight frost heave may result with minor undulations appearing. In impervious paving, use cast iron or precast concrete tree grids or slotted bricks laid flush with the surrounding paving. These can be linked by storm drains to

even out water intake. Paving slabs or bricks with holes or grilles are useful around tree perimeter where the roots get their nourishment.

3.4.6 ARTIFICIAL WATER SUPPLY

This is often necessary due to excessive evaporation and overheating of tree roots through shallow paving. Planting needs comprehensive irrigation schemes that will include time-controlled sprinklers for small plants, adequate water is necessary for the first year after planting but after establishment in suitable conditions, most alpiners and conifers will thrive quite happily with only occasional watering.

3.5 PLANTS FOR ENCLOSURE

3.5.1 TYPES AND QUALITIES

Plants are primarily used for visual enclosure and shelter; they are as physical barriers they are limited to hedges, used as an alternative to fences or walls. Their choice over artifacts is because of their association with other organic materials (field hedges) because of the desire to obtain contrast between the works of man and nature or simply because of man's love for natural things. Being organic, plants present the problems of growth and time. Time is the interval before the plants are either effective visual or physical banners and the limited length of life before they need to be replanted.

The only way plants can be maintained is by clipped, pruned or trained cutting-of the two broad groups of plants which are evergreen and deciduous the choice is

primarily aesthetic. Evergreen plants give the most complete round enclosure except in broad-scale or dense planting such as wood or copse. Deciduous plants provide complete changes of form, colour plant are texture over the seasons, they are often abhorred by those responsible for the upkeep of the urban scene because falling leaves have to be disposed off. Evergreen and deciduous plants used for enclosure can be placed in three broad groups namely trees shrubs and hedges. The best way to use these plants depends on there on the fact that if they are indigenous to the district they will preserve the character of the environment. And if a new species is required the selection will be based on those that give the most effective enclosure because functional expression is the objectives of landscape.

3.5.2 TREES

The main function of trees is for enclosure and its falls into three broad categories namely: space defining, view screening and wind screening. Space defining is the art of landscape enclosure and the trees combined with land enclosure and the trees combined with landform are its raw materials. The purpose of tree screening is to hide ugly structures of disfigured landscape like planting for visual enclosure is primarily in aesthetic problem. Trees may be used to distract attention from the unpleasant view, they may be planted close to the view point, the nearer the trees are to the view point, the greater will be the effect and the species can be selected to have a formal relationship to be obscured. Shelter belts or windbreaks are formed by belts of trees singly or in system or by small blocks of trees of various shapes.

3.5.3 HEDGES

Hedges are the alternative to fences for physical enclosure and to walls for both physical and visual enclosure. As wind breaks they are more effective than solid walls because they are permeable. Hedges are the complement of trees and land shaping in the art of landscape enclosure, in town design they define space for different functional uses such as playing fields and in gardens they provide the partitions and dividing screens which give the design structure. As with trees, the choice is a very wide one indeed, hedges that are to provide a physical barrier are generally strong growing plants with thorns. Those that are to form a visual screen tend to be evergreens and those that are to be wind breaks are sturdy and dense in growth.

It is important to consider the appearance of the hedges as a whole rather than as a series of individual plants for instance a beach tree is different from beach hedges. Hedges can be combined to give a variety of colour and texture when various species are considered.

3.5.4 EVERGREEN HEDGES

These are hedges that can easily be shaped into forms to take on the architectural character of walls and also be the exuberance of topiary work. A typical example is the Yew (*Taxus baccata*) commonly called "the aristocrat of hedging plants." It is a strong hedge with compacted growth and dense texture. Its sombre dark colour makes a beautiful contrast with ground covers such as grass and paving and fine background for flowers. Its disadvantages are its high cost of purchase and slow growth. Its growth can be enhanced by double planting with cheap, quick-growing hedges.

3.5.5 DECORATIVE HEDGES

A very choice of plants for decorative hedges can be found under the broad heading called colour stems for winter effect, leaf colour: autumn foliage: berries and fruiting and flower colour. Most of the plant are more closely associated with garden rather than landscape design. Typical evergreen decorative hedges are laurustinus with attractive flowers. Bar berries for a dense informal hedge up to 3m with yellow flowers in spring of the deciduous types Cotoneaster simonsii can be trimmed to narrow width it has tinted foliage and vermilion berries in autumn. Philadelphus has a single or double white flowers for informal hedges and a whole range of roses, the more robust of which such as Hognis, canina, Musk, and Rogosas will withstand children and dogs.

LANDSCAPING WITH PLANT

<p>TREE CANOPY TO UNIFY GROUND</p>	<p>DESIREOUS SUMMER SHADE & WINTER SUN</p>	<p>INTERIOR LANDSCAPING</p>	<p>SUMMER OPAQUE & WINTER OPEN</p>	<p>LANDSCAPING AS SCALE TRANSITION</p>	<p>LANDSCAPE AREA FOR SPACES</p>	<p>LANDSCAPING AS INVITATION DEVICE</p>
<p>INTIMATE SUMMER SCALE & WINTER OPEN</p>	<p>SUMMER FOCUS HIGH - WINTER LOW</p>	<p>LANDSCAPE ALL SHAPE LEVELS</p>	<p>WIND PROTECTION</p>	<p>DEEM FOR SITE LANDSCAPING</p>	<p>GREEN CELEBRATION AT ENTRY</p>	<p>LANDSCAPING WITH BUILT-IN OCCUPANTS</p>
<p>DEEM FOR ACTIVITY SEPARATION</p>	<p>DEEM FOR SITE LANDSCAPING</p>	<p>DEEM FOR PROTECTION</p>	<p>LANDSCAPE ONLY CONTROLLED AREA LEAVE THE REST NATURAL</p>	<p>CREATE LANDSCAPE TO ENTRY</p>	<p>MODULAR LANDSCAPING FOR RESIDENTIAL PLANTS</p>	<p>CREATE LANDSCAPE TO ENTRY</p>



LANDSCAPING WITH PLANT

CHAPTER FOUR

4.0 CASE STUDIES

4.1.1 TRANSWONDERLAND AMUSEMENT PARK (IBADAN)

- (a) Historical Background: The leisure park is a brain-child of Oyo State government which was put to ground through Messrs Dolyom Associates and was tagged Trans Amusement Park. The effort of the State was to generate revenue and at the same time provide for recreational facilities for the development of the citizens. Thus the project was initiated in 1987, on the above basis which is aimed at boosting the concept of leisure as leisure as business. The part was completed in December, 1989.
- (b) Client/User/Sponsor: The Trans-Amusement Park is owned by Oyo State Government (25%), Nigeria Airport Authority (20%), Oyo State Local Government (7%), Other Nigerians (48%) held in trust for private investors by Oyo State Government.
- (c) Size and Location: The size of the park is over 72 hectares of picturesque gently rolling and slightly undulating land.

The site is situated strategically on the stretch of land between Agbowo Shopping Centre, opposite University of Ibadan and Old Bodija Airport.

- (d) Scope of the Park: Basically the Trans-Amusement Park is a theme park and the facilities available are as follows: An amphitheater designed for entertainment, shopping complex, restaurants and other auxiliary services.

The emphasis on the park are the machines, these are mechanical gadgets which provides the fun for users. Also the scattered picnics gardens which help to beautify the environment. A swimming pool, golf course and permanent exhibition have been proposed for future development.

- (e) Design Concept: The structures have been planned to compliment with the machines ride and taking into cognizance the natural terrain of the site. Due to cost constraints, most of the initial proposal had been revised to suit the client financial status, thus simplicity in terms of function and form had been adapted by the architect.

- (f) Appraisal/Evaluation: The Trans-Amusement is a scheme which is properly elevated would boost the tourist industry of the country and at the same time the development of the citizen towards the importance of leisure oriented scheme.

It can be seen from the design that the architect was making conscious effort to blend the structure with the natural terrain of the site.

Also the use of simple form of construction in which villa tile roof sheet was used to create a village scene harmonize with the site.

Emphasis was given to the ceremony entrance to the complex this create a feeling of homeliness in which landscape element were used to enhance the aesthetic appreciation of the site.

The circulation patter is well articulated, to which links are to various facilities provided, but the exist from the complex is not defined which create confusion during peak periods.

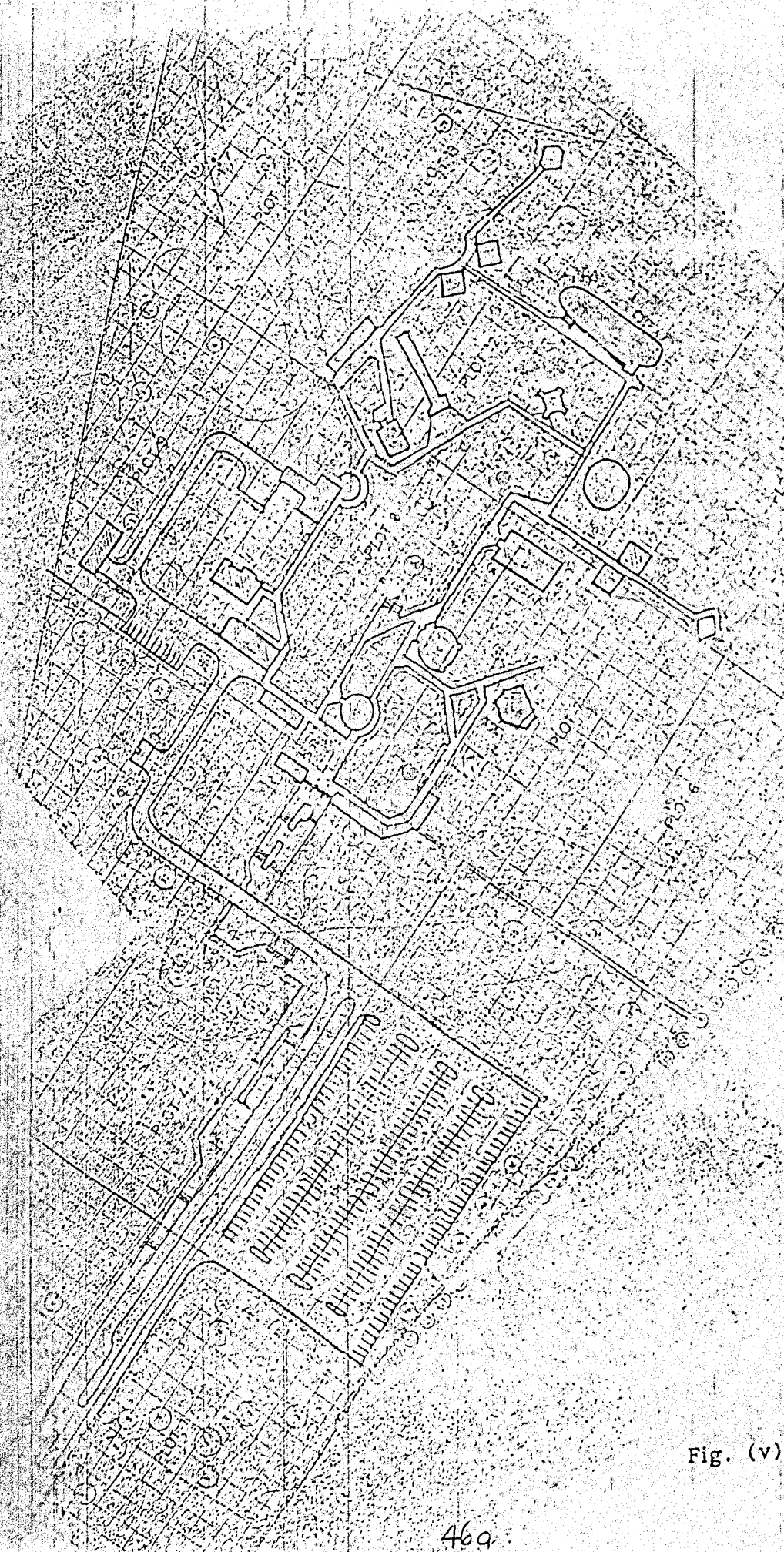


Fig. (v) Site Plan

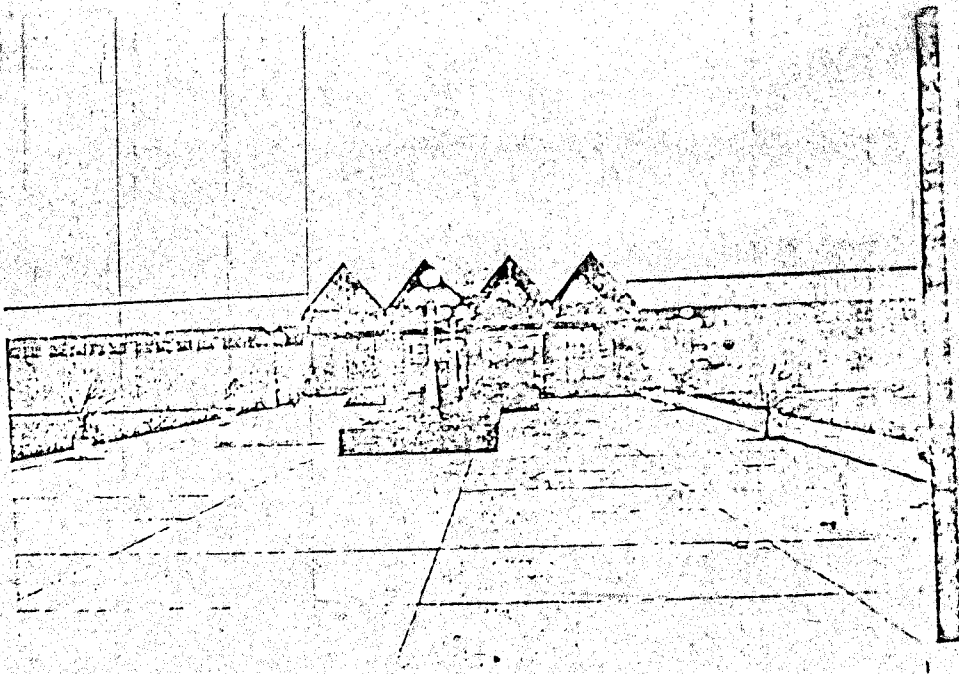


Plate (I) - Entrance View

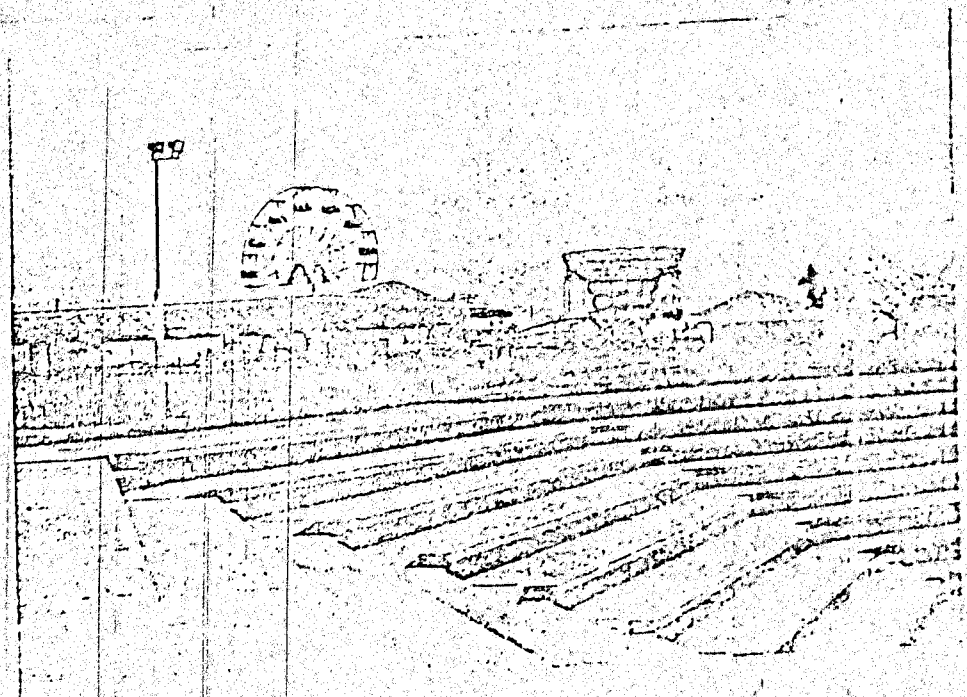


Plate (II) - View Towards Amphi-theatre

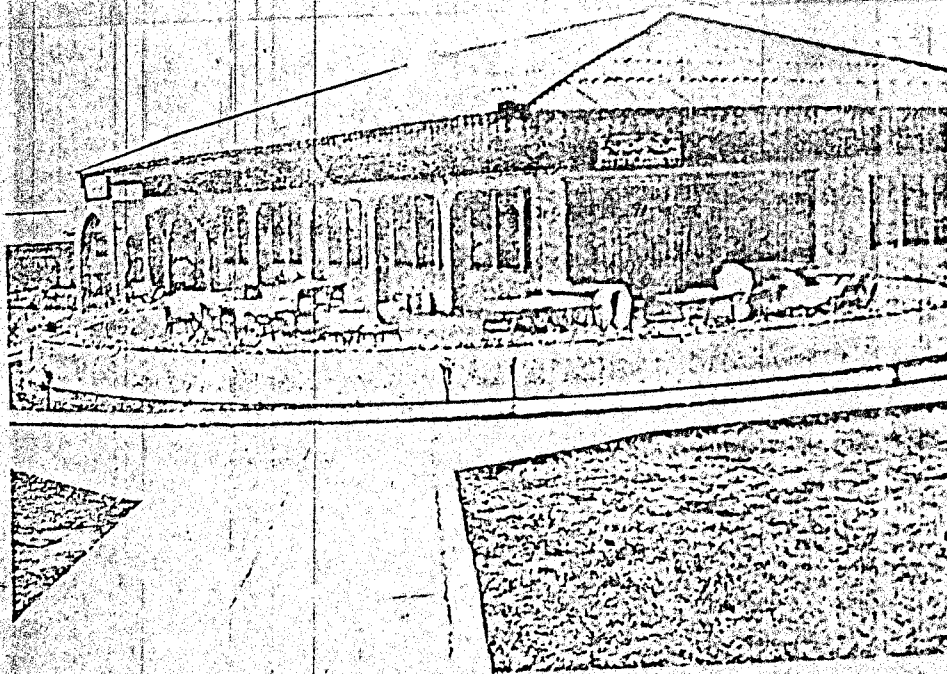


Plate (III) View of Restaurant

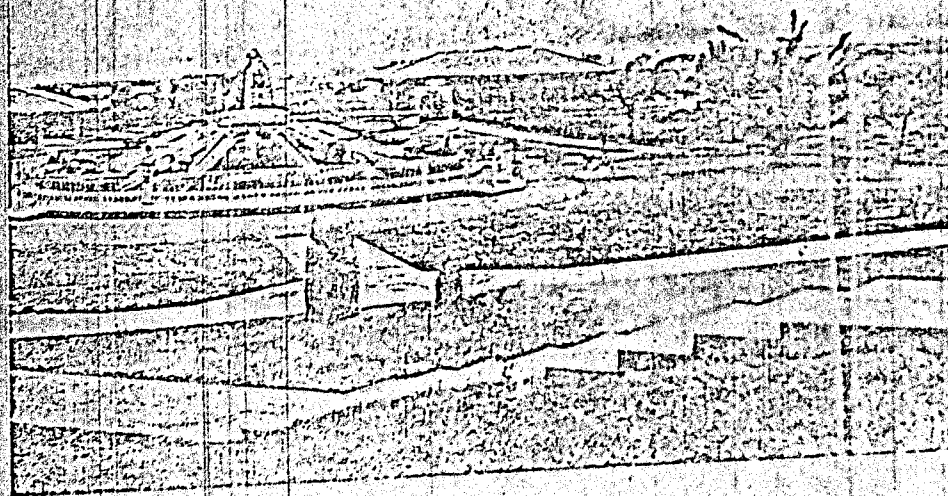


Plate. (iv) View Towards Combat Machine and Surrounding

4.1.2 GENERAL HASSAN USMAN KATSINA PARK, KOFAR GAMJI, KADUNA,
KADUNA STATE

GENERAL DESCRIPTION

During the course of my visit to the site there was no administrative body to assist me in obtaining the basic historical background of this park. But based on people's knowledge it was named after General Hassan Usman Katsina who is now late.

The park is sited along a riverbank, with the other side of the bank used for farming and fishing by near by villagers. On the site (i.e. park) there is a stage within the swimming pool premises, where shows are organized and performed here. Also within the swimming pool are snacks bars here and there with outdoor sitting arrangement under canopies.

Furthermore there is a paved path all along the bank for people to walk on and a bridge above the river. From the gate as one enters the park, both left and right sides of the access to the park is landscaped with various plants and flowers. Also by the left is a pond of crocodiles and some recreational machines for children like swings. Present also on the site are some shops and an art gallery.

MERITS

- (1) It has a good location (i.e. along riverbank)
- (2) It has facility for stage performance and swimming.
- (3) It is easily accessible to people because of its location.

- (4) It has well-defined parking spaces.

DEMERITS

- (1) It made no sufficient provision for public toilets.
- (2) It has no facility for sporting activity
- (3) The bridge and some other facilities are not adequately maintained.
- (4) There are no enough shades for people against rain.

4.1.3 OKADA WONDERLAND DELTA STATE

- (a) Historical Background: Site clearance commenced in 1984 but open to the public in 1986. Up to date the complex is still under construction. Architects – Aim Consultants, Lagos, Damus Consortium, Benin City, Contractors handling this project have been invested construction, Benin city. This is a predetermined holiday resort, which recognizes the importance of basic and controlled planning of a wide variety of functions and activities.
- (b) Client/Sponsor/Users: This is a self owned and self sponsored project. Chief S. Igbenedion conceived the idea and he is till date, the only sponsor to the scheme. User's come from all works of life and various origins. Over 2,000 visitors are received within 7 days during the holding. This shows the degree of patronage.
- (c) Site and Location: Okada wonderland is located about 90km from Benin City and 7km off the Lagos-Benin expressway. The scheme itself is located at the southern end of Okada town. The climate here has 1,524 to 2,032mm average annual rainfall coastal plain relief and a rain forest vegetation. Area characterized with numerous dry valleys and gently undulating landscape
- (d) Scope of Case Study: Okada wonderland, though not completed have a variety of facilities to serve intending tourists. These include 150 chalets of one, two, and three bedroom types, two restaurants, a multi purpose conference hall and an Olympic swimming pool under construction, a yet

to be opened soon, 7 tennis courts, children amusement park and play ground, a shopping complex, fish ponds, a games room and a garden of fame where sculpture pieces of heroes are kept.

- (e) Structure, Construction and Materials: The structure of the complex are simple and special construction techniques required. Materials used include sandcrete block, zinc roofing sheets, reinforced concrete in the general construction of smaller kiosks and other landscape elements (benches) a direct labour method of entrepreneur organization, is being utilized. It is only in construction of the hospital and secondary schools that architecture is being put to test.

- (f) Appraisal:

MERITS

- (1) The creation of man-made attractions in the absence of natural attractions e.g. fishes ponds, parks etc.
- (2) Simple forms of structures used are cost saving.
- (3) Provision of pipe borne water and electricity supplies to surrounding village.
- (4) Presence of garden of fame and heroes where national history is being physically preserved.

DEMERITS

- (1) Proximity and accessibility pose a problem to the less privileged or lower income group.
- (2) Non-portrayal of indigenous architecture.
- (3) Relative proximity of units in the wonderland involves the long treks or use of cars.
- (4) Insufficient variety of recreational facilities present

4.1.4. UNIVERSITY OF BENIN, BENIN CITY, NIGERIA

Located on the outskirts of Benin City, a cradle of an old rich cultural heritage, the university of Benin is one of the few universities in Nigeria established over the last decade that is of comparable standard to any other university in any other part of the world. Established in 1973 during the last military regime preceding the civilian administration, the layout of the university suggest a careful analysis and an understanding of the requirements necessary for a university, during the planning stages.

A cursory look at the developments on the permanent site at Ugbowo will show that adequate considerations has been given to the leisure recreational needs of the students.

Facilities provided for leisure needs include:

(1) A Student Centre Complex: Another line with facilities such as a central cafeteria, a ball room, banquet hall, meeting rooms, games rooms, lounges and television room.

(2) A Sport Complex with:

- A football pitch and synthetic athletic tracks with covered seat banks.
- A swimming pool
- Basketball court
- Handball pitch
- Shops

And 3 auditorium complex used for academic, cultural and social functions. (See plates).

OBSERVATIONS AND REMARKS

- The facilities are hired out to outsiders (non-campus residents) for functions. This generates funds for the university and help ultimately in realizing the funds used in executing the projects.
- The facilities are located on different places on campus and although they are intervisible, it does not allow for a proper recreational environment where facilities for leisure and relaxation can be properly coordinated.
- Some of the facilities (swimming pool and sports complex) are used for organized sporting activities and the design was executed with this in mind.

The result is a formal, officious looking environment which is not ideal for relaxation.

□ The facilities were designed with two sets of users in mind – campus residents and non-campus residents. This led to the facilities being located as near as possible to the main approach from the town so that outsiders don't encompass too much of the campus for social activities.

□ This attempt at a compromise resulted in the facilities being rather far away from student concentrations. Consequently, students only partake of their pleasure infrequently.

OTHER FACILITIES

Apart from the above mentioned facilities, there are other facilities on campus where students can spend their off-lecture hours gainfully and creatively.

For one thing, the halls of residence which are concentrated in one area (both male and female) are well serviced by common rooms.

These common rooms are well equipped with good buffet service, have lounges with television sets and have various types of indoor games like table tennis and table board games such as draughts, chess, ludo, scrabble, monopoly etc. Above all and most important, these common rooms are properly maintained and cared for.

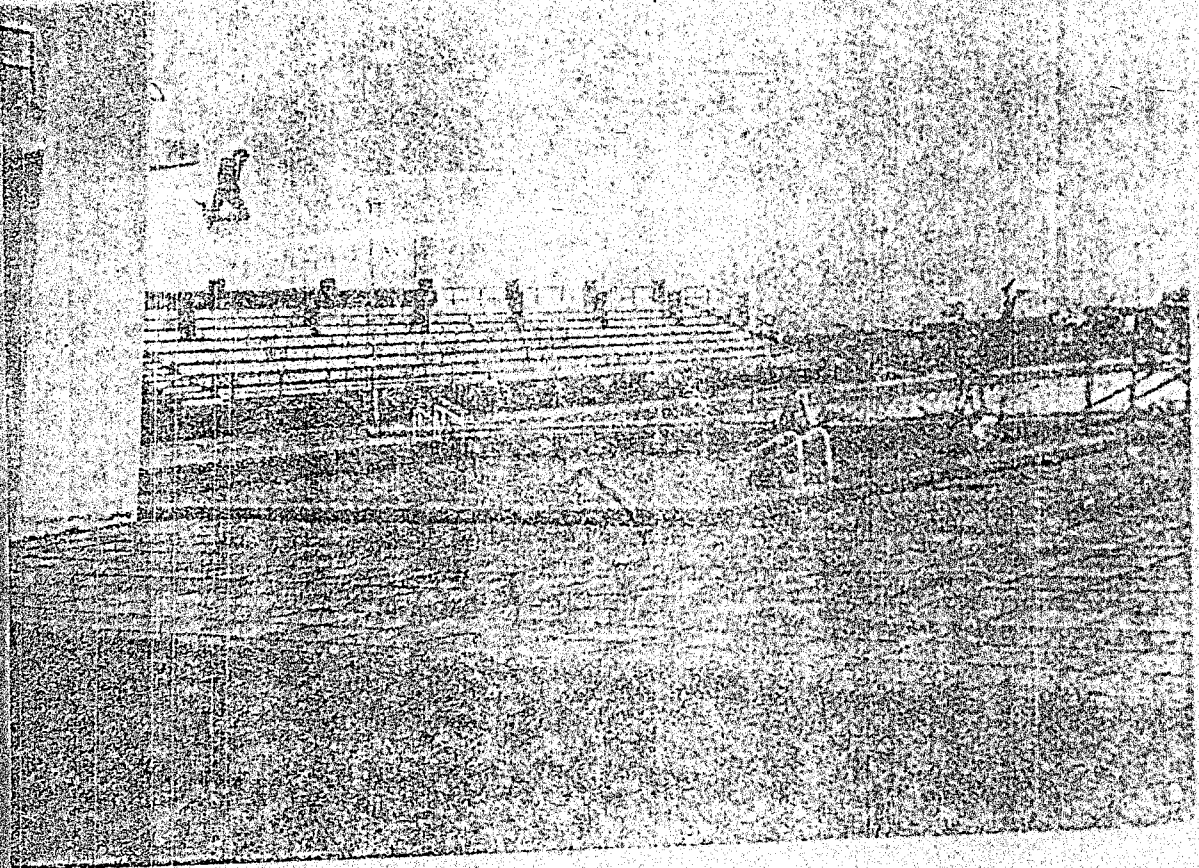
The close proximity of these common rooms and the way they are cared for make them to be very popular meeting points on campus as on any given evening, students in large numbers will be found there, either watching television, taking snacks, playing games or just sitting down doing nothing in particular but generally socializing.

CONCLUSION

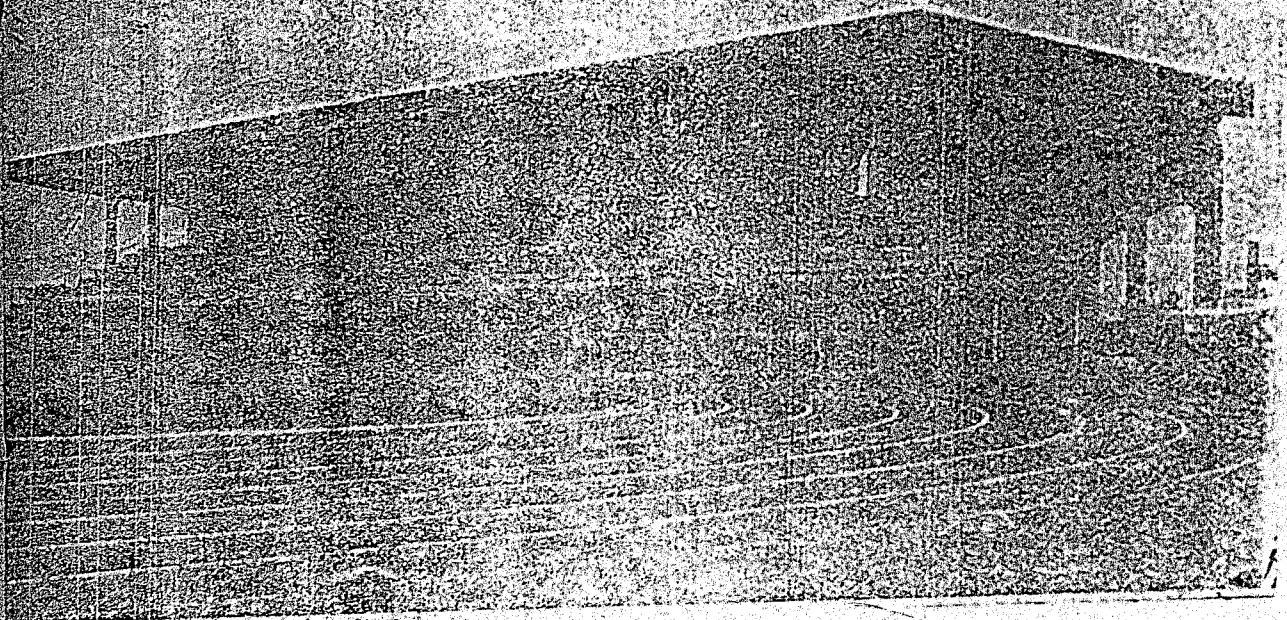
The presence of leisure recreational facilities on campus and the general planning policy of concentrating all the students in one area has raised the social life on campus to such a level that only the universities of Ife Lagos are comparable.

The social clubs on campus (like skala, skomit, etc) take advantage of the availability of these facilities to organize and plan events that go a long way in providing a welcome diversion from the rigorous academic life of books and lectures.

UNIVERSITY OF BENIN
HOME STUDY 8 BENIN-CITY & SURROUNDINGS

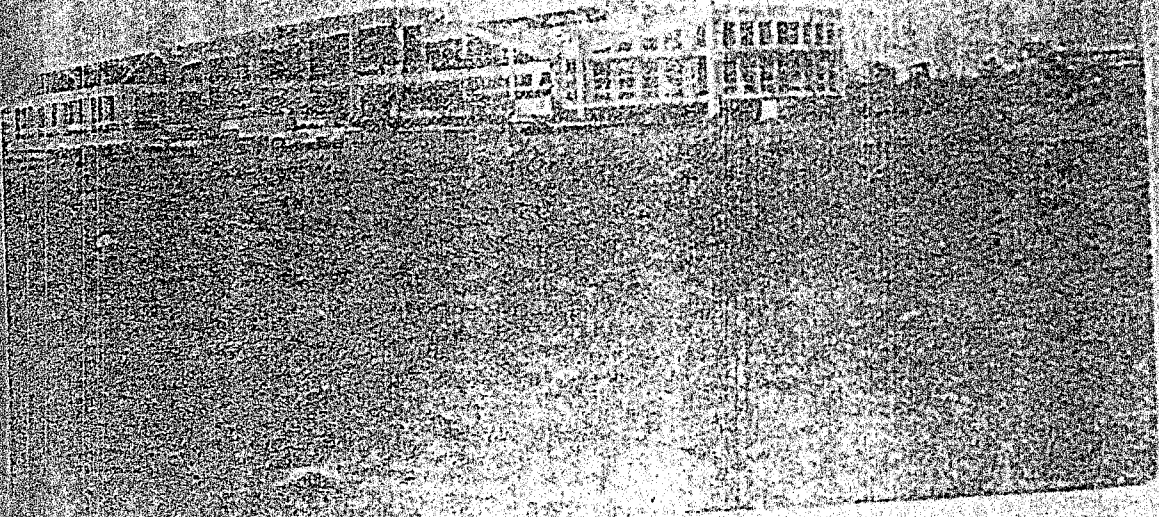


THE SWIMMING POOL

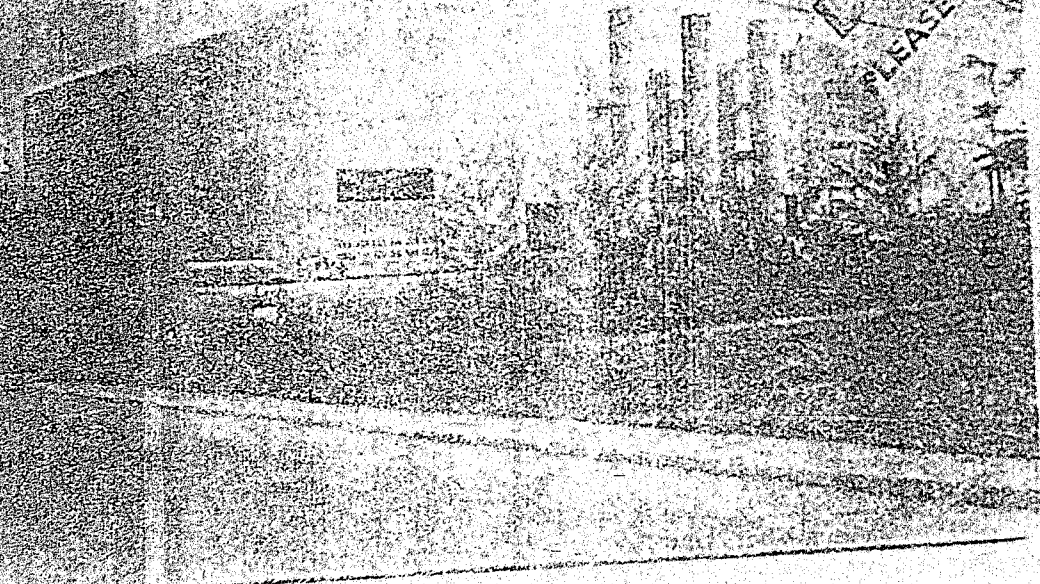


THE MAIN BUILDING

HOME STUDY 2



THE STUDENT CENTRE-CAFE COMPLEX



DATA ROOM
PLEASE DO NOT TAKE AWAY

4.2.0 FOREIGN CASE STUDIES

4.2.1 CROWNTREE LEISURE CENTRE, SUNDERLAND, GREAT BRITAIN

The borough of Sunderland has presented its citizens with a grand centre for physical recreation packaged in a spirit of fun and leisure. The Crowntree's popularity has proved overwhelming, providing a much needed social focus to this bleak north-eastern town.

The Crowntree leisure centre is the most advanced of a line of indoor leisure centres that have been developed over the past decade by municipal authorities and with a plan area of some 10,000m² – equal to three football pitches, it is also one of the largest costing over £10 million to build.

The leisure centre is a building type that has emerged only in the last decades. It differs from the conventional sports centre in that it deliberately caters for family recreational and leisure activities in an atmosphere where these can be enjoyed as fun rather than as organized sport.

Crowntree offers swimming, ice-skating and bowling as well as climbing, squash, five-a-side soccer and all sports ball games. This range of activities makes the centre attractive for the whole family to visit together. Once there, everyone can split-up and enjoy their chosen pursuits all under one roof and then meet up again afterwards.

Traditional sports facilities have attempted to promote public health through disciplined events in a clinical atmosphere. Understandably, this rather apartan

image has managed to put off those who could most benefit from physical exercise. Leisure centres in contrast, attempt to entice as many customers as possible by providing a popular and bright image and an atmosphere of amusement.

Leisure centres like entertainment complexes, however, are decidedly introspective in building form. Typically, they are simple rectilinear blocks bounded by blank walls. Such a building form can do little to integrate recreational facilities into everyday town life and results in an unnecessary claustrophobic internal environment.

The swimming pool is the focal points of the complex. It has the full quota of internal leisure pool features, curvilinear pool with adjacent toddlers pool, wave machine and an outer circle of tropical vegetation including full scale palm trees. A café on the first floor level overlooks the pool.

A major innovation is that the building is designed for flexibility. The roof has been separated from the space enclosures below, so that they can be arranged without interfering with the roof changes in the provisions of the centre are envisaged in the long term, so that in, say, 15 years, the ice rink could be converted into a ten-pin bowling alley should this prove more popular.

The centre is an exciting structure, thanks mainly to the space frame roof structure, the largest in Europe, which is exposed all around the perimeter of the building, it would be a splendid piece of architecture if it were located as an isolated pavilion. But it happens to be situated at the centre of a town of some population of 200,000 bounded on the front by a commercial shopping centre, and

on the side and back by a small scale street scene that includes a Victorian church and alms house. As a simple rectangular form, the centre is basically too bulky to related to this existing townscape.

The building bluff external appearance is aggravated by the blank walls unrelieved by windows and by the materials used, which consist of rough grey concrete and matt stainless steel panels that have quickly dirtied to provide a similar effect.

The problem is fundamentally that large-scale leisure centres have evolved into an introspective building form that makes for poor urban design. In spite of its bulky form and grand municipal scale which can be criticized as being off-putting, the Crowntree centre does happen to be remarkably accessible, as it is located adjacent to the towns main bus terminus.

Open 364 days a year from 9.00am to 11.00pm, the centre is a constant hive of activity, with an attendance averaging about 25,000 people weekday evenings. A few months after opening, the centre already had in excess of 20,000 individual members in a catchment area of only ten times that population. Each member pays between \$2 and \$8 a year in subscriptions.

The centre has created a vortex of activity that draws in people in droves, many of whom only come to watch. It provides a much needed social focus to the soulless centre of this drab northern town. And there could be hardly a healthier way of doing so.

SUMMARY

USERS

Borough of Sunderland and outlying districts.

FACILITIES

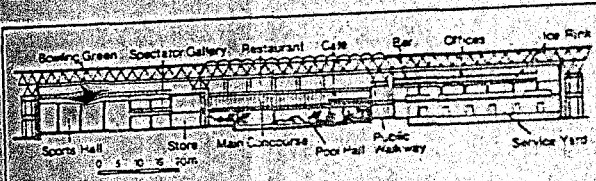
- Multi-purpose sport hall
- Leisure swimming pool
- Restaurant
- Café
- Bar
- Shops
- Ice rink
- Bowls

REMARKS AND OBSERVATION

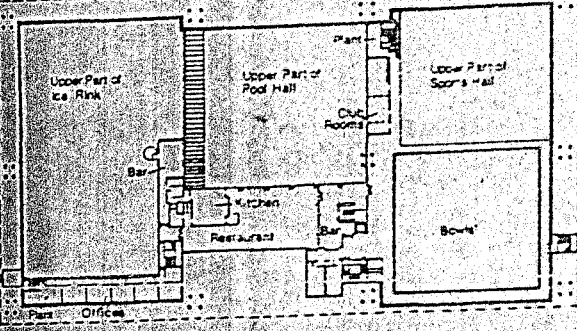
- The building is designed for functional flexibility. The space frame roof is structurally independent of the space enclosures below so that they (the spaces) can be arranged according to needs as and when these need arise.
- The spatial organization of activities is done in such a way that there is visual communication between activities that are visually compatible. For example a café overlooks the leisure pool.
- The focus of the leisure centre is the free from leisure pool, which is, designed in such a way that fun takes precedence over organized sports.

- The exterior design of simple rectilinear blocks bounded by blank walls and their mere scale of the structure relative to its immediate environment is rather off-putting and does little to integrate recreational facilities into everyday life and results in an unnecessarily claustrophobic internal environment.

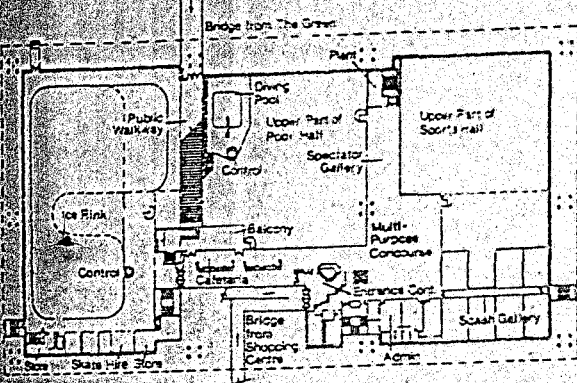
CONVENTIONAL LEISURE CENTRE



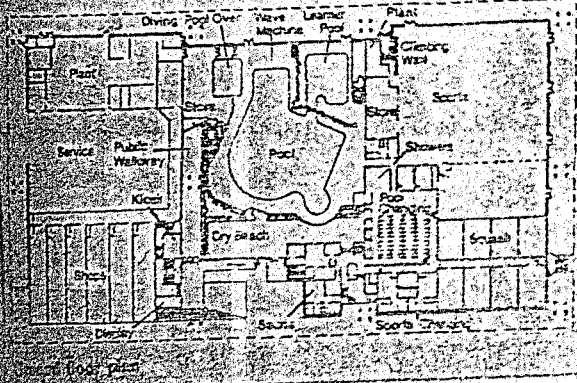
Section



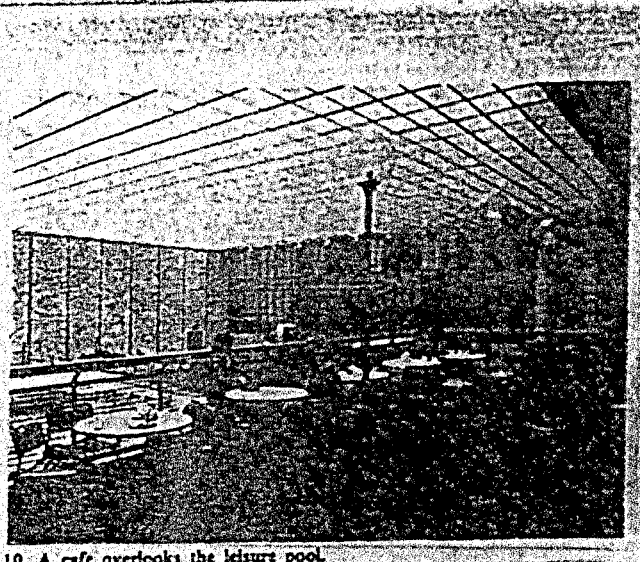
2nd floor plan



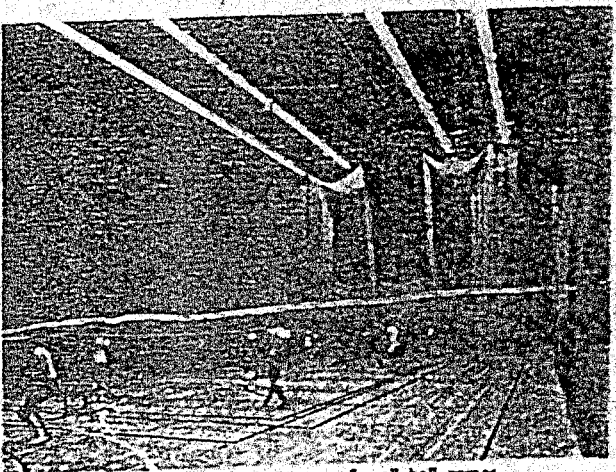
1st floor plan



0th floor plan



10. A cafe overlooks the leisure pool.



11. The multi-purpose sports hall caters for all ball games.

● CROWTREE LEISURE CENTRE SUNDERLAND

CASE STUDY 2
CAMPUS LEISURE FACILITY

4.2.2 STUDENT CENTRE

UNIVERSITY OF ARKANSAS, FAYETTEVILLE, U.S.A

Architects: Wittenberg, Delony and Davidson Inc.

The student centre of the University of Arkansas is a typical American example of student unions building. It acts basically as an academic community centre of the campus. It functions simultaneously as the headquarters of the student's union administration as well as, a base for social interaction between members of the university community and with comminuting students.

The location is a steep hillside on the periphery of the campus, with a fine view down a long valley holding the stadium and student housing complexes.

The architects have made maximum use of the slope and view by designing the building in such a suitable series of levels that it becomes impossible to describe the facilities in terms of "storeys" or "floors". The site is isolated from the main campus by a street, the architects solved this problem by creating a large bridge-plaza to establish a strong connection and to maintain a pedestrian scale. Its practical function is to provide a covered vehicular drop-off at street level and a paved one for outdoor dances, forums, displays, etc at campus level.

The building's primary traffic generator is the dining complex, so this is placed at a level midway between the plaza-bridge and the street, to make access simple from either entrance. All dining spaces are planned to take advantage of the spectacular views. A covered terrace at the rear provides a large outdoor dining terrace.

The "socio-cultural" heart of the union is a series of spaces on level 6 holding the lounge complex, art gallery, auditorium, music rooms, and at a half level, the ballroom.

The topmost level (+ 12.00) holds meeting rooms, private dining spaces and office. Student offices and work - spaces have a private "penthouse" area at an even higher level (+ 18.00) looking back into the campus. Corner entrances at the lowest level of the building provide access for students from the housing complex below.

The architects were limited by the client to a basically symmetrical scheme and feel that this limitation did compromise the design of the building, particularly in the bookstore and game rooms. However they feel that many of the complex relationships within the building have been successfully solved with the significant social spaces established and defined, both from the exterior and internally.

SUMMARY

USERS

University of Arkansas Academic Community.

- Primary users – students
- Different users – staff.

FACILITIES PROVIDED

- Cafeteria
- Ball room
- Games rooms
- Bowling
- Music rooms
- Multitude of lounges/relaxation/browsing rooms
- Meeting rooms
- Auditorium
- Student union administration

OBSERVATIONS AND REMARKS

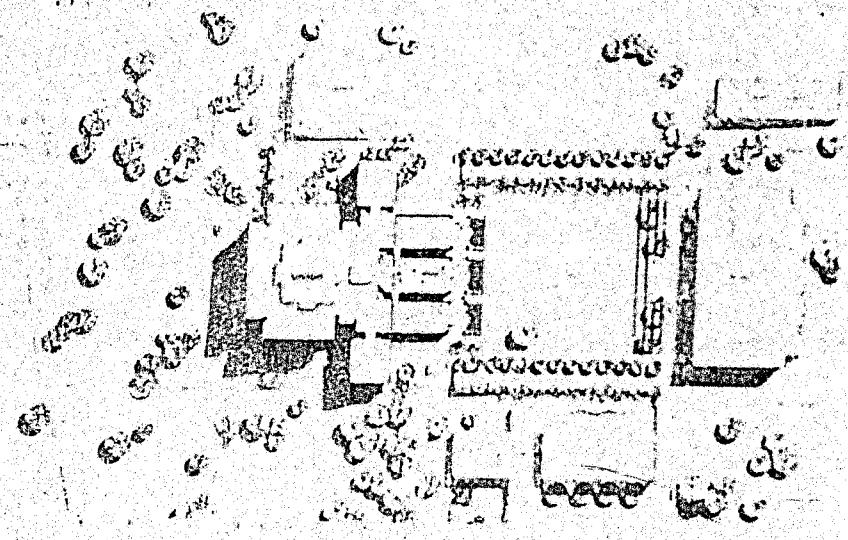
- The building is ideally sited to accommodate future campus expansions, is centrally located and integrates very well with other student activities.
- Emphasis in the design of the complex was on mechanical ventilation aids.

While this constitute no problem in this case considering the advanced technology obtained in its area of setting, surely this is not workable and therefore acceptable in our own particular environment.

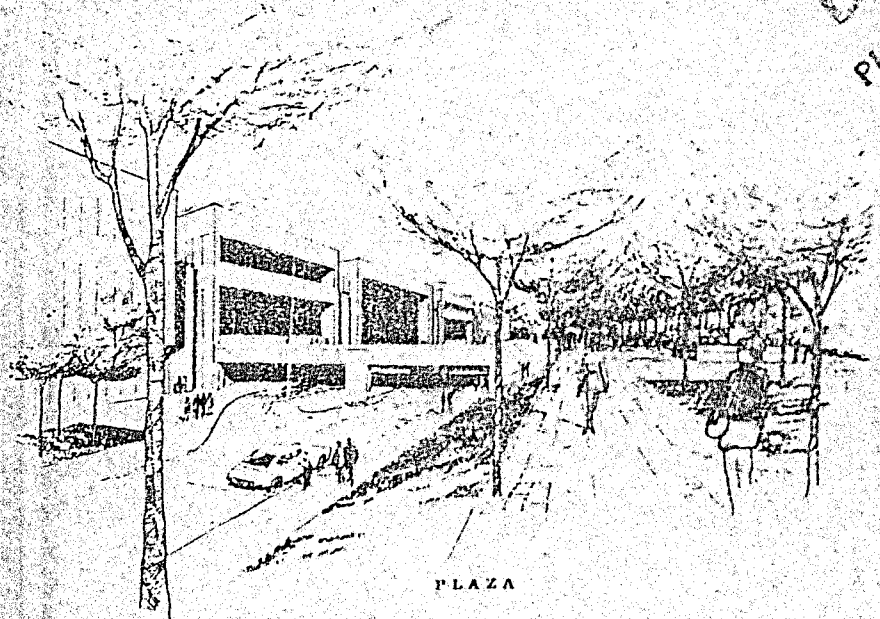
□ Again, here the building form is a box-like, rectilinear structure completely closed in. While there is no hassle whatsoever on the functionality of the complex, the form is rather officious looking and looks very much like the other academic oriented structures that a student is trying to get away from for some time.

CAMPUS LEISURE FACILITY:

STUDENT CENTER
ARKANSAS UNION, UNIVERSITY OF ARKANSAS
FAYETTEVILLE
ARCHITECTS: WITTENBERG, DELONY AND DAVIDSON, INC.



● SITE PLAN



PLAZA

● VIEW TOWARDS THE PLAZA

EXHIBIT 100
PLEASE DO NOT TAKE AWAY

CHAPTER FIVE

5.0 DATA COLLECTION

5.1 CLIMATIC CONDITIONS

Kaduna State experiences a typical tropical continental climate with distinct seasonal regimes, oscillating between cool to hot dry and humid to wet. These two seasons reflect the influences of tropical continental and equatorial maritime air masses, which sweep over the entire country. However, in Kaduna State, the seasonality is longer than the raining season.

During the dry season from November to March, the dust carries harmattan wind dry, cold, and often strong blows northeastwards from Sahara region. On arrival of the first rain, in April the prevailing wind veers to the southwest and continues from May to October. About 40-60 inches of rain is experienced during the wet season in Kaduna, which rises to a peak from late July and into September.

Highest temperature is experienced in April and it ranges between 95°F 105°F, the lowest temperature is recorded to be between 45°F to found in the temperature climate and the extremes of hot and cold in a single day places a strain upon the inhabitants. This is aggravated by considerable changes in humidity, which in the dry season may well be below 30% at down. This causes skin and lips to crack and the fine dust blown by the harmatan aggregates the nasal passage.

5.1 VEGETATION

Across Northern Nigeria, from East to West i.e. four district zones of vegetation;

CHAPTER FIVE

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5.1 VEGETATION

Across Northern Nigeria, from East to West i.e. four district zones of vegetation;

laterite ironstone especially in the northwest quadrante. However, granitic residuals from inselbergs of varying sizes and shapes, and constitute the main local relief (relative relief is less than 150m) here and there.

Furthermore, Kufena, Kagoro hills and Dustinwai-Kudaru Ring complex stands out very predominantly, the valleys are shadow but wide estretching several tens of kilometers into the headwater areas with gentle sloping, valley sides, imperceptibly grading into flat moist to marsh "Fadamas". Although, stream valley incision and direction of the high plains are evident in several areas, especially in the Zaria region, they are due to anthropogenic influences and climatic factors than regional geologic instability.

5.4 POPULATION STRUCTURE AND DISTRIBUTION

The 1991 provisional census result puts the population of Kaduna State at 3,969,252. Although majority live and depend on the rural areas, about a third concentrate between the two major urban centres of Kaduna and Zaria. However, except in the northwestern quadrant, the rural population concentration is moderate reaching a height of over 500 persons per square kilometers in Kaduna, Zaria and the neighbouring villages, 350 in Jaba, Igabi and Giwa and 200 in Ikara Local Government Areas.

Despite the provisional nature of the census results, observations of movement of young strong male labourers in large numbers from rural villages to towns during the dry season and back to rural agriculture fields during the wet season suggest a sizeable seasonal labour force in the state. However, the seasonal labour migration has no effect on agricultural labour demands in the traditional setting. Indeed, some of these seasonal migrators come to town to learn specific trade or acquire special training and eventually go back to establish in the rural areas as skilled workers (e.g. masons, technicians, tractor owners, carpenters, motor mechanics etc.).

Another major feature of the state's population structure is the near 1:1 male/female ratio, not just for the state as a whole but even among all the local government areas. The effects of this may be helpful to the future social economic development of the rural sector especially in the agro-allied rural industries. The large number of secondary school leavers, polytechnic schools and university graduates provide a growing skilled labour force for the growing industries in the state.

TABLE - POPULATION OF KADUNA STATE

S/NO	LOCAL GOVERNMENT NAMES	HD/ QUARTERS	MALE	Female	TOTAL
1.	Birnin Gwari	Birnin Gwari	73,727	66,683	140,410
2.	Chikun	Kujama	154,495	143,636	298,131
3.	Giwa	Giwa	85,889	84,363	170,253
4.	Igabi	Turunku	153,421	144,606	298,027
5.	Ikara	Ikara	175,688	168,569	344,257
6.	Jaba	Kwoi	34,056	33,328	67,384
7.	Jama'a	Kafanchan	111,037	104,712	215,749
8.	Kachia	Kachia	109,059	107,202	216,261
9.	Kaduna	Kaduna	182,318	155,321	337,639
10.	Kaura	Kaura	64,290	56,475	120,765
11.	Kauru	Kauru	64,523	63,414	127,937
12.	Lere	Saminaka	114,114	106,944	221,058
13.	Makarfi	Makarfi	107,236	104,010	211,246
14.	Makera/Tudun Wada	Ahmadu Bello Way/Kigo Road	197,006	176,510	373,516
15.	Sabon Gari	Sabon Gari	113,415	99,256	212,671
16.	Soba	Maigana	95,741	91,536	187,277
17.	Zangon Kataf	Zonkwa	76,134	73,350	149,484
18.	Zaria	Zaria City	147,233	129,954	277,187

Source: Census News 1992

5.5 SOCIO-CULTURAL LIFE

Kaduna State forms a portion of the country's cultural melting pot. Apart from six major ethnic groups found in the state, there are over twenty other ethnic minority groups, each with its language and arts or religion different from the other. Works of art and pottery (e.g. the Nok Terracotta) found in the southern parts suggest that it is a major cultural centre.

Among the major ethnic groups are the Kamuku, Awari, Kadara, in the west, Hausa and Kurama to the north and northeast. "Nerzit" is now used to describe the kaba, Kaje, Koro, Kamanton, Kataf, Morwa and Chawai instead of the derogatory term's "southern Zaria people". Laos, the term "Hausawa" used to describe the people of Igabi, Ikara and Makarfi local government areas include a large proportion of rural dwellers who are strictly speaking, "Maguzawas". In the north, the Hausa and some immigrants from the southern states practices Islam and majority of the people in the southern Local Government Areas profess Christianity.

Furthermore, the major Muslim festivals are the Salah celebrations of Id-El-Fitri and Id-El-Kabir; while the Christians observe Christmas, New Year day and Easter. Two traditional festivals of significance are the "TUK-Ham" and Afan in Jaba and Jama'a Local Government Areas/ prominent among the traditional arts are leather works, pottery and indigo-pit dyeing.

5.6 TOURISM AND RECREATION

Although the present state of tourism in Kaduna does not reflect the long history and its cultural developments, there are several tourist attractions in different parts. For example, the famous Zaria City walls, the emir's legendary insignia and the palace drums are all in the old city centre. During Muslim festivals, like those mentioned in the previous sub topic, mini-durbar – Hawan Doushe is normally staged in the open field in front of the palace.

The origin of Nigerian's famous "NOK" terracotta and its rich cultural heritage is in Jaba Local Government Area and the annual traditional festival of "TUK-Hamo" in NOK festival among the people in Jama'a and Kaura Local Government Areas are held during Christmas and Easter and attracts visitors, Nigerians and foreigners, by thousands. The most recent "NOK" terracotta funds is the dual face portraits (male and female) said to predate the single female burst culture dated 258B.C. Wildlife parks and games are very limited in the state but there are some good spots of natural history and recreational sites such as Plateau Scarp, Kagoro Hills bathylth and Matsirga falls all in the Jama'a Local Government Area.

CHAPTER SIX

6.0 SITE ANALYSIS

6.1 CRITERIA FOR SITE SELECTION

- Optimum accessibility to all present and future users concentrations
- A.B.U. Master Plan Zoning
- Physical suitability
- Adequate space for phased developments

6.2 LOCATION OF SITE

The Ahmadu Bello University master plan has a large irregularly shaped piece of land, along the A.B.U. Reservoir are pieces of land reserved on the master plan for recreational developments. These developments include A sport stadium, a theatre, a swimming complex and a university garden and parks.

The piece of land proposed for my park satisfies all the criteria earlier discussed. The presence of a water body also is at an advantage for the location of a leisure park, and activities like boating and fishing could be carried on as part of the recreational activities of the park.

The site is irregularly shaped and measures about 800metres in length along the road connecting the main campus core with the Samaru-by-pass. This road is the only access route to the site presently as fallow grounds bound it on two sides (North and South) and

by the A.B.U. reservoir on the other side (East). Also inclusive to this is the bank (eastwards) which is very necessary for locating my boating decks and fishing sites.

Diagonally from the access road to the A.B.U reservoir is about 1kilometre in length.

Ahmadu Bello University main campus is located in Samaru, 15 kilometres from Zaria old city. The Institute for Agricultural Research and new Teaching hospital are situated in adjacent areas along Zaria-Sokoto highway. While Samaru is located in Zaria, Zaria is situated at a latitude 10 10 and a longitude 7 38 east.

6.3 SITE CHARACTERISTICS

A. TOPOGRAPHY

The main campus lies on the elevated plain at an altitude of 685 kilometres above mean sea level. The plain is gently sloping down towards Kubani River and is cut by numerous valleys and streams. These streams are generally widely spaced with virtually ungullied banks and marshy alluviated beds.

B. GEOLOGY

The main campus is largely underlain by undifferentiated pre-cambian basement complex formations and comprises of both igneous and metamorphic rocks. The igneous rocks are mainly biotite gneisses and older granites while metamorphic sediments include quartzite's and schists found mainly in streams valleys. Alluvial deposits of laterite overlie most of the area.

C. SOIL

The soil is part of the "Zaria soil group" which is known to have covering material of up to 14 feet in depth. The soil material consists of several feet of deposited silty sand overlying sedimentary decomposed rock. Most of the soils allow good moisture retention due to their high proportion of clay content and hence cannot sustain intensive agriculture for long periods without the use of fertilizers. The alluvial soils occur in low-lying areas adjacent to Kubani River and are used for cultivation of Sugar cane and vegetables. The bearing capacity of the main campus soil varies significantly from place to place and is strongly affected by the fluctuation of the water level.

D. CLIMATOLOGY

Owing to its location on the elevated plateau, Zaria enjoys reasonably good tropical savanna climate with distinct wet and dry seasons.

During the dry season, (October /November-February/March) the dust laden harmattan winds blow from the Northeast straight from the Sahara regions. From May to October, the prevailing rain bearing winds blow from Southwest. The mean annual rainfall in Zaria region is 1100mm. The relative humidity is very low during the dry season and changes greatly in August when monthly mean humidity goes up to over 85%.

E. VEGETATION

A.B.U falls within the guinea savanna grasslands with its characteristics parklands and gallery forests. Examples of trees found here include:

-The locust bean tree

-Shed butter tree

-Oil bean tree

-Isobelina tree

These are found in clusters generally not more than 6metres high inter-spaced with elephant grass reaching to a height of 3 to 3.6metres. In addition certain tropical trees have been found to grow well and have been used to provide shade all through the year and will also serve well for landscaping recreational grounds conducive to relaxation.

These include:

(i) Neem (*Azadirachta indica*)

Mahogany family, dense widespread crown, with average girth of 5.3m. It is always green and therefore suitable for shade.

It takes about 3 years to mature to an average height of 16metres.

(ii) Savannah Mahogany (*Khaya senegalensis*)

This is slow growing, it requires plenty of water for growth. It grows best in valleys and low-lying areas and where the water table is high. It has profuse heavy branches and sheds leaves during the dry season. It grows finally to an average girth of 5.3metres.

(iii) Eucalyptus (*Canal olulensis*)

Vertical crown. Slow growth for variety.

(iv) Whistling pine

For variety

(v) Pride of Barbados

It has yellow and red flowers with small leaves, grows to an average height of 3metres.

Suitable for parks.

(vi) Teooma

Also suitable for parks with yellow flowers and fairly large leaves. It grows to an average height of 2metres and must be trimmed.

(vii) Bibiscus

Have red and white flowers with small and narrow leaves. Grows to an average height of 2metres.

(viii) Bourgainvilla

This is both a shrub and climber with pink and red flowers. It consists of fairly small leaves. As shrub it can grow up to 2metres and as climber to above 2metres.

(ix) Delonix

Has bright red flowers growing up to 14metres or more. Used for decorative purposes.

6.4 ACCESS AND CIRCULATION

The site can be approached from two directions;

(i) APPROACH DIRECTION I

This approach connects the site with the main campus core. It is presently the only access route from the student concentrations. For now, this approach is expected to be the sole approach and facilities meant for large crowds. Aside from it, linkage with the student concentration, it will be the shortest and easily accessible way to the site for both students and interested members of the public.

(ii) APPROACH DIRECTION II

This approach linking the main campus to nearby villages. This road is un-tarred and very rough.

Combination of these two access roads is of great advantage to users of the proposed Leisure Park. The road from the campus will be tapped from two points to serve as inlet and exit to the proposed Leisure Park. Apart from the road leading to the administrative block and the general parking so as to avoid any accident or obstruction of recreational activities. Linking the units on site will be pathways, walkways and paved walkways for circulation of people and items on the site.

CHAPTER SEVEN

7.0 DESIGN CONCEPT AND CONSTRUCTION

7.1 CONCEPT AND DESIGN

A leisure park is meant for relaxation through recreational activity that might suite all categories of people that make use of the place. The philosophy behind my design is to bring people close to nature as much as I can through preservation of nature's gift and proper combination of this with man-made features depicting nature.

The concept is better explained studying the site plan, the site plan is designed through zoning of activities according to their order of preference and to categories of people that will participate in such activities. The site is thus categorised into -Noisy, intermediate and quiet zones.

The noisy zone has activities like outdoor games, swimming pool and Amphi-theatre.

While intermediate has - children play arena, administrative block, restaurant and general parking. The quiet zone comprises of fishing, garden and picnic sites.

For the purpose of this proposal, activities listed below are provided for on the site, although not all of them could be designed due to their nature, such activities can be represented on the site plan (i.e boating, fishing sites, picnic sites, garden and children's playing arena.

Activities provided for on my proposed Leisure Park includes;

- a. Outdoor and indoor games
- b. Swimming

- c. Boating
- d. Indoor eating - Restaurant
- e. Picnicking
- f. Fishing
- g. Open air stage performance
- h. Public car parking

Units on Proposed A.B.U Leisure Park are:

- a. Restaurant
- b. General car park
- c. Children's play arena
- d. Administrative block
- e. Special garden
- f. Fishing sites
- g. Picnic sites
- h. Amphi -theatre
- i. Swimming pool
- j. Boating with decks
- k. Outdoor games
- l. Indoor game

Some of the facilities on site are located on the other side of the water body with two bridges linking the two banks. Decks are provided at strategic points for the boats to load and offload passengers. Picnic and fishing sites are located along the riverbanks with artificial rock formation and sufficient palm trees for maximum shade for people. The

floor areas of the picnic and fishing sites will possess a carpet grassing and towards the river will be well treated retaining walls to control water movement and level.

Young ones (children) will be monitored and watched by parents while on their playing ground and if need be for them to cross to the other bank, then it has to be with proper supervision.

7.2 MATERIALS AND CONSTRUCTION

When designing a park, care needs to be taken in choice of materials and construction techniques. Durability in materials chosen is very essential. Materials with little or no maintenance are advisable as it is meant to be a public prone area. Aside from some buildings on sites, which I am proposing, use of common concrete blocks, glass and steel (i.e. in restaurant design) longspan aluminium roofing sheets. Other materials are pre-fabricated and to be brought to the site. Due to the nature of this proposal, landscaping elements need to be concentrated upon, things like footpaths, walkways, picnic sites, fishing sites and lighting elements need to be emphasized.

Footpaths and paved areas can be constructed with a variety of materials, and the choice will be determined by such factors as initial cost, maintenance cost, appearance, wearing qualities and non-skid properties. The width of a footpath varies from about 1.35m to 1.80m on housing estates and may increase as much as 6m in public centres like a park. For the benefit of this project, I am proposing the use of inter-locking pre-cast concrete blocks for all footpaths, due to its low maintenance cost. Although it is expensive to construct but in the long run it is economical since it needs almost no maintenance.

Picnic and fishing sites will be constructed in such a way that the water does not overflow the bank and at the same time people are brought as close as possible to the water body.

Retaining walls will be used to control water, and a reinforced concrete slab in form of a cantilever over the retaining walls will be provided to bring people willing to fish closer to the water body.

Retaining walls here are to support the earth along the bank by providing damp proof obstruction from the water body. However at some strategic point drains will be provided within the walls to allow ground water to be drained. The drains of, which are normally called "weep-holes", should be of a reasonable diameter and connected to public sewer or gutters as the case may be.

7.3 SPACE REQUIREMENTS

- Indoor Games = 750m²
- Administration = 258m²
- Public Toilets = 152m²
- Restaurant = 1345m²
- Picnic
- Parking
- Fishing
- Swimming Pool = 1575 m²
- Amphi-theatre = 314m²
- Outdoor Games

- Garden = 35m^2
- Children's Playground = 81m^2

CHAPTER EIGHT

8.0 DESIGN STUDIES

8.1 ELECTRICITY AND LIGHTING

On my proposed leisure park, street lights and path lights will be used to lighten the main access road to the site, the parking area and all walkways. The major source of the electricity shall be from the National Electric Power Authority (NEPA) and there is already a standby generator on the site.

All street lights and path lights shall be operated automatically, the on and off switch will be computerized in such a way that a fixed time the light goes on and off. The street lights shall have infra-red bulbs and properly insulated against rainfall and other weather conditions.

8.2 WATER SUPPLY

The site has an advantage of water supply due to the presence of A.B.U. reservoir on site. This proposal shall operate on its own water treatment plant. The required amount of water needed on the site will be calculated and compared with the amount of water (in gallons) the proposed treatment plant can produce per day. When there is an imbalance in the amount of water required to the amount produced, then alternative source of water from the Water Works will be sought. Therefore coupled with the treatment plant their will be a link with the town's main source of water supply.

8.3 MAINTENANCE

One of the major problems facing public facilities like a park or garden is poor maintenance policy. A leisure park entails a lot of landscaping (i.e trees, shrubs, hedges e.t.c) which needs constant wetting and spraying of insecticides in case of pest outbreak. All these are expected to be taken care of in the general maintenance policy of the park.

Some of the maintenance works need to be carried out annually, while some every 10 to 20 years, and others could be done on a daily basis. Daily works of maintenance include; wetting of flowers, sweeping and clearing of dried leaves and emptying of water in the swimming pool. Application of manure to flowers are normally done every planting season, while trimming of flowers are done as often as required.

Furthermore, major maintenance works like painting, changing of leaked roofing sheets, and other facial uplifts of buildings and equipments on site could be carried out once in every 10 to 15 years.

8.4 SOLAR CONTROL

Solar control is very essential on a park since lots of people will be expected to come here and relax, and since it is not going to be quite easy roofing the whole park. There are several devices and methods of controlling sun rays, but for the purpose of this project, the method that will not obstruct natural features of the environment (e.g tree shades) will be adopted.

On site trees with big shades will be planted in abundance along walkways and within picnic sites, fishing areas and general garden. To protect children from direct sun rays trees will be planted around their play arena sufficient enough to produce shade while they play.

Further more, on other buildings on site, use of sun shading devices (e.g concrete fins) and proper orientation of buildings is expected to control sun radiation.

CHAPTER NINE

9.0 CONCLUSION

On embarking on a project like this, there is a need to be sure or to ascertain that there will be patronage from members of the public so as not to run the park at a loss. Many parks had to close down due to either lack of awareness on part of the public or poor location, one of these parks is the Murtala park in Minna, Niger State. To this effect, I carried out personal surveys to the site on several occasions to ascertain that the site is known to people and discovered that the site is used by both the students and members of the public for recreational activities like picnics, party and site seeing.

Ahmadu Bello University is a very large institution, siting a leisure park here will not only boost tourism but also provide an additional source of income to the institution. As people visit the park, they pay some fees both at the main entrance and at some parts of the park like the boating decks, restaurant and indoor games. This money will be used in turn for maintenance works, payment of staff salaries and the balance goes to the institution's treasury.

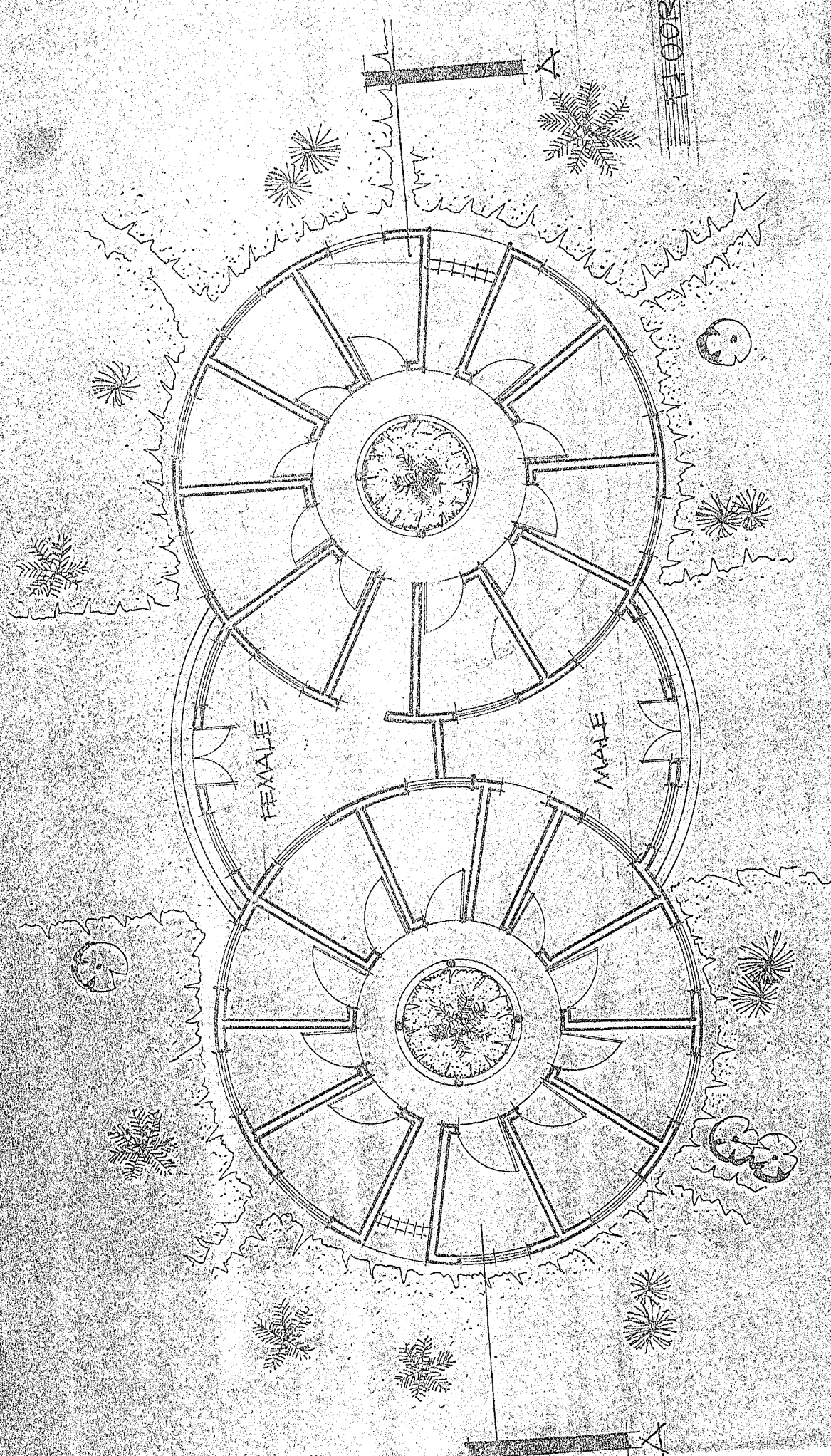
In conclusion the proposed Ahmadu Bello University leisure park shall provide for all categories of individuals from children to old aged people. To make the site pedestrian friendly, parking spaces are designed and placed at areas where people visiting the site or children will not be obstructed or knocked down. The administrative block is located close to the main entrance and the restaurant close to the parking spaces for easy circulation. An additional route to serve as the service entrance to the park is linked to the

road from the other part of the campus. Activities like swimming, outdoor games, picnicing, fishing and open air stage performance are sited across to the other bank of the reservoir with two bridges linking them. This is an attempt to maximise the effect of the water body for relaxation purposes.

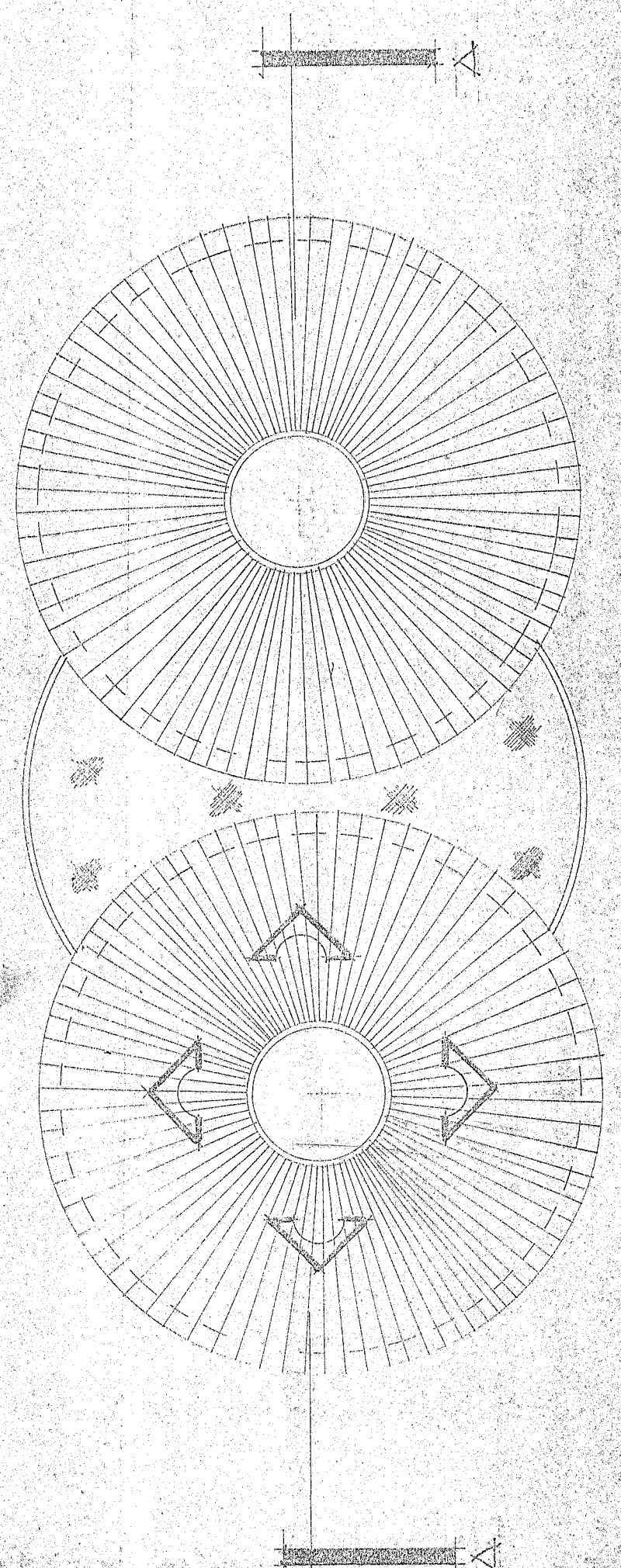
Furthermore, gazebos are located all over the site with snacks bars at strategic areas. This is meant for sight seers to relax or rest as they survey and enjoy the site. Public toilet is an essential facility too which shall exist one in every 20metres and shall be drained using the chesspool system of drainage.

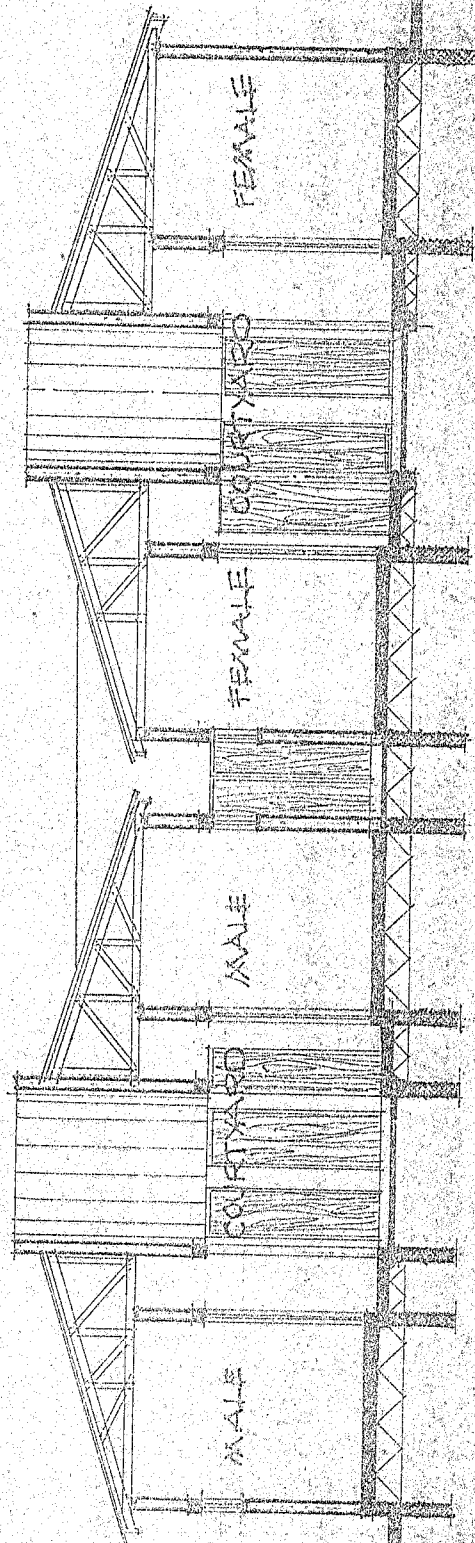
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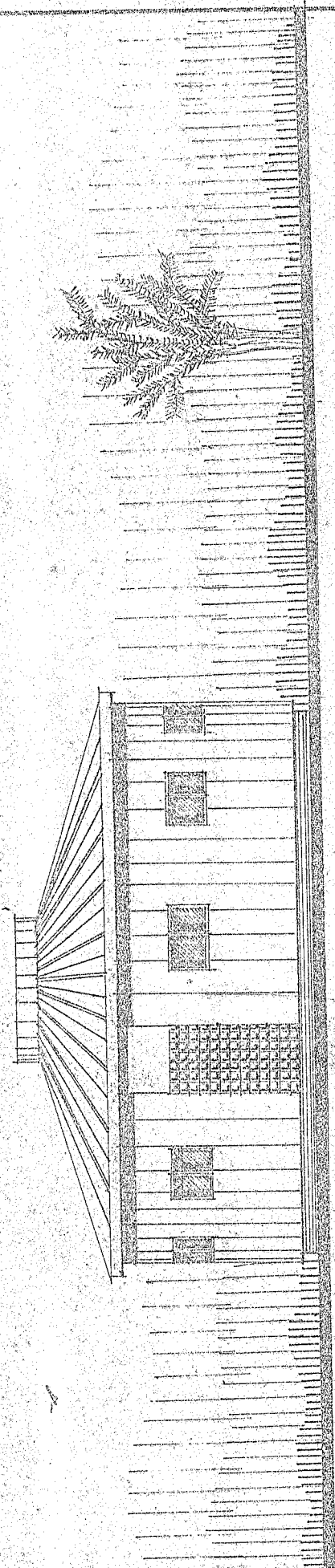


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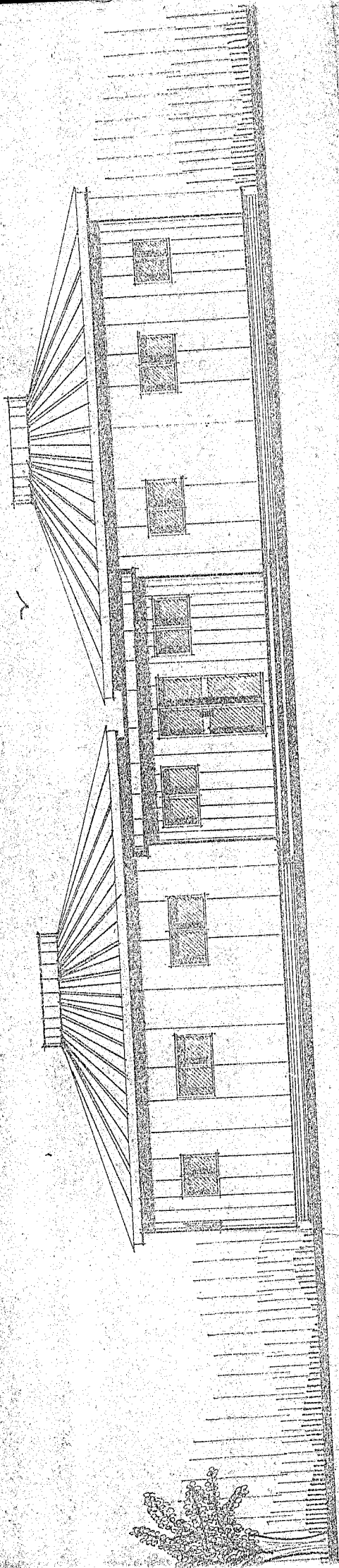




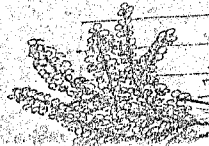
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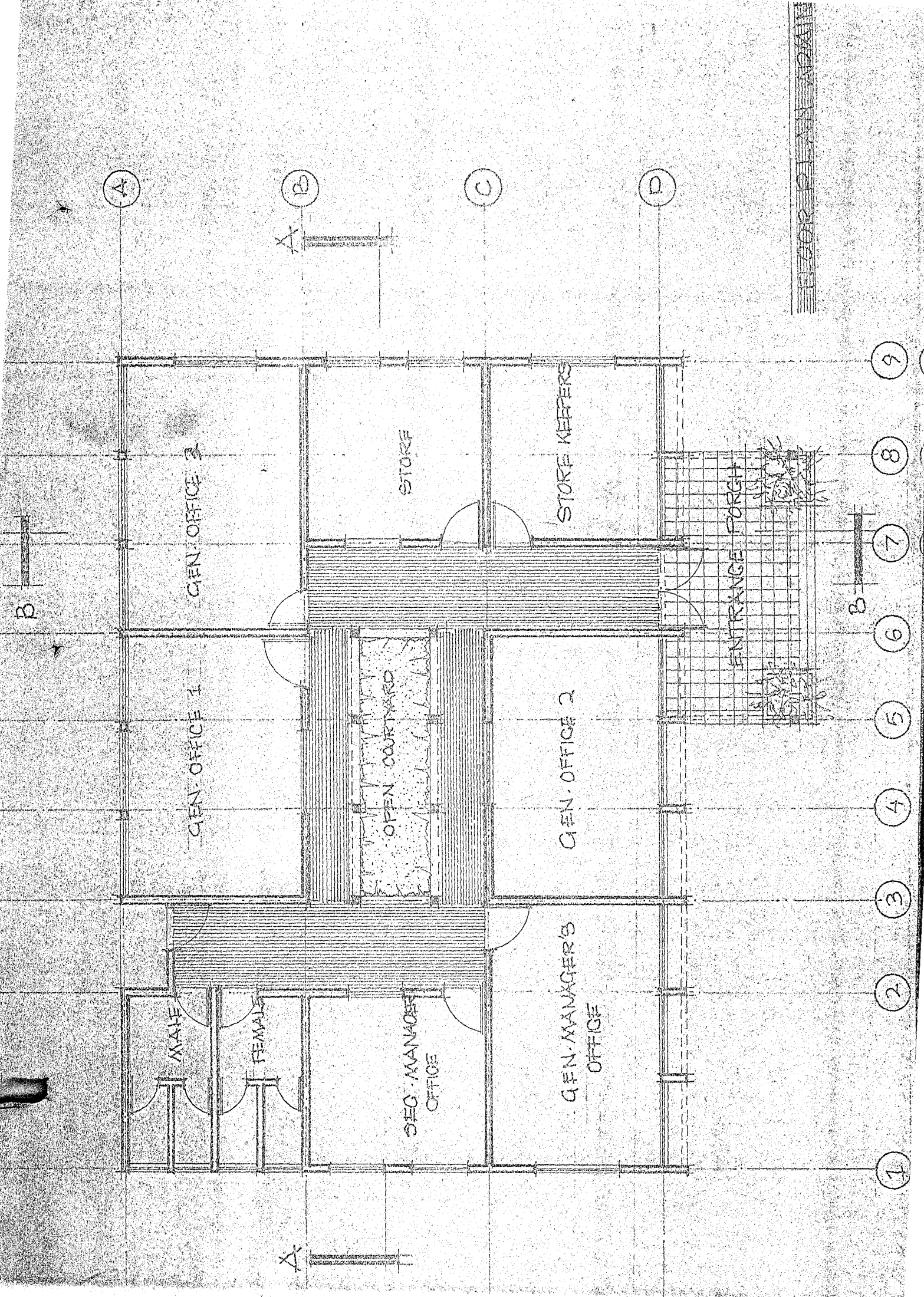


COLLEGE



APPROACH PAVILION





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C

D

B

B

GEN. OFFICE 3

STORE

STORE KEEPERS

ENTRANCE PORCH

GEN. OFFICE 1

OPEN COURTYARD

GEN. OFFICE 2

MALE

FEMALE

SEC. MANAGER'S OFFICE

GEN. MANAGER'S OFFICE

FLOOR PLAN

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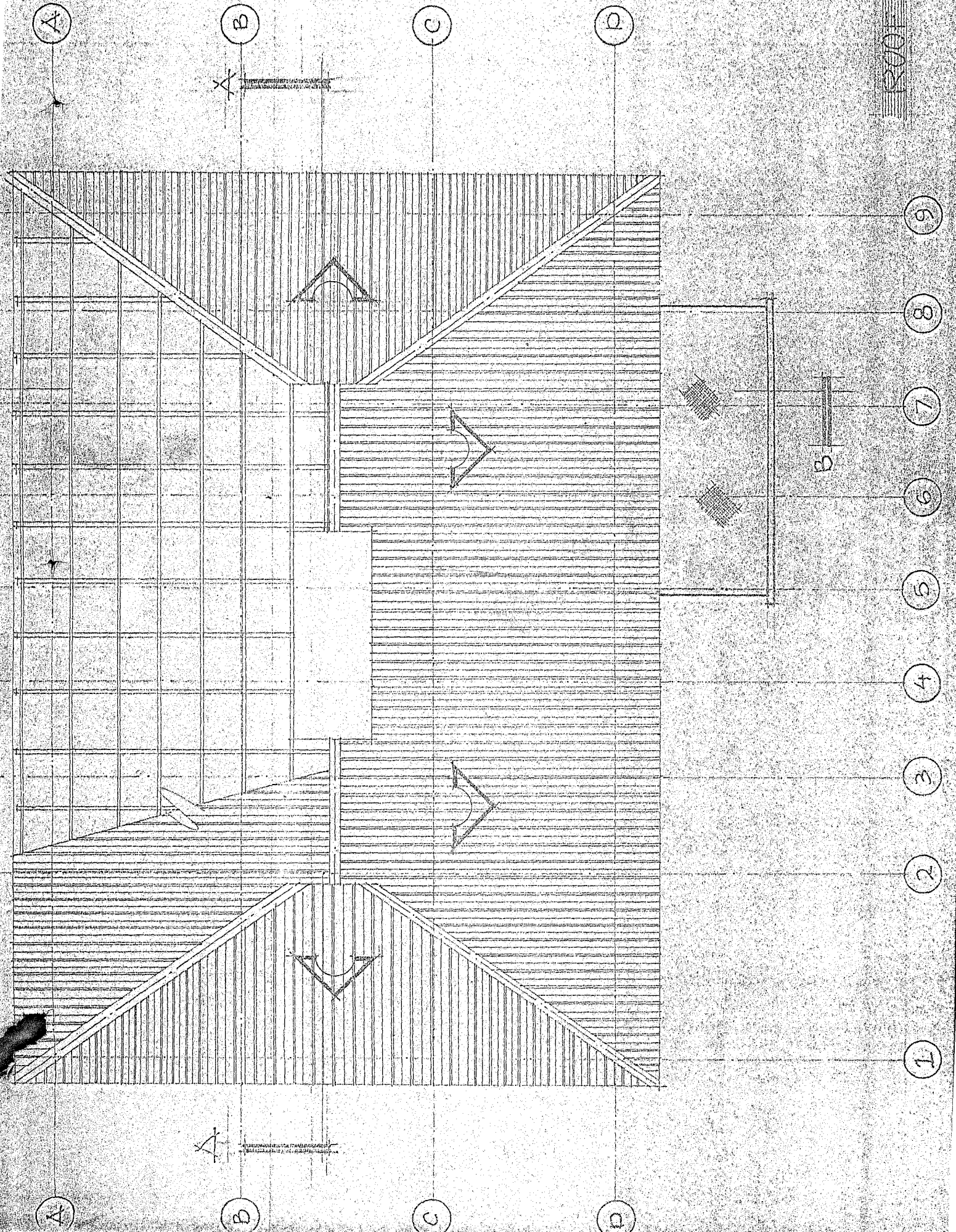
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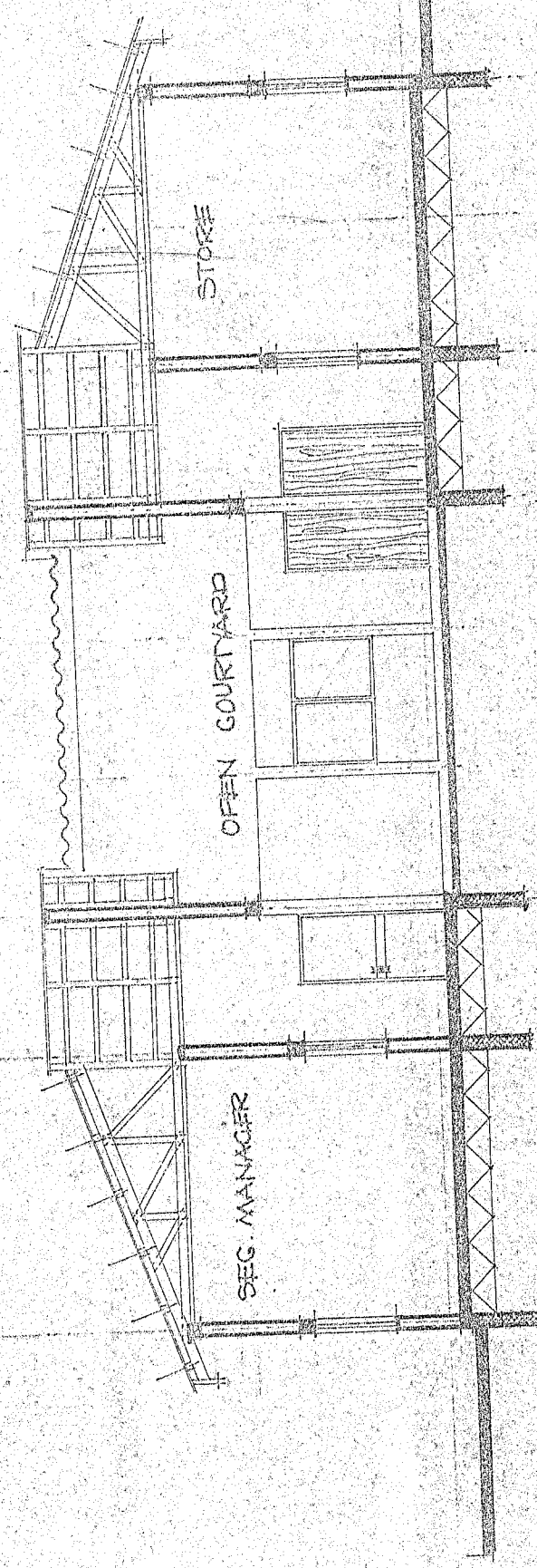
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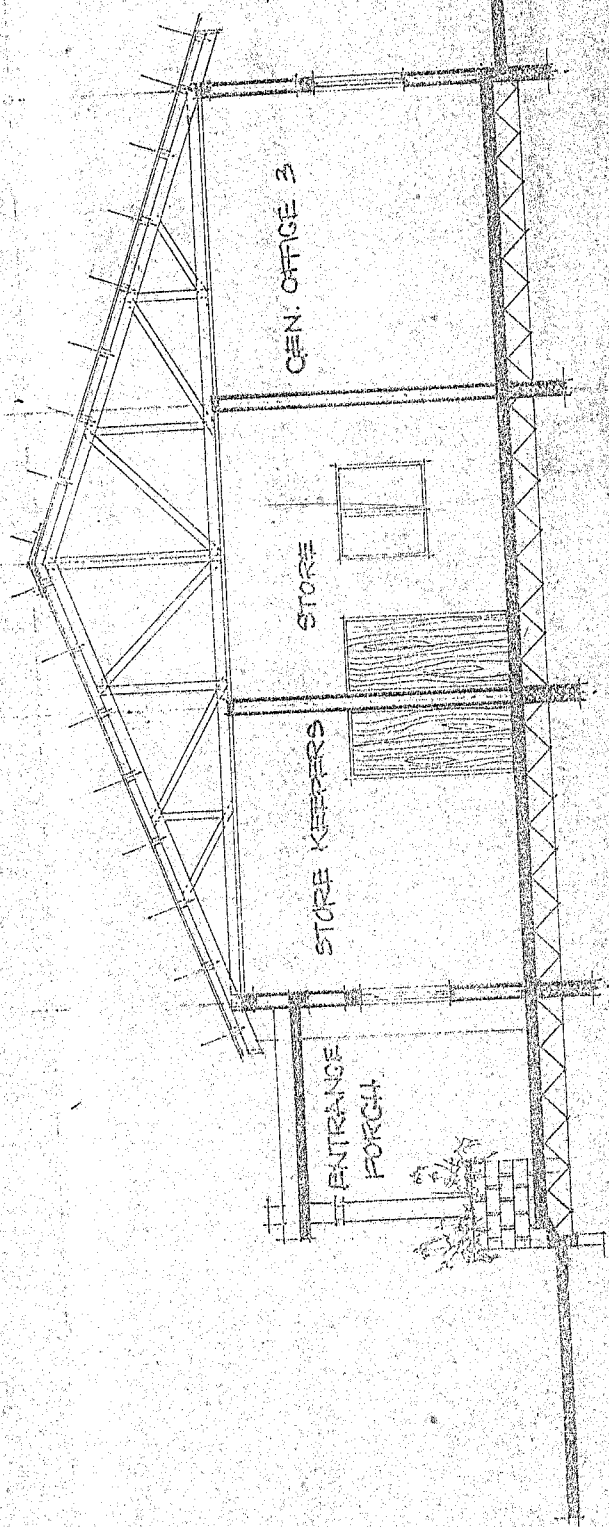
SECTION A

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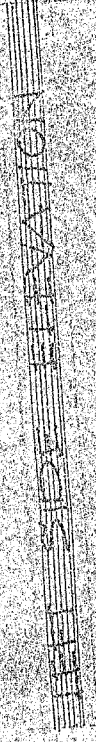
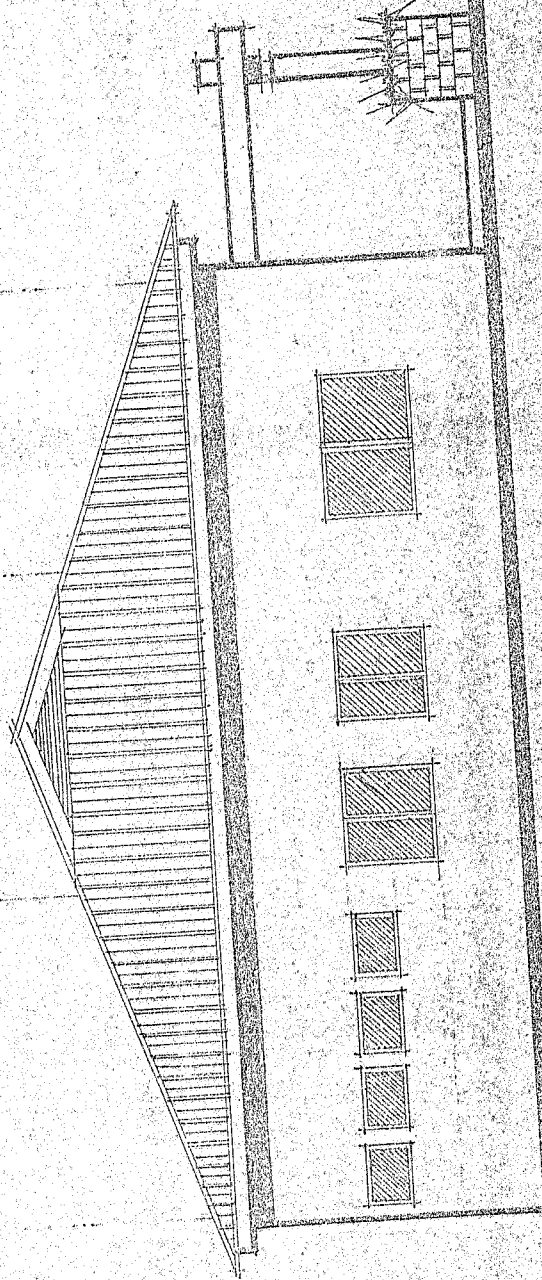
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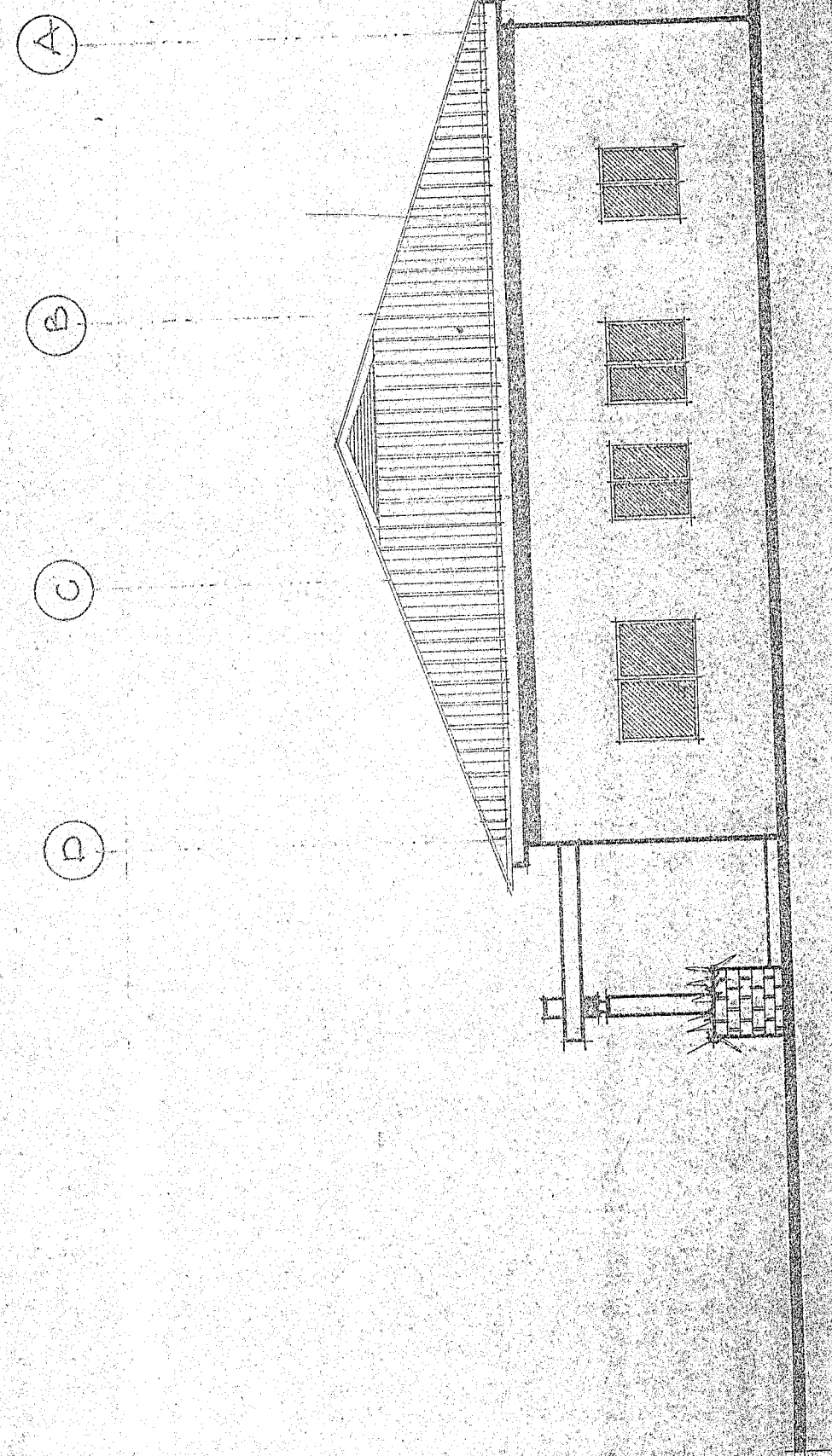
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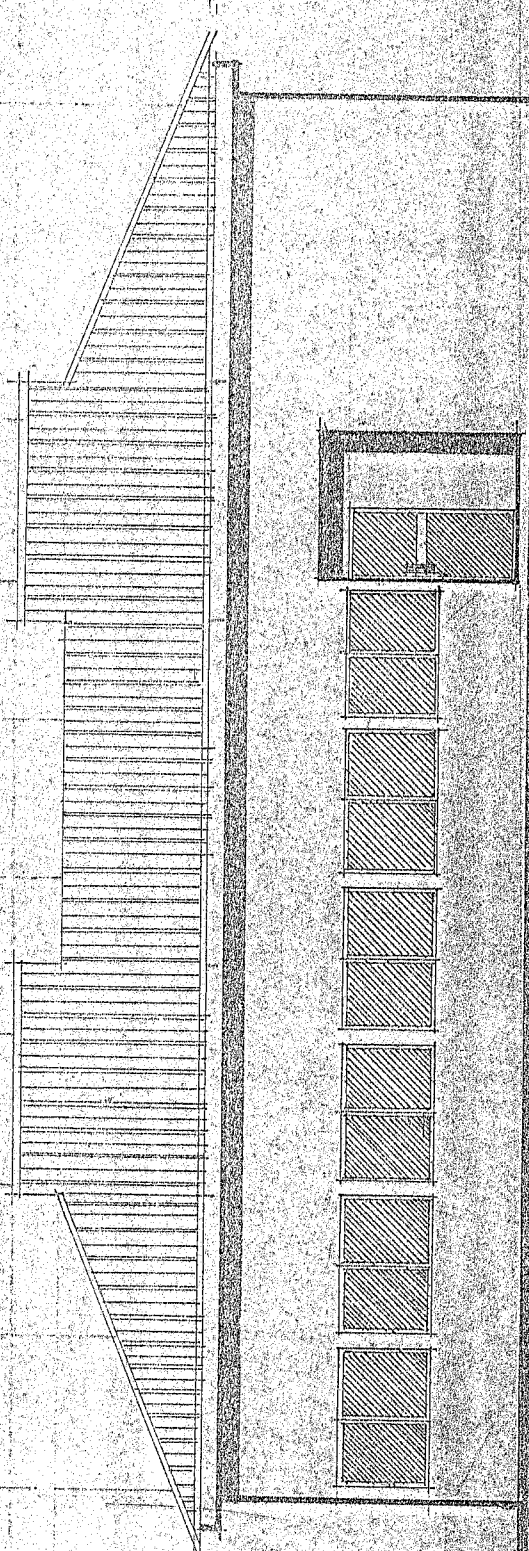
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RIGHT SIDE ELEVATION

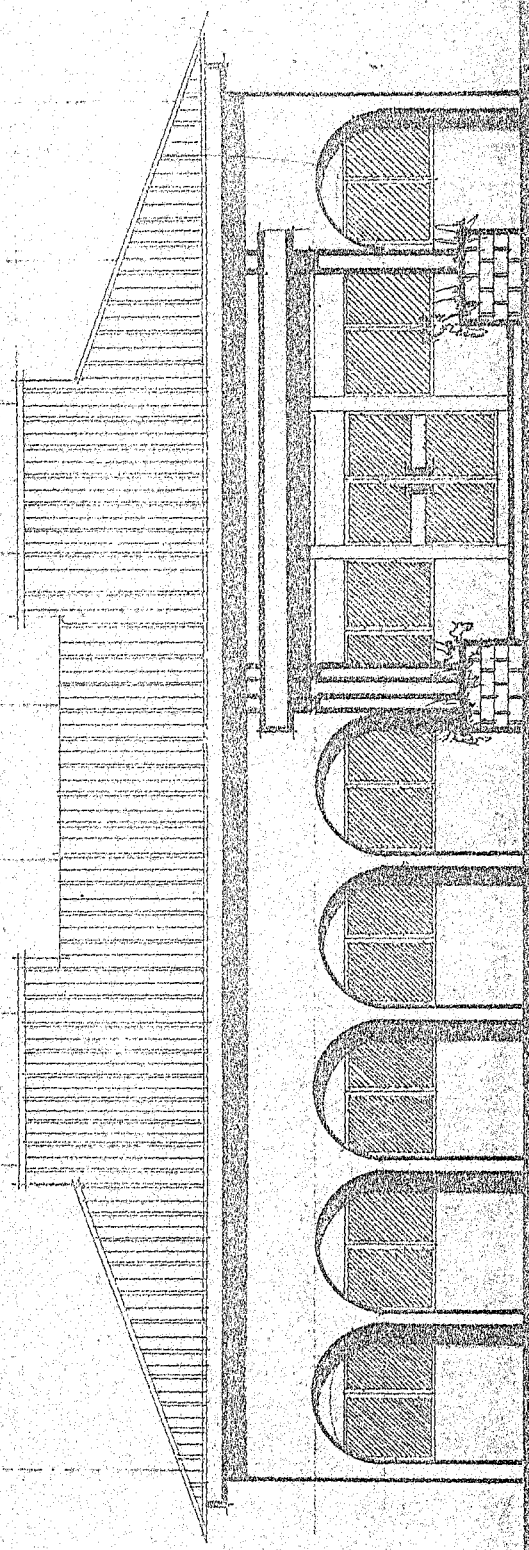


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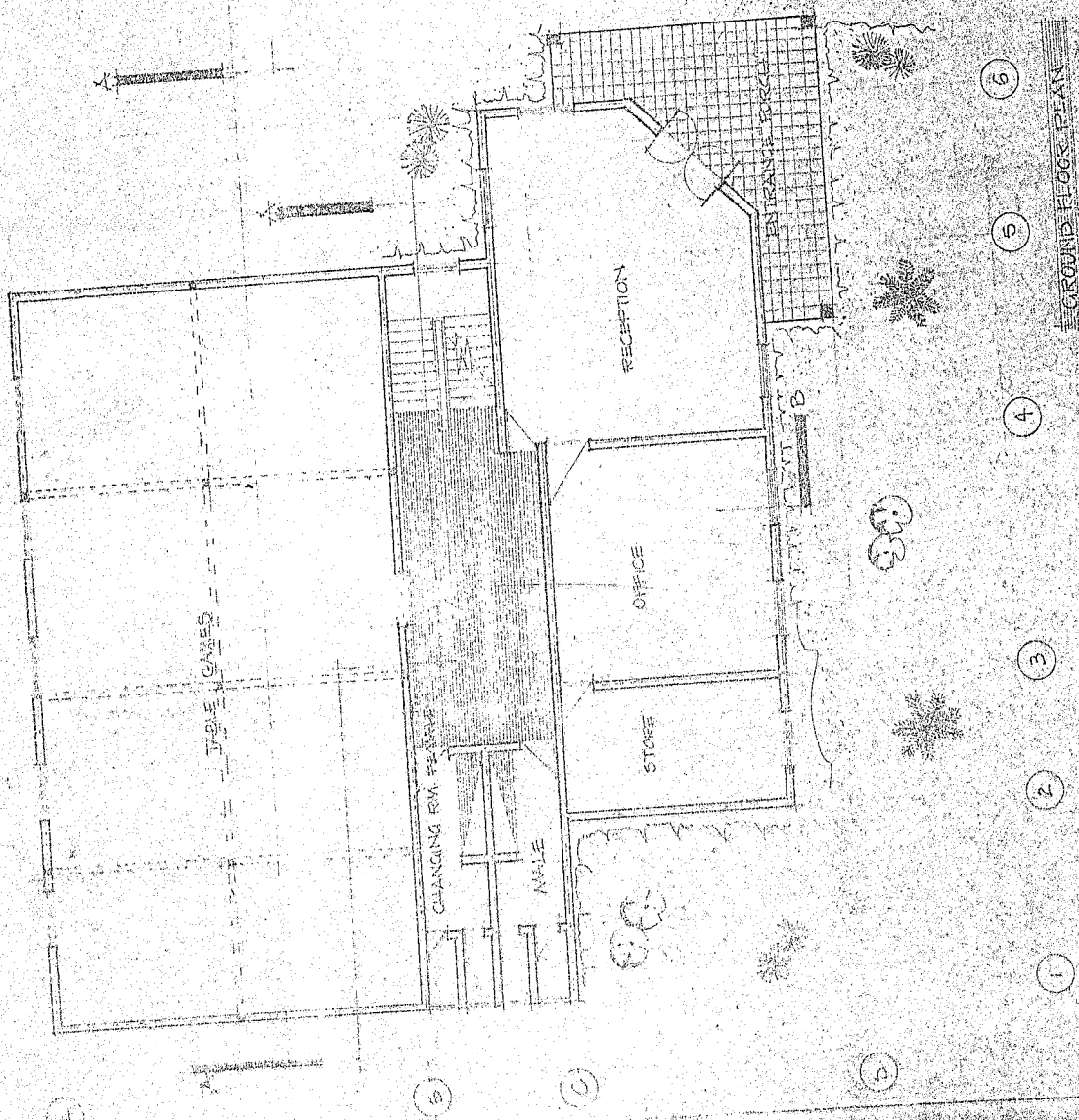


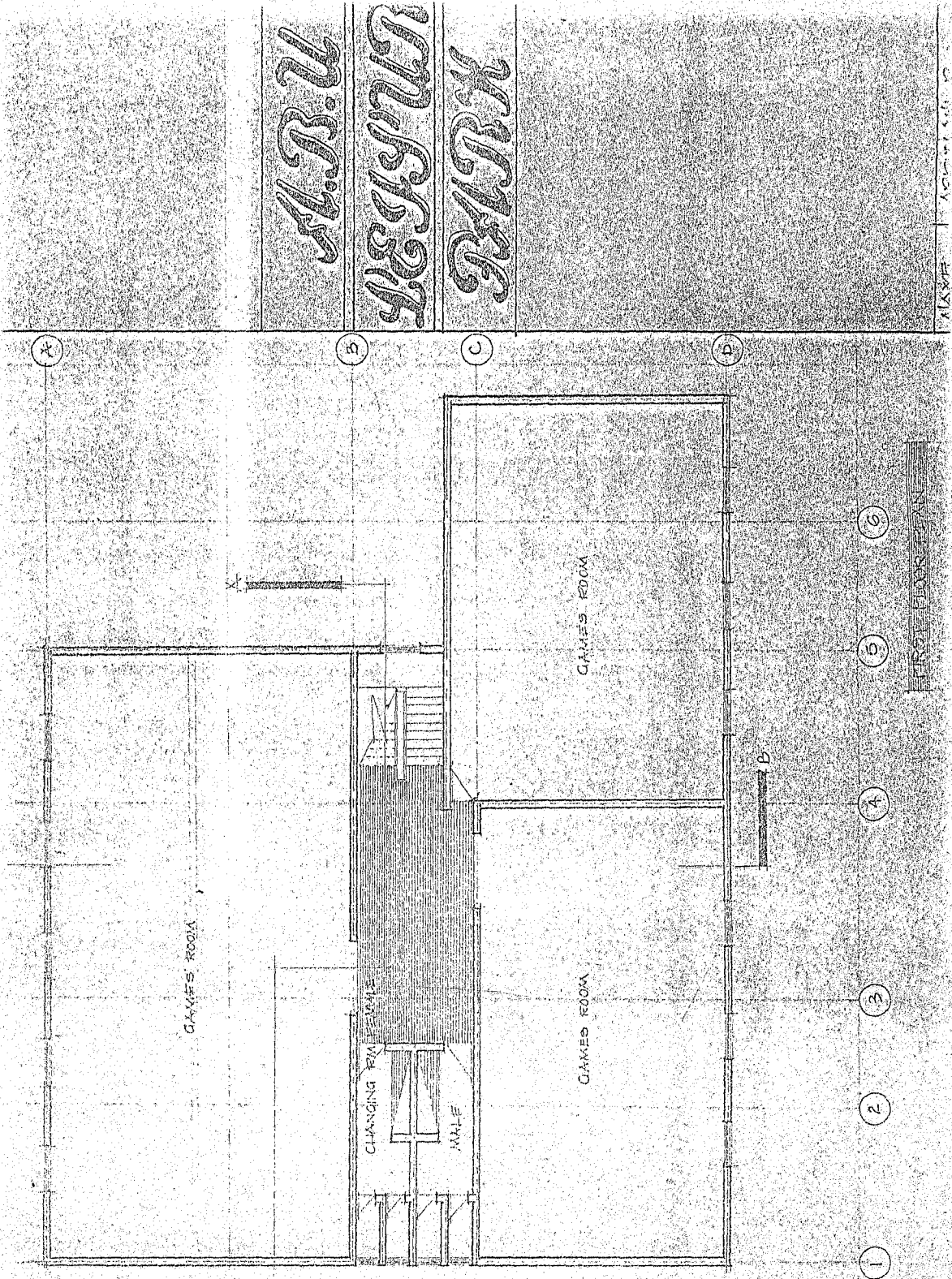
BACK ELEVATION

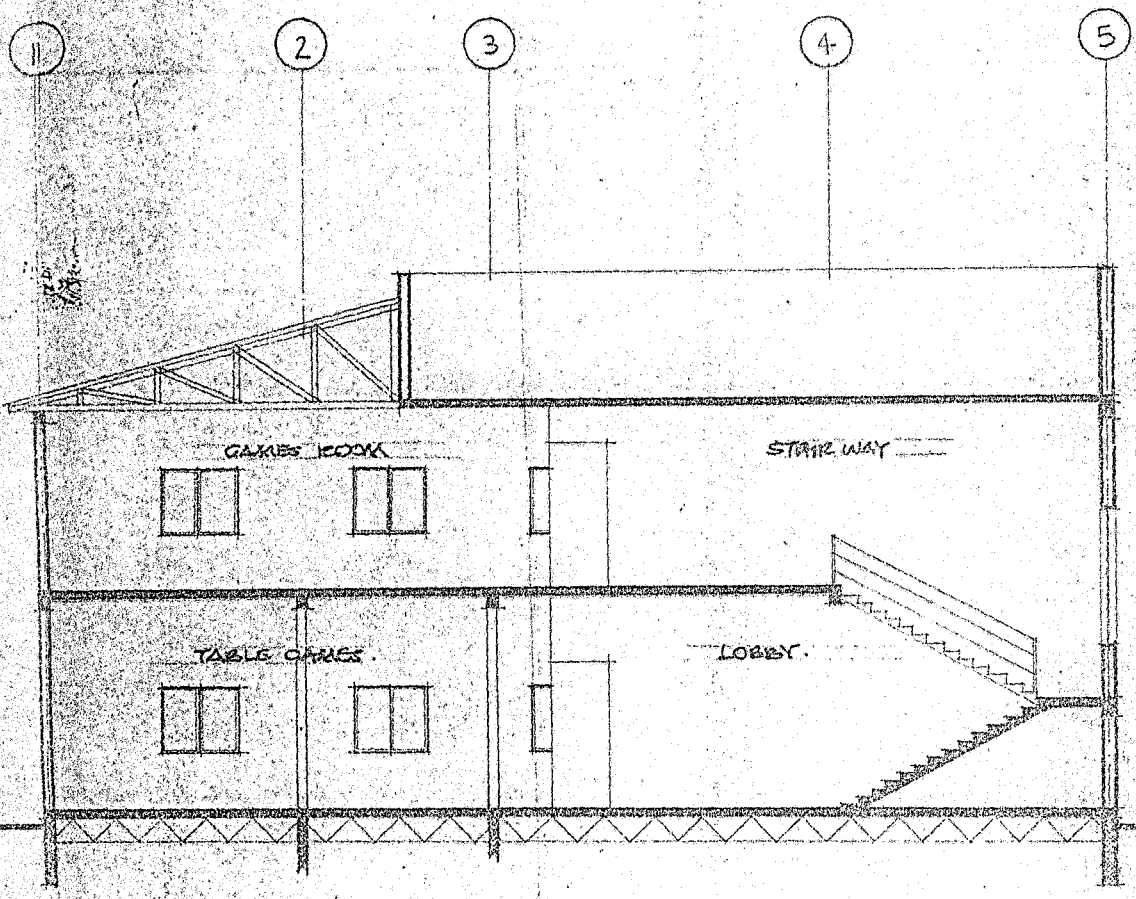
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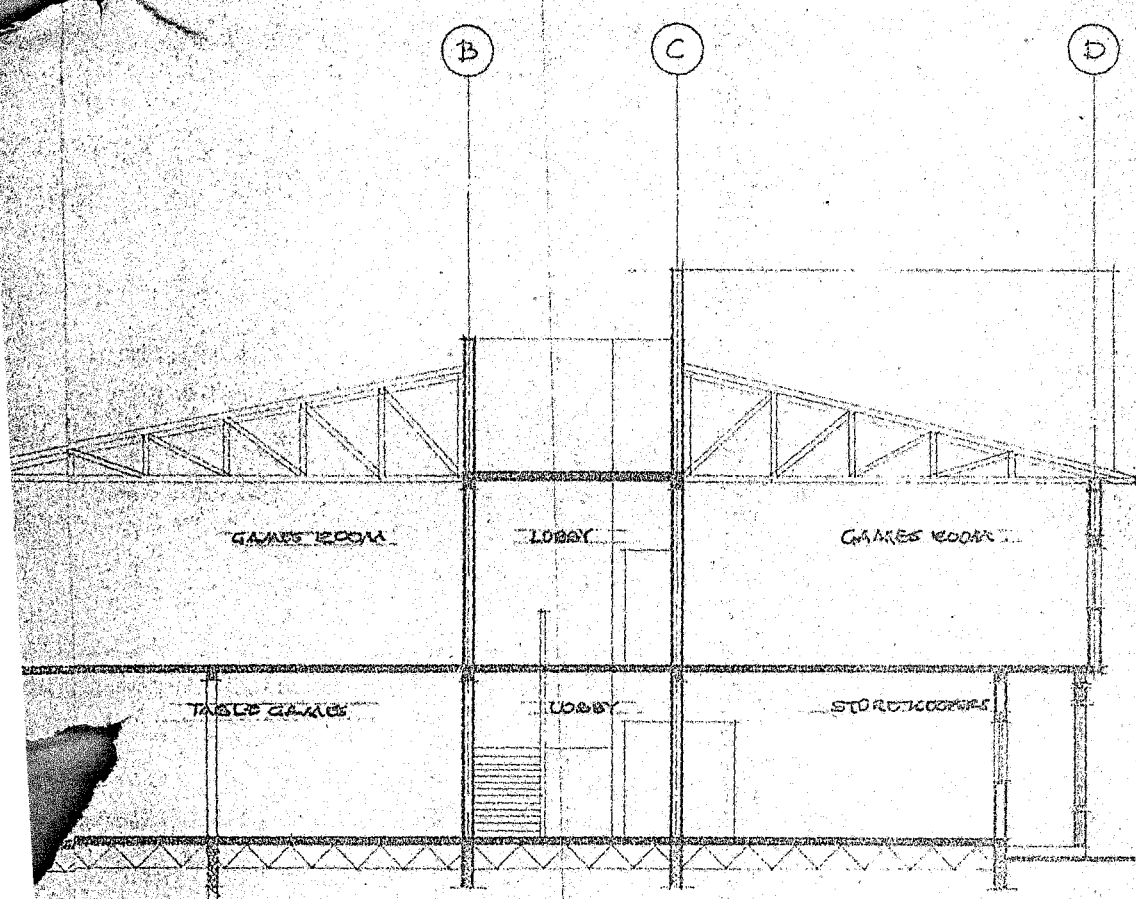
APPROACH ELEVATION



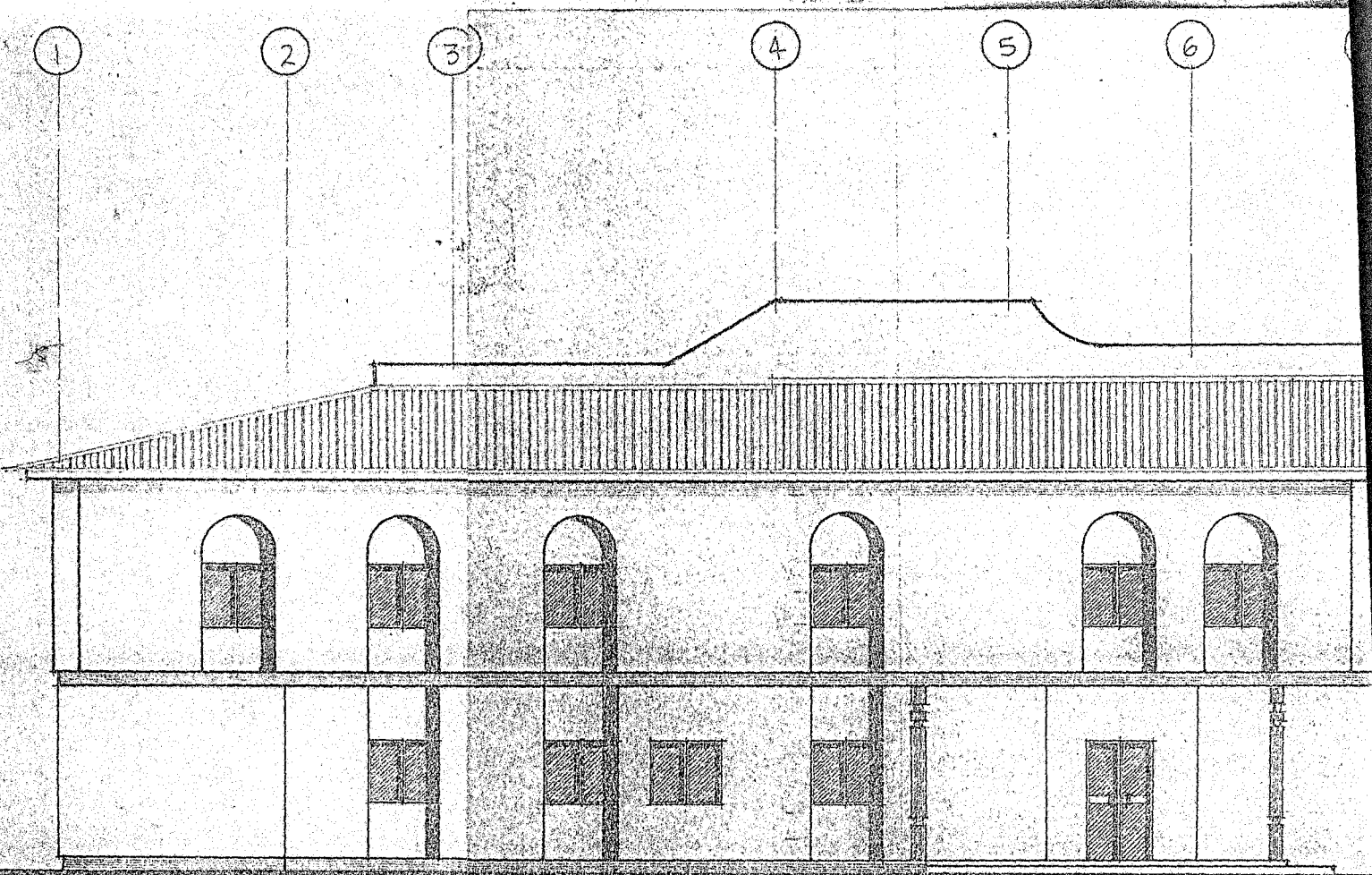




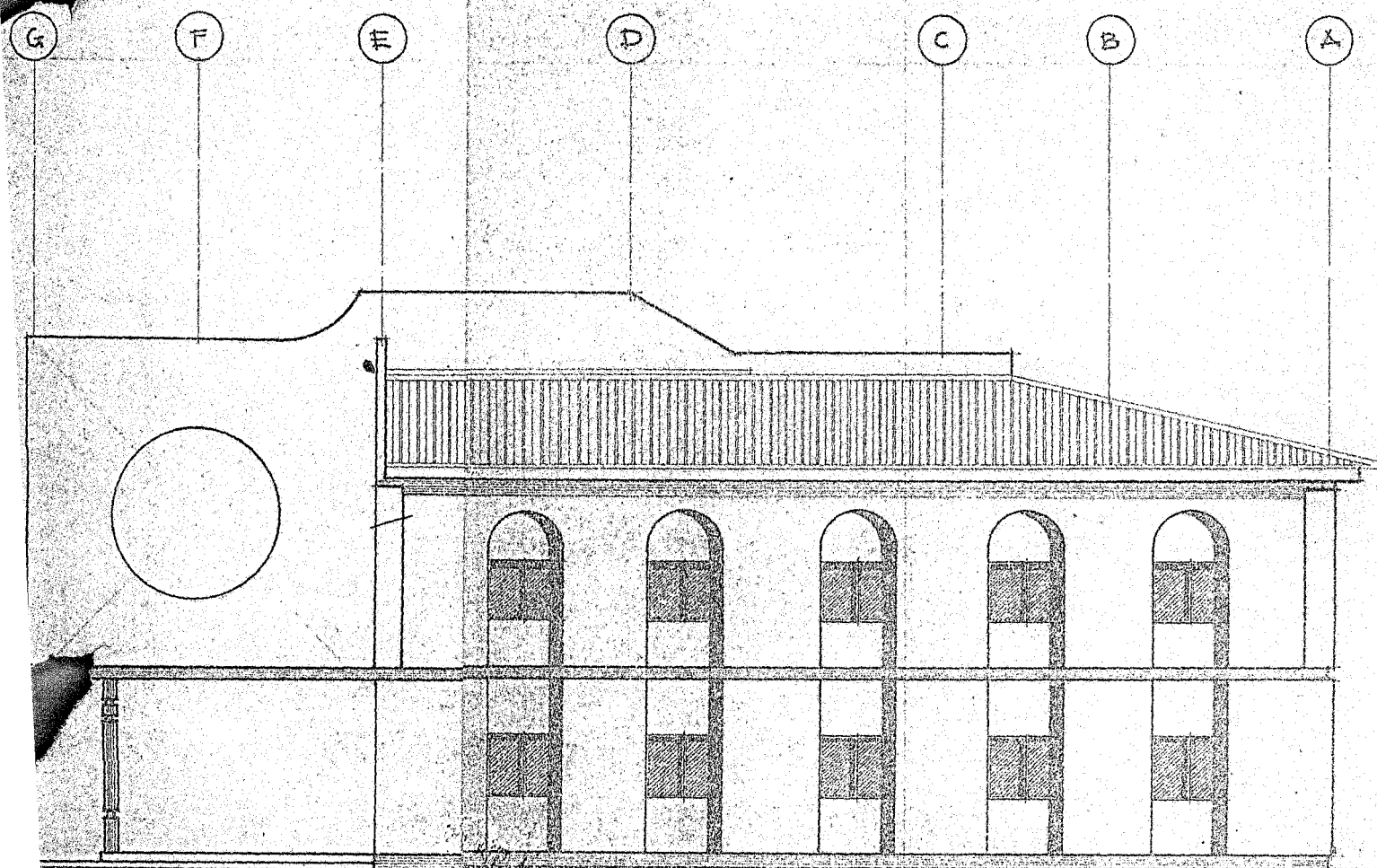
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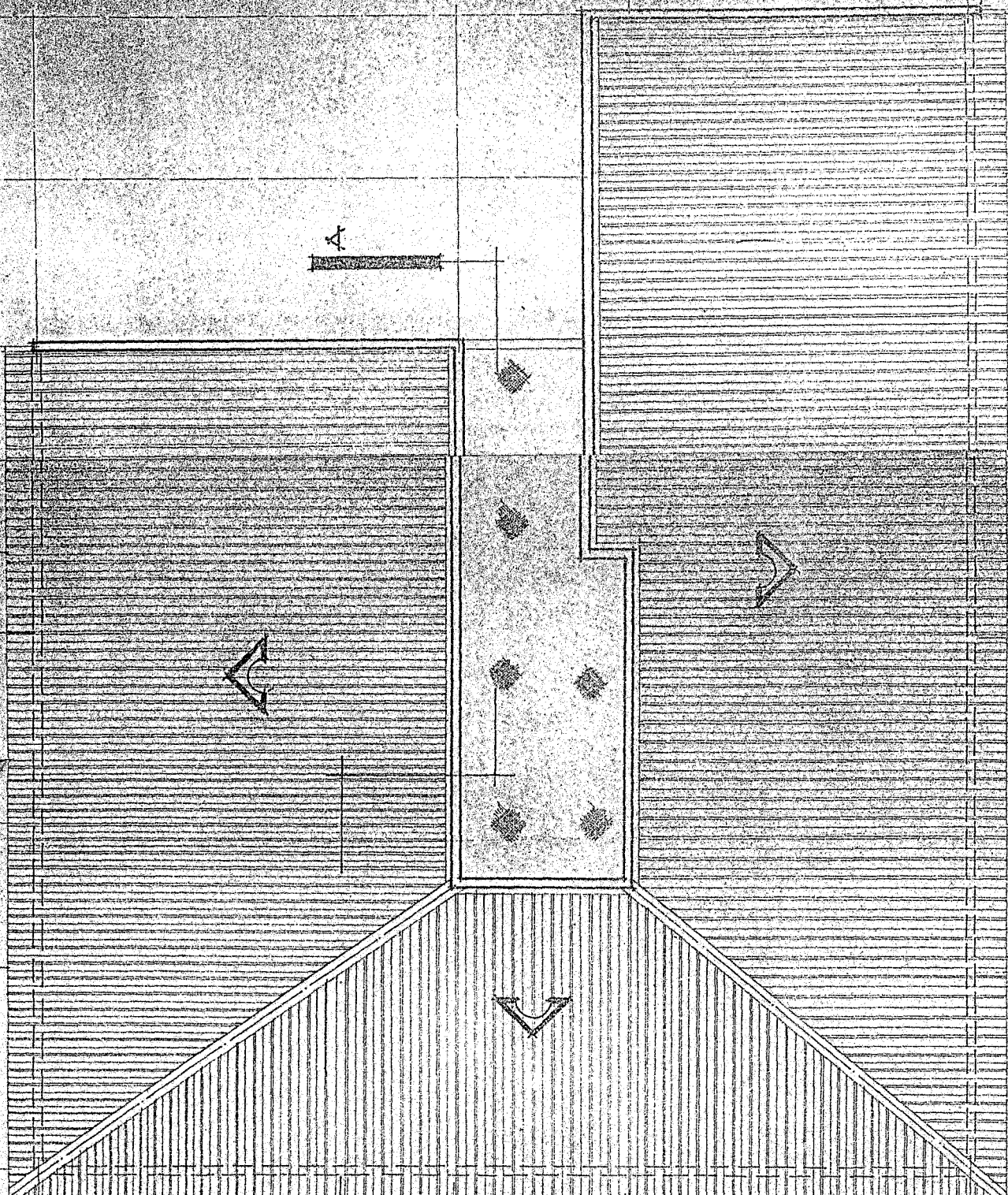


SECTION B-B



APPROACH ELEVATION





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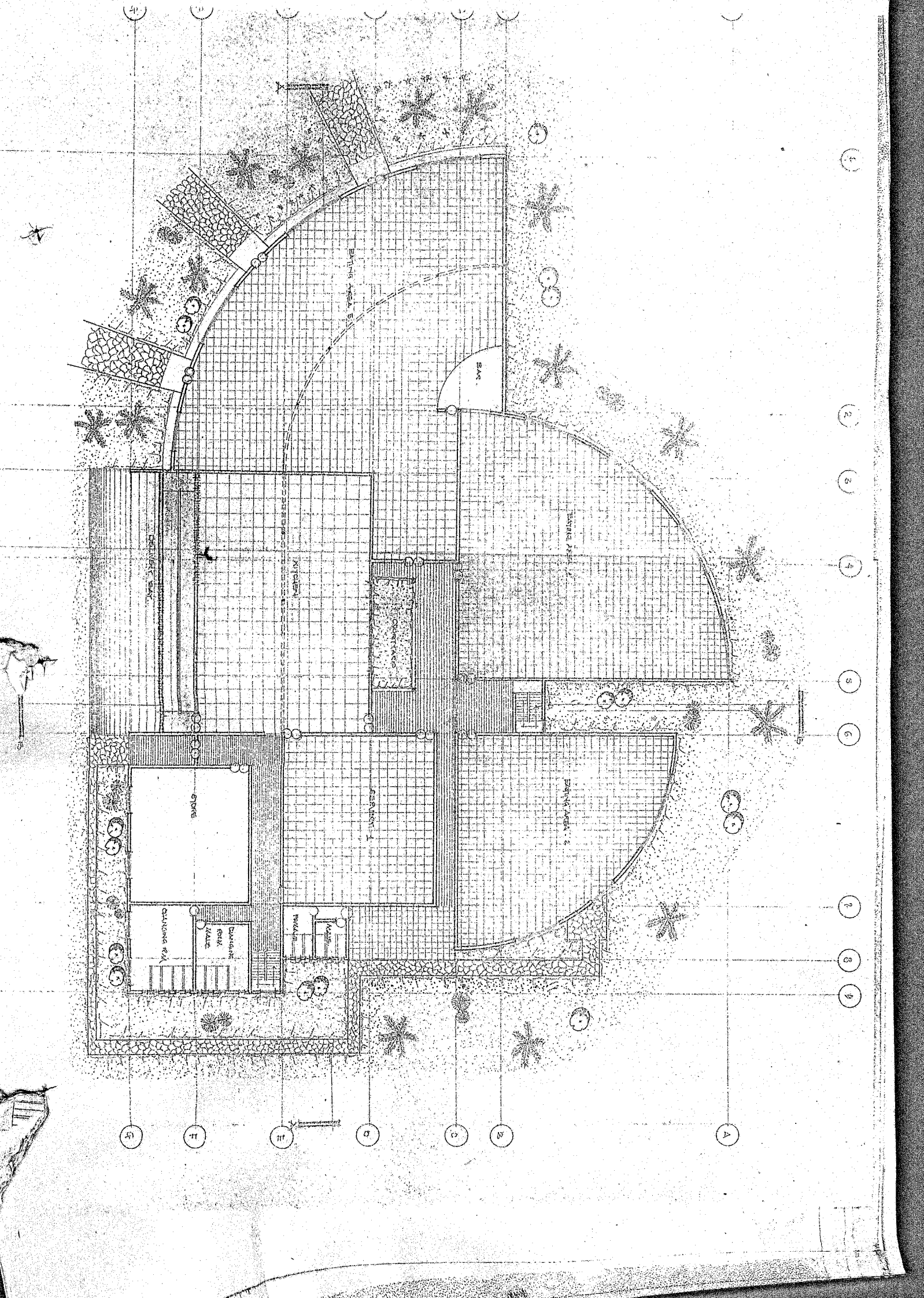
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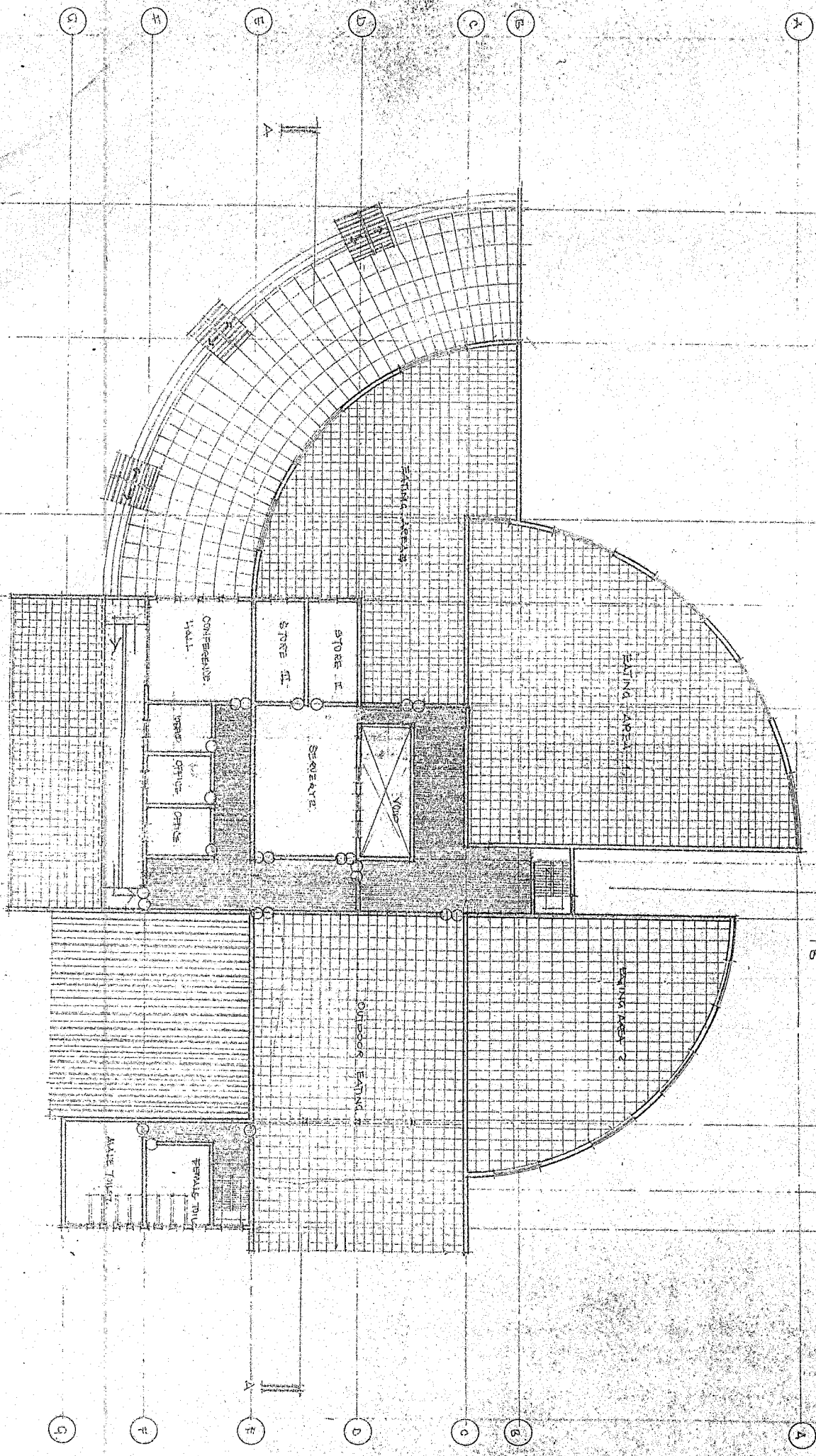
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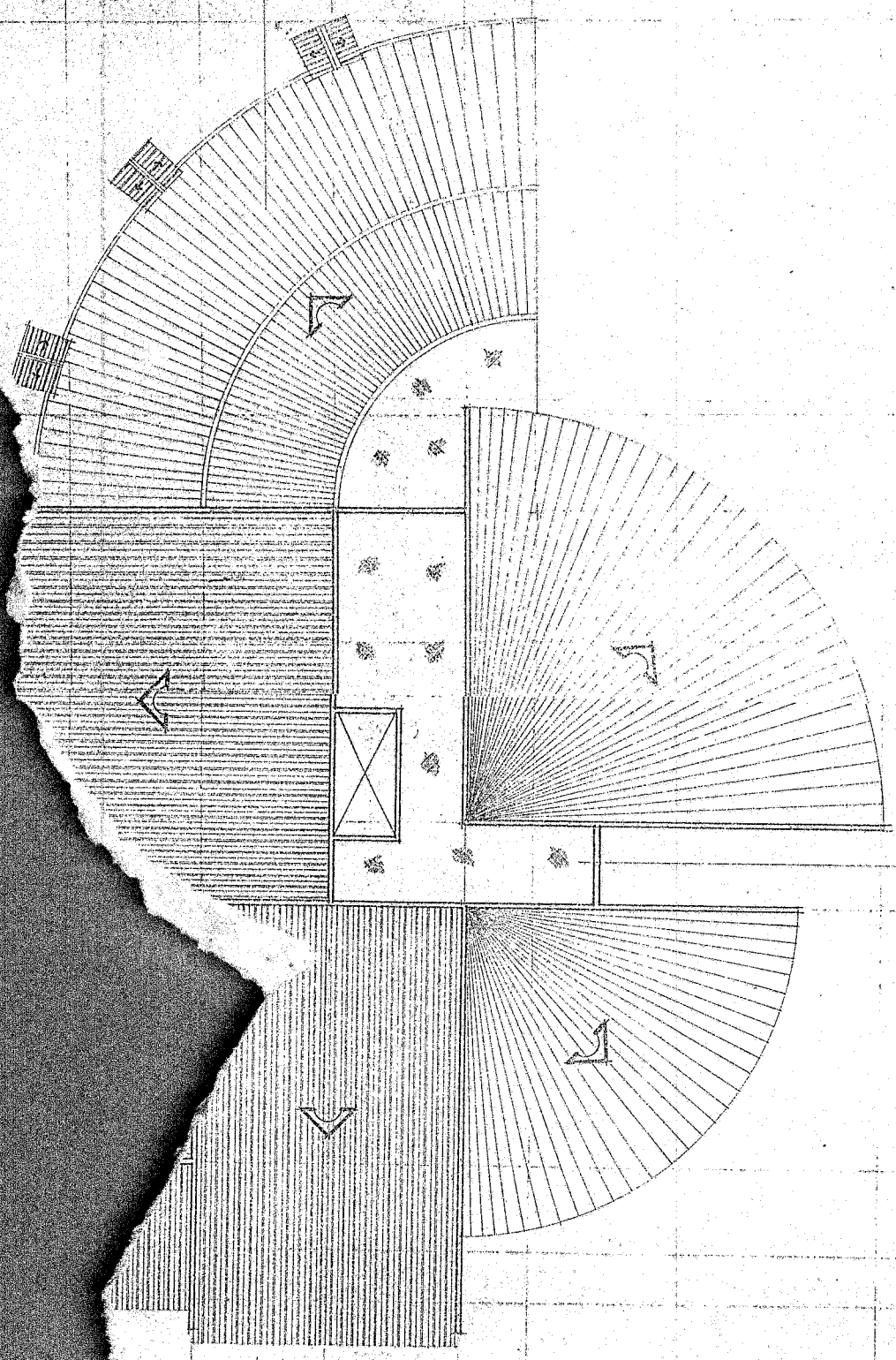
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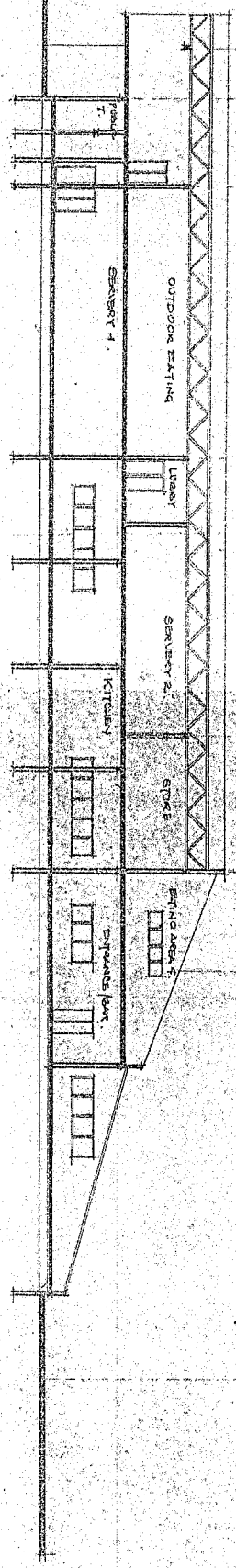
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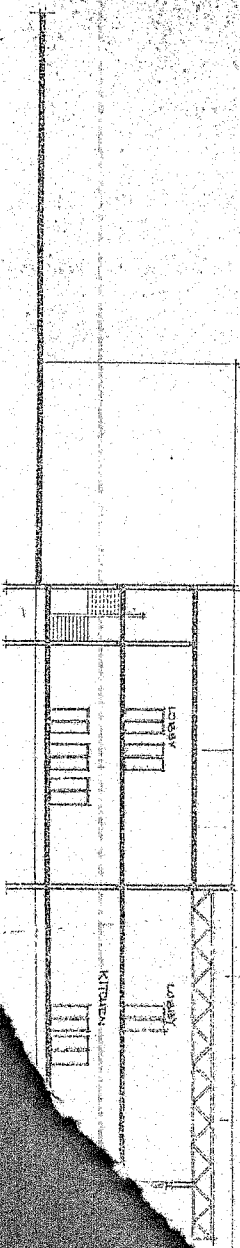
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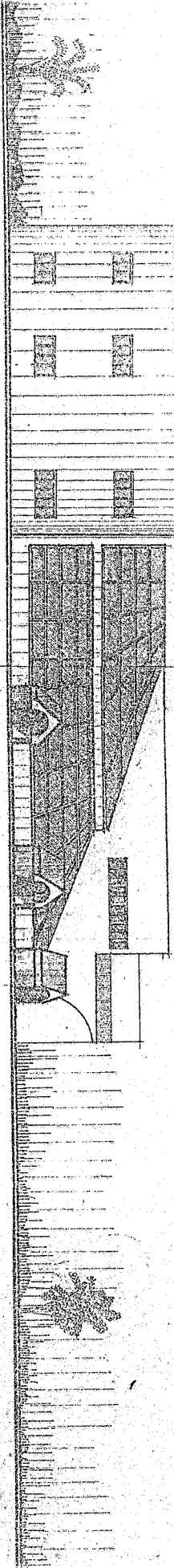
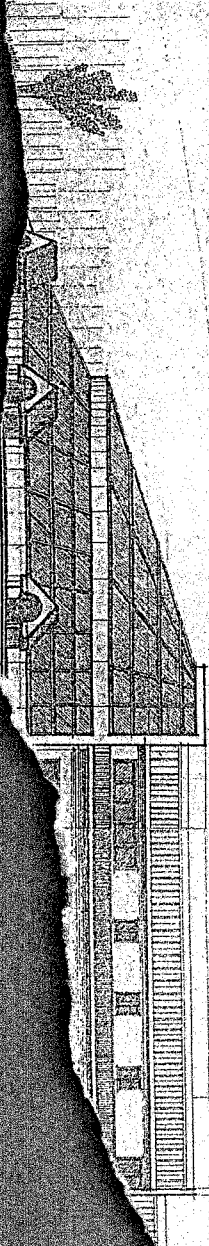
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