STUDENTS' UNION COMPLEX
UNIVERSITY OF ABUJA
(SPACE ORGANISATION AS A STIMULUS FOR INTERACTION)

By

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BSc. (lions.) Architecture

A thesis submitted, to the Tostgraduate School, Ahmadu Bello University, Zaria, Nigeria in partial fulfilment of the requirements for the award of the degree of Masters of Science in Architecture (M.Sc. Architecture)

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AUGUST, 1991

DECLARATION

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

All quotations are distinguished by quotation marks and the sources of information are specifically acknowledged by means of references.

.....

ADESANYA, Taiwo Oludotun

AUGUST, 1991 - Zaria.

CERTIFICATION

This thesis entitled: "STUDENTS' UNION COMPLEX, UNIVERSITY OF ABUJA: Space Organisation as a Stimulus for Interaction", meets the regulations governing the award of the degree of Masters of Science in Architecture (M.Sc. Architecture) of the Ahmadu Bello University, Zaria, Nigeria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

Olunowo and Jokotade, this is for you,

for being parents of inestimable value.

And Biodun and Toyin, for being one.

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In the research and compilations of this thesis, there have been moments of doubts and outright confusion. It would be criminal not to acknowledge those who have helped reduce apprehension by their relevant contributions at one stage or another.

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And my Cousin, Kunle Owoaje for his financial and moral assistance.

Lastly, I thank the Almighty God for giving me the strength to see this phase of my life through.

--- Taiwo, O. Adesanya
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ABSTRACT

For the most part of ones life to date one has been a student of one form of formal education or other. From the wealth of experiences from these forms of education, one could not be conversant with one might term "the student problem", this of course places one in a good position to advocate for the need to improve the general welfare of students.

Finally, arrived at a decision to design a community living space for Abuja University Students to be known as STUDENTS' UNTON COMPLEX. Realisation of the fact that other welfare buildings like Churches/Chapels, Mosques and Classrooms cater for only a cross-section of the students was considered as an added advantage to this thesis.

This thesis report in its first part deals with the introduction. This is followed by literature review of College/Students' Union Buildings. Lastly in this part, are the case studies of existing Students' Union/Centres, where a critique is done to the Union buildings.

The second part deals generally with the necessary information on the University, site and thesis problem.

Information and basic data, in this stage attention was given to the site and its environmental factors, **which** are among ,the factors determining the design, as they form the basis for the guidelines Leading to design process.

In the next staple, attention was focussed on the various processes of design, like programming, schedule of accommodation, conceptual development and the final stage and its report.

Programming process sheds more light on the multiple functions of the students' Union complex, with a view to coming up with a comprehensive brief for the proposed Union complex

Conceptual development, deals with the analysis and synthesis of various concepts or factors in the process of conceptualizing the design.

The final design evolved as a result of translating various analysis and functions. The design report is an evaluation of the design in terms of its operation and the problems encountered and the likely ones in its executions.

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EPIGRAM

"When planning for a year
sow a corn

When planning for a decade
plant a tree

When planning for a life-time
train and educate men"

--- Ahmadu Bello University
Students' Union

CHAPTER - ONE

INTRODUCTION

Over the past decades, physical anthropologists have been concerned with the documentation and description of human body, size variability and its application to design. A significant problem continue to exist. This is in the communication of the documented knowledge to the wide variety of potential users, the design community.

This thesis is primarily concerned with the arrangement of spaces in a Union building and its effects on stimulation of interaction amongst students, and its community, i.e., the neighbours.

The interaction between human beings and their environment have become of great interest and importance to modern civilization. Along with the popularization of ecology, concepts such as "spaceship earth" and the visible deterioration of portions of the environment, scientist and others have begun to systematically investigate the consequences of environmental conditions and the implications of human alteration of these conditions.

The environment exerts a pervasive influence over our social systems and our individual experience and behaviours. As we modify our surroundings and extend our development technologically, we must consider the degree to which man has psychologically abused and caricatured by the technology which it controls. While we tend to think of ourselves as masters of the environment we are necessarily involved in a continuous interchange with our surroundings. In this respect, we are no better than our phylogenetic predecessors although we may have superior adaptive capabilities we must still cope with even the most mundane occurrences in our daily lives. Our behaviour can be conceptualized as a dynamic sequence of adjustments and re-adjustments to our social and physical environment. We may not always be aware of this coping responses, but the sun and moon, wind and rain and terrain and characteristics of the land all affects our lives and require us to predict and cope with their effects. When we consider our built environment, offices and homes, shops and highways, city and streets and parking the consequences for experience and behaviour are just as important, but less evident.

A survey of some campuses in the country has shown that most Universities do not have buildings set aside for students' Union activities or where provided, have inadequate facilities to cater for the students. Indeed, the establishment of a community kind of setting on our campuses is a step in the right direction, for it does not only provide students with the opportunity of meeting to share knowledge but it also intergrate them with immediate neighbours.

Realization of the foregoing needs, inspired the idea of undertaking this thesis, in which attempts would be made to incorporate in a building the communal facilities to be used by students of the University of Abuja.

The building is not intended to serve as a substitute for Church, Mosque and other traditional or social life, but that which can supply an absolutely neutral meeting place in which students of varying shade of creed, opinion and discipline can foregather for social learning and recreative purposes.

It is hoped that this thesis will be instrumental to the improvement of existing relationship between

the students and University administrators and students' welfare generally.

1.1 MOTIVATION

The drive behind this thesis is the desire to see the student Union, as a body, developed, respected and functioning within the academic environment. It is also envisaged, that this thesis will show the importance of extra-curricular activities in the development of the mind of students.

1.2 AIMS AND OBJECTIVES

To supplement or complement formal academic instruction by enriching and broadening students' experiences in the arts of politics and administration. The building will also serve a useful purpose for clubs to conduct activities without obstruction to general function of other buildings. To provide a pleasing Union building design offering favourable conditions for creative thinking. To create a forum for interaction among diverse groups within the University. And the use of landscape elements; courts, plazas, etc., to achieve greater cohesiveness in design. Provision of highly accessible communal facilities to ensure greater interaction.

1.3 ARCHITECTURAL CONTRIBUTION

To create an integrated academic environment in which the various units operate in mutual cooperation.

1.4 SCOPE AND LIMITATIONS

In this case, it is anticipated to meet the needs of the University's ultimate students projection for the year 2000 and beyond. However, there are some common facilities in all Union buildings. Given the apathy of Nigerian University Administrators, the thesis has been made realistic. The building as proposed will house among other functions, a multi-purpose theatre, library, bar, restaurants, shops, offices, conference room, television/music room and outdoor spaces and plazas. The constraints been finance from the Federal Government and rising cost of building materials.

1.5 RESEARCH METHODOLOGY

Like any other architectural problem, this thesis will involve studies into space organisation as a stimulus for interaction. The procedure for conducting the research follows the figure suggested below.

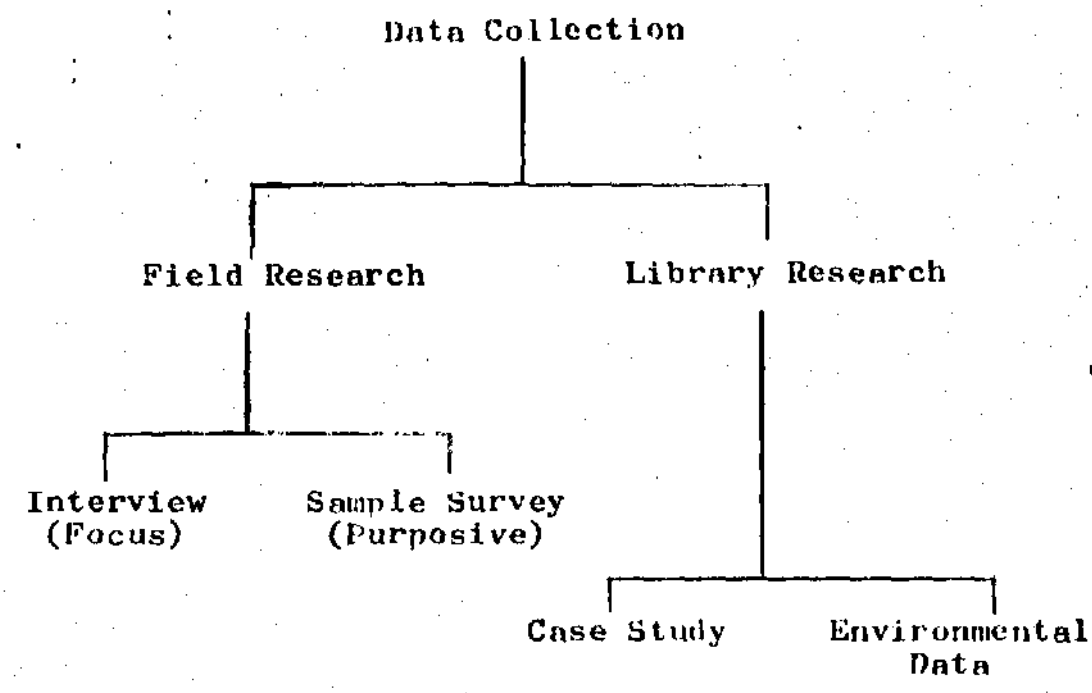


TABLE - 1

Thus, the data collection will follow these two sources: field survey and library research. In the case of library research, books, papers and other journals have been analysed with the motive to comprehending the ideas and views regarding the design principles. And case study, personal observations and environmental data will cap the research.

Field research on other hand, will depend on purposive sample surveys and focus interviews.

Deductions from personal observation in field and research findings as well as responses during interviews are analysed to assess people's view with regards to critical design issues. Finally, assessment by environmental data which enhances the analysis of prevailing environmental condition both in micro and macro levels of the site for the proposal as well as physical features around the site are analysed with the aim to adopting the proposal to these ever enduring forces.

1.6 USERS AND CLIENTS

The users will mainly be the students and the University as the clients.

CHAPTER - TWO

LITERATURE REVIEW

The present regular physical setting for socializing students on the campuses is rather a recent development. Though most tertiary institutions of learning have always had some occasions and places where students met, discussed, ate or drank together. Credit for the invention of students' Union goes jointly to Universities of Cambridge and Oxford both in England.

The Cambridge Union formed in 1815, emerged as a Union of the three existing College debating societies. The main function of course remained debating for the next fifty years. This Union made use of small backrooms of the Lion Inn or where ever else it could find accommodation. Part of the proceedings became dinner before the debate and drink afterwards. The year 1866 marked another turning point in the history of this Union, when its activities went beyond debating. In addition to debating facilities, provisions were made for such facilities as reading room and lounge, where members could research and discuss the issues of the day, dining and bar services

as well as Committee rooms, smoking room, writing and a billard room for relaxation.

The Oxford Union formed in 1823, also started in the same manner with that of Cambridge, by Union of separate debating societies. This Union rented three rooms at a bookstore in downtown, Oxford in 1829, this place remained its headquarters until the time it was to build its own home. This was as a result of a worked out financial scheme whereby a graduate could become a life member of the Union by an initial payment of ten pounds. The proceeds of this scheme, plus a personal donation by the President of one of the Oxford Colleges, made the realisation of this premier Union building possible. This emerged as the first Union building in the world and was completed in 1957.

The Union in Oxford and Cambridge are lively socializing centres at both Universities, their original purpose was to form a University wide society which would cut across separate College lives, to achieve unity through the understanding of differences as they are definetely not the only ones. There is a great variety of other independent clubs and societies for instance, the Drama, Music, Politics and Arts which are in no way related to Union and certainly not supported by it.

Oxford and Cambridge were not then community centres for the entire University community. The most motivating factor for the creation of the University centre was the need for a place where the Faculty Staff and their families could meet on collegiate basis. Oxford and Cambridge Universities should be remembered to have created interdisciplinary academic community for all undergraduates and most Faculty members from time in memorial through their collegiate living and dining tradition.

The significance of these two pioneering Union could be summed up by saying that they have become a symbol of the new traditional British two fold system in education; that is by way of inculcating in students civilized manner alongside with knowledge especially in the art of living together and encouraging independence of students thoughts and actions, also to infuse them with the idea or feeling of responsibility for their country's welfare.

The next Union of note in the history of students' Union buildings is the Toronto University Students' Union, in Canada. Those behind the creation of the students' Union, attempted courageously with limited fund, staff and premises to satisfy the students need

for social and recreational centre. This Union building was put into use for the first time in 1919. Toronto University Hart House as the Union there is popularly called had unique amenities in the entire world.

The uniqueness was in its:

i. Unprecendented range of facilities.

ii. Designed to serve all members of the entire academic community, i.e., students, faculty, administrative and alumni.

iii. Placing of a unique trust and responsibility on the hand of a warden, chosen most carefully for his qualities of leadership and ability to cultivate cultural interest and leadership talents in students. The warden was a member of University's academic staff, as well as in the President's cabinet.

iv. Placing of considerable responsibility on five standing committees comprising of faculty, alumni and or majority of undergraduate students member.

In America, Colleges later around the turn of the century began to sense the need for students socializing.

The large urban colleges seemed to threatened end of the academic community living, which the smaller colleges had known and enjoyed. This was becoming clear, as a large number of students lived at home or in dispersed rooms throughout the large cities, the fraternities created small intense groups at the expense of any identification with the student body as a whole. Fragmentation of the college was further aggravated with the increasing number of student enrolment and specialization.

The colleges began to perceive the idea of a union as a place for all students and other members of the college community to come together and meet informally. The first American building designed as a union was Houston Hall in Pennyslavania, which was established in 1866. The needs in conjuction with posterity brought a great wave of union buildings after the first world war. A great increase in number of students and consequent over stretching of the existing facilities led to the emergence of more unions. This trend continues to date when students' union formed an essential part in campus planning world wide.

However, in the Nigerian context, students' union has always been incorporated in most of our Universities, master plans, but still constrained by subventions from

Federal and University authorities. The activities and programmes of students' Unions have always been doomed in the country. The first Union building in Nigeria, being that of the University College, Ibadan, the country's Premier University.

2.1 MEANING OF A COLLEGE UNION

College Union could be defined both in terms of organisation and building. As an organisation, it is the Union of three important College groups; the students, the faculty and the alumni. It is run by a Governing Board, which acts as the overall coordinator of various Standing Committees. These Committees in turn constitute the real policy implementation group. Representation in these Committees comprise mainly the students. These Committees are dedicated to the various needs and interest of the College community, this set-up keep the Union dynamic, flexible and busy.

As a building, College Union has varying characteristics, whether viewed from functional or physical perspective. Functionally, it is defined as a community centre devoted to the interest of students it serves. Physically, Union differ with locations. Though, both functional and structural nature differ, the overall purpose remain the same.

The American philosphy visualize College Union as the "Community Centre of the College, providing for services, conveniences and amenities for members of the College family needs in their life on the campus... part of the educational programme of the College and a common meeting and social centre". Interpreting this philosophy into spatial terms, College Union in America typically provides some or all of the following:

i. A place for informal meeting, conversation, browsing and seating, housed in such spaces, small and large lounges, parties, terraces, outdoor courtyards and amphi-theatres.

ii. A variety or types of food services, ranging from formal waitresses, served dining rooms to cafeterias, coffee shops, snack bars and faculty dining rooms.

iii. In its capacity as social and recreational centre, the Union has provisions for a wide variety of organised social activities and indoor recreation.

iv. Either from necessity - for the reason of being located far from shopping centre or for

convenience most Union sell some goods and services facilities ranging from bookstore to post office, barber shop, renting kiosks for cigarettes or co-operative store.

v. Most Unions house offices of student government and other organisations and provide specialised premises for such student enterprises as newspaper and other publications, radio and television station and photography and hobby clubs.

vi. The Union traditionally has an educational programme,in the cultural, political and civic development of the student. Spaces which allow for these functions include: Art display areas, Music rooms, Theatres, Concert halls, Debate chambers, Browsing, libraries, periodicals room, lecture rooms, small seminar or meeting rooms and conference areas.

vii. One of the most important functions of the Union in many Universities is to provide a tie between the commuting and the University community. These are services which the Unions could render for commuting students; sleeping rooms available

on nightly basis and faculty member so that contact between them could be simplified.

The Union is not considered exclusively for students alone but also intended to serve as a link between members of the academic and the neighbouring communities. And the building can house some or all the functions expected in a Union building, but this depends primarily on finance, scope and the geographical location of the proposed Union complex.

CHAPTER - THREE

CASE STUDIES

This chapter is aimed at highlighting the various elements that could make up a Union and functional relationship of the basic spaces. This will also help to identify the basic design concept(s) employed in designing such buildings world wide. In an attempt to provide a broad base for this thesis design project, various examples were studied from within and outside the country.

3.1 STUDENTS' CENTRE, AHMADU BELLO UNIVERSITY, ZARIA, NIGERIA

(a) Site: The students' centre was to be located originally in the heart of main campus on a site between Ribadu Hall, Cafeteria and Old Gymnasium. This Union building site was moved to a new site far away from the present campus centre, to a new site along the University Dam nearer to the Drama Village.

(b) Client: Ahmadu Bello University, Zaria, Nigeria.

(c) Architects: Olomu, O. F., Macaulay, F. and Ugbabe, L. O.

(d) General Description: This building is made up of two distinct wings which are semi-circular wing and auditorium wing. The auditorium wing houses functional spaces like the foyer, thicket booth, the auditorium proper with a stage and backstage rooms such as custume room, rehearsal room and toilets.

On its ground floor, accommodation is provided for such functions like buffet and its store, kitchenette, printing room, a mini-market and a games room. In the centre connecting these two wings is a courtyard (see Figure - 1).

Other services like barbershop, hairdressing saloon, cleaners rooms, changing rooms, staircases and toilets are located in-between these two wings. The last floor has only guest rooms and store (Figure - 2).

(e) Appraisal: Entrances have been provided to take care of visitors from all directions. Generally, circulation is highly emphasised in the design of this building.

(f) Merit: Good circulation is achieved.

students centre, ahmadu bello university, zari

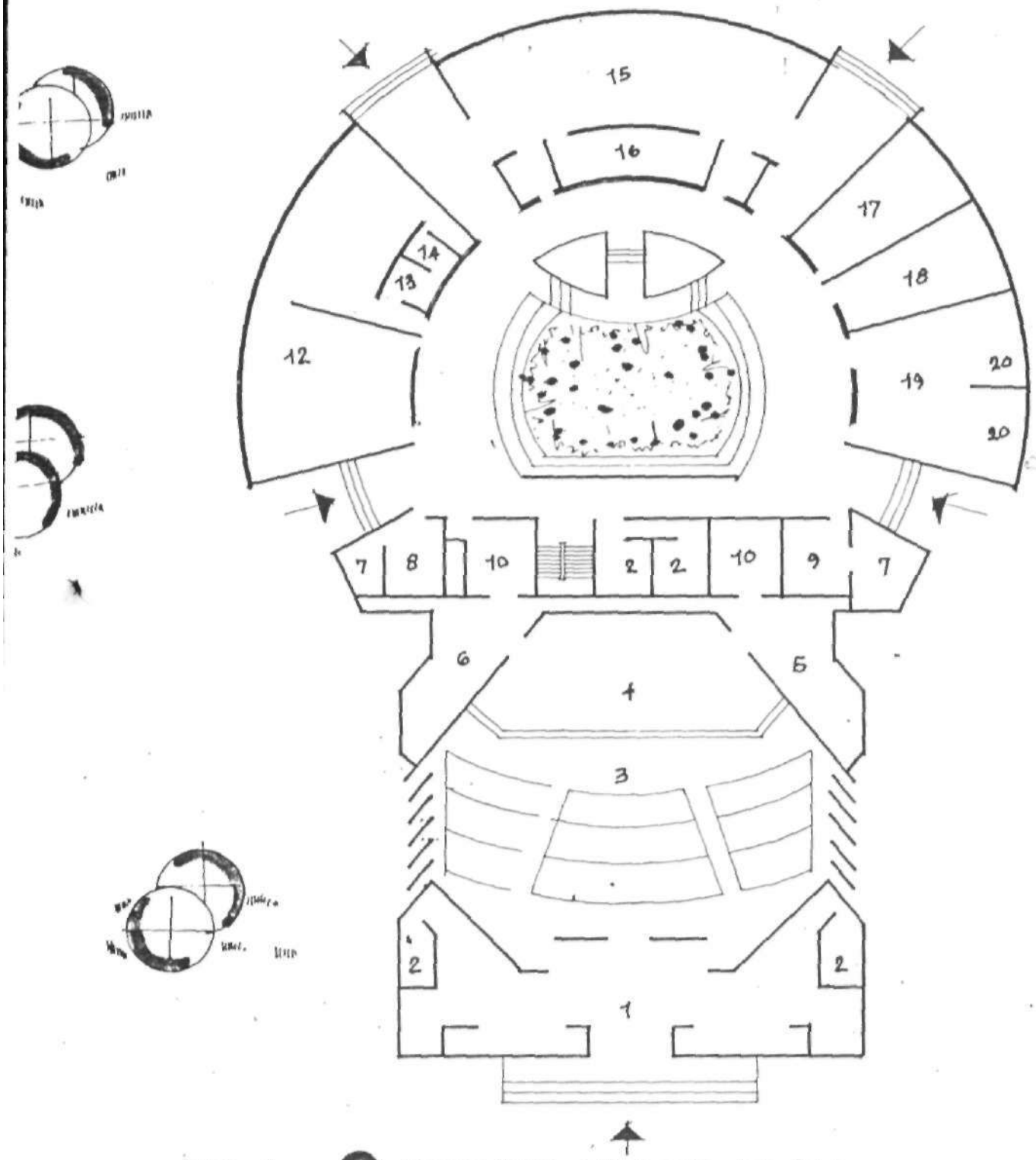


FIG. 1 GROUND FLOOR PLAN

LEGEND

1	FOYER	11	COURTYARD
2	TOILETS	12	GAMES ROOM
3	AUDITORIUM	13	GAMES STORE

Case Study

CLIENT: AHMADU BELLO UNIVERSITY, ZARIA
ARCHITECTS: OLONU, O.F, MACAULAY, F & UGBABE, L.O.

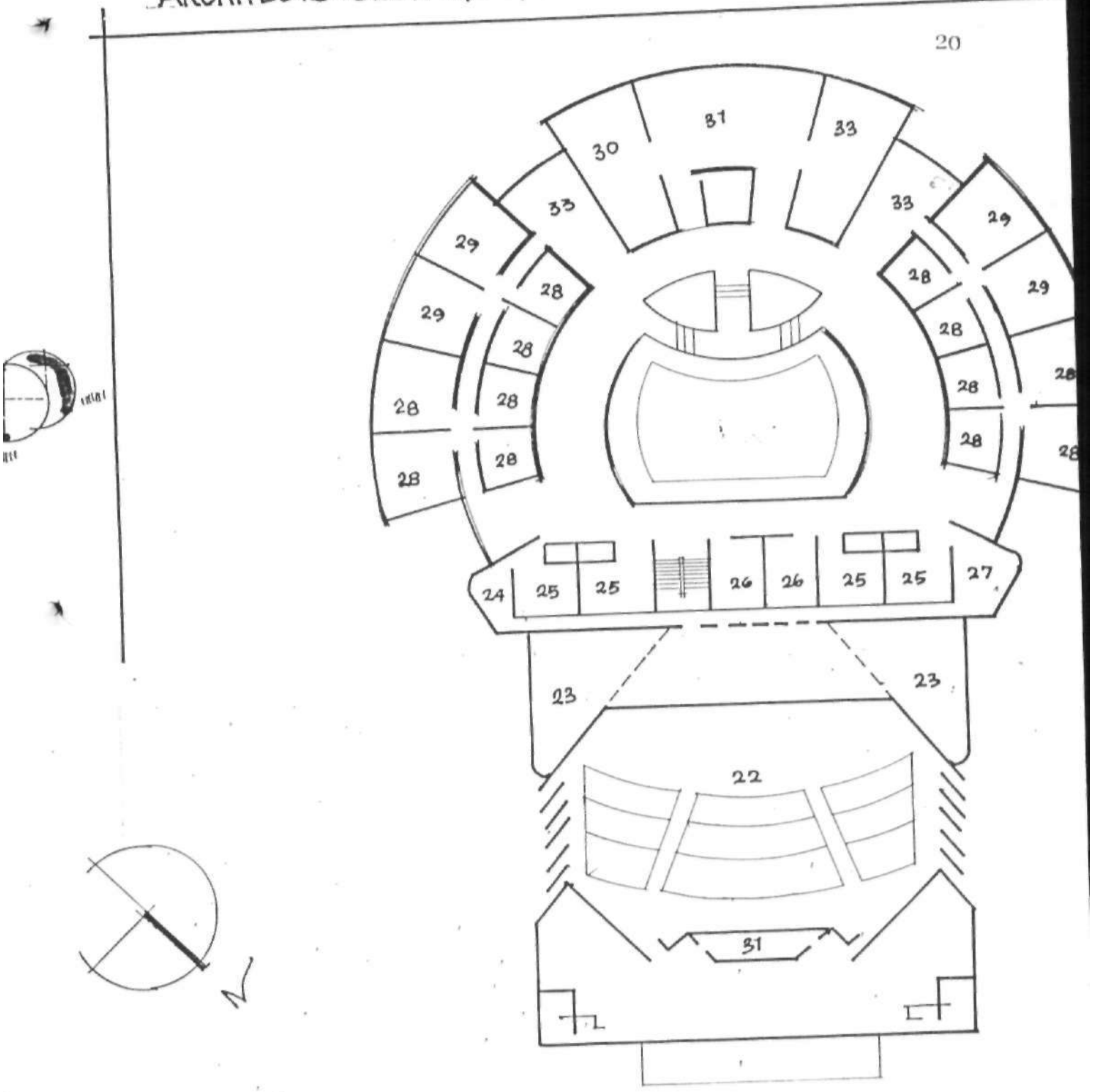


FIG. 2 FIRST FLOOR PLAN

LEGEND

21 PROJECTION ROOM
22 AUDITORIUM
23 PLANT BASE
31 GENERAL
32 NATIONAL
33 CORRIDOR

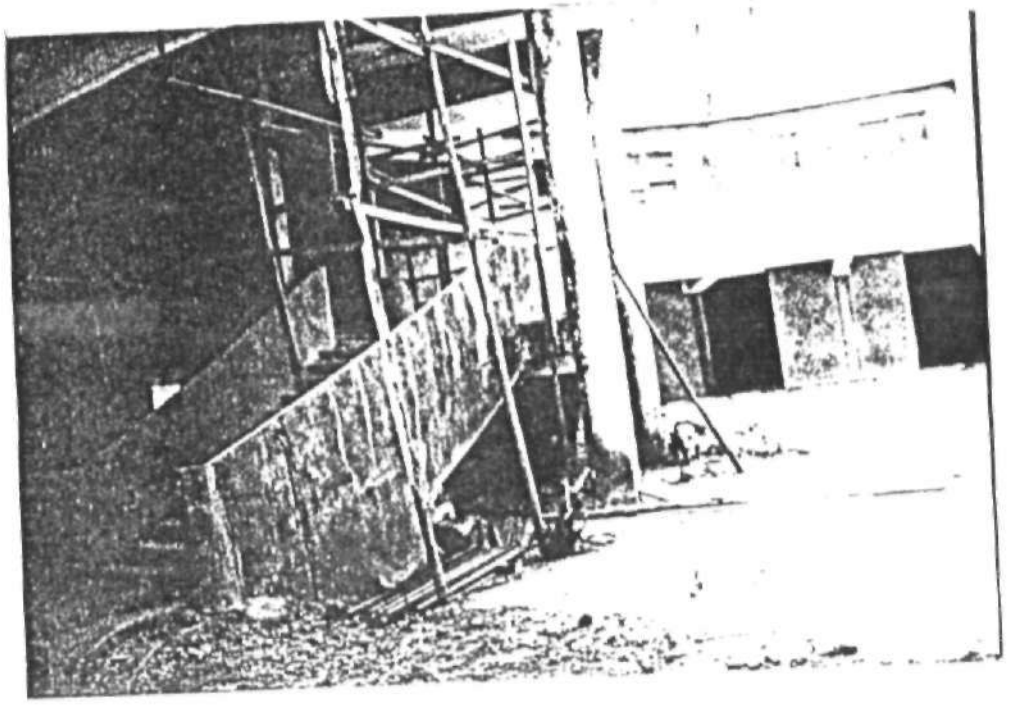


Plate (i) : COURTYARD
STUDENTS' CENTRE, A.B.U. ZARIA



Plate ii: NORTH VIEW
STUDENTS' CENTRE, A.B.U. ZARIA

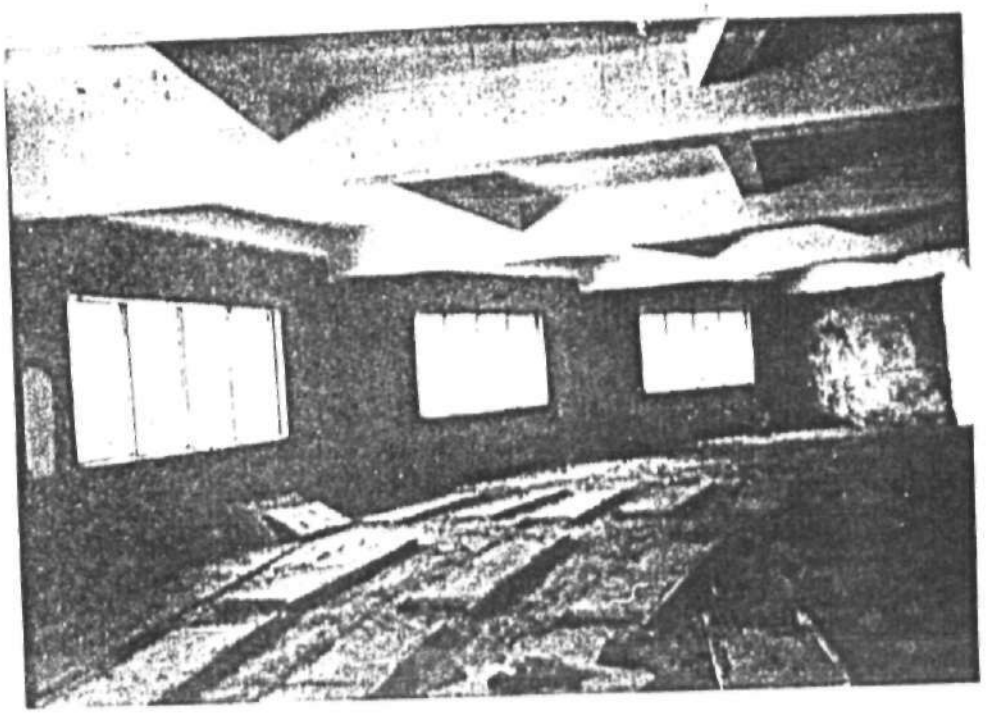


Plate iii : INTERIOR OF BUFFET
STUDENTS' CENTRE, A.B.U. ZARIA

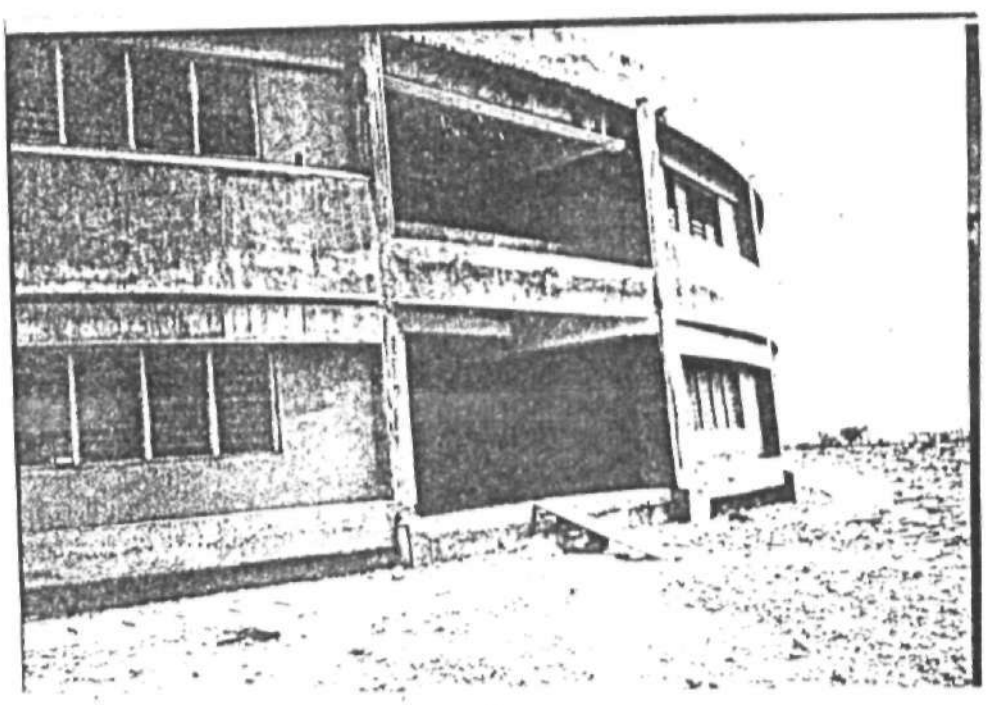


Plate iv: MAIN ENTRANCE TO STUDENTS' CENTRE, A.B.U. ZARIA

(g) Demerits

The new site for this building is too far from the campus centre considering the fact that majority of students are pedestrians.

Inadequate provision of facilities (see Plates i - iv).

3.2 STUDENTS' UNION BUILDING, UNIVERSITY OF IBADAN

(a) Site: The Union building is located opposite the sports centre and far away from the University main gate (Figure 3).

(b) Client: University of Ibadan, Nigeria.

(c) Architects:

(d) General Description: The main students' building houses two floors. The ground floor has functions like lobby, bar, lounge bar, shops, offices for Union executives, toilets and store. This floor is linked to the main cafeteria and swimming pool by means of covered walkings (see Figure 4).

The first floor takes care of functions like the parliamentary and debate rooms, offices and a concourse (Figure 5).

UNIVERSITY OF IBADAN.
STUDENTS' UNION BUILDING

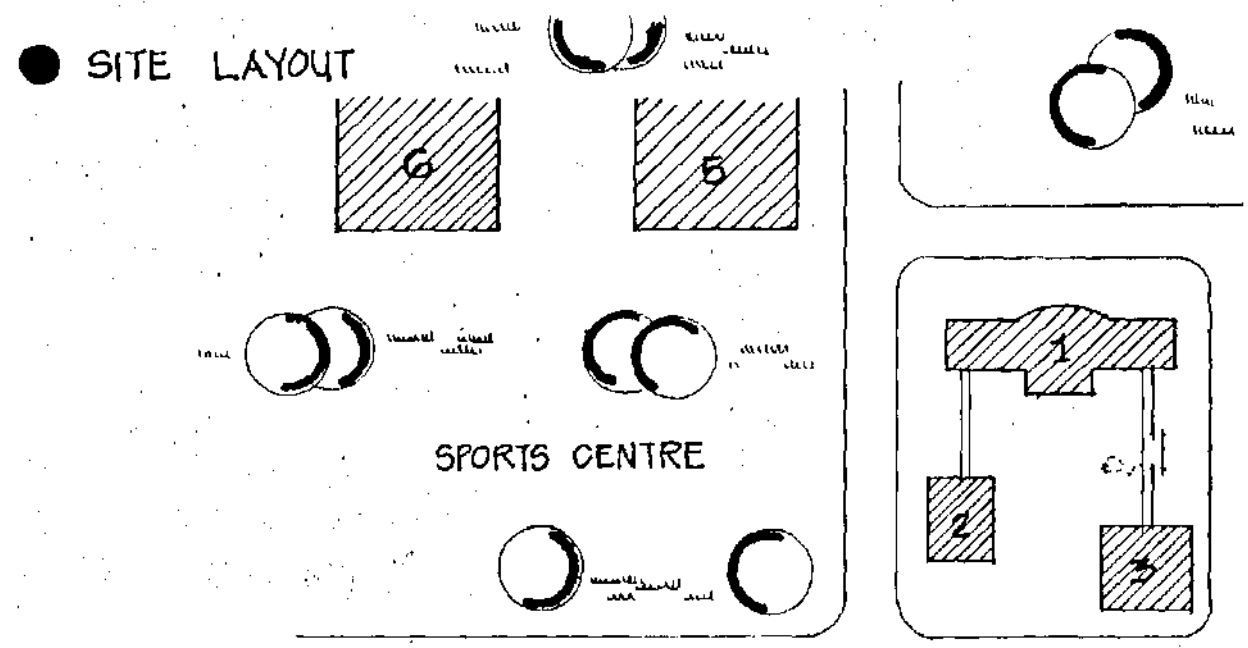


FIG. 3

UNIVERSITY OF IBADAN
STUDENTS' UNION BUILDING

GROUND FLOOR PLAN

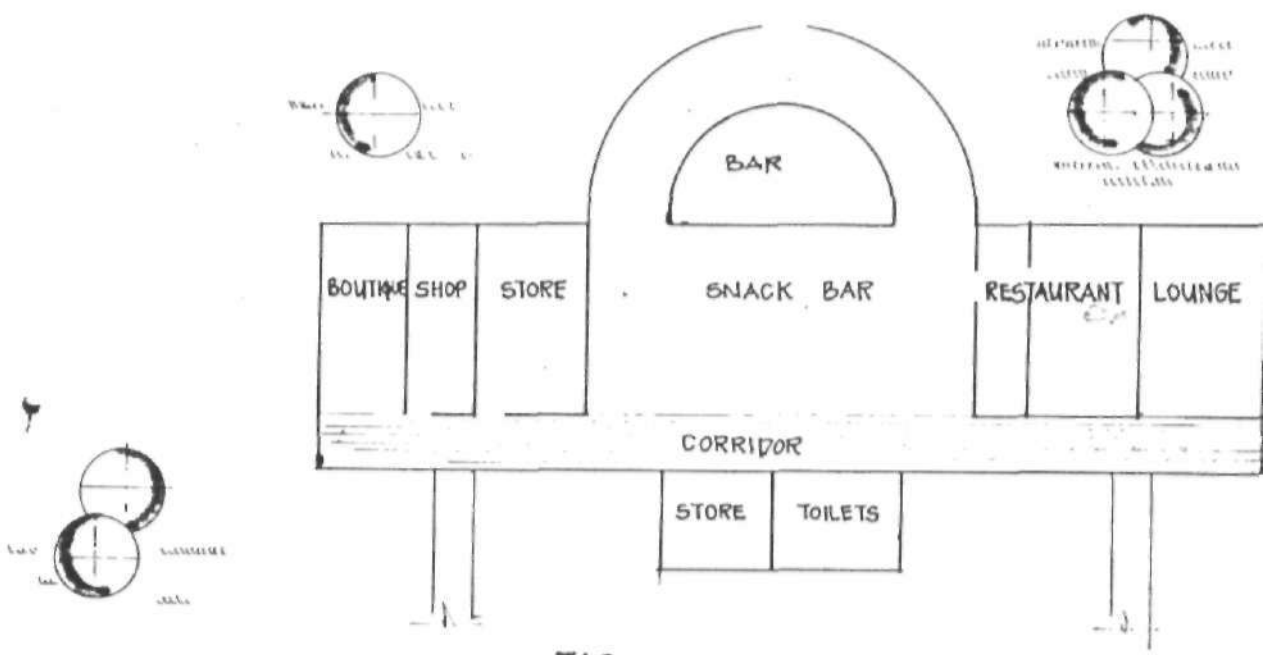


FIG. 4

UNIVERSITY OF IBADAN
STUDENTS' UNION BUILDING

FIRST FLOOR PLAN

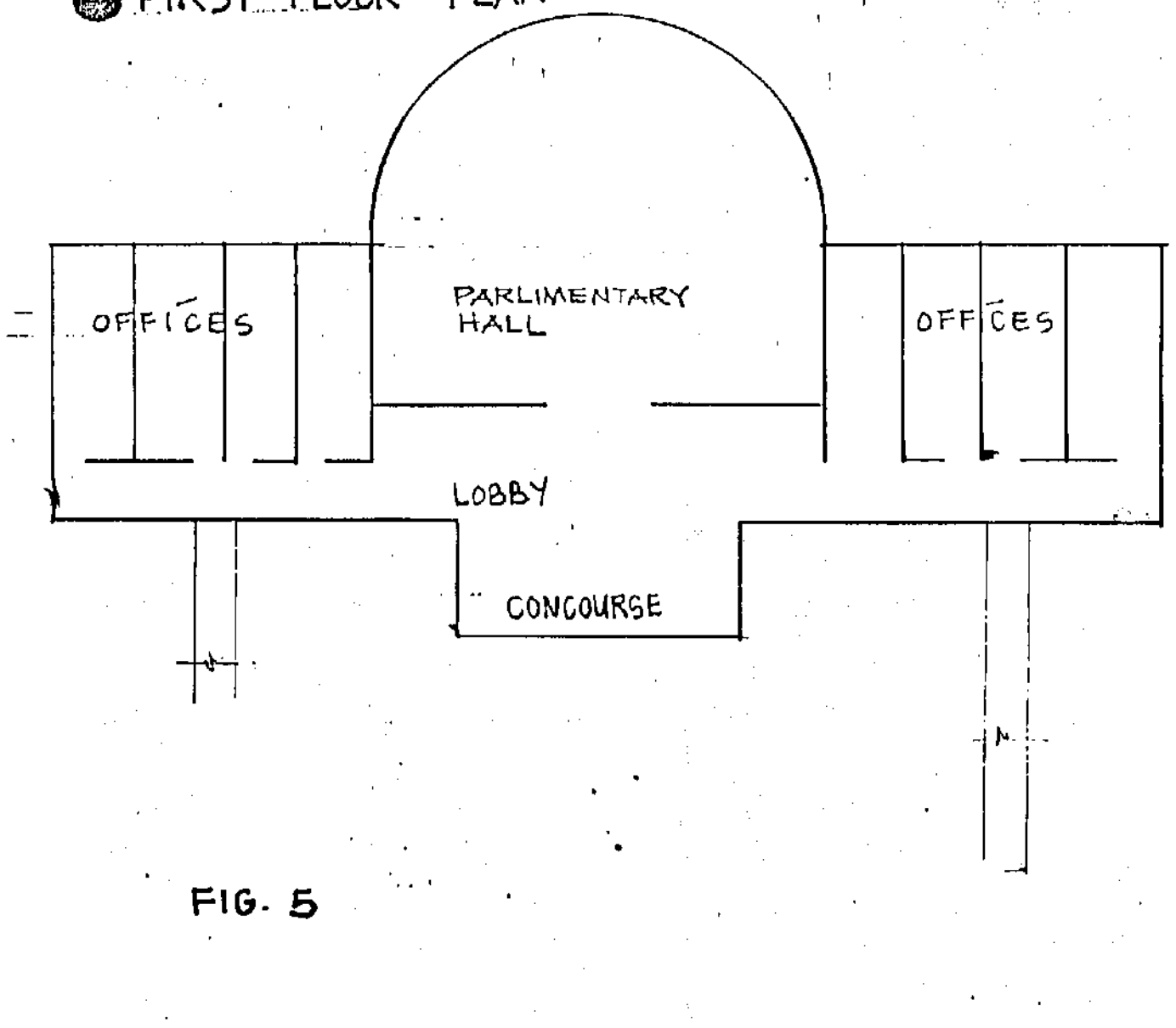


FIG. 5

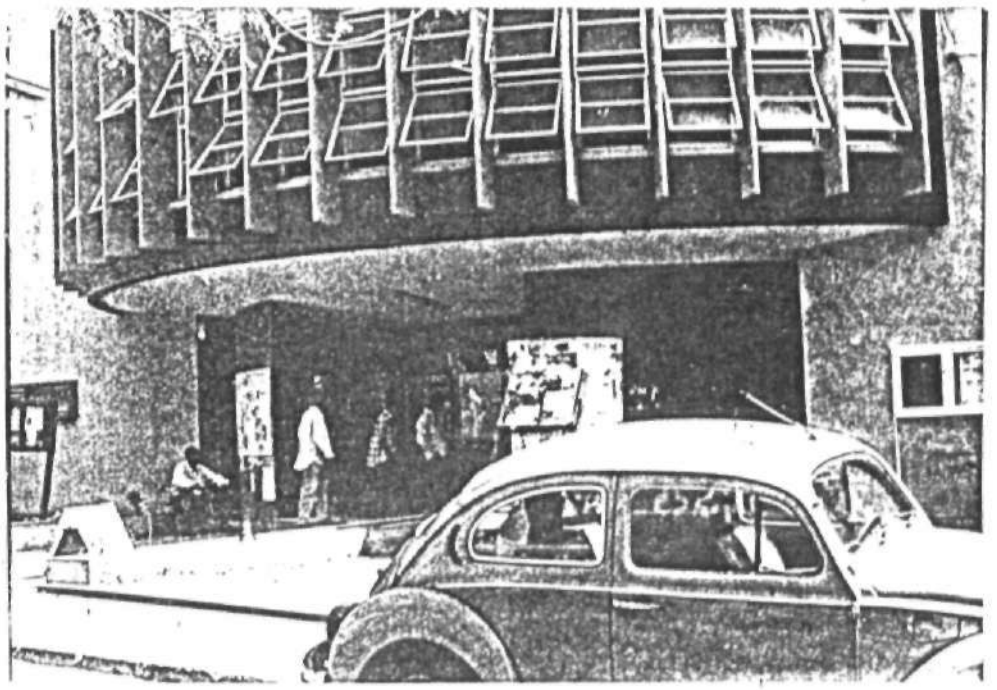


Plate v: MAIN ENTRANCE (S.U.B. U.I)

STUDENTS' UNION BUILDING
UNIVERSITY OF IBADAN

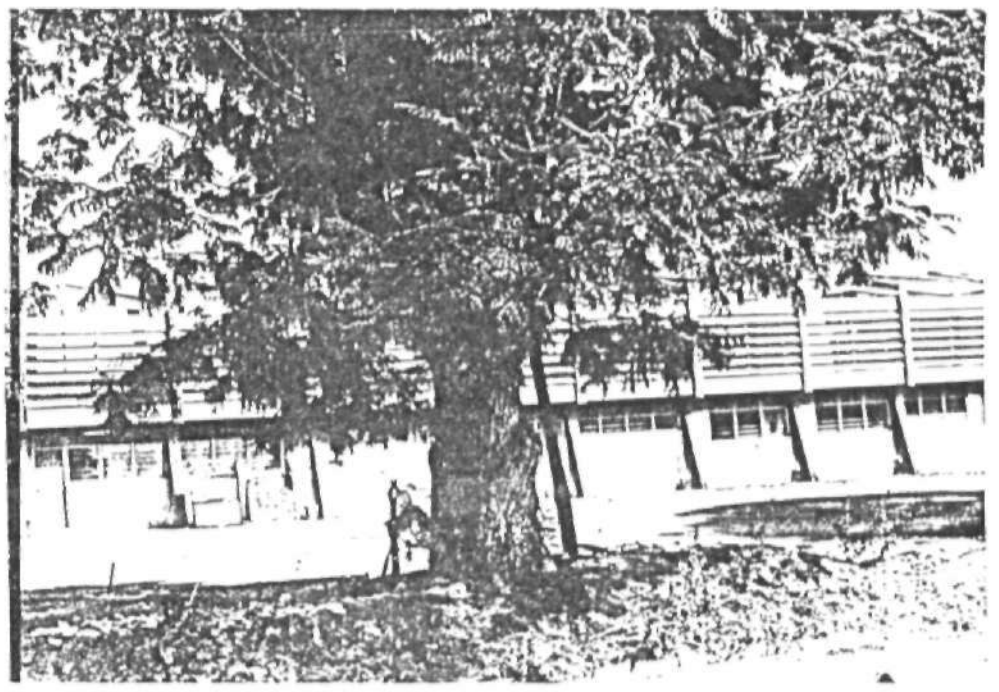


Plate vi: 'ABẸ IGI'
TUNJI ADEGBORO SHOPPING COMPLEX
STUDENTS' UNION BUILDING, U.I.

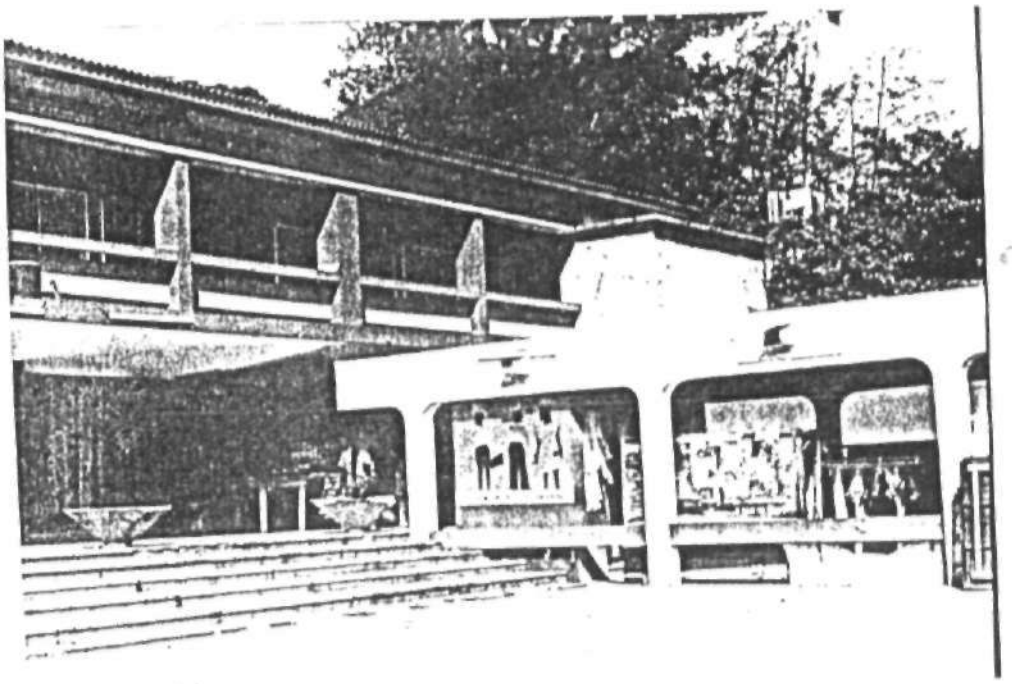


Plate vii: INSIDE OF THE QUADRANGLE
STUDENTS' UNION BUILDING
UNIVERSITY OF IBADAN

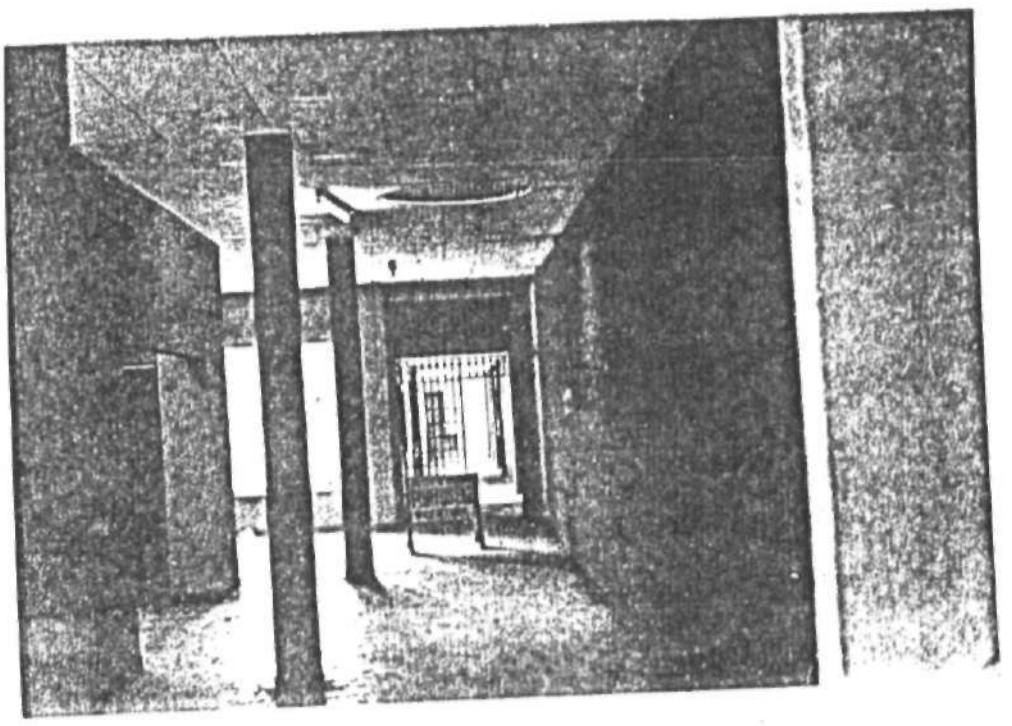


Plate viii: CORRIDOR
STUDENTS' UNION BUILDING, U-I-

(e) Merits

- Compact planning
- Well organised external circulation
- Articulate pedestrian circulation

(f) Demerits

- Lighting inadequate in places like the corridor, concourse and toilets.
- Landscaping not properly integrated in the planning of the layout.
- Lack of inclusion of spaces like multi-purpose hall, organised supermarket, indoor games room.
- Separation of dining area from the building

(see Plates - v — viii).

3.3 STUDENTS' UNION BUILDING, OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE, NIGERIA

(a) Site: The Union building is located opposite the University main hall (Oduduwa Hall) and nearer to the sports centre (Figure - 6).

(b) Client: Obafemi Awolowo University, Ile-Ife, Nigeria.

(c) Architects:

OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE
STUDENTS' UNIDN BUILDING

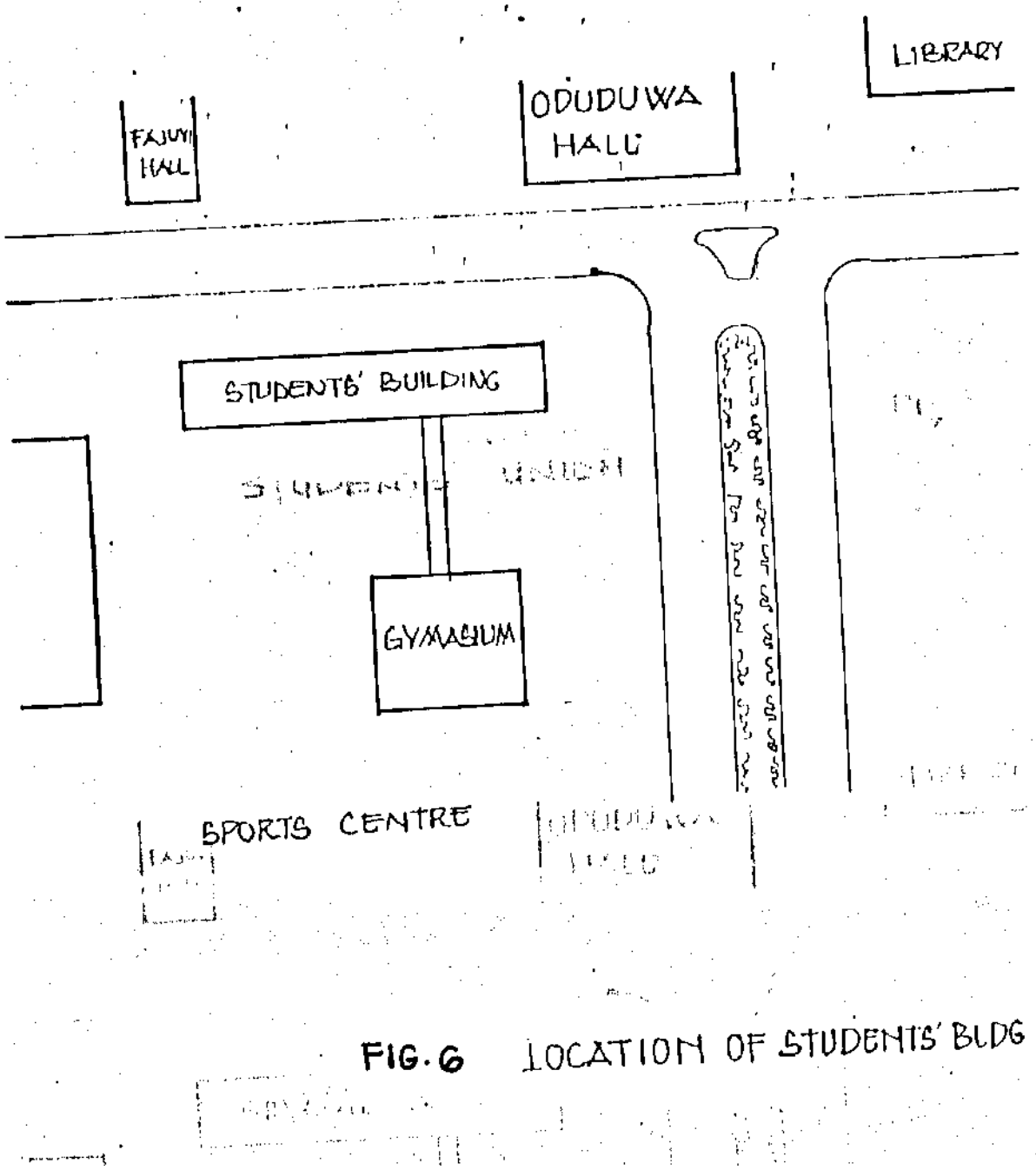


FIG. 6 LOCATION OF STUDENTS' BLDG

(d) General Description: This Union building is an elongated, rectangular building, housing two floor. On both sides of the ground floor are free spaces. Magazines and dailies lounge, a supermarket and a staircase leading to the first floor (Figure - 7).

The first floor houses such functional spaces like the lounge bar, reading room, students' Union Executive Offices, auxilliary stores and toilets. This floor also has balconies/terraces on either side (Figure - 8)

(e) Appraisal: Most students seems to have high opinion of their building for they consider the fact that it is one of the rare such buildings you can find on the campus.

(f) Merits

- Good site location in relation to other buildings.
- Adequate lighting is provided.

(g) Demerits

- Bad location of toilets and poor ventilation of them.
- The students' executives offices are inadequate and exposed to circulation area.

OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE
STUDENTS' UNION BUILDING

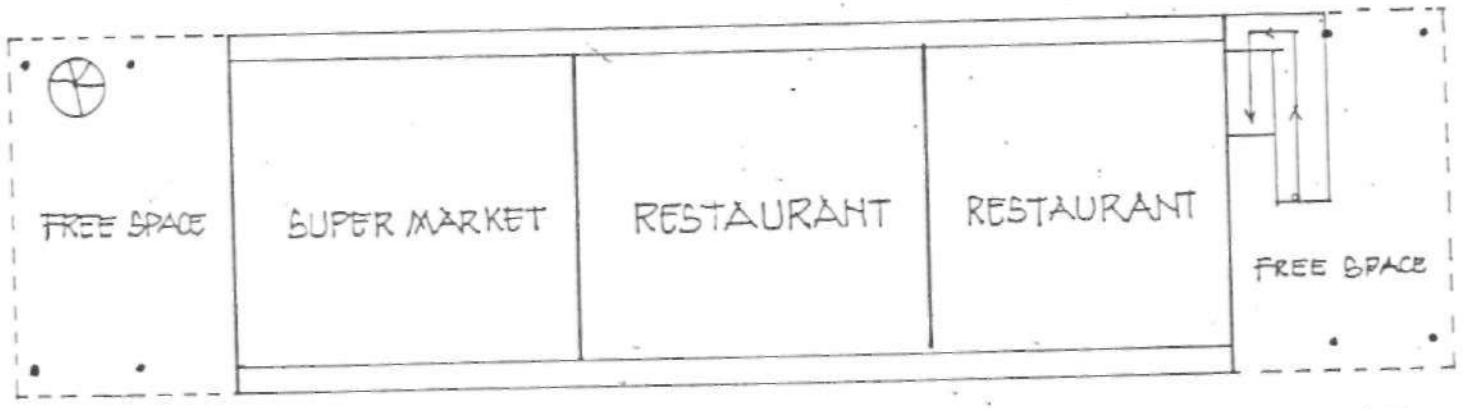


FIG. 7 GROUND FLOOR PLAN

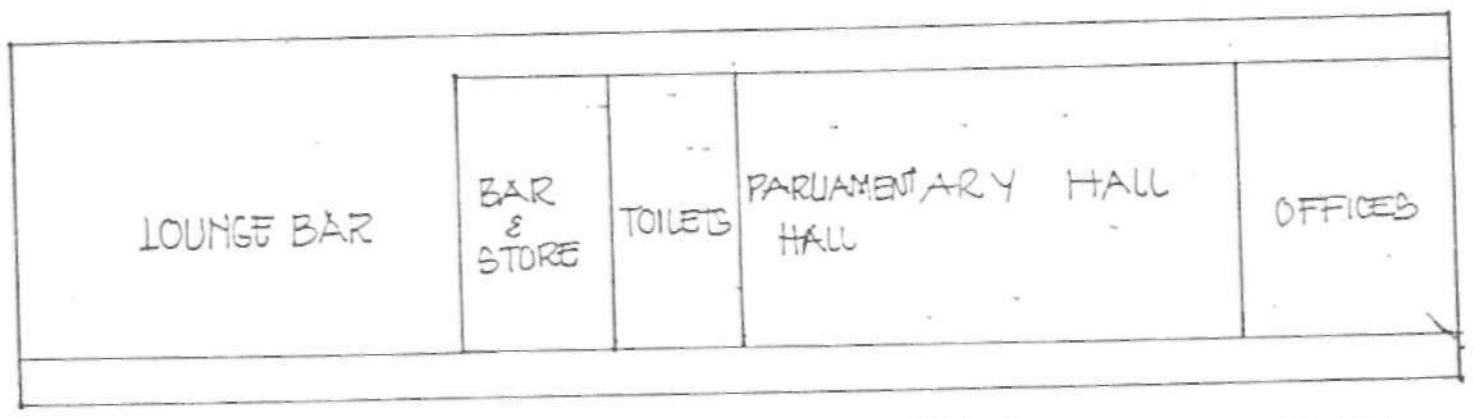
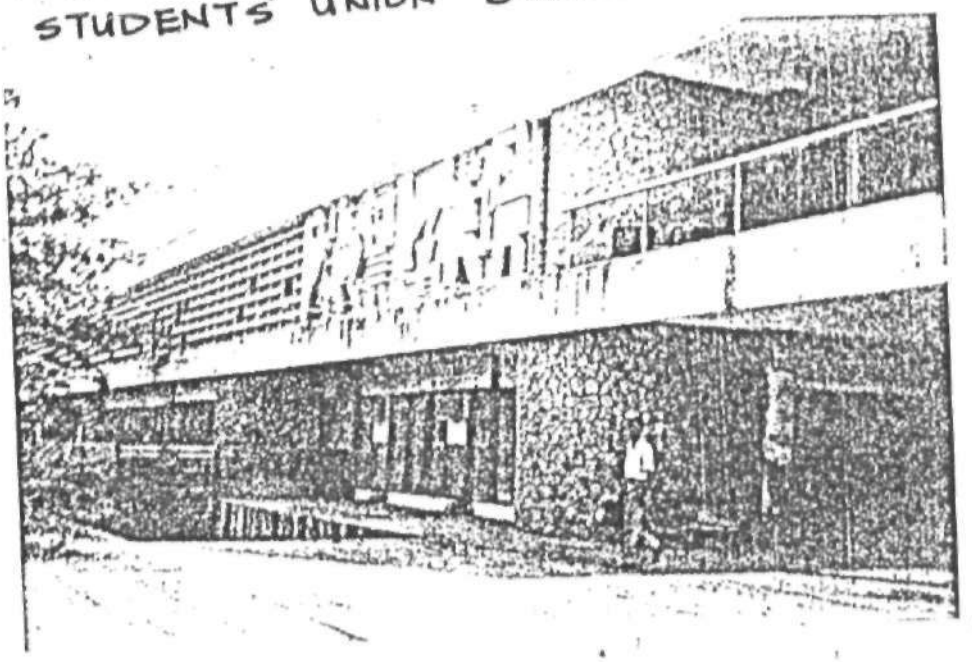
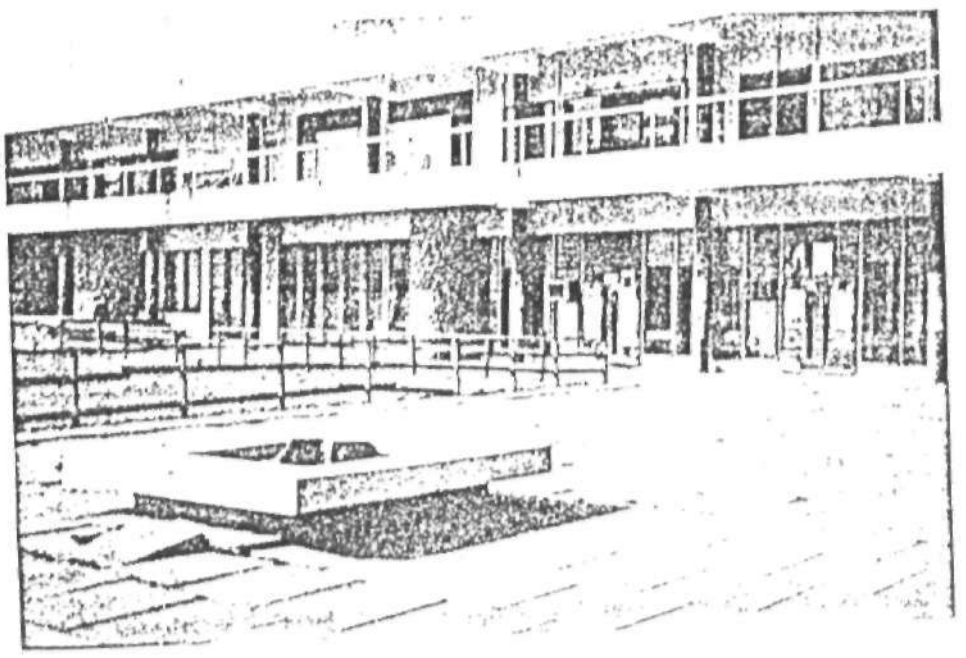


FIG. 8 FIRST FLOOR PLAN

OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE
STUDENTS' UNION BUILDING



A SIDE SHOWING SUPERMARKET
Plate ix:



THE RESTAURANT
Plate x:

OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE
STUDENTS' UNION BUILDING

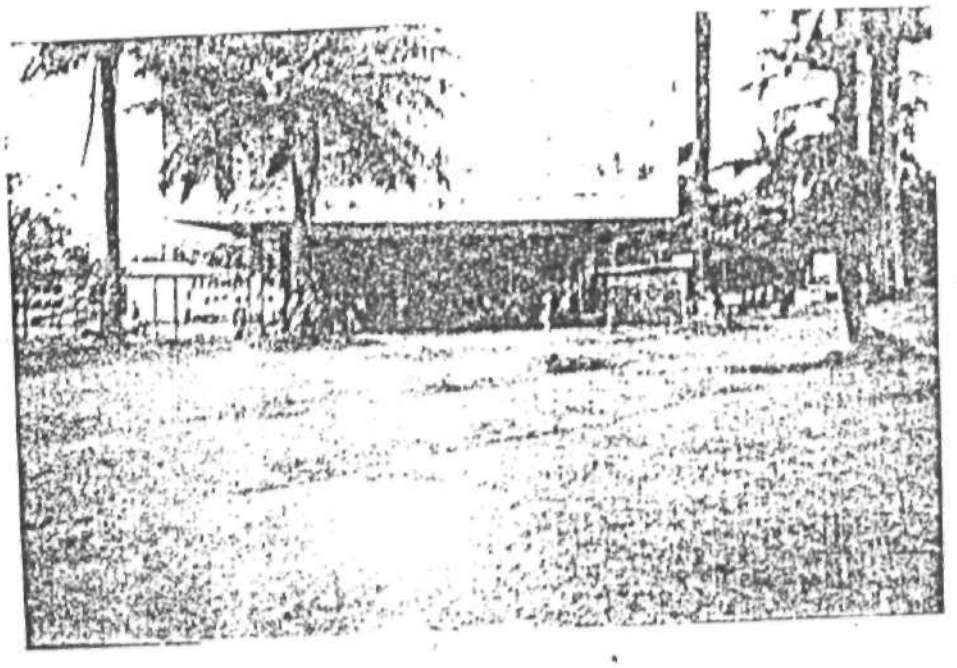
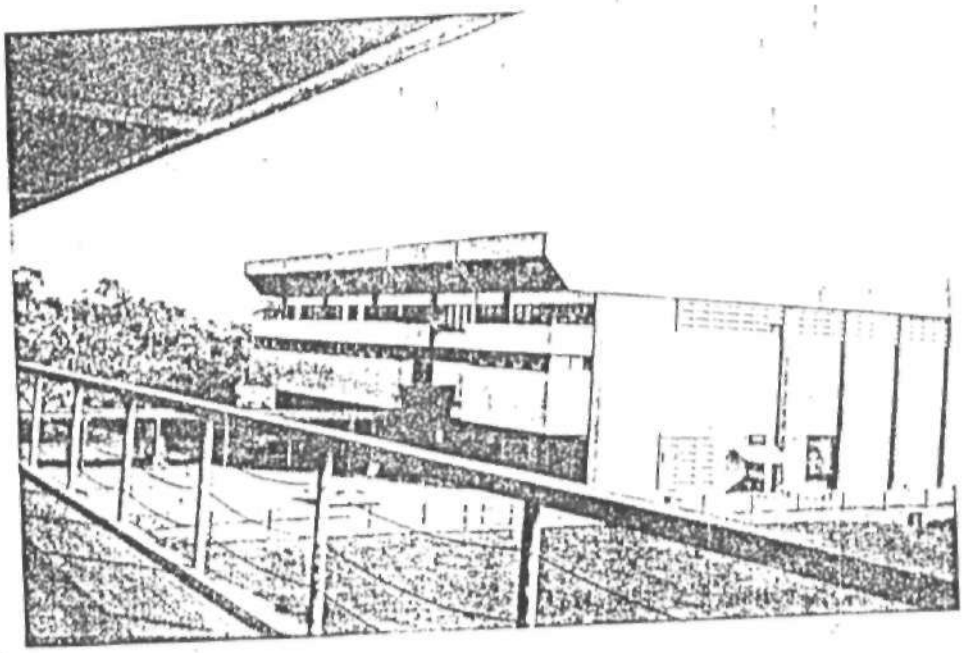


Plate xi: SIDE SHOWING OPEN SPACE WITH STAIRS



A COVERED WALKWAY LINKING THE UNION BUILDING WITH GYMNASIUM

Plate xii

- Lack of inclusion of a multi-purpose hall may be due to its proximity to Oduduwa Hall.
- Facilities provided are grossly inadequate.

(see Plates ix - xii).

3.4 STUDENTS' UNION BUILDING, UNIVERSITY OF KEELE, STAFFORDSHIRE

(a) Site:

(b) Client: University of Keele, Staffordshire

(c) Architects: Stillman and Eastwickfield

(d) General Description

Facilities for the above activities have been planned to be accommodated in three storeys. The first floor houses the main communal spaces like the ballroom, lounges, drinking and snack bars and the kitchen arranged "ensuite" round a central circulation area. This area uses full height from the ground floor concourse. Terraces and staircases are also provided on this floor, this includes a terrace opening off the lounge cantilevered over the main entrance doors (Figure - 9).

The ballroom which is the most conspicuous part of the whole building, is a double storey height

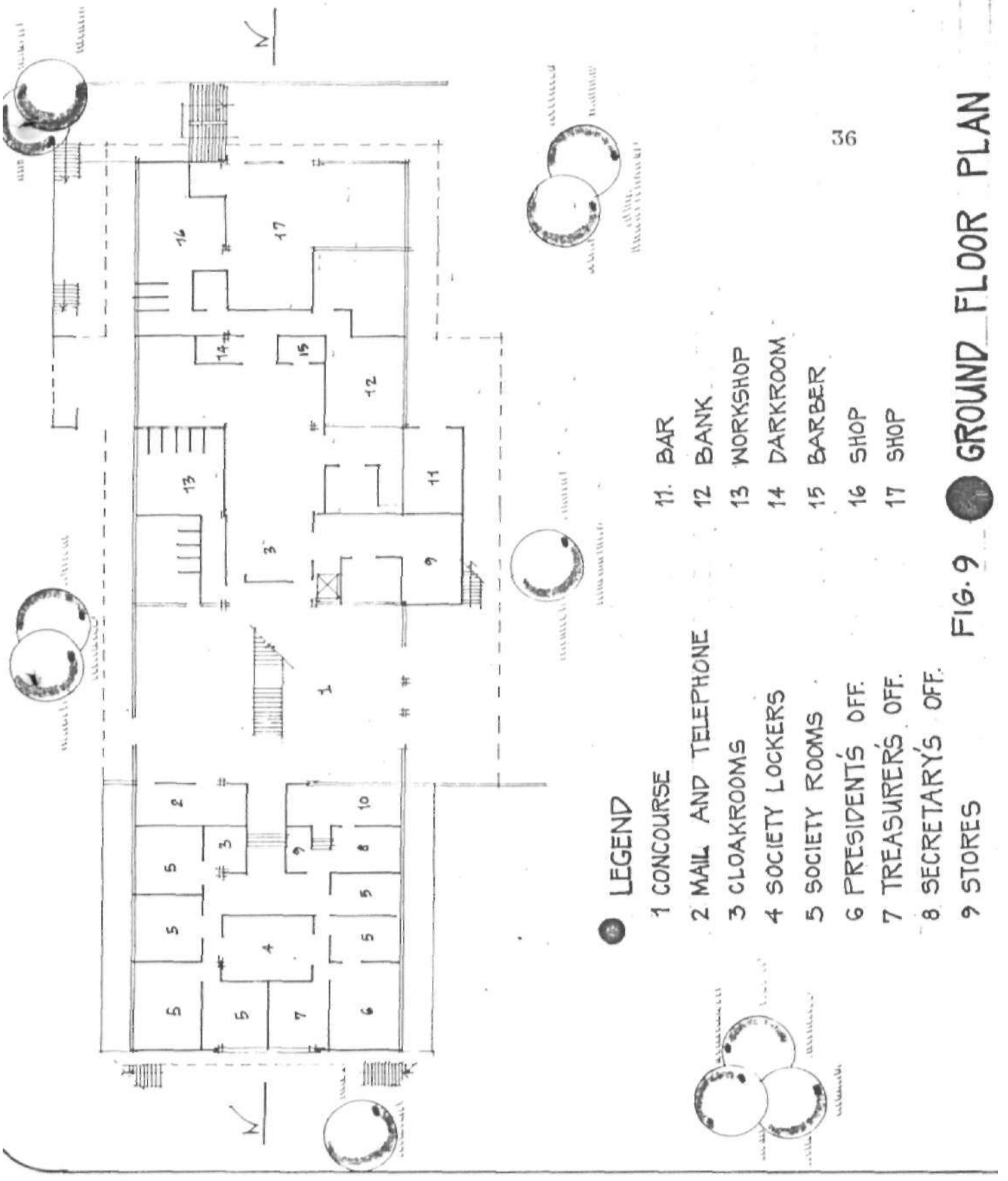


FIG. 9 GROUND FLOOR PLAN

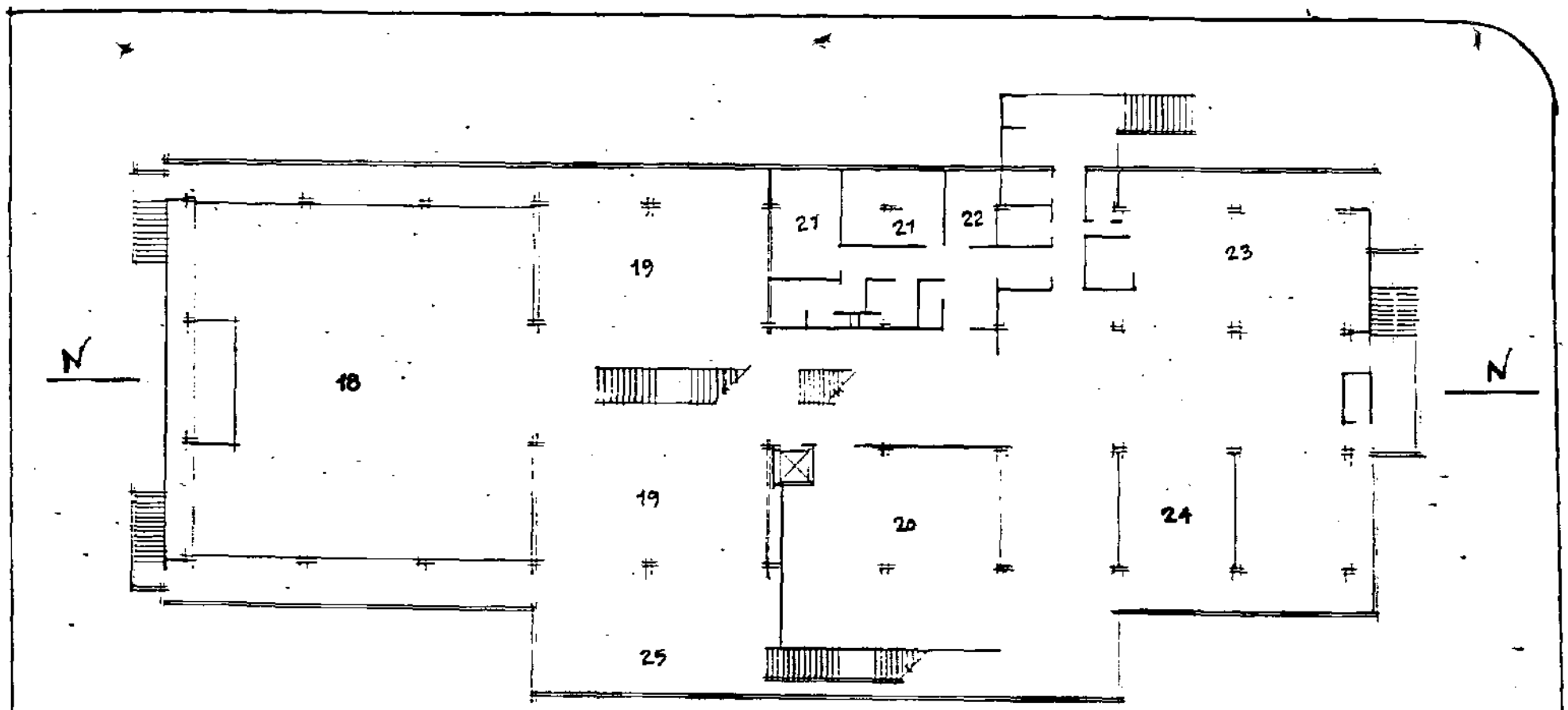
UNIVERSITY OF KEELE, STAFFORDSHIRE
STUDENTS' UNION BUILDING

with a shallow dommed roof. Directly under this ballroom, are offices for the Union Executives, these rooms have rise-in terrain. There are provisions for Committee rooms, three of which have been planned to be thrown together when the need arises, to give way for larger meetings. The remaining part of the ground floor, houses such functional spaces like a bank, a shop, barbershop, cloakrooms, stores and a workshop which opens into a courtyard at the back (Figure - 10).

Most recreational spaces are provided on the second floor of this building (Figure - 11).

e) Structures

The structure, including that of the dome over the ballroom is made up of reinforced concrete. This is for the most part left in its natural state, both inside and outside, a special white limestone aggregate has been used, which is exposed in the external work to improve weathering. The building is emphasized by ranges of exposed columns and covered ceilings in the snack bar and periodicals room (Figure - 12).

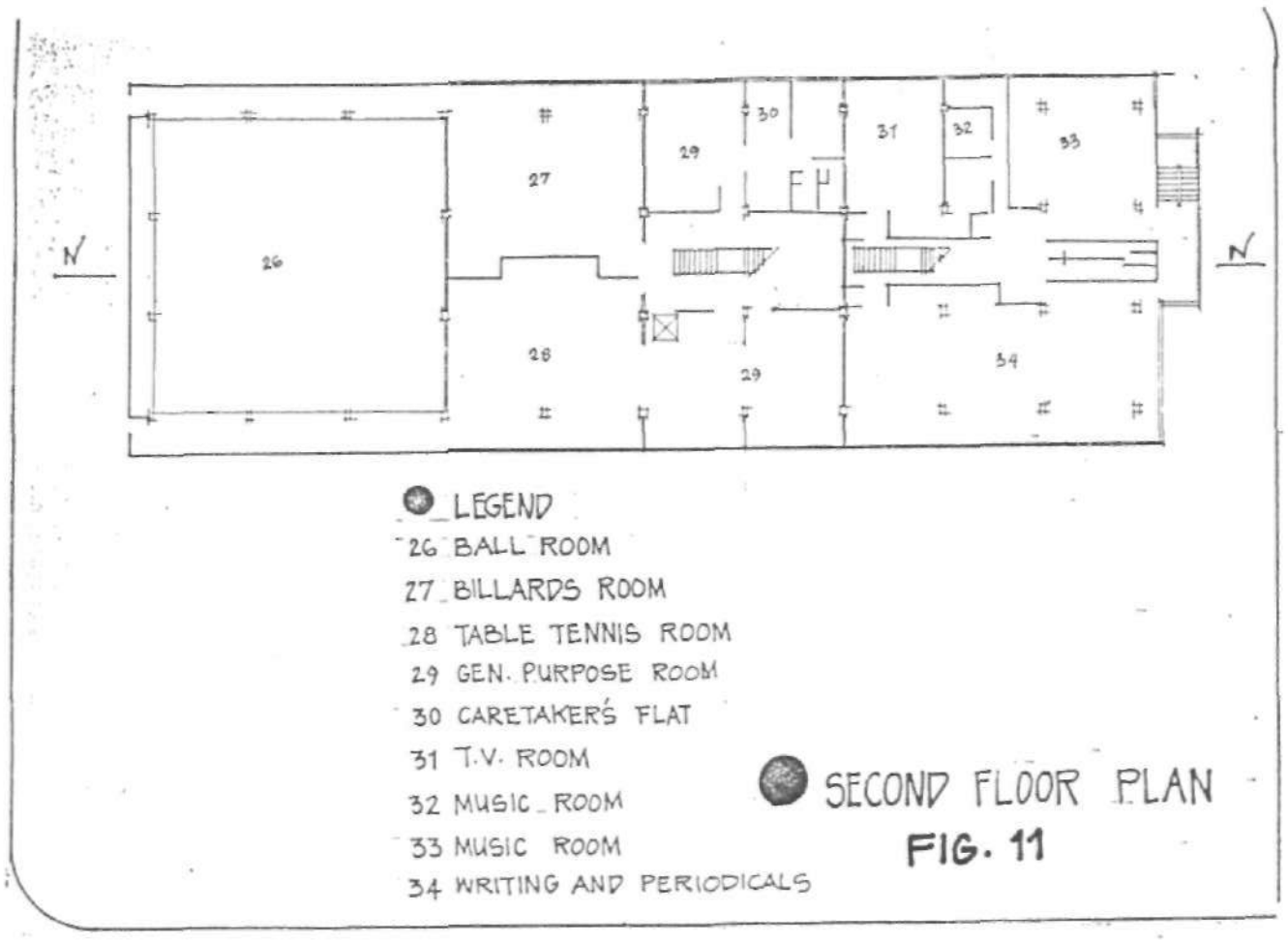


LEGEND

18 BALLROOM
19 LOUNGE
20 BAR
21 STAFF ROOM
22 STEWARD'S OFFICE
23 KITCHEN
24 SNACK BAR
25 TERRACE

UNIVERSITY OF KEELE, STAFFORDSHIRE
STUDENTS' UNION BUILDING

FIG. 10 FIRST FLOOR PLAN



LEGEND

26 BALL ROOM
27 BILLARDS ROOM
28 TABLE TENNIS ROOM
29 GEN. PURPOSE ROOM
30 CARETAKER'S FLAT
31 T.V. ROOM
32 MUSIC ROOM
33 MUSIC ROOM
34 WRITING AND PERIODICALS

SECOND FLOOR PLAN

FIG. 11

UNIVERSITY OF KEELE, STAFFORDSHIRE
STUDENTS' UNION BUILDING

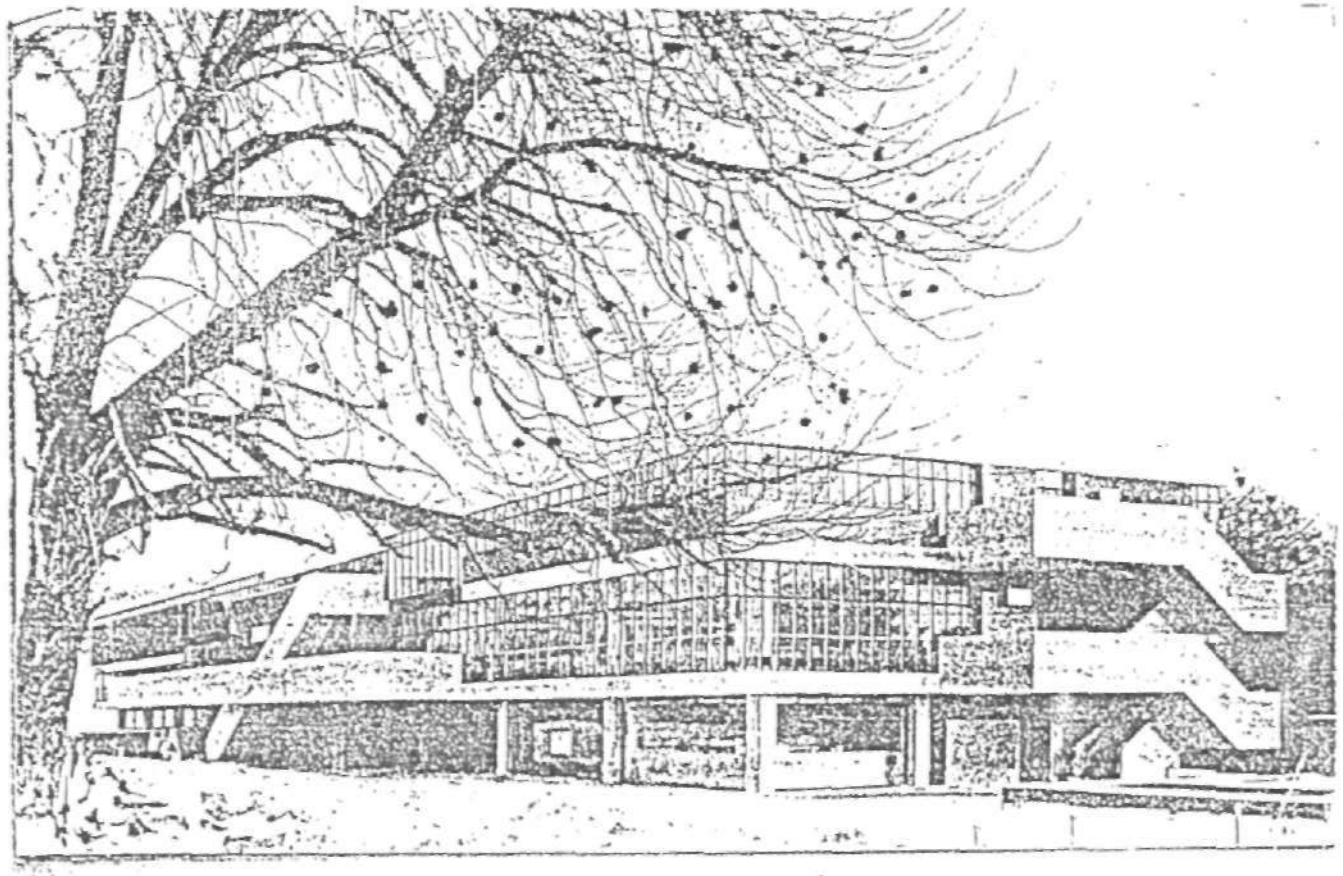


Plate xiii: GENERAL VIEW
UNIVERSITY OF KEELE, STAFFORDSHIRE
STUDENTS' UNION BUILDING

UNIVERSITY OF KEELE, STAFFORDSHIRE
STUDENTS' UNION BUILDING

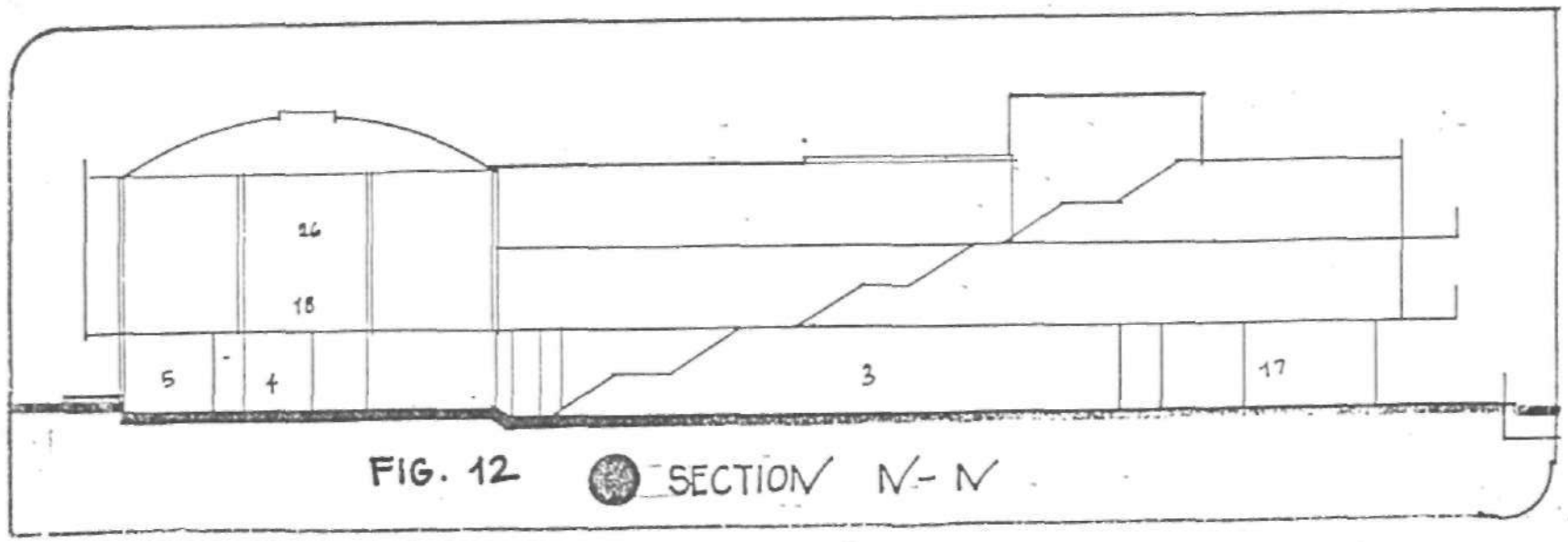


FIG. 12 SECTION V - V



- Plate xiii: GENERAL VIEW
UNIVERSITY OF KEELE, STAFFORDSHIRE
STUDENTS' UNION BUILDING

(f) Merits

- Fits well into its surroundings.
- Form composition looks attractive.
- Good pedestrian circulation
- Natural lighting is commendable in the building.

(g) Demerits

- Too many staircases
- Lack of inclusion of information or reception point for Union members and visitors to the building.
- Facilities for recreation, entertainment and services are grossly inadequate.

(Plate - xiii).

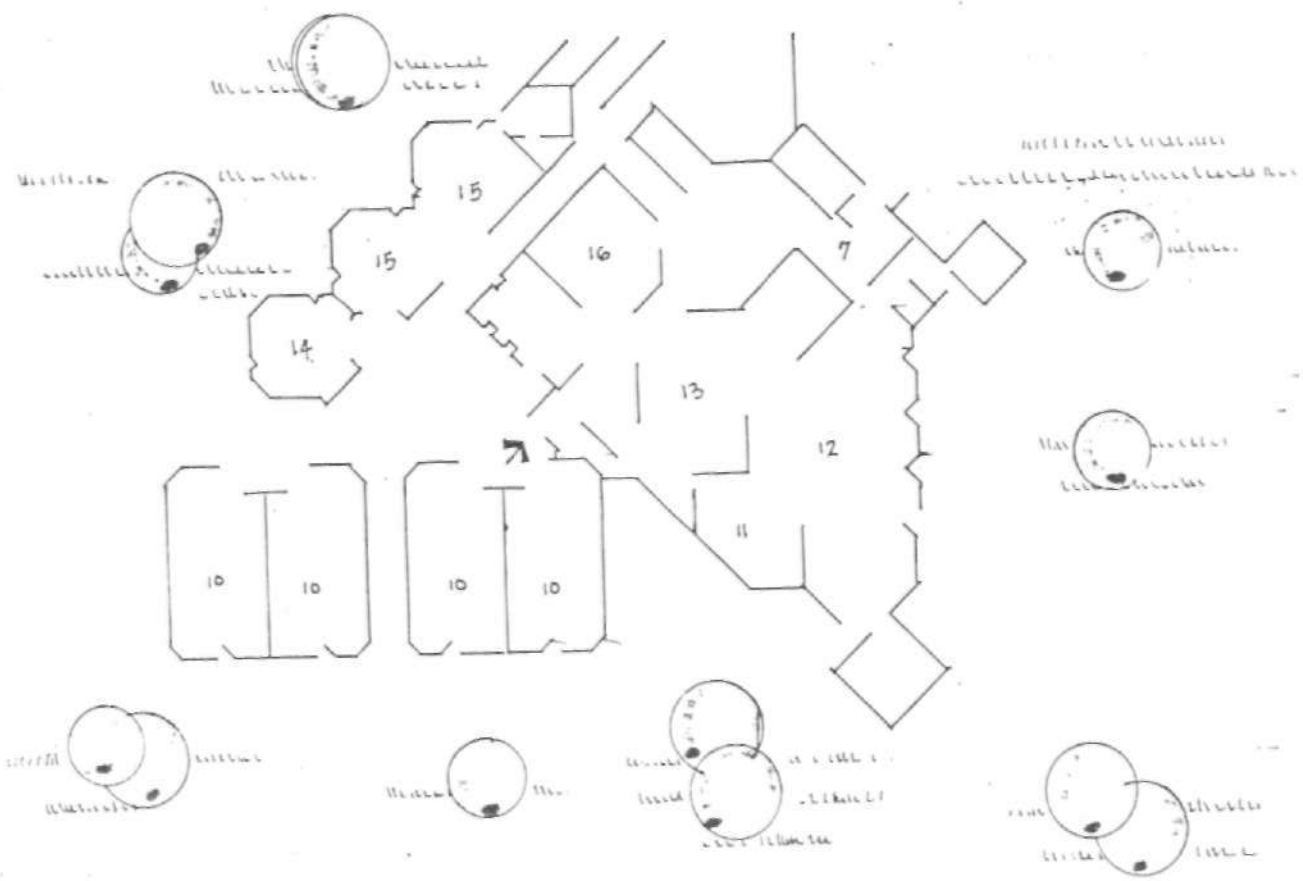
3.5 STUDENTS' UNION BUILDING, UNIVERSITY OF WARWICK

(a) Site: The site slopes gently from North-west to South-east. It is a central site, having no views to exploit and led to the design of an inward looking, 'winter' building (Figure - 13).

(b) Client: University of Warwick

(c) Architects: Alan Goodman and Anthony Short

(d) General Description: The building was not designed specifically for the students' Union,



LEGEND

7 STORE
10 BANK
11 T.V. LOUNGE
12 SANDWICH LOUNG
13 MARKET PLACE
14 LAUNDERETTE
15 SHOP
16 BILLIARDS

FIG. 13 GROUND FLOOR PLAN

UNIVERSITY OF WARWICK
STUDENTS' UNION BUILDING

but as a joint use building for all members of the University. There was no formal brief, in the sense of a static set of requirement.

The central space is for everyone and was designed as a casual, central "market place", surrounded by bars, billiard rooms, coffee bar, television, common rooms and restaurant.

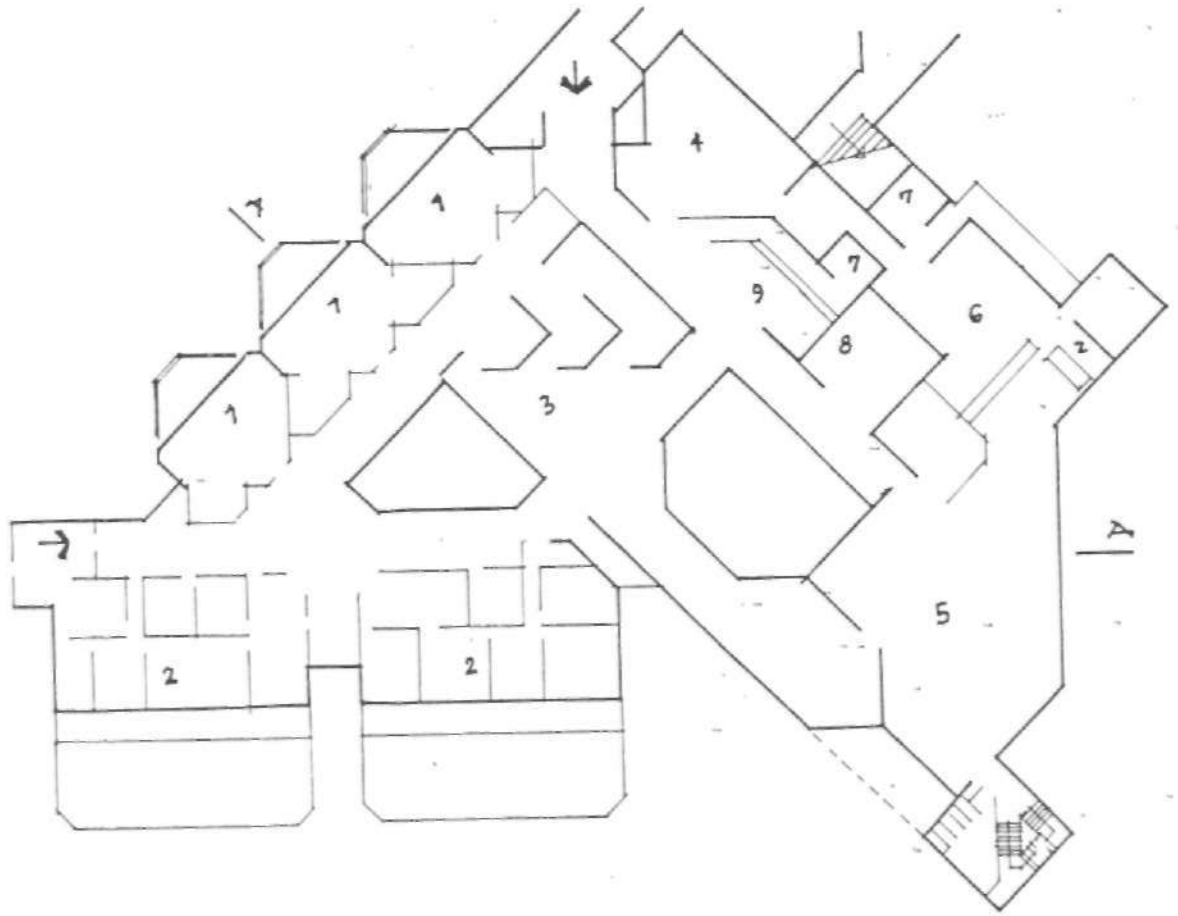
The senior and middle common rooms are an integral part of the building, but removed from the central space. They are on the first and second floors and have separate external access.

There are four branch banks, and three shops, forming a link with Rootes Hall. They are situated around a small internal court, with the coffee bar opening onto the third side.

The student Union offices occupies a central position, to give prominence to their activities.

Ramps on the North side enable disabled people to use both lower and upper ground floors and from thence go onto the first floor of Rootes Hall (Figures - 14 and 15).

UNIVERSITY OF WARWICK
STUDENTS' UNION BUILDING



LEGEND

1 SOCIETY ROOM
2 OFFICES
3 COMMON ROOM
4 PRIVATE DINING
5 RESTAURANT
6 KITCHEN
7 STORE
8 TOILET
9 BAR

FIG. 14 FIRST FLOOR PLAN

Case study

CLIENT : UNIVERSITY OF WARWICK
ARCHITECTS : GOODMAN & SHORT

D
TIONAL HOUSE
_DS RESIDENCES
HOUSES
HALL

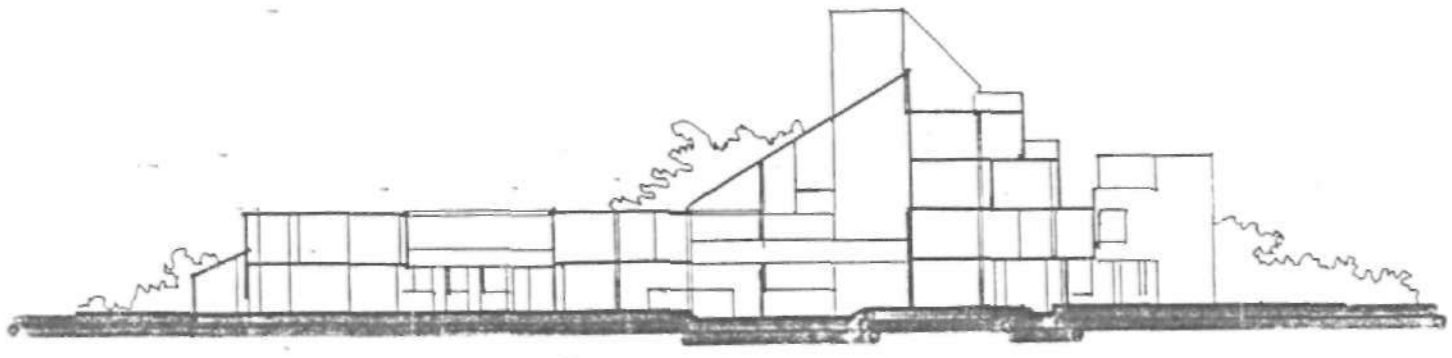
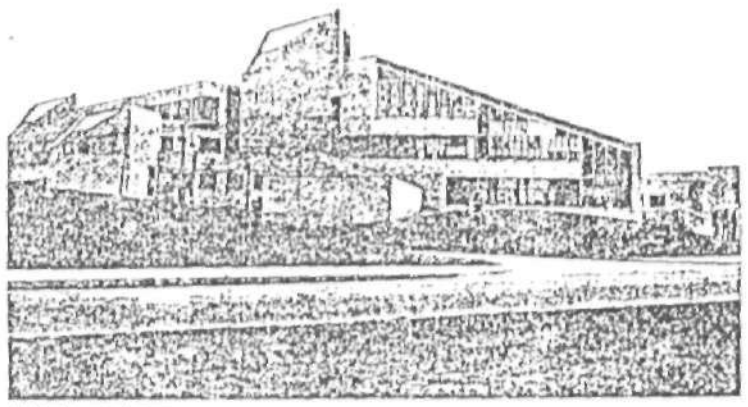


FIG. 15 SECTION A–A

UNIVERSITY OF WARWICK STUDENTS' UNION BUILDING



18 North-west elevation

Plate xiv: NORTH-WEST ELEVATION

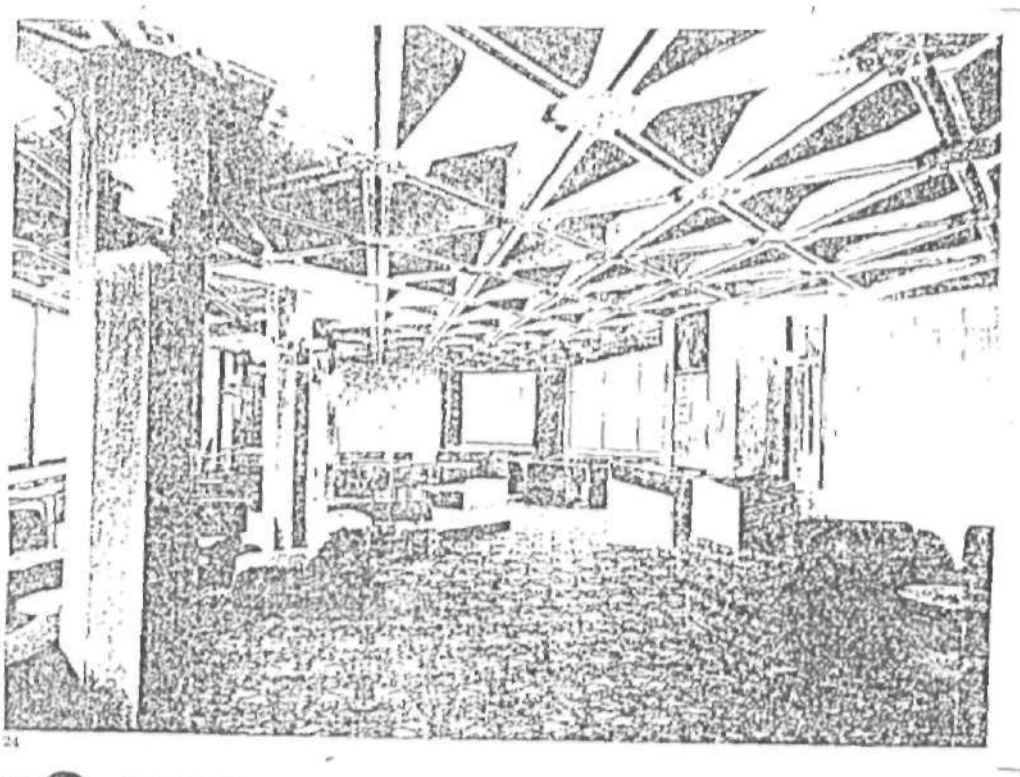


Plate xv INTERIOR OF T.V. LOUNGE

The kitchen serves both the "private dining" and the restaurant on the same level, and has an open servery between kitchen and restaurant.

(e) Construction: The structure is a reinforced concrete frame, with textured concrete blocks for external skin and load bearing internal partitions. Non-load bearing partitions are plastered and painted, and thus, one can read the difference between permanent elements and those which can be changed. Where high acoustic correction is needed, applied ceilings in textured render or timber, are used.

The building is indirectly lit by Tungsten halogen lamps on the columns, and air handling plants provide warmed fresh air to compensate for the high extract rate needed (Plates xiv - xv).

(f) Merits

- Fits into the surroundings.
- Good cross ventilation.
- Good pedestrian circulation.

(g) Demerits

- The siting of course is not unique to Warwick.
- Relative isolation from the city of conventry.

- The complex is tightly organised on a 4800 square grid.
- The main direction of student movement from Rootes Hall is 45^{o} from the main entrance.
- Coaches must park within sight of the main entrance to Rootes Hall.

CHAPTER - FOUR

UNIVERSITY OF ABUJA: A Synopsis of the Facts

The University of Abuja was established by the Government of the Federal Republic of Nigeria in January, 1988. It establishment followed the recognition by Government that the emergence of a new Federal Capital, located in the heart of the country, called for establishment of an institution of higher learning that would cater for the educational needs of inhabitants in and around the territory (Figures- 16 and 17).

Originally conceived of and with site allocation made in the Abuja Master Plan because no trully great city can afford not to have one. Responsibility for the development of the University was handed over to the National Universities Commission from the Federal Capital Development Authority in 1984 at which point the site was relocated completely to the outskirts of the city. Recommendations of the Planning Committee in 1987 has constituted the blue print for development.

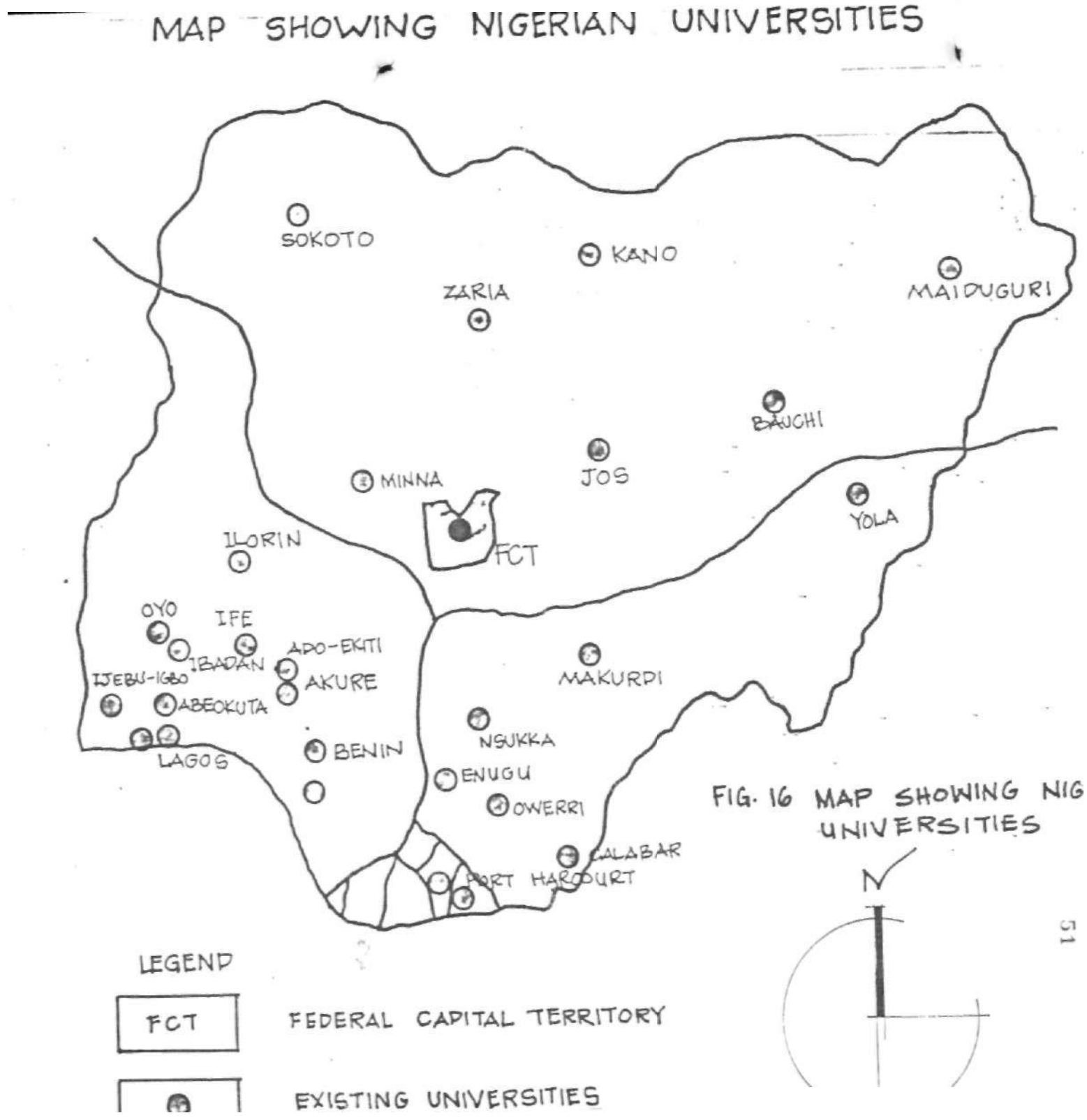


FIG. 16 MAP SHOWING NIG UNIVERSITIES

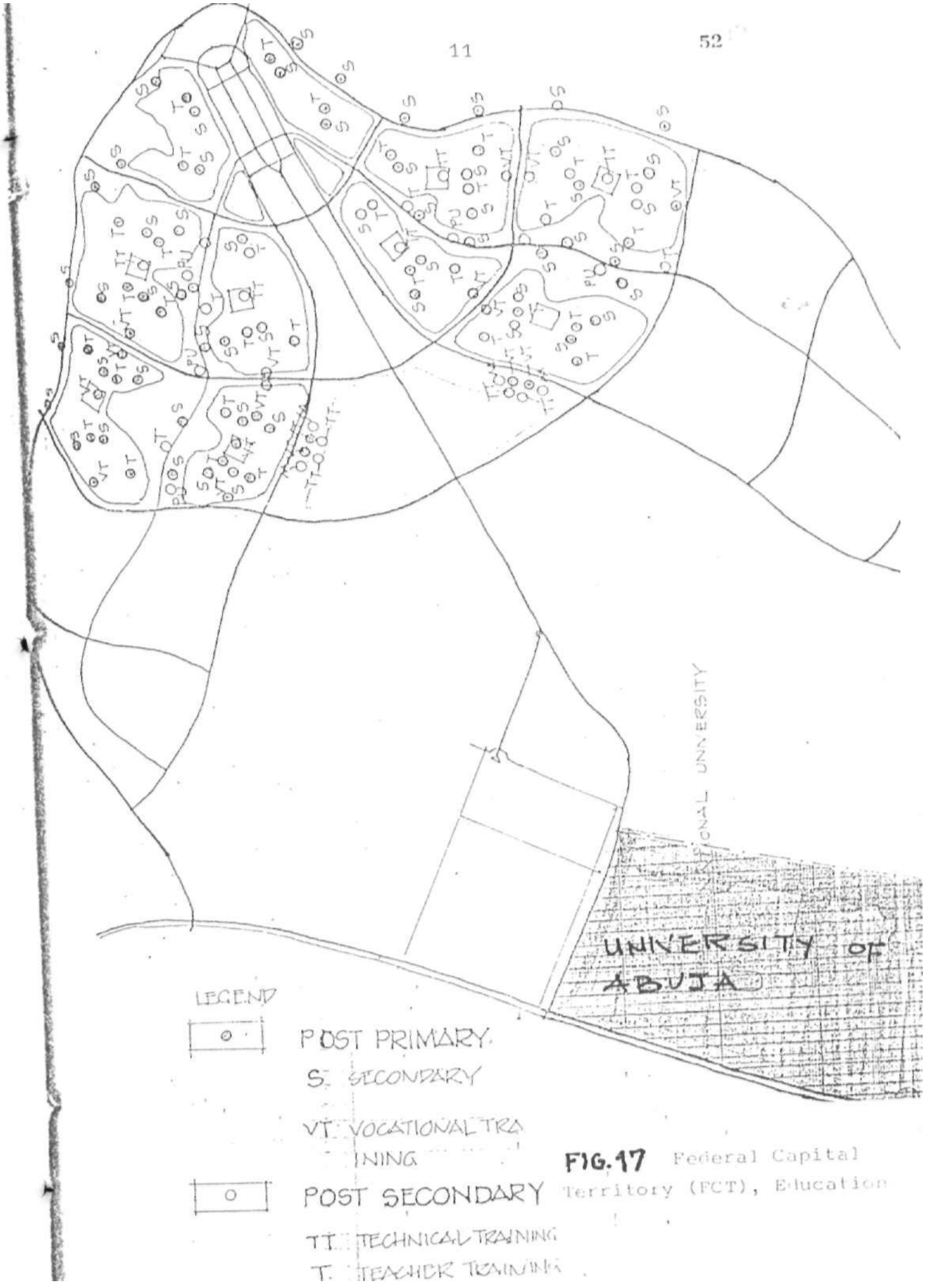


FIG. 17 Federal Capital Territory (FCT), Education

4.1 OBJECTIVES

i. To encourage the advancement of learning and to hold out to all persons without distinction of race, creed, sex or political conviction, the opportunity of acquiring a higher and liberal education.

ii. To develop and offer academic courses and other facilities for the pursuit of learning in all its branches and to make those facilities available on proper terms to such persons as are equipped to benefit from them.

iii. To encourage and promote scholarship and conduct sound research in all fields of learning and human endeavour. Particularly, the most relevant to a balanced National Development.

iv. To relate its activities to the social, cultural and economic, scientific and technological needs of the people of Nigeria and to provide innovative educational programme of high standard, regardless of the degree pursued as long as this has importance and relevance for National Development.

4.2 COMPARISON OF STUDENT ENROLMENT AND PERCENTAGE HOUSED

To provide a comparative base for the forecast, the admission force characteristics of a number of representative, Federal and State Universities were reviewed and evaluated for the relevance to the University of Abuja. (Tables - 2 and 3).

4.3 POPULATION PROJECTIONS

Based on the previous observation, in particular that:

i. The relationship among the University of Abuja will be comparable with the Federal and State Universities at equivalent levels of development.

ii. The enrolment will be considered as basis, along with the academic and non-academic staff.

4.4 DEMOGRAPHY OF THE POPULATION

Three key characteristics of the year 2014 population were developed to determine such planning factors as number of housing units required, service facilities requirements such as students' centre and health care. These characteristics are: age/sex distribution, the number of house-holds. In

TABLE - 2: Presents a Set of Comparative Data for Some Federal and State Universities Students Enrolment and Total Percentages Housed (1980 - 1989)

Year	University of Nsukka			Ahmadu Bello University			University of Lagos		
	Total Number	Total Housed	Percentage	Total Number	Total Housed	Percentage	Total Number	Total Housed	Percentage
1980-1981	7,817	5,959	76	9,882	7,646	77	N.A.V.	N.A.V.	--
1981-1982	8,712	6,063	62	11,471	9,005	79	12,198	4,822	40
1982-1983	11,140	6,444	58	12,295	8,966	73	12,345	5,177	42
1983-1984	12,132	6,445	53	12,004	9,118	76	12,678	5,177	41
1984-1985	13,862	6,552	47	14,668	9,125	62	13,227	5,203	39
1985-1986	14,896	6,656	45	16,471	9,665	58	18,001	4,822	26
1986-1987	17,324	6,782	39	18,444	9,258	50	18,417	6,177	33
1987-1988	19,004	6,982	36	19,174	9,241	48	19,666	6,177	31
1988-1989	20,143	7,363	36	21,666	10,125	46	20,006	6,203	31

NOTE: The disparity for different years is due to the fact that sometimes double-bunk beds are used.

SOURCE: The Planning Offices of various Universities and by calculations.

TABLE - 2: (Continued)

Year	University of Jos			University of Technology Minna			Over-all Percentage Housed
	Total Number	Total Housed	Percentage	Total Number	Total Housed	Percentage	
1980-1981	2,168	1,674	74	1,529	867	57	71
1981-1982	2,572	1,712	67	3,476	1,072	31	56
1982-1983	2,832	2,218	78	3,326	1,050	32	57
1983-1984	3,369	2,417	72	3,533	1,066	30	54
1984-1985	3,972	2,327	58	3,167	1,072	34	48
1985-1986	5,337	3,000	56	3,374	1,088	32	43
1986-1987	6,292	3,272	52	3,581	1,004	30	40
1987-1988	7,314	3,511	48	3,788	1,144	30	38
1988-1989	11,750	4,700	40	4,011	1,244	31	36

NOTE: The disparity for different years is due to the fact that sometimes double-bunk beds are used.

SOURCE: The Planning Offices of various Universities and by calculations.

TABLE - 5: Nigerian Universities Total Enrolment (1980 - 1989)

Y e a r	Enrolment
1980 - 1981	70,252
1981 - 1982	82,952
1982 - 1983	94,375
1983 - 1984	105,798
1984 - 1985	1,172,221
1985 - 1986	128,644
1986 - 1987	140,167
1987 - 1988	151,590
1988 - 1989	163,079

First, the enrolment percentage in each year is relatively constant.

Secondly, the proportion of the admission force is consistent with the known phenomenon of increasing orientation with development and University age.

SOURCE: National Universities Commission, Annual Report, 1980 - 1989.

determining these characteristics, the extra population were based on the latest available statistics.

4.5 ASSUMED GROWTH OF STUDENT POPULATION AT UNIVERSITY OF ABUJA

With the information gathered from the Academic Planning Offices of various Universities and by calculation above, one could see a trend of increament for each successive year. Based on this, the student expected an increase each year.(Table - 4)

4.6 DEVELOPMENT PLANS OF THE UNIVERSITY

The development plans of the University can be seen under two headings, namely; temporary and permanent development plans. Presently, the University of Abuja is concerned with its temporant at the development of it's Mini Campus (see Plates xvi - xix).

At the inception of this scheme, the University bought over a Federal Capital Development Authority (F.C.D.A) Model Primary School and remodelled it to meet University's needs for the take-off of academic programmes (see Figure 18). Also, acquired Federal Capital Development Authority (F.C.D.A) Low Cost

TABLE - 4: Assumed Total Enrolment by Discipline

Discipline	Year-1	Year-2	Year-3	Year-4	Year-5
Education	70	100	150	200	250
Science	80	100	190	230	300
Arts and Social Sciences	50	60	90	125	130
Law	40	50	75	105	110
Distant Learning	120	180	300	450	650
Total	360	490	805	1,250	1,440

Houses were all remodelled to suit the demand for hostels and offices.

The renovation of Giri Housing Estate on the permanent site for occupation by staff of the University has also been completed.

MINI CAMPUS, UNIVERSITY OF ABUJA

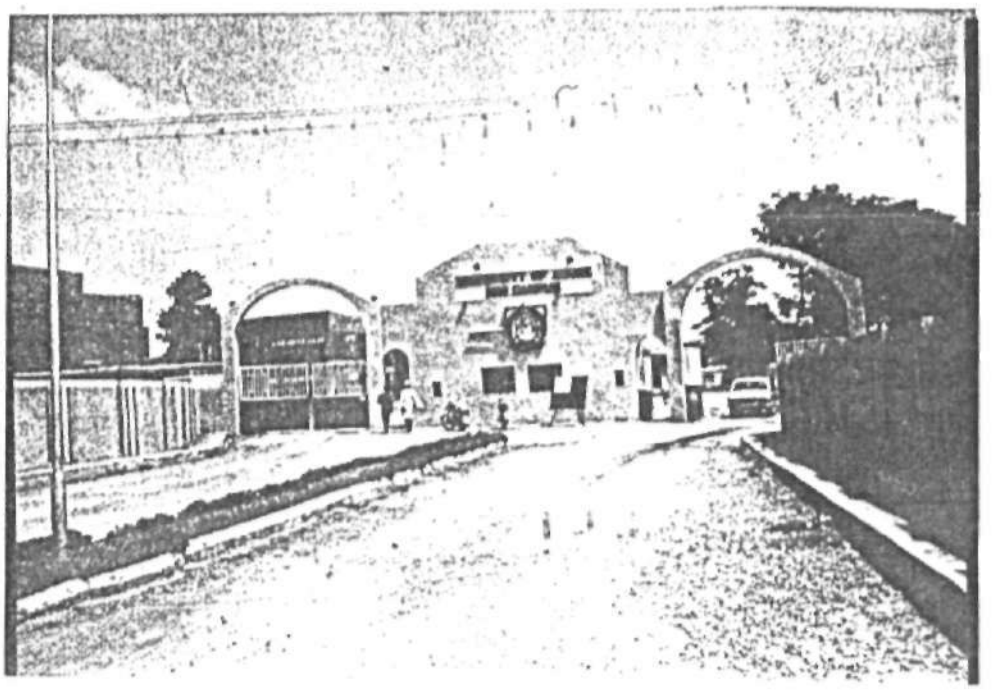


Plate xvi: UNIVERSITY GATE



Plate xvii: STUDENTS' COMMON ROOM (M)
TEMPORARY STUDENTS' UNION BUILDING

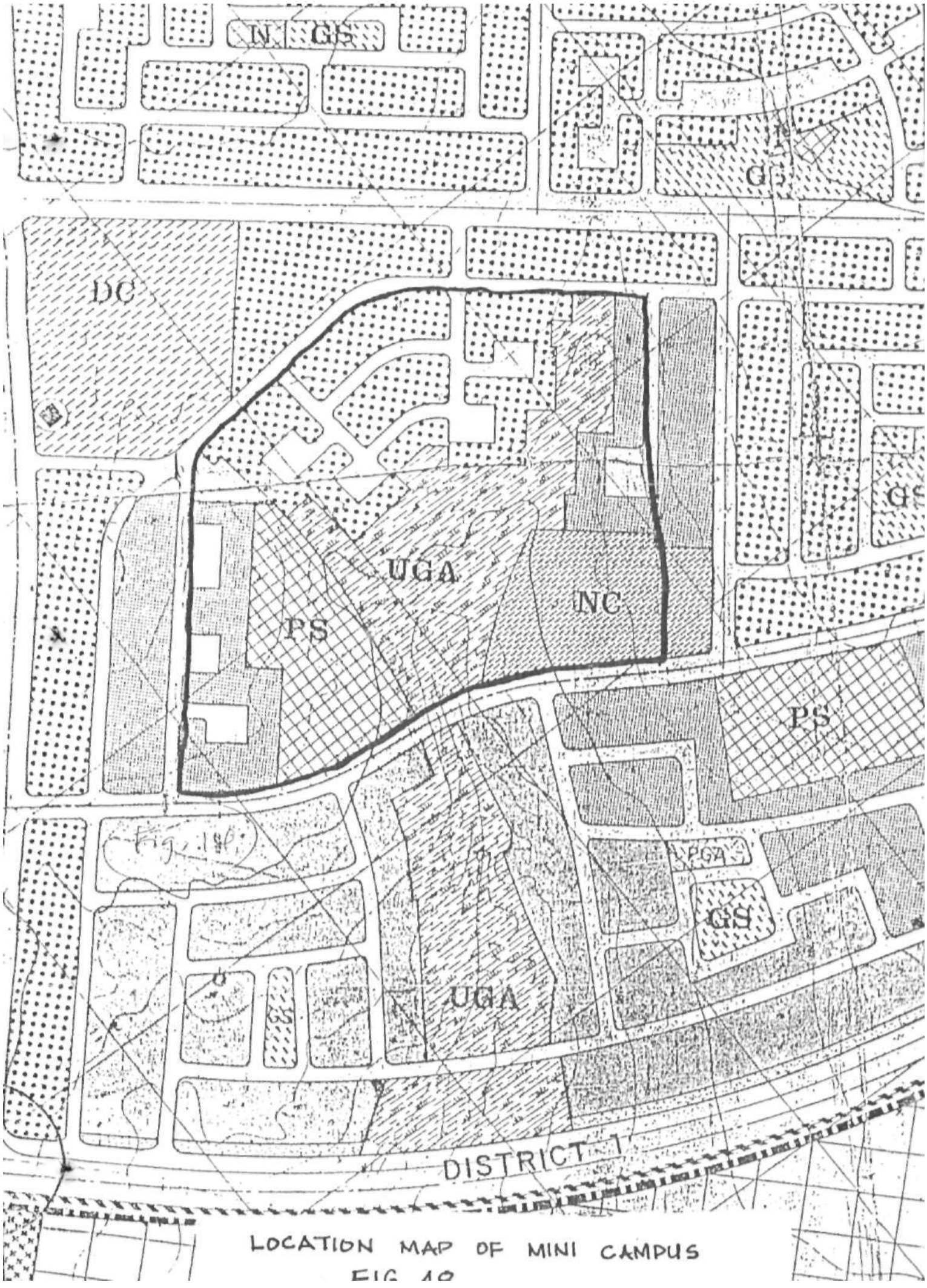
MINI CAMPUS, UNIVERSITY OF ABUJA



Plate xviii: STUDENTS' HOSTEL (F)



Plate xix: CLASS ROOMS



LOCATION MAP OF MINI CAMPUS

FIG 1P

CHAPTER - FIVE

THE SITE AND ENVIRONS

5.1 SITE LOCATION

Abuja is at the centre of Nigeria lying just below the hot and humid low-lands of Niger/Benue troughs. It also lies just North of alluvial plains, formed by the confluence of Niger and Benue Rivers.

The geographical location of Abuja is characterised by three large Plateau areas separated from one another by troughs of Niger and Benue Rivers. Abuja is defined as an area of 8,000 square kilometres surrounded by Niger, Kaduna, Plateau and Kwara States.

Meanwhile, the location of the proposed site is at Gwagwalada within the Federal Capital Territory (Figure - 19). Gwagwalada was one of the first new towns to be developed in the area. It is located at about 40 kilometres from Federal Capital Territory, West of the A2 Road (Plates - xx - xxiii) and has other functional relationship that are as follows:

In good spatial relation to the Federal Capital Territory and at the centre of the territory, particularly within Abuja Municipality.

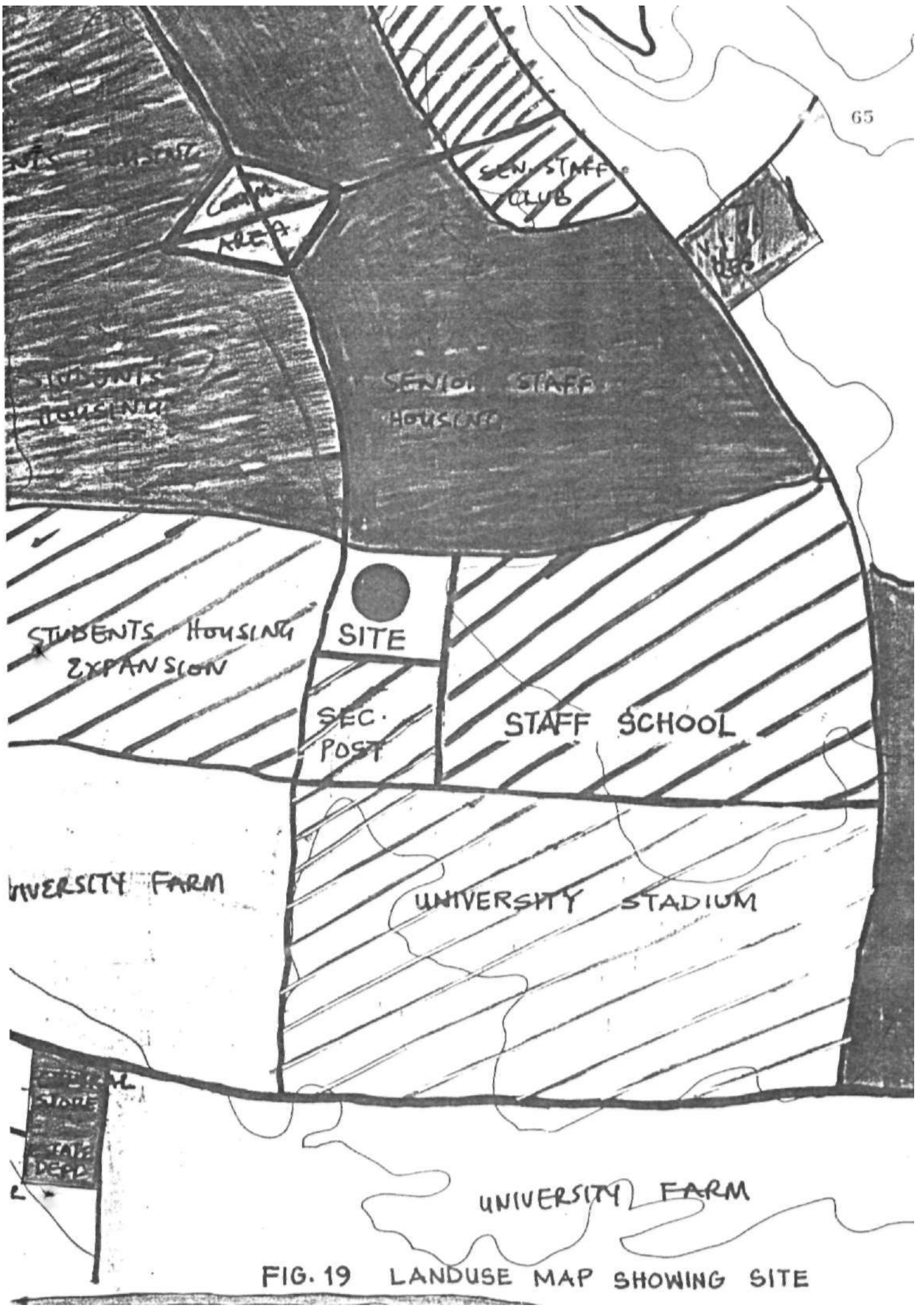


FIG. 19 LANDUSE MAP SHOWING SITE

SITE PICTURES



Plate xx: SOUTH WEST VIEW



Plate xxi: SOUTH EAST VIEW

SITE PICTURES



Plate xxii: NORTH EAST VIEW

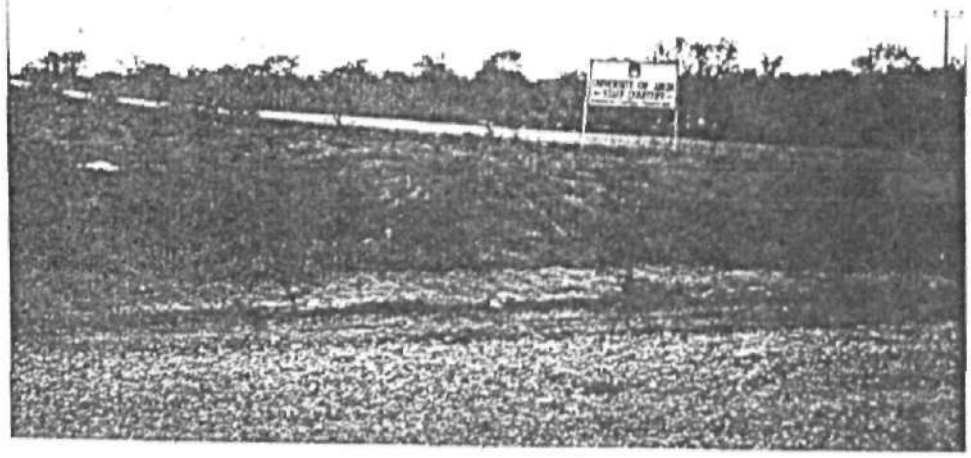


Plate xxiii: NORTH WEST VIEW

Highly nodal, being in connection with the National and Regional Roads system as well as the international airport road and the proposed Izom railway alignment. Adjacent to Usuman River which performs its regional administrative function with navigational improvement on the river.

Also, the spatial relationship of Gwagwalada with Suleija is of importance. Centrality of Abuja and Gwagwalada is as shown in Figure - 20.

5.1.1 Physiography

The site is part of the Gwagwa plain and rises from an elevation of 305 metre in the West to 610 metre in the East. The upper Gwagwa plain area is dotted by numerous large outcrops of rock or near surface bedrock such as Aso Hills, Abuja Hills around which is necessary to arrange development (Figure - 21).

The plain is typified by gently undulating terrain interlaced by riverine depressions. The central and Southern areas consist of uplands and plains with numerous inselbergs and other rock outcrops of various sizes. Inselbergs and other granitic clusters occupy about eight percent (8%) of the total

CENTRALITY OF GWAGWALADA NEW TOWN

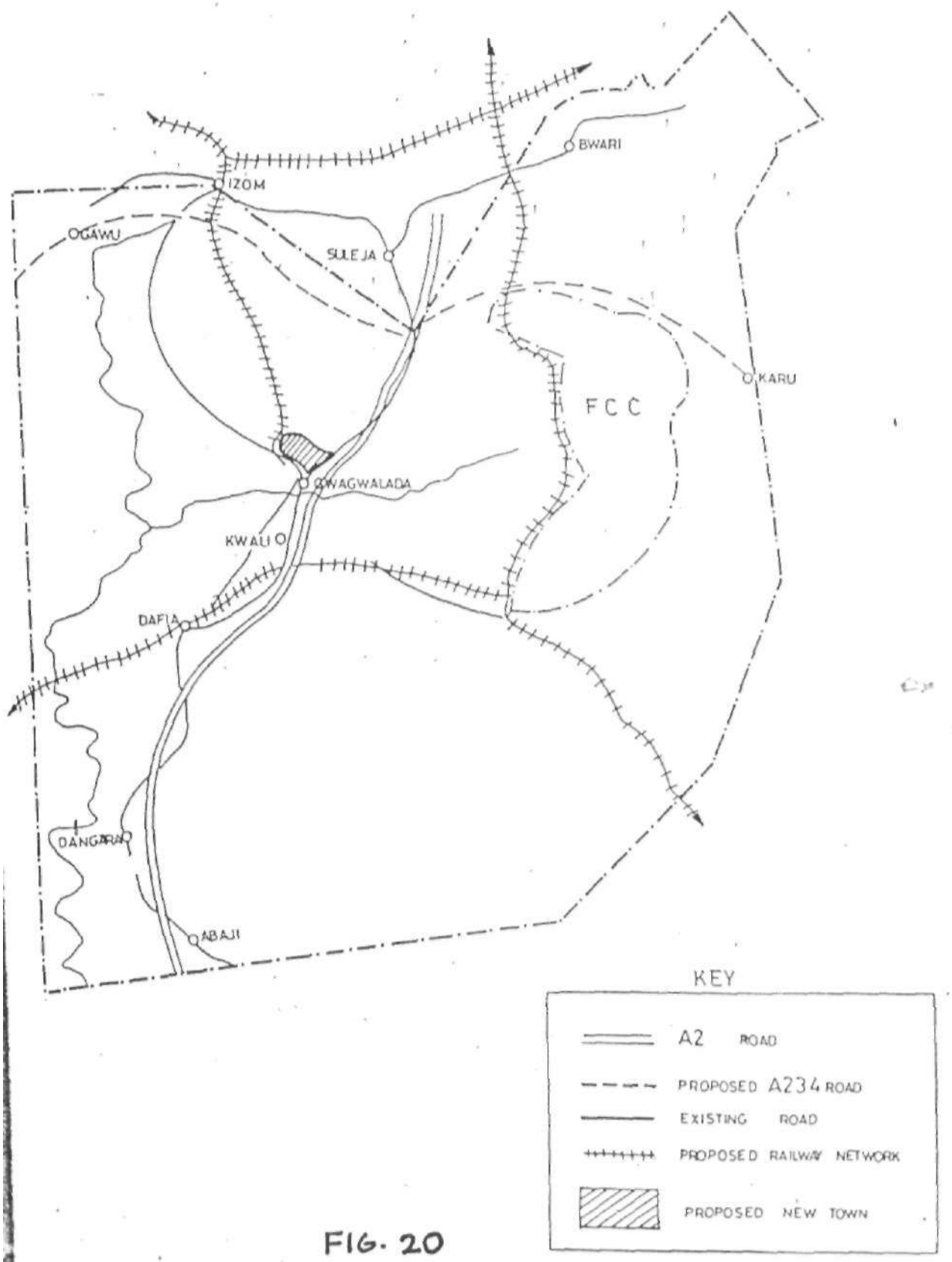
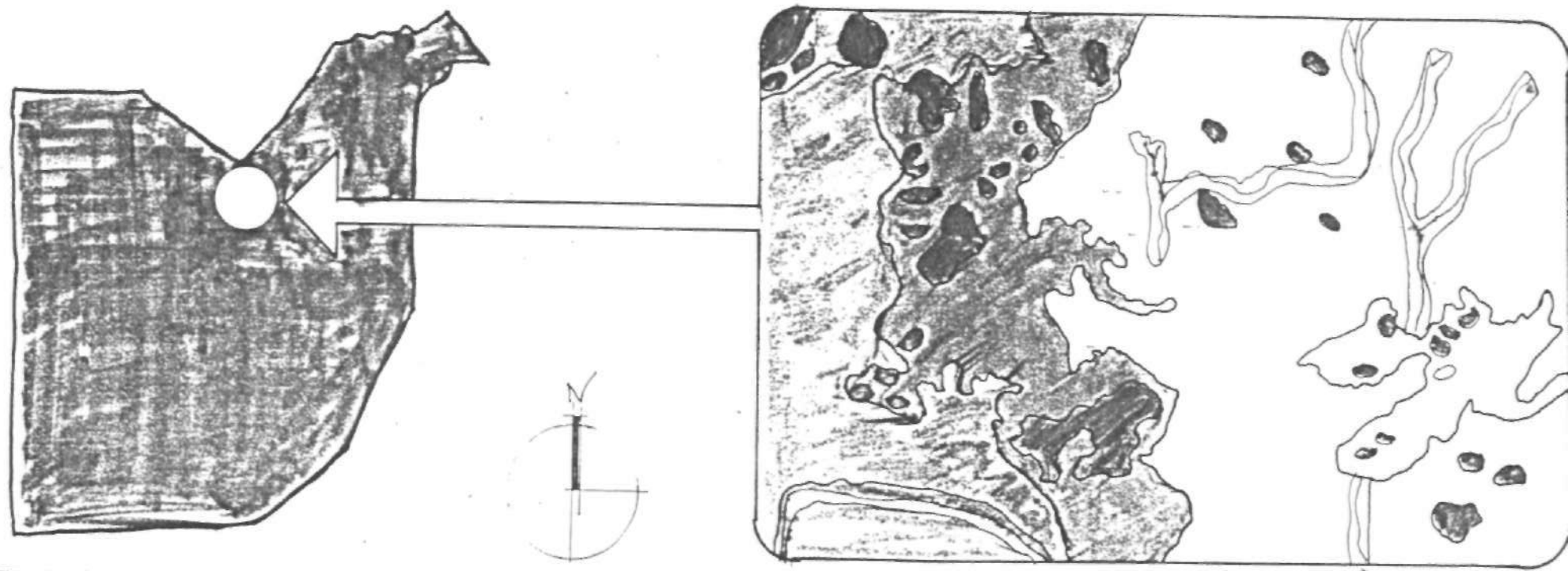


FIG. 20

Source:- Gwagwalada mater plan.

general landscape has provided a "dramatic background for the development of land uses".



FEDERAL CAPITAL TERRITORY

NORTH CENTRAL AREA OF THE FCT.
CONTAINS SITE FOR THE UNIVERSITY OF ABUJA AND INTERNATIONAL AIRPORT

LEGEND

DISSECTED ZONE

ROUNDED HILLS

IKU GURARA PLAINS

GWAGWA PLAINS

ALLUVIUM

FIG·21 PHYSIOGRAPHIC MAP OF NORTH CENTRAL FCT.

SOURCE: master plan for ABUJA

GEOLOGY

plains areas and generally bare and rocky, varying in size and occuring as isolated masses or in groups rising abruptly from the plains.

The abrupt change in relief and massive rock outcrop rising from the plains to summits as much as 500 centimetre above the plains provide a dramatic background for developed city land uses. This unique and fortitious situation allows all of the area to be developed for a large population.

5.1.2 Geology

The site is characterised by plains of precambrian metamorphic sedimentary rock and younger igneous rock. The rock includes porplyntic gneiss underlying the Usuman River and granitic gneiss. Large intrusive masses commonly elliptical in shape forming dissected zones of the Zuma-Bwari-Aso Hills and outcrops of the Gwagwa plains. Phyolite, forming smaller intrusive's on the plains, are another type of igneous rocks found in the area. Sedimentary rocks includes alluvium which are located in streambeds throughout the territory. The rocks of the territory discussed are expected to present a minimum engineering problems.

5.1.3 Surface Water

The site can more or less neatly be divided into small contiguous water sheds, all covering on one point with a rough fan shape network of valley and depression draining the crescent of development area.

The Gwagwa plain drain into the Usuman River. Streams typically originate in broad fadamas, comprised of poorly drain alluvium deposits. Extremely low flows occur during the dry season, with stream corridors containing water limited to the trunck of the Usuman River and Yewu River. Much of the river in these streams during the dry season is limited to stagnant pools of standing water. The overall plan has been developed to accommodate these run-off problems and urban development has been located so as to cause minimum interference with the natural drainage patterns.

5.1.4 Soils

The soils underlying the site are generally deep and well drained. The Gwagwa plains area is underlain by soils derived from granitic gneiss and magmatite. The soils are generally the deepest and least stony.

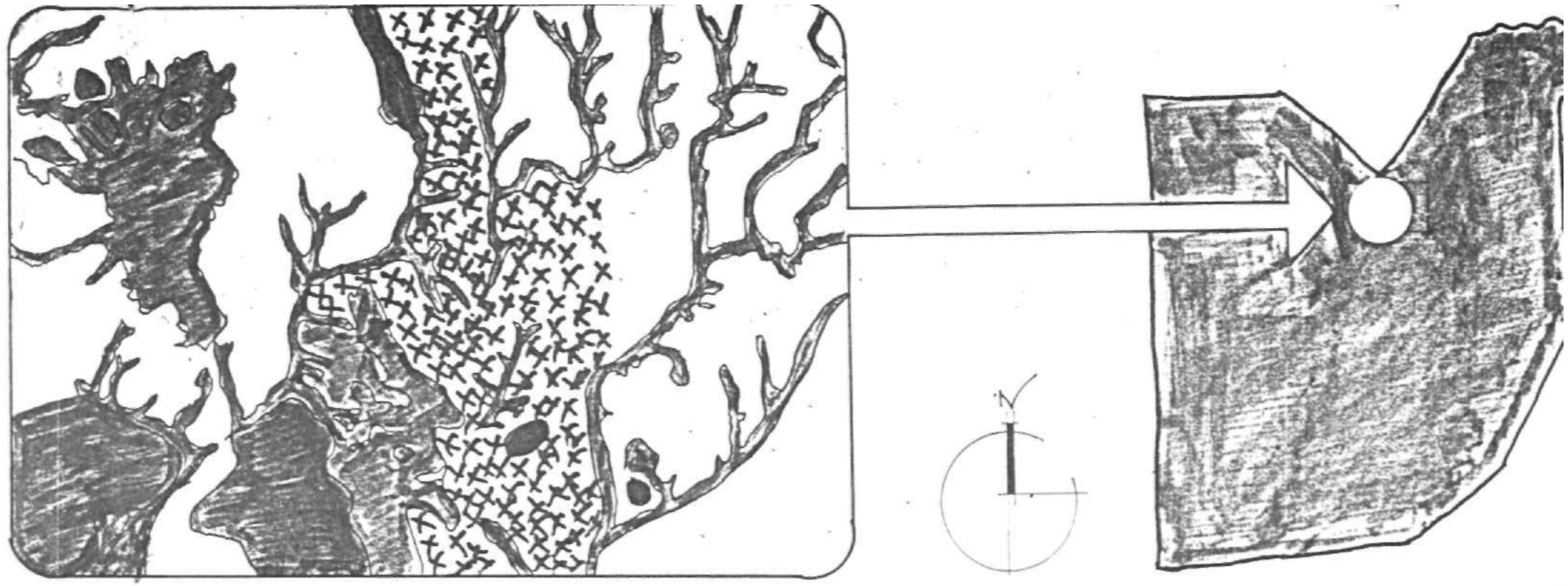
The site is characterised by the shallow soils of the Gumi, Gui and Panda complexes which are from well to imperfectly drained with run-off potential dependent on clay content and occurrence of iron par, texture, erodibility, run-off potential, and drainage. Soil constrained because of depth and limited to inselbergs, hill tops and escapement in the vicinity of site. Run-off potentials are rated from slight to severe and could result in localised flooding condition during the rainy season.

5.1.5 Vegetation

The vegetation is characterised by park savanna, riverine depressions typical by fringes of thickets and high trees with occasional patches of forest or heavily wooded areas.

Forest vegetation occurs in riverine areas, smaller areas of riverine forest and savanna woodland occur along streams and the flat and undulating plains (Figure - 22).

Park savanna is typically a stratified community with a discontinuous canopy, shrub and grass layer structurally comprising of thick tall grass consisting of Audopogon and Hyparrhenia species.



FIG·22 VEGETATION MAP OF FCT NORTH CENTRAL AREA

canopy species include Albizia, Butyrospenum, Danulla and Parkia. The Wuye and Usuman River Valleys in the vicinity are characterised by riverine complex vegetable linning their stream banks.

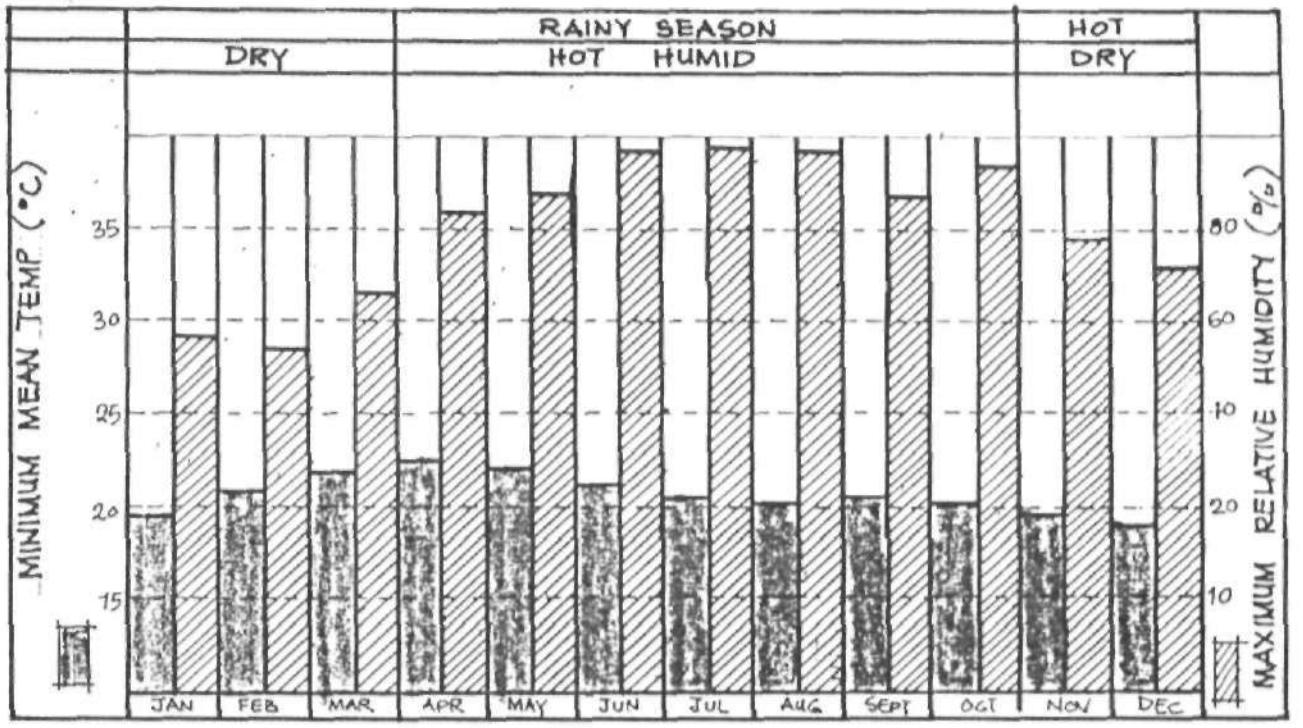
5.2 CLIMATIC CONDITIONS OF SITE

Statistics Analysis

Living environment to be comfortable will depend on maximizing the aspects of the environment which reduce heat and the effect on humidity, and protect from rain and dust.

Temperature Humidity

Highest temperature occur in the dry season when there are little cloud cover, changes in temperature as much as 17^{o}C have been observed during highest and lowest temperature. During the rainy season, the maximum temperature is lower due to the dense cloud cover. The diurnal variation gets as low as 7^{o}C in the months of July and August. The relationship between temperature and relative humidity at 0700 hours and 1600 hours is given in (Figures - 23 and 24). During the day, the dry season, relative humidity falls in the afternoon to as low as twenty percent (20%) and climbs as high as Ninety-five percent (95%)



TEMPERATURE - HUMIDITY (0700 HOURS)

FIG. 23 F.C.T. TEMPERATURE - HUMIDITY (0700 HOURS)

TEMPERATURE - HUMIDITY (1600 HOURS)

FIG. 24 F.C.T. TEMPERATURE - HUMIDITY (1600 HOURS)

during the rainy season. This low relative humidity, coupled with high temperature determines level of human comfort and the dessicating effects of the dry season. The reverse situation in the wet season results in a heat trap with little heat loss by evaporative cooling and given a general feeling which is uncomfortably hot.

Design Implication

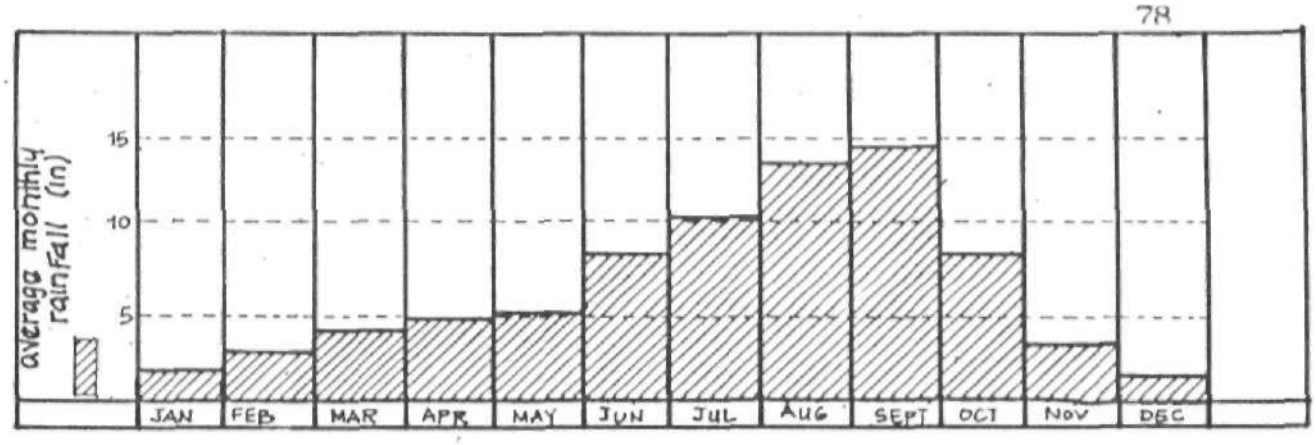
Adequate cross ventillation of habitable areas is highly desirable for all years comfort in the Federal Capital Territory, more so, since the dessicating effect brought about by the high temperature - low humidity situation can be countered by effective shading.

Rainfall

The rains starts by April in North-eastern part of Federal Capital Territory with the duration of 180 days to 190 days and tapering off around October. Sixty percent (60%) of the rainfall is experienced in the month of July, August and September (Figure - 25).

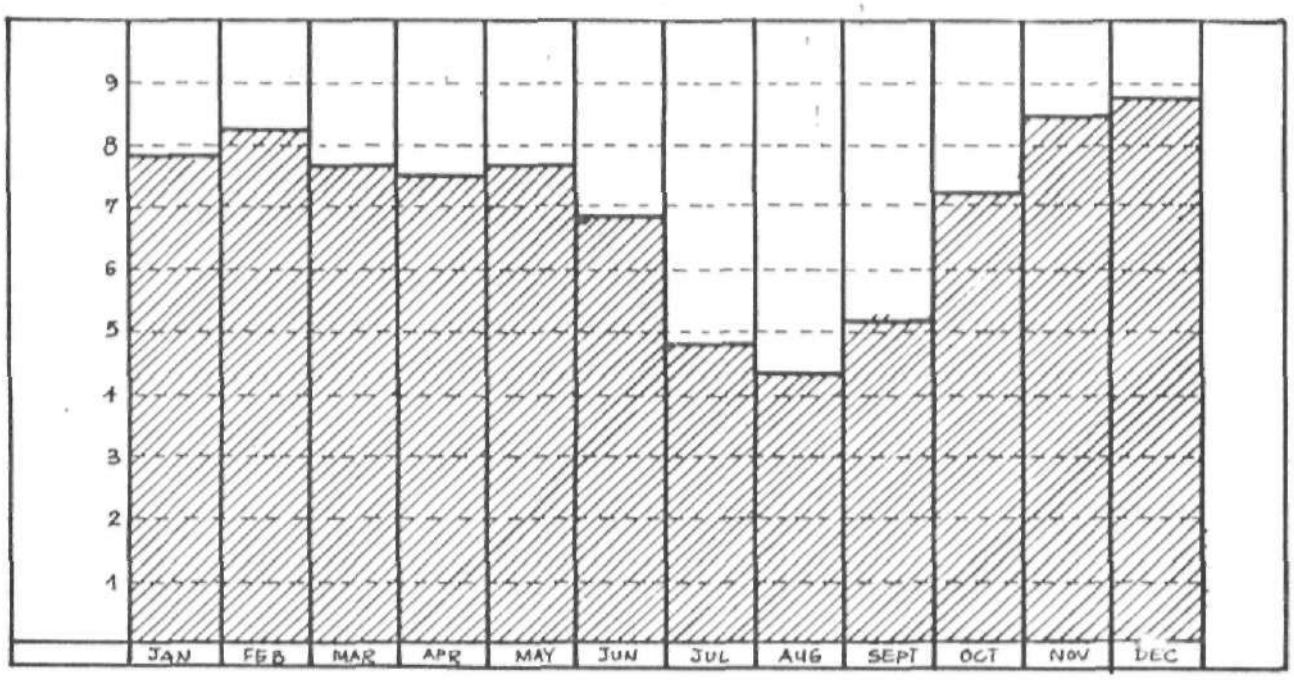
Design Implications

This concentration of rainfall shows the needs for drainage systems that can handle large volumes of



RAINFALL

FIG. 25 F.C.T. RAINFALL



SUNSHINE - DURATION

FIG. 27 F.C.T. SUNSHINE - DURATION

water very quickly. Frequent occurences of squall lines, strong wind and intense rainfall are observed in Federal Capital Territory and often causes serious property damage. The Abuja hills (near the project site) can like other inselbergs in the territory causes intense relief rainfall (micro-climatic effect) in the immediate surroundings.

Wind Dust

Two major air masses dominate the climate of Federal Capital Territory. These are the tropical maritime air masses and the tropical continental air mass. The tropical continental air mass is developed over the Sahara desert and therefore, is warm and dry while the tropical maritime is formed over the Atlantic Ocean to the South of the country and is therefore, warm and moist. The tropical continental air mass is associated with the dry season while the tropical maritime mass creates the wet season (Figure - 27)

Design Implication

The tropical continental mass is associated with the North-east trade winds and the tropical maritime mass gives the South-west mansoon wind. These maritime winds blowing in a South-westerly direction are cooler

and generally more desirable than the harmattan winds.

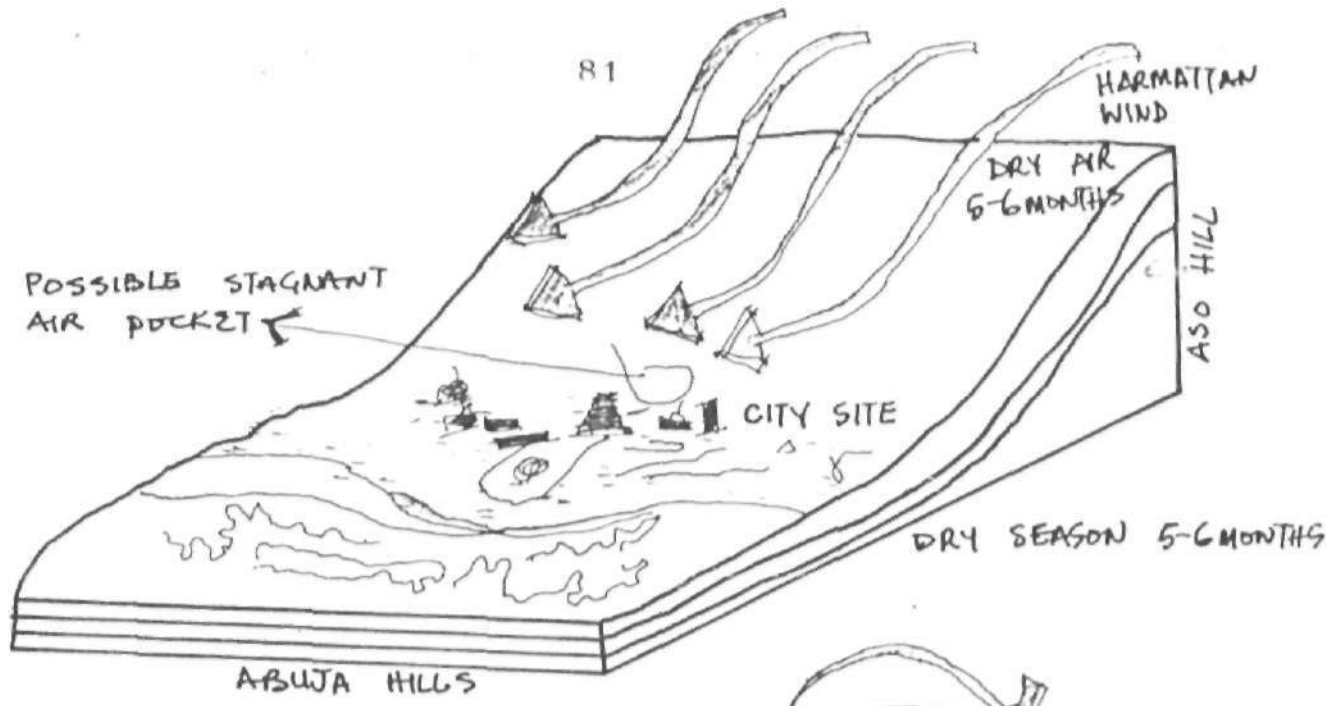
Building orientation should therefore, be such as would take advantage of the maritime winds while the harmattan winds could be screened off by the use of barriers, trees, walls, etc., or by proper orientation.

Sun and Cloud Cover

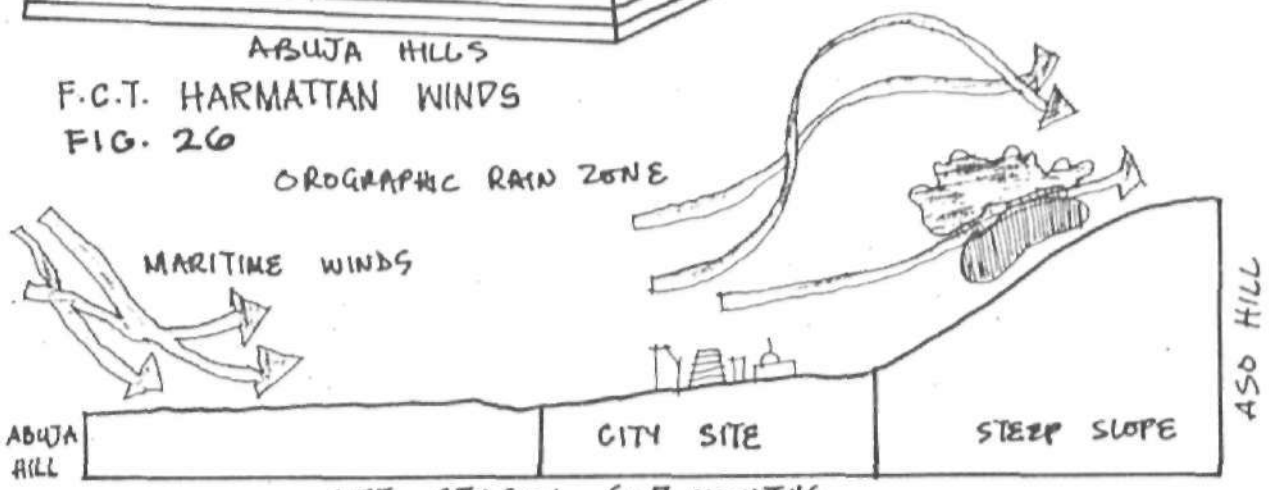
The amount of sun-shine ranges from a minimum of 1300 hours in the delta to cover 3200 hours in the extreme North-east of the country. The annual amount of 2,500 hours sun-shine is recorded over the city. Sun-shine hours are most in the dry season when there is little cloud cover. As the rainy season approaches, the trend is to increase cloudiness and later decline at the month of August (Figure - 26).

Comfort Zone

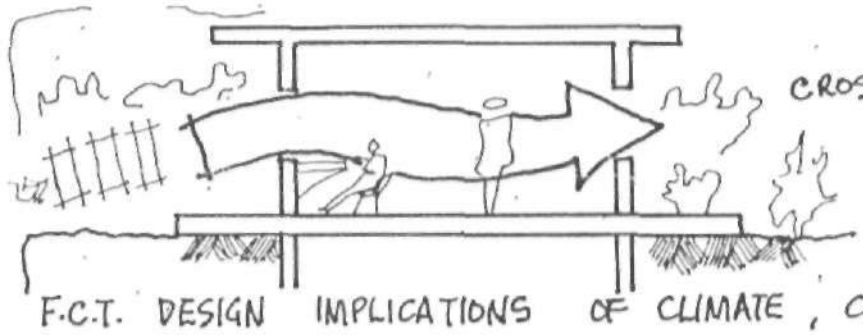
The comfort range of conditions for comfort are 29°C to 30°C for temperate and 30 percent to 70 percent for relative humidity. The charts above indicate that conditions in the Federal Capital Territory are hardly over within the comfort range hence the need for proper control measures through design (Figure - 28).



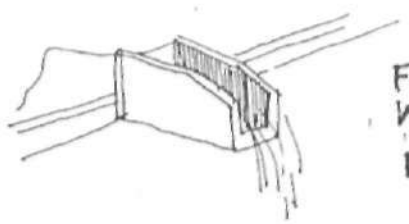
F.C.T. HARMATTAN WINDS
FIG. 26



WET SEASON 6-7 MONTHS
F.C.T. MARITIME WINDS



F.C.T. DESIGN IMPLICATIONS OF CLIMATE, CROSS VENTILLATION



F.C.T. DESIGN IMPLICATIONS OF CLIMATE, STORM, WATER DRAINAGE
FIG. 28

CHAPTER - SIX

THESIS PROBLEM

The smooth and effective functioning of buildings is marred by constraints based on the operational procedures. The existence and occurence of these problems particularly the organisation and arrangement of spaces makes it impossible for buildings to achieve the desired goals and objectives.

In highly industrialised countries, more people work at the desk, which is predominantly concerned with managerial decisions or with combinations subject to certain rules of facts and figures, so the creation of a suitable environment, offering favourable conditions for creative thinking, communication and storage of results is as a result of manipulation of spaces to suit different functions at the same time made to relate to one another in the social realm.

Space has been defined as "emotional charged zone around each person which helps to regulate spacing of individuals"[1]. Spaces where people mark out and specialize, the spaces which they inhibit so architecture must enclose space where certain activities can take place comfortably and efficiently.

Architecture controls the physical environment that people as individuals or groups can live, work and be together. It is seen as a means for accommodating and expressing the spaces for social living and also an embodiment of a socio-economic institution.

A building is the physical form of a social institution, an enabling mechanism which houses its occupants, accomplishes its objectives and relates to ideas and operations in the social realm, this architectural form in the advent becomes a major investment and an instrument of development, particularly urban growth.

The modern office building is unique and is differentiated from all other types of construction in the audience, it exists to serve, in a way it is a symbol of the ultimate achievement of a machine age - a building which serves an administrative and planning centre for a machine society, built solely for human beings and to answer human needs.

Thus, an office space must be planned so that its spaces if broken into separate units can function as a cohesive whole. These spaces can be ancilliary spaces, administrative - executive and non-executive spaces,

service spaces, etc., and they must all be planned so that these are flexible and can be changed rapidly to meet varying needs.

It must allow for extreme fluidity within its walls and more often today built so that future additions can be made to the building itself. The main factor that has affected space organisation in buildings has been the general world economic recession, during the twenties, there was a boom and great over-building of office space - but that space was created according to the formal and rigid tenets of earlier architectural principles, within the depression, clerical staff shrank and so did office occupancy, then came the expansion with world war II followed by a booming prosperity in which pressure for office spaces and demand exceed anything ever before. At the same time, offices with larger staff now had more complex organisation than before, resulting not only in more space requirements but more individualized design and layout of the space.

New concept in office spaces is a shallow structure, with rental spaces constructed around a centre service core containing elevators, stair-ways, utilities and toilet facilities, such structures gives

offices maximum possible exposure to exterior light and air, but with improvements in artificial lighting and air-conditioning, different building concepts can now be evolved, making it possible to build deep spaces in buildings with interior working spaces uninterrupted by service facilities - which can be located off to one side and still make office space in such building efficient, functional, comfortable and healthful.

Space according to Edward Hall and R. Sommer should be flexible and have variety, the former an anthropologist the later a psychologist each have their own concept of space.

Edward Hall in "Hidden Dimension" talks about fixed feature space and semi-fixed space. Fixed space "is that mould into which a great deal of bahaviour is cast"[2]. In essence, what he meant is that every activity had to adapt itself into that space that had fixed boundaries. Semi-fixed space is that space that "is defined but has no permanent character"[3]. He went on to introduce two other concepts concerning space.

Sociofugal space is that space that tends to isolate individuals thereby making them self existence. Sociopetal space brings activities together, seeks to

integrate people while at the same time gives the privacy needed.

"Sociofugal space is not bad, neither is sociopetal space good, what is desirable is flexibility and congruence between design and function so that there is variety of space and people can be involved not as the occasion and mood demand"[4]. While Sommer has this to say of personal space "... if two rooms are intended to serve the same function, it is desirable to make them slightly different unless the cost is prohibitive. One conference room can be long and narrow, the other short and squat, this provides the user with greater flexibility in assigning space"[5]. These can then be concluded that to achieve very effective organisation of spaces especially in institutional buildings, there must be:

i. Semi-Fixed feature space (flexible partitions except where desirable).

ii. Variety of spaces all inter-related to one another.

The aim of producing an intergrated atmosphere conducive for cohesive existence and comfort is the ultimate for the architect and the designer.

As earlier explained, this is based on the manipulation of spaces which in turn has a marginal effect on the final output of the organisation.

Inadequate, badly designed and too much space affects the working capacity of the users, because a financial organisation or corporation is that "complex organisation consisting of structured, functional and social components in which people behave in an inter-related fashion according to the norms, values and roles existing in the context of the goals of that organisation", and since institutional and public buildings environment is unique in its physical and functional nature, the architect can more systematically expose alternatives to achieve the required performance.

6.1 SPACE ORGANISATION IN BUILDINGS

These spaces can be sub-divided into;

i. Reception/Public Spaces;

ii. Ancilliary/Semi-Public Spaces;

iii. Service/Circulation Spaces;

iv. Non-executive/Semi-private Spaces;

v. Executive/Private Spaces.

6.1.1 Reception/Public Spaces

This is the first point of call of all visitors and first impression of the organisation is usually made here. Interior public spaces like reception and lobbies are too small and so do not accommodate people particularly at peak periods.

There is the general lack of interior office land-scaping which might have created a sense of belonging to visitors. Lounges, commercial spaces are usually not well zoned and located properly. This is evident from the literature review and the case studies.

6.1.2 Ancilliary/Semi-Public Spaces

These are spaces which serve as a link between the public and private spaces. They serve as a support arm for the organisation and are usually the staff canteen or cafeteria, clinic, kitchen, cloakroom, meeting rooms, etc.

The human factor is predominant in buildings and the best way to achieve increased productivity for clients is to respond to the needs of the users, so they can have the ability to work efficiently and in the end achieve individual goals.

Welfare of users is important, but the case studies do not have spaces for facilities associated with it, e.g., there is the general lack and non-availability of adequate kitchen and dining facilities within hygenic surroundings, for users, students, staff have to commute few kilometres away in order to eat which in the end affects their working output as they would have been exhausted by the time they get to their offices, classrooms or hostels.

6.1.3 Service/Circulation Spaces

This is usually the main support system of all buildings. It provides access to all parts of the buildings and subsequent floors, however, these accesses are not appealing, while connecting bridges like stairs and lifts are monotonous. Most of them generally have lighting and ventilation problem, they therefore, rely on artificial means. Spaces (horizontal and vertical) for ducting of office services are usually a problem in buildings and so must be organised in a way that it would not affect the planning layout or stability of the building.

Circulation spaces from the case studies have peculiar problems associated with the design. And

they are either too long, narrow and do not permit easy ingress and egress to work areas.

6.1.4 Non-Executive/Semi-Private Spaces

These are spaces occupied by junior and managerial staff, they depend in most cases on the hierarchy within the organisation and consist of work space, file space, storage space and circulation.

From the case studies, since the nature of the building cater for a cross-section of the public and students, these spaces are small compared to other facilities like recreation, services and entertainment provided in the building.

6.1.5 Executive/Private Spaces

These are spaces occupied by executives within the organisation and also vary according to the hierarchy within the organisation, however, their location is greatly dependent on the fact of their use and accessibility.

These spaces are not found from the case studies because, the buildings do not have areas or spaces designated for such purposes. It could be evident only in the administration cadre, but this is only in the Union executives offices.

6.2 ARCHITECTURE AND SPACE PHENOMENON

The space is the basic tool readily available to be manipulated in the field of environmental design. Because of its enormous scale, numerous human needs and the need to control harsh climatic environment, man evolved the principle of creating shelter as early as the stone era. The architect apart from creating shelter against climatic elements, also, reduces the scale of the space to an appreciable human level, so as to improve on the quality of the perceived, environmental context.

In modern time, space is developed for shelter, park, recreational purposes, conservation of land and natural resources as well as for historic and scenic purposes. The sociology of space involves what and how people experience space and to what extent this affects their feelings and personality. The effectual scale of an enclosure is dictated by space defining elements like walls, ceiling and floor. If a space is enclosed with no light from outside, the observer experiencing the space feels that the space is static and that it is actually smaller than its geometric dimension. An enclosure with opening or void to allow in sun-light enlivens the colour and texture of the space, it brightens the space and brings out its

three-dimensional configuration to a richly appreciable level. Hence, an enclosed solid space can create a claustrophobic tendency while an over illuminated space can create a dynamic feeling and if the space is large enough can result in agoraphobic. The resultant effect of agoraphobia can be intimidating and dehumanizing.

As a result, the architect must be adequately equipped to be able to create a balance or equilibrium between the space, needs and human cognitive system. Built environment should be handled in a skillful way to enhance positive human response. It can be therapeutic if diverse elements of high aesthetic values are incorporated with feelings for human scale and proportion; this can have a great influence on human sensory organs of perception. The architect has to contrast visual amplitude as an antedote to "insipient mental homeostasis".

CHAPTER - SEVEN

DESIGN PROCESS

7.1 THE PROBLEMS

7.1.1 Environmental Problems

It is intended that this project would succeed in satisfying the would be users requirements maximumly, in terms of spatial organisation of functions and the building performance. The success of any building is also measured by the comfort derived there in. This of course depends largely on various environmental factors of climate and weather.

7.1.2 Functional Problems

This aspect deals with the performance requirement of the building, and tends to give shape to the building in attempt to achieve the following:

i. Centrality by accessibility

ii. Functional separation of major activities and circulation with regard to noise and degree of publicity/privacy.

iii. Flexibility and adaptability.

iv. Easy orientation with surrounding buildings.

7.1.3 Building Forms

Forms consideration affect building design in the following ways:

i. Sober monumentality to suggest the significance of students in the entire academic community.

ii. Structure: simplicity and honesty of form.

iii. Functional separation and grouping of activities for space economy and users convenience.

iv. Spatial organisations of functions in decreasing order on horizontal plane.

7.1.4 Economy and Time

The fabric and geometry of the building could be greatly influenced by financial commitment as it dictates the following:

i. Materials to be used.

ii. Buildings to withstand the rough tendencies of the users.

iii. Simple and efficient forms.

The performance of a building must be capable of meeting with the continual use, as well as changing mannerism in students, in social and political out-look.

This building is anticipated for a maximum number of students in this University.

7.2 THE DESIGN CRITERIA

This section deals with major consideration for the design in respect of the problems highlighted in the preceeding section, which forms the basis for the design criteria. This is sought to provide solutions to some of the problems in the following ways:

(a) Orientation of the building should be made to face due North and South in order to avoid heat penetration into interior due to the rising and setting sun or use shading devices on East and West facade.

(b) Building to be oriented at 45^{o} to the direction of the prevailing winds (South-west and North-east winds). This as well helps improve the efficiency of natural ventilation by maximising pressure differences on the wind-ward and lee-ward faces of the building. Building orientation should be made East-west since the prevailing winds are either North-east to South-west or vice versa.

(c) Natural ventilation could further be efficiently achieved by designing a single banked building

with functional or living interiors to one side and external corridors to the other.

(d) Cross ventilation could be encouraged by spacing the building at least 6 times its height from the nearest building or the wind-ward side.

(e) The building should not go beyond three levels in other to obviate the use of lifts.

(f) Materials used should be most durable, for minimum maintenance cost.

(g) Fenestration by brown tinted panes.

(h) Site drainage should be such that it does not undermine the building foundation.

(i) Views to Abuja Hills and the University farm to be given due consideration.

(j) Circulation to be separated from main access of the building in a way that it permits ingress and egress to and from the complex University.

(k) Monumentality in this case could be achieved by making the building unique in contrast to its immediate surroundings. However, this does not only call for uniqueness of the plan alone but

must also be extended to the elevational treatment of the facade for the required visual impression.

(l) Landscaping materials have to be specified for various sections of the site depending on functions they serve. This could also be used to check some of the environmental problems.

CHAPTER - EIGHT

PROGRAMMING PROCESS

Almost every College/University now recognises that whenever young people are gathered away from their homes, a centre and programme for their out of class life forms an essential part of the College provision, if it is to satisfy one of its primary objectives of livening along with learning. Students' Union therefore, is an essential requirement, equal to such facilities as library, hostels, recreation/ community centre and gymnasium in any College or University.

Students' Union now becomes not just an organisation, but a priceless tool for shaping community solidarity and individual students sense of social responsibility. A rightly conceived and planned union can serve the campus in the following ways:

8.1 COMMUNITY LIVING SPACE

Social association or interaction still remain the central function of the college.

8.1.1 Community Students

These are group of students living off-campus. They very much need a place to relax in between lecture and as well mix up with their campus residing colleagues after classes. An effective means of communication between this group, the authorities and the students organisation, could be achieved by this means. Students' union provides a forum whereby the commuters participation in campus life and satisfaction with their college experience increase tremendously, especially when an adequate social dining activity area is incorporated.

8.1.2 Male and Female Students

Both male and female students need a place for informal meeting as well as sharing common interest. Provision of union for them is a step in the right direction, for their need of relaxation beyond drinking elsewhere.

8.1.3 Faculty and Alumni

Entertainment at parties, dinners and receptions has always been of interest to the Faculty and Alumni members. Provision of a central place for the visitors, parents and alumni when they visit the campus can never be over emphasised. A union with

an information centre, lounge, meeting places and exhibition area meet the basic needs of any such visitor.

8.2 DINING ROOM AND THE COLLEGE/UNIVERSITY

Union is usually the main and often the only dining centre serving as an alternative to the students and faculty members who do not dine where they live. For smaller campuses, a Union serves as the dining hall for all students or part of the residential students. Most students have a conviction that if Union were to comprise of only Faculty, it would be a lunch room and a snack bar. Dining table is universally accepted as a symbol of family social life - so is the dining centre to college life. Conversations, contacts are continuous and most effective here. Students gain wider circle of friends and a sense of community living in this centre.

8.3 SERVICE CENTRE

A Union building provides numerious other services and conveniences for the improvement of lives on campuses. Part of these services do not only provide conveniences to students alone, but also other members

of the academic community. These include a place to check things, lockers and information desk, telephones, barber shop, a place to get supplies, books, mails and campus newspaper.

8.4 CENTRE FOR CONFERENCES

Provision of accommodation for conferences, institutes and symposia and extending hospitality to town groups related to the college, are other valuable functions a Union serves in most campuses. The conference meetings are normally held with the students faculty meeting programmes as they are normally in the morning or early afternoon or on weekends. For conveniences to students and faculty, meetings are normally held at late afternoons or on weekends.

8.5 CULTURAL/RECREATION CENTRE

This centre also serves as an educative one, if the facilities encourage informal, cultural and hobby activities to be exposed to the civilizing influence of arts: Recreational reading or browsing room with books and periodicals, music listening and piano playing rooms for group recreation, workshop for informal students hobbies, photo darkrooms, adequate


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gallery for art displays and other exhibits produced by students and a small theatre. In this way, the Union cultivates tastes and intelligence in the life of undergraduates. The Union plays a unique role in enhancing the leisure quality of the students more so as it operates within their leisure hours.

8.6 LABORATORY FOR STUDENTS GOVERNMENT

Students should be allowed to organise and run their own government. This is another way of intensifying efforts towards useful citizenship for a dynamic nation.

Students' government as the main co-ordinating part of the Union has greater role to play in shaping the life of a body of undergraduates on the campus. This responsibility could be greatly expanded if students have tools to work with, offices which relate to the on-going life on campus, meeting/conference rooms for holding meetings, conferences and workshops. This provision facilitates students self-directed programmes, which further attract student participation and infuse them with a sense of direction and belonging.

8.7 SYMBOL OF UNITY

There is always the fear of splitting the campus socially due to emergence of special interest and living groups and fraternities, the hostels, the churches, the mosques, the clubs or the commuters. As a result of its centralized socio-cultural dining and living facilities, coupled with the fact that all students are members on equal platform, makes it common meeting ground. However, it encourages and strengthen special interest groups. The combined strength of the separate interest groups produce a strong, unified students, with all students widening their acquintances and sharing the sense of belonging to the large college community.

CHAPTER - NINE

SCHEDULE OF ACCOMMODATION

9.1 ANALYSIS OF SPACES

The purpose of this chapter is to further break-down the facilities high-lighted in the preceeding one in terms of spaces and functional requirements. The spaces are further grouped in order of functional relationship into services, entertainment, recreational and administration and miscellaneous.

9.2 SERVICE FACILITIES

These spaces serving students and the rest of the University population in various ways and are as follows:

Information Centre

This area as the main notice board of the students for internal and external informations. A space is also provided in this centre for storing lost and found items.

Travel Agency

This centre is made of offices for air travel and luxury buses booking. The aim here is to save students the problem of getting to town before booking for any journey.

Ticket Room

Purchases of ticket for any function taking place either in the Union building or any other place on the campus, could be made here before hand, thus, preventing last minute rush at the gates.

Arts and Crafts Shop

This is designed to be a shop devoted to selling locally made items like paintings, ceramics, etc.

Beauty and Barbers Shop

These are intended to serve both female and male students respectively. This of course save them the trouble of having to leave the campus for other locations in the city to dress their hair.

Supermarket

This is anticipated to be leased out to any of the names in supermarket operations within the town,

e.g., turnover, Doma or even Leventis, U.T.C., Kingsway, etc. The aim here is to save students valuable time of having to journey to the town to purchase basic essential commodities like detergents, drinks and other things of similar importance. This could save the entire campus population that problem.

Boutique Shop

To satisfy students fashion shopping requirement, this set up remain the same with the mini-market.

Bookshop

To contrast with the University bookshop which concentrates on selling text-books and other educational materials and opens for some hours of the day. This book-store will concentrate more on other students needs like book reselling, magazines, novels and stationeries. This is expected to open daily including week-ends and operate far into the night for students emergency needs.

Bank Branch

Considering distance between the campus and Gwagwalada where most of the banking facilities are concentrated coupled with the fact that presently Bank of the North is having a branch temporarily accommodated

within the academic area. Students' Union complex seems to be the most appropriate place to house such a functional space, thus, bringing such services closer to the students. However, thus, could still serve the banking needs of the entire University population.

Post Office

A small postal agency to serve the students and the rest of the University population would be provided within the students' union complex. It is recommended by the Nigerian University Commission for all Universities to have provision for postal services.

Telephone Exchange

This union building will house telephone services in attempt to improve communication link between the students and the rest of the University population and outside world.

Laundry and Dry Cleaning Services

These are included among the numerous services the union accommodates, but in this case, it is a collection centre.

Catering Services

i. Restaurant/Banquet

This is intended to have two sections, the self-services and the private. The self servic service section will operate normal cafeteria service, where the students queue up, collect their food and pay. While the private section will operate a waiter service, where the order is taken prepared in the kitchen and brought to the table and the payment is done by bills.

ii. Coffee/Snack Bar

Coffee service and foods like sandwitches, cake and soft drinks are served seats would be provided mainly for coffee services but snacks could either be taken away or eaten right in. A kitchnette is to be provided attached to this bar for preparations and services.

iii. Kitchen/Servery

This is expected to offer services to only the restaurant. Attached to it are other kitchen ancilliary functional spaces like office, changing rooms and toilets for kitchen staff and storages both cool and dry. The main kitchen would however, be made up of washing, preparations and main cooking areas.

9.3 ENTERTAINMENT FACILITIES

Buffet/Drinking Bar

This provision is aimed at satisfying the students drinking requirements. As well as to prevent them from taking their ways out for drinking in hotels and beer parlours outside the campus. This provision will contribute to a very great extent in enhancing interaction and retaining students on campus. This will house functional spaces like drinking area, bar services, storage and toilets.

Multi-Purpose Theatre

This is planned to provide accommodation for students functions like club, drama, plays and film shows, this could as well be used for large public lectures and symposia. It will comprise of the main hall, a stage, a projection room and other back stage facilities like changing rooms, rehearsal rooms, costume store and toilets for both the performers/ artists and the audience.

9.4 RECREATIONAL FACILITIES

Lounges

It is desirable to break-down the concentration of students in one place, for this various types of

lounges are to be provided in accordance with specialization of activities.

Special attention has been accorded to the main sitting lounge both in terms of space and finishing/ decoration.

A separate lounge is also desirable for reading Union supplied dailies and weekly and monthly magazines.

Music or Television Rooms

Separate lounges or spaces are required in the Union building for music listening and television watching respectively to serve students needs.

Piano Room

This is a provision made in the Union building to serve the students interest/hobbies like piano playing and other related functions.

Browsing Library

The aims here is to provide a reading space within the students' Union complex that will devote more on general/wide reading supplements, in contrast with the main University library, which offer comprehensive library services. This library will instead encourage recreation/leisure reading habit.

Games Room

Provision is to be made of a large space devoted to such games like table tennis, cards, draught, ludo, etc. A games storage space is to be incorporated together with the games room proper for keeping games equipments.

9.5 ADMINISTRATION

These are the spaces that form the centre of co-ordinating all the activities of the students Union. This is made up of the followings:

Union Executive Offices

These are the spaces provided for the sole use of various elected officers of the students Unions like President, Secretary General, Protocols and the rest. An office space is reserved for students National body (N.A.N.S).

General Office

This is a larger office for accommodating Union employees and their functions and activities like file and booking clerks, steriographers and the rest of them.

Conference Rooms

Rooms are to be provided for small conferences meetings as well as for use by the Union, Clubs or Societies for Press Conferences.

Students Parliamentary Hall

A large room is desirable for the students representative assembly for their parliamentary proceedings. This being the most powerful assembly will occupy a prominent part of the building.

Club Room

Offices to provide accommodation for some registered students fraternities/organisations clubs and societies should be provided within the Union building. This helps in centralising students' activities.

Alumni Office

For alumni office activities, this will be the office they first contract whenever they come round. This affords the students and alumni opportunity of meeting together equal platform.

9.6 MISCELLANEOUS

A space for the display of works by students and other exhibit is part of the requirements of Union building. This could also be rented by other people to exhibit their goods, for revenue generation as well.

9.7 DIMENSIONAL ANALYSIS

This section deals with the dimension of the various functional spaces of the Union building. The dimensions in this case are based on the space standards set out in National Universities Commission (N.U.C) and other architectural standards. The National Universities Commission (N.U.C) guidelines for Universities and their planners is expressed as an area per full-time equivalent (F.T.E) students, which is in this case projected to reach an ultimate population of 4,000 by the year 2000. However, a figure of 10,000 have been considered most suitable for this project.

The final brief have been broken down under the major functions of a students' Union for this purpose.

Services

Parking: the number of cars and cycles to be take taken care of in this project have been based on student/vehicle ratio.

- Cars: Student Ratio = 1:10

∴ Projected Number of Cars = 1,000

Percentage recommended for parking = 20 Percent = 200 Cars.

- Cycles: Student Ratio = 1:50

∴ Projected number of cycles = 2,000

Percentage recommended for parking = 5 Percent = 100 Cycles.

- Usable space area for cars and cycles are 20 square metre and 2 square metre respectively including circulation.

Information Centre: includes reception, mail office, lost and found spaces (64 square metre).

Travel Agency: one office	$16m^2$
Ticket Room: two rooms	$24m^2$
Arts and Crafts: one shop	$24m^2$
Beauty Shop: one shop	$24m^2$

Barber Shop	24m^2
Supermarket	108m^2
Boutique	24m^2
Bookshop	108m^2
Bank Branch	108m^2
Post Office	108m^2
Telephone Exchange	36m^2
Restaurant/Banquet	210m^2
Kitchen including store and other supporting facilities	200m^2
Coffee Bar including Bar and Service Area	136m^2
Laundry and Dry Cleaning Services	108m^2
Rentable Spaces	136m^2
Stores and Toilets: Based on Usable space per person	0.76m^2

Entertainment

Multi-purpose Theatre: to have an area of 1,500m^2 based on space standards of 0.15m^2 usable space per person per 10,000 population which includes all other supporting services for a theatre.

Recreation

Lounge	36m^2
Music/Piano Room	60m^2

Television Room	60m^2
Browsing Library	84m^2
Games Room	35m^2
Stores and Toilets: Based on usable space area	0.76m^2

Administration

Students' Union Executives: Eight in number each	10m^2 = 80m^2
Presidents' Office	35m^2
Reading Room	35m^2
General Office	80m^2
Secretary's Office	35m^2
Parliamentary Hall	120m^2
Conference/Meeting Room: Two in number each	112.5m^2 = 225m^2
Protocols	35m^2
Club Room	80m^2
Press Room	35m^2
NANS Office	35m^2
Alumni Office	80m^2
Toilets: Based on usable space area	0.76m^2

Miscellaneous

Exhibition Gallery	80m^2
Open air rallies/relaxation	adhoc

CHAPTER - TEN

CONCEPTUAL DEVELOPMENT

In the process of developing a concept for the design of this project, various factors were considered and adequately incorporated. These factors are as follows:

10.1 THE DESIGN PARAMETERS

10.1.1 The Designed Students' Union

A common planning concept has been identified with the designed students' Union, from the studies of the five different cases discussed earlier. The plan in each case is simple and organised in such a way that, the most heavily used spaces are located nearest to the circulation spine. The plans are made totally free of barriers and include elevators/stairs, parkings and other special public facilities.

In each of the above cases, the functions have been vertically arranged in order of zoning.

10.1.2 The Site Motivating Factors

A careful study of the University's Master Plan, identifies four axes of approach to the

proposed site for the Union building. This factor resulted in the provision of four entrances each of which leads to a circulation verandah or corridor. And also due to the size of the site.

10.1.3 Psychological Factor

Realisation of the fact that apart from the hostels, the Union building will be only one on the whole campus that will be solely devoted to students' activities, monumentality as the key word of the scheme right from conception stage, makes it mandatory to anticipate evolution of a Union building as a domineering architectural piece on the campus. This suggest a highrise development as a means of achieving the desired contrast, considering the fact that the surrounding structures are low-rise.

10.2 DESIGN TASK

Based on the case studies conducted, the design task are as follows:

i. Design a students' Union complex, University of Abuja.

ii. Brief will include four major sections, viz; administration, recreation, services and entertainment.

iii. Provision of adequate facilities.

iv. Buildings not to exceed three floors.

v. Optimal and effective space organisation for interaction.

vi. To house nearly all functions under one roof.

vii. Flexibility in the use of spaces.

viii. Reduced to the minimal distances between functions.

ix. Emphasy on good network of pedestrian and vehicular circulation.

x. Courtyard planning to be utilised.

10.3 SITE CONCEPT/ZONING

Site zoning is based on the following criteria:

i. Expansion possibilities

ii. Accessibility

iii. Circulation pattern

iv. Convenience

v. Possible links between all facilities

vi. Noise level

vii. Grouping of activity

Three different approaches were utilised and compromise was reached between them to evolve the utilized one (Figures 29 - 31). The utilized concept is on hybrid of the above three and based on a conscious attempt at separating the public area from semi-public area and private area. Success is achieved in shielding away the quite areas, i.e., students' Union offices from the noisy areas (car parks, services areas and the entertainment). In all, the final concept meets the functional requirements by integrating many parallel functions together.

10.4 THE DESIGN PROPER

Finally, the design for this project evolved as a direct translation of all the analysis and concepts. It is made in such a way that the building could be approached from all the four sides via pedestrian accesses. The main approach falls exactly along the main pedestrian axis which adjoins the academic core, thus, creating a kind of visual contact between those around the academic area and those at the Union building.

On approaching the main entrance, is a well landscaped courtyard with a fountain. A beautiful and symbolic sculptural element placed along the boarders of the fountain will further add to the visual

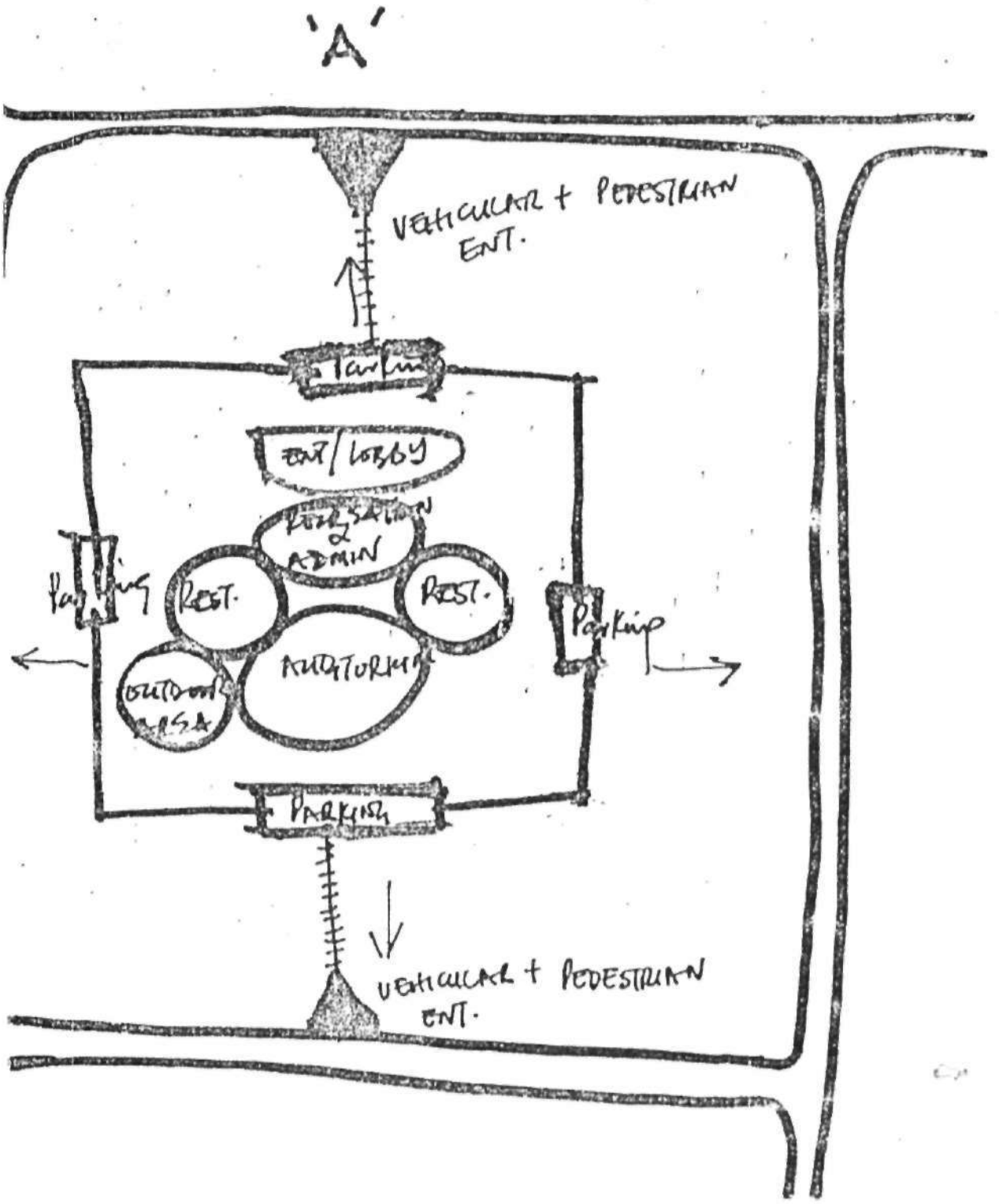


FIG. 29 CONCEPTUAL SKETCH

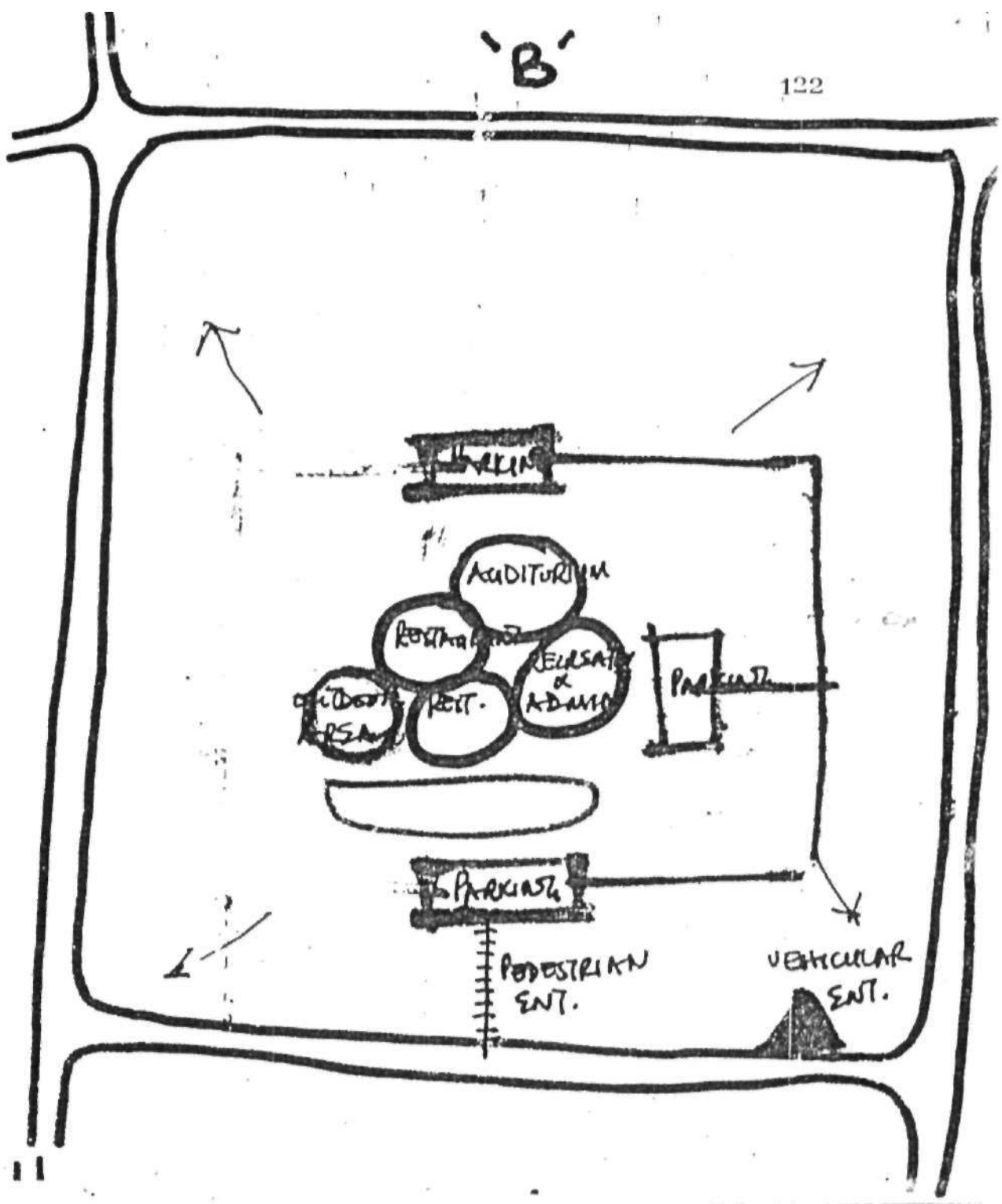


FIG. 30 CONCEPTUAL SKETCH

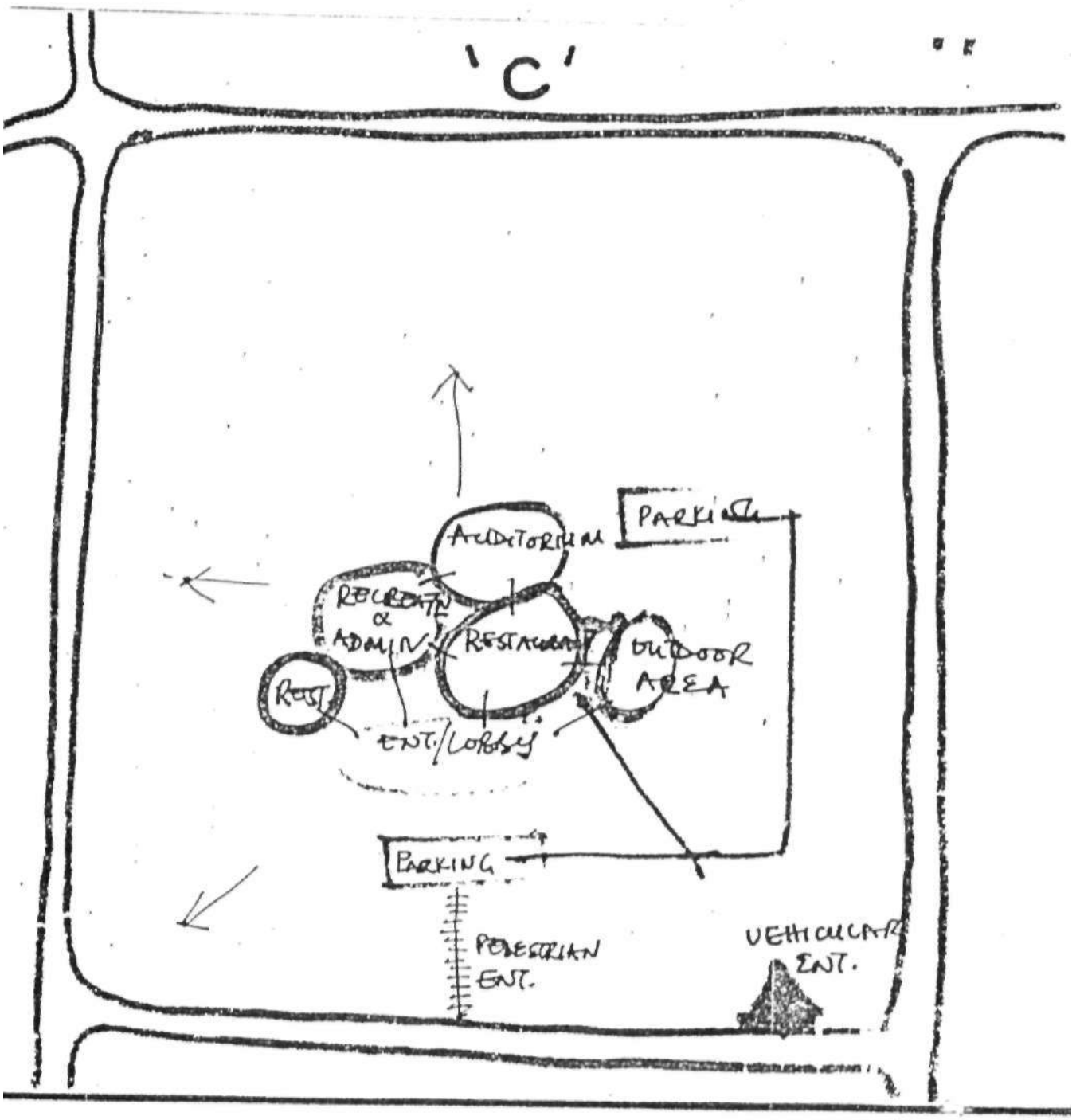


FIG. 31 CONCEPTUAL SKETCH

impression. The concept of zoning heavily used spaces closer to the ground have been properly employed in this plan. On the three floors, the spaces are located as follows:

Ground Floor

Ideally, this floor is meant to be free for circulation so as to provide maximum interaction opportunities. However, small commercial services are located here. All the four pedestrian accesses are directly linked to the four entrances that lead into a courtyard. Functional spaces located by the sides of this courtyard on this floor includes information/reception area, coffee, bar, telephone exchange room, mails office, supermarket, restaurant/ banquet hall, post office, bank and kitchen/servery area.

The auditorium wing comprises of the stage, backstage, rehearsals, changing rooms for male and female artists. The main entrance into this wing is through the main block, however, some emergency exists have been provided by the sides of the stage.

Still on the ground floor, is a provision for out-door area for relaxation of students' or for rallies.

First Floor

This floor is devoted to most of the services required by the students and the rest of the University population. Such as a barbing saloon, laundry, beauty saloon, club room, boutique shop, arts and crafts shop, travel agency office, magazine shop, television room, piano/music room and rentable space.

The auditorium also appears on this floor, it has the gallery, projection suit and the toilets.

Second Floor

This could be referred to as the executive floor where all other important students administrative facilities are accdmmodated. This includes offices for students' Union executives, press room, protocols office, exhibition hall with store, audio visual room, browsing, library, general office, conference room and lounge.

Roof Terrace Floor

This floor houses the fibre glass dome over the courtyard and may serve as a relaxation area for students.

10.4.1 Form

The design is based on a classically symmetrical theme, a series of simple geometric (square) forms stacked on each other in decreasing areas resulting in an overall outward semblance of a pyramid.

This four corners of the floors plates are carried by circulation fins which themselves are structural supports.

10.4.2 Structure

The building structure is based on the post and beam construction technique. There are four central vertical columns going through the court of the floor plates, supporting the plates on the inside. The floor plates themselves are rigid waffle plates.

A grid of (post-tensioned) reinforced concrete beam connects the central columns with inclined columns running approximately at 30^{o} on the external periphery of the floor plates, two (2) of such columns on each of the four faces of the pyramidal form.

The corners of the plates are buried in a box structure (of beams and columns) which also serve as the circulation and services "fins" of the building.

10.4.3 Finishes

Low maintenance costs was considered in the selection of finishes. Also of important consideration is durability in a setting of low maintenance culture.

For the walls, sandtex paint is applied on the rendered walls, while glass and longspan roofing sheets are noticeable in lobby and entrance areas. Floors are made up of in-situ terrazzo, cement/ sandscreed, and water resistant PVC floor tiles. The walkways are of precast concrete paves. In places like the auditorium, decorceil suspended suspended ceilings are used with the walls having plywood and the floor carpetted. The doors are made of sound-proof timber doors.

10.4.4 Services

i. Electricity:

Electricity is tapped from National Electric Power Authority (N.E.P.A) transmission lines which run along Kaduna-Lokoja road on the periphery of the site and complemented by on site stand-by generator in the general maintenance section on the campus.

ii. Water Supply

Two basic sources of water supply are ground water and surface water. Data suggest possible large ground water supply, but surface water is not promising. The rivers in the area are highly variable to season.

The most promising source is Shiroro Dam 120 kilometre from Abuja. The pumping station on the river wye to international airport is about 13 kilometres. Meanwhile, the international airport to Gwagwalada is about 12 kilometres.

However, the amount of water required at Abuja and it environs ultimate size of 3.1 million population represents less than 2 percent of the designed minimum release of water through Shiroro hydro-electric dam. Meanwhile, water requirement would not interfer with the generating purpose of Shiroro Dam.

iii. Surface Water Drainage

All surface water on the site are channelled to the main drainage gutter along Kaduna-Lokoja road. On-site gutter are treated with wire mesh screens at intervals and designed to easy

cleaning to avoid blockage. All road surfaces are treated with drainage pumps by their side cover with slabs as walkways.

iv. Sewage and Foul Water

For easy maintenance and avoidance of short-down of all convenience facilities due to problem in centralized sewage, single sewage disposal system is utilized. The treatment system is a combination of anaerobic pond and aeration ponds.

v. Refuse and Garbage Disposal

This is done by the use of bins and paladins type refuse collection located at strategic points in the entire complex. These are to be emptied on a daily basis to a central refuse collection point located near the kitchen.

In Gwagwalada layout, the sanitary landfill is in-use. It is however, confined to a small area to prevent access by diseases.

vi. Communications

There is the telephone exchange located along one of the circulation areas. Also incorporated is the postal agency in the complex. Further,

intercom are located in each of the offices and shops. Also incorporated into the scheme, are sharp pulsating signs and symbols to further entrance directing.

vii. Fire Services

A mini-fire station is integrated in the master plan of the University. Though all other areas of the complex have special fire accessories such as fire detectors and suppression equipment. Fire hydrants spaced at 75 metres all over the site and water sprinklers are installed in areas such as the auditorium in the ceilings.

CHAPTER - ELEVEN

SUMMARY AND CONCLUSION

The thesis shows the arrangement of spaces in a Union building and its influence on the interaction amongst students.

Particular mention is made of students of University of Abuja and the public in general, where provision is made for services, recreation, entertainment and administration.

In this regard, spaces were clearly broken down into a hierarchy and the level of interaction students can have as to the type of space.

Thus, in designing the Union complex different parameters ranging from environmental factors to design process and programming process were considered as added advantage.

Space areas were clearly defined and dimensioned. Concepts were evolved and design parameters were taken into consideration. The design of the complex followed the concepts and appraisal is made of the complex with regards to services, finishes and description of the building.

Finally, we are made to understand that most of the students lack some sense of community living which is of course one of the attributes of the institution non-provision for community kind of life on our campuses. Crisis have become order of the day on our campuses, this could be averted if students have their own "home" where they could interact and resolve the differences amongst themselves and University administrators.

It is doubtless that the Abuja University will enjoy more community life in their own Union complex than in the neighbouring township and it is hoped that this thesis will be instrumental to improving existing relationship between students and University administrators in general.

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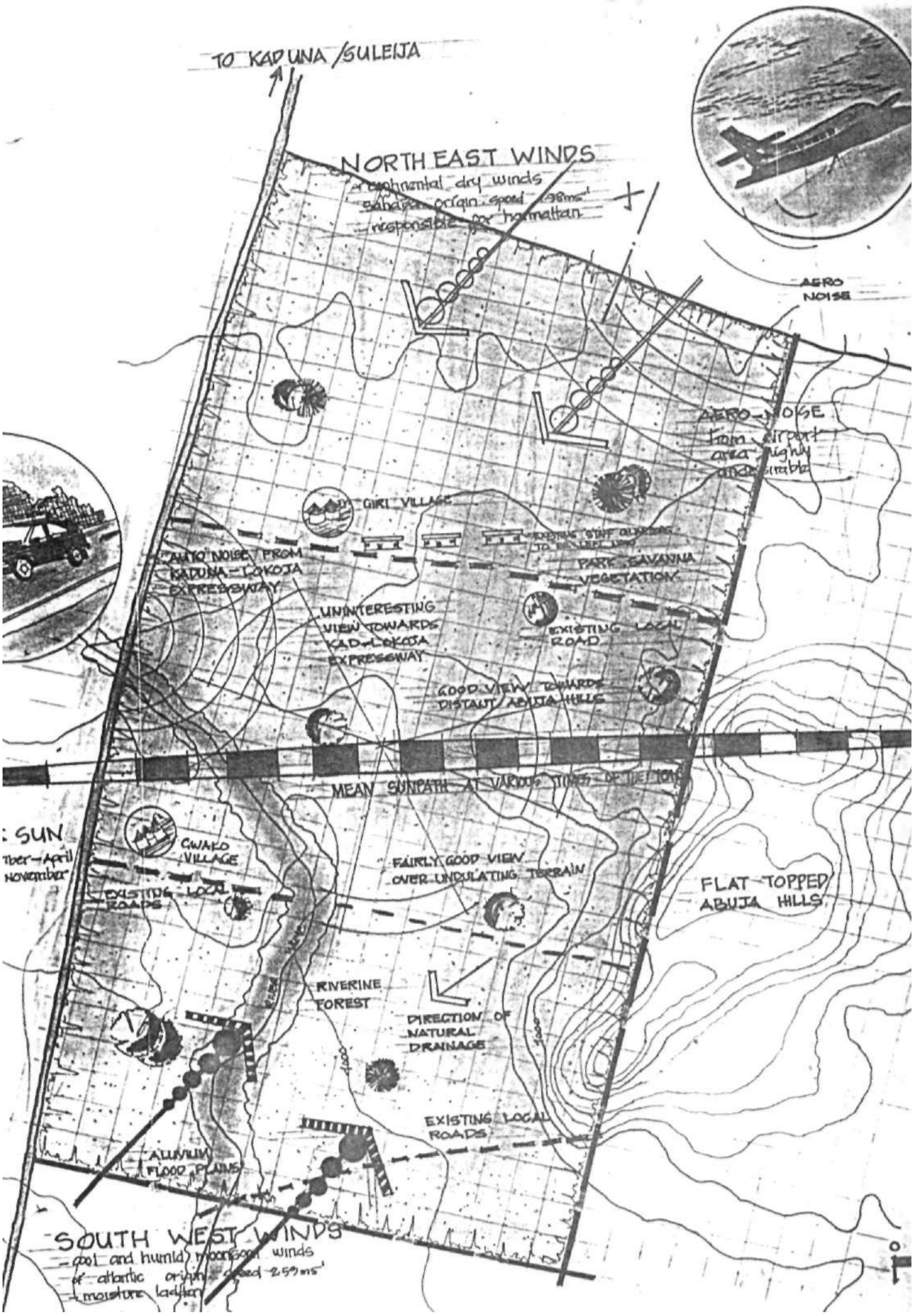
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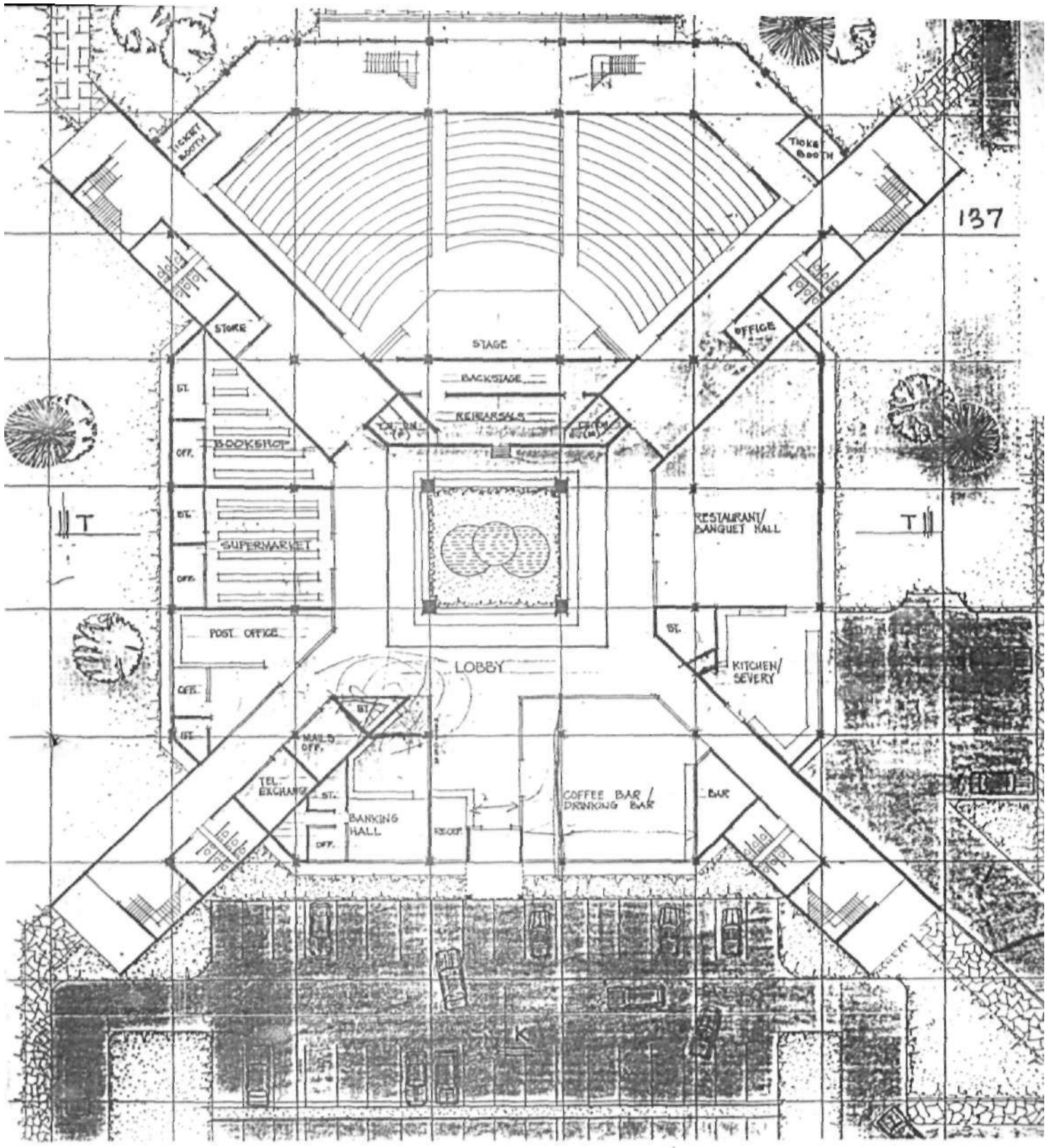
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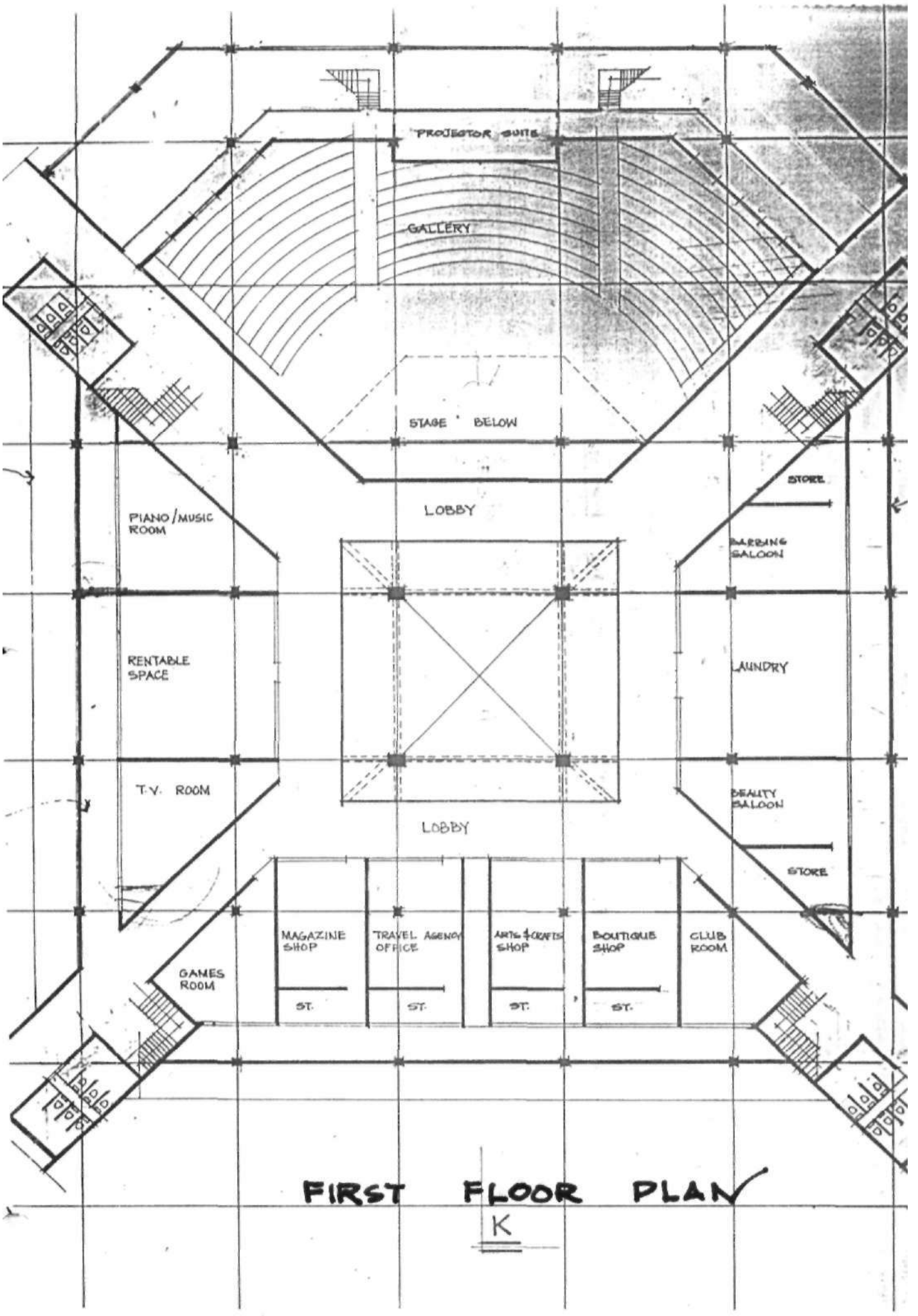
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TO KADUNA / SULEIJA
NORTH EAST WINDS
continental dry winds
Sahara origin speed 9ms
responsible for harmattan
AERO NOISE
AERO-NOISE from airport area highly unsuitable
GIRI VILLAGE
EXISTING STRIP ALIGNMENT TO BE REPLACED
AUTO NOISE FROM KADUNA-LOKOJA EXPRESSWAY
PARK SAVANNA VEGETATION
UNINTERESTING VIEW TOWARDS KAD-LOKOJA EXPRESSWAY
EXISTING LOCAL ROAD
GOOD VIEW TOWARDS DISTANT ABUJA HILLS
MEAN SUNPATH AT VARIOUS TIMES OF THE YEAR
SUN
tober-April
November
GWAKO VILLAGE
EXISTING LOCAL ROADS
FAIRLY GOOD VIEW OVER UNDULATING TERRAIN
FLAT TOPPED ABUJA HILLS
RIVERINE FOREST
DIRECTION OF NATURAL DRAINAGE
EXISTING LOCAL ROADS
ALLUVIUM FLOOD PLAINS
SOUTH WEST WINDS
cool and humid monsoon winds
of atlantic origin speed 2-5 ms
moisture ladden

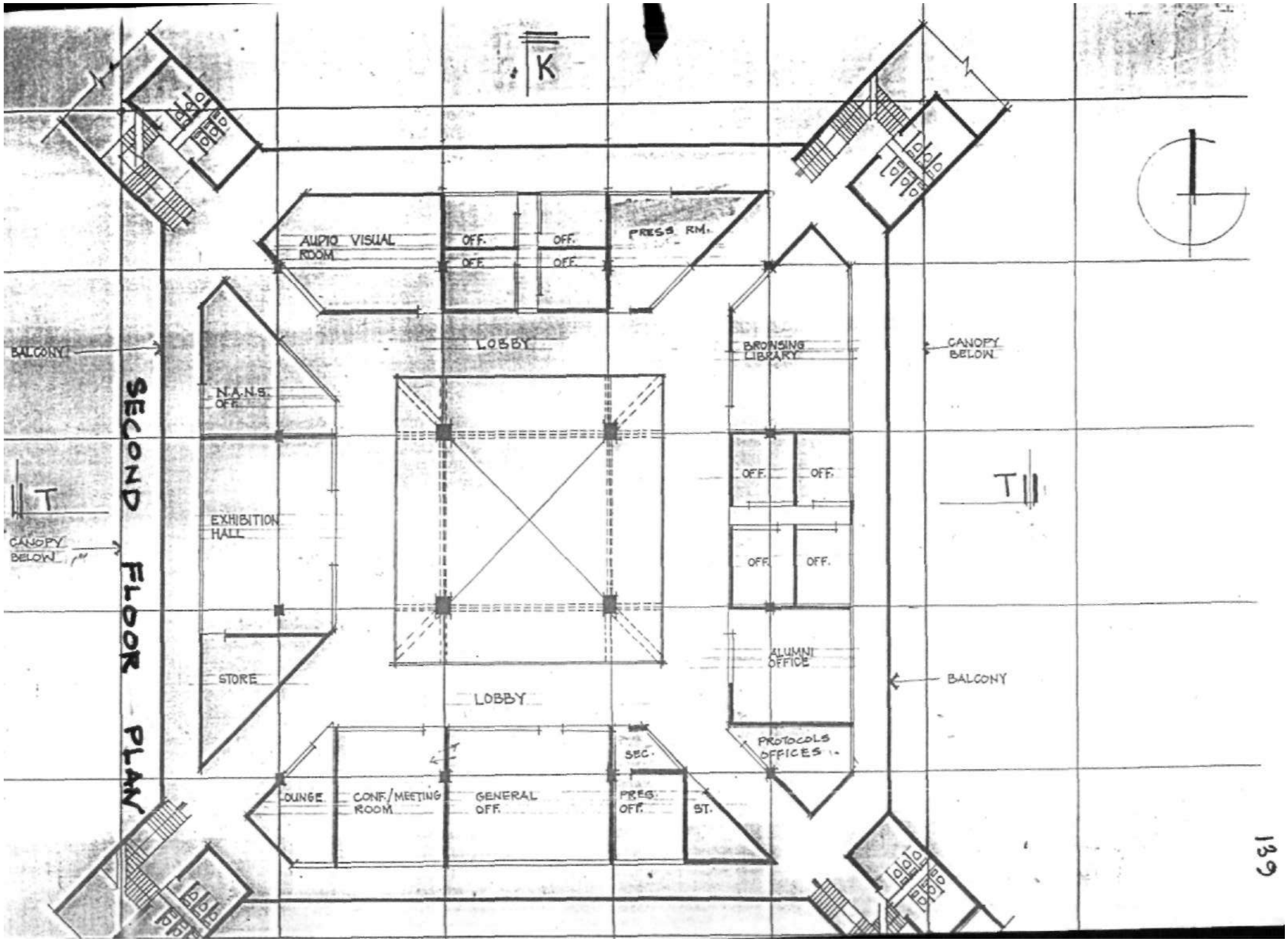


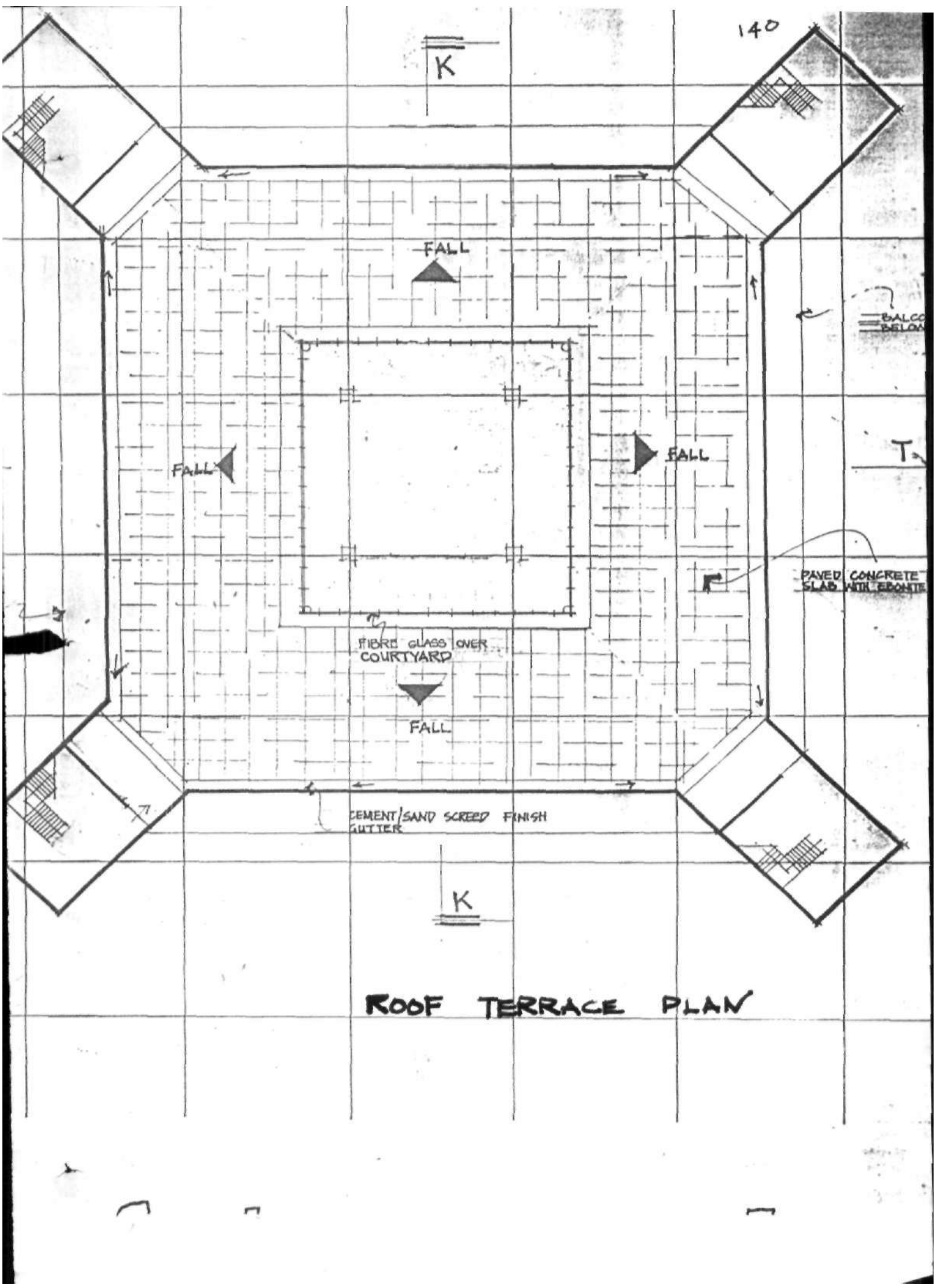
GROUND FLOOR PLAN



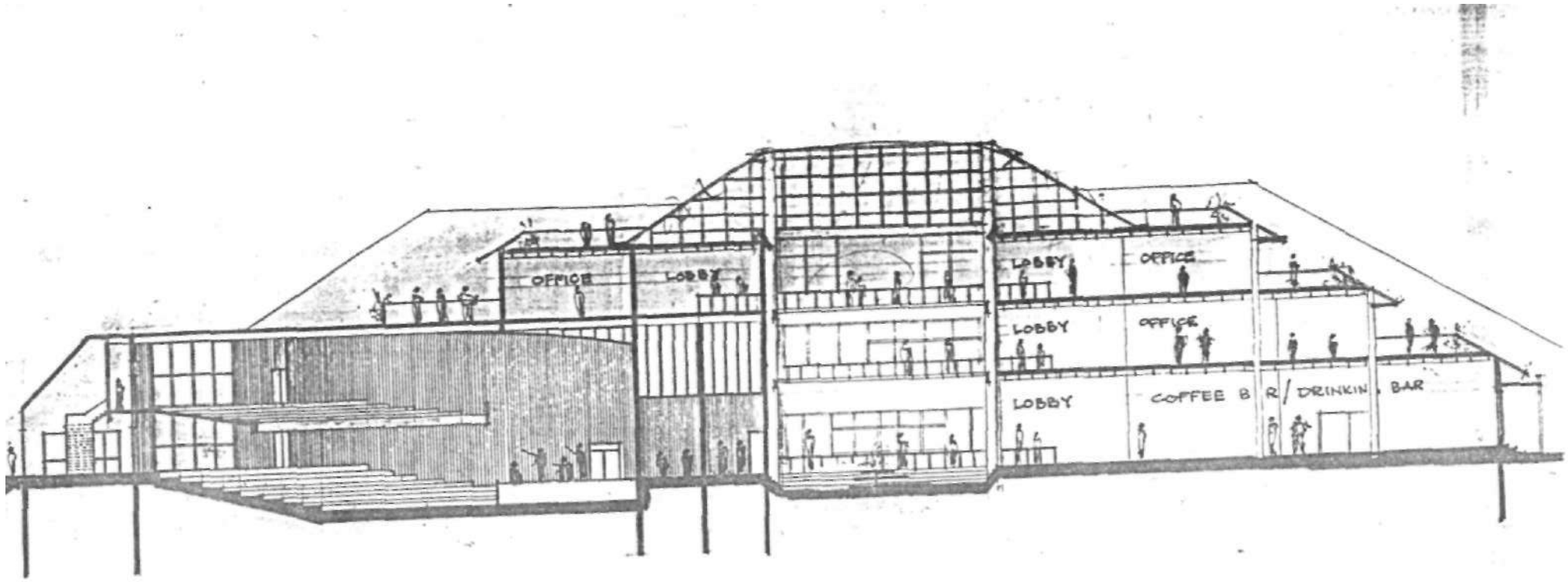
FIRST FLOOR PLAN

K


K
AUDIO VISUAL ROOM
OFF.
OFF.
OFF.
OFF.
PRESS RM.
LOBBY
BALCONY
N.A.N.S. OFF.
BROWSING LIBRARY
CANOPY BELOW
OFF.
OFF.
OFF.
OFF.
T
CANOPY BELOW
EXHIBITION HALL
STORE
LOBBY
ALUMNI OFFICE
BALCONY
PROTOCOLS OFFICES
SEC.
LOUNGE
CONF./MEETING ROOM
GENERAL OFF.
PRES. OFF.
ST.
SECOND FLOOR PLAN

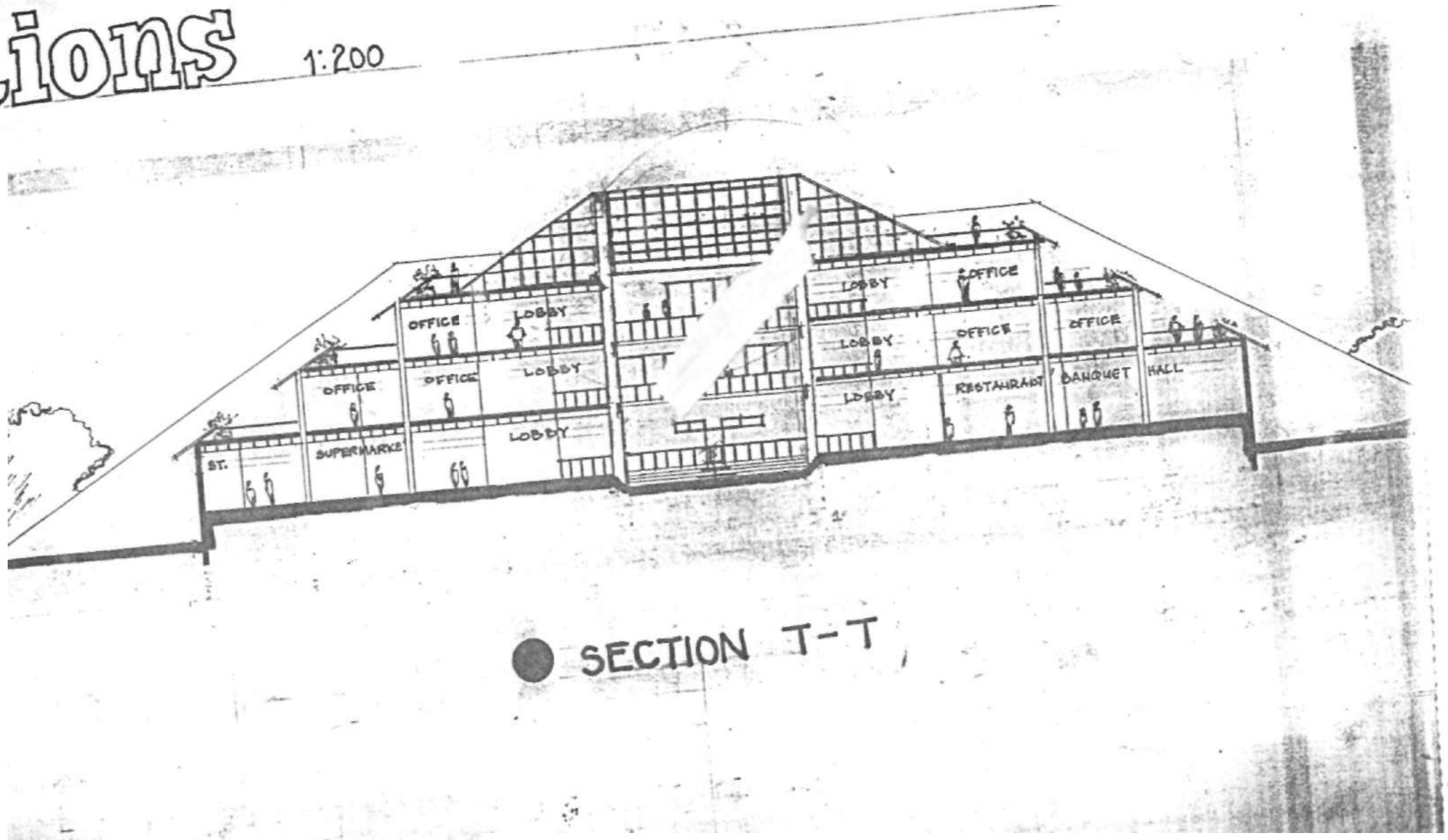


ROOF TERRACE PLAN

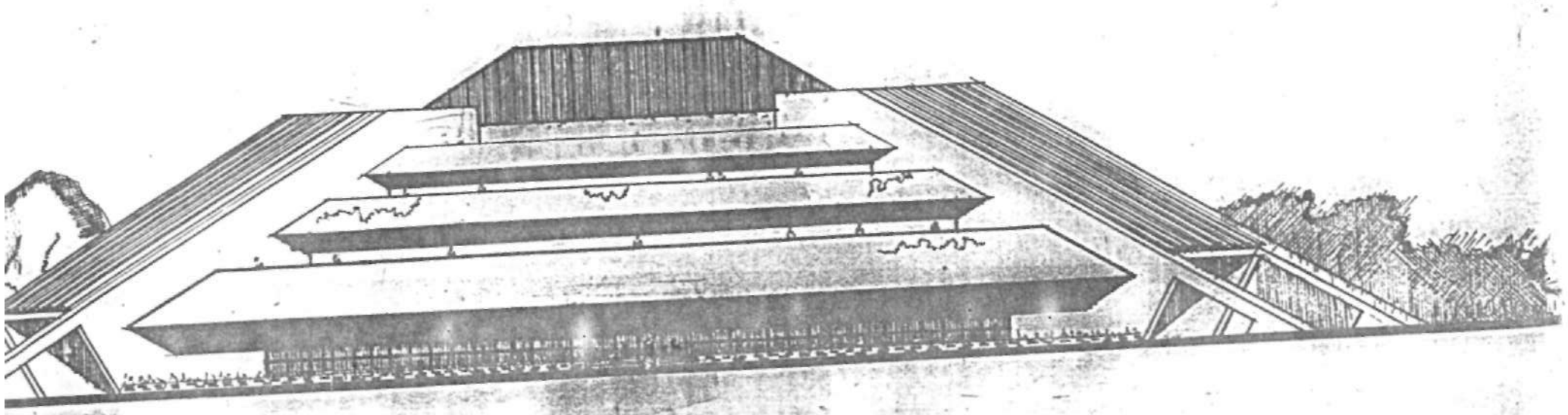

OFFICE
LOBBY
LOBBY
OFFICE
LOBBY
OFFICE
LOBBY
COFFEE B R / DRINKIN BAR

SECTION K-K

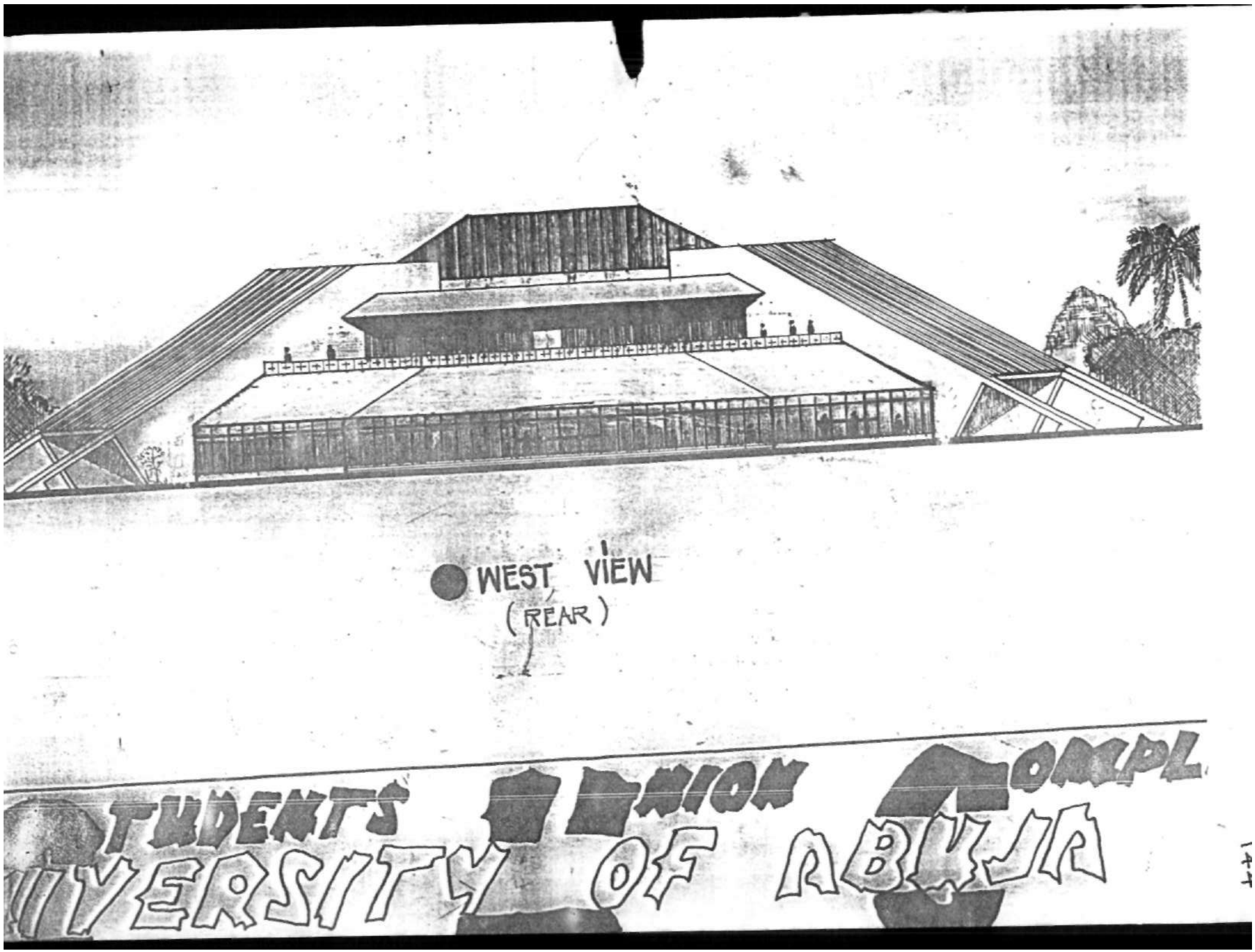
tions 1:200



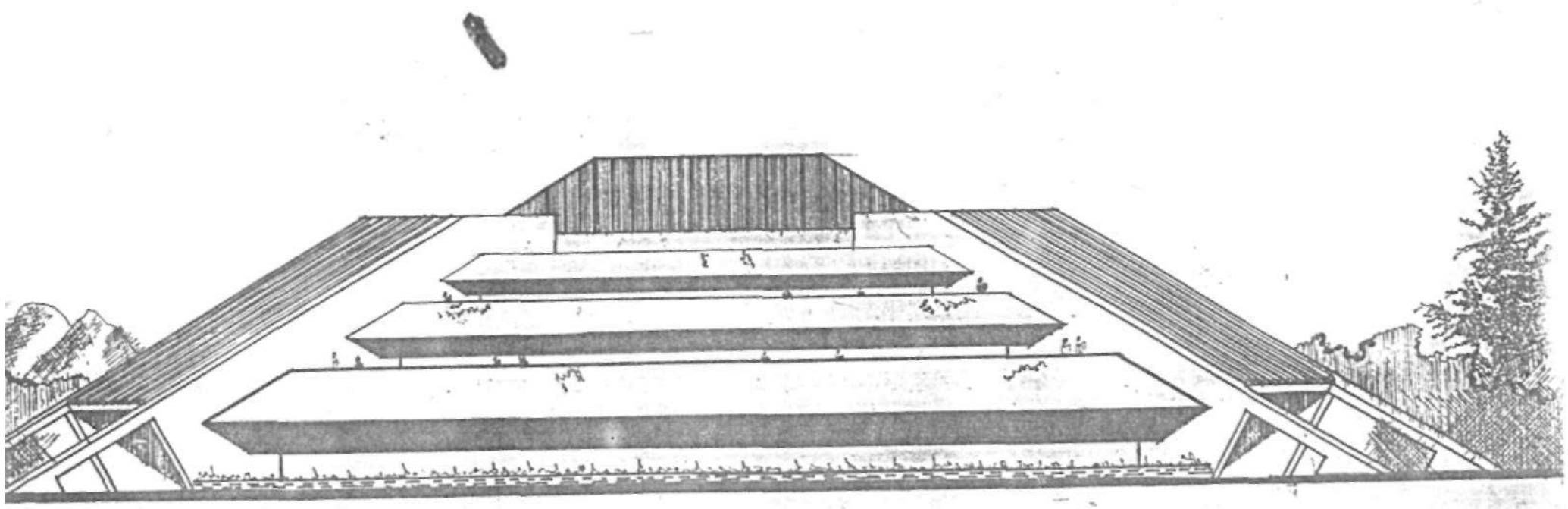
SECTION T-T



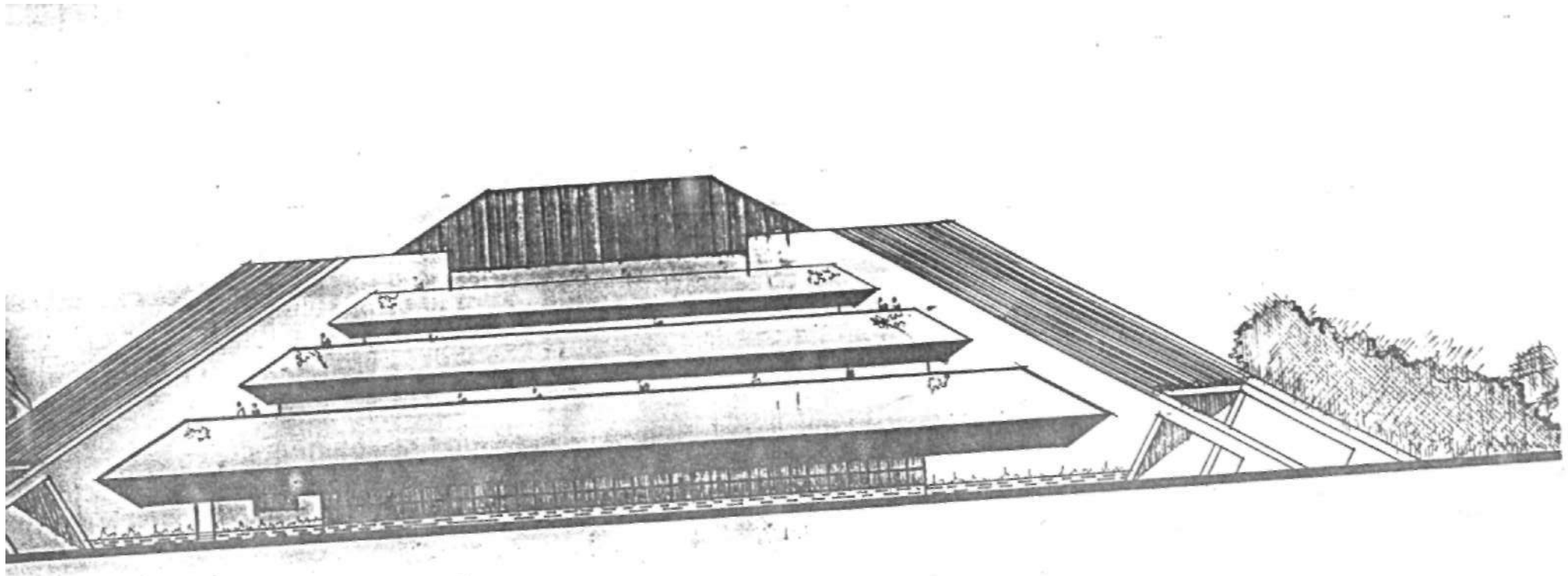
EAST VIEW
(APPROACH)


WEST VIEW
(REAR)
STUDENTS' UNION COMPL
UNIVERSITY OF ABUJA

1:200



SOUTH VIEW
(RIGHTSIDE)



NORTH VIEW
(LEFTSIDE)

STUDENT'S UNION COMPLEX

