COMMUNITY HOSPITAL

FOR

FESTAC TOWN, LAGOS

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Approval Page

This thesis by Victor Ayotunde Bankole OSUNLOYE, meets the regulations governing the degree, Master of Science of Ahmadu Bello University and is approved for its contribution to scientific knowledge and literary presentation.

Internal Examiner

External Examiner

Date

DECLARATION

The candidate hereby declares that the whole of the work now submitted as thesis for the Master of Science Degree (Architecture) of Ahmadu Bello University is the result of his investigation (except where reference is made to published literature and where assistance is acknowledged) and has not been part of any presentation for any other qualification.

Signature: _____ Date: _____

DEDICATION

This work of knowledge
is dedicated
To all human beings with whom
I have had any form of contact
Not withstanding
Negative or Positive expirience of the contact
Especially to
David Olasebikan and Hannah Ibitola
Who made me possible
Olufemi, Obasola and Folashade
Who pushed me positively
My numerous friends
Male, female, black, white, seadogs and lubbers
Who made the present bitter and sweet
And to Oluwatoyin Oyenike
A sweet pain in the neck
With whom we shall make many buildings!
I love you all.

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This thesis, although it carries my authorship, could not have been possible without the help of the following people:

Mr. A.J. Jagun, Chief Medical Records Officer, Lagos State Health Management ,Board Alhaji Oshodi & Wale Adetona (Architects) of the Architectural Consultancy Service, Lagos State Ministry of Works.

Chief S.O. Bakare and Dr. G.T. Oladunjoye both "Cousins", Fehin Soleye , Architect Orji, & LA 5 KF, my very reliable and useful friends. Alhaji Osineye and Mr. Raheem of the Lagos State Ministry of Economic Development & Land Matters. The members of staff of various libraries and hospitals, especially Mrs Okikiolu of Festac Town Primary Health Clinic.

The staff of the Department of Architecture, Ahmadu Bello University especially my mentor Mr. R. Chimel, the Professor and Head of Department Professor E.A. Adeyemi, Mr. Ben Beeko, Mr. Solanke (Uncle Show) and all other lecturers. My colleagues too numerous to mention.

You are all wonderful people, these few lines are a manifestation of my gratitude. Thank you all.

I take full responsibility for any shortcomings of this thesis.

Victor Ayotunde Bankole Osunloye

March '83

Zaria.

ABSTRACT.

Traffic studies and interdepartmental relationship shows that circulation in hospitals would be greatly simplified if diagnostic services are located central to both out-patient departments and wards. The domestic services at the same time are located between the diagnostic services and the wards.

The analysis of the various departments shows that improvements in medical sciencies that render hospitals obsolete with time more than usually affect the diagnostic and treatment aspect. Departments housing these departments should be flexibly designed to aid the response to constant change and improvement.

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PREAMBLE

The Black Arts Festival Town now popularly called FESTAC TOWN is the first town in Nigeria, planned from inception to execution. It was planned to be a model town.

The unpredictable political and economic climate of Nigeria has caused a lot of policy changes that is fast turning the model town into a modern ghetto. A town without water supply, health facilities, recreational facilities, markets or shopping centres and other facilities to enrich life would no doubt destroy the habitating population.

It is universally acknowledged that man's basic needs are food, clothing and shelter; if these can be attained man seeks the secondary necessities which are fulfilment and enrichment. For life to be fulfilling and enriched life itself must be sure of continuity. This can only be enhanced by a guarantee of protection against diseases.

Without too much emphasis, the need to devote a thesis submission to the provision of a health care delivery facility for a town like Festac cannot be overlooked.

"In their classic form, architecture and city planning are "intuitive systems". In modern times however efforts have been made to develop the planning aspects along "objective" lines. A mixture of the intuitive and objective systems in both the training of architects and in the execution of their commissions has been the bedrock of the success of the 20th Century architecture.

An attempt at generating objective systems for the

design of a community hospital is made in this thesis to develop a principle of "Progressive Planning Concept".

Architecture? It is in what you see and feel, there is the integrity of architecture: true, pure, ordered, self creating and adventurous.

INTRODUCTION

The ultimate goal of this endeavour is to design a community hospital for Festac Town in the architectural scale.

The approach in attaining this goal is one of progressive planning principle, this study and design may result in principles of physical planning which differ from existing or traditional approaches or concepts. It can however be applied within the current norms of building technology and human resourcefulness. The logic in the approach makes functional thinking and would soon call for a re-appraisal of traditional intuitive concepts.

A study of Festac Town and population to determine the type and size of health care delivery facilities that would be adequate for the immediate and near future, to select the best possible site for same within the undeveloped area of the town.

The analysis of similar health care delivery facilities within the Lagos metropolis both statistically and physically".

To use the result of such analysis in proposing a workable architectural design for the proposed facility taking into consideration the local factors earlier studied.

This study at various times takes consideration of governmental policy, the site, the population, the existing pattern of use of health facility, trends in the design of

buildings and review of existing buildings.

The whole endeavour apart from achieving the design goal, would generate a clear principle of health care building layout, traffic and circulation pattern and departmental space allocation.

This would aid the architect in generating his own data rather than rely 100% on the interview with various professionals in the medical field and on his own intuition.

CHAPTER ONE

HISTORICAL NOTES

Early Times

Archeology has revealed that the art of healing is almost as old as human settlements. Surgery akin to plastic surgery was practiced during Hindu civilisation. The care of the sick was commonplace in Egyptian civilisation. Trephining - the surgical art of removing pressure on the brain was known to date back to Neolithic times.

Planning for healing on an area wide basis dates back to 226 and 137 BCE in the region of present day India and Sri-Lanka.

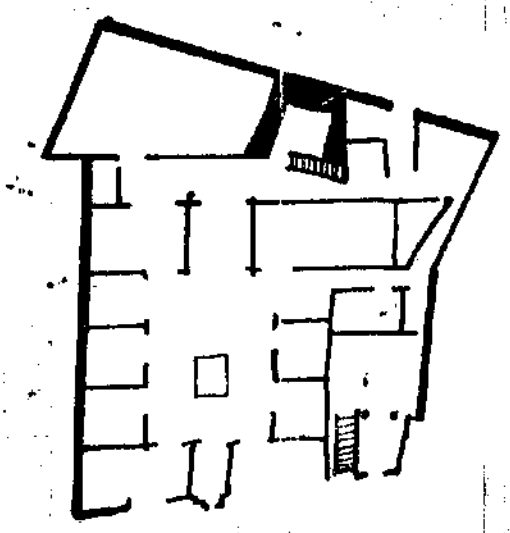
The beliefs during this period attached illness to supernatural forces hence healing and care for the sick had spiritual links. Houses for healing, the forerunners of the modern day hospital were close proximity to shrines for deities according to specialisation.

Greek and Roman Times

The Greek "Iaterea" and Roman "Valetudinaria" which later turned to infirmaries did not lose the vestiges of spiritualism in terms of location and personnel. The Greeks and Romans however made some conscious attempt in planning their buildings to take care of the sick or wounded.

FIG.1 FIG 1

GRECO ROMAN IATERIA



Christian Era

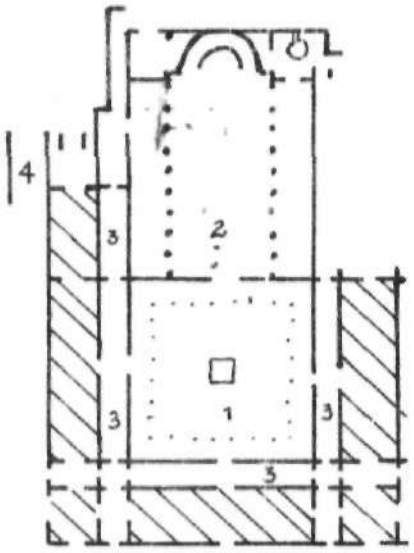
Christianity with its concept of responsibility to the neighbour and its contempt for the workship of deities strengthened the values of charity, care for the sick and poor manifested itself in the larger society. A new system of life and activity emerged. The approach to the planning of places for the sick changed. The Xenodochium excavated in Osita built in 308 CE is a vindication of this assertion. A clear pattern of circulation is decipherable and the building of a basilica as the dominant building attests to the change in religious belief (See Fig. 2.).

The dominance of the basilica was gradually reduced as the proper function of a place for the care of the sick was recognised. Rigid geometrical plans gave way to dynamic assymetrical patterns. Services, supply and function were delineated. The need for funeral parlours, separate water supply line for the stable and hospital proper recognised. (Fig. 3 & 4).

Figure 4 which is the Abbey at St. Gallen in Switzerland 820 .C.E. is one of the first hospitals to recognise the multi-functional nature of the hospital. There was order, functional grouping and clean pattern of circulation. This complex houses a church, monastic quarters, motel, school, library, hospital and nurses hostel. The degree of organisation is more refined. Surgery was separated from patient care, gravely ill separated from ambulant and bedridden. Sanitation, open

FIG 2 FIG 2

ROMANO-CHRISTIAN XENODOCHIUM AT OSITA, ITALY



▨ PATIENT AREAS

1 COURTYARD WITH WATER CISTERN

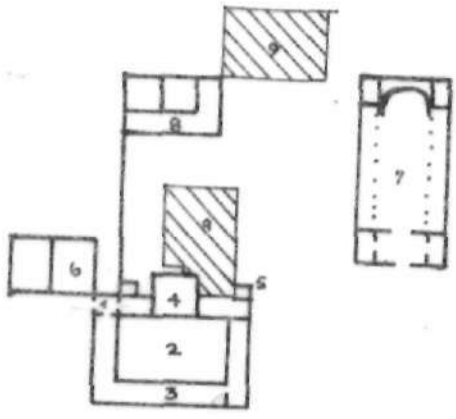
2 BASSILICA

3 TRAFFIC CORRIDORS

4 STREET

FIG 3

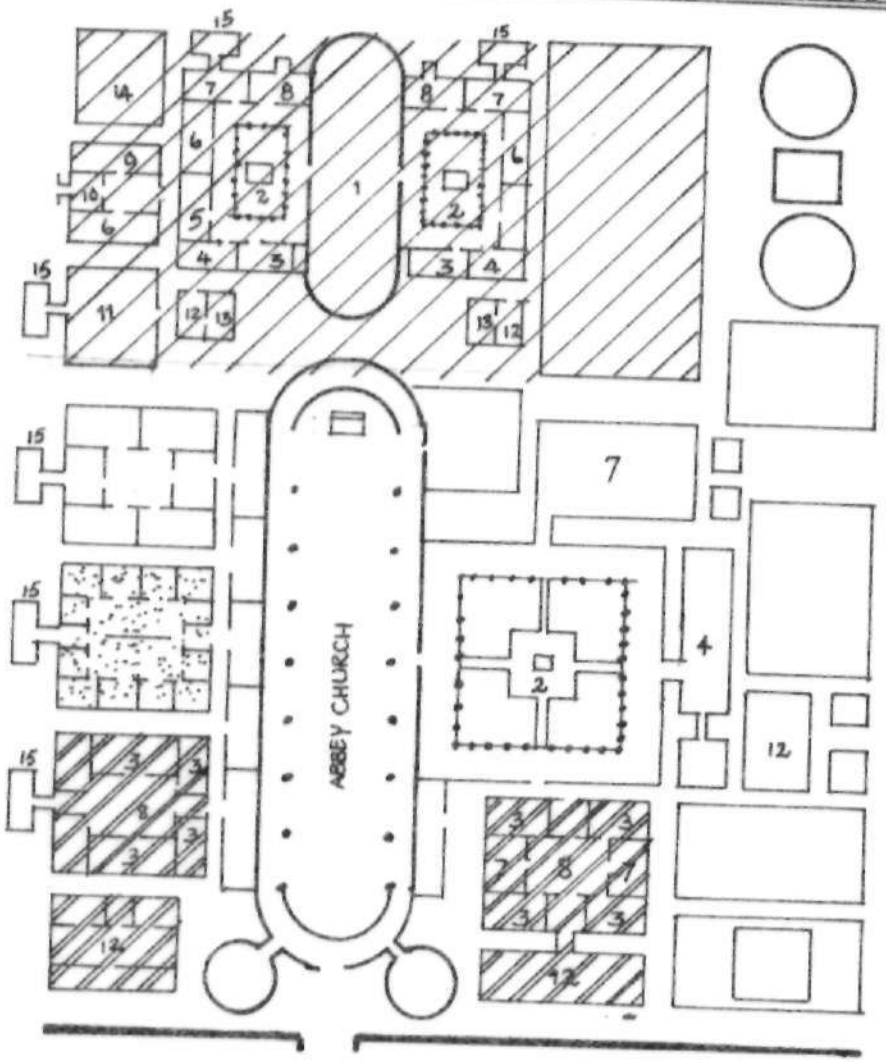
6TH CENTURY XENODOCHIUM AT TURMANIN, SYRIA.



1 ENTRANCE
2 HALL FOR SICK
3 PORTICO & CORRIDOR
4 SERVICE BUILDING
5 STAIR
6 MORTUARY
7 BASSILICA
8 BARNS & STABLE
9 PURE WATER CISTERN

FIG 4

ABBEY AT ST. GALLEN. SWITZERLAND.



MONASTERY & GEN. SERVICES
HOSPITAL AREA
LODGINGS
SCHOOL

1 CHAPEL
2 CLOISTER
3 ROOM
4 REFECTORY
5 SUPERVISOR'S DOCTOR
6 CRICTICALLY ILL PATIENTS
7 PATIENTS WARD
8 RECEIVING ROOM.
9 PHYSICIANS QUATERS
10 PHARMACY
11 SEPARATE BLD. FOR SURIGAL & TREAMENT
12 KITCHEN
13 BATHS
14 HERBAL GARDENS
15 SERVICES

spaces, ventilation and small grouping of patients received some attention.

The religion still maintained an appreciable impact on the general form and planning. The hospital as an entity was still nondescript, without self expression it was still tied to the apron of the basillica.

RENNAISSANCE

This period was Greek-Roman civilization revisited also in terms of hospital architecture. Based on classical logic, the plan was basically cruciform, the altar at the heart of the cross and the wards at the wings. Services treatment and administration were in the periphery connected to the wards by colloneded porticoes. (Fig.5.). The Ospedale Maggiori in Milan-Arch Filaretti 1456-1465.

The hospital exhibited a clarity of form and pattern of movement but the overrriding factor in the choice of form was still religion andnot function, this led to ill ventillated wards (halls) in the center of the complex. Function has been sacrificed for form, hygiene for belief. Western Europe 800 - 1800 CE.

The chaos of medieval times continued in Western Europe till the 18th Century. The hospitals grew as the city grew, there was little conscious attempt in planning. Patients were housed in large halls without regard for hygiene or security, hospitals grew to accommodate up to 5,000 patients.

The Hotel Dieu in Paris Fig. 6. is a very good example. The destruction of the Hotel Dieu by fire drew attention to the neglected chaos in Hospitals.

FIG. 5

OSPEDALE MAGGIORE. MILAN. ITALY.

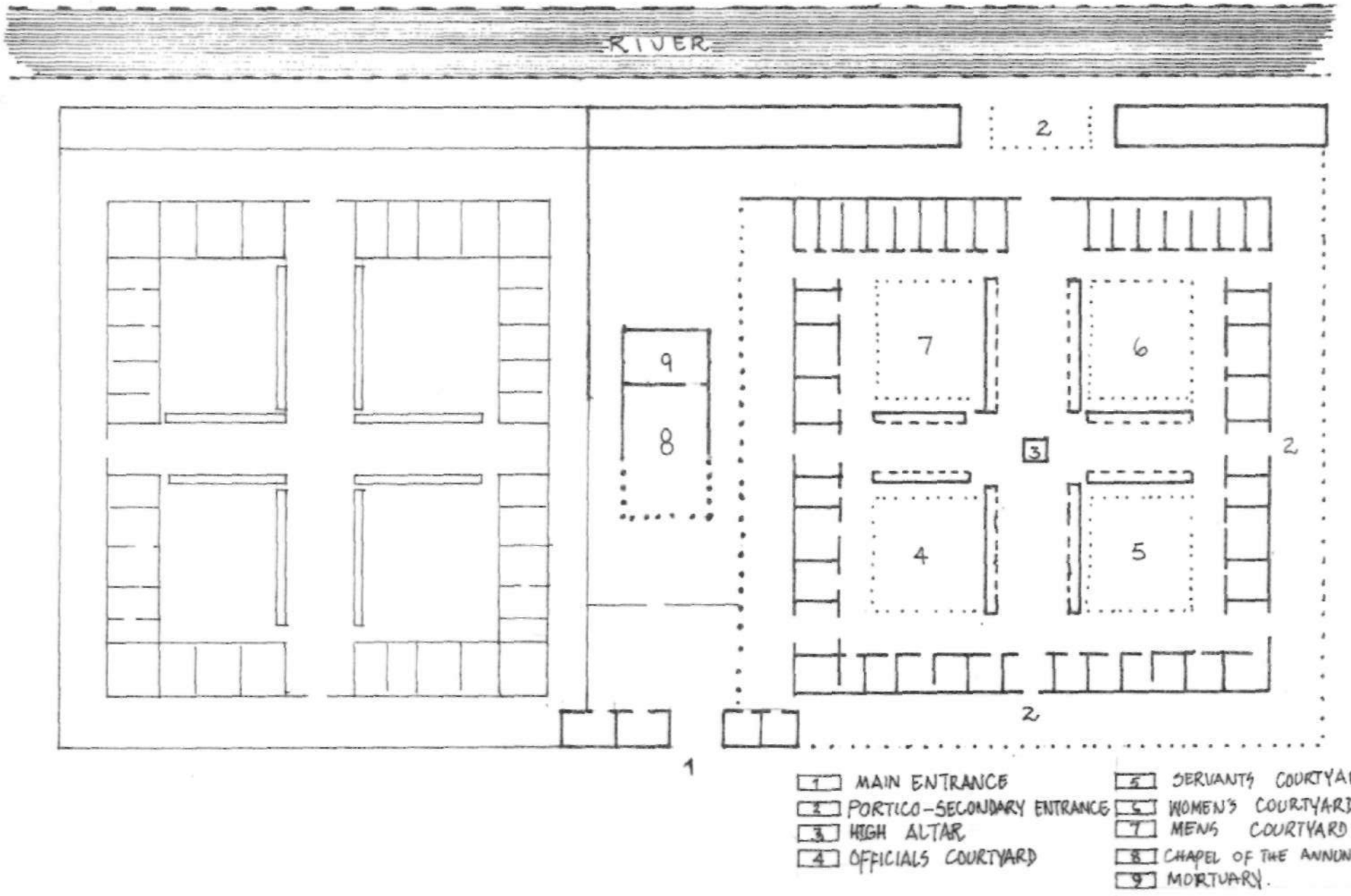
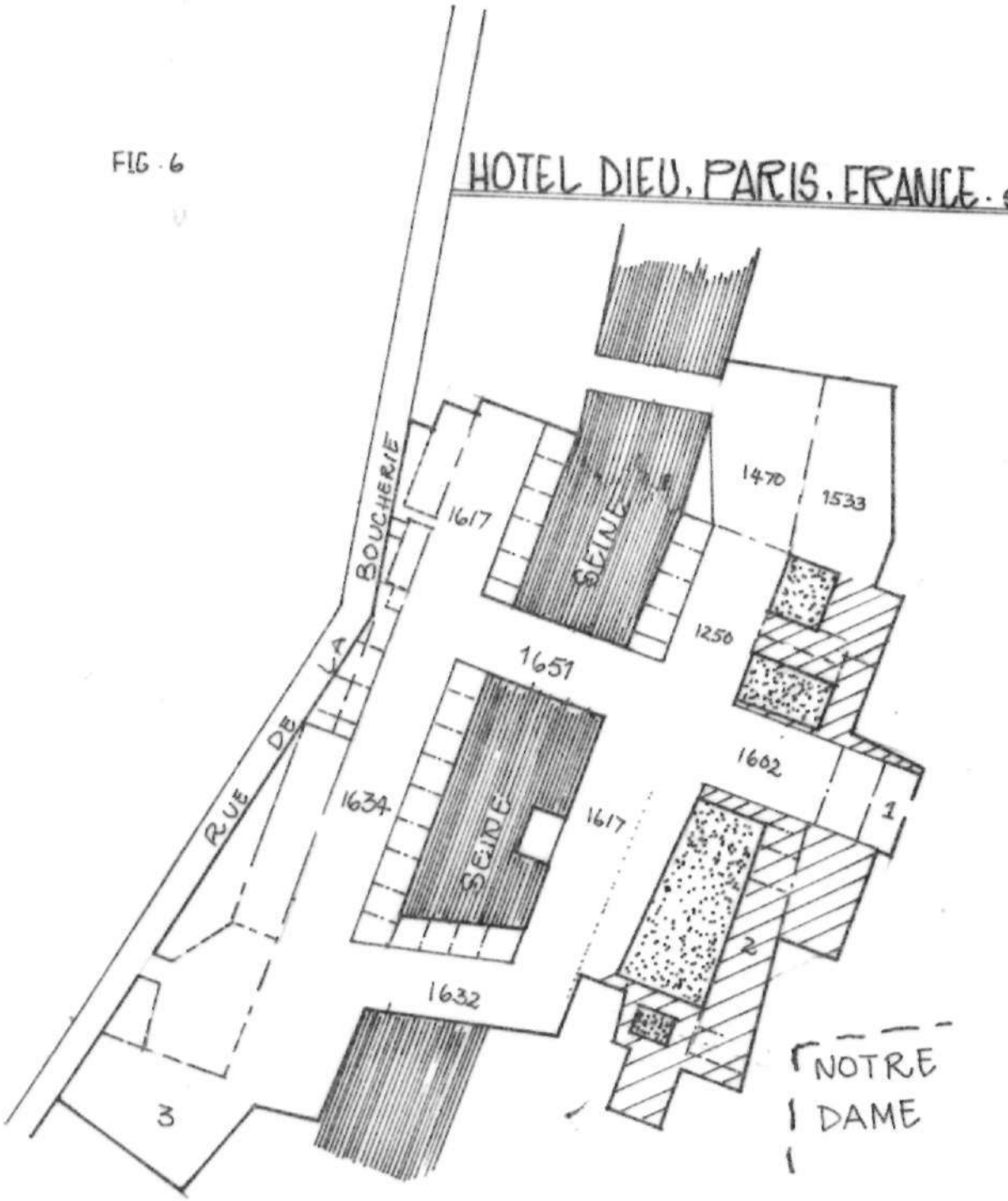


FIG. 6

HOTEL DIEU, PARIS, FRANCE. SITE PLAN



1 RECEIVING 2. PHARMACY 3. CONVALESCENTS

The efforts of the British architect Rovehead in the design of the Royal Hospital Stonehouse near Plymouth set some standards and principles in Hospital Design (see Fig. 7). 1756-1764. The philosophy of the times expressed in Poyets design, for a new Hotel Dieu, by a cartwheel which ensured surveillance inner ring of service rooms; isolated contagious pavilions, but also the dominance of religion as the Chapel was located in the centre. The scheme submitted by Poyet in 1758 was rejected as Rovehead in Britain had established a ceiling of 1,200 patients per hospital and the feedback from the hospital tended to support the fact that it had improved health care delivery. See Poyets new design Fig. 8.

19th and 20th Century

The developments at the end of the 18th century and early 19th Century laid down the principles of hospital design on a functional and scientific basis.

The discovery of bacteria; the work of Pasteur and Lister 1860-75 established the principles of the antiseptic system; the efforts of Florence Nightingale in nursing reforms; the concepts of hygiene, discipline and ventilation originating from the various works, coupled with the dangers of cross-infection resulted in a self supporting ward which is minimally dependant on external functions. This was expressed physically in the pavilion plan. Fig. 9, 10, 11 and examples.

Land values, land use in urban areas and discoveries in medical sciences and techniques such as x rays for diagnosis and further discoveries in pathology called for

FIG 7 ROYAL HOSPITAL. STONEHOUSE. PLYMOUTH. ENGLAND. SITE PLAN

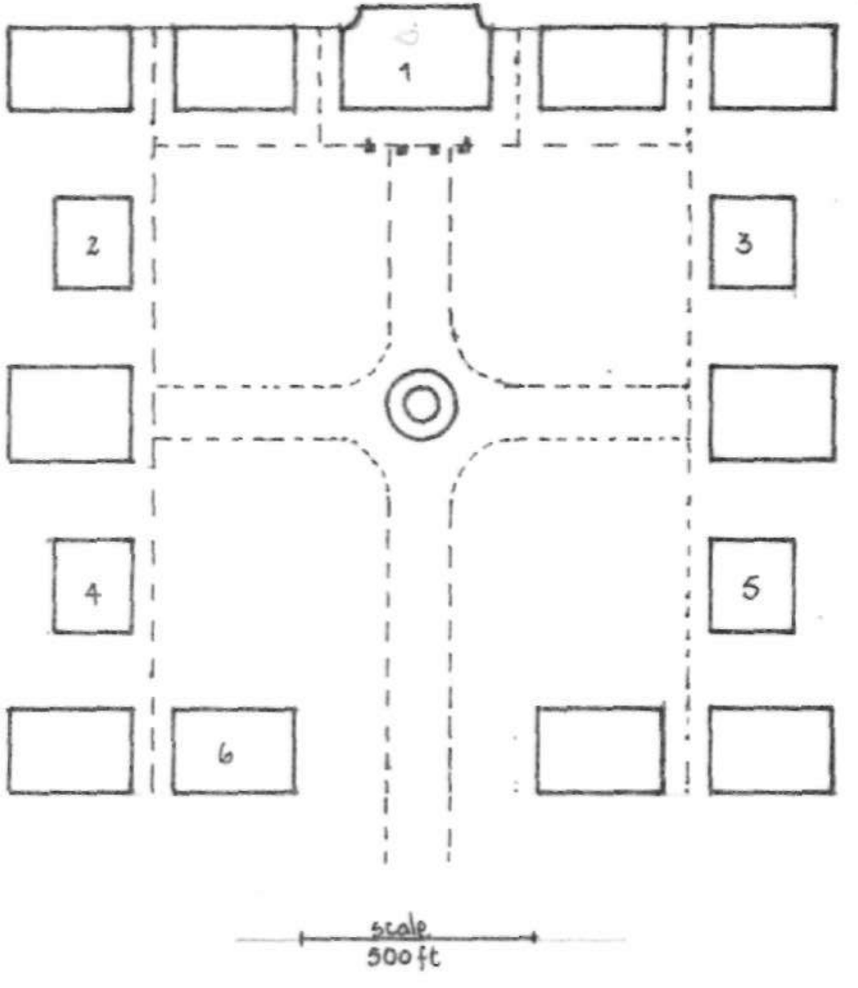


FIG. 7

1 CHAPEL BUILDING
2 SMALLPOX WARDS
3 COOK ROOM & DINNING
4 STORE ROOM
5 VIVCTUCATING RMS
6 WARD 1-6

FIG 8 POYET'S SUBMISSION TO THE ACADEMY 1788

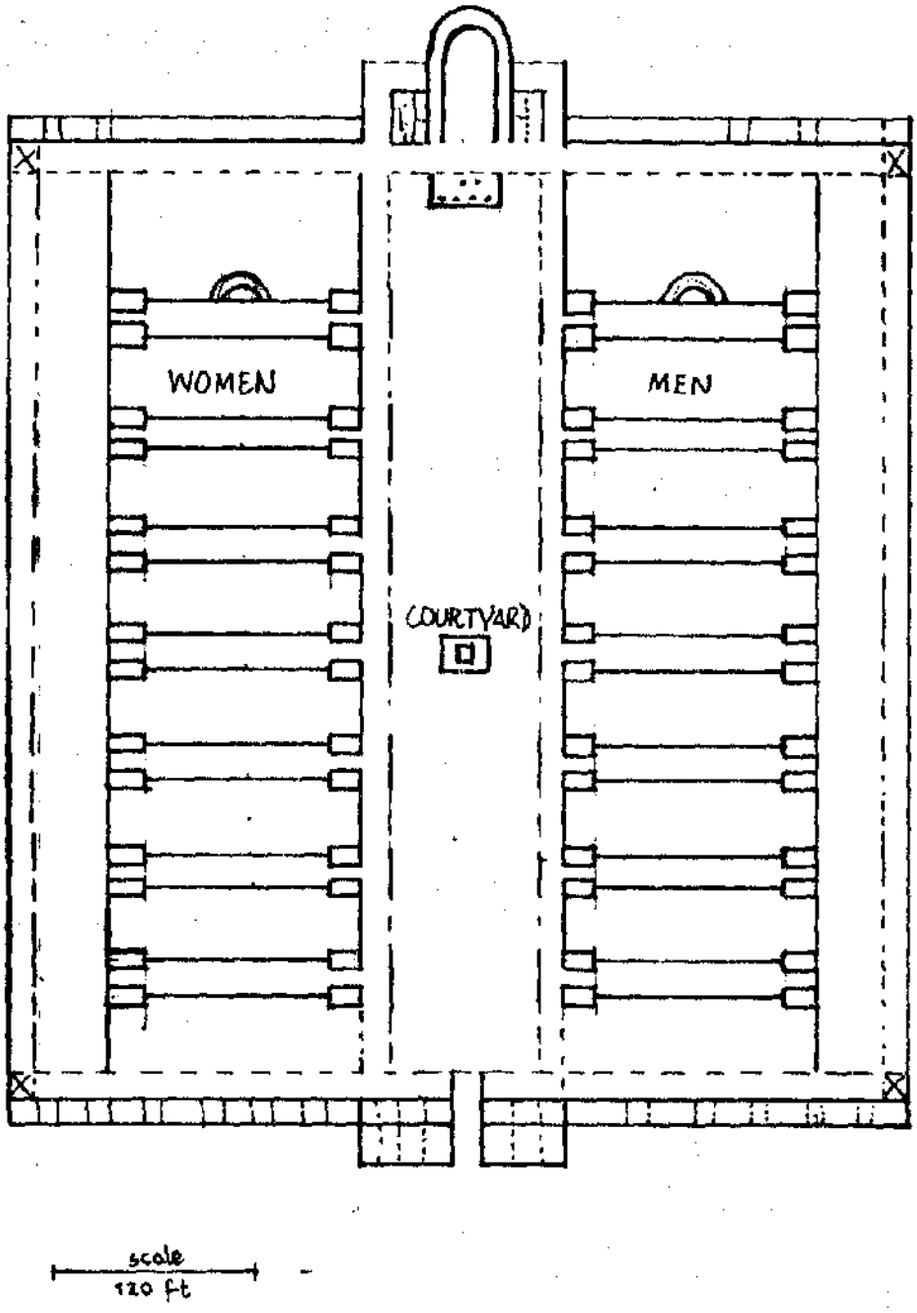


FIG.9 LARIBOISIERE HOSPITAL, PARIS, FRANCE. 1875.

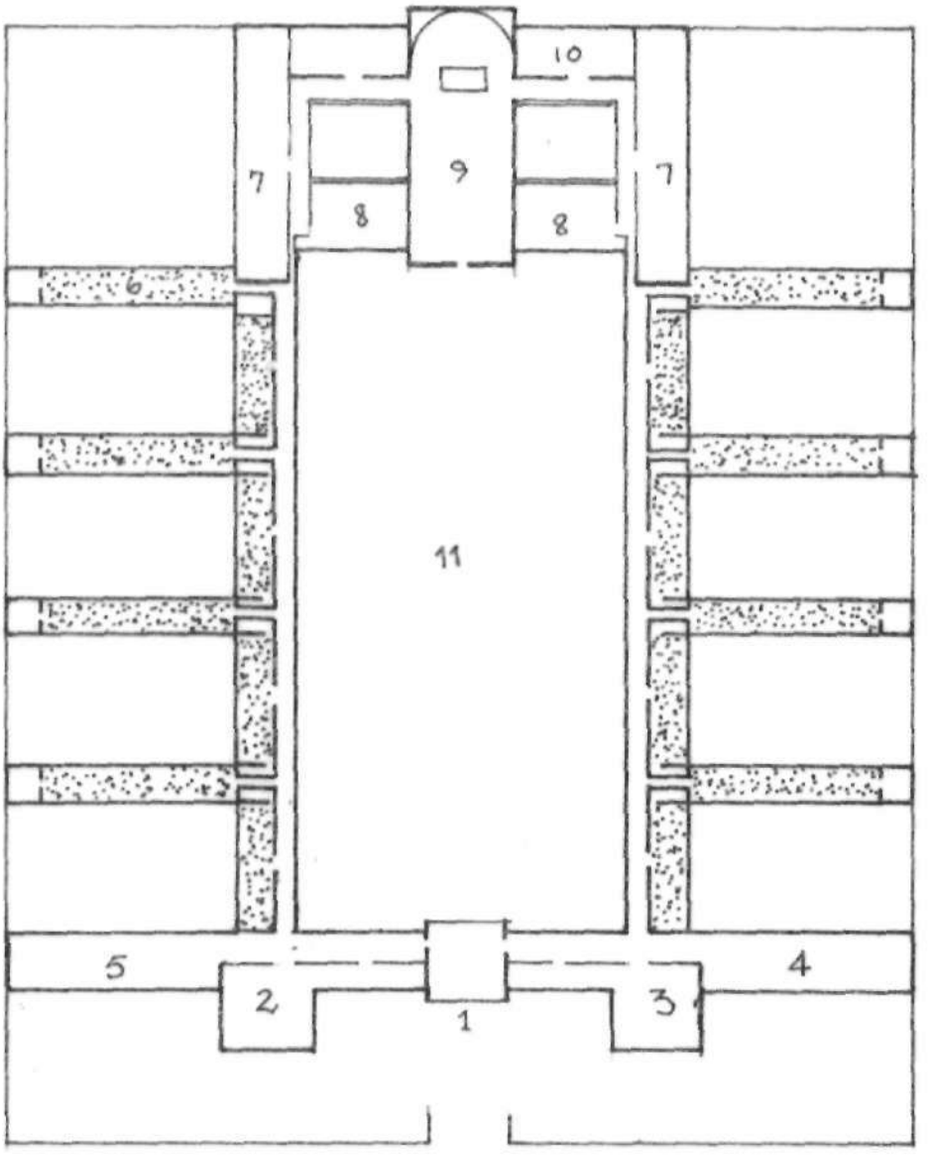
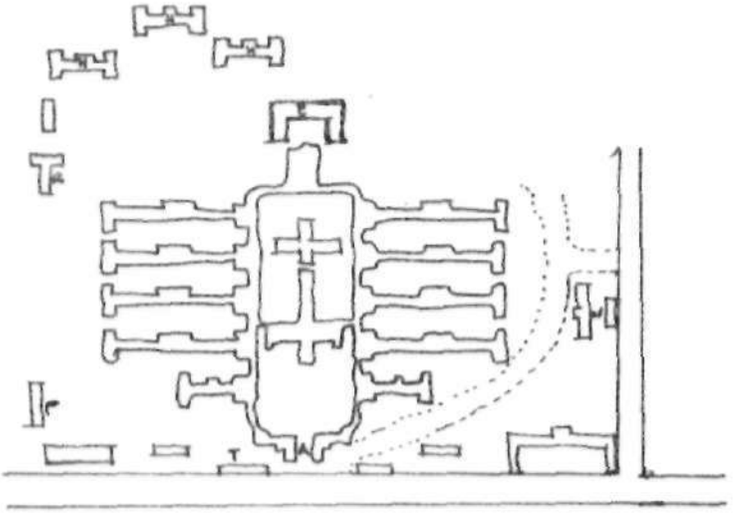
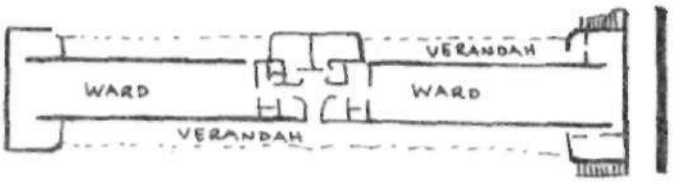


FIG 10 ST. ELOI, MONTPELIER, FRANCE.





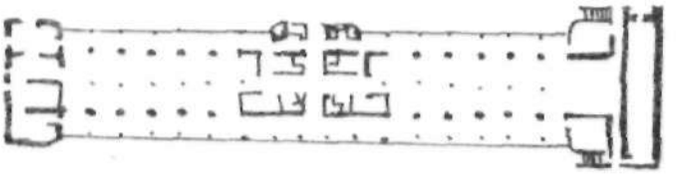
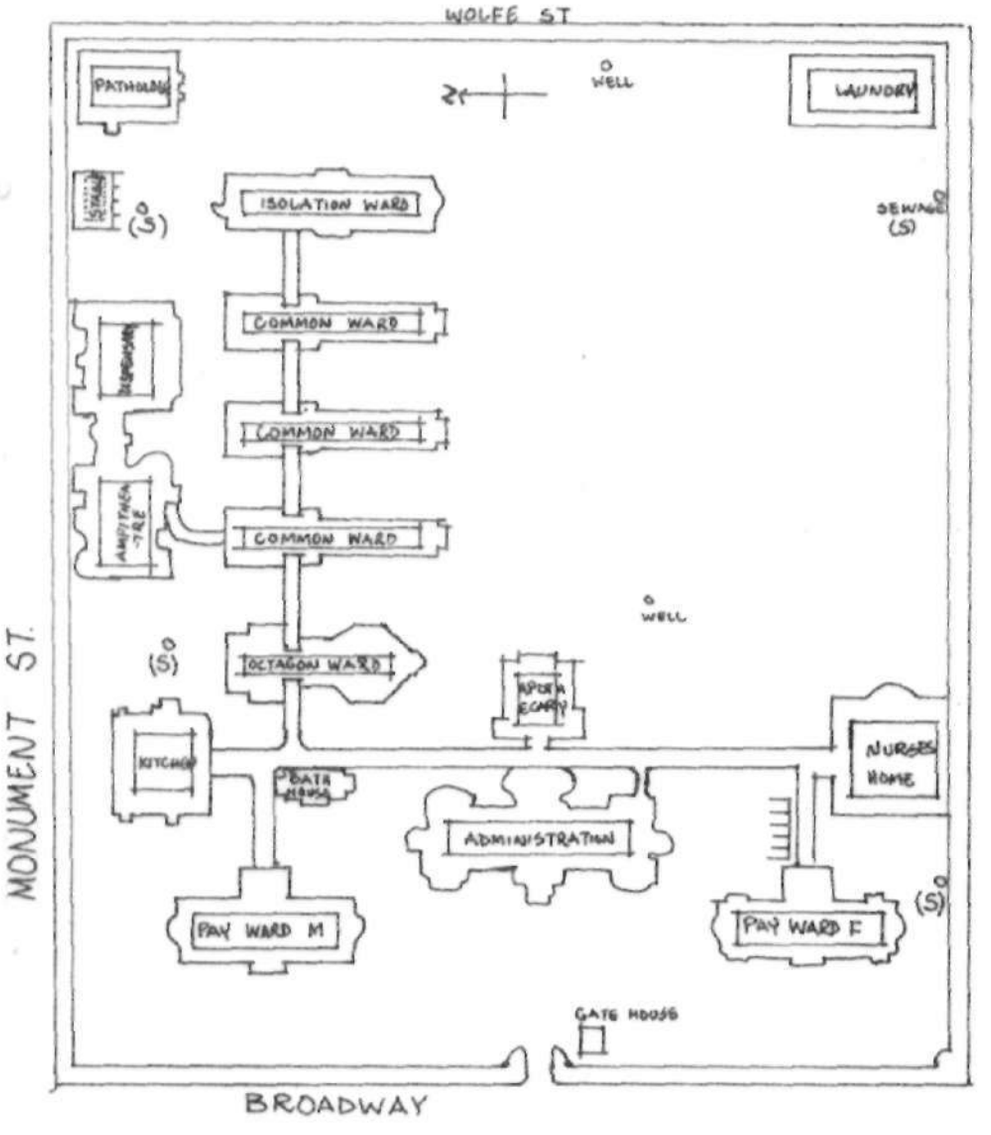


FIG 11



JOHNS HOPKINS, BALTIMORE MARYLAND U.S.A

the concentration of hospital function which led to the block system. The most successful of these was T shaped in plan and were developed in Sweden. The outpatient and casualty in the leg and administration in the arms. On the floors above the wards in the arms and treatment and diagnosis in the legs. Vertical circulation and engineering concentrated in the core.

Hospitals of the 20th century continue to be designed along both the pavilion and block concepts as the needs of the particular population and site dictates.

More recently new concepts of contiguity of function is being applied in obedience to the dictates of advances in medical sciences.

The face of the modern hospitals has also been changing as the need for teaching in hospitals is being recognised and also the prevention of diseases is taking more attention than traditionally attached to it. Preventive medicine is gradually being emphasised viz-a-viz the curative aspect hence the general form of the hospital has been changing to incorporate the newcomer.

The Nigerian Experience.

The history of the art of healing is not well documented until the advent of the missionaries and colonialists. It is however common knowledge that surgery albeit crude was performed in pre-colonial Nigeria. The Fulani/Hausa surgeon is known to be adept in tonsilitis surgery and the itinerant circumcision surgeon of the Yorubas are still very much around.

Pharmacognosy is the preserve of the herbalist, many local herbs had been identified for their curative and therapeutic values. Psychiatry was also practised. Builings

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Pharmacognosy is the preserve of the herbalist, many local herbs had been identified for their curative and therapeutic values. Psychiatry was also practised. Buildings for the various arms of health care are most usually the residence of specialists concerned and they in turn have deities that they believe aid them in the performance of their trade.

Literature was not located to show that there was any effort except in psychiatrist cases, to build specialised buildings for the practice of their trade.

various arms of health care are most mainly the [illegible] and they in turn [illegible] in the performance of their tasks.

[illegible] was made to show that there was any [illegible], except in [illegible], to build specialist buildings for the practice of their trade.

The advent of scientific medicine dates back to the Portuguese slave ships that carried their medical personnel to care for the slave traders and help in choosing healthy slaves. It would be seen that this was however transient.

The intorduction and sustenance of medical care is credited more to the missionaries. The Roman Catholic church built the first missionary hospital in Nigeria in 1895 and a leper colony in 1897.

The first hospital in Nigeria, The Lagos General Hospital built in 1873 evolved out of a military background. The provision of health services for the West African frontier forces first as a reception centre for sick seamen of the Royal Navy developed to the 45 bed colonial hospital of 1873 which is the present day Lagos General Hospital.

Both the mission and colonial hospitals which started proliferating the country were designed along the Pavilion Concept. The mission hospital were however not lacking in chapels and churches.

The pavilion concept which was the vogue in the home country of the British colonialist was particularly successful due to the low value of land and the infant nature of scientific medical science in Nigeria.

CHAPTER THREE

Designing a hospital is a most complex and difficult task – Architect Ernst Neufert.

MY HOPE

Concepts, Logic and the Scientific Approach

The fact that hospital architecture is a most problematic and complex design has been echoed by many great architects. The reason for this belief is the fact that hospital architecture dwells on a milleau of data and information and more so that medical sciences in itself is very dynamic.

It is my hope that if hospital architecture is approached in a logical manner and all the determinants of its complexity are analysed thoroughly a system of design could be achieved where the hospital can rightly be conceived as a factory or service garage for the human body. The aforegoing concerns the physical planning of the hospital which can be approached as an objective system. The enveloping shell on this well planned hospital can then be approached on the intuitive plane which would be an expression or impression of the architect concerned.

This approach to hospital planning is without prejudice to traditional concept. It entails research into existing hospitals on specific subjects or problems and to use the feedback from the research to evolve a clear pattern of solution to the particular problem.

The problem of circulation is the architectural problem of the thesis; data was taken from existing hospitals in Lagos, the percentageof interdepartmental traffic was analysed, to give form to the pattern of circulation.

This form shall be used in the design of the hospital that shall be suitable for the population of Festac Town and also within the site constraints. The endeavour may result in planning principles which are entirely different from traditional concepts but the logic of the endeavour and the scientific reasoning will no doubt generate a circulation pattern which will most certainly satisfy the real requirement of hospitals since it is the actual circulation pattern condensed from human movement in existing hospitals.

Hospitals and Health Care Delivery in Lagos

Agencies of a complex organization responsible for health care delivery in Lagos include the following.

1. Federal Ministry of Health
2. Lagos State Ministry of Health & Lagos State Health Management Board.
3. Various Local Government Councils.
4. The University of Lagos - Lagos University Teaching Hospital.

CHAPTER 4

HOSPITALS AND HEALTH FACILITIES IN LAGOS

The categories of agencies and organisations responsible for health care delivery in Lagos include the following:

1. Federal Ministry of Health
2. Lagos State Ministry of Health via Lagos State Health Management Board.
3. Various Local Government Councils.
4. The University-Lagos University Teaching Hospital College of Medicine and Institute of Child Health.
5. Private Practitioners
6. Voluntary Organisations
7. International Organisations, W.H.O., U.N.I.C.E.F.
8. Industry
9. Armed Forces
10. Traditional Medicine Men
11. Pharmacists and Chemists
12. Patent Medicine dealers

Of the above, the Federal Ministry, State Ministry, Local Governments, University and private practitioners play major roles in the provision of health care.

Both the Federal and State Ministries of Health look after the Health of the people. Certain functions are exclusive to either the Federal or State Government while others are concurrent.

Personal Medical and health service which is the major function of hospitals and health centres is exclusive to the State Government.

LAGOS STATE GOVERNMENT HEALTH POLICY

The policy of the State Government as contained in the 3rd National Development Plan is: To provide free health Service to every citizen of the State. The policy became effective on 1st December, 1979.

The State Government believes that the services rendered by existing hospitals were largely inadequate. The spatial distribution of health institutions was uneven and unsatisfactory. These problems have resulted in the inability to effectively diagnose between 260,000 and 364 cases annually.

A perfunctory look at Fig. 12 would show the evenness of the distribution of health services.

It is also the aim of the State Government to cope with the overpopulation of the Out Patient Department of bigger hospitals by providing health facilities at easily commutable distances for communities. From the aforegoing the need to devote a thesis research to the design and specialised study of circulation problems in a community hospital for Festac Town needs no overflogging.

HIERARCHY OF AND REFERAL
SYSTEM OF HOSPITALS AND HEALTH CARE
FACILITES IN LAGOS

- NEIGHBOURHOOD DISPENSARY
- BASIC HEALTH CLINICS
- PRIMARY HEALTH CLINICS
- DOMICILIARY CLINICS
- HEALTH CLINICS
- HEALTH CENTRES
- COMPREHENSIVE HEALTH CENTRE
- RURAL OR COMMUNITY OR CITY HOSPITAL
- SPECIALISED HOSPITALS
- GENERAL HOSPITAL
- TEACHING HOSPITAL/Base Hospital

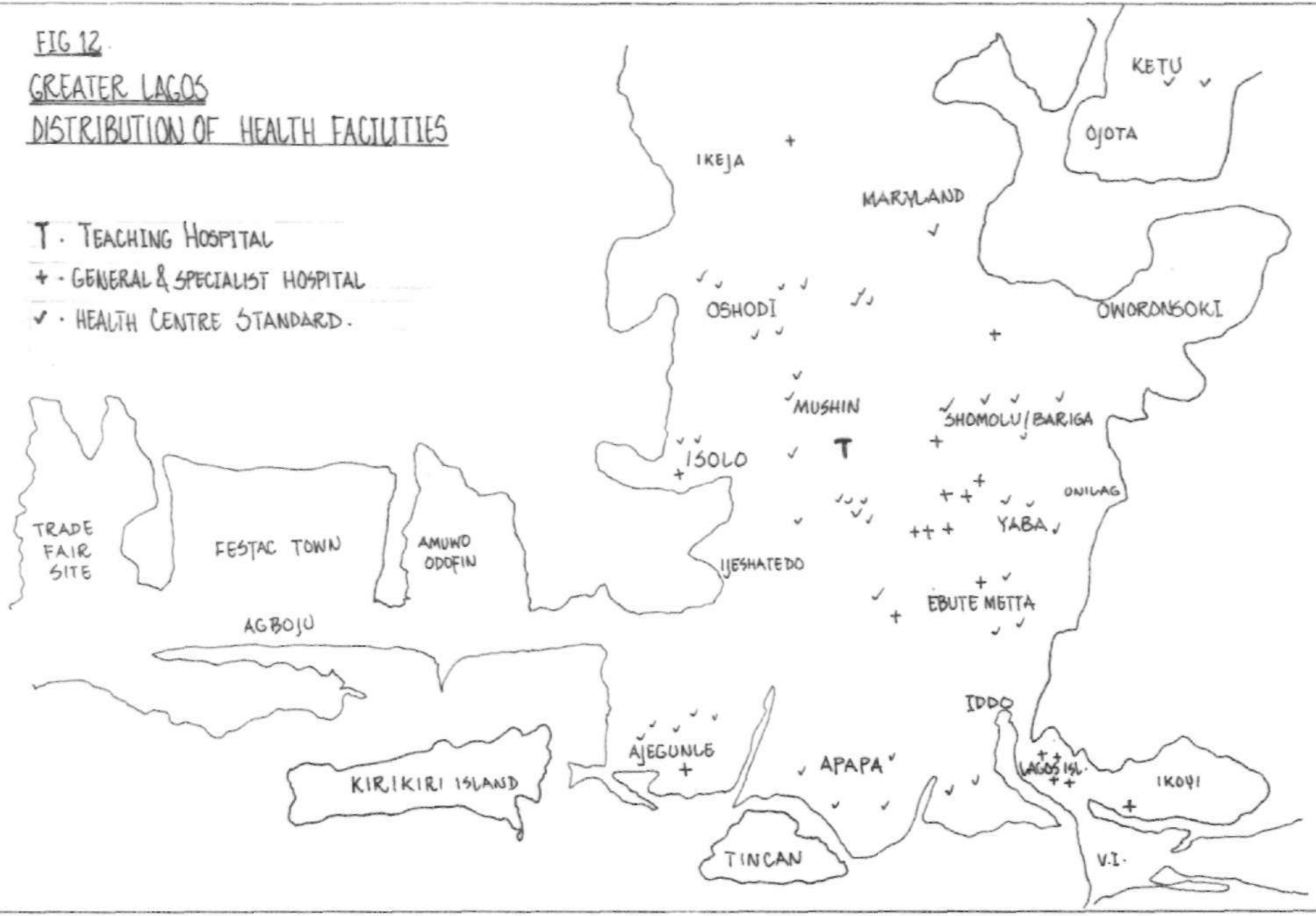
The functions and referalsystem of the various facilites had been adequately investigated elsewhere (Allison S.O. 1974).

The only newcomer, that needs some mention is the community or City Hospital which is the subject of concern.

FIG 12

GREATER LAGOS
DISTRIBUTION OF HEALTH FACILITIES

T · TEACHING HOSPITAL
+ · GENERAL & SPECIALIST HOSPITAL
✓ · HEALTH CENTRE STANDARD.



CHAPTER 5

COMMUNITY HOSPITAL

The community hospital is one that provides hospital services of the nature of a general hospital but serving a small catchment area and with a lower bed complement and patient days. In fewer words, it is a small acute general hospital. By nature the community hospital helps in reducing pressure on the general hospital both in the out-patient department and the In-patient.

The bed capacity is usually between 100-300 beds. The central domestic service of the hospital is usually de-emphasised on the hospital grounds. Chronic and contagious diseases are referred to the General Hospital. The emergency service is adequate but not elaborate. Diagnostic services are also adequate. Public Health services are also provided.

The community hospital concept emanates from providing near to full medical services in urban communities at short distances in cognisance of various urban problems that militates against provision of prompt and adequate medical care.

CHAPTER 6

CASE STUDIES

Physical Evaluation
Ikeja General Hospital

The Ikeja General Hospital was planned for about 725 beds. It grew from 120 beds at various stages. The hospital complex houses the School of Community Health responsible for the training of community nurses. The design is of the pavilion concept. No adequate attention was paid to expansion at inception hence a spaghetti like complex is the result at its prime. There is an apparent lack of co-ordination of elements, circulation is haphazard, zonning is not distinct. Each building is functional with their aesthetic value but when viewed together the unity of the whole is grossly lacking. Circulation of patients, staff and service not defined hence the danger of cross infection. Fig. 13.

AJAFA HEALTH CENTRE AND MATERNITY ANNEXE.

This is a 60 bed, 30 cots and 30 adult beds Health Centre. It provides emergency, dental, gyneacological, surgical, medical, Paediatric, Ear, nose and Throat, Venereal disease/skin, optical and general medical services. It was designed along the block and muffin concept. The ward being the muffin and all other hospital services in the block unit. Too much emphasis was laid on mechanical aid in conditioning the internal environment for conducive human occupancy. Air-conditioning to maintain proper interior humidity, artifcial lightingforillumination. The complex does not own an electric generating set. This in effect puts the energy supply at the mercy of the erratic public utility. The airconditioner of the centre

FIG 13

IKEJA GENERAL HOSPITAL.

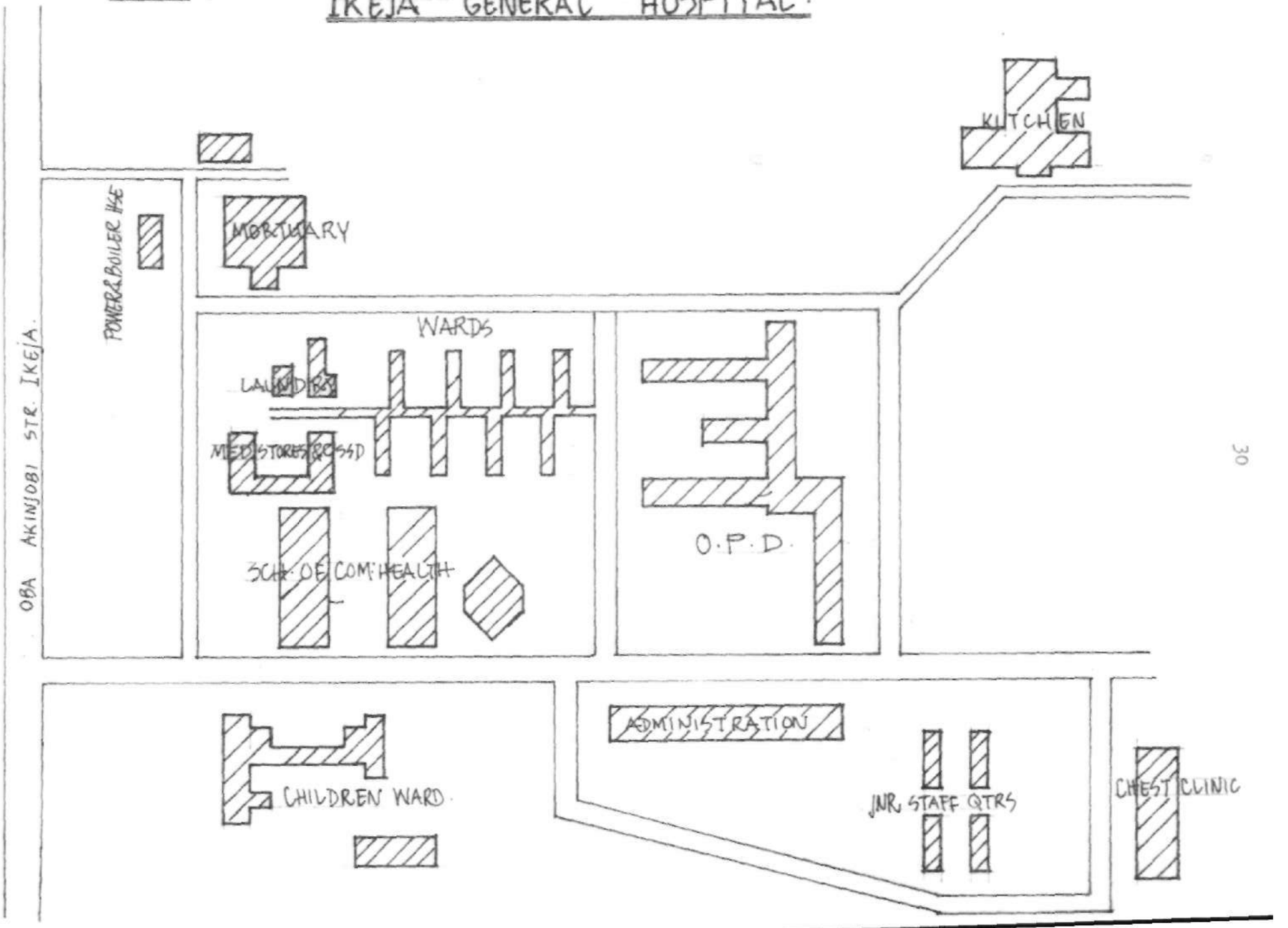


FIG 14

APAPA HEALTH CENTRE



ground floor plan 1:200

had broken down, rendering the surgical theatre septic. The design of the centre as a whole is quite good but too many functions have been lumped into too little space hence causing an influx of patients that the building and services cannot effectively cope with. (See. Fig. 14).

CHAPTER 7.

Statistical Evaluation

Methods and Types of data collected

Over a six month period between October 1982 and March 1983 four health facilities in the Lagos metropolis were studied.

The object of the studies was to determine the nature of the traffic existing and also to get a clear picture of the epidemological profile of the Lagos population.

In planning the methods and type of data to be collected, the concept behind the whole endeavour was paramount. The progressive planning concept (See Chapter 16) on Progressive planning concept).

The primary factors that determine the main form of a hospital are patients, service and staff. A study of the movements of these three entities goes a long way in establishing the form.

Over the period of study traffic census were taken between the hours of 8 a.m. and 2 p.m. and also between 3 p.m. and 10.00 p.m. Hospital Records were used to ascertain traffic between 10 a.m. and 6 a.m. Interviews with Doctors, Nurses, hopital help, patints, visitors, service personnel etc were conducted. Extensive use was made of hospital records to determine the epidemorlogical profile. Data were not collected simultaneously in all departments since only one person was doingall the data

collection. Departments were rotated on hourly basis and total attendance extracted from the record office. Necessary and logical adjustments were made.

Data collected were collated and expressed as a percentage of total daily movements. These gave a numerical value to relative volume of traffic. This approach gave a visual sensation to comparative value.

				WARDS (INTERNAL)						
TREATMENT & DIAGNOSTIC DEPT.	OPD	CASUALTY	EX-TERNAL TOTAL	SURGICAL	MEDICAL	PAEDIATRIC	OBSTETRICS	GYNEA	STAFF CLINIC	HEALTH FACILITY
X-RAY	24	40	64	12	7	6	1	1	9	General Hosp. (a) Lagos
DIAGNOSIS	26	44	70	14	5	4	5	5	6	General Hosp (b) Ikeja
	55	38	93				3	2	2	Health Centre (c) Apapa
	60	32	92				2.5	3	3	Health Centre (d) Surulere
LABORATORY	40	5	45	6	18	12	5	8	6	(a)
	39	7	46	5	19	13	4	8	5	(b)
	90	5	95				1	3	1	(c)
	87	6.5	93.5				1.5	4	1	(d)
OPERATING THEATRE	2	15	17	72	1	2	5	3	0.5	(a)
	1	17	18	70	1	2	5	4		(b)
	5	15	20				44	36		(c)
	8	13	21				42	37		(d)

TABLE 7.1

TRAFFIC STUDIES (i) -Patients movements to Treatment & Diagnostic Departments in 4 Health Facilities as % of Total Daily Movement.

TREATMENT & DIAGNOSTIC DEPT.	OPD	CASUALTY	EXTERNAL TOTAL	WARDS (INTERNAL) SURGICAL	MEDICAL	PAEDIATRIC	OBSTETRIC	GYNAE	CLINIC	HEALTH FACILITY
X-RAY DIAGNOSIS	22	39	61	15	6	9	1	1	7	(a)
	27	40	67	16	7	4	1	1	4	(b)
	54	38	92				4	3	1	(c)
	59	30	89				3	5	3	(d)
LABORATORY	38	4	42	5	23	10	6	10	4	(a)
	37	5	42	4	24	11	4	10	5	(b)
	92	2	94				1	3	2	(c)
	88	5	93				1	5	1	(d)
OPERATING THEATRE	3	13	16	74	-	1		3		(a)
	2	16	18	72	1	1	4	4		(b)
	4	14	18				48	34		(c)
	6	14	20				4	36		(d)

TABLE 7.2

TRAFFIC STUDIES (ii) - Patients movements to Treatment & Diagnostic Departments in 4 Health Facilities as % of Total Daily Movement

TREATMENT & DIAGNOSTIC DEPT.	OPD	CASUALTY	EX-TERNAL TOTAL	WARDS (INTERNAL) SURGICAL	MEDICAL	PAEDIATRIC	OBSTETRICS	GYNEA	STAFF CLINIC	HEALTH FACILITY
X-RAY	23	39.5	62.5	13.5	6.5	7.5	1	1	8	
DIAGNOSIS	26.5	42	68.5	15	6	4	.75	.75	5	
	54.2	38	92.6				2.5	2.5	1.5	
	59.5	31	90.5				2.75	4	3	
LABORATORY	39	4.5	43.5	5.5	20.5	11	5.5	9	5	
	38	6	[illegible]	4.5	21.5	12	4	9	5	
	91	3.5	94.5				1	3	1.5	
	87.5	5.75	93.25	[illegible]	[illegible]	[illegible]	1.25	4.5	[illegible]	
OPERATING THEATRES	2.5	14	16.5	73	.5	1.5	5.5	3	.25	
	1.5	16.5	18	71	1	1.5	4.5	4		
	4.5	14.5	19				46	35		
	7	13.5	20.5				43	36.5		

TABLE 7.3

TRAFFIC STUDIES - AVERAGE - Patients Movements to Treatment & Diagnostic Departments in 4 Health Facilities as Percent of Total Daily Movement

SYNTHESIS

From the data in Tables 7.1, 7.2, and 7.3 it was found that the bulk of traffic emanating from O.P.D. and casualty is to the X-Ray and that the traffic to the laboratory is about equally shared by in-patients and out-patients in health facilities with complete in patient wards.

The majority of in-patients requiring X-ray diagnosis is from the surgical ward. It may be rightly concluded that in actual design effort should not be spared in relating the x-ray facilities to the most common users.

The laboratories being equally used by both in and out-patients should be located in such a position that will facilitate effective use. By both sections of the hospital.

Operating theatres are seen to be heavily dependent upon the surgical ward and to a lesser extent by the casualty department, this could have been affected by the location of the hospital itself. However the operating theatre should be very near the surgical ward and easily accessible from the casualty and more so by the other departments of the hospital that may need it as the need arises.

This synthesis was not translated alone into the design without taking cognisance of perennial problems of the hospital like dangers of cross-infection, comfort of patients, distance of journey and the site constraints.

Table 7.4 is an analysis of service journeys in two of the hospitals in Table 7.1, the two general hospitals. It is the essential service journeys. The analysis is the average number of journeys per day per department. The journeys to the wards, hence the more the number of wards the more journeys.

It was therefore possible to determine the intensity and frequency of movements between various departments and be a guide to their relationship in plan hence giving a picture of the form of the hospital in plan.

The above synthesis has been mainly concerned with traffic but the nature and means has not been analysed. Table 7.5 sheds some light on the nature of traffic, walking and ambulant patients, service trolleys and other types of transportation in a hospital. Generally medical and domestic supplies are all wheeled hence influence dimension of route and the axis. This calls for a review of the verticallity and horizontality of the design.

It is apparent that a horizontal approach would be desirable if the site permits and if not verticality should be kept to the minimum desirable. This is due to the high cost of vertical circulation equipments, the delay in waiting, the cost in use of such equipment.

From the aforegoing it would be seen that the hospital can be broadly divided into four. zones. The out-patient/casualty, diagnosis x-ray/lab, in-patient and medical domestic services.

In basic plan it would be desirable to site the diagnosis centrally between the OPD/Casualty and the In-patient (wards) and the central domestic and medical services between the wards and diagnostic department. In siting the services they should not obstruct flow to the wards. The location of the operating theatre should be between the O.P.D./casualty and the wards. In detail planning efforts should be made to make the operating area the end of a circulation line rather than a junction

TABLE 7.5

NATURE OF TRAFFIC

DEPARTMENT	% WALKING	% AMBULant
O.P.D.	98.0	2.0
CASUALTY	40.0	60.0
X RAY	70.0	30.0
PUBLIC HEALTH	99.0	1.0
TOTAL AVERAGE	76.75	23.25

this would reduce movements around the area to the essential traffic.

CONCLUSION AND EXPANSION

The physical growth of hospitals is essentially a growth of the bed complement. This could be arrested two folds. Increasing the physical size of hospitals by adding new buildings or improving health care delivery to reduce patient stay in hospital to make available bed spaces and also improving on public health to reduce chronic and acute cases. It has been found out elsewhere that wards are relatively static and are able to perform their functions over a long period of years. The real dynamic entity of the whole hospital is the treatment and diagnostic department which changes with breakthroughs in medical sciences. The building housing these functions should be such that they can easily be expanded or replaced. They should be located on the ground.

CHAPTER 8
THE LOCATION-FESTAC TOWN

Social and Economic Analysis

The Black Arts Festival Town popularly known as Festac Town is situated at about 10km West of Lagos on the Badagry road which forms its southern boundary. The Shasha river and the International Trade Fair complex forms the eastern and western boundary respectively. The Northern boundary is at about five kilometres running parallel to the Badagry road. (See Fig. 15).

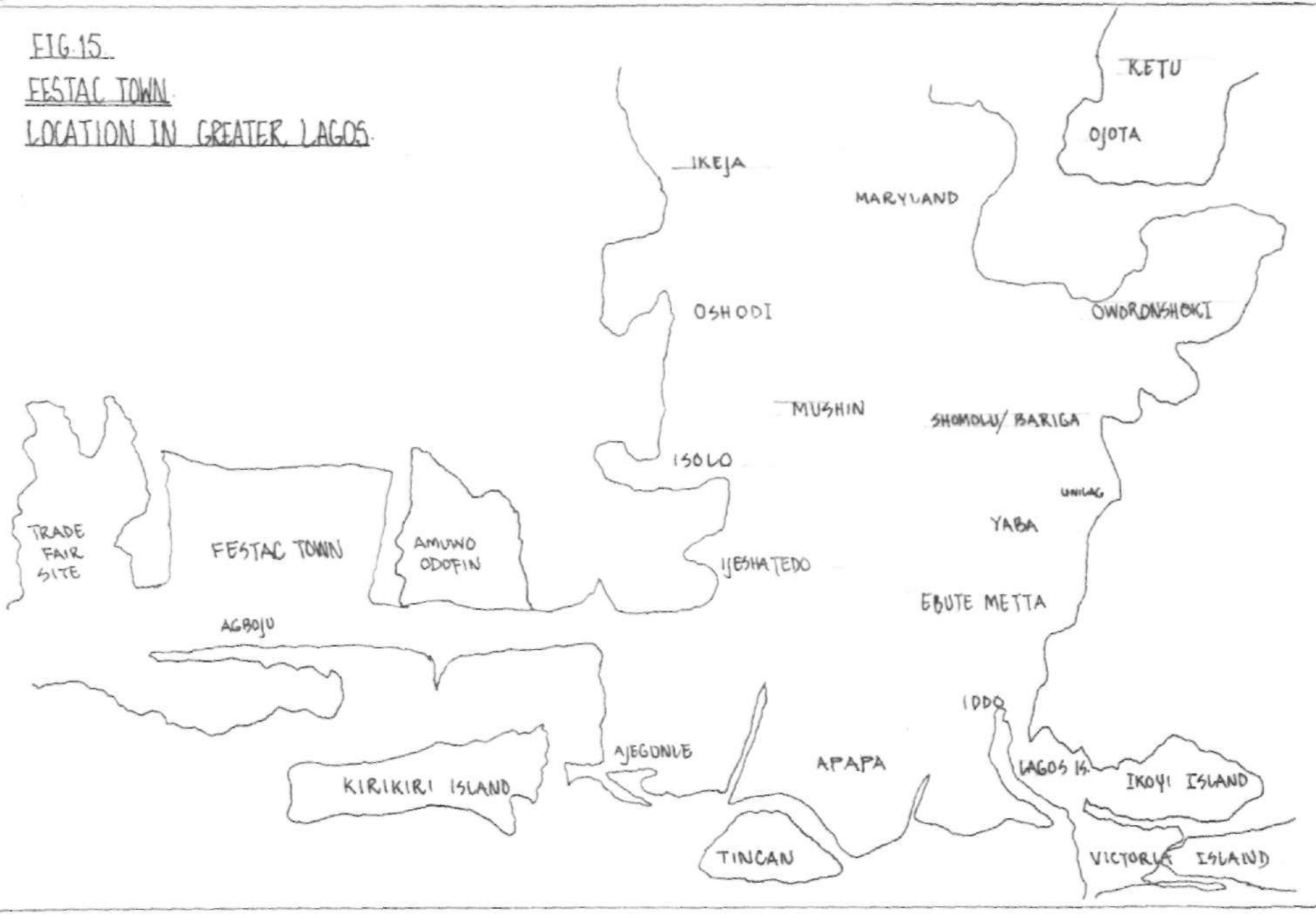
The site covers an area 1,770 hectars out of which 460 hectares had been developed and the hope of developing the rest not existing at least in its planned form. The masterplan Fig. 16 provides for residential, industrial, civic and communal activities. The present phase of development (see Appendix 1) is largely residential. The estimated population is about 92,444 being the result of a study carried out by the Planning and Research Department of the Federal Housing Authority. The sole body administering the town.

Table 8.1 shows the breakdown of population by house type. The majority of the population are in the low income group (see Table 8.4 below) N450 total family income and stays in either 1, 2 or 3 bedroom unit blocks of flats. The problem of overcrowding can easily be seen. The hospital to serve this population should be one that should be able to educate on the hazards of overcrowding and that could easily arrest spread of contagious diseases. The income group suggests that the hospital should also provide free or near free medical service.

FIG 15.

FESTAC TOWN

LOCATION IN GREATER LAGOS.



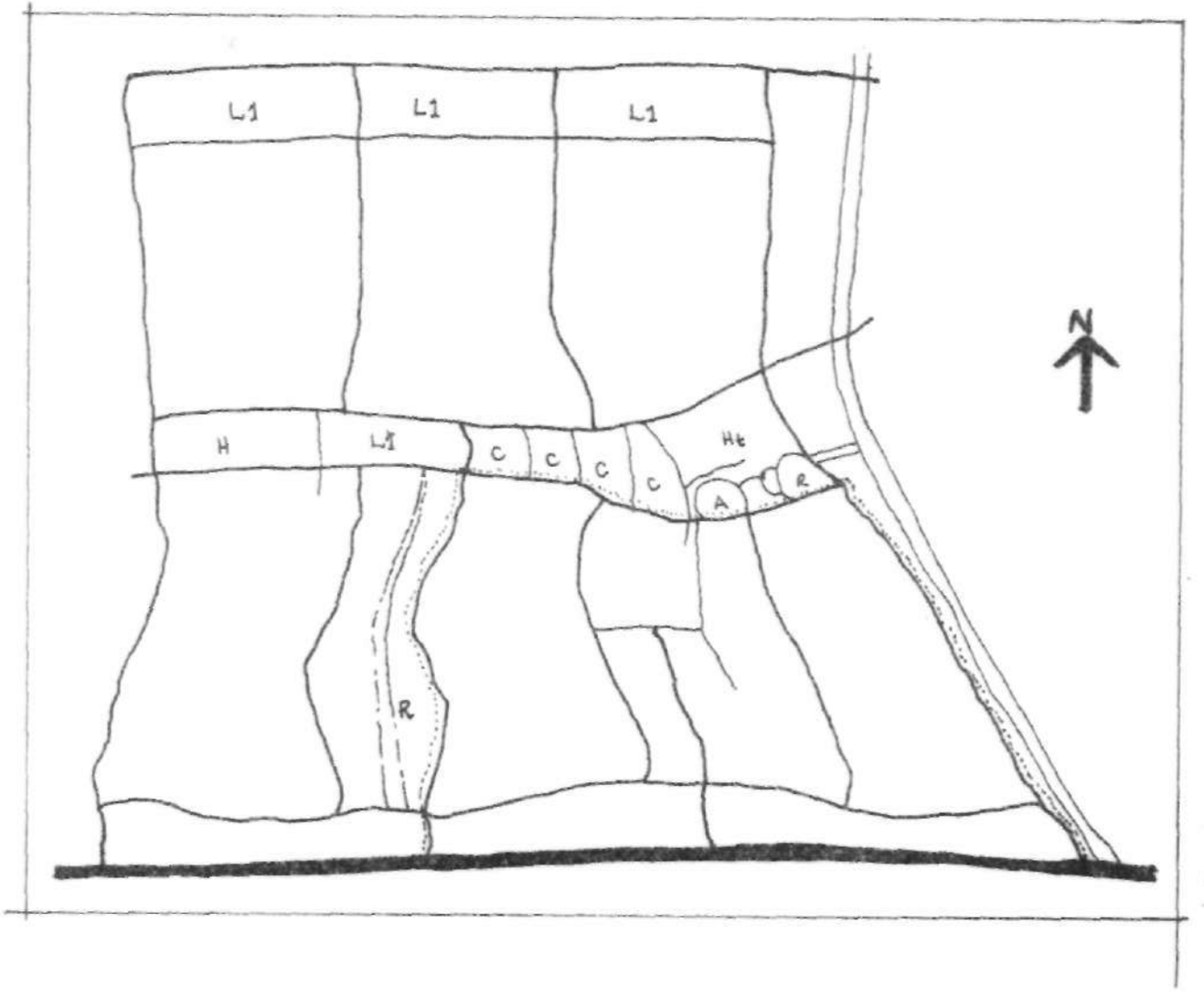


FIG. 16

FESTAC ORIGINAL MASTERPLAN

Ht - HOTEL
H - HOSPITAL
L1 - INDUSTRIAL
C - COMMERCE, CIVIC
A - STADIUM
R - RECREATION
---- - TOWN LIMIT 1983

TABLE 8.1

TOTAL POPULATION BY HOUSE TYPE

HOUSE TYPE	MALE	FEMALE	TOTAL	%
One bedroom flat	6215	6108	12323	13.3
Two bedroom flat	22410	21396	43806	47.4
Three bedroom flat (in 2 hor blk)	6273	6647	12920	14.0
Three bedroom flats	3677	3802	7479	8.1
Two bedroom Terrace bungalow	2480	2873	5353	5.8
Two bedroom Terrace bungalow and garage	2773	2600	5373	5.8
Three bedroom bungalow Row houses	237	238	475	0.5
Three bedroom semi-detached	329	381	710	0.8
Three bedroom detached	1638	1627	3265	3.5
Four bedroom detached	381	359	740	0.8
TOTAL	46,413	46,031	92,444	100

TABLE 8.2

DISTRIBUTION OF POPULATION BY AGE, SEX AND PERCENTAGE

AGE GROUP	NUMBER OF PERSONS			PERCENTAGE		
	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
0-4	8978	8997	17,975	9.3	9.7	19.0
5-9	7467	7854	15,321	8.1	8.9	17.0
10-14	6114	7711	13,825	6.6	8.4	15.0
15-19	4487	4573	9,060	4.9	5.1	10.0
20-24	3552	4643	8,195	3.9	5.1	9.0
25-29	3394	5356	8,750	3.8	5.2	9.0
30-34	4110	3101	7,750	4.6	3.4	8.0
35-39	3793	1721	5,514	4.0	1.9	5.9
40-44	2242	765	3,007	2.5	0.8	3.3
45-49	1170	384	1554	1.3	0.4	1.7
50-54	811	280	1091	0.8	0.3	1.1
55-59	149	140	289	0.15	0.15	0.3
60 and over	146	506	652	0.15	0.55	0.7
TOTAL	46413	46031	92444	50.2	49.8	100

TABLE 8.3

ECONOMIC ACTIVITY

Economically Active		Not Economically Active				Economically Active but unpaid		No Response
employed	self employed	Home makers	unemployed	students	Children below school age	Housemaids, old people	boys,	
22103	5729	1499	2206	38905	17975	810		3217
30.1%		65.5				0.9		3.5

TABLE 8.4

Family income/House Type

HOUSE TYPE	income (Monthly) ₦
1	154.35
2	339.70
3	434.40
4	529.40
5	599.00
6	498.70
7	5991.00
8	860.00
9	1049.00
10	1192.97

TABLE 8.5

POPULATION BY RELIGION

RELIGION	POPULATION	%
Christianity	65432	70.78
Muslims	11000	11.90
No-Response	16012	17.32

TABLE 8.6

POPULATION PROJECTION

YEAR	POPULATION	RATE	PROJ. POPULATION	COMMENTS
1982	92444	5.5%	92444	
83		5.5	97528	
84		5.5	102892	
85		5.5	108551	
86		5.5	114521	
87		5.5	120819	
88		5.5	127464	
89		5.5	134474	
90	139852	4.0	139852	Movement to Abuja
1991		4.0	145446	Decrease in Death Rate
92		4.0	151263	Decrease in Birth
93		4.0	157313	Rate. Education and family
94		4.0	163605	planning. Improve-
95		4.0	170149	ment in Health Care delivery.
96		4.0	176954	
97		4.0	184032	Decrease in Migration.
98		4.0	191393	Improved Rural
99		4.0	199048	Development.
2000		3.5	206014	Decrease in Birth
01		3.5	213224	Rate
02		3.5	220686	Decentralisation of industry
03		3.5	228410	
04		3.5	236404	
05		3.5	244678	
06		3.5	253241	
07		3.0	260838	
08		3.0	276722	
09		3.0	276722	
2010		3.0	285023	

The total population of the sexes is also shown in Table 3.1. There are almost equal number of male and female. Hence the provision of bed spaces should reflect this equality in population distribution.

Table 3.2 breaks down the population into age groups and sexes. 19% of the total population are in the post-natal and paediatric group accounts for about 32% of the population. Women of child bearing age of 15-45 account for 21.5% of total population. The need for a paediatric gynaecological, obsterical and maternity facility cannot be over emphasized.

Table 3.3 shows the economic activity of the population. 30.1% are economically active and 65.5% are not. The distribution of general beds and amenity beds in the hospital should show a bias for this relationship.

Table 3.5 shows a predominance of christians over muslims. This makes the provision of a mortuary inescapable as corpses are bound to stay a period of time unclaimed and possible embalming. The population projection for the town for the next twenty five years is shown in Table 3.6.

PHYSICAL ENVIRONMENTAL CHARACTERISTICS OF FESTAC TOWN

Soil & Geology

The top soil consists mainly of sandy soil, the area was reclaimed by sand filling. The original land form was swampy alluvial plains with two predominant soil types, sand and clay. Sand, uniformly grained, medium to fine grains, non-plastic fine. Clay deposit is random, medium plastic and stiff to very stiff in texture.

TOPOGRAPHY

Generally flat terrain with less than 2^{o} slope from North to South.

VEGETATION

Sparse vegetation, largely made up of shrubs, grasses and man cultivated trees.

WATER TABLE

Very high water table, site if 9.00 M above sea level at highest point.

CLIMATE

Rainfall- Two major rainy seasons May-July and Sept/ October. Torrential Rainfall during the rainy months. Figure 17 shows the mean monthly rainfall.

TEMPERATURE

Highest temperature March to May and Nov/Dec. Low in Jan/Feb and July-September. Mean maximum temperature 85^{o}F and mean minimum 76^{o}F. See Fig.18.

HUMIDITY

Very humid. Relative humidity above 95%. See Fig.19.

SUNSHINE

Low clouds, maximum of eight sunshine hours and and a minimum of three hours July-September. See Fig. 20

WIND

Prevailing wind is the south westerlies, an average of 2 gales per annum. 50-60% calm winds. Diurnal change in wind direction sea breeze during the day and land breeze at night.

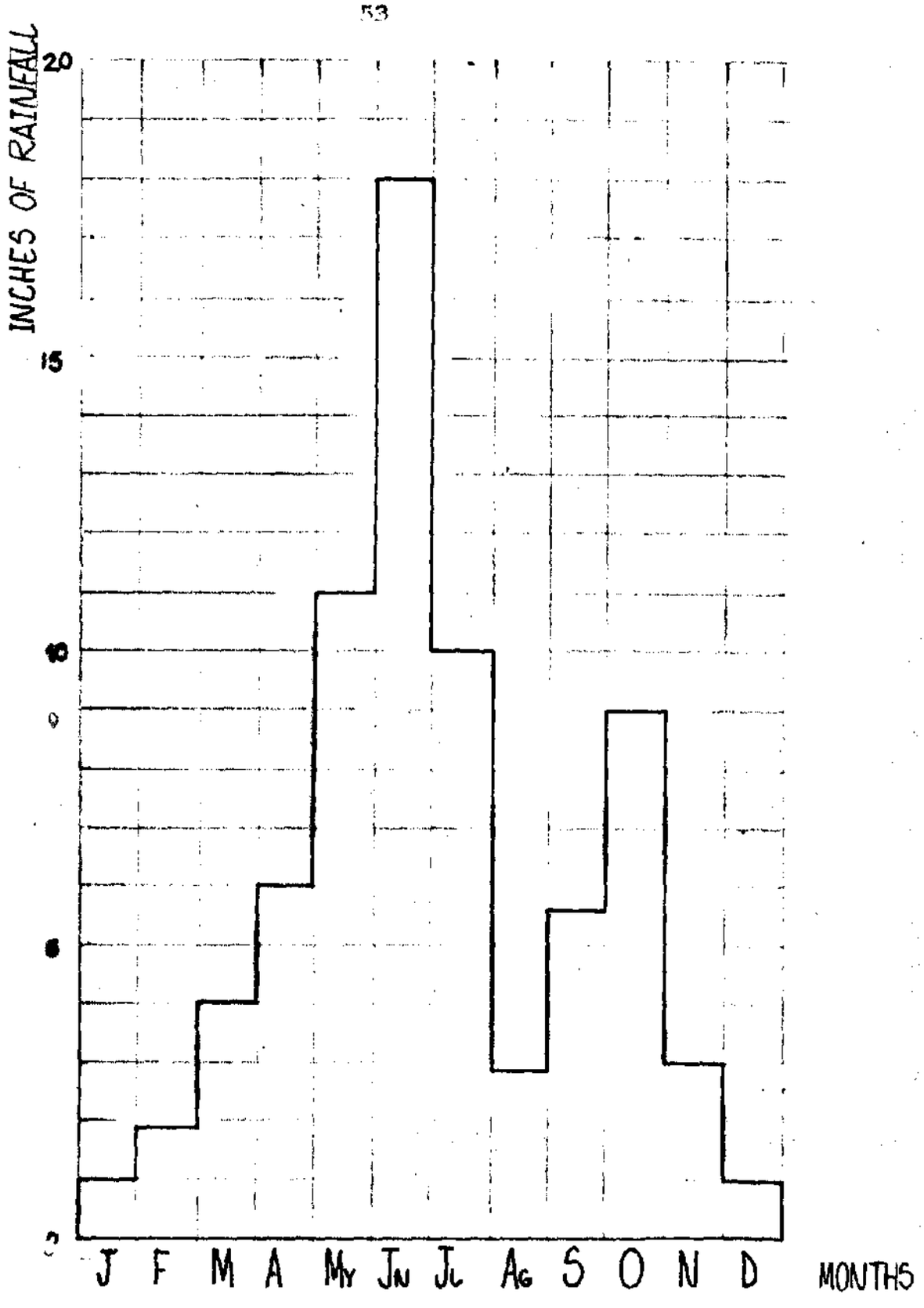


FIG.17

MEAN MONTHLY RAINFALL CHART.

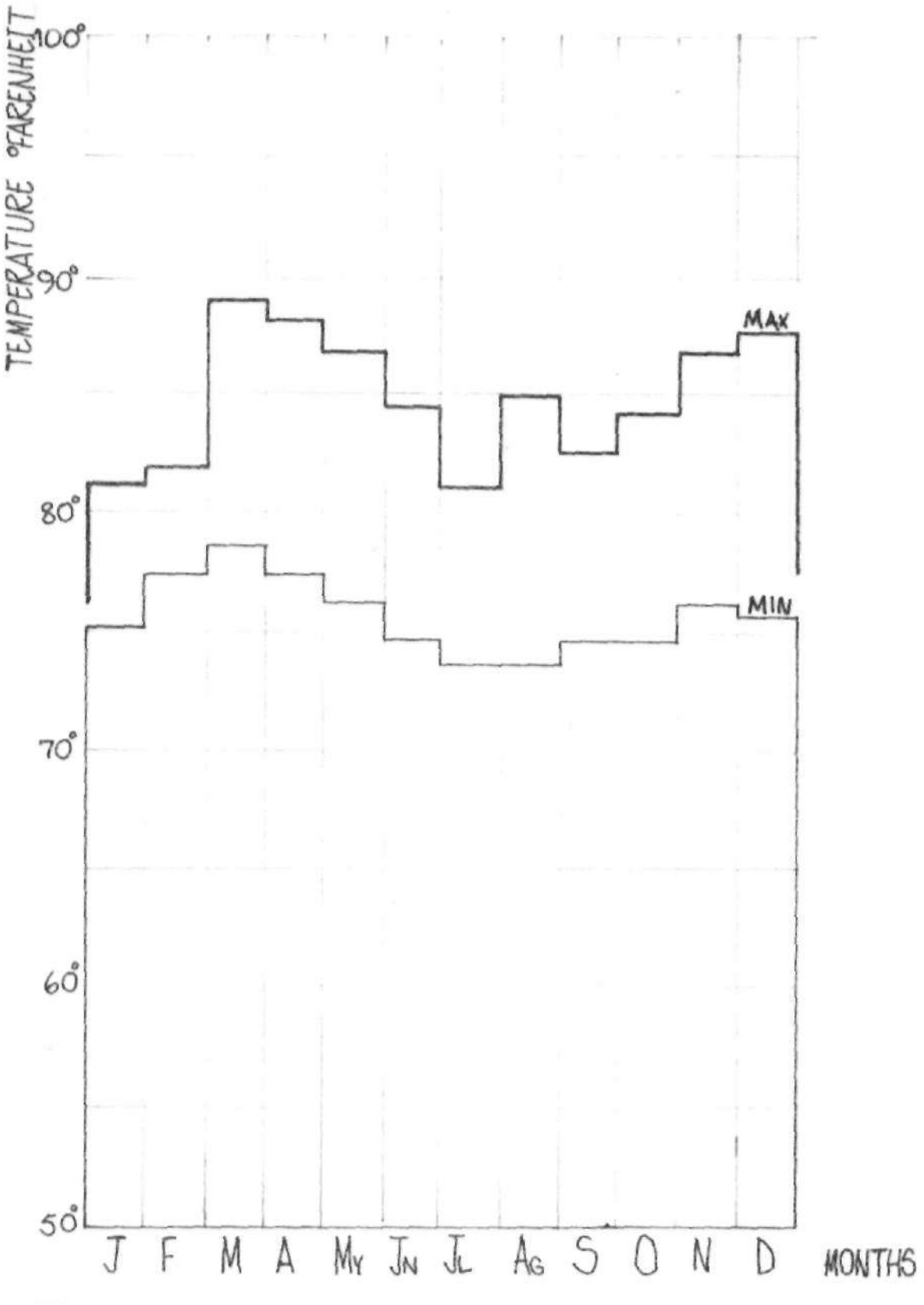


FIG.18

ANNUAL MEAN MONTHLY (MAX. & MIN) TEMPERATURE

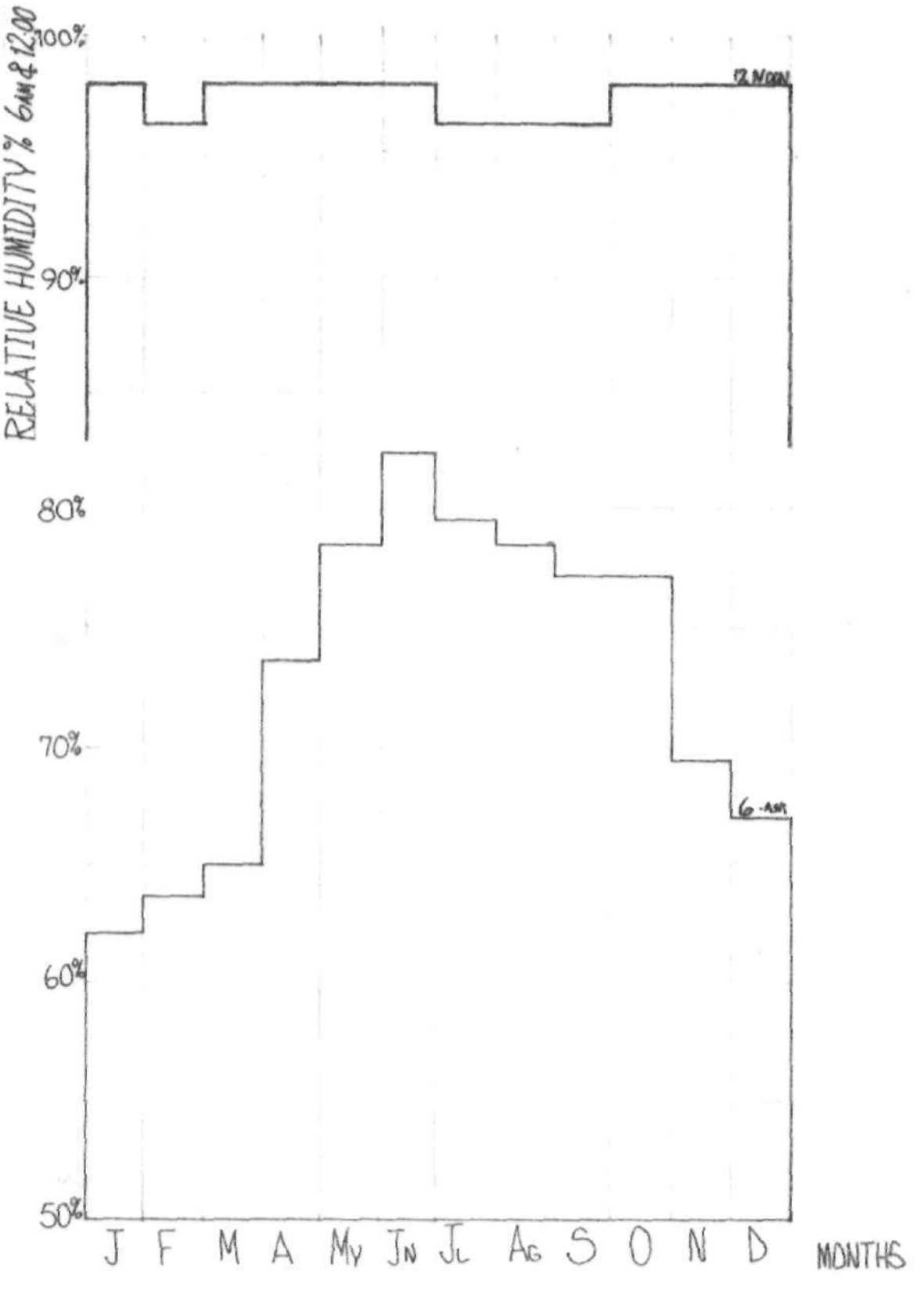


FIG.19

MEAN MONTHLY RELATIVE HUMIDITY

6AM & 12 NOON

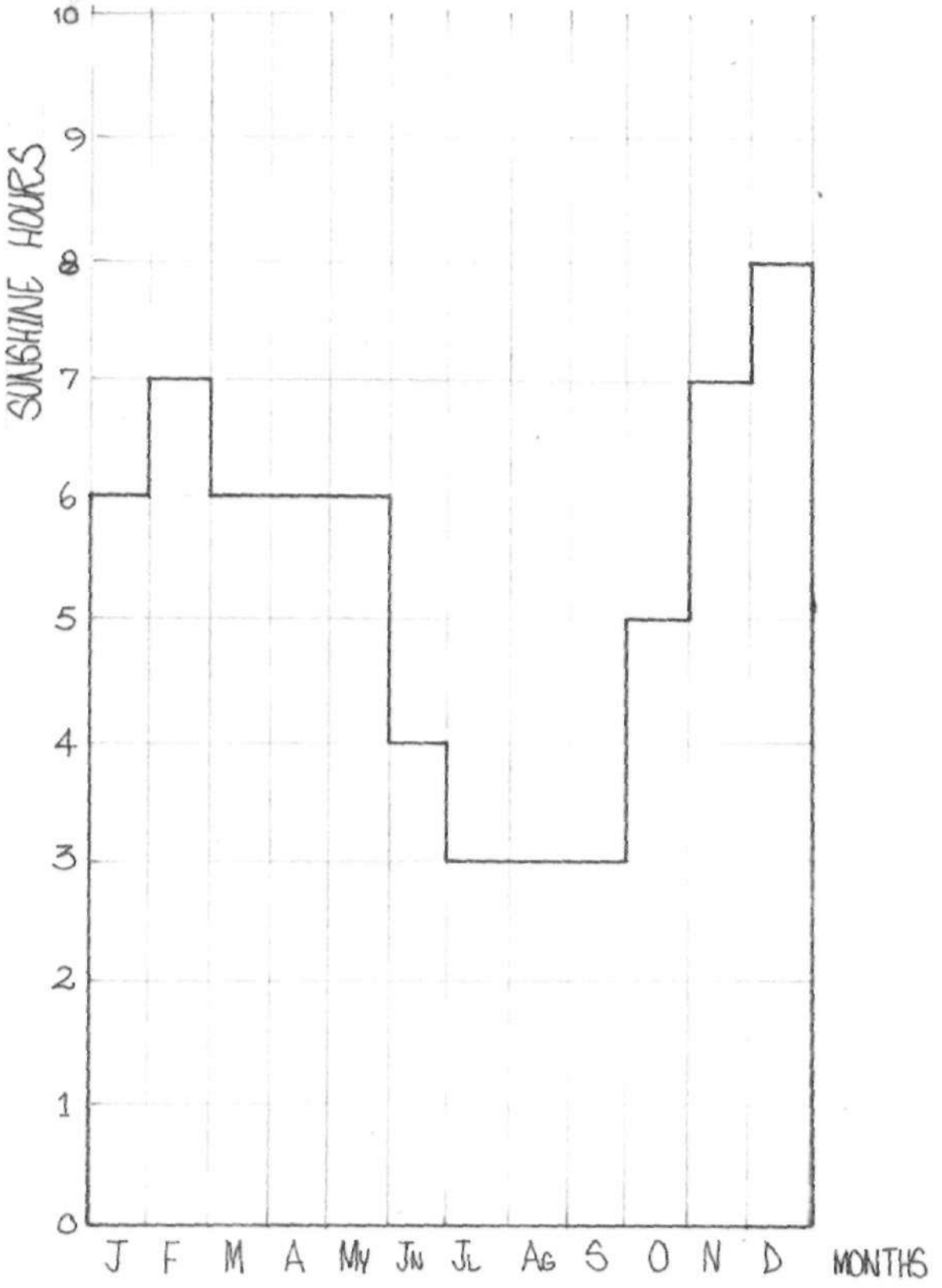


FIG 20

MONTHLY AVERAGE SUNSHINE HOURS.

LOCATION

Festac Town is located at about Lat. 6° 28'N and Long. 3° 22'E.

SITE VALUES, RIGHTS AND OWNERSHIP

Land controlled by Federal Housing Authority for the Federal Government of Nigeria but by virtue of the Land Use Act, any land required by the Lagos State Government could be acquired for public use.

ZONING

The whole town is zoned and developed along income line. High income to the south, middle income central and low income predominantly to the north. However small percentage of each are found everywhere for proper integration. See Appendix 1.

THE SITE, VISION AND CHARACTERISTICS

According to the masterplan of Festac Town Fig.16., the area allocated for the hospital marked H has not been reclaimed and provided with basic infrastructure like roads. The developed area of the town shown in appendix 1 lacks health care delivery facilities and it is within this area that the proposed facility would be located.

In choosing the site marked 'S' attention was paid to accessibility, centrality and the hierarchy of roads in the vicinity, size of land available and routes of public transport.

The site itself is a disused building materials excess storage, with overgrown grass and shrubs. It has all the peculiarities of the town as enumerated earlier. It is the most suitable site for the location of the hospital.

CHAPTER 9

DESIGN CRITERIA

Climatic

The design shall aim at the reduction of heat production by the building fabric. Radiation gain shall also be reduced to the barest minimum while evaporation shall be promoted. Cross ventilation at all times, buildings oriented for minimum solar heat gains and maximum cross ventilation. Longer side in the East-West axis. Light weight materials would be used. Insulated materials better. Concrete hollow blocks and corrugated metal sheets for roofing with generous isolation space. Large windows and perforated screen walls to encourage ventilation. Sun shading devices to be incorporated wherever necessary.

The roof becomes very important due to its exposure to solar radiation. Double roofing sheets with insulation desirable.

The building itself painted in reflective colour of the Pastel range to reduce glare. Landscape planning to enhance internal climate of buildings. Trees high branching and grass lawn nearer to buildings than trees. There should be minimum walking outdoor distances which should be shaded.

USER REQUIREMENTS

Consideration should be given to the volume of out-patients as seen from the other hospitals evaluated. The provision of a diversified out-patient department grouped along ailment type and age. Adequate and sophisticated diagnostic department that would facilitate easy diagnosis of patients accessible to both out patients and out-patients. There should be a department to take care of casualty cases. This department

must be easily accessible to both pedestrian and auto-traffic throughout the day and night. This department should be able to attend to automobile accident cases due to the close proximity to an international highway. The Lagos-Badagry Express highway.

In-patient facilities should be able to diagnose and treat gynaecological, obstetrical, paediatric and surgical cases. General medical cases should also be provided. The dangers of cross infection in hospitals also calls for proper attention in design to reduce or eliminate this danger.

THE SITE

The small size of the site calls for very compact buildings within the limit of satisfying its functional requirements. The geology of the area calls for the provision of special foundation wherever the building superstructure exceeds one storey height. Zonning regulations should also be given attention in determining the height of buildings.

AESTHETIC CRITERIA

A beautiful building is the ultimate aim, the building should be able to marry into the existing townscape without necessarily utilising the type of elements in the existing facades. A building that would be easily noticed amongst other buildings due to its different functions yet maintaining an aesthetic unity with the other buildings.

CONCEPT

Utilisation of the progressive planning concept to determine the form of the hospital complex and the primary circulation pattern and that of contiguity in the arrangement of details.

CHAPTER TEN

THE PROGRESSIVE PLANNING CONCEPT

Planning is the technical procedure through which user requirements are translated into buildings. Research in planning involves observations and measurements of user requirements in order to clarify them systematically. This is the basis of the progressive planning concept.

User requirements are generated by studying through observations and measurements and are separated into primary and secondary planning factors. This separation is necessary as it helps the planner to proceed in an orderly manner in his endeavour thereby reducing the chances of getting confused or lost in the milieu of planning factors on his drawing board.

The hospital function is served by three basic factors: space, staff and supplies. This endeavour is concerned with the space aspect both sheltered and open space but most especially with the former.

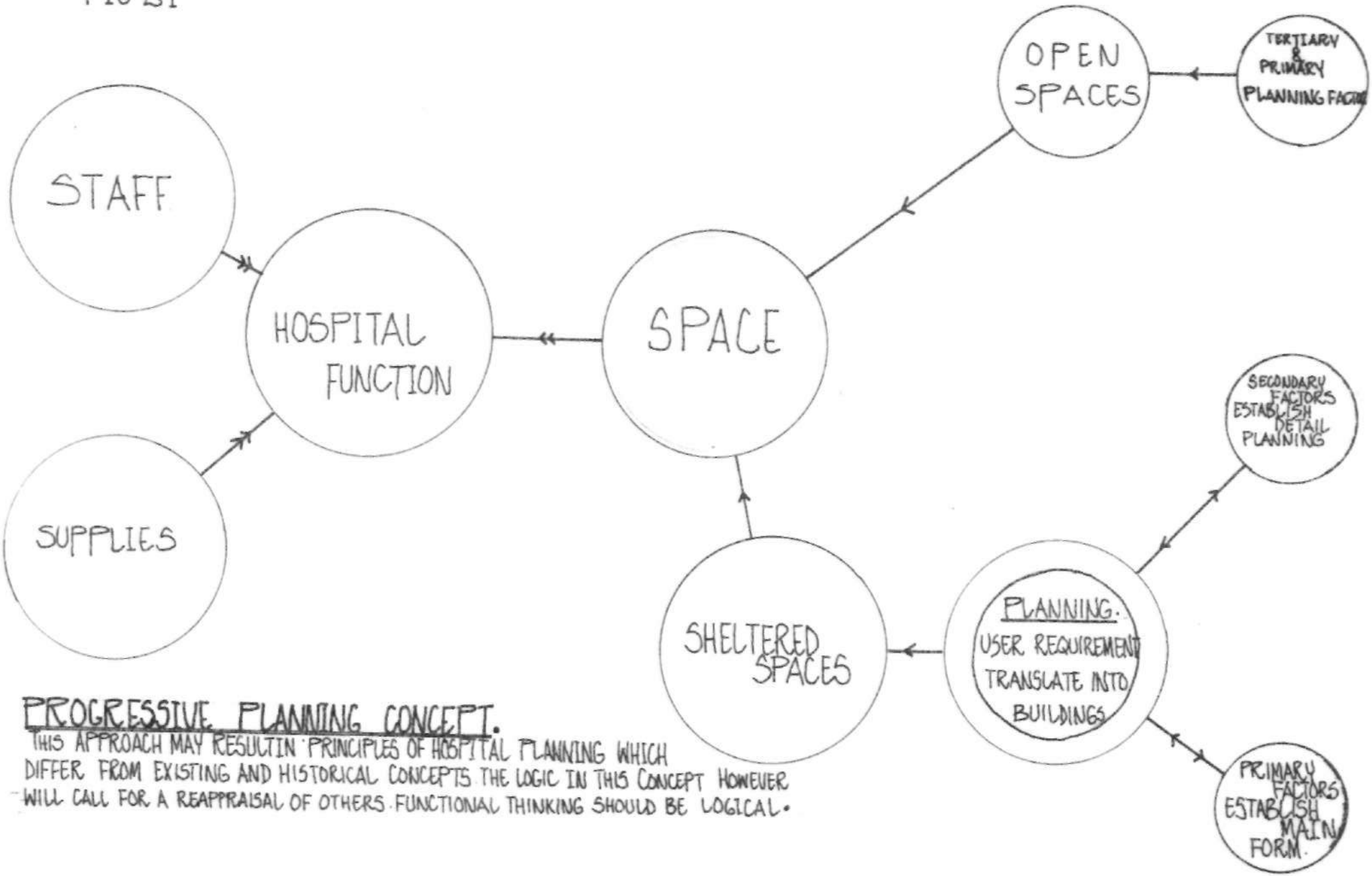
Figure 21 explains diagramatically how this concept has been utilised in approaching this design problem.

Traffic studies and circulation pattern forms the primary planning factors investigated. The results of the studies were used to generate the layout and form of the whole hospital.

The secondary planning factors intra-departmental circulation shown in schematic diagrams in later pages were used in designing individual departments and incorporated into the general layout already generated.

The planning stages gone through in utilising this concept are, unscaled zoning diagram indicating main circulation, street and links, second rough block scaled layout indicating departments in outline, main circulation streets, road systems, access and egress points and lastly the development of the detailed planning of the various departments.

FIG·21



PROGRESSIVE PLANNING CONCEPT.

THIS APPROACH MAY RESULTIN PRINCIPLES OF HOSPITAL PLANNING WHICH DIFFER FROM EXISTING AND HISTORICAL CONCEPTS THE LOGIC IN THIS CONCEPT HOWEVER WILL CALL FOR A REAPPRAISAL OF OTHERS FUNCTIONAL THINKING SHOULD BE LOGICAL.

DESIGN

A fair idea of the layout of the hospital complex had earlier been enumerated. The types of men and material that would enter the complex are namely patients, staff, visitors, suppliers, supplies and utility services.

The patients could be subdivided into three categories, the day-sick (O.P.D) acute sick and casualty. The distinction in variety calls for a separation of their circulation. Attention was paid into this in the design. Casualty entrance differ from other patients. The in-patients once admitted either from casualty or O.P.D. are boarded in a separate part of the hospital and sub-divided according to illness. The circulation of cadaver and living are separate for obvious psychological reasons.

Staff are admitted into the complex according to their duty.. Service staff through the service yard. Administration and O.P.D. staff through the main entrance and in-patient staff from elsewhere.

Visitors enter the complex without having to pass through the other departments of the hospital with a view of not exposing them to conditions that would give them fears about the condition of their relatives and also expose them to infection.

Supplies are admitted through the service yard. Suppliers come in with their supplies or go into the administration through the main entrance.

The separation of the various circulating components allows for clear and effortless combination of all the components in the architectural scale.

The circulation of fresh and clean utility and supplies are separated from that of used, soiled and dirty supplies. Transportation of food is direct from general severy to the unit severies. Materials from different units are pre-sterilised before being sent to the general cleaning depot in a bid to arrest dispersal of infection.

The Out-Patient Department

The O.P.D. being the recipient of the largest volume of patients is provided with a large waiting area accessible to the record office. The main reception hall is sky-lit and ventilated in recognition of the size and population to serve. The seating area is at a lower level to ease the circulation of people and discourage the use of circulation routes as waiting spaces. The department itself is divided into paediatric clinic, women's clinic-gynaecology and ante-natal, general medical, dental and pharmacy. The use of concrete fins as walls in the waiting area encourages ventilation and natural light. The whole area is designed around courtyards. The toilets are well ventilated and easily accessible to all the various clinics.

The auditorium for holding public health lectures and films is easily accessible from either the car park or bus stop and taxi ranks.

Patients attending the O.P.D have easy access to the laboratory, blood bank and x-ray diagnostic facilities, they can easily retrace their way out. Each unit of the

FIG 2.2

K.EVELOW IN COMMUNITY HOSPITAL

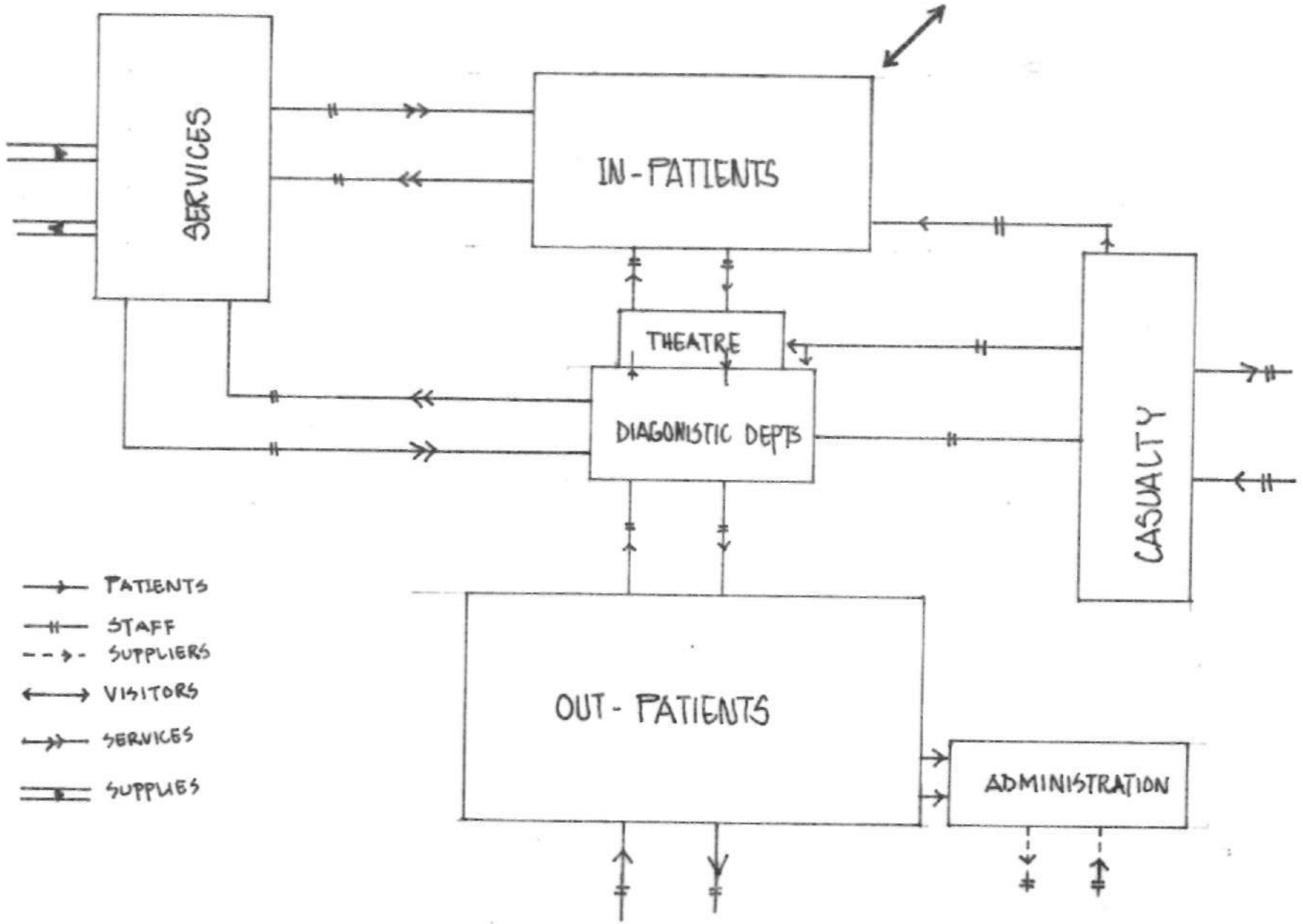


FIG 23

SCHEMATIC LAYOUT OF HOSPITAL

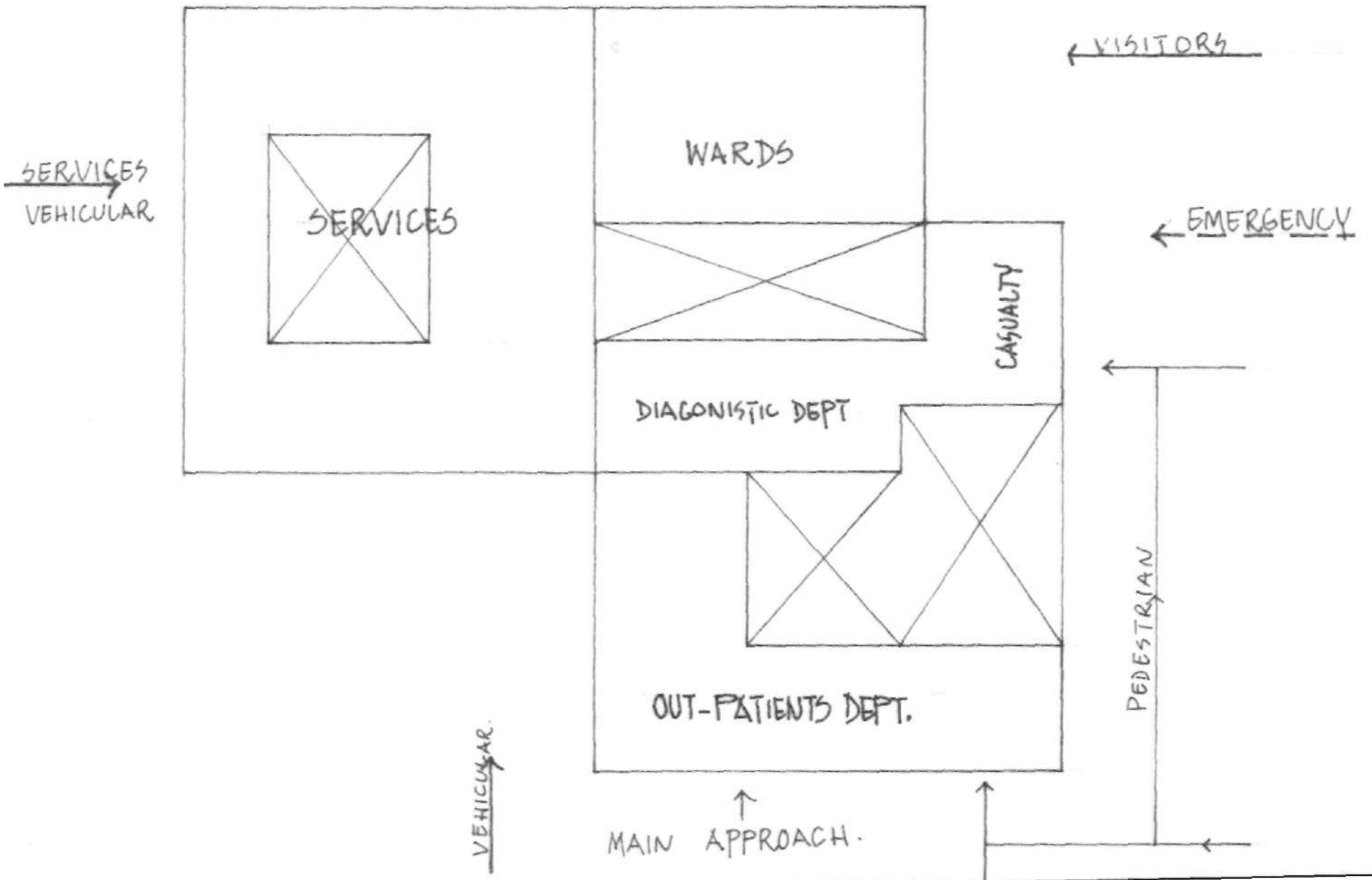
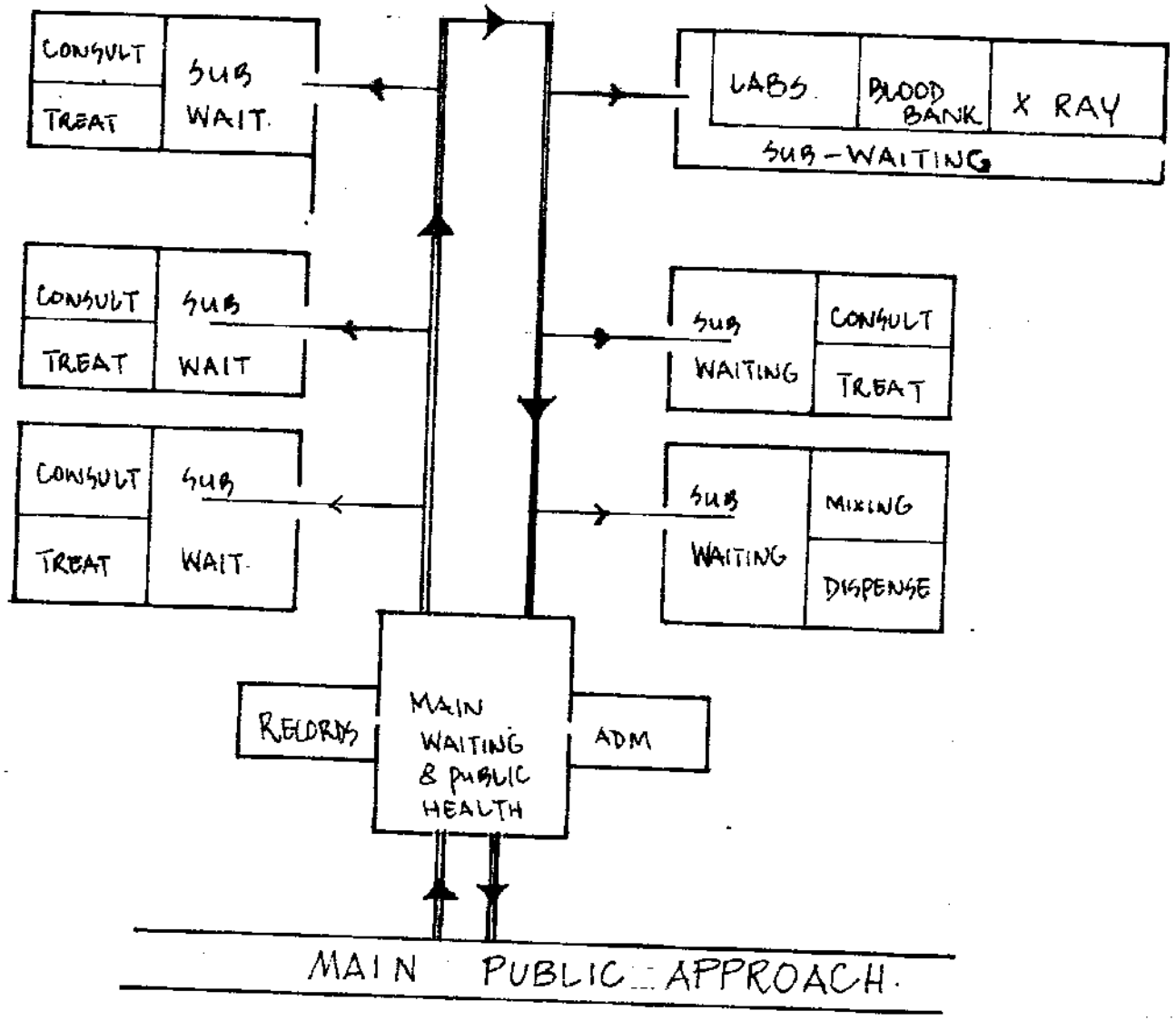


FIG 24

FLOWCHART OF THE O.P.D.



O.P.D. is serviced by individual waiting areas and consultation rooms.

CASUALTY DEPARTMENT

This aspect of the hospital provides 24 hour emergency service to patients. The paramount principle behind the design of this department is one of action devoid of protocol. The entry point to this department serves just the department hence the patient is brought into the department without any hindrance or obstruction to movement. Waiting space is provided for helpers and sympathisers as they most often distract the attention of medical personel. Storage space for wheelchair and stretchers are provided. There is a septic theatre and direct access to x-ray facility in the department. The provision of a nursing unit for patients that needs observation for a few hours is also provided. Patients that need to be operated upon or admitted can easily be transported to the operating theatre or the wards. In general the casualty department serves its primary function of first-aid and the secondary function of health care. Patients that need to be discharged are sent home after treatment and those that require a few hours of hospital attention are retained within the department others are sent for operation after preparation in the department while others are recommended for admission.

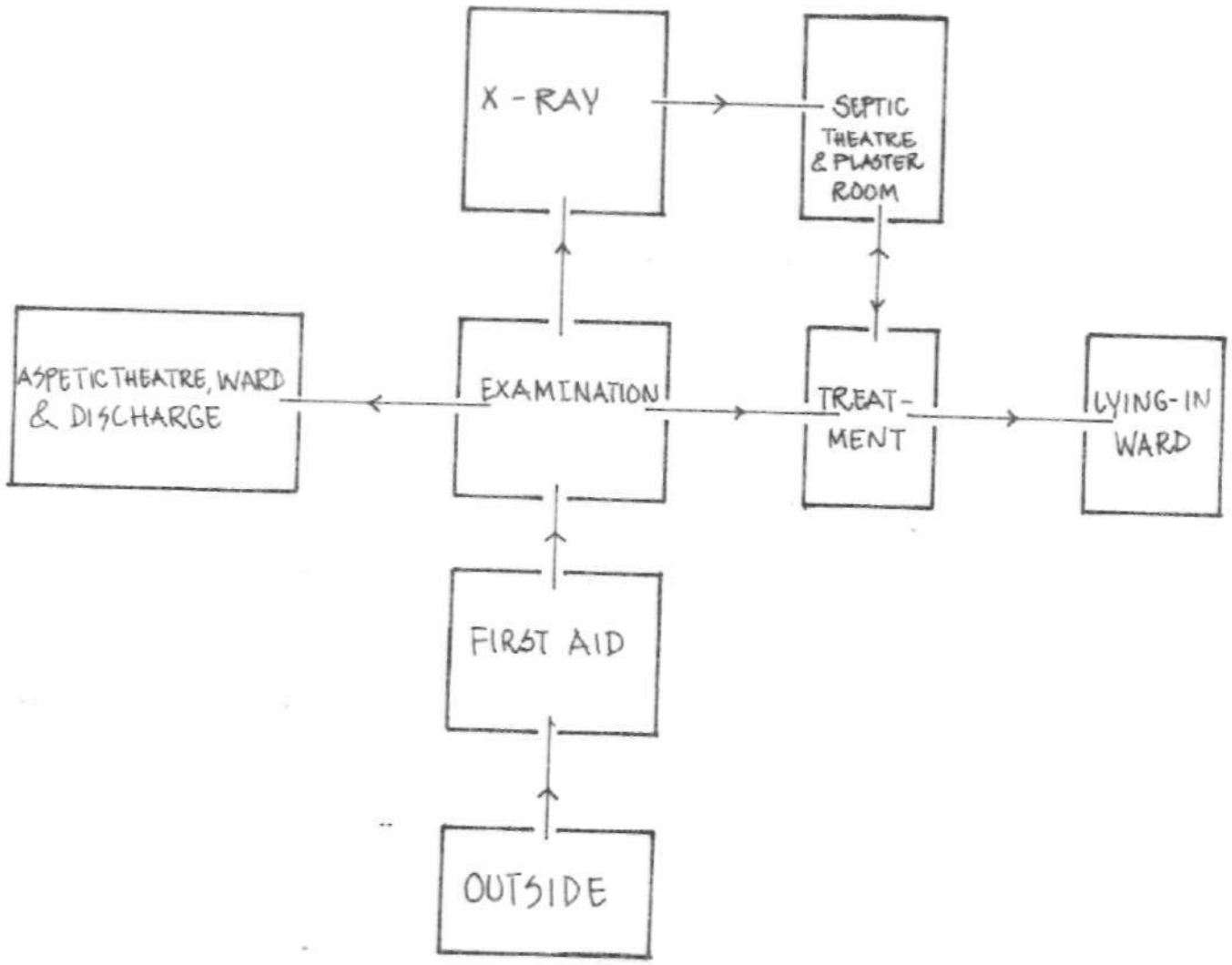
See Fig. 25 and 26 for patient-flow and diagramatic lay-out.

Diagnostic and Medical Services

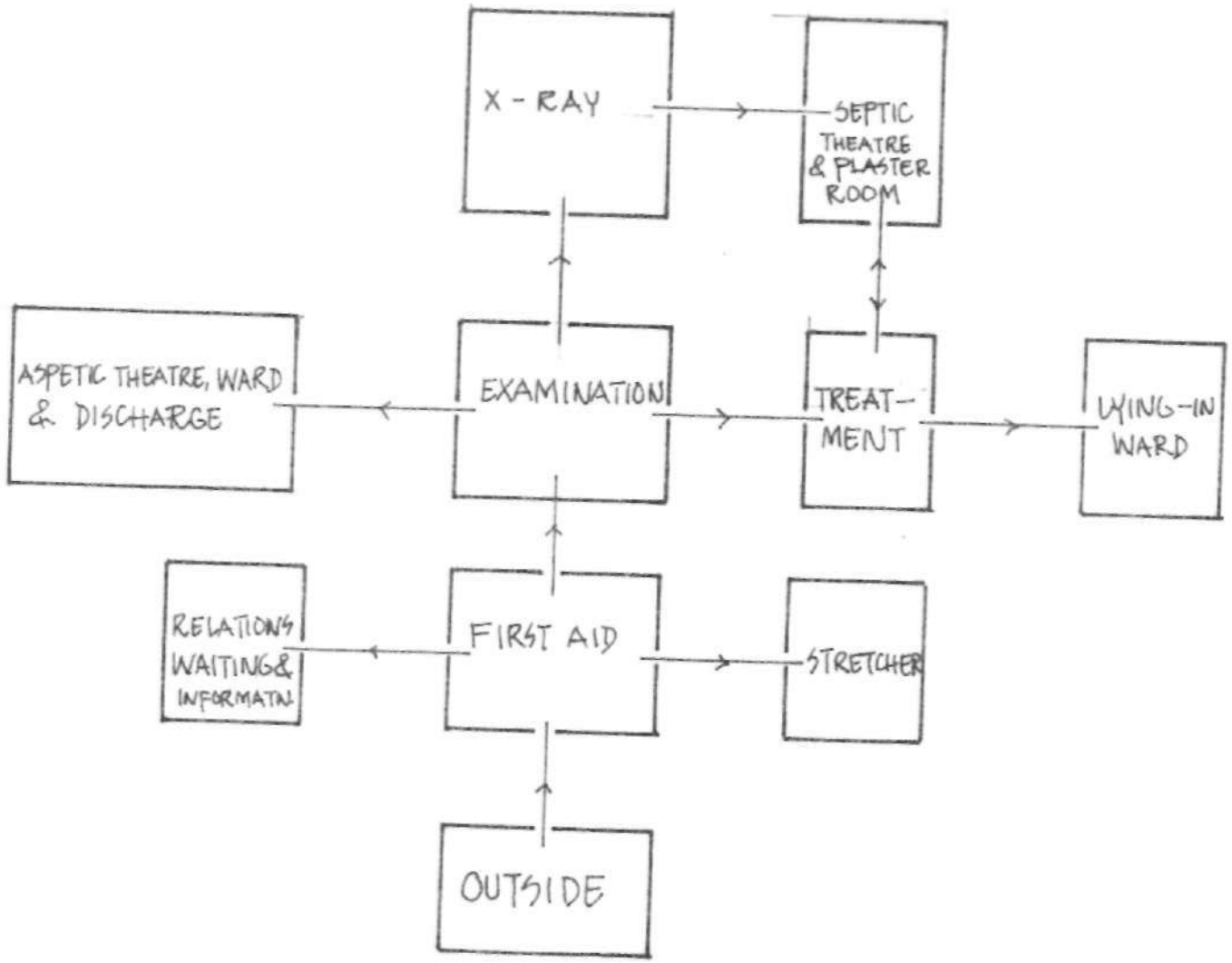
This department includes the x-ray laboratories, haematology and blood bank. This department is centrally located for easy access from all parts of the hospital. Waiting spaces are provided and changing rooms where

FIG 2.5

PATIENT FLOWPATH IN CASUALTY DEPARTMENT.



FUNCTIONAL RELATIONSHIP & DIAGRAMATIC LAYOUT OF CASUALTY DEPARTMENT.



necessary. The blood bank is easily accessible from the wards and theatres, same is true for the laboratories. They are also accessible from the O.P.D. The blood bank is especially accessible to the casualty department and theatres.

The x-ray facility is lit by artificial means because of functional requirements and the walls are constructed of monolithic dense concrete with lead sheets of specific thickness as a precaution against radiation hazard. Dark rooms, materials store, barium kitchen and exposed film store are provided. The supply of electricity to this area is specified because of the high voltage required to generate the x-rays. The department is also artificially ventilated and air conditioned.

The Operating Theatre

Functional requirements dictates that the operating theatre should be completely aseptic and micro climate controlled. There is direct access to and from wards through a bank of two service lifts. This opens into a lobby that is continuously fumigated. There is a storage space for stretchers. Patients are moved directly into the anaesthetic room and from there to the operating room. See Fig.27.

Doctors and nurses enter the operating theatre by way of the scrub up area and then into the operating room. The return journey is via the clean up area and back through the scrub-up room. Instruments are cleaned and auto-claved in the autoclaving room. See Fig. 28. Space is allocated for personnel lounge and for records and scheduling. Patients to use the operating theatre are prepared from the point of request for surgery either from the ward or the casualty department. The intensive

FIG 27

PATIENTS FLOW IN OPERATION THEATRE.

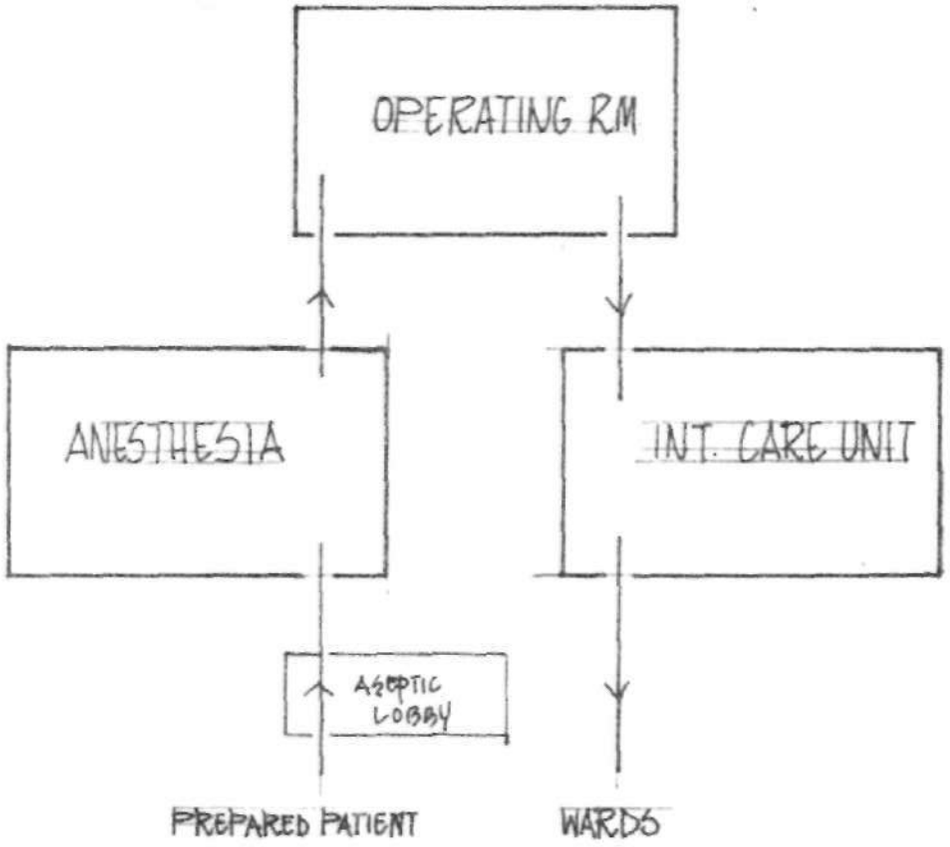
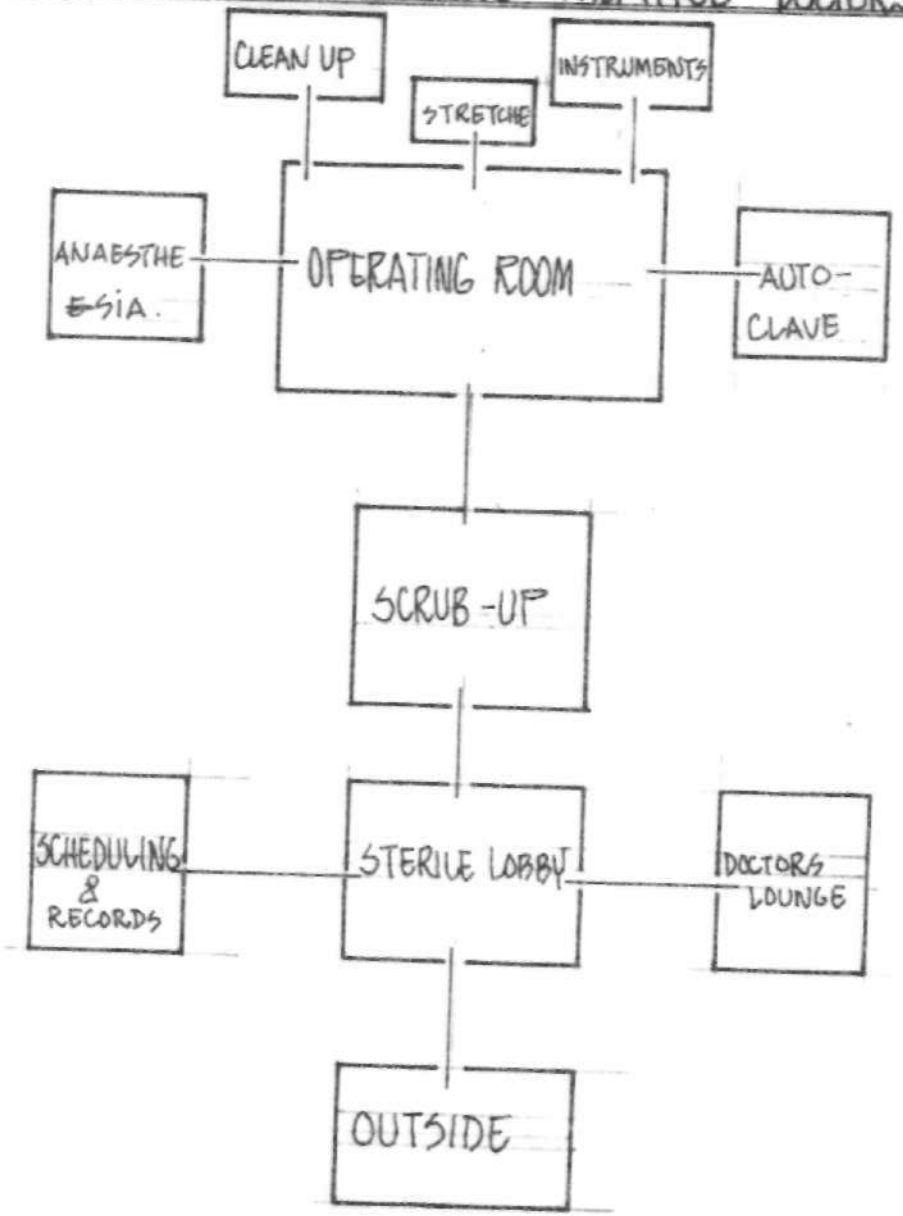


FIG. 28

STAFF FLOW IN OPERATING THEATRE - DOCTORS, NURSES & ATTENDANTS.



care unit is for post-operation recovery and other patients necessitating intensive care.

The internal climate is conditioned by split-air-conditioning systems of adequate capacity mounted on the roof of the operating theatre. The head room in the theatre is about 3.25 metres to allow for the surgical lamps mounted at roof height plus the movement of other surgical equipment that would be shifted about.

Central Domestic Service Dept.

This department has been scaled down to provide essential services on the hospital grounds and most of the services contracted to the nearby Durbar Hotel and Trade Fair Hotel. Laundry and cooking services are contracted out. A general or central servery is provided. This servery has direct transportation duct for food to the unit-sevory on other floors for the separate wards. Clean linen are transported to linen rooms on separate floors after allocation from the central linen store. The dirty linen are transported through the dirty-service lift to the central dirty linen store. The central sterile supply department is also allocated space in this department. The boiler room and bulk store is located in this department. Spaces have been allocated for the various components of this department and the circulation worked out and integrated into the total hospital circulation pattern.

The mortuary and autopsy room is located here. The whole section is made accessible from outside through the service road. A maintenance yard is not provided, the little routine maintenance and service work is to be carried out by personnel provided space near the boiler

room.

The Wards

Wards and treatment facilities are provided from the 1st floor to the 6th floor.

The maternity Ward, obstetrics and intensive care are located on the first floor. The second floor houses the male and female surgical wards. The third floor, the gynaecology and paediatric wards. The fourth floor the male and female medical wards. The 5th floor are for male and female amenity wards and the sixth floor for the male and female isolation cases. An open floor ward planning was used in recognition of the attendant advantages on the basis of the level of sophistication, of health care delivery and availability of trained medical personnel.

Individual wards has been designed according to the space and functional requirements especially the maternity ward and paediatric ward.

The amenity ward and isolation wards are designed on the basis of individual occupancy and provided with call buttons to call the attention of nurses.

Staff Welfare Facilities

There is provision for staff lockers for changing into hospital uniforms from street clothes. Dining areas are also provided for the staff. Nurses'and doctors'common room in close proximity to the Chief Nurse and Consultant Office are also provided.

Patient Welfare

There is an information and security room at the approach to the access of the wards. Shops are also provided where relations could buy things for the patients.

There is an admission office by the access to the service route to the wards. A repository for patient clothes and a warden office are provided.

Administration

The central administrative office is located near the main entrance and provides offices for the consultant hospital secretary, a general office, communication room, a deputy secretary, conference room and a supervisor of the various departments of the hospital. It is accessible to both outsiders and into the hospital.

General and Specific Considerations

The nature of traffic in hospitals makes it imperative that wheeled traffic must be accessible to all parts of the hospital. A generous utilization of ramps would be noticed wherever levels are introduced.

The stretcher and wheelchairs has introduced a different scale into space requirement along circulation routes, due attention was paid to the various space requirement. Doors to toilets and urinals should have locks that can be opened from outside in case of any emergency.

Sun Control ,Sun Shading and Building Orientation

The maximum and minimum angles of solar radiation for the different elevations are analysed in Fig. 29 to 32. Fig. 33 shows the method used in determining orientation of buildings. This was however utilised with the dictates of the site. Buildings of this latitude should face North-South on their longer elevations. But for ventilation reasons reasons they should face within 70^{o} of prevailing winds since the site is flatly profiled. Medical reasons

FIG 29

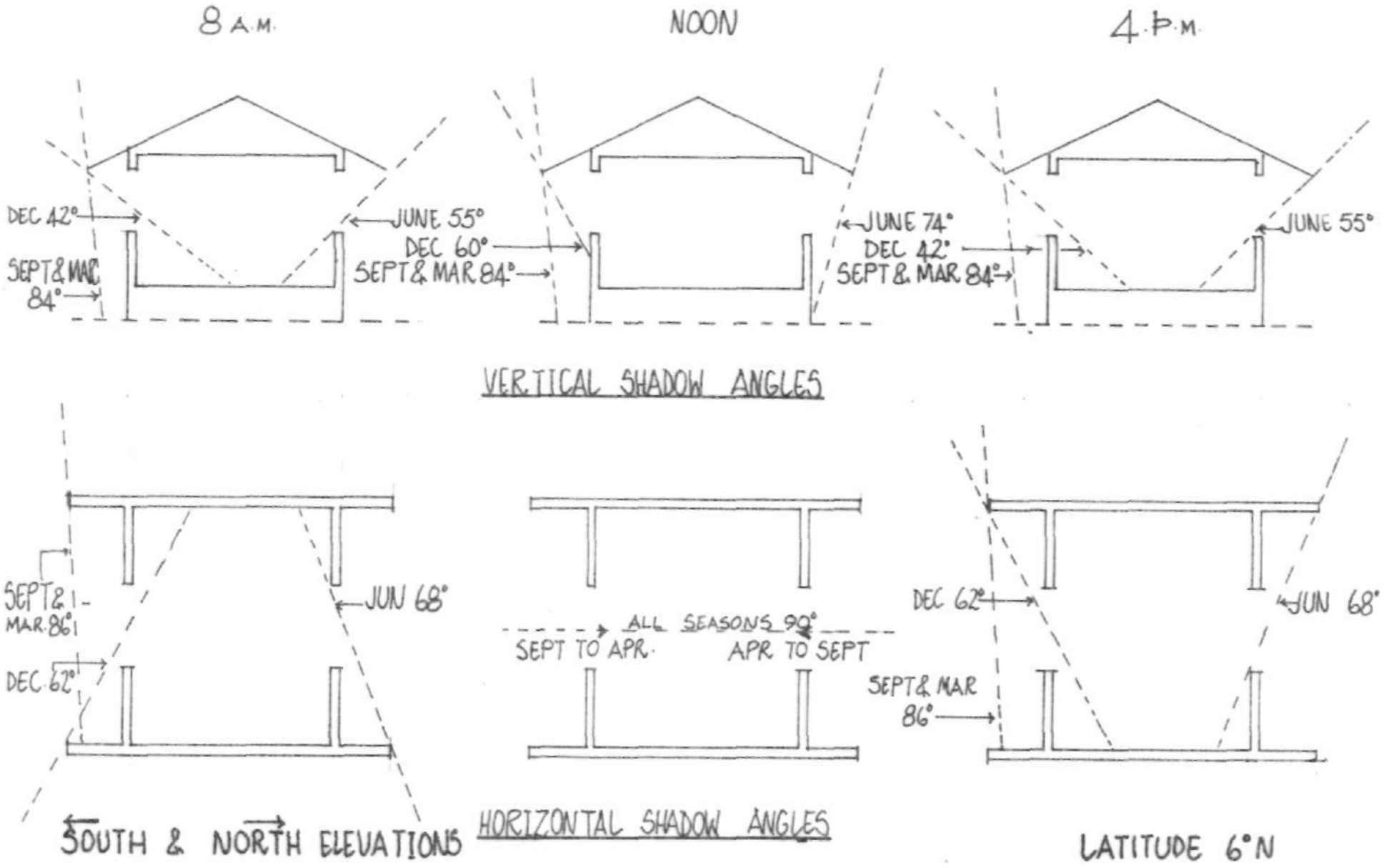

8 A.M.
NOON
4 P.M.
DEC 42°
JUNE 55°
SEPT & MAR 84°
DEC 60°
SEPT & MAR 84°
JUNE 74°
DEC 42°
SEPT & MAR 84°
JUNE 55°
VERTICAL SHADOW ANGLES
SEPT & MAR 86°
JUN 68°
DEC 62°
ALL SEASONS 90°
SEPT TO APR.
APR TO SEPT
DEC 62°
JUN 68°
SEPT & MAR 86°
SOUTH & NORTH ELEVATIONS
HORIZONTAL SHADOW ANGLES
LATITUDE 6°N

FIG 30

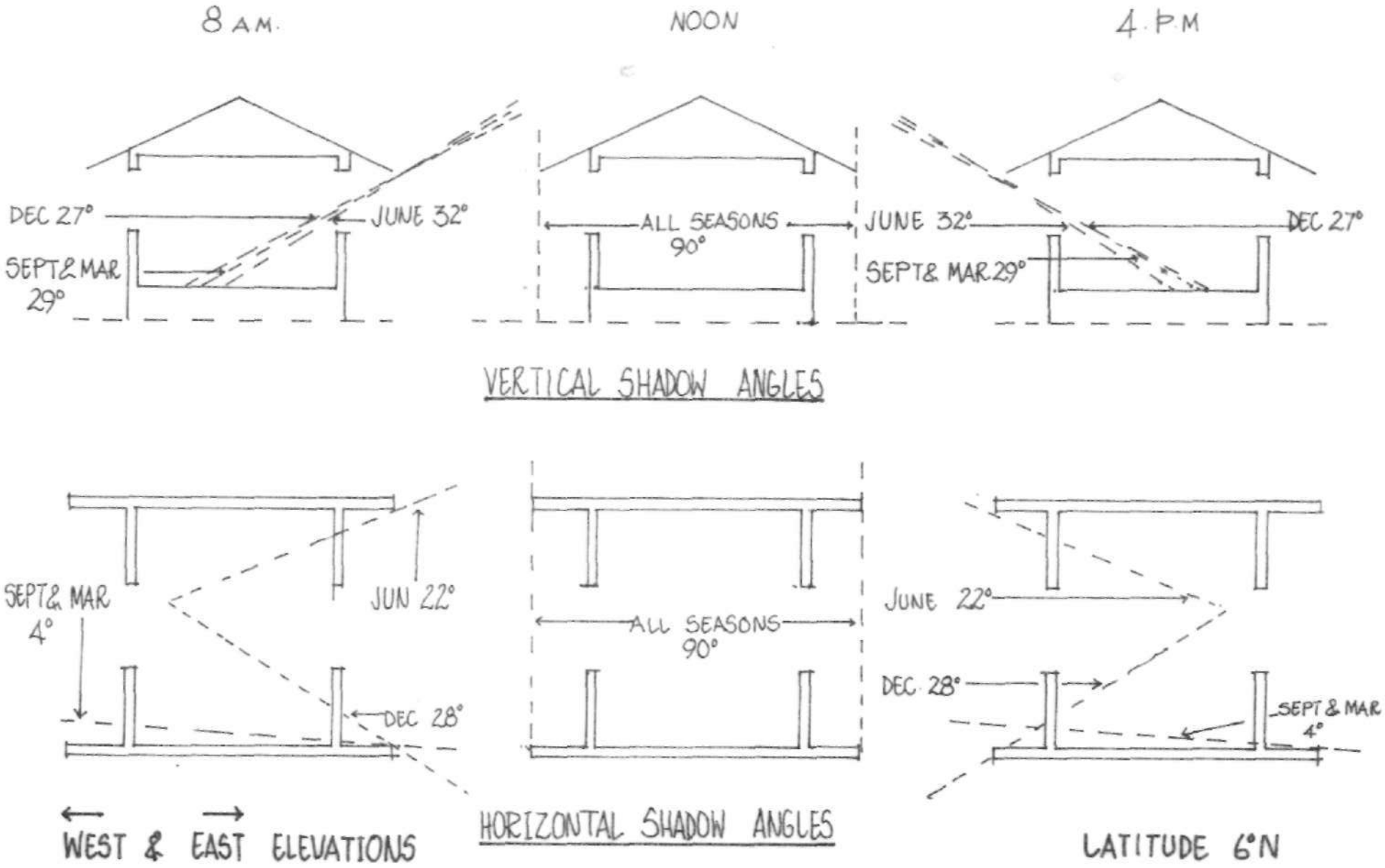
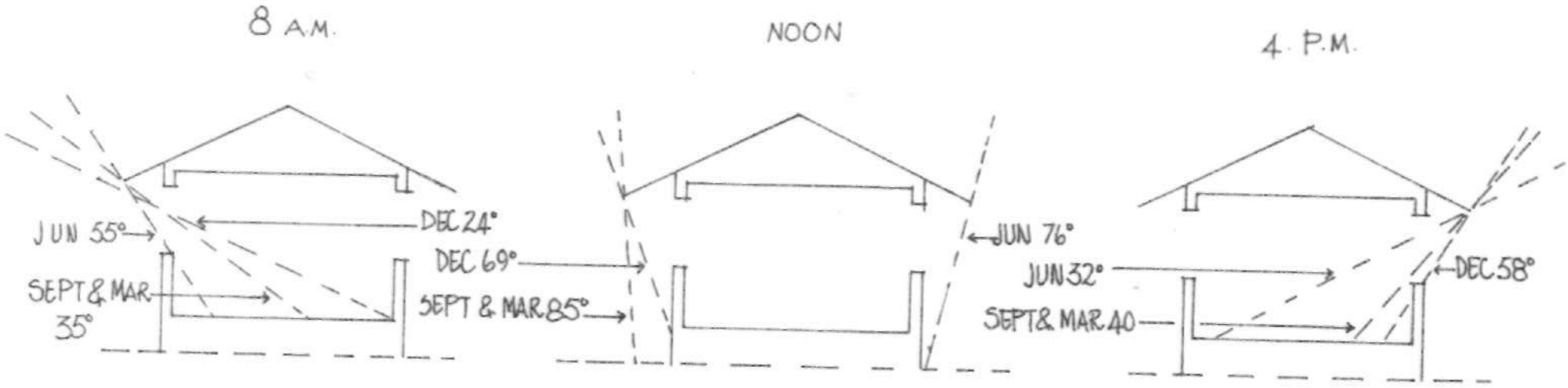
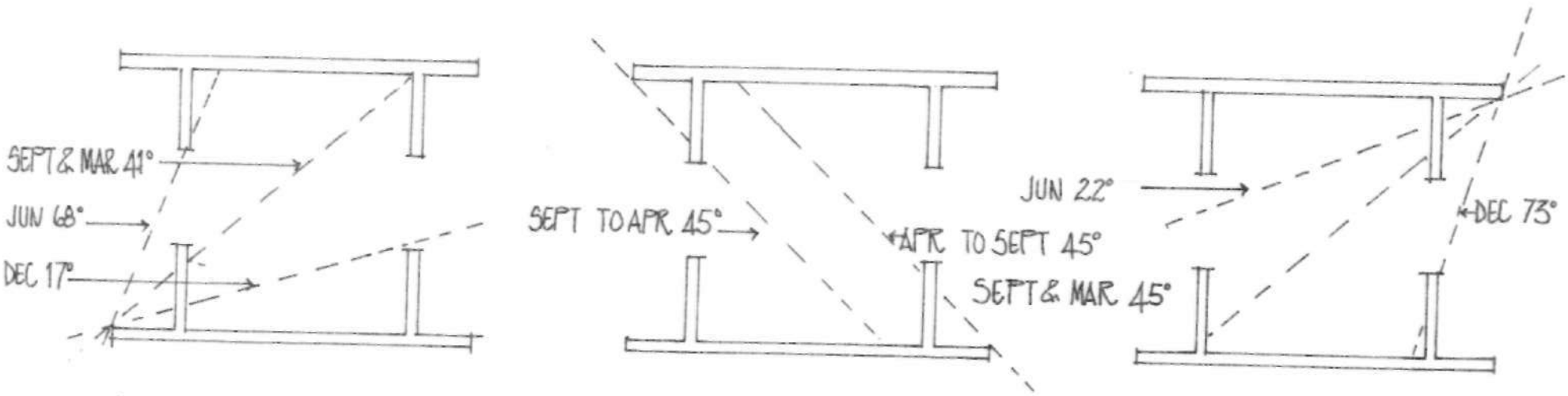

8 AM.
NOON
4 PM
DEC 27°
JUNE 32°
SEPT & MAR 29°
ALL SEASONS 90°
JUNE 32°
DEC 27°
SEPT & MAR 29°
VERTICAL SHADOW ANGLES
SEPT & MAR 4°
JUN 22°
DEC 28°
ALL SEASONS 90°
JUNE 22°
DEC 28°
SEPT & MAR 4°
HORIZONTAL SHADOW ANGLES
WEST & EAST ELEVATIONS
LATITUDE 6°N

FIG 31



VERTICAL SHADOW ANGLES

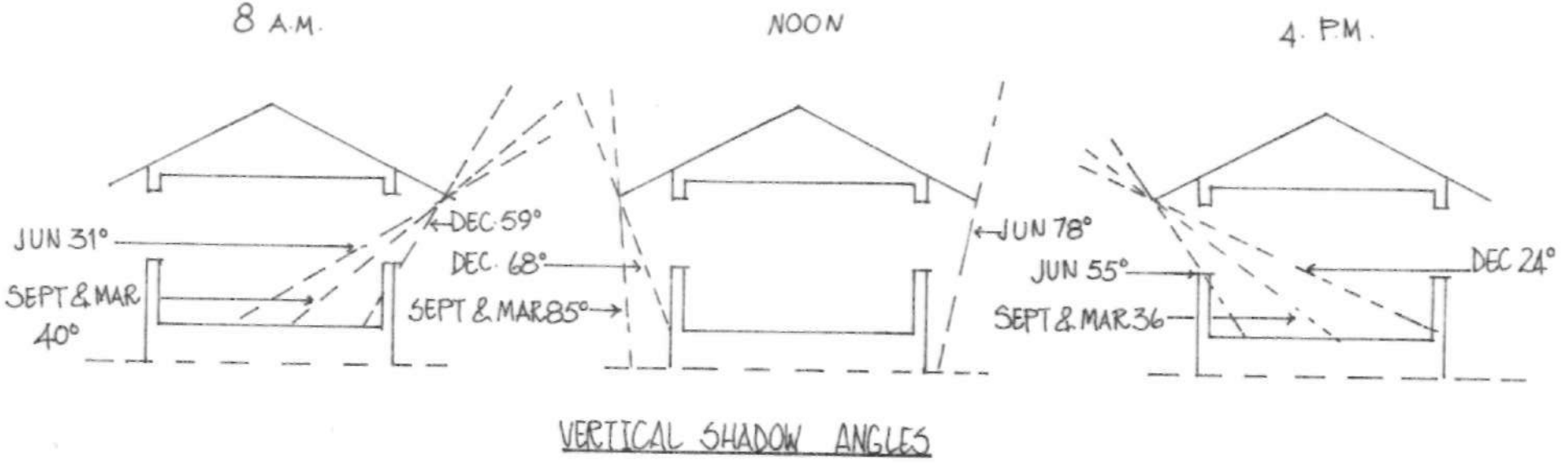


← SE & NW → ELEVATIONS

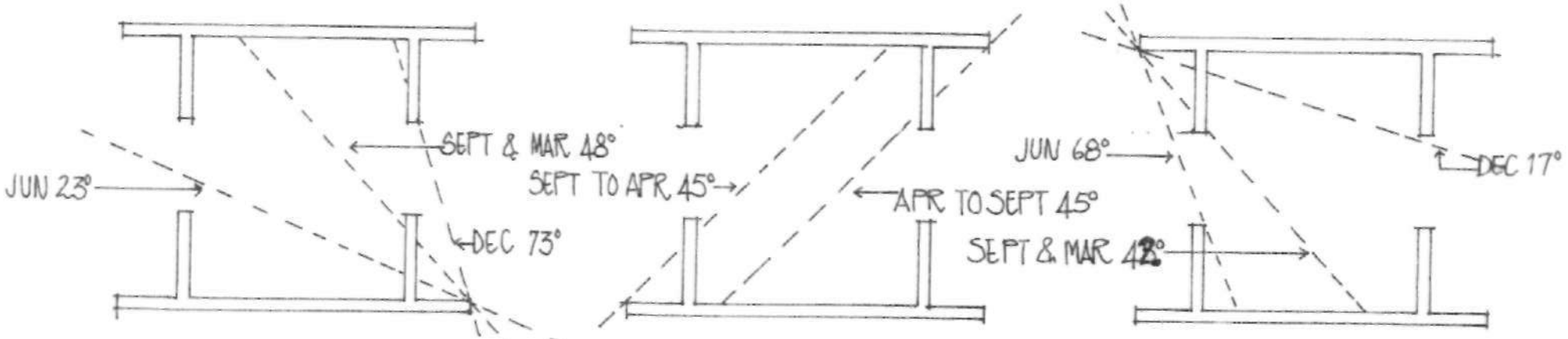
HORIZONTAL SHADOW ANGLES

LATITUDE 6°N

FIG 32.



VERTICAL SHADOW ANGLES



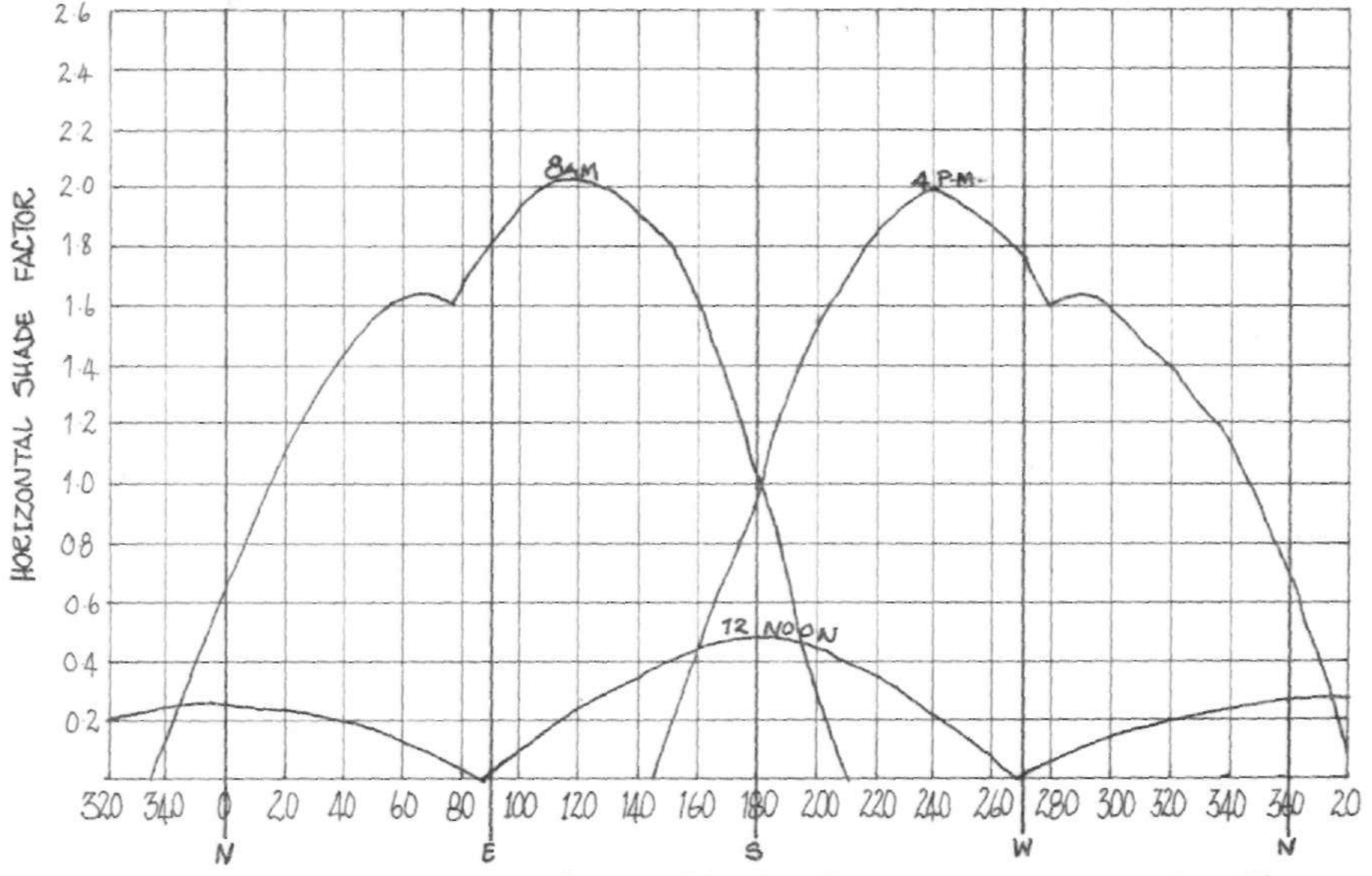
SW & NW ELEVATIONS

HORIZONTAL SHADOW ANGLES

LATITUDE 6°N

FIG 33

TO FIND THE MINIMUM WIDTH OF HORIZONTAL OVERHANG. MULTIPLY THE REQUIRED DEPTH OF SHADE BY THE SHADE FACTOR..



also dictate that early morning sunlight is desirable for patients. Most of the direct solar radiation is prevented especially the low angle radiation by sun shading devices. The method of sun shading utilised is such that inter-visibility between interior and exterior of the building is not disturbed and the facade of the buildings is not overcrowded by other components of a different scale.

Daylighting and Glare

Daylight encourages cleanliness and have direct bactericidal properties. Large windows within comfort range of ventilation without accompanying glare are utilised. The internal arrangement of the buildings are such that glare is also reduced. The open space design - the landscape also takes proper care of glare by use of elaborate system of greenery.

Ceiling heights of about 3.00 m is also used for optimum daylighting and minimum glare, the walls enclosing space also have high reflection factor.

Artificial Lighting

The illumination level of a space generally contributes to the mood of the user of the space. The lighting of spaces in the hospital complex has been a subject of primary concern. Every effort was expended in design to enhance adequate daylight but wherever necessary suitable artificial levels are introduced for obvious functional and psycological reasons.

Colour

Colour like illumination is of utmost importance in hospital buildings. Colour helps to

(a) Intensify the feeling of space within the building

(b) Define and develop architectural volumes.

(c) and good lighting in hospital space.

The design aims at utilising colour to stimulate positive response of patients to hospital environment. The colours of the various departments are such that patient moods are controlled towards a positive response to his immediate environment. A hypertensive patient is not kept in a gaudy enclosure.

The out-patient should be stimulating and warm since the stay of patients is only transitional.

Sound and Noise

Sound in its desirable form could be stimulating and even therapeutic as it could encourage sleep and rest.

However in its undesirable form as noise it could be a source of deep irritation and unease. Sources of noise has been reduced to a bare minimum from the inventory of functions provided. The location of the complex itself has reduced sources of external noise to the barest minimum. The site is away from primary roads and not in the path of airways. The zonning of the hospital complex itself is aimed at the reduction of internally generated noise.

The door specification and design is such that they are not sources of noise. Timber door and rubber door stops, sound absorbent ceiling materials all go in the reduction of noise level. Expansion joints were used to check transmission of sound and to localise the source of noise.

The control of noise from planning, design, sepecification and constructional principles were all incorporated. See Allison S.O., A general Hospital, Ikorodu, 1974.

Fire Protection

The risk of fire hazard is reduced by designing the whole hospital complex as aggregates of fire resisting units thereby reducing spread of fire. The materials specified are of very high fire resistance. Adequate fire evacuation and escape routes minimised casualty in case of fire. Safeguards of anaesthetic explosions are also introduced in design and use of operating theatres, intensive care beds and places where Nitrous Oxide and Oxygen are used.

Water Supply

The hospital complex shall be serviced by the municipal water supply and supplemented by emergency boreholes on the hospital grounds. The municipal mains is piped into an underground tank of adequate capacity. The underground tank is jointly serviced by the emergency supply from the borehole which has passed through a mini-treatment plant. Water from the underground tank is pumped to an overhead tank wfrom whence it is distributed to the various hospital departments.

Sewage and Waste Disposal

Festac town is serviced by a network of sewer system which flows under gravity to pumping stations and from where they are pumped to the sewage treatment plant.

The network of sewer system on the hospital site is connected to the central system at the appropriate inlet to join the central system.

Solid wastes are burnt in the hospital incinerator.

Storm water and surface water was channeled through covered drains into the central storm water drain and from

there channeled into Shasha river in the eastern fringe of the town.

Electricity Supply.

Electricity supply shall be by NEPA the public utility augmented by standby generating sets of adequate capacity located in the noisy zone of the hospital complex Telephone systems are also tapped from the public automatic telephone exchange (PAX) located in the vicinity of the hospital.

SCHEDULE OF ACCOMMODATION

GENERAL

Main Waiting Area/Lobby	320.00
Public Health Auditorium	200.00
Family Planning Office	9.00
Social Workers Office	9.00
Vaccination, Immunisation and Health Education Office	18.00

ADMINISTRATION

Consultant	15.00
Secretaries	10.00
Hospital Secretary	12.00
Registry	16.00.
Ass. Sec.	10.00
Tel. Room	10.00
Conference Room	36.00
Procurement Officer	12.00
Director of Diagnostic Services	15.00
Storages	16.00
Toilets	14.00

RECORDS	
Registry	12.00
Card room	16.00
Med. Records Officer	10.00
Storage	8.00
PAEDIATRIC CLINIC	
Waiting	50.00
3 Docs Consultation	27.00
Treatment & Injection	15.00
Storage	8.00
WOMEN'S CLINIC	
4 Doc. consultation	36.00
Treatment and Injection	10.00
Waiting	60.00
GENERAL O.P.D. CLINIC	
Waiting	80.00
3 Doctors consultation	27.00
Dressing, treatment and injection	27.00
Storage	8.00
DENTAL CLINIC	
Waiting	30.00
Consultation	18.00
Dentistry	10.00
Dental Workshop	12.00
Storage	8.00
Toilets	9.00
LABORATORY & HAEMATOLOGY	
Gen. Laboratory	16.00
Bacteriology & Parasitology	16.00
Pathologist	9.00

Samples room	8.00
Blood Suction room	12.00
Processing	12.00
Blood Bank	12.00
Haematologist	9.00
Waiting	50.00

X-ray Diagnosis

X-ray rooms 4 x 20	80.00
Dark rooms 2 x 7.0	16.00
Radiologist & Technicians 2 x 10.5	21.00
Exposed Films stores	15.00
New films and chemicals	16.5
Changing rooms 4 x 1.5	6.00
Waiting	24.00

CASUALTY

Relations waiting room	15.00
First Aid	25.00
Stretcher Store	5.00
Doctors examination 2 x 10.5	21.00
Treatment	9.00
Scrub room	10.00
Septic Theatre	24.00
Lying in Ward	24.00
Toilets	7.50

WARDEN

Warden	9.00
Repository	9.00
Reception	12.00

STAFF SERVICES

Nurses Common Room	20.00
Chief Nurse	12.00
Consultant	12.00
Secretary & Reception	9.00
Male lockers	20.00
Female lockers	20.00
Doctors Lounge and Common Room	40.00

OPERATING THEATRE

Records & scheduling	12.00
Anaesthesia	10.00
Doctors Rest room	16.00
Autoclave room	15.00
Clean up	6.00
Scrub Up	24.00
Instruments	8.00
Stretcher 2 x 3.6	9.00
Toilets	5.00

GENERAL DOMESTIC AND MEDICAL SERVICES

Sterile storage	35.00
Bulk Store	70.00
Processed store	55.00
Clean linen	20.00
Dirty linen	20.00
Gen. Sevevy	20.00
Wash room	15.00
Storage	15.00
Male lockers	15.00
Female lockers	15.00
Autopsy Room	15.00

Cadaver Storage	9.00
Embalming Room	10.00
Waiting Area	12.00
Staff Dining Room	55.00

WARDS

Open ward	138.00
Nursing Station	16.00
Drugs & sisters station	14.00
Stretcher Storage	5.00
Clean Linen	8.00
Severy	10.00
Local Sterilising room	8.00
Day rooms	20.00
Sluice Room/Toilet/Dirty Linen	14.00
Bathroom	14.00

COST ANALYSIS

The whole process of design was cost conscious. Design judgement as regards costs were however compromised at certain instances where functional constraints in regard to the site, and the enclosed function dictated otherwise.

The shape of the plan satisfies functional requirements within costs limits. "Dead spaces" in the form of circulation space are reduced to the minimum without impairing function; the width of corridors are within functional limits without unnecessarily increasing cost. The value and availability of land in the locality makes the building of multi-storey hospital a reasonable decision as the site is fully utilised. Foundation cost has been limited as simple foundation of the slab form is used in the single storey out-patient department and the cost of the substructure in the ward complex is shared by a number of floors. The arrangement of plumbing works throughout the complex reduces the cost of extra-piping.

The spacing of the structural frame is such that useful floor area is not encroached upon and the frames are enbedded in the wall of the superstructure. The spacing of columns is such that the cost of the superstructure is not unnecessarily increased and at the same time having clear floor areas.

The choice of reinforced concrete frame for construction rather than structural steel. Reinforced concrete here comes 25% cheaper than structural steel of the same scheme.

LANDSCAPE AND OPEN SPACES

The objective of the design of the landscape and open spaces is to harness the external spaces with the building in such a manner that there is a harmony of mood for the user. The hospital being a place of healing, where the user comes to retain this sense of living, a place where the worker (doctors, nurses and others) comes to help people who want to live must be the height of hospitality, invitation and inspiration. The general vegetation is green with specks of colourful flowers and play of light and shade with emphasis on shade to pronounce a feeling of coolness and invitation in the humid tropical climate of Lagos.

The footpaths are hedged with knee high shrubs to maintain its openess and invitation and at the same time shaded with high branching evergreen trees. The lawns a green carpet of kikuyu grass is dotted with ornamental dwarf palms of various types.

The perimeter wall to the hospital site is not just blank dull wall but an existing sculptural component deriving its existing from the form rather than the components on the wall in agreement with the character of the building itself which takes its architectural taste in its form.

The open spaces are graded with a slight slope to the storm water drains to encourage the drainage of the whole site and the footpaths paved with concrete slabs laid in alternate sequence to add a little excitement.

Car parks are well delineated from footpaths by concrete kerbs of a 15 cm high and grass patch of about 60 cm width.

The total landscape is hence designed in such a manner that it emphasises the feeling to be expected inside the building and at the same time modify the external climate in order to improve the internal climate in order to improve the internal climate of the buildings of the hospital. The trees shade the walls reducing the solar radiation falling on and being absorbed by the building, cast shades which give a feeling of coolness. The green lawns reduces glare, absorb solar radiation with little or no re-radiation. The shrub guides the pedestrian by emphasising the path to his destination and the flowers and ornamental trees decorate both the landscape and building.

CHAPTER 14

AESTHETIC THEORY

Architecture and architects like art and Artists can broadly be divided into two in terms of Expression and Impression.

The expressionist strives to express his artwork in exactly the way it is and the architect communicating in this mode tries to make his building look the way other buildings of the same function looks. The expressionist architect is at his best when designing buildings that has a history of character, a church, a mosque, a hotel and an airport terminal building.

The impressionist artist on the other hand strives to create this artwork from his own perception. This can be true of the architect as well where the effort is a deliberate attempt with a clear vision of his ultimate aim.

The aim at the outset of the design in this endeavour is to create a beautiful and inviting building. A monument for the living who want to live. The building must enhance the townscape rather than intimidate the user and other buildings in the neighbourhood. It must be fresh, living and hopeful. This was the vision at the outset and the result is shown in the drawings that accompany this write up. This is the impression of this designer of a hospital with a city setting and in the particular location.

CONCLUSION

The design of a building such as a hospital calls for great caution by the architect as the result of a judgement made on the drawing board may send a large number of users to premature death or contact with disease. The recognition of this fact by the hospital architect would force him to pay attention and excercise caution in his utilisation of data for planning purposes. The planning consideration in the design of hospitals however are collosal. The moment the architect is able to sift through the various considerations to determine the basic (primary) factors he has gone a long way in getting a clear picture and the design approach.

The division of the whole design endeavour into two broad parts the objective systems and intituitive systems aids in effective planning of the functional requirements and in expressing the vision of the enveloping mass.

The study of the interdepartmental traffic in a hospital is a pointer to the pattern of circulation in a hospital and that planning decisions when executed progressively enables the architect to proceed with confidnce and a clear picture of his endeavour. The logic of the progressive planning concept utilised calls for a reappraisal of former concepts based on layout and shape of hospital buildings. A hospital is a place that must function and be seen to be functional, to be functional decisions concerning it must be logical.

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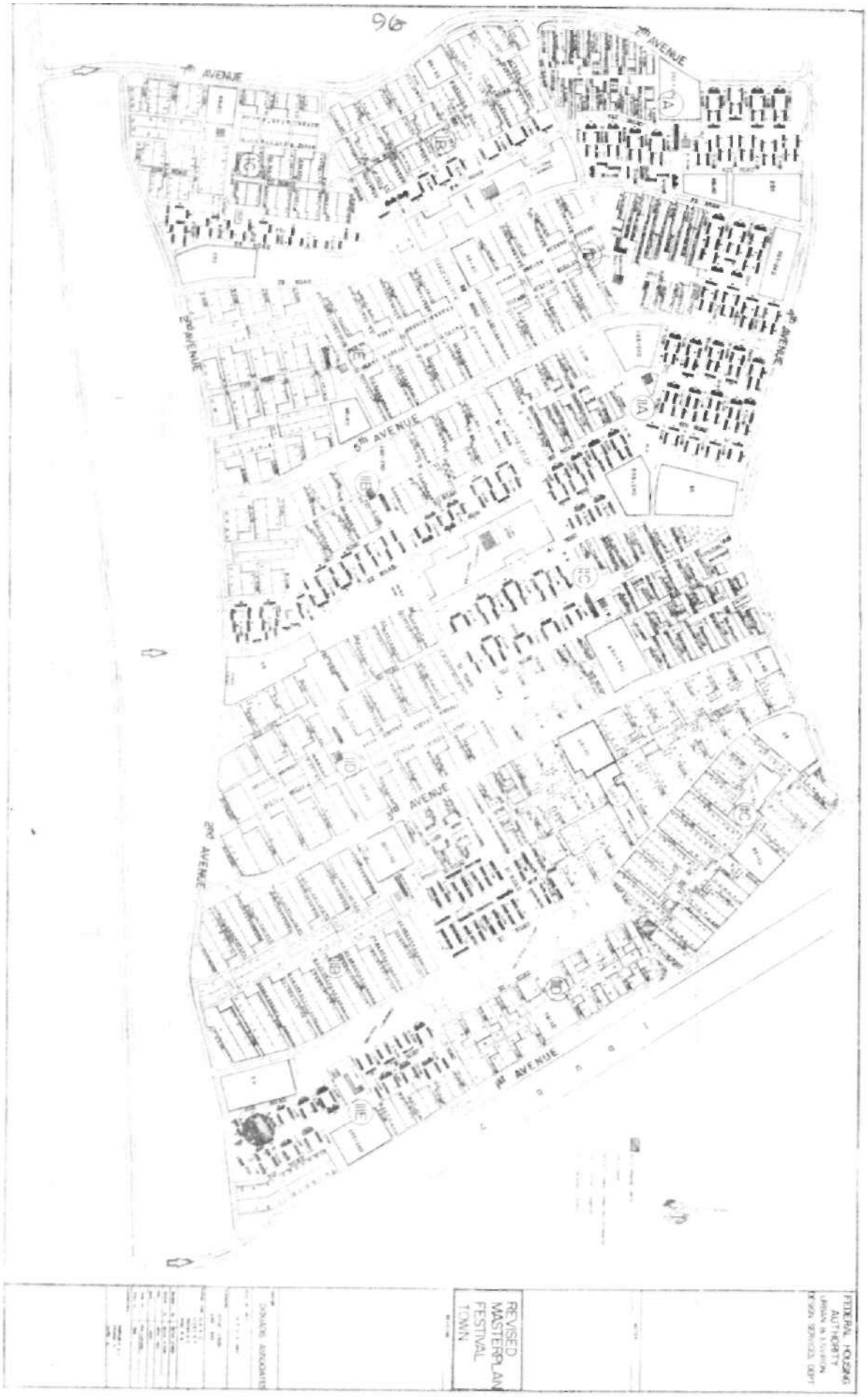
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APPEND DC

1« Present Level of Development of Festac Ttrwn June, 1983 and position of hospital site.



REVISED MASTERPLAN FESTIVAL TOWN

FEDERAL HOUSING AUTHORITY