A THESIS

Presented to the Department of Architecture
Faculty of Environmental Design

Ahmadu Bello University, Zaria

In partial fulfilment of the requirements
for the Award of the Degree of

MASTER OF SCIENCE IN ARCHITECTURE

By

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"ILORIN MATERNITY HOSPITAL"

JUNE, 1981.

DEDICATION

D E D I C A T I O N

This thesis is dedicated to my parents

Dr. Timo Afolayan

Mrs. R. A. Afolayan

who have contributed immersely to my being me.

'The Woman' about to become a mother.

And to God, the origin of life.

THE MOTHERS CREED

If a child lives with criticism
He learns to condemn
If a child lives with hostility
He learns to fight
If a child lives with riducle
He learns to feel shy
If a child lives with shame
He learns to feel guitly
If a child lives with tolerance
He learns to be patient
If a child lives with encouragement
He learns to be confidence
If a child lives with praise
He learns to appreciate
If a child lives with fairness
He learns justice
If a child lives with security
He learns to have faith
If a child lives with acceptance and friendship
He learns to find love in the world.

ABSTRACT

The bravest battle that ever was
fought;
Shall I tell you where and when?
On the maps of the world you'll
find it not,
"It was fought by the mothers of
men"

Joaquin Miller

MOTIVATION

1. The present conditions and atmosphere are not conducive at all for that unique experience of childbirth.

2. Statistic has shown that demand for a more comprehensive maternity hospital is for more than can be met.

3. The maternity hospital should be seperated from the of the hospital even from the Gnaecological unit because mothers should not be in close proximity to the atmosphere of morbidity which inevitably prevades other units. Pregnancy is not an illness.

GOALS AND OBJECTIVES

1. To achieve a 300 bed maternity hospital.

2. To provide an atmosphere that will contrive to meet all the medical, physical, psychological emotional educational and social needs of an expectant mother.

3. To introduce by the way of design the concept of courtyard system which is generally associated with the buildings in the tropics.

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AKNOWLEGEMENT

A C K N O W L E D G E M E N T

My sincere gratitude goes first and foremost to the following people for their invaluable professional contributions in forms of design data and suggestion throughout the period of this documentation and architectural design.

— Dr. F. W. Schwerdtferger my Mentor who guided me through cuts, agreements and disagreements to a final solutions worth presenting for a thesis.

— Professor E. A. Adeyemi the Head of Department of Architecture and Expert in Hospital design for his valuable contribution

— Arc. Shim Adesina - Thesis Year Co-ordinator (1981)

— Mr. Beeko who was very helpful.

— Mr. Solanke

— Mr. Urbanowicz

— Architect Oyedipo - Niger Consultants Ilorin.

— Ministry of Health, Ilorin.

I will want to express my gratitude to my colleagues, Halima, Ema, Makanjuola, Nath, Victoria and many others who have been helpful during my stay in the studio.

Special thanks to Gbenga for being so careing, Deji, Jumoke, Demola and Bukola my brothers and sisters for their love.

May God the Almighty continue to bless each and every-one of them.

INTRODUCTION

I N T R O D U C T I O N

Hospital is a social institution utilying combinations of different scientific equipment and functions in collaboration with a team of trained medical, para-medical and non professional staff to provide a service to the patient.

The spaces within the hospital complex and their climatic requirement are concern of architect. He deals with design and planning aspect of the whole complex. therefore, hospital utilysis effectively the talents and time of employees and also provide an efficient and safe services to patient.

I fell it is a duty of young Nigerian architects and medical personnel to collaborate and make contribution to improve situations.

The architect should make research into hospital architecture in order to understand the functions and relations of various elements of the complex so as to prepare an architectural contribution in the field of health facilities design.

The proper planning of a maternity hospital can be named as attempt to create a suitable environment which caters for

(a) The medical needs

(b) The psychological emotional and social needs of a patient.

To be able to achieve such an effective planning the social background of the patients will have to be taken into consideration.

Ilorin has a maternity hospital already but the conditions and atmosphere are quite poor. It is not a comprehensive hospital. It can just a very small percentage of women about to give birth. I therefore suggest to have a new comprehensive maternity hospital that will later (cater) for a cater (larger) number of people in Ilorin and its outskirts. Its hospital should also met all the medical, physical, psychological emotional and social needs of an expectant mother.

SCOPE

SCOPE OF THESIS

This thesis deals with female sex from the time they become an expectant to the time they become a mother. That is antenatal (before birth), during birth and bostnatal (after birth) treatment.

The scope has been determined to enhance.

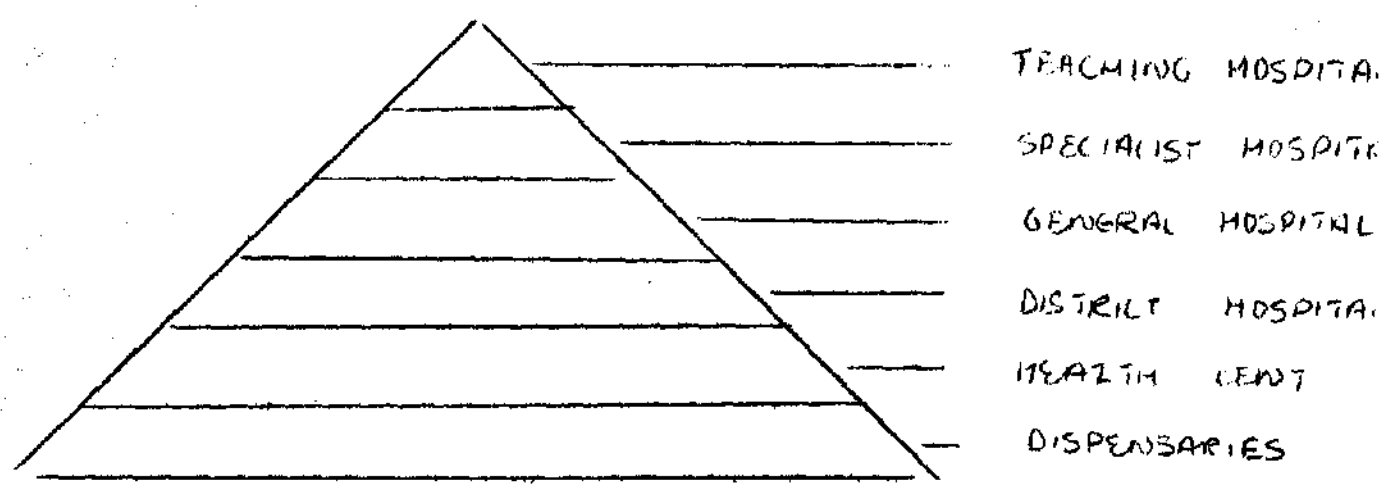
1. Efficient running of the hospital.
2. Proper and adequate running.
3. Adequate specialied staffing.
4. Adequate sorphisticated equipping.

HOSPITALS CAN BE CATEGORIZED INTO THE FOLLOWING:

1. Medical Teaching hospital which provide all the necessary medical needs of an entire state. It is normally situated in the capital town of the state. It brings up medical and para-medical personnel who will renue in the smaller health care institutions.
2. District General hospital - smaller and less complex than a teaching hospital. It refers cases beyond its scope to the more advanced teaching hospital.
3. Rural hospitals are provided to serve a group of town where health centres, climes or dispensaries will not suffice.

4. Special hospitals - these are hospitals speciali zed in certain medical fields like, maternity optuamology, otolaungology etc.

HOSPITAL HIERARCHY PYRAMID



Departments:

1) Out patient department
   - Antenatal Clinic
   - Diagonistic Facilities

2) In patient department
   - Antenatal Ward
   - Postnatal Ward
   - Private Bed Ward.

3) Supportive Facilities
   - Doctors Facilities
   - Kitchen services
   - Laundry
   - Morque and Antorsy
   - Mechanical services
   - Electrical services.

GENERAL DISCUSSIONS

The Enviroment Inside the Hospital:-

The have a profound effect on people. Colour cannot be judged in isolation and any psychological suggestiveness ascribed in it is either weakened or strengthened by the altributes of other adjoining items such as shape, forms, texture. If one is effected by colour in normal every day life and respond to its pressure how much more subsceptible must we be when we are not in our best.

The entire concept in planning the hospital should be received as an intergrated unit. Three types of people will use the hospital each with different view points.

The Patient:-

She does not want to be in hospital at all and would rather be some where else, she feels imprisioned. She must conform to hospital rules and regulations she has temporarily lost her freedom. It is important that colours in wards should not be over stimulating because patients find it impossible to let off steam and pent up emotions can be disturbing. Colours of more relaxing nature such as green or blue are excellent.

It can also be red or yellow if it does not have too much chromatic strength. A monotone and boring. Coloured ceiling is effective when the patient is confined to bed. Small strong areas of colour on doors or lamp shades add interest, break monolony of any room.

Day room is utterly dissimilar to ward. It should give complete change of atmosphere. The hygiene book should be abandoned for a more domestic one. Furniture should not be too low. Bathrooms and lavatories through small should have lower ceilings thus appear larger and more roomy . Floor colours carried up on to the skirling also create the impression of space.

The hospital Staff:-

The staff see the hospital in all its aspects and have difficult job of trying to keep it clean and run it effeciently. Colours chosen should be pleasant but easy to maintain. Dark green or brown on lower ways are easy to keep clean but terrible to look, gives rise to institutional look. Emulsion on upper walls and gloss on lower down should be provided.

Carpenting is essential for the off duty rooms. Softness under foot is essential psychologically as well as physically because work on hospital is very tiring on legs and feet. When the other surfaces throughout the hospital is hard. Chairs are up holstered and low so that aoccupant can stretch their legs out in a relaxing almasl horyontal fashion. Staff dinning rooms can be either small or large tables should real no more than four.

The doctors private room sometimes provide chance for break. This should be seperated physically or a strong usual break provided by link corridor between the hospital and should be painted in very strong colours. This acts as a psychological battlement behind which the staff can retire and relax.

The Visitor:-

Normally they do not always enjoy visiting hours and are often made to feel unwanted. They are told wh where to go what time to come when to keep quiet. These controls worry both patient and visitors.

Colour can play an important role in guiding people along certain routes. The main routes leading to the wards can have a warm rich floor tile, secondary may have corridors of more neutral or less attractive colour. Colour to doors, one for ward doors, another for bath room door, another for services etc. Colours may just be a variation contents.

The Hospital:-

The planning of a hospital is highly complicated by a variety of quite unrelated factors. There is necessity for providing certain rooms such as private rooms, operating theatre and other rooms in the most s suitable location with the shortest possible connections and easy inter-communication between various departments. There should be provision for future expansion. There are also purely economic aspects. All these points must be carefully co-ordinated. The problem is more complicated because some of these considerations and requirements are quite incompatible. There may also be different requirements conflicting with each other within the same department.

"A hospital perhaps more than any other kind of building is a compromise between various considerations among which the medico hygienical are of special importance solution will vary according to the importance places on one or another of these considerations. This is one of the reasons why hospitals even if of the same type and size are often quite dissimilar and why it is so difficult to achieve a standardization of even small institutions.

The architect first and foremost must have the broad view of the problems regard the whole as a working unit, differentiate between leading principles and secondary requirements.

The main consideration is the cure of patients in the shortest possible time through the co-ordination of all available means. A comparision between hospital and factory operation may be justified. A factory producing an article assembled from several processed parts must insure that these parts are produced a made available at the proper time and in the proper quantity for assembling the finished article in the same way.

It requires not only good organisation and co-ordination of the various departments but also sufficient space.

"A good hospital is always a good compromise between a number of different points of voview. A spirit of loyalty and co-operation between all parties involved is always the best for achieving the main purpose, a hospital working as a single unit with a maximum efficiency.

Hospital Planning in Relation to Cost:-

When discussing economy in connection with hospitals the following must be kept in mind.

- The need for hospital beds can never the filled.
- Funds for hospital construction and hospital care are always inadequate and always will be.
- Hospital economy:- (1) Economy of construction
  (2) Economy of medical care.

How economy influenee hospital planning:-

From authorities point of view, the sums they can afford are always limited and adequate.

From the planning and construction point of view there is no place for anything which is not strictly necessary for the proper functionning, no waste of space hospital architecture is more functional than any other kind. Unnecessary space or decoration in the long run most not affect the production of beds. These facts does not deprive the architect of any of his joy of creation. In a way it perhaps makes his problems more challenging and at the same time more interesting.

From medical point of view, there is wish for every facility.

Hospital as a whole is a unit where each part is dependent on all the others. The various departments must be able to work together in harmony. It is the total effectiveness of the hospital that comes first. It must always be remembered that a hospital is built for the patients.

1. Unnecessary space is eliminated.
2. The necessary space is arranged for maximum service and minimum of help.

Economy of construction is not achieved by using cheap materials instead of ones.

Every hospital is a living organism which is constantly growing. This must always be foreseen and provided for in an economical way. Mistakes are always very lacostly.

Conclusions:-

- Unnecessary expenses affect the possibilities of filling demands for beds.
- Unnecessary space affect costly.
- Maximum effeciency is obtained when the various departments are planned to co-ordinate each other.
- Good equipment pays in the long run even if expensive.
- Nursing costs are important than construction costs but it is no less necessary to save on both.
- Research and scientific work in hospital planning field is very important.
- Development and additions must always be foreseen when planning hospitals.

Program of Hospital Construction:-

Every building fills a function and all its parts must be adapted to this function if it is to work properly. To adapt a building to a vertain functions means that it should be planned and equipped in such a manner that the purpose it is going to serve can be accomplished in the most suitable and effecient fashion.

It can be said that the preparation of a complete detailed program compels the designer to penetrate the various problems and to consider carefully all of its angles. The following words of Swedish poet may also be applied to building programs. "What is vaguely said is vaguely thought.

Planning Process:-

The overall planning process of build a new health facility consists of five sequential steps.

- Developing a master plan which conform with the area wide plan.
- Obtaining a certificate of need from appropriate state agency.
- Preparing a functional program.

- Determining equipment needs.
- Designing the physical form.

Provision for the Project:-

A) Narrative Program

- Space requirements.
- Staffing pattern
- Departmental relationship
- Institution objectives
- Description of each function to be performed
- Approximate space needed for these functions
- Number of staff
- Types of equipment required
- Interrelationship of various functions and spaces.

B) Services:-

Each element provided in the hospitals must comply with the requirements outlined.

C) Sizes:-

Sizes will depend upon the program of requirements and organisation of service with the hospital.

D) Parking:-

Parking for staff member, patient and services.

Minimum Requirements of Construction for Hospital and Medical Facilities:-

Site:

A) Location:-

- Accessibility:

The site of any medical facility shall be easily accessible to the community and to serve vehicles such as fire protection apparatus.

- Availability of transportation:

Facilities shall be located with due regard to the accessibility by public transportation for patients, staff and visitors and availability of competent medical and surgical consultation.

B) Roads and parking:-

- Roads. Paved roads shall be provided within the lot lines to provide access to the main entrance, emergency entrances and other entrances. The emergency entrance should be well marked to facilitate entry from the public roads, and it will not conflict with other vehicular traffic.

- Parking:

Off street parking shall be made available for patients, staff and visitors.

Factors that Affect the Rate of Construction:-

1) Demand for hospital care:

The number and type of physicians, type and location of hospitals, size and demographic characteristic of population probably represent the fundamental determinants of demand for hospital services.

2) Quality and supply of hospital services:

The utilization of existing capacity is another major determinant. If patient load is too great for it's bed capacity usually new beds have to be added.

3) The availability of Capital:

This depends on projected risks and interest rates.

Creativity in Planning:-

Planning is basically an effort by an organisation to gain control over a future that is always new and uncertain. Experts thus assign so much importance to creativity in planning.

To some hospital managers, creativity which is usually associated with artists, composers and other 'long hairs' seem incongruous with the details of

hospitals daily operations and with planning for the hospital's future. But leaders must seek to be creative creativity involves:-

- The ability to change the approach of a problem.
- The ability to develop ideas that are both new and relevant.
- The ability to translate these ideas into desired actions.

Some people are more creative than others but most people possess some degree of creativity and can apply when encouraged. To some extent creativity can be identified and measured. It can be nurtured and increased through training and education it can be discouraged, smothered or punished. It can not be forced. For most part creativity can be exercised only in a supportive enviroment that provides the individual with opportunities and resources required for creative expression.

There are 2 essential conditions for creativity:-

- Individual's inner capabilities for creative behaviour.
- An enviroment that supports and encourages this behaviour.

Creativity involves both generating new ideas and for saking old ideas.

Summary:-

An organisation that is committed to planning and that is willing to thoroughly scrutinize what it is doing and what it should be doing to shape its future has taken the first step towards creative planning.

Planning can be both an exciting and productive venture for imaginative mind.

Attitudes Towards Pregnancy and Child Bearing:-

Since giving birth represents a major milestone in a woman's life pregnancy and birth inevitably precipitate a variety of emotions. For many woman giving birth to a child represents self-fufillment the epitone of what it means to be a woman.

Cultural views on Childbirth:

Cultural practices themselves can produce anxiety or peace of mind concerning birth.

The Cuna Indians of lentral America guarantee an anxious mother. Every thing is done to keep Cuna girls

from learning of existence of coitus or childbirth until the marriage ceremony. Pregnancy is viewed as a time of anxiety and rising fear. Everyday the pregnant woman must go to the house of the medicine man for a cup of medicine. Labour is treated as a secret ordeal from which the husband and even the medicine man are excluded. The midwife informs the medicine man how the labour is going while he chants and supplies medications as indicated by these progress reports, labour is prolonged and difficult.

Sirono Indians of Bolvia:- Birth is viewed as a non-anxious open event. Birth takes place in a communal hut and is freely witnessed by anyone. The women labours in hammock while groups of women keep her company. She ties a childbirth rope over her hammock to pull during contractions and digs the earth under the hammock to cushion the baby's fall. When the baby is born it slides over the edge of hammock dropping a few inches to soft ground. They have a short labour. 1 - 3 hour.

Rooming in:

Evidence shows maternal anxiety or fear affects the newborn. Women with high anxiety scores have a greater likelihood of experiencing difficulties in delivery room and of giving birth to babies with abnormalities. Strong positive emotions affect autonomic smooth muscles of the uterus.

Out of concern for psychological needs 2 controversial practices have arrisen.

- Natuaal birth and rooming in:

Much pain experienced by mother during birth is due to societal attitudes which generate maternal anxieties rather than to the physiological process itself.

Preparation for natural child birth is educational process and exercises. Some prefer anesthetics.

In rooming in baby stays in mother's room she begins taking care of infant immediately. This reduces anxieties of the physic of the baby.

ILORIN

I L O R I N

HISTORICAL BACKGROUND AND DEVELOPMENT

Ilorin, Capital of Kwara State is Nigeria sixth largest City population area 400,000, and is strategically located at the geographical and cultural confleunce of the North and South.

Its 'middle belt' position and relative ease of access are definite assets. It is located on latitude 8 30 North and longitude 4 38 East. By road it is 300km. from Lagos and the coast line and only 160km. from Ibadan. Africa's largest indigenous city.

The new Federal Capital of Abuja will be also about 300km. away. A good network of roads links Ilorin with major cities the north/South railroad passes through it and on ultramodern international airport is virtually completed. There are good hotels, shopping centres and health care facilities.

Ilorin in early nineteen century (1817) was said to be a small village under Afonja who was supposed to have been the found ruler of the city when the city was actually founded and by whom is still a subject of great academic research. However the settlement grew rapidly following the death of Afonja and the subsequent invasion of Fulani refugees from the North. According to historical records, the present

Emir-Alhaji Sulu Gambari is a direct desendant of the first ruler of what might be regarded as modern Ilorin.

Ilorin and it's Emirate maintains very strong cultural and religious lies under the rest of the former Northern Nigeria. A relatively high percentage of its inhabitants are Moslem, Christians of various denominations are also found in the city.

For the purpose of accurate description of the spetial distribution of socio-economic facilities of the city we can conveniently divide the city into two parts the West and the East. The river Asa which flows through the town in a roughly North-South direction would be said to be the dividing line between the East and the West.

The West in the traditional section of the town with the Emirs' palace as its core area. The East is more mordern in terms of its structure and type of facilities.

The location of the major social and economical facilities in the city are seen to be concentrated in the Eastern section of the town. The central business district may be regarded as the Post Office. Minlands complex, comparising parts of Murtala Muhammed way where most of the banks, insurance houses and some big shops are located. Shopping belts however, exist in various parts of the city.

Also along the Ahmadu Bello Avenue are the civic and commercial areas, the hotels and guest chanlets. Modern residential houses comparising of the G.R.A. the government reservation areas and some private houses.

The area of concentration of development now in the city is in this part of the city. The Eastern section of city because of the free land in terms of availability of land and expansion likewise without obstructions viz Cultural/ Political consideration.

VEGETATION AND SOIL

The town is situated in the guinea savanah region of the middle belts with marked dry season (November - March)

The North-East winds and the South Westerly winds are the prevailing winds.

It has an annual rainfall of 1.3m. and moderality hot temperature varying from 75° - 80°F. annually.

Ilorin and its environs has concretionary ironstone of masses or concretions i.e. predominantly laterite and is c capable of carrying heavy structures at no extra cost.

It is granite/loamy sudimentary sort of soil.

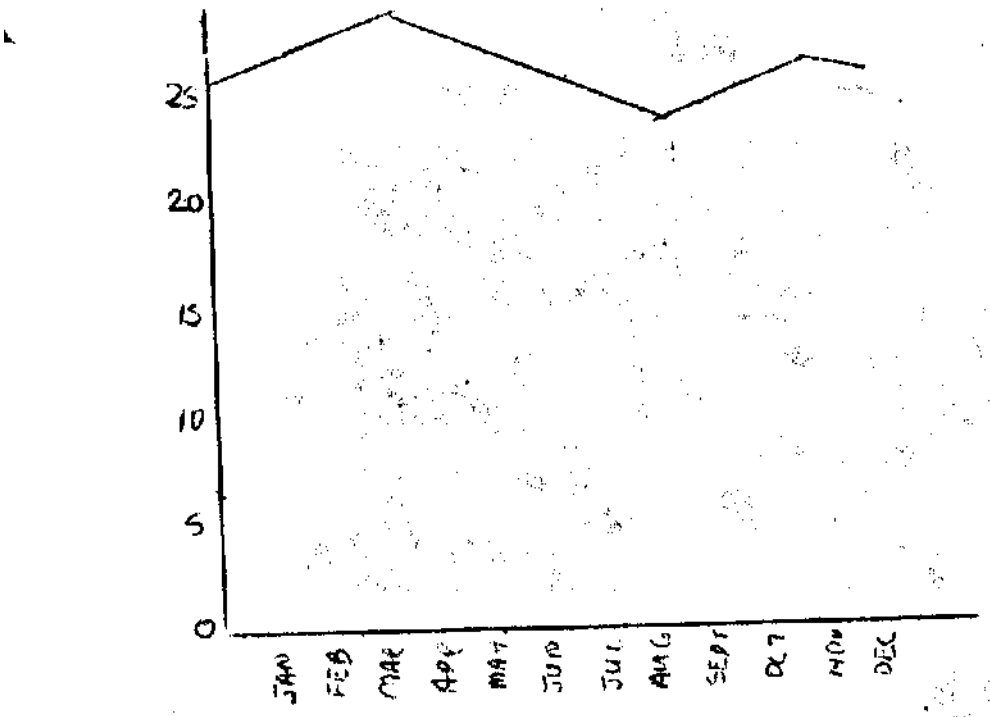
WEATHER CONDITIONS

i. Mean monthly totals of rainfall (mm/month)

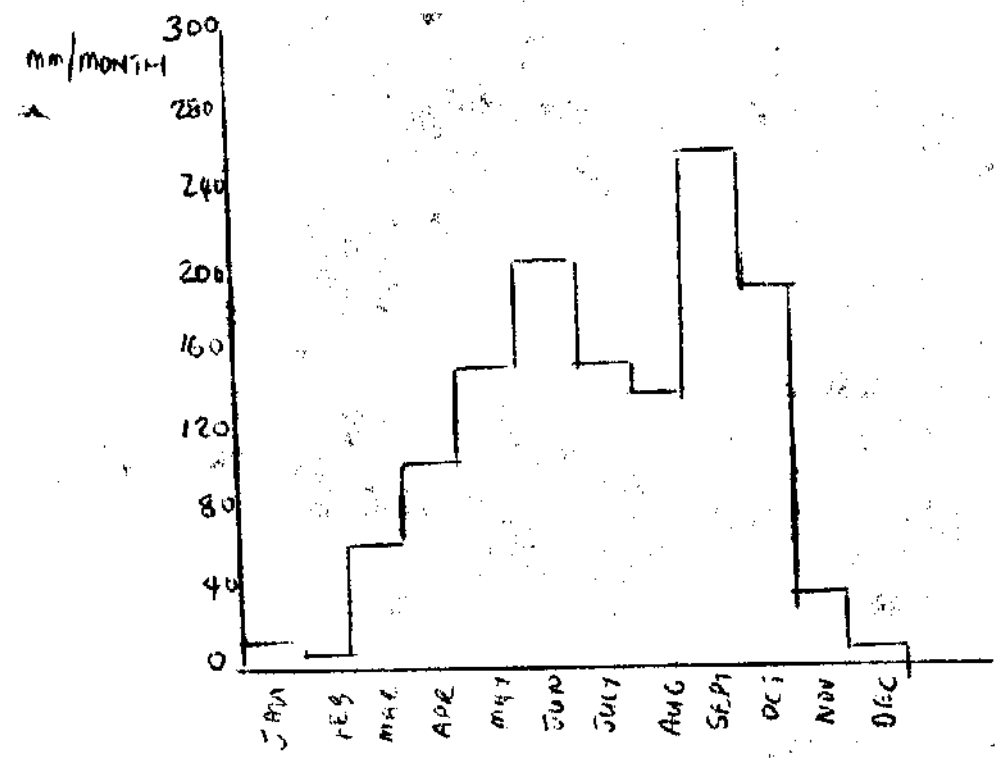
The rainfall reflects double maxima with August break. It is most insistent between June and September. There is about 7 months of met season under the influence of South westerly wind coming from the altantic accan.

The period between November and March is the dry season when the influence of North East is most predominant

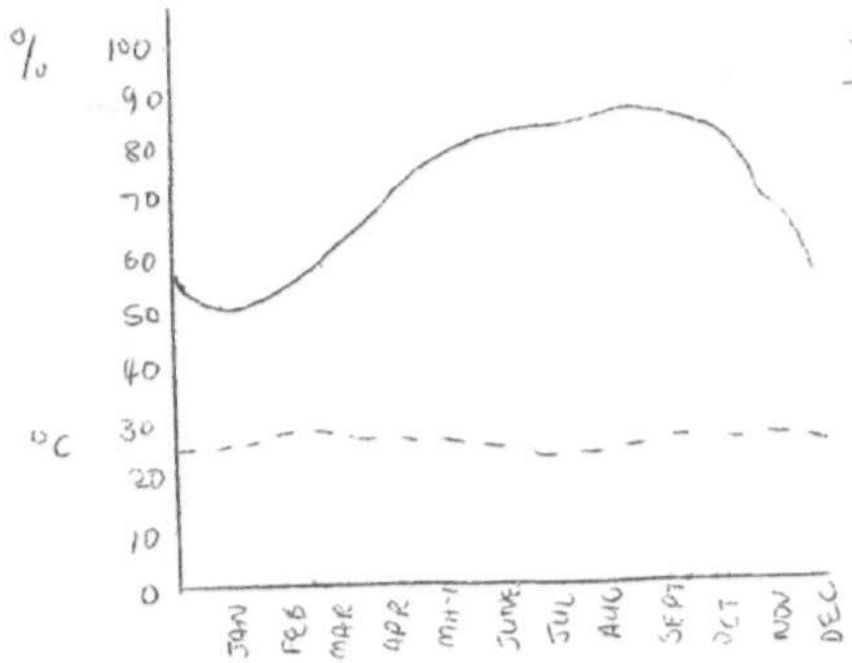
(See Chart and Graph)



MEAN MONTHLY TEMPERATURE [°C]

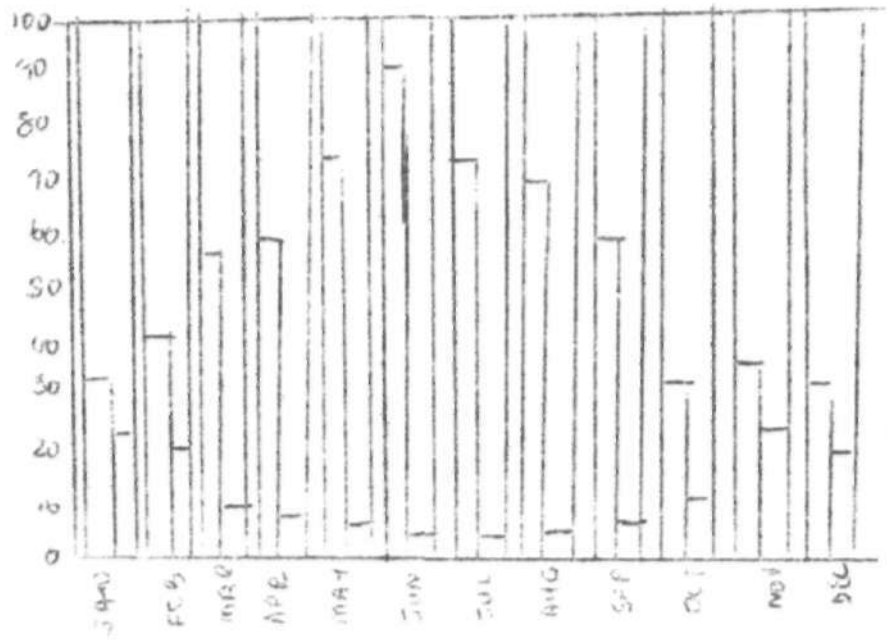


MEAN MONTHLY TOTALS OF RAINFALL (mm/ MONTH)



——— RELATIVE HUMIDITY
– – – AIR TEMPERATURE

% RELATIVE HUMIDITY
°C AIR TEMPERATURE

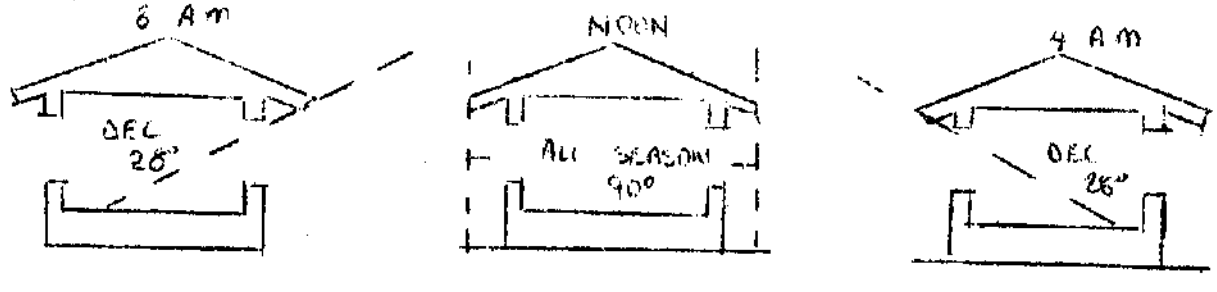


% FREQUENCY OF WIN
DIRECTIONS (N.E. & S.W

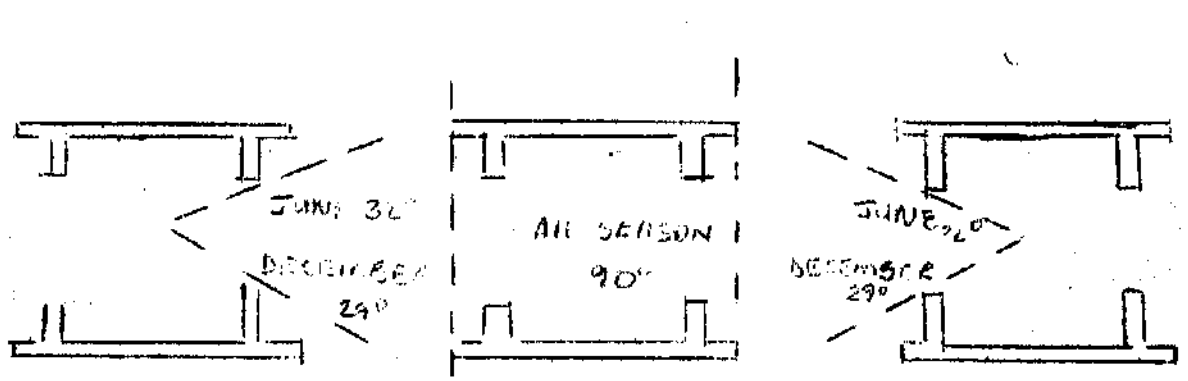
SUN ANGLES AND SHADOWS FOR ILORIN

ORIENTATION N-E

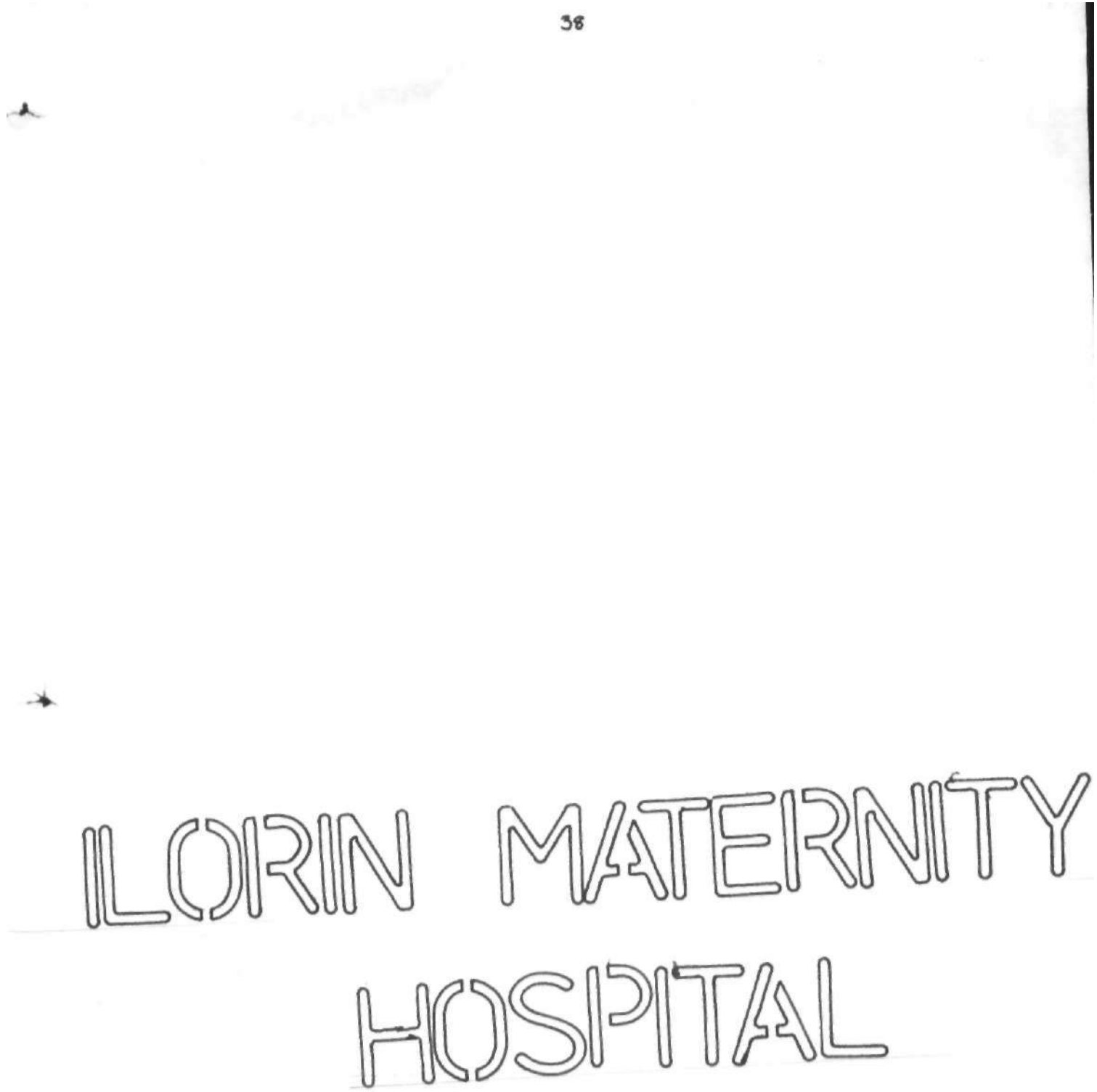
CRITICAL SUN ANGLES VERTICAL = 28°
HORIZONTAL = 22°



VERTICAL SHADOW ANGLES



HORIZONTAL SHADOW DEVICE


ILORIN MATERNITY
HOSPITAL

ILORIN MATERNITY HOSPITAL

HISTORY

Ilorin maternity hospital was initially a general small health centre for the whole Ilorin. The building was first built in 1919. It was later converted into a hospital about 1920. Around the forties the hospital was mined to the new site and the building became a small maternity hospital of few blocks. Some structures are appearing in the tight space in-between the existing block.

DIVISION

Ilorin maternity has two main clinics

1. Maternity clinic
2. Cynaecology clinic

(a) MATERNITY CLINIC

They have three main divisions

i. Antenatal clinic

This is where a woman recieves continous care throughout pregnancy. For a better chance of safe delivery and a healthy baby. Here minor troubles can be treated before complication.

They have

(a) A Waiting Room

It is a small room with benches arranged in rows, this is where talks should be given and

where they are chatted up since she will receptive at this important time to education in many aspects of physical and metal health which will be to the benefit of both her baby and herself. Averagely around 144 patients c come per day. Here they are also given cards and numbers. After that they moved to a similar room (b).

(b) This room is similar to the waiting room. It is small room too of few benches in a room. In actual fact these rooms are not used because they are too small so the patients sit outside where there is enough space. But no shelter. In the above room it was formally to be used to take the patients blood pressure. Urine test should be taken too. The provision given is very inadequate. It is seperated from the waiting room by a partron wall. The patients have to stand because there are no space to provide for sitting areas. It is really just under construction. It should be designed to provide adequate facilities and well equiped as a good laboratory.

After that they should be weighed. The facility provided is not adequate cause it is a room opened to the outside and a tiny room partitioned from the cubicles for examination. Normally these ladies should be weighed naked but this is impossible in this case.
The expectant mother is then examined. In the examining room there 4 cubicles, one for examining (2) for the doctor (3) for the matron and and (4) for the sister

For the case of the antenatal clinic the flow is to be as shown in (fig)

Because of inadequate space absence of real planning to accomodate the number of patients, the flow is as shown in (Fig.)

The next is the delivery suite As shown in fig ( ).

2. Delivery Suite

a) This is the addmitting and preparation area for the expectant mothers in labour. Sometimes these mothers have fake labour in this section they are tested in the flimsy partioned area which consist of a only two examination beds. There beds cannot take the normal load of patients in the same room is a small nurses station where all the medical staff stay. A table is provided for that and the staff sit around chairs that are arranged around the table.

There is also a small window opening to the outside where patients can peep through for enquiry. There is no proper waiting area provided for this unit. Benches are just put outside for them to sit on. The staff complain to a very great insufficient space to cater for the patients coming.

b) This room represents the recovery room. It has two beds and the toilet doors facing these beds and opening directly into the recovery space.

The room is improvised as a recovery ward whereas it was initially designed as toilet and lavatory facilities. The presence of these toilet makes the room a public passage it allows foul air to fill the room thus causing inconviniencies.

The two beds provided cannot at all cater for the patients thus a bed takes about 3-4 patients at a time.

c) Seperated from (b) by a very narrow corridor is (c) which is the labour ward. It has 4 beds and opens directly into the delivery ward. In between the beds are spread some blankets on cold ground to cater for the other patients. It is not well ventilated so has a foul air. On each bed are 2 patients sometimes more.

d) Straight from (c) the labour ward is (d) the delivery room. It has 4 beds too. It is not well equipped and not well ventilated.

e) This is the operating theatre which is seperated from the delivery room by a narrow corridor. The existing windows are blocked and there are no spaces for auxilliary facilities necessary in an operating theatre.

Generally the replacing of the rooms do not allow the straight blow of the process of giving

It is not planned at all. It is just a long building will an interior corridor opened from room to room. It does not solve any noise problem thus affecting their emotional and psychological state of mind. The general conditions are poor and the facilities very very inadequate. It does not put the expectant mothers problems in the right state of mind.


SITE

SITE CRITERIA

1. Because of it's close proximity to residential areas especially that of the common people it will give ready accesibility.

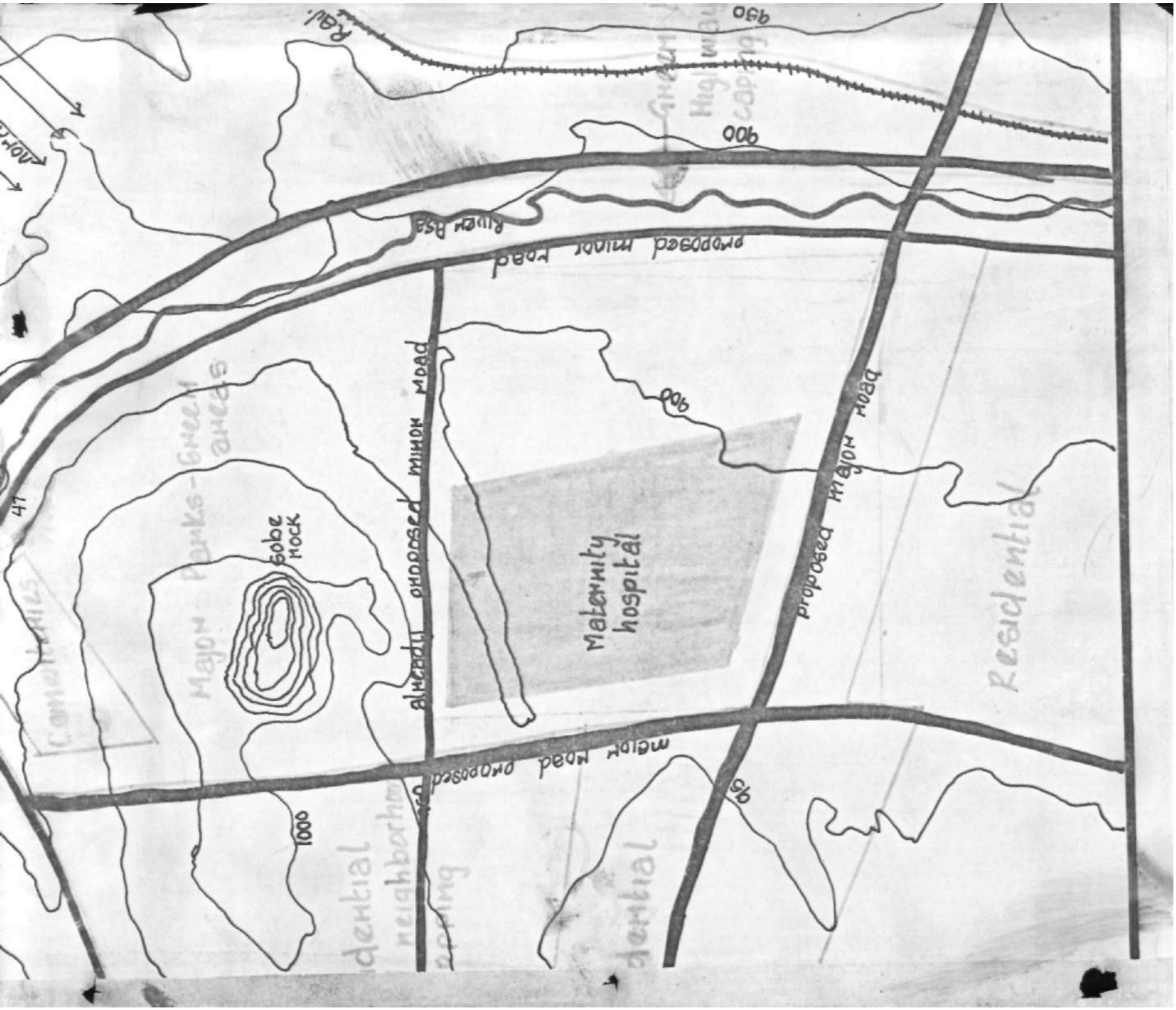
2. There is availability of senuicces e.g. water supply system, sanitary sewage system, and electrical supplies.

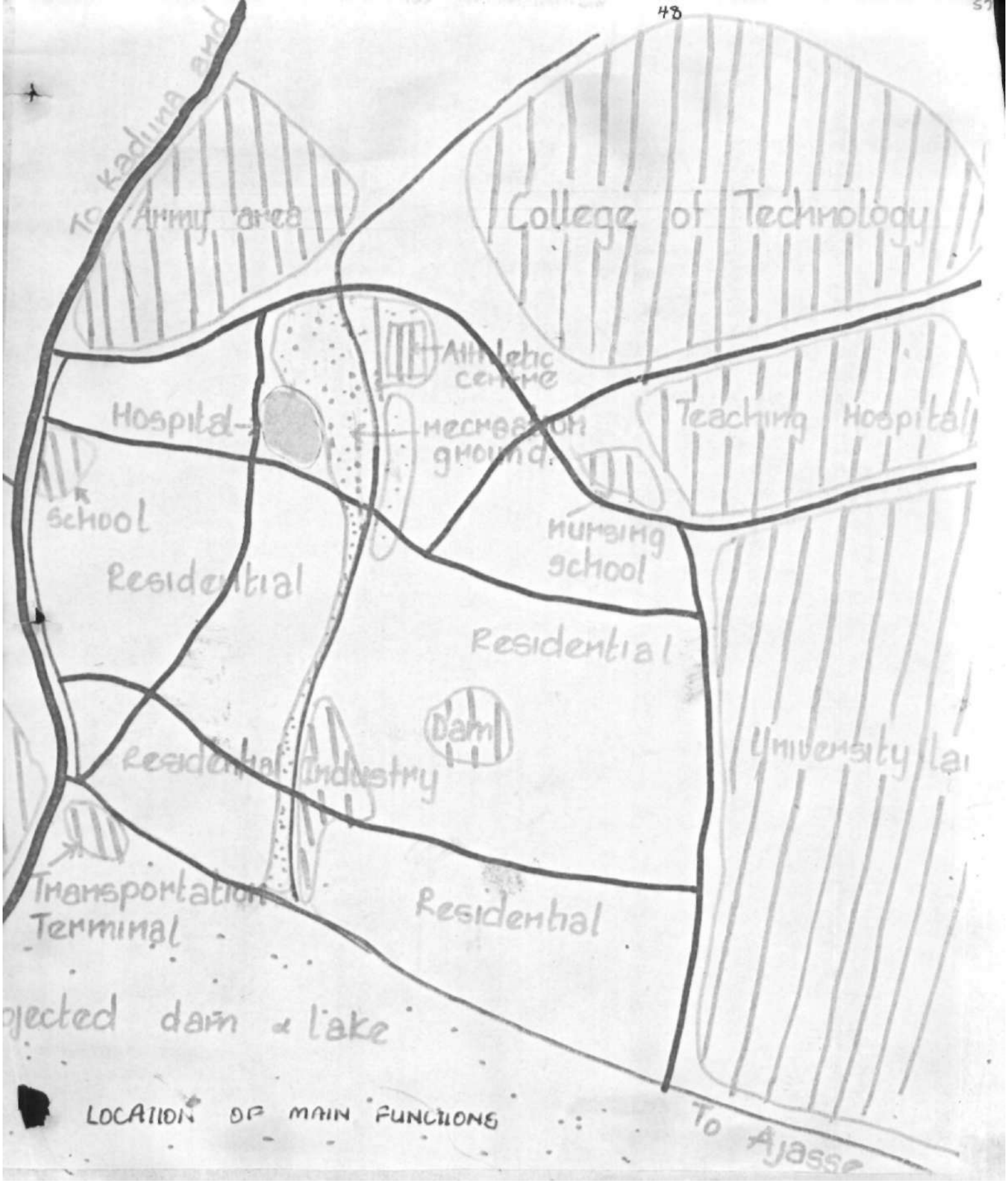
3. There are good road connections which gives availability of transportation for patients, staff and visitors.

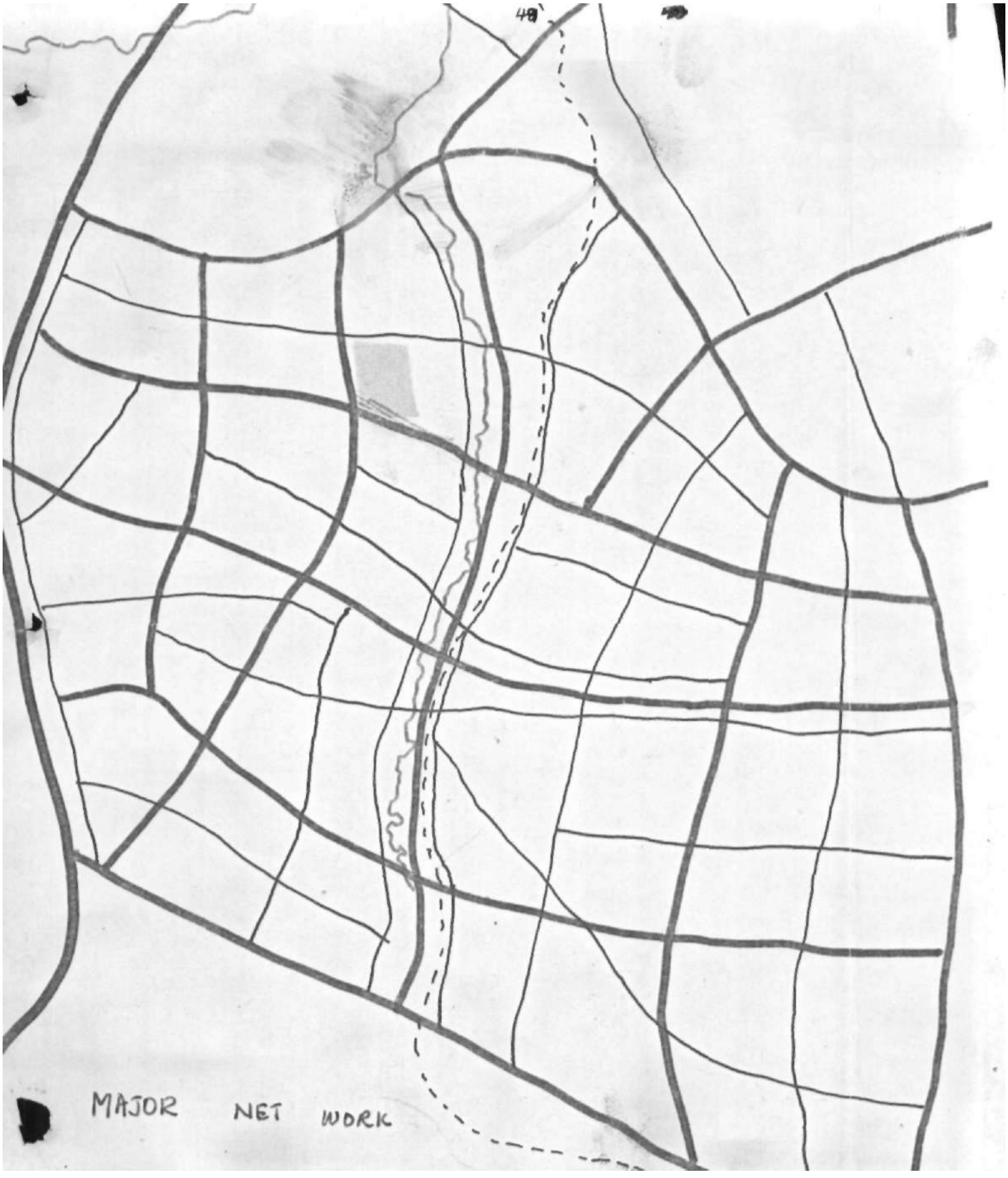
4. There is enough land for design and expansion.

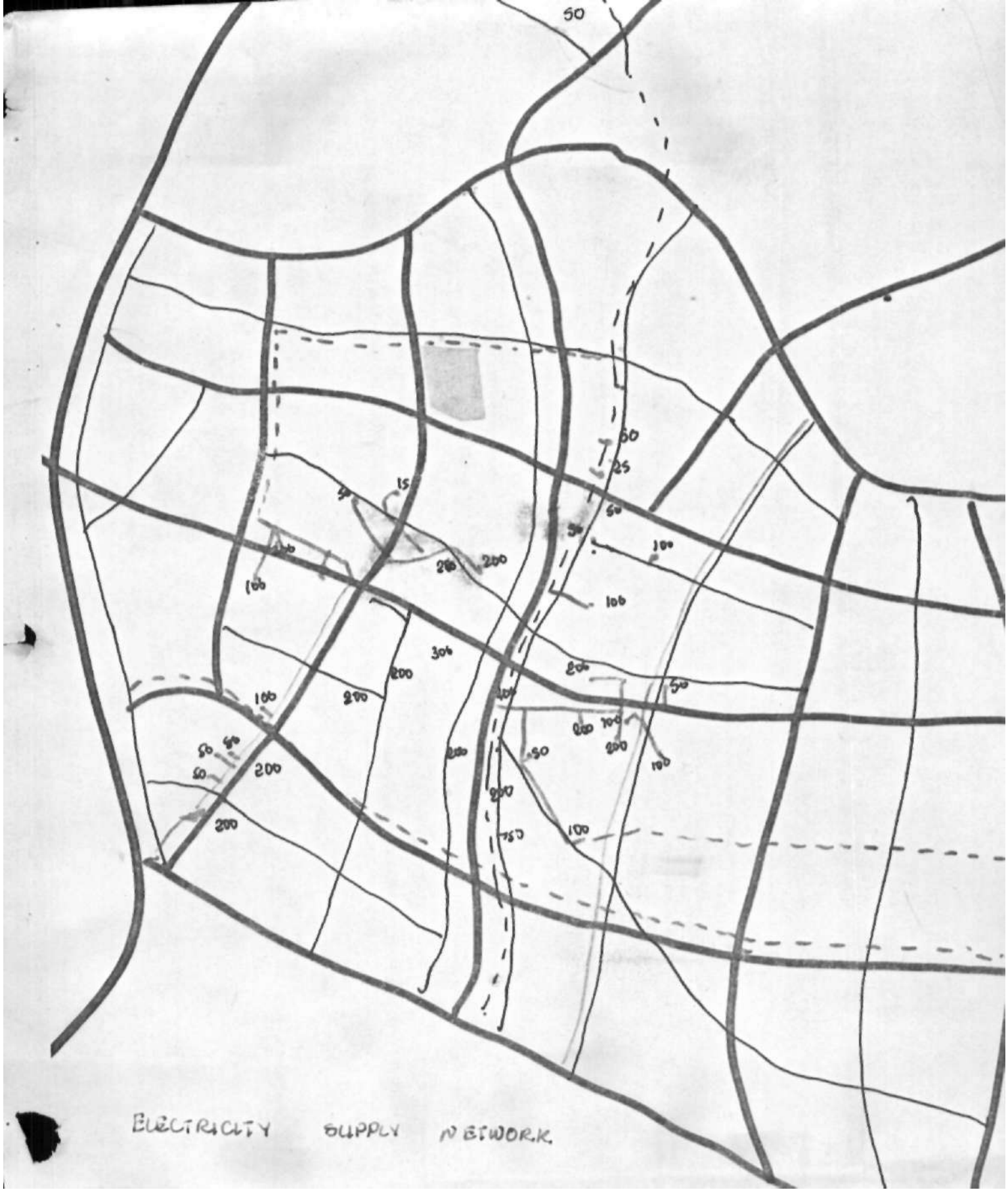
5. Because of its close proximity to proposed recreational areas there will be a nice and refreshing scenery which will be a good therapy for the patients.

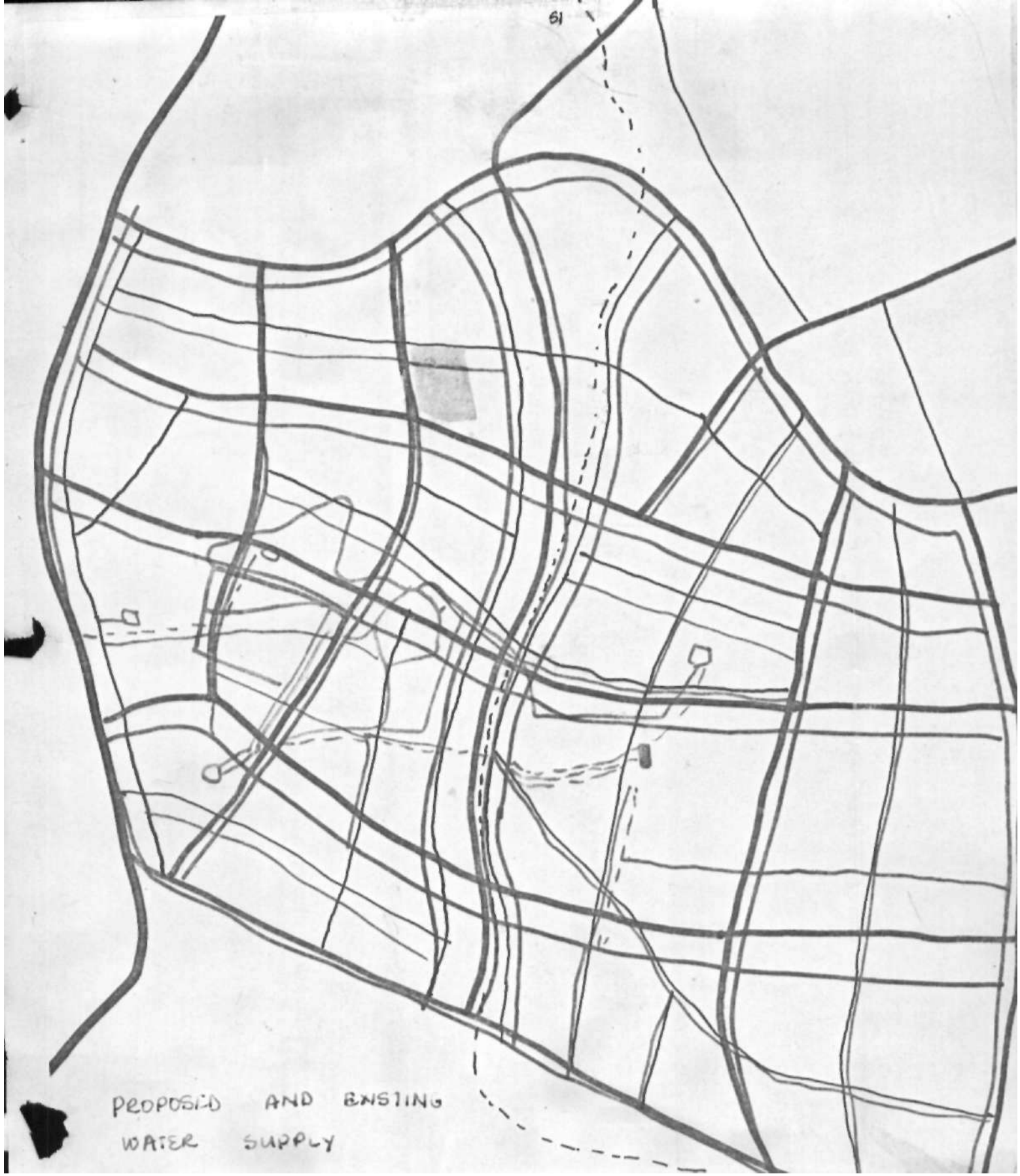
6. The site has already been choosing for hospital design (Specialist) in the master plan at Ilorin.


Rail.
900
930
River Esa
proposed major road
900
proposed minor road
Maternity hospital
proposed major road
Residential
Major Rocks-Green areas
Cobe rock
1000
Residential neighbourhood
proposed major road
Residential
96
47


To kaduna awd
To Army area
College of Technology
Athletic centre
Hospital
recreation ground
Teaching Hospital
School
Residential
Nursing school
Residential
Dam
Residential Industry
University la
Transportation Terminal
Residential
ojected dam & lake
LOCATION OF MAIN FUNCTIONS
To Ajasse


MAJOR NET WORK


50
60
25
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5
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100
200
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300
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200
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200
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50
200
200
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200
100
750
100
ELECTRICITY SUPPLY NETWORK


PROPOSED AND EXISTING
WATER SUPPLY

PLANNING

There are different functions needed in the hospital. The planning of this hospital can be in 3 major departments.

(1) Out patient Department

(2) Inpatient Department

(3) Supporting Facilities

These divisions are further broken down with various departments.

(1) Outpatient Department

--- Antenatal Clinic

--- Diagnistic Facility

(a) Pathology

(b) Radiology

(c) Pharmacy

Out Patient Department

(a) To keep patient out of bed by diagrunics of ailments and effecting a cure at an early stage - antenatal clinic

(b) Follow up treatment after discharge from the hospital. This is the postnatal treatment.

There are some principles that can affect the design of this department.

--- Location:

The out patient department must be near supporting facilitie that are shared. It must also be located in such a way that it i easily and directly accessible to the patients.

SIMPLICITY OF CIRCULATION

It is very necessary to define clearly Staff and patients circulation for easy accessibility of the patient and also for the efficiency of the Staff.

PROVISION OF NURSING STATIONS

A place or centre of nurses actioclits should be provided for. Here the nurses can take control and supervise the dinies.

Out Patient Department

1. Antenatal
2. Diagonistic Facilities

The function of the out patient department is to diagruse and treat cases. It also deals with Education, prevention, diagrusis and therapy along with follow up cases.

The antenatal clinic cater for cases that can be dealt with within 24 hours. Diagonistic facilities which consist of pathology, pharmacy and radiology departments, cater for cases that generally last more than 24 hours. These rares are for more intensive diagrosis.

The load expected in the antenatal clinic will be very high A total of 500 patients per day is anticipated for the out patient department. Approximately about 20% will attend the diagrostic facilities per day.

The out-patient department also deals with the psycological and emotional treatment of a patient also nutritional and health education of mothers and babies due to the number of cases and saruty of personnel about 120 patients will be in the waiting hall at a time.

Nutritional and health education can be given while the patients are waiting.

The outpatient should be kept as soft and valming as possible to give a relaxed atmosphere. Facilities like toilet facilities, wheel chair storage spaces, play area for children - court yard are necessary also.

Pharmacy Suite

--- Dispensing area with hand wash facilities.

--- Editing or order review area

--- Sterile products area

--- Administration areas e.g. Chief pharmacists.

--- Storage areas

--- Dmig information area

--- Quality control area

Pathology Suite

--- Pathology is the part of medicine which explains nature of diseases, their causes and symptoms.

--- Laboratory work counters with sink, vacuum gas and electrical services.

--- Lavatories or counter sinks for hand washing.

--- Storage cabinet or closet.

--- Blood storage facilities

--- Specimen collection facilities unine collection rooms equipped with water closet and lavatory.

--- Blood collection facilities - work counter, handwash facilities, space for patient seating.

Radiology Department

1. It should be easily accessible to the wards.
2. It should have an entrance or entrances conveinient for in and out patient.
3. It should be adjacent to the out patient department or the situated in the O. P. D.

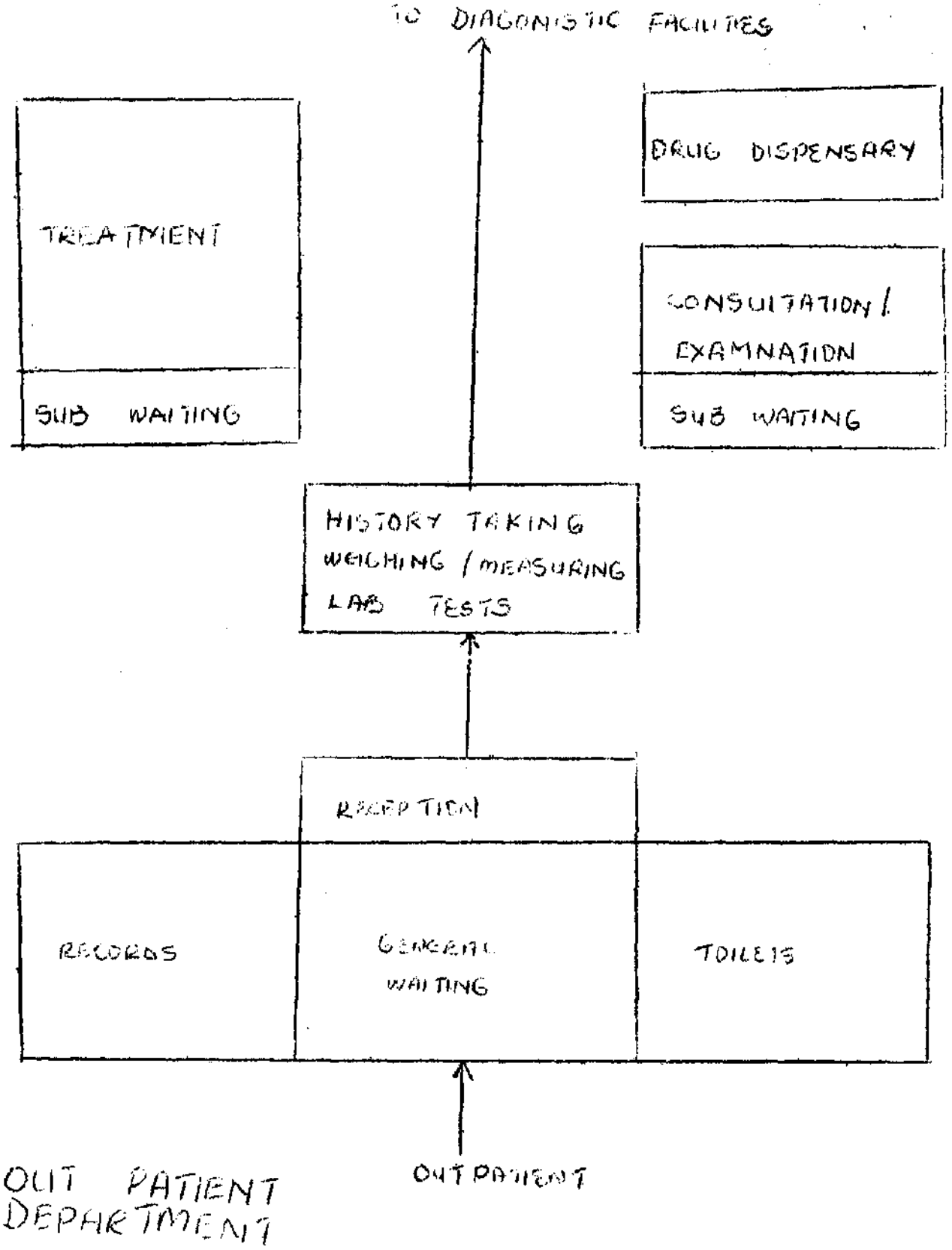
The In Patient Department

It is not too easy to categorize these functions in the hospital because the durable of the patients differ for different sections but for this design it can be said to consist of:

a) The labour - delivery unit. This is the most important part of this Maternity Hospital.

b) The Theatre Suite

c) Wards



OUT PATIENT DEPARTMENT

THE LABOUR - DELIVERY UNIT

There are four main areas of activity.

1. Labour
2. Delivery
3. Recovery
4. Supportive facilities

ESTIMATING NUMBER OF LABOUR BEDS, DELIVERY ROOMS AND RECOVERY BEDS

Recomodating for a maternity service should be based in the annual number of berbers expected in the hospital.

Labour beds in the programing stage consideration should be given to variables in procedure that may affect the number of labour beds needed.

For example, the policy on admissions affects to some degree the lenght of time, a labour bed may be occupied. If hospitalization is encouraged early in labour and the patient is admitted directly to the labour bed, average occupancy is of course longer than of such admittance reslmeted to patients whose labour is advanced. Initial admittance to a postnatal bed is another vamable affection of the number of labour beds required.

To provide a basis for estimating, it is assumed that patients are generally assigned a labour bed at the onset of labour. On this basis, no. required = average no. per day e.g. if 880 annual births

DELIVERY BEDS

This may be based in a ratio of 1.2 - 1.2.5 of labour bed needed.

RECOVERY ROOMS

They are recommended whenever three or more labour beds are required. One consideration affecting recovery beds is the average lenght of time after delivery the patient may remain in the delivery room. This may vary from 20 minutes to 1 hour. The number of recovery beds ranges from one murid to one half the number of labour beds.

ARRANGEMENT OF THE DELIVERY SUITE

Proper sequential arrangement of labour delivery and recovery areas in the labour - delivery unit facilities patient care and aids the staff in carrying out proper medical techniques and practices.

The rooms should be located and related for easy movement of patients from one area to another and for good patient observation.

From the stand point of asepsis location of delivery rooms should be as remote as practicable from entrance to reduce traffic, caucelen air turbulence and provide privacy for patient.

Scrub up areas should be adjacent to delivery rooms so that attending Physician can observe the delivery room.

High speed washer instrument sterilizers with storage space for solutions should be in the delivery room.

A medical prekaration facility, seming labour and delivery areas.

Storage for flammable anesphelics

A soiled holding room for preparing the delivery room and retaining soilid articles for disposal, processing or return to central service.

Labour rooms should be close to delivery room but not so clo e that the areas are intermixed.

Recovery room should be

1. Adjacent to delivery rooms or
2. near the entrance.

Location of nurses station is detrmined by age of the delivery sink.

Locker and toilet facilities for staff are located within th unit.

Doctors lounge located within the unit adjacent to their locker facilities.

ADMITTING AND PREPARATION

There are various methods used.

(1) Through main hospital admitting desks.

(2) Directly to labour rooms in the delivery suite.

(3) In an admitting and preparation unit.

The admitting and preparation unit should have beds for examination and preparation with curtains round each bed. It should toilet, shower and lavatory, space for storage should be provided.

LABOUR ROOMS

It should provide maximum comfort and relaxation for the patient.

Toilet and lavatories are provided. Provisions should be made for the care of patients personal belongings.

DELIVERY ROOMS

Facility for the welfare and safety of the mother and the new born child should be incorporatid.

RECOVERY ROOM

The recovery period after delivery is imtical and may last from 1 - 3 hours. During this period, the mother requires close observation and special care.

It provides location for a recovering, frees the delivery or labour room for clean up prior to occupancy by another patient.

Provision should be made for easy movement of stretchens or beds.

NURSE STATION

Is the administration and control center of labour-delivery unit. It size and complexity and location will be determined by the size and staffing of the suite.

Scrub up and substerilizing areas

Hand scrubbing by the staff is an essential part of delivery techniques. Facilities should be next to delivery room so that physician can see into the delivery room.

SUPPLY AND EQUIPMENT STORAGE

Supplies:- Location is due to the method and frequency of issuing supplies from central supply areas.

It can be divided into two categories.

(a) Clean supplies

(b) Sterile supplies

EQUIPMENT STORAGE

This is to store equipment that is infrequently used.

ANESTHESIA FACILITIES

This should be provided in such a way that it will be convienient for the anesthesialogist.

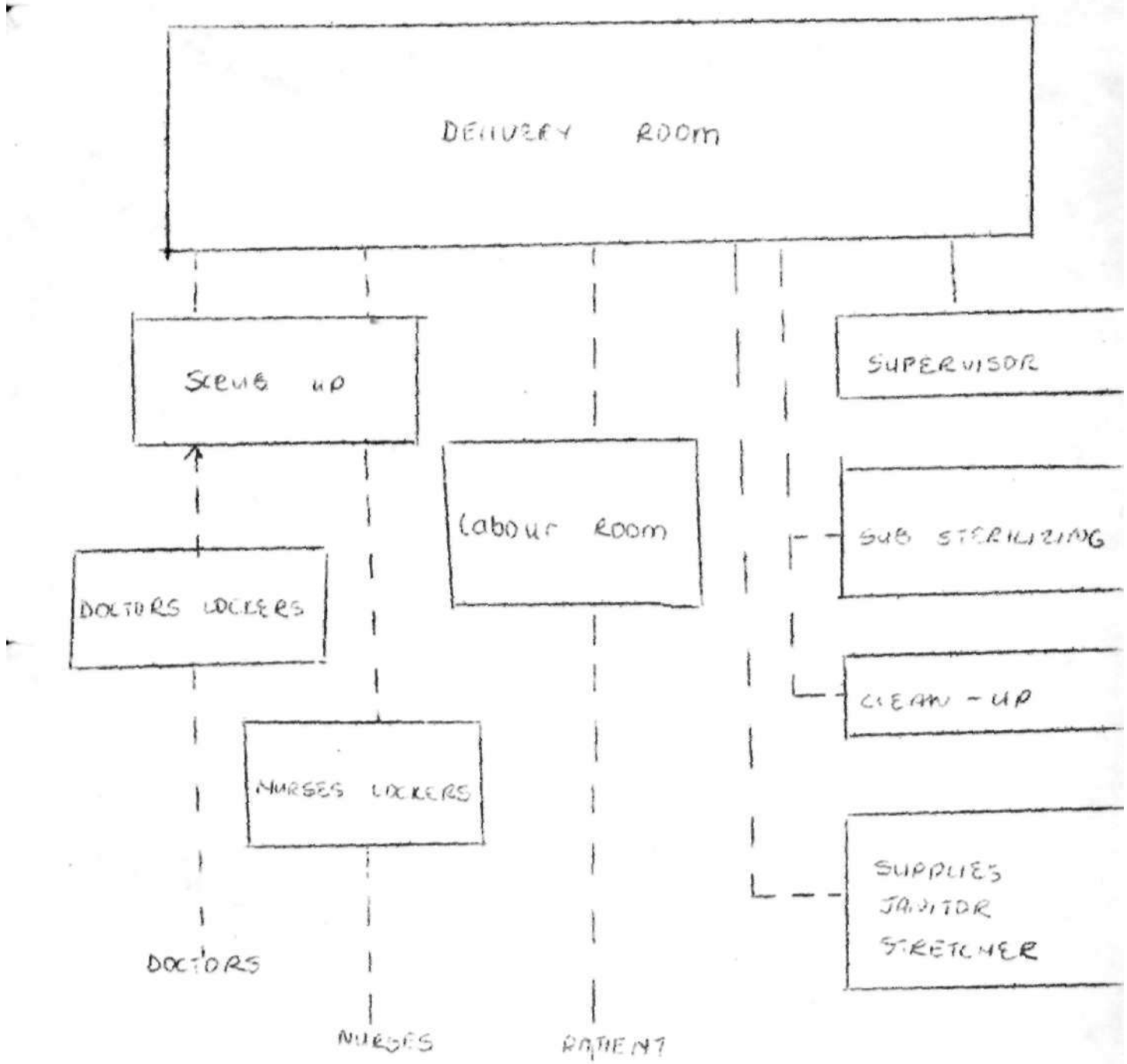
INSTRUMENT PROCESSING

This includes washing in a washer - sterilizer and sent to central sterile supply for processing.

OPERATING THEATRE SUITE

Major atenormal cases are taken in the theatre suite that cannot be coped with in the delivery suite.

There are some basis requirements in theatre design.



OBSTERICS DEPARTMENT
FLOW DIAGRAM

(1) Relation to supporting facilities - X ray department:- This has an abmous relationship with the operating theatre suite and this can solved by the provision of mobile X-ray.

PATHOLOGY FACILITIES:- The operating theatre must not be remoted from the pathology.

EMERGENCY DEPARTMENT:- As emergency cases might require major operating procedures, the emergency department should be related to the operating theatre.

CENTRAL STERILIZING DEPARTMENT:- This should be close to the operating theatre or if possible within the department.

RECOVERY ROOMS:- This should be adjacent to the operating theatre. For hospitals over 130 beds 12-16 recovery unit is recommended after which they are discharged or transfered to I. C. U.

INTENSIVE CARE:-

(2) CIRCULATION

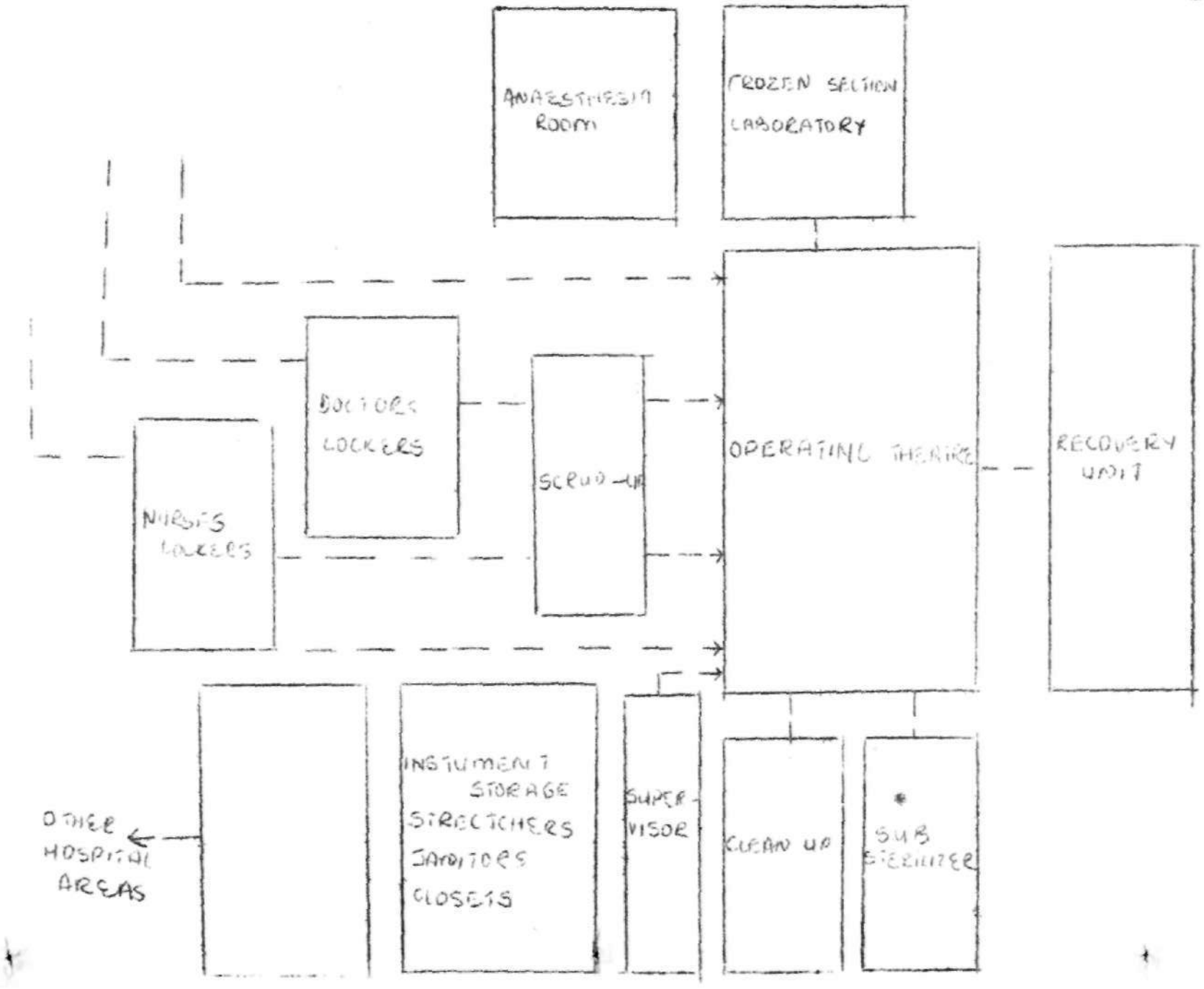
The department should be independent of general traffic to minimise the risk of contamination and also to prevent interruptions and confusions.

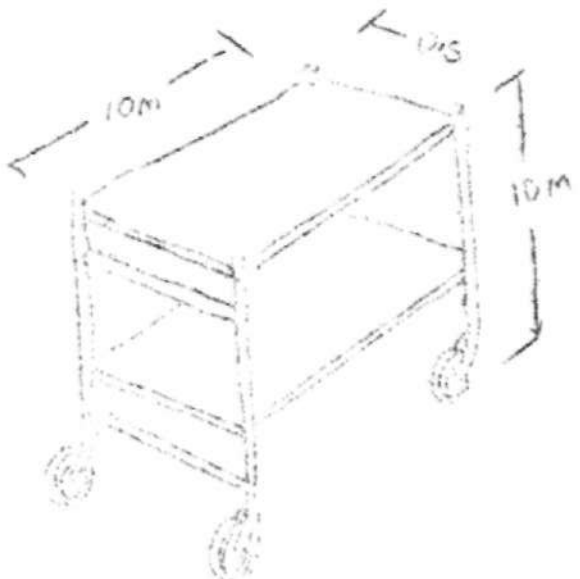
The clean and dirty streams of traffic are segregated as far as practicable.

Staff should move from clean to clean area not through an unprotected area.

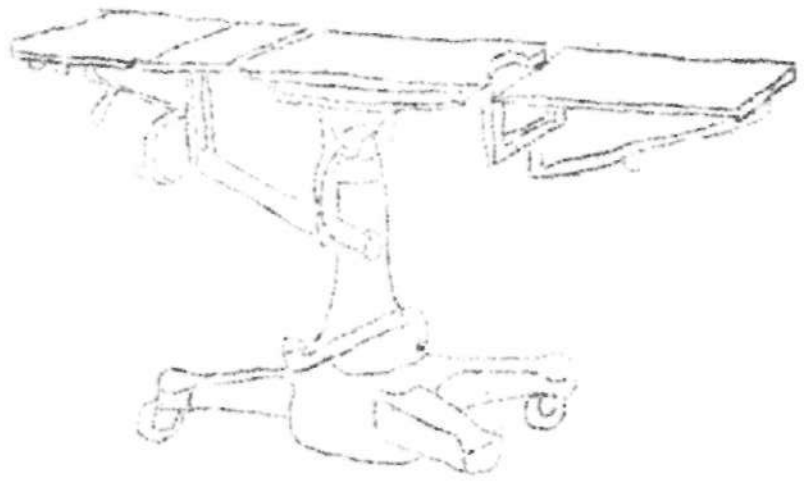
Dirty material should be removed not passing through clean

FLOW DIAGRAM OF OPERATING THEATRE





TYPICAL INSTRUMENT TROLLEY



TYPICAL OPERATING TABLE
(2.3m x 0.6 - 2.5m x 0.6m)

The direction of the air flow should be from clean to less clean area.

Generally, the circulation solution of this unit is very important as patients and staff circulation must be cleanly defined and separated. Ancillary rooms to support the theatre suite have to be closely related. Facilities like changing rooms, toilets etc. are also necessary but location should be such that cruss infection is minimised.

WARDS

The ward unit is an important element of a hospital. The patient starp the longest in the wards.

The patient do not want to be in hospital at all and would much rather be somewhere use. The patient is confined and feels imprisioned at not being let out. It is important that the enviroment in the Ward should be relaxing.

There are some general consideration which are essential for this unit.

A MEDICAL NEEDS

Sufficient space to examine and test.

Adequate facilities for the treatment and comfort of the patient.

Suitable enviroment to emphasy the patients spiritual well being.

Accessibility of adequate services.

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NURSING NEEDS

Easy supervision and observation from nurses station.

Facility for locating other staff in the case of emergency.

PATIENT NEEDS

Seeing nurses and being able to communicate with them

Privacy dining medical and nursing care.

Availability of washing facilities.

Being able to change enviroment by ambulant patients into e.g. the day room.

Provision of space for visitors.

GENERAL CONSIDERATION FOR PLANNING

(1) The communication or relations with different departments.

(2) Orientation proposal and external noise.

(3) Ward access and day space.

--- There should be no passageway through a ward.

--- The main entrance into the nursing department must be identificable.

--- The acutely ill should be located near the entrance.

(4) The internal noise and the need for privacy is part of the general consideration.

THE SIZE

The size of each ward is directly related to the capacity of supervision by Nurses.

The United States Public Health Service says:

"The head nurse must be fully aware of the needs of all the patients as well as of the staff. When the census of the unit exceeds 30 - 35, the span of control of the head nurse is weakened."

Relationship between medical and nursing staffs are strained when volume of work is compounded by a large census.

SHAPE

There are different shapes of ward units. These different shapes have their various advantages and dis-advantages.

CORRIDOR LAYOUT

There are different corridor layouts.

1. Single loaded corridor
2. Double loaded corridor

-- Triple corridor

-- Circular corridor

WARD DESIGN TYPES

1. Single loaded corridor (see fig)

   Advantage:- Ventilation is often achieve

   Disadvantage:- It allows for lenthening or the overall length of the building.

2. Double loaded corridor (see fig)

   Advantage:- It shortens the overall length of the building.

   Disadvantage:- Natural ventilation is not achieved, no causing subjection of the central core to antifical ventilation.

3. Triple Corridor (see fig)

   Advantage:- It separates traffic e.g. visitors corridor from nurses corridor.

   Disadvantage:- It creates ventilation problem as bed increases.

4. Circular Corridor (see fig)

   Advantage:- The nursing station is centrally located.

Disadvantage:- It is costly and creates ventilation problem as bed increases.

BASIC WARD TYPES

1. An Open Ward "Nightingale Ward"

Advantages:-

1. Natural light and ventilation can be provided for.
2. It provides usual possibility of patient by the nurses.
3. The centre of ward is opened for working space.
4. It gives reduction in construction and maintenance cost.
5. It gives patient company of a under community.

Disadvantages:-

1. Noise can not be controlled
2. It doesn't allow adequate control of climate and temperature.
3. Cross infection is encouraged.
4. It gives no privacy.

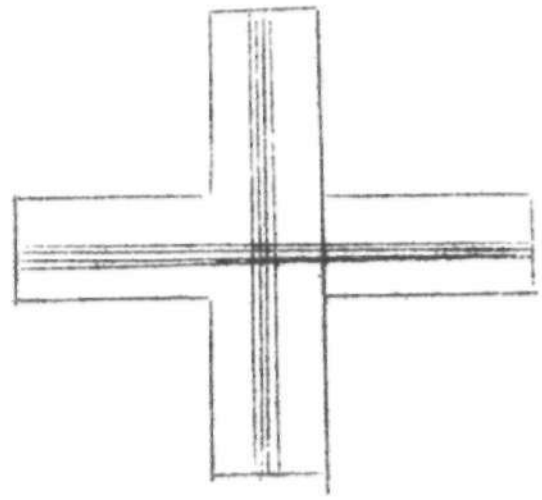
2. Room Ward "Nuffield"

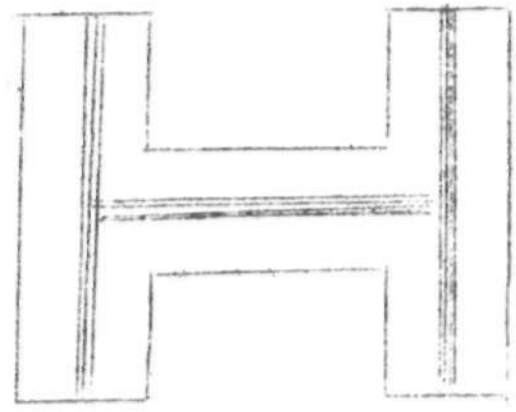
Advantages:-

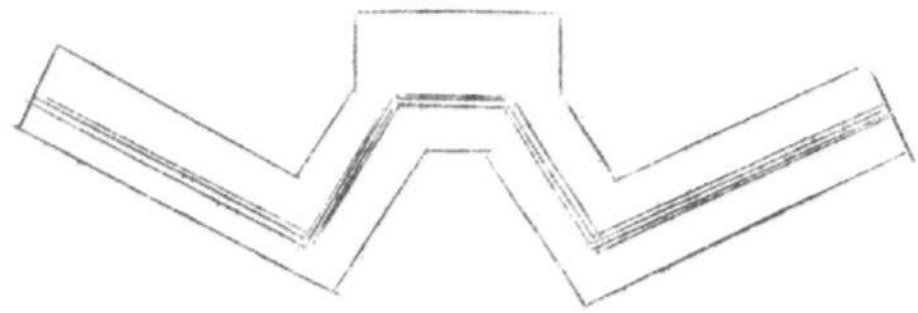
1. Noise is minimised
2. There is privacy
3. Cross infection is reduced
4. The walking distance of nurse is minimised.
5. Patient has sence of belonging.

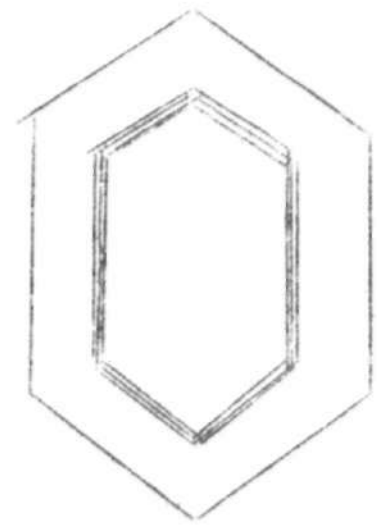
Advantages:-

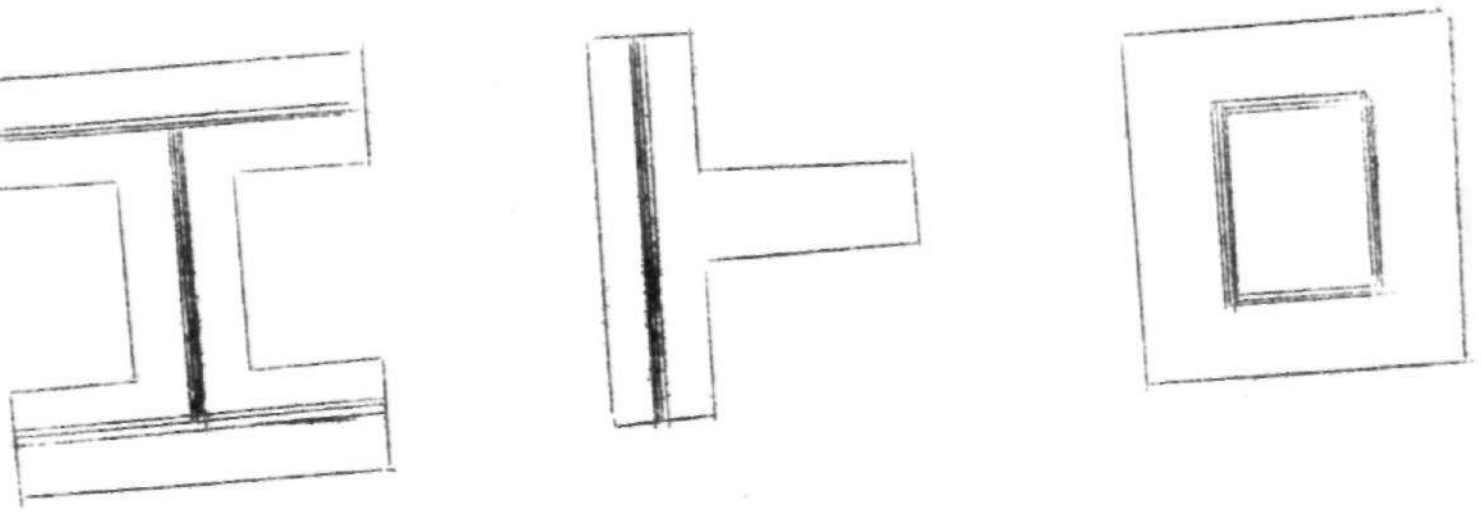
1. More cost of construction and maintenance.
2. No effective nursing visual supervision of patient.
3. Service rooms take interior location and it is artificially illuminated and mechanically ventilated.











5. PATIENTS ROOMS

This is the local point of running unit because the patient spends more time there.

The more the bed the less flexible the room becomes. To select the number of rooms one has to take into consideration, primary needed, flexibility required, travel time of staff and economic aspects.

Patient rooms should be designed to meet the medical physical psycological, emotional and social needs

6. NURSES STATION

It should be located within the unit to reduce travel time.

7. BATH AND TOILET ROOMS

A central toilet area should be provided with water closets showers and wash-hand basins. An assisted bath should be provided also. The toilet rooms should have doors opening outwards. and provided with nause call botton.

8. Clean Utility, Dirty Utility

The clean supply is where all the clean supplies necessary for the patients are received from the central supply and can be distributed to any patient when it is requir. d.

Dirty utility is where all roiled or used equipment and facilities are dispersed off until a time when these things and centrally collected from the individual places.

9. Day room

This room is where ambulant patients can relax. In this room any patient can welcome her visitors during the visiting hours. The room must be big enough to accomodate 50% of visitors and it should be design to have a relaxing atmosphere.

SUPPORTIVE FACILITIES

1. Service departments
2. Doctors facilities
3. Administration.

1. Service Department

There are not too different from the similar facilities in other types of buildings but there are few notable points in the hospital operation.

- To maintain if possible a more than normal isolation of these areas. Largely because there is much noisy bustle about them which would disturb the quiet of a hospital or interfere with concentration in the departments where people do critical things.
- A complicating factor as to kitchens is that food must be delivered to patients in their rooms. This is usually accomplished by a tray service system, with individually prepared trays in bulk food sent from kitchen to nursing units.

Storage problems are always harassing on a hospital. It has a chronic complaint that there is never enough storage area. The central storage is prefferred for reasons of control. A hospital stores varieties of commodities from foods to furniture.

Doctors Facilities

This consist mainly of a relaxation area for the medical staff especially the Doctors.

- Sleeping Area

  They have a sleeping area seperated for the male and female equipped with toilets shower and lavatories. These the doctors can sleep over night and be called upon by telephone system anytime their services are needed.

- Lounge/Dinning

  This area is provided to be used especially during the day for relaxation and sharring of notes and cases. The dinning section is connected to a kitchenette which makes snacks and food can be got from the central kitchen and warmed ready for eating.

- Medical Library

A medical library is provided for the medical staff for study. It is located a bit away from the noisy dinning and in a more quiet zone. Adjacent to it is the librarian that caters for the welfare of those interested in using the library.

Visiting Medical Staff Room:

There are sometimes that a visiting medical staff has to stay overnight for a case provision is made for such a personnel.

Nurses Rest Room:

The nurses rest room are seperated from the doctor's but still in the same vicinity. Provision is made for nurses to next dinning break. They can sometimes use the lounge/dinning provided for the doctors.

Administration:

This building is of two sections seperated by heights. The administration has two main divisions of public and private. These two divisions have to be seperated to be able to achieve effective planning.

SCHEDULE OF ACCOMMODATION

SCHEDULE OF ACCOMODATION

The schedule of accomodation for the maternity hospital has been grouped into ten different divisions.

1. Entrance hall
2. Antenatal clinic
3. Diagonistic facilities
   - --- Pharmacy
   - --- Radiology
   - --- Pathology
4. Administration
5. Doctors facilities
6. Delivery / Labour suite
7. Theatre suite
8. Emergency
9. Services
   - --- Kitchen
   - --- Laundry
   - --- Central sterilization
   - --- Central services
   - --- Mortuary
10. Wards
    - --- Antenatal
    - --- Postnatal

		SQ. M
1.	ENTRANCE HALL	
	Entrance lokky	50.0
	Receptionist	15.0
	Store	15.0
2.	ANTENATAL CLINIC	
	Comultation / Exam rooms (6)	190.0
	Waiting hall	180.0
	Records store	29.0
	Multipurpose room	45.0
	History taking room	27.5
	Weighing and measuring	25.0
	Minitals	27.5
	Nurse Station	32.0
	Family Planning	30.0
	Examination unvicles	77.5
	Waiting hall	96.0
	Toilet	32.0
3.	DIAGONISTIC FACILITIES	
	A/ Pharmacy	
	Reception	16.0

Control temperature room	8.0
Store	8.0
Preparation	16.0
Distribution	15.0
Waiting hall	50.0
Head of department	25.0

B/ Parthology

Waiting / records	25.0
Laboratories	31.0
Costant temperature room	8.0
Store	8.0
Chief Technician	16.0
Head of department	

C/ Radiology

Radiology rooms (2)	50.0
Control room (2)	9.0
Dark room	10.0
Running room	9.0
Film Store	16.0
Waiting hall	45.0
Head of department	25.0

4. ADMINISTRATION

A/ Ground floor

General Enquiry	47.5
General Cash Office	47.5
Doctors / Nurses Administration	47.5
General Records	47.5
Telephone / Postal sorting	26.0
Typing Pool	47.5
Store	16.0
Toilet (male)	30.0
Toilet (Female)	20.0
Personnel Office	52.0

B/ First Floor

Offices (4)	96.0
Secretaries (4)	28.0
Individual Waiting Space (4)	48.0
Individual Toilets (4)	15.0
Multipurpose room (Conference)	47.5
Office Spaces	95.0

5. DOCTORS FACILITIES

Medical Library	47.5
Book - Keeper	25.0
Kichenelte	25.0
Lounge / Dinning	47.5
Sleeping for Male Dr.	15.0
Toilets and Shower	22.5
Sleeping for Female Dr.	25.0
Toilet and Shower	4.0
Visiting Medical Staff	25.0
Toilet and Shower	6.0
Sleeping for Nurses	25.0
Toilet and shower	6.0

6. DELIVERY/LABOUR SUITE

Farmer's lounge 1 bar	40.0
Preparation room	32.5
Labour Wards (4)	267.0
Toilets (4)	44.0
Delivery rooms (5)	240.0
Equipment rooms (5)	37.5
Scnub Up rooms (5)	60.0
Sub Stenile rooms (5)	60.0

Recovery room (2)	50.0
Female Staff locker/lounge	33.0
Male Staff locker/lounge	33.0

8. EMERGENCY

Waiting hall	32.0
Testing Area	36.0
Stretener Store	8.0

9.	KITCHEN	
	Bulk store	9.0
	Grain store	0.0
	Cold store	9.0
	Reception	28.0
	Preparation	28.0
	Washing	28.0
	Distribution	24.0
10.	LAUNDRY	
	Distribution	32.0
	Clean linen	20.0
	Dirty linen	20.0
	Washing (machine)	36.0
	Irroning	36.0
	Drying (machine)	36.0
11.	CENTRAL STERILIZATION	
	Preparation	15.0
	Cloves store	6.0
	Bottles store	9.0
	Sterile Storage	32.0
	Portable Equipment	9.0
	Distribution	25.0

Boilers room	108.0
Mechanical workshop	54.0
Electrical workshop	54.0
General store	54.0
Generator	30.0
Stand by generator	30.0
Morgue and autopsy	45.0
Refrigerated facility	36.0
Waiting hall	32.0
Changing room	27.0

ADMINISTRATION

General Office	88.0
Office (3)	108.0
Store	27.0
WC for female	30.0
WC for male	30.0

13 WARD

Private Bed Ward	
Clean utility	9.0
Dirty utility	9.0
Nurses locker	9.0
Common room	40.0
Sluice room	6.0
Store	6.0
WC/bath	12.0
Private rooms	10.0
Nurse station	8.0
Normal ward	
Equipment store	9.0
Clean utility	9.0
Dirty utility	9.0
Nurse locker	9.0
Medical staff room	28.0
Milk preparation	16,0
Store	9.0
Sluice room	9.0
WC/birth	12.0

Nurse station	24.0
Reception	28.0

SCHEDULE OF FITTINGS

ENTRANCE HALL

- Comfortable chairs for visitors
- Sign-boards showing the direction of the different departments
- Receptionist desk
- Small and normal tables

ANTENATAL CLINIC

Waiting area:-

- Chairs (normal) for expectant mothers
- Toys for children
- Chairs that are small for children
- Low wall that patient can sit on if they are able and can look out into the courtyard.

CONSULTATION/EXAMINATION ROOMS

- Doctors desk
- Doctors Chair
- Two normal chairs for patient and relative
- Couch (full length)
- Lavanortory (basin)
- Cupboard
- Examination Couch

EXAMINATION CUBICLES

___ Examination

___ Work top

___ Chair

___ Changing cubicles

___ Cupboards for storage

___ Treatment trolley

FAMILY PLANNING ROOM

___ Staff Chair

___ Desk for staff

___ Cupboard for storage

___ Two normal chairs for patient and ralative

___ Couch

___ Lavatony

___ Telephones

MULTI-PURPOSE ROOM

___ Cupboard for storage of equipment

___ Store

— Stool

— Treatment Trolley

— Blood pressure apparatus

— Telephones

MINI LABORATORY

— Benches for working - Work top

— Cupboards for storage

— Chairs for patient

— Lavatn /

HISTORY TAKING ROOM

— Chairs for patient

— Chair for staff

— desk for staff

— Cupboards for storage

WEIGHING AND MEASURING ROOM

— Weighing machine

— Measuring equipment

— Cupboard for Storage

— Chairs for patient

— Desk for staff

SERVICES

MECHANICAL SERVICES

WATER SERVICES

Investigations and calculations have shown that the parameter of design as related to demand as

- Hospitalised patient
- Total hospital demand

which is approximately 6% of the total demand for the whole complex.

N.B. Figures are in accordance with suggested bed state (refer to schedule of accomodation giving a margin of 15% of cover predicted increase in the future demand.

BOILER PLANT AND STEAM DISTRIBUTION

A steam boiler is provided to serve the Maternity Hospital complex by a Multi-boiler installation and producing steam at 1000 P.S.I.G. The plant is oil fire and include storage for approximately one month's supply under average conditions.

Steam and condensate distribution services will be extended from the contral boiler house in the man underground subway system of the complex to the Paediatric Hospital, then to the various blocks as required.

DOMESTIC HOT WATER

Domestic hot water storage heat exchangers will be installed centrally to provide hot water requirement of the operating theatre since ward units, Kitchens, Sanitary fittings etc. The heat exchangers will be served by the central boiler plant.

The steam and condensate services to the cabrifiers will be extended from the main distribution pipe work in the services sub-way. Hot water storage to other parts of the hospital will by means of local electric storage type heaters.

DOMESTIC COLD WATER

Seperate high level cold water storage would be provided in the various blocks to serve the hot-water heat exchangers and in addition domestic cold water would be extended from the storage tanks to serve the sanitary fittings.

GAS

Small bottled Butane gas stores would be distributed to suit the beat demands of Laboratories etc.

VENTILATION

Natural ventilation has been provided as far as pratiCable, outside confort condition areas, with the exception of the following areas which will be provided with mechanical ventilation.

1. Internal tpilets (approximately 10 Air. charges/ hour extract)
2. Dirty utility and sluice area (approximately 10 Air chagea/hour extract)
3. Ward kitchens (approximately 10 air changes/hour extract)

In large areas such as open plain wards, waiting areas etc. allowance has been made for the provision of ceiling type "Punkah" fans to give increase air movement. Local extracts will be provided to serve laboratory equipment as necessary.

AIR CONDITIONING

The following areas will be comfort air conditioned:-

i. Operating theatre suits
ii. Intensive care unit
iii. Special baby care unit
iv. Private Bed ward
v. Lecture/Nutritional Education Theatre
vi. Central teaching areas.

FIRE SERVICES

A fire ring main has been provided around the Main Teaching Hospital Complex with internal hydrants positioned at approximately 100m. interval around the hospital buildings

The hydrant main is provided with booster pumps as necessary.

Internal hose reels will be provided within the Paediatric Hospital building at strategic points, served from the main cold water distribution with booster pumps as necessary.

INCENERATOR

One oil fire incenerator has been provided to deal with the requirements of the whole Hospital Complex which has been estimated to be 2.5 to 3.0 tonnes (2500 - 3000 kg.) of refuse per day ultimately. This is large enough to cater also for the Paediatric Hospital.

STERILIZERS

The following will be provided with specific sterilizers

i. Special baby care unit sterilizer; 999cm^2 pass through type milk sterilizer.

ii. Dropped instrument sterilizer will be provided to serve the various requirements.

MEDICAL GAS

A central Bulk Oxygen store has been provided in the main Teaching Hospical Complex to serve various requirements of the Hospital. Allowance has been made for services outlets to the following standards

OXYGEN:

Aesthetic Room : 1 outlet

Plaster Room : 1 outlet

Treatment Room : 1 outlet

Wards : 1 outlet per bed for intensive and special Baby Care units and the Private Bed Ward.

: 1 outlet per 2 beds for the other wards.

: 1 outlet per bed for single rooms.

NITRONS OXIDE:

Anaesthetic Room : 1 outlet

Recovery room : 1 outlet

Plaster room : 9 outlets

Sunction: Sunction points will be provided along with every oxygen point.

LAUNDARY

A main laundary to service 30,000 pieces per week to handle the load in 7hours working day, 5 days per week has been provided by the main Complex Laundary for Wards are taken at specific internals arranged by the Hospital administration to the main laundary and back.

The Paediatric Hospital load has been found to be able to fit into the capacity of the Laundary.

WARD KITCHENS

The main kitchen will serve the wards on heated trolleys which are further heated in the ward kitchens and dished out to patients by their bed-sides while the bulk of the food is still on the heated trolley.

Crockery and dishes will be served in the Ward Kitchen and retained for the next meal since the number can be conveniently handled by the ward staff.

SITE DRAINAGE

Foul Drainage

A foul drainage system has been installed on the Teaching Hospital Site employing locally manufactured asbestos cement pipes. The system drainage by gravity to the North-West corner of the site where sewage treatment facility is located. Final effluent from the sewage treatment plant is dis-charged into the water which flows in the River Asa.

SEWAGE TREATMENT PLANT

The process of "Extended Acration" is used. The principle factors dictating the choice are:-

i. Smell niusance and health hazards.

ii. Flexibility in terms of future development.

iii. Minimal off-shore cost.

The plant is designed to provide B.D.D and solids removed such that the final effluent complies with the Royal Commission standard of 20mg/l. (75.8m litres/l.) B.D.D and 30mg/l (113.7m litres/L) suspended solids.

Resulting in surplus sludge from the process is dried on open beds from which it may be disposed of direct to the land. Chlorine injection has also been provided in addition to the plant, to be injected into final effluent to minimize health harzards to operators and public since, the process is not capable of destroying pathogenic organisms.

A resulting figure of approximately 650lbs. (292.5kg) B.D.D. per day and flow rate of 550,000 gallons/day (2.08 litres/day) for the scheme has been arrived at considering the following standards:

1. Peak flow rate of 3. D.W.F.
2. B.D.D. per capita range between 0.06lb (0.027kg) B.O.D. for non-residents and 0.24lbs (0.108kg) B.O.D. for patients.
3. Allowance being made Laboratory wastes.

SURFACE WATER DRAINAGE

An open channel type system of surface water drainage is used on the Teaching Hospital site, designed to accord with known rainfall intensity in the area of 2½inches/hours (63.5mm/hr)

Channels are located alongside.

Covered walk ways connecting the various buildings and constructed in rendered concrete blockwork, covered where necessary.

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