COMPREHENSIVE REHABILITATION CENTRE
(FOR PHYSICALLY DISABLED)
BAUCHI

By

YAKUBU YUNUSA

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DECLARATION

I hereby declare that this thesis has been composed by myself and that it is a record of my research work. It has not been accepted in any previous application for a higher degree. All quotations are distinguished by quotation marks and the sources of information are specifically acknowledged by means of references.

STUDENT: YAKUBU, Yunusa

SUPERVISOR: MAS'UD ABDULKARIM (MR.)

HEAD OF DEPARTMENT: E. A. ADEYEMI (PROF.)

DEDICATED TO

LATE ALHAJI YUSUF FANTAMI

AND

HIS WIFE

LATE HAJIYA HAUWA (ASABE) YUSUF

(May their soul rest in perfect peace).

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COMPREHENSIVE REHABILITATION CENTRE FOR PHYSICALLY DISABLED, BAUCHI

ABSTRACT

The changing pattern of disabling conditions and the alarming proportion with which the new forms of disabilities affect people; from various ages, states, and social classes, need to be considered with most curiosity, And an urgent solution ought to be found.

"A person is said to be disabled if he is permanently handicapped from functioning adequately as a human being," The handicap may be physical, e.g. blindness, paralysis, crippled, mental, e.g. mentally ill and the maritally normal or social e.g. orphans. Whatever, the kind of disability that affects an individual or group of individuals. The society/ government which is fundamentally responsible for caring of its governed, ought to device a means for reducing the effect of the absurd conditions on whoso-ever is effected. This could be done if opportunities for self improvement, conducive environment and an atmosphere of care and concern is created for the disabled person.

Thanks in large part to high technology medicine, few of us die of old-age anymore; or of what was once called "Natural causes" rather we enter an increasingly lengthy period of terminal stages of one or more

disorders; which results into a varied cases of physical disabilities.

The high level of subceptibility of every living human beings to these forms of disabling conditions, reminds me of a popular television advertisement for a cigar; in which the pitchman winks slyly at the audience and says "we're gonna get to you" the television audience may resist and reply "you are not going to get to me". But such a response is not possible, when we talk of physical disability.,

To think of physical disability as a problem that only a limited number of people face is deceptive. While at any given moment the number of physically disabled people is finnete, in the long run everyone of us is counted as one. But this seems to be a reality that we never tire of denying. And it seems to be a denial that cuts across all classes of people.

This sort of denial is likely to make all of us triply cursed. First by denying the real economic, physical and social deprivations, that inevitably accompany aging and disability in our society, we feel like "has been" and "less thans" when they eventually do occur. Secondly by denying that it will happen to us we lose the possibility of preparation.

The United nations in its proclamation for the International Year for Disabled Persons (I.Y.D.P.) has set aside, five principal objectives of the year.

The objectives include the following.

Helping disabled persons in their physical and psychological adjustment to society.

Promoting all national and international efforts to provide disabled persons that proper assistance, training care and guidance, to make available opportunities for suitable work and to ensure their full integration in the society.

To encourage study and research projects designed to facilitate the practical participation of the disabled persons in daily life, for example by improving their access to public buildings and transportation systems.

Educating and informing the public on the rights od siabled persons to participate in and contribute to various aspects of economic, social and political life.

Promotion of effective measures for the prevention of disability and for the rehabilitation of the disabled.

In a nut-shell the International Year for the Disabled Persons (IYDP) charter; categorised our roles to the disabled persons into four aspects:- social equality, prevention, integration and rehabilitation.

Rehabilitation could be said to mean "means of working to find the best way of satisfying all of the important needs of the handicapped person, towards his/her reintegration into the mainstream of life.

Where, when and what is provided for rehabilitation schemes is what this thesis is critical about.

Various governments, philanthropist organisations and individuals have a lot of varying perceptions of what a rehabilitation scheme ought to have, give and take. Some look at it as a vocational institution, some give health more emphasis others suggests education, All the various views have relevance in a rehabilitation programme. But the most common mistake, is providing the facilities in isolation.

The provision of the above important units of rehabilitation independently, is tantamount to relegating the importance of one or the other. Therefore if a comprehensively well articulated rehabilitation is to be achieved. All the various arms must be brought together optimally. This is the only way to awoid the lapses of the single focus form or rehabilitation; especially to the physically disabled.

It is the intention of this thesis to research into the various components of different wings of rehabilitation scheme and to look at them critically with the intention of designing a comprehensive centre that will contain all the essential needs of the rehabilitatees (physically disabled) for guick and problem free rehabilitation.

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Chapter 1

INTRODUCTION

Whereever an individual or group of individuals, have social conscience, there is a concomitant feeling of guilt or responsibility for the tribulations of the less fortunate members of the society. No less galling today is the lot of beggars and destitutes with one type of disablement or the other, who are seen soliciting for alms to keep body and soul together at vantage points, as road junctions, markets, shopping centres, Mosques, public buildings and infact all over the central business districts of Nigerian towns and cities.

The attitudes of the various Government of Nigeria to the plight of the disabled is anything but fair. The disabled are seen as pollutants or "solid precies of waste lettered all over the country" little did the Government think about its responsibility to this class of its citizens. At various times, especially during international gatherings in this country. Disabled persons or destitutes are quickly refered to as a "NATIONAL DISGRACE". They are then hurriedly taken away for a short lived rehabilitation, which usually span the period of the gatherings.

At some instances, the government (Federal and State) had attempted various schemes for the rehabilitation of the disabled. However, most if not all of them failed. The reasons for failures could be found entrenched in an answer to the following questions.

Does the formally instituted programme usually legislated by the government action, with implementing procedures and administrative rules established by the responsible agency, accomplish the generally stated objective in dealing with the underlying problems of the destitutes? The answer to this question is an emphatic No!

The inconsistency or mismatch within these areas of concern may result in a lack of "success" for the implementation of the program independent of the level of funding or operating efficiency (even if available) in program administration. No attention is made to assess program efficiency as such. The orientation is to the policy's formulation and implementation and the program's outcome.

The aforementioned intricases are enough to buttress the fact that, the government is indeed aware of its responsibility to this group of unfortunate citizen. But it lacks the courage and aptitude to deal with it optimally.

With the rise in number of disabled people with physical disabilities, due to increase in road accidents, mechanised workshops, after effects of diseases and drugs. There is an urgent need for a comprehensive rehabilitation centres in our towns and cities.

Since each disabled person, who does not have the opportunity to regain his potentials costs the community far more than it hopes to recover (or nill) from him, then it makes sound economic sense to rehabilitate a disabled person to a tax-paying status.

The comprehensive rehabilitation centre will be aimed at the improvement of the disabled person by both treatment and counselling. However, the treatment in the centre will be for the purpose of improving the efficiency of the muscles, bones and joints malfuntioning or continuation of treatments as prescribed or ordained on a discharged patient from an orthopaedic hospital. Vocational training will also be provided to the rehabilitees, for the purpose of the reincorporation of the patient to his/her former work, development of new skills, etc. Adult educational facilities would also be provided to the rehabilitees to help the disabled with requirement of the rehabilitation program.

At the end of the rehabilitation; the graduands are expected to specialise in one form of occupation or the other. This will lead them to forming a one man business, cooperative or partnership hence live an independent living as against begging.

Motivation

I feel the purpose of living is to make the most of being alive. It means realizing one's potential; making use of the talents one is born with and the opportunities and challenges that life affords, to achieve in some measure of personal fulfilment. In the action of life, the person with a disability is doubly handicapped. First, he is handicapped simply because he does not physically

have the capabilities that others have. This can have a variety of effects, causing social, financial and emotional deprivations. Second he is handicapped because he is perceived by others as handicapped, because there is a social doctrine which says that to have a disability is to be blighted and improverished.

The first kind of handicap can be allevated by props, usually of physical character. The second is more serious in that it is culturally entrenched.

However the seriousness could be lessened, if a commitment could be directed towards enhancing of opportunities for people with physical disabilities and the enlarging of possibilities for item to participate and be involved in the ordinary busy world. This means chanelling resources and utilizing them to the best effect.

The comprehensive rehabilitation centre will have two functions of TREATMENT and REHABILITATION.

Goal and Objectives

(1) To arouse the crippled person's interest in certain activities and thereby to help him demonstrate that he still possesses abilities and capacities thought lost.

(2) To help the crippled person regain motor control of the disabled member of his body.

(3) To help or enable him adjust to his disability.

(4) To accommodate person's with physical disabilities, at the same time encourage buildings convenient for all.

(5) To assist the crippled in putting his regained physical ability to some economic or social use.

(6) To assist rehabilitates to overcome their social problems.

(7) To give ecomic potential to the disabled.

To achieve this noble aims, the medical section of the rehabilitation centre provides the following services.

(1) Medical evaluation.

(2) Physical and hydrotherapy.

(3) Occupational therapy.

(4) Social adjustment therapy.

The objective of providing the aforementioned services in the medical unit are as follows:-

Physical and Hydrotherapy

To alleviate or correct bone and joint or neuromuscula disability. This entails a concern with all types of crippling disabilities, such as neurological deseases, anthrities, amputations, paralyses, spasticity, structural and postural melalignment, crippling accidents, post surgical conditions, etc. etc.

To regain or re-establish circulation, muscle tone, coordination, joint motion leading to mobility, ambalation

and activities of daily living.

In achieving these noble objectives, the therapist will make use of hot, cold, water, light and electricity as well as the training effects of active, passive, resistive and re-education exercises.

Occupational Therapy

To assist in physical restoration of the crippled person, enabling him to adjust to his disability, increase his work capacity, and want to become a productive member of the community.

In addition, the occupational therapist is concerned wi with the training of patients in the activities of daily living.

Social Adjustment Therapy

To help patients overcome their social problems.

In order to give economic potential to the disabled, the rehabilitation section - of the centre provides the following services.

(a) Vocational Training

This programme has the responsibility of acquinting the disabled with situations in industries and business and of preparing him for job competition - provides economic potentials.

(b) Sheltered Workshop

The sheltered workshop provides additional opportunities for further evaluation, training and eventual employment of the handicapped individual.

Orthetic and Prophetic Appliances

Orthetic appliance is an aid prescribed for suppport of weakened parts of the body and to increase or control their functions.

Prophetic appliance is an equipment/aid prescribed as artificial substitute for missing parts of the body.

These appliances shops are under the physical/ hydro therapy functions.

Having studied the problems of rehabilitation programmes within the releams of our society; I also endeavoured to look into the planning, designs and detail of the existing rehabilitation centres here at home and abroad.

It is from these studies, I realised the Architect could contribute immensely in providing, not only a good or conducive environment but a centre that could take of all his requirements into considerations.

Chapter 2

THE PHYSICALLY DISABLED

Most terms refered to the physically disabled are often misused or misapplied; however a thorough understanding of the terms will be of great help towards the understanding of the disabled and the various classifications within the popularly considered unit term.

2.1 Basic Definitions and their Relationship

Disabled:- The disabled are the people who are physically incapable and hence cannot function adequately as normal human beings.

Handicapped:- Handicapped person is one who is being hindered in achieving some specific goals as a result of certain obstacles.

Disability and Handicapped.

'Disability' and 'handicapped' are not synonymous. A disabled person is not automatically a handicapped person, whether or not there is handicap depends on the nature of individuals impairment and the circumstances in which he is placed.

A disability is a condition of impairment that can usually be identified or described by a physician, but a handicap is the cummulative result of obstacles which disability interposes between individual and his maximum functional level.

A blind person for example is not handicapped when he is doing work for which it is not neccessary to be able to see. A chairbound person is not handicapped if what he wishes to do can be managed from a wheelchair without difficulty.

Conversely, there can be handicap where there is no medically identifiable impairment. A person whose ambition is to be a great sportsman is handicapped if his physical abilities are just average.

The precept needs to be emphasised: a physical disability is handicap only where it constitutes a barrier to the achievement of specific goals.

2.2 'Disabled People' and 'The Disabled'

There are hazards in talking about 'Disabled people' or the Disabled'.

The physically disabled or physically disabled people are not unable to do anything. They are also physically abled person, unless blind, deaf, totally paralysed and mentally deficient. There are things he can do as well as things he cannot do.

It is therefore better or more appropriate to speak of 'a person with a disability, the disabled' and disabled people' used in this thesis are therefore excused.

2.3 Architectural Definition of Disability and Handicap

Disabled People:-

They are those who on account of physical impairment are handicapped in their desired use of buildings due to lack of suitable facilities.

A Handicap:-

This is the cumulative result of the obstacle which lack of suitable facilities in buildings interposes between the individual and his maximum functional level.

Lack of Suitable Facilities:-

They are the architectural barriers like non-availability of rails beside a Wc, an excessive distance to walk from car park to building entrance, non-availability of easy access for people on crutches, wheelchairs, etc. In the application of the definition, the important variable is the characteristics of the building against which the disabled person is measured. The only buildings which matter are those which he uses or wishes to use. A person who is totally incapacitated and bedfast is not as a rule greatly handicapped by buildings.

2.4 Grouping of Disabled

Various models could be used to classify disable people. Among them is the classification according to the nature and extent of their disabilities. The disabled

can be grouped into three groups.

AMBULANT DISABLED

SEMI-AMBULANT DISABLED

NON-AMBULANT DISABLED.

2.4.1 The Ambulant Disabled

They are those whose power of movement or locomotion is not seriously impaired. This category of disabled people could use sticks, crutches, braces and other walking aids; or even move without external aids. The ambulant disabled can be classified as follows:

i. persons with circulatory, respiratory or locomotory defects.

ii. person with prothesis and orthesis appliance.

iii. person wearing appliances.

iv. person with manipulatory impairment.

v. person with impaired hearing.

vi. person with impaired vision.

2.4.2 Semi-Ambulant Disabled

They are those whose powers of locomotion are impaired to such extent that they have to use external walking aids like sticks, elbow crutches, armpit crutches, tripod or wheeled frames.

Those who fall under this category are often unable or not easily able to:-

i. stand by themselves

ii. sit down

iii. rising from sitting posture.

2.4.3 The Non Ambulant Disabled

They are those whose locomotion is so impaired that they are unable or scarcely able to walk and stand by themselves.

They can move about in and around the building either independently or with an attendant.

NON AMBULANT DISABLED — INDEPENDENTLY / WITH ATTENDANT

Independently

The Non-Ambulant can move in a wheelchair propelled by means of hand-rims, if the person retains sufficient functional capacity in his arms, they can also move in an electric wheelchair if there is still only a little residual capacity.

With Attendant

They can sit in a special car chair or in an ordinary wheelchair propelled by the attendant. (wheelchair users may also be effected by paralysis apart from locomotory disability.

2.4.4 Classification and Causes of Disabilities

Broadly speaking, there are two types of disabilities:-

1. Temporary disability.
2. Permanent disability.

Temporary disability may be caused by:-

1) Accident
2) War
3) Diseases
4) Injuries at birth.

Permanent disabilities may be caused by:-

a) Congenital malformation
b) Trauma
c) Inpaitence
d) Natural aging process.

Common disabilities arriving from these causes are:-

(1) Limb disabilities - i.e. physical disorder of limbs which cripples a person.

(2) Dumbness
(3) Deafness
(4) Blindness
(5) Mental illness

) This thesis work addresses itself to only limbs disability - i.e. crippled.

(6) * Diseses of nervous systems such as cerebral palsy.

Cerebral palsy is the most serious threat to locomotory or ambulatory functioning of the body resulting from neurological disorders. Several definitions have been used to describe cerebral palsy; however it does not have a universally accepted definition.

In a classification scheme developed by the American Academy for cerebral palsy, the motor component aspect of cerebral palsy is given precendence over other forms of classification. Within the motor component, six types of cerebral palsy have emerged:-

- Spasticity
- Athetosis
- Ataxia
- Rigidny
- Tremor
- Mixed

2.5 Definitions

Locomotory Disabilities:- Handicaps of the trunk and/or lower limbs which impair normal ambulation.

Mampulatory Disabilities:- Handicaps of upper limbs, either amputation, distortion or ill-effect.

(locomotory and manipulatory impairment can sometimes be restores economically.)

Paralysis:- Loss of muscular control.

Paraplegia:-The total or partial paralysis of both lower extremeties.

Triplegia:- Paralysis of three limbs.

Quadriplegia:- Paralysis of all four limbs, caused by an injury to the nerve cells in the cervical region.

Amputee:- Person who lost one or more limbs due to amputation.

Calliper Spcints:- They are to give support to weak ankles (short ones) and (long ones), knees, thigh or calf muscles.

Gaastic:- A person with cerebral palsy.

Spastic Cerebral Palsy:- Involved both lower limb mostly and more rarely both upper limbs or three or all four limbs.

(mental faculties are frequently impaired).

Monoplegia:- Paralysis of a single limb.

Poliomytelities:- A river disease which affect the anterior nerve cells of the spinal cord, causing paralysis of the muscles. (The residual effect may involve complete or partial muscular paralysis e.g. in one leg or arm).

Arthritis:- Inflamation of the joints.

Spina Bifida:- This is a congenital condition where the spinal cord is imperfectly developed, hence causing in some cases paraplegia and incontinence.

Congenital Disabilities:- These are those which are present at birth or manifest themselves soon after birth.

Prothesis:- Replacement of an absent part by an artificial one e.g. a leg, arm denture, eye, (Artificial limbs).

Trauma:- Accidental or other injury due to shock or wounding.

Rehabilitatees:- Disabled individuals who are assisted in a rehabilitation centre.

Rehabilitants:- Disabled who have been restored to their normal activities or gainfully employed.

2.6 Limb Disability

These are various disorder of limbs which cripples a person. (In this thesis, the lower and upper limbs disabled are considered).

2.6.1 Mobility Classification of Limb Disabled

Ambulant wheelchair user.

Semi-Ambulant with wheelchair.

An Attendant wheelchair user.

Non-Ambulant alone in a wheelchair.

Ambulant without a wheelchair (whose aid can be sticks, crutches, braces, or any walking aids.).

2.6.2 Mobility Aids for the Limb Disabled

A. (i) Walking stick - quadrupted walking stick walking frames.

(ii) Elbow crutches.

(iii) Full length crutches.

B. Wheelchairs

(i) Self propelling wheelchair.

(ii) Indoor Electric wheelchair.

(iii) Outdoor wheelchair.

(iv) Hand propelled tricycle.

(v) Foot propelled tricycle.

(vi) Electrically propelled tricycle.

(vii) Motor propelled tricucle.

2.7 Use of Wheelchairs

How the Physically Disabled Move with Wheelchairs

Non-self propelling wheelchair - it is used by someone else pushing.

Self-propelling wheelchairs:- Is moved:-

by using hands on handrims,

by using hands on tyres,

by using feet to push,

by using two handrims on same side,

by using one handrim, one foot on floor,

by driving electric chair,

by using knobs on handrim.

Standing up from Sitting Position

Depending on the extent of the disability, the crippled have different methods of standing up from a sitting position/or on a wheelchair. Some can stand up:-

without help,

with the help of someone else,

with the help of appliance, e.g. rail or piece of furniture,

with the help of appliance and someone else,

while some cannot stand up at all.

In Nigeria today most physically disabled people hardly use wheelchairs. They alternatively crawl with their legs or move on their buttocks, this is however, dependent upon the extent of the disability.

The reason behind their inability to use wheelchairs could be found imbedded in any of the following; either because

- The expensive cost of the wheelchairs.

Those who have trained themselves to manage without wheelchairs, could not afford to change to wheelchair.

- Those whose condition has deteriorated so that they are bedfast.

Wheelchair Manoevure

The ability of people with wheelchairs to propel their own chairs and the means by which they do so are determined by:-

(1) whether they have a chair which can be self propelled and

(2) whether they have hand or arm impairments. Many physically disabled have arm impairment.

Some with both arms weak and some with only one weak and the other strong.

Transferring In and Out of a Wheelchair

The way the crippled people transfer in and out of their wheelchairs is determined in the main by their ability to use their legs to stand.

Some of them have to be helped because of the extent of their disability, some could transfer by themselves:-

(i) by standing up without help.

(ii) by standing up with the help of sticks, crutches, or furniture.

2.8 Providing the Crippled with Wheelchairs

(a) Electric indoor wheelchairs can be issued to people with locomotory disability, who are unable to propel themselves.

(b) Rear Propelling Wheelchair (Fig.1.0)

This type of wheelchair has propelling wheels at the rear. This type is preferred to issued to the crippled people, because of the following reasons:-

(1) For people with good upper limbs it is easier to propel.

(2) For people not able to stand at all it is easier to transfer to or from the chair.

(3) For people with lower limb disabilities only, it is possible to tip the chair and

balance it to mount kerbs, this cannot be done where main wheels are at the front.

(4) It is easier to descend kerbs or single steps. The normal practice is to reverse the chair and allow the main wheels to drop down the steps, or, among people with strong upper limbs, to tip the chair and balance it so that it rides down; neither of these techniques is possible with main wheels at the front, where there is hazard of tipping out forward.

(5) It is prefered by wheelchair pushers, since the foot tipping lever allows an attendant to tip the chair without difficulty to negotiate kerbs or single steps, it is difficult to negotiate kerbs where main wheels are at the front, whether or not the user has an attendant.

(6) Better directional stability is obtained with rear propelling wheels; with front propelling wheels the rear of the chair tends to swing round.

(7) A closer approach to desks and tables may be possible.

(8) It is easier to load in or out of car.

(C) Front Propelling Wheelchair

For a person with weak upper limbs a wheelchair with main wheels at the front is easier to propel independently.

Chairs with main wheels at the front are specified for double lower limb amputatees owing to lesser risk of over balancing.

(D) One-Arm Drive Wheelchair

A one-arm drive wheelchair (fig. 1.1) may be used by physically disabled people such as hemiplegics who have strong function in the arm only.

Tricycles commonly used by the limb disabled are not suggested for use in the proposed centre - because:-

1. It is not easy to get in and out of it.
2. It occupies more space.

2.9 Preventions of Physical Disabilities

1. Accident

Educating drivers against reckless driving, alcoholism and drug addiction; could help in no small measure towards reducing and ultimately preventing crippling disabilities.

2. Drug-Abuse:

Citizens should be educated to take drugs under strict medical supervision orpre-scription. The factor of drug-abuse in aggravating the occurrences of physical disabilities is more prominent with pregnant women. This has been known to result in the delivery of babies without arms or legs (e.g. such drugs like Haliolomide.)

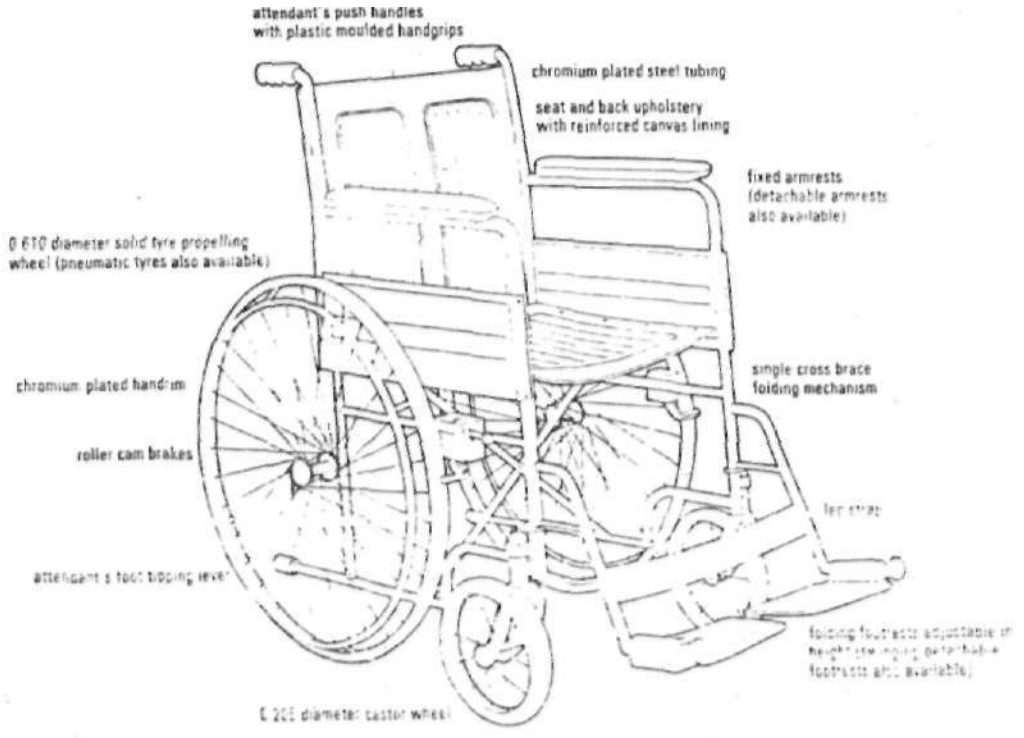
3. Cleanliness:

Both personal and environmental cleanliness helps in preventing crippling disability diseases like syphilis, tuberculosis, poliomyelitis and measles which often results in deformities and paralysis.

4. Control of Communicable Diseases:

By preventing certain communicable diseases, such as diaptheria, measles, scarlot fever, tuberculosis of the bones and the joints, and poliomyelitis which is one of the main causes of physical disabilities by immunization and vaccination; by the introduction of artificially produced radioactive isotopes; and by the discoveries in genetics that have intensified research into some of the congenital defects that are now among the chief causes of abnormality and disability.

5. People employed at such jobs like the fire services, despatch riding, heavy machinery operation, climbing high altitudes or towers etc. should be insured adequately by their various employers against any occupational disability.
6. The various governments of this country needs to set-up manufacturing factories of rehabilitation equipments like calipers, crutches, wheelchairs and prosthetics. These equipments could be sold to the disabled at a highly subside rate.
7. Finally, the various governments need to set-up such centres for the rehabilitation of the physically disabled. This responsibility by the government towards the alleviation of disabilities improves not only the life of the crippled but also the lot of humanity.



23.8 Everest and Jennings Premier wheelchair

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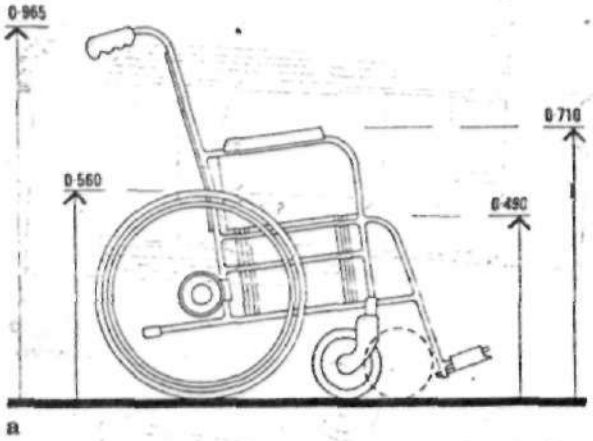


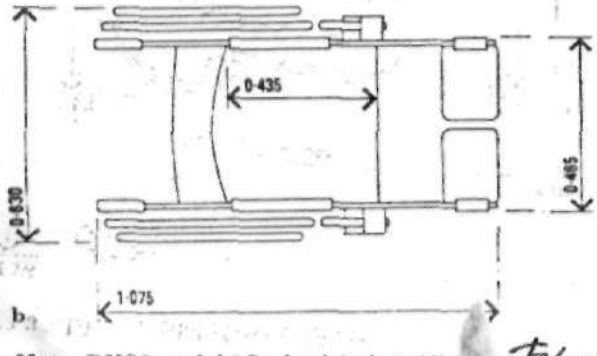
23.3 DHSS model 8G wheelchair

F·H



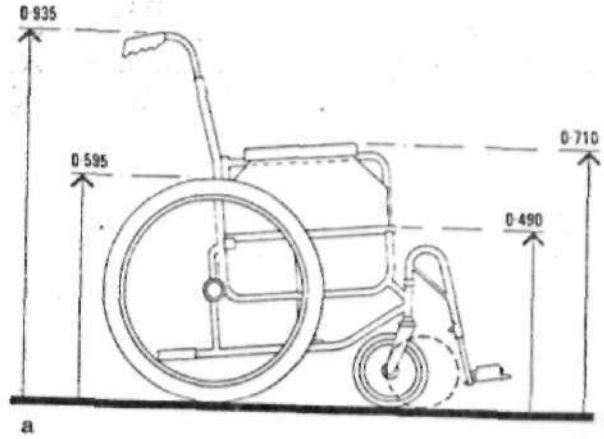
23.1 DHSS model 8L wheelchair

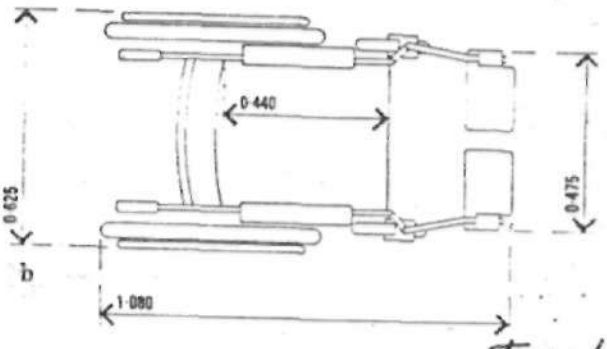




23.4 DHSS model 8G wheelchair (1:20)

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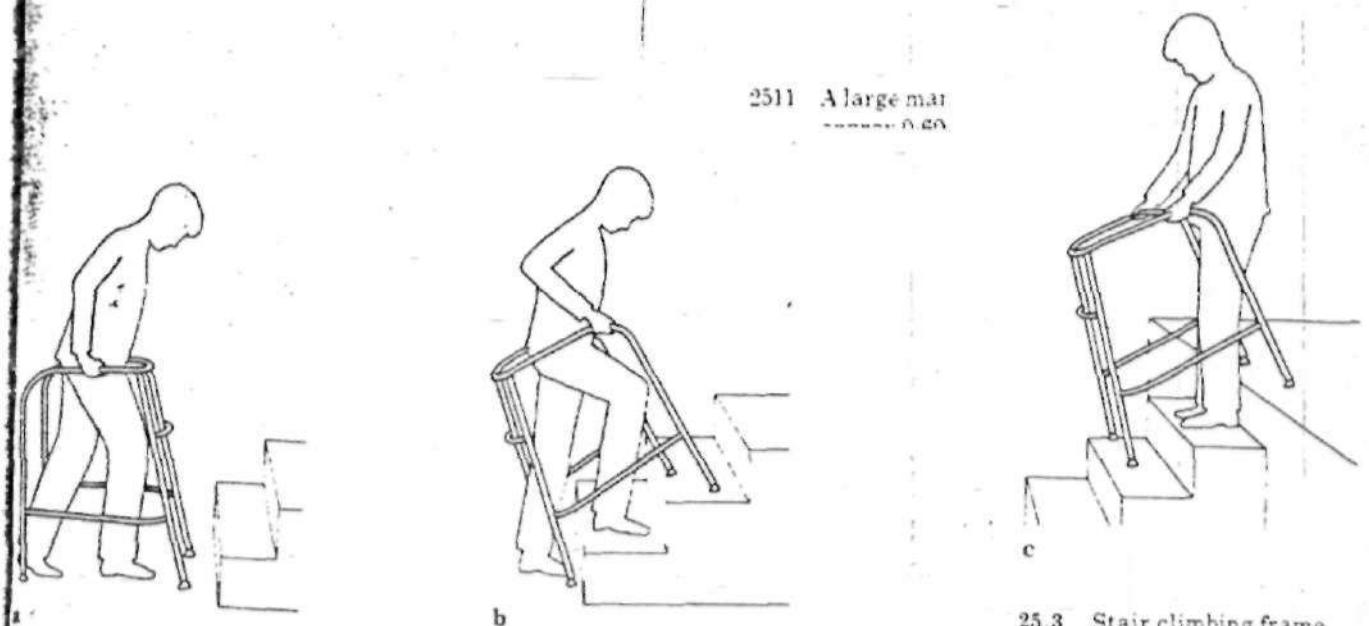




23.2 DHSS model 8L wheelchair (1:20)

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2511 A large mar

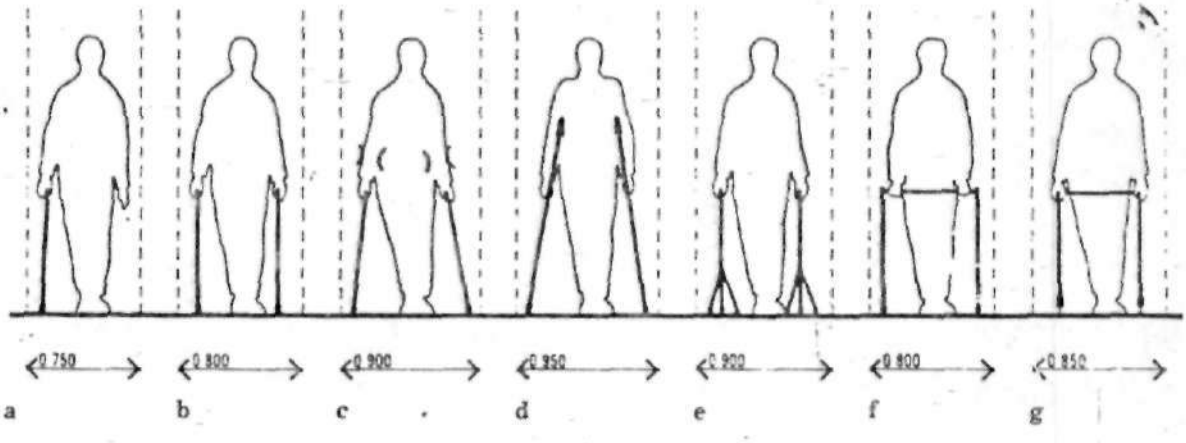


25.3 Stair climbing frame

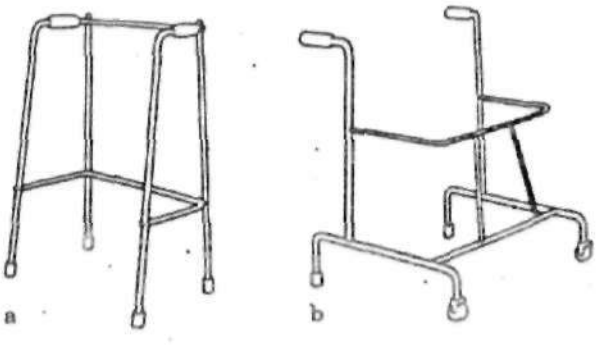
251 Circulation spaces: Stick users

2510 For stick users, passage widths of 0 800 ar adequate but are not recommended. Buildings will not in practice be designed for stick users only, and the preferred minimum for passage widths of 0 900 should be observed.

2521 A large man using two elbow crutches occupies a space approx 0 780 wide and needs a utilization space 0 900 wide (diagram 25.1c).



25.1 Ambulant disabled people: Circulation utilization spaces (1:50)



25.2 Walking aids

FIG 1.7

Chapter 3

REHABILITATION

The current English dictionary definition of rehabilitation, is the process of restoring to good. To a better condition or former position of rank.

Though various definitions have been given to rehabilitation, they all seem to emphasize, the restoration of the lost potentials in the handicapped person. Amson-Yevi (1981) defines rehabilitation as the process in which the remaining physical and mental capacities are utilized and developed to their highest efficiency to adjust them to the demand of the society.

Bewaran (1984) sees rehabilitation as the restoration of the disabled to the fullest physical, mental, social, psychological, vocational, and economic usefullness.

Gearheart (1980) defines rehabilitation as the general term which refers to the assistance provided for the handicapped person.

From the x-ray of these definitions; rehabilitation could be said to be bringing (who is physically disabled) to normal or near normal life by special treatment. It could also be refered to as a generic term covering the continuous medical, paramedical and vocational processes through which a person who has been disabled by congenital causes, injury or illness can to the extent possible, achieve his full acceptance as a working member of society and become an intergral part of it.[1]

3.1 Brief History of Rehabilitation

Since the last World War much more attention has been paid to the vocational aspects of the rehabilitation and in particular to developing vocational assessment and work preparation courses for the disabled and destitute persons.

In America, rehabilitation legislation was initiated with the passage of the National Defence act of the 1916, which provided for vocational training of returning soldiers and this was the beginning of favourable attitudes towards rehabilitation, which later resulted in a large National programme of today.

The Smith-fess vocational rehabilitation act of 1920 was the first federal law which was not limited to soldiers. It provided for guidance, training, occupations adjustment and placement services to the physical disabled.

The establishment of this act then, became a guide-line to the State and Federal Government in the administration and funding of rehabilitation services. The major concern of these services is the correction and minimization of the disability under consideration.

Rehabilitation program is the foremost among many programmes planned for the disabled in America. In the beginning most rehabilitation programmes were undertaken by private non-profit making organizations. However, today the programmes are dependent on Federal legisla-tions for their existence.

Provision for rehabilitation has been on the increase in America, because of many reasons which include economic benefits and the increasing convention on the part of the citizens of the nation; that the equality of opportunity to participation in the benefits and responsibilities of the nation is the natural right of all citizens.

3.1.1 Nigerian History of Rehabilitation and the Need for it

In Nigeria the rehabilitation program practices came as a result of western influences, imported from America and Europe. This has been influenced in recent years by organisations and individual philanthropists who are concerned with the welfare of the disabled.

The program was initially undertaken by missionary organisations and bodies, spirited individuals and many voluntary organisations who has been working for years without government support.

Some of these rehabilitation schemes are:-

1. Rehabilitation and leprosy settlement Mangu.
2. Alushi Medical Rehabilitation Centre Akwanga (Plateau State) 1944.
3. Pacelli School for the Blind Surulere Lagos.
4. Beth Torrey Home, Zaria (Kaduna State) 1968.
5. Shabu Rehabilitation, Lafia (Plateau State) 1952.
6. St. Joseph's Blind Centre, Obudu Cross River State.

7. Obudu Vocational Education for the Handicapped.
8. Leprosy Settlement, Mkar (Benue State).
9. Molai Hospital Settlement (Borno State).
10. Chesire Homes in Anambra and River States.

3.2 Rehabilitation as a Solution to Street Begging

In 1945, the Lagos City Council endeavoured to cope with the problems of beggary and destitution in its area of jurisdiction - when it promulgated a local government law, which empowered the city council to deal with the problem by restricting prohibiting the movement of beggars (most of whom are physically disabled) in the streets of Lagos.

At about the same time the Nigerian Railway Corporation made bye-laws prohibiting alms begging in trains and precints of railway establishments. These measures, have failed to solve the problem posed by beggars who are found in the most prominant places in our cities particularly Lagos.[2]

In 1965, the Federal Ministry of Labour set-up a committee under the chairmanship of Mr. Abraham Ordia, to study the problem of street begging (the traditional work of most physically disabled) and its attendant repercurssions on public health and morality. The committee submitted some recommendations and noted that within the period of seven years, the number of

beggars in the city of Lagos, rose from 459 in 1958 to 1,182 in 1965 an increase of 256%.[3]

In 1967, the Federal Military Government implemented part of the recommendations of the committee by sending about 700 beggars and destitutes from Lagos to their various states of origin. Unfortunately, the exercise was a failure because adequate arrangement to receive and rehabilitate these beggars in their home state were not made before sending them away from Lagos. Hence, almost all those beggars repartriated returned back to Lagos within a month and the population of beggars continued to increase.

A much larger committee was set up again, charged with the responsibility of carrying out a detailed survey of all categories of beggars and destitutes in the Federation with a view to devicing solutions appropriate to each category. A comprehensive report has since emerged from this study. The overall intention was to decisively tackle the problem of the disabled through gainfull rehabilitation and eventual integration with the rest of the society.

Apparently now, the authorities, be it State or Federal Government have known that disabilities are the main cause of street begging in Nigeria.

Hence, a nation wide systematic survey of beggars and destitute should be carried out. Such a survey would enable authorities to define disablement and

understand better their problems, this could be done easily by the various governments.

3.3 Rehabilitation Programmes in Nigeria (Federal and State Governments)

Over the years, there had been no deliberate, well laid out national plan to rehabilitate (the disabled). As has been mentioned already, most of the rehabilitation world for the disabled were created by a few voluntary and charitable organisations. Although the Federal and State Governments continued to increase their budgets on public health yet little or no money was voted to the rehabilitation of the disabled.

Nevertheless, adhoc steps were taken in the past by the Federal Government towards the rehabilitation of beggars and destitutes. These steps included the beggars and destitutes camp at Oshodi, set up to accommodate more than 500 beggars and destitutes during the tenth anniversary of the country's independence in 1970, temporary camps for beggars and lunatics at Gbagada, Lagos State, the short rehabilitation during Festac, temporary camps at Dawaki, Bichi, and on the outskirts of Kano city and so many others in other parts of the Federation.

State Governments Programmes on Disabled in the Past[3]

The various State Governments in Nigeria had attempted various forms of rehabilitation schemes too. Though most of them were well concieved, key, however failed due to either poor administration, lack of manpower of poor financing. Among the states that attempted the schemes are:-

Benue/Plateau State

Construction of 12 alms houses for beggars and destitutes at Akwanga, Makurdi, Gboko, Otukpa, Shendam, Langtang, Keffi, Lafia, Pankshin, Wukari, Nasarawa and Jos.

Kano State

Construction of Rehabilitation Centre and Workshop at Kano, Hadejia, Kazaure, Gumel, Dambata, Birnin-Kudu, Rano and Gwarzo.

Lagos State

Construction of Rehabilitation Centre for beggars, lunatics and destitutes at Majidun along Ikorodu Road to accommodate 500-700 destitutes.

Bendel State

Construction of (a) Vocational Training Centre for handicapped persons (b) Sheltered Workshop for use by trained handicapped persons.

Kaduna State

Rehabilitation Centre for beggars and destitutes in Kafanchan, Katsina and Kaduna.

Borno/Bauchi/Gongola States

Construction of Destitutes and Refugee Transit Centre with residential facilities, improvement and construction of new workshops for the handicapped.

Niger/Sokoto States

Construction of Rehabilitation Centre for disabled at Sokoto, Kontagora and Gusau.

Ondo/Oyo/Ogun States

Construction of a centre at Ilesha for the rehabilitation of the disabled.

The above proposals by the Federal and State Governments, reafirm the strong conviction that, the various authorities are aware of the need to rehabilitate the disabled persons.

However, up till now most of these projects are still yet to be constructed. With the coming of the civilian administration in 1979; the situation got worsen. At that time, most important issues were turned into political issues, hence leaving most important national concerns unsolved.

Anyway the Government of Bauchi State, the state in which this thesis is sited, has just appointed a committee to look into the problem of beggars and

destitutes in the state. The committee has taken the population census of the disabled in each local government area of the state. It is also proposing a rehabilitation centre (modern) in the state capital.

3.4 Social Welfare Policy-Programme and Objective (Prospects and Failures)

The question that "does the formally instituted program usually legislated by government action with implementing procedures and administrative rules established by the responsible agency, accomplish the generally stated objectives in dealing with the underlying social problem". This question could not be easily answered here.

However, the inconsistency or mismatch within these arears of concern may result in a lack of "success" for the implementation of a social program independent of the level of funding or operating efficiency in program administration. No attempt is made to assess program efficiency as such. The orientation is to the policy's formulation and implementation, and the program's outcome.

The possible reasons for the mismatch at levels of general policy at its view of the problem or of the legislated program designed to accomplish the goals of the policy are discussed to the extent these can be surmised. Some possible "whys" include:- a lack of

appropriate data on the nature or dimensions of the problem or on what actions might affect it and how; the resolution of opposing social philosophies or approaches toward or responsibilities for social problems and political compromise negotiated between or for vested interest groups with varying degree of power.

This mode of analysis suggests that social problems, social policies and social programs should be interrelated. How a social problem is defined suggests the extent to which society assumes an obligation for the amelioration of the problem through social policy. A social program is then enacted to implement the goals and objectives of the social policy formulated. Since the ultimate result of this process is supposed to be a congruence between the original problem, the policy and the program designed to deal with it; relief should also be provided for the target population defined as affected by the social problem. However, if the original definition of the social problem is, to some extent inaccurate, the situation may not be relieved.

3.5 What can be Done to Make Rehabilitation Centre Successful

1. The Rehabilitation Board should strive towards improving the public awareness of the importance of rehabilitation in the society.
2. The program should be a team work involving all professionals and specialists required in rehabilitation process.
3. Interested people willing to work in the centre should be encouraged, by giving them additional advantages against their counterparts in other sectors.
4. Adequate plan should be made to meet the various needs of the rehabilitatees. These indludes, spaces, facilities, equipments etc.
5. All parasitic activities performed by disabled should be banned; this include begging and squatting.
6. The rehabilitation program should be made compulsory and free to the disabled.
7. An adequate and consistent means of funding should be provided for the centres. This help immensely in attacking one of the major weak points in rehabilitation programmes in Nigeria.

The aforementioned proposals will hopefully lead us to effective rehabilitation scheme for

the Niderian disabled population.

8. Rehabilitation centres should be integrated into the social fabrics of the society. This is an area most often neglected by the authorities concerned.

3.6 Means of Financing the Centre

1. The State Rehabilitation Board should be charged with the responsibility of collecting alms on behalf of the rehabilitatees from specific points like Mosques, Churches, public buildings, markets, etc. The alms collected could be used to assist government in maintaining the centre.
2. Special charity programmes should be arranged, to create avenues for collecting funds to run the centres.
3. The Board could also educate the public to realise that the money at present given to those on the streets would be better administered by them for maintenance of the centre. This campaign would better be achieved by involving religious leaders.
4. The rehabilitatees after their vocational training, work for six months in the sheltered workshop. The sales of the products from the workshop are used to

finance the centre.

5. The public should be advised to give their job contracts to the centre's workshop. (if such job is within the discipline of the centre). This could better be achieved by a consistent and well programmed exhibitions.

References

1. Recommendations of I.L.O./U.N.O. concerning vocational training for the disabled. (Rehabilitation of the Disabled (GENEVA I.L.O. 1967)

2. S.O. Koku, opening address to delegates to a Conference of the National Council of Social Work in Nigeria in his capacity at the Permanent Secretary, Federal Ministry of Labour, 1972, published in the Rehabilitation of Beggars in Nigeria (Ibadan, Ibadan University, Press 1972) p.63.

3. State governments' programme for rehabilitation as contained in the Third National Development Plan (1975-1980).

Chapter 4

DISABILITY RELATED SERVICES

The services related to the treatment and reorientation of a person with physical disability are most often thought of in terms of persons who offer or perform these services. These persons, working in conjunction with one another, usually have their own professional interests at the centre of their approach to treatment. This may lead to a fragmentation of services or, at least, to a lack of coordination and a conflict of interests. Although certainly not a new concept in its approach to management, the team approach is the only one that fully contributes to the well-being and best interests of the physically disabled person.

An analogy between the team interracting with the physically disabled and the family and a sports team may be appropriate when one considers the function of a team. In sports, a team consists of group of players who have different functions or tasks to carry out in the prevention of an event (the opposing team making a score) and in the striving for other events to take place (scoring against the other team). The overall goal is to win the contest or event. When the team members act in such a way as to avoid reliance on a single feature or play or on the performance of a single player, then the effort that is expended is directed toward a unified goal: winning when concentration is on

a particular type of activity or play or on the skill of a particular individual, then the goal of the team may be lost; or at the very least, the team may lose sight of the goal.

Several similarities may be found between this sports team and the term interacting with the physically disabled and his family. The treatment team consists of several members who have different functions or tasks to carry out in the prevention of certain events (muscles contractures, the deterioration of physical and/or intellectual functioning) and in the striving for other events to take place (mobility within physical abilities, learning to accomplish or acquire certain skills for certain jobs). The overall goal of the team, involved in treatment has the same central feature as that of a sports team: maximum independence (in this case the independence of the physically disabled person.) Whereas the sports team's goal is winning, the treatment team's goal is for the winner, the physically disabled. With individual treatments, or when individual team members participate at levels not consistent with the overall identified goal, the person may be lost, or his/her achievement may lack unification of purpose or function. This should not be taken as a suggestion, that there are not separate goals for each of the participants on the treatment team. It should, however, be recognized that the

individual goals, as represented by the characteristics or modalities of treatment, should combine to reflect a total convergence of success for the physically disabled person; they should not represent a collection of separate, but equal, goals. Although establishing the equality of the goals and their respective treatments is laudable, keeping them separate lacks a wholeness that is essential for reaching the overall team goal. Even though a single player or team member may function at the highiest level, his participation must be in conjunction with the other team members for the result to be winning, rather than the recognition of individual player effort.

"A true treatment team is a group of professionals working together, and learning to contribute and exchange views. This ultimately leads to a confluence of ideas. There should be no suppression of thinking, but rather a broadening of understanding that makes for better care" (Curtis, 1972, p.301).

Team members and a treatment services include a wide range of practices and professions, including physicians and their several specialities (pediatrics, orthopaedic surgery, and cardiology, for example, and the subspecialities within each), physical and occupational therapists, speech therapists, social workers, psychologists and host of other specialists

who may be essential for optimal care and development.

4.1.0 Role of the Physician

To identify a team member as a physician is as inaccurate as referring to a member of a baseball team as a "player". Medical specialists with whom the centre's personnel are most often in cotact with, is the orthopaedists or orthopaedic surgeon.

The centre's physician will serve as a member of the team of specialists who will act as part of an admission-discharge committee for the physically disabled. This committee composed of the pediactrician, occupational therapist, physical therapist, speech therapist, social worker, psychologist, Administrator/ Principal and parent or guardian.

The main function ot the physician in the centre; is that of physical evaluation. In this context, the physician takes into account the total health situation of the patient, including a medical or health history and an examination to determine strong and weak areas of functioning, the extent of disability and the effects of disability on functioning. At this point, the physician may have several recommendations for physical care, inciuding referials for further evaluation and treatment by the occupational and physical therapists or other medical specialists.

The orthopaedists or orthopaedic surgeon is the physician, who specializes in the functioning of the

skeletal system, may also advise surgical procedures or use of braces or other appliances for the prevention of deformities or for the enhancement of motor activities.

The role of the physician in relation to the other members of the treatment team, including those members forming the vocational component of the team, may become that of team coordinator; or the physician and the centre's administration may become co-ordinators. The physician does not prescribe vocational approaches, techniques or directions, but does prescribe for the physical aspects of growth and development: occupational and physical therapy, orthopaedic considerations, medication and recommendations for the cessation of the treatment.

Of primary importance in relation to the role of the physician in the care of the physically disabled and the family is the fact that the physian is a member of a team with a phere of expertise and knowledge that is related to a specific set of characteristics of a physically disabled. In this regard, the physian is not unlike the other members of the team; it is through a collaboration of effort and a sharing of expertise among the team members that the physically disabled, rather than the individual team members or his professional responsibility, becomes the most important focus of the team.

The orthopaedist may be joined by other specialists as the need for their services arise: neurologist, endocrinologists, cardiologists etc, to form the medical

team of the centre.

4.2 Occupational Therapist

Occupational therapy has been defined and described in many ways, depending on the type of treatment being used, the type of patient being treated, and the type of dis disability that the patient may have. A definition that has recently been adopted provides a statement of the range of activity in this health profession:

"Occupational therapy is the application of occupation, any activity in which one engages for evaluation, diagnosis and treatment of problems interfering with functional performance in persons impaired by physical illness or injury, emotional disorder, congenital or developmental disability, or the aging process in order to ahieve optimum functioning, and for prevention and health maintenance. Specific occupational therapy services include, but are not limited to, activities of daily living (ADL); the design fabrication and application of splints; sensorimotor activities, the use of specifically designed crafts; guidance in the selection and use of adaptive equipment; therapeutic activities to enhance functional performance; prevocational evaluation and training; and consultation concerning the adaptation of physical environments for the handicapped. These services are provided to individuals or groups through medical, health, educational and social systems, and

for the maintenance of health through these systems". (American Occupational Therapy Association, 1977, p.4).

An expansion of this definition might be useful in light of the range of treatment types possible. The occupational therapist may be involved in

1. Assessment of an individual's functional ability both in terms of physical capability and cognitive and/or perceptual abilities;
2. Treatment for maintenance of acquired levels of health and physical status.
3. Preventive treatment to reduce or limit the effects of a disability and its possible progression; and
4. Developmental or redevelopmental treatment to learn new skills and abilities or to relearn skills and abilities that have been lost as a result of illness or injury.

The occupational therapist's patients may range in age from early infancy to the geriatic years, and the range of health problems that are referred for treatment is as broad, including failure to thrive; congenital physical disabilities; acquired disabilities through injury, disease, or the aging process.

The occupational therapist provides treatment care through the prescription of a physician. The prescription may be to strengthen a specific muscle group, or it may be broader in scope, such as to "develop independent

activities of daily living skills".

4.3 Physical Therapy

Physical therapy has, in many ways, problems of defnition similar to those found in the field of occupational therapy; the functions and activities of therapy are often related to the type of disability and to the characteristics of the patient. A description of physical therapy and the knowledge that is required of the therapist has been provided by the American physical Therapy Association:

> pysical therapy requires practical knowledge of human growth and development, human anatomy and physiology, neuroanatomy, neurophysiology, biomechanics of human motion, manifestations of disease and traums, normal and abnormal psychological responses to injury and disability, and ethnic, cultural and socioeconomic influences on the individual.
>
> The physical therapist practices as a part of a large and varied team of personnel which includes the physician, generally as the team leader, and other professional and assistive health specialists, as well as members of the lay community (American Physical Therapy Association, 1976).

A distinction has often been made between occupational and physical therapy has been in the ultimate functioning of the patient: occupational therapy deals with physical functions that enhance daily living activity skills and with the fine and gross motor activities relating to upper-extremity development for the attainment of these skills; physical therapy deals with physical functions relating to the overall strengthening, positioning and development

of the individual in relation to balance, ambulation, and independent motor functioning.

The treatment process for the physically disabled will depend on the nature of the disability, on the physical characteristics of the disabled, and on the special conditions that may be part of the physicians orders for treatment. Physical therapy, like occupational therapy, is based on the prescription of an attending physician. The prescription may be a request for new information for further treatment (the physician may request an evaluation of muscle strength, range of motion, or other physical characteristics), or the prescription may be for specific treatment. It should include information needed for effective treatment, and include diagnosis, treatment goals, the frequency of treatment, the area to be treated, precautions for treatment (information regarding recent surgical procedures, cardiac problems, and so on), and special instructions that the physician may require (for example, exercising with the patients brace or splint in place).

Although the prescription may include a variety of instructions for treatment, the method and type of treatment procedure may be the decision of the therapist involved. The physician may request that the patient develop strength or range of motion of specific muscle groups, but the therapeutic techniques used may be left to the discretion of the therapist. These techniques

may include passive or active exercises, stretching, message, hydrotherapy, electrotherapy and others.

4.4 Role of the Social Worker

The social worker may, from the first, be involved with the family when the family must confront the initial crisis: the diagnosis of disability. If the physically disabled is born with an obvious physical disability, the social worker may begin interaction with the family in the hospiral to help overcome the initial shock of diagnosis confrontation. Expectations for the newly arrived child and expectations that the parents had percieved for themselves in relation to the presence of a normal baby will need resolution. This crisis intervention will continue throughout the growing years of the child when the impact of the effects of the disability on the family structure are realised:

Also feelings of fear, separation and isolation by the physically disabled, and familiar attitude of distrust toward professionals who push and pull at the family's physical, mental, and psychological resources are problems that must be dealt with by the social worker. The client-centred problems are one-end of a continuum of concern on the part of the social worker, who must also relate to the various professionals and agencies involved in the treatment of the person and family.

A collaboration of efforts may need to be orchestrated by the social worker, who is in direct contact with all of the principals in the situation. This rather overwhelming task is one that demands knowledge of medical, educational, psychological, and social agency functions and conditions.

4.5 Recreational Therapy

The goal of services provided by the specialist in recreational therapy is not dissimilar to those provided by the other treatment specialists: participation to the extent possible by the individual in the educational, play and family activities of the normal population. Many of us, whether disabled or not, need outlets for our non-working leisure time in order to avoid the stagnation and physical deterioration that results from confinement to the office, business, other work or life setting, or the television set.

A Recreational therapy may provide specific therapeutic benefits to those with physical disabilities. These benefits may result in the strengthening of muscles; in perceptual, attitudinal and self-image improvement; and in the chance to bridge the gap between the sheltered environment of the life of the person with disability and the community in which recreational opportunities are available. With the increasing availability of public transportation for those with physical disabilities, and even for those who are homebound, the recreational therapist

can provide and invaluable service in the training and use of public and private recreational facilities and in the adaptation of games, sports, and other leisure time pursuits. A person with a disability should not be denied recreational and play activities just because the disability exists. Though some individuals do prefer passive observation rather than active participation, still, opportunities to learn the skills necessary for participation at whatever level chosen by the individual should be made available to the person with a disability.

4.6 Rehabilitation Counselling

The role of the rehabilitation counsellor and the goal of this professional's services cannot be generalized to the extent that a specific statement about them can be m made. The type and severity of disability and the levels of social-emotional-mental development are a part of the rehabilitation and training picture.

The role of the vocational rehabilitation counsellor not only includes an assessment of the vocational skills of the client and the development of work training and work experience activities, it also involves an active community-based component. Awareness of the community's existing jobs and their requirements, of the job market for the able-bodied and the competition for jobs that this may imply, of the agencies providing services and training for those with disabilities and of how these community characteristics may be coordinated is an important part

of the rehabilitation counsellor's function in the placement of clients for both work training and employment.

4.7 Orthopaedic Appliances

The stigmata often used in identifying persons what physical disabilities are most usually obvious: physical abnormalities and mechanical aids used for treatment and/or mobility. Frequently used aides are illustrated in Figs . Although these do not cover the full range of appliances that may be seen in any one centre, they are representative of those often encountered.

Chapter 5

RESEARCH METHODOLOGY

5.1.0 Method of Research

The Research into the thesis; comprehensive rehabilitation centre (for physically disabled) Bauchi, was initially rolled into my mind by basically two factors. One is the desire on my part, to see to the improvement of the lots of the disabled in the midst of the society, while the other, is the decision of the Bauchi State Government to establish a rehabilitation centre in the State capital, Bauchi.

It is a known fact, that careful study and analysis of the needs of a rehabilitation centre, are not always considered before establishing same. I therefore believe that if care is not taken, the same approach could be applied to the proposed centre. Hence its failure or inability to perform effectively.

Having acknowledged these problems, I then set myself to resolving the ambiguities. This lead me to find out - how many rehabilitation centres exists in the State, in what arears are they located, what is the scope of the rebailitation scheme, how do they get their intakes, what is the responses of the disabled to the centres, what is the aim of the established centre etc. These questions could not be answered easily, as it requires a lot of Data compilation and analysis.

5.1.1 Methodology of Data Collection

Data collection was based by the two main sources of data, i.e. the first and second sources. The first source is the collection of data directly, this is mostly referred to as field Data. The second source is the one referred to as Book method/source - collecting relevant data from published and unpublished books, magazines, journals, Newspapers and thesis write-ups of former students of Architecture.

Field Data

The Field data are the data collected from existing centres, from the reahbilitatees in the centre, from appropriate government arms e.g. Rehabilitation Board and Ministry of Social Welfare, from physiotherapy departments of hospital and data also from the site.

Since most of the physically disabled are illitrates, the need for the questionnaires was not neccessary, hence the questions were asked in forms of interviews. Relevant questions were also refered to the staff of the rehabilitation centres, staff of the Ministry of Social Welfare and the Bauchi State rehabilitation committee. The questions and answers helped immensely towards the successful take-off of these thesis.

The Bauchi master plan was collected from the town planning section of the Department of Land and Survey of the Military Governor's Office. The master plan is a guide to the particular area of the town mapped for such

institution under which the thesis topic falls. It is also a guide to site selection.

The field data collected includes the following: Metrological data, Demographic data, Historical data, Geographical data, Climatic Geological and Planning data.

Metrological Data

The metrological data was collected from the Bauchi State Board, Hydro-metrological Bulletin. The data given in the bulletin includes, mean monthly minimum and maximum temperature, mean percentage relative humidity in %, monthly rainfall in millimeters.

Demographic Data

The study of the demographic data was an attempt to analyse the population of the disabled and beggars in Bauchi State. This will provide the guideline to prediction of its growth or decline in the future.

The data was collected from the Bauchi State Rehabilitation Committee under the Ministry of Social Welfare.

Historical and Geographical Data

This data was particularly difficult to collect, because of the unlimited unmber of sources. This task was however carefully undertaken with the help of the documentary unit of Kasim Ibrahim Library.

Climatic, Geological and Planning Data

All the three forms of Data were deducted from Bauchi master plan prepared by Max-lock. The planning data which included land use pattern was collected from the Department of Land and Survey of the Military Governor's Office Bauchi.

5.1.2 Methods of Data Analysis

Both the first (Field) and second (Books) sources of Data were combined and then analysed. From this analysis; the population of the centre, the type of equipments and facilities to be provided in the centre, the number of departments or units, the relationship between the departments, types of manpower needed, types of vocational trades to train the rehabilitatees for the possible illimination of the problems envisaged were all formulated comprehensively.

Conclusions

From the analysis of the Data collected, it became clear, that there is a need for the establishment of the Rehabilitation centre.

It was, however, understood that all the existing rehabilitation centres are only workshops. They provide the disabled with only vocational training, no effort is made towards normalising their disabilities. I therefore decided to include a medical unit and accommodation for the disabled within the centre. The medical treatment

will be in the form of therapy.

The inclusion of medical treatment in the centre, will improve the status of the centre from that of equiping disabled with job potentials and minimising their disabilities as much as possible.

TABLE I

TOTAL POPULATION OF SIXTEEN LOCAL GOVERNMENT AREA IN BAUCHI STATE

1.	Bauchi	190,099
2.	Akko	439,159
3.	Katagum	298,239
4.	Gombe	290,406
5.	T/Waja	296,034
6.	Shira	225,416
7.	Dukku	256,570
8.	T/Balewa	207,367
9.	Toro	221,641
10.	Misau	245,239
11.	Ningi	136,981
12.	Darazo	263,603
13.	Alkaleri	207,121
14.	Gamawa	212,669
15.	Jammare	55,416
16.	Dass	47,160

SOURCE:-

Bauchi State Ministry for Social Welfare, Bauchi.

TABLE II

POPULATION CENSUS FIGURES OF PHYSICALLY DISABLED IN ALL THE LOCAL GOVERNMENTS IN BAUCHI STATE (NUMERICALS)

No.	LOCAL GOVERNMENT	BLIND	CRIPP-LED	LEPER	OTHERS	TOTAL
1.	Bauchi	950	741	627	494	2,812
2.	Akko	526	395	351	395	1,667
3.	Katagum	290	203	214	182	899
4.	Gombe	274	178	211	86	749
5.	T/Waja	276	159	177	91	705
6.	Shira	315	225	180	108	828
7.	Dukku	384	285	171	155	996
8.	T/Balewa	680	532	621	296	2,129
9.	Toro	311	233	311	144	998
10.	Misau	318	235	245	147	945
11.	Ningi	645	421	512	212	1,790
12.	Darazo	286	263	263	200	1,015
13.	Alkaleri	538	476	351	289	1,634
14.	Gamawa	381	360	275	279	1,294
15.	Jammare	106	53	45	69	265
16.	Dass	141	70	56	99	366

Source: Bauchi State Ministry for Social Welfare, Youth, Sports and Culture Bauchi.

TABLE III

CENSUS OF BEGGARS AND DISABLED IN BAUCHI STATE

1. Able Bodied	32,625	1.34%
2. Disabled	28,973	1,19%
3. Blind	12,904	0.53%
4. Crippled	8,278	0.34%
5. Old	9,495	0.39%
6. Insane	8,278	0.34%
7. Lepers	7,791	0.32%
8. Deaf and Blind	5,599	0.23%
9. Others	9,251	0.38%

TABLE IV

1971 CENSUS COMPARED TO 1980 IN BAUCHI STATE

	1971	1980	DIFFERENCE	%
Crippled	8,278	2,439	-5,844	-70.59
Blind	12,904	3,659	-9,252	-71.69
Lepers	7,791	2,921	-4,870	-62.51
Others	9,251	1,899	7,352	-79.47

Source:- Bauchi State Ministry for Social Welfare, Youth, Sports and Culture, Bauchi.

5.2.0 Case Studies

Case study is one of the stages of design processes. At this stage, studies are undertaken on existing similar projects with a view of evaluating and analysing what has been done in previous projects. The aim of the designer at this stage is not to copy or dubed the previous project. The intention is to understand the good and bad sides of the project and hence come out with much better solution by not repeating the same mistakes. Sometimes the study of the proceeding project provides the designer with the opportunity of understanding how the previous designer develops his concept.

The improvements intended are not always based on the failure of designer to provide what is required or his inefficiency or professional incompetence, but most of the improvements, or radical changes or new forms of design are possible because of daily emergence of more advanced technology, new building techniques, and better understanding of those to be affected by the design i.e. the users - in this case physically disabled persons.

In this thesis, four different rehabilitation projects were studied. Two of the case studies were conducted in Nigeria while the remaining two are foreign. The studied case studies include:-

1. Rehabilitation centre for the crippled and blind, Kakuri-Kaduna.

2. Child Care and Treatment Home/School, Akoka-Lagos.
3. Centre for the Physically Handicapped U.S.A.
4. Middle Twon Rehabilitation Centre, New York.

Source:- Institutional Buildings pg.96
An Architectural Record Book edited by Louis G.R.

5.2.1 Rehabilitation Centre for the Crippled and Blind, Kakuri-Kaduna

Aim

The aim of the programme of this centre is to train rehabilitatees different vocational trades. However, no attempt was made towards normalising their disabilities.

Site

The site of this rehabilitation centre is in the southern part of Kaduna town at Kakuri/Makera Kaduna. The centre is situated on a relatively flat land.

Capacity

The centre was initially established to cater for about 500 rehabilitatees, apart from staff housing. At the time I visited the centre it contains about 100 rehabilitatees, which is about 20% of the planned capacity.

Site Plan

The centre has two main sections i.e. accommodation (living) and workshops. The buildings are scattered all over the site. It deny the concept of rehabilitation for the

crippled and blind. Though the concept shows horizontality, there is no proper inter-relation between the buildings. The administration is located at the heart of the centre.

Appraisal

1. The design of roads in the centre makes the centre dangerous for rehabilitatees. The blind and the crippled ones struggle in crossing the roads from workshop area to the hostel.
2. The walkways are uncovered, therefore no shade against sun nor rain despite the distance from different areas.
3. There is no pedestrian crossing or bumps to reduce speed of vehicles.
4. Most of the facilities are not adopted for the use of rehabilitatees e.g. sanitary facilities, equipments like wheelchairs are not available.
5. The ramps provided at the hostels are too steep to use with ease especially for crippled.

Fig. 2.0.

5.2.2. Child Care and Treatment Home/School Akoka/Lagos

Site:-

The childcare and treatment home is situated at Akoka village, Lagos, opposite St. Finbavr's College.

The treatment home is placed at a road junction. The school environment is noisy as a result of it been located near a busy road. The access to the school is from this noisy and busy road.

Capacity

The home/school used to cater for about 30 patients at a time. But since its transfer of ownership to the Lagos State Ministry of Education, the enrolment figure has been on the increase. The school has a total population of 130 students now. The treatment home is operating with both boarding and day student. Among those residing in the centre, some attend a nearby secondary school,

Planning

The school/home has six classrooms, an assembly hall which serve also as a music room, a dinning hall, toilers and living accommodation area. Adjoining the assembly hall is another building where medical treatment take place.

Facilities

The school has no resident doctor or nurse to take care of the children but there is a physiotherapist who visits the school once in two weeks. Institute of Health and Orthopaedic Hospital, Igbobi, doctors and nurses help in treating the children.

The children in the centre are provided with nothing for play. Fortunately some of the students are very good in music.

Appraisal

The location of the site affects the performance of the children. The location of the classrooms at the remote and of the site poses a lot of problem to the day students. Lack of proper medical facilities crippled the well throughout planning of the school for the use of children with wheelchairs.

5.2.3 Centre for Physically Handicapped (U.S.A.)

Comments

The centre comprises of three main cells:- therapy department, workshops and a school. The planning revives the idea of an institutional building as a formal expression of a busy community life.

All the services are integrated with the building fabrics.

The main corridor is well suited for social contact and big enough for wheelchairs to pass each other.

The swimming pool room has a hoist at its cieling to transfer patients in and out of the water.

Sunken walkways on three sides of the therapy pool assist supervision and inspection.

The therapy room has overhead steel frame neating designed for suspension of arm slings.

Critic

Entrance Hall:- No suitable storage space was provided for wheelchairs, they are hence left in entrance hall, which looks odd in such a prestigious soroundings.

Heavy and awkward slinding doors used throughout, deny the concept of rehabilitation.

Factory or workshop is well lit to the north, but the natural light level soon falls away from the windown because of the absence of roof lighting.

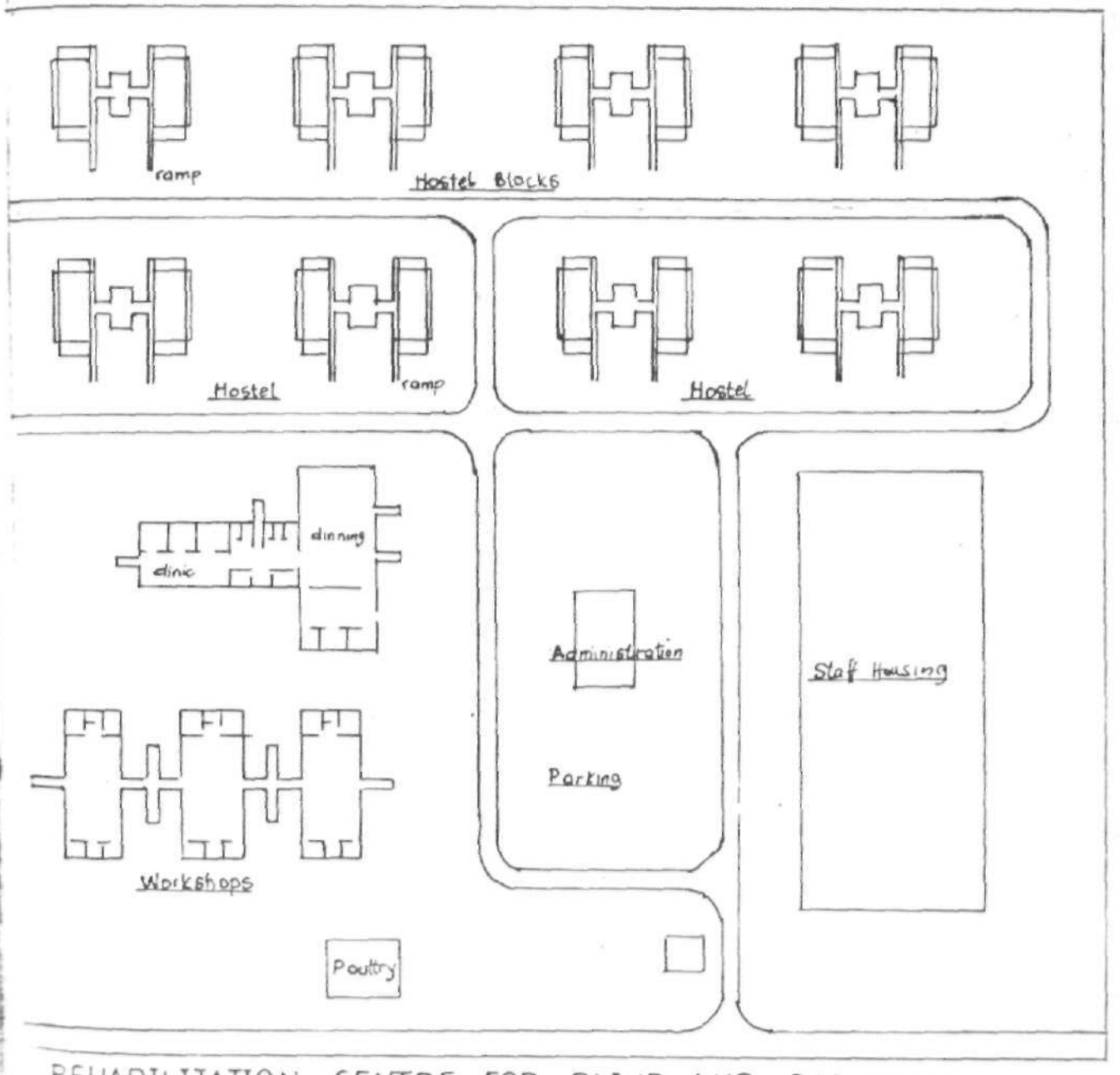
Privacy might have been preferred to full height glazing of the swimming pool, moreso it opens to the internal courtyard.

Privacy is also neglected in the design of the consulting tooms by providing full height glazing.

Planning

The building is a single storey, consisting primarily of three (3) 36.6 sq m cells set out one behind the other from north to south and separated by 3.05 m corridors. The main entrance of the clinic is down the west side, under a 12.2m square canopy and leads into the central square cell. This is built around an open 12.2m^2 courtyard, and contains the entrance hall, day centre, consultants' offices, conference room, and administration as well as dinning areas. Light occupational therapy overlaps into this area. The norther cell contains the factory and locker space as well as kitchen. The southern cell, which is built around another courtyard contains occupational therapy, and physiotherapy, a gymnasium and two swimming pools (one equipped for therapy) with their changing rooms.

The service entrance is on the east side of this building with the boiler house and the school beyond on the eastern edge of the site. The school is a linear building linked by a covered way to the clinic with classrooms off the west side of a corridor.



REHABILITATION CENTRE FOR BLIND AND CRIPPLED
KAKURI ~ KADUNA

Chapter six

AN ANATOMY OF REHABILITATION CENTRE'S FACILITIES

As the title of the thesis implies, the centre performs a dual functions of treatment and rehabilitation, hence it has a medical and rehabilitation sections.

For a rehabilitation centre of this nature to function properly it has to have:-

An Adminstrative section

A Medical section

A Rehabilitation section and

An Accommodation section.

6.1 Administrative Section

This consist of the administrative department and the maintenance department. This is where the entire administration of the centre is done. It consist of a variety of offices for senior administrative officers, their secretaries, medical officer, educational officer and some clerks.

The administrative department serves as thefocal point of the centre and also as the point of initial contact for visitors to the centre. In addition to all the necessary offices and work spaces, a conference room for staff meetings, which is also suitable for use as a board room should also be included in the administrative unit.

The maintenance department will not only serve general maintenance purpose, but will frequently be used for the repair, and modification of some of the furniture and equipment used in the centre.

6.2 Medical Section

The Medical Section contains the following departments:-

(1) Medical Evaluations Department

This department has the following areas

- waiting area
- examination and consultation
- X-ray
- laboratory
- pharmacy
- offices.

(2) Social Adjustment Therapy

This therapy unit/department has the following areas.

- waiting area
- psychologists office
- social study office
- social group worker's office

(3) Physical/Hydrotherapy Department

This department has the following areas:-

examination/consultations

gymnasium/exercises

treatment cubicles

hydrotherapy pool

shower/changing rooms

store

offices

(4) Orthetic/Prosthetic Shop

This unit has the following areas:-

A shop

waiting area

examination and fitting area

store.

(5) Occupational Therapy

This department has the following areas:-

Therapy rooms

Activities of daily living

In this department the physically disabled are trained in daily activities, such as bathing, cooking, sleeping and dinning. Therefore it is made up of the following facilities:-

(a) Bathroom and changing room

(b) Bedrooms/living room

(c) Kitchen

(d) Dinning room.

Physical Medicine

The medical zone provides what is popularly known as physical medicine.

Physical medicine is the youngest of adjunct diagnostic and treatment facilities which include physical and occupational therapies.

Physical Therapy

The objectives of physical therapy are to correct or alleviate bone and joint or neuromuscular disabilities. This entails a concern with some types of physical disabilities, such as neurological diseases, amputation, paralysis, crippling accidents, anthritis, polio etc.

In carrying out the objectives of the physical therapy, the therapist will make use of heat and cold water, light and electricity as well as training effects of active, passive, resistive and reeducation exercises.

Physical Therapy Equipment List

The equipments used in physical therapy treatment includes:-

Massage plints, hydro arm and leg whirlpools, hubbard tank, hof-pack machine, swimming pool, heat impared, posture mirror, stational bicycle, sayer head sling attached to

cieling of exercise area, gymnasium matress, parallel bars, horizontal bars, shoulder wheel, finger ladder, ramp and stair, weight lift, electric machine, etc.

Occupational Therapy

This therapy also deals with physically handicapped or degiciencies but its techniques are applied through processes of demonstration and training and not primarily manipulation. Its purpose is not to replace the physical and training of physical therapy but to supplement it with training in activities. Occupational therapy seeks to assist the patient in putting his regained physical ability to some economic or social use. This is the p functional phase of occupationa therapy.

6.3 Rehabilitation Section

Like in most African countries, Nigeria has a high level of unemployment, meaning that limited opportunities exists for integrating the physically disabled into the competitive labour market.

It is therefore, in the rehabilitation section, that the training and programming is made in order to train the rehabilitatees in what is most beneficial to them, in terms of securing employment or self-employment.

Taking into consideration these problems or situations that befalls the future employment opportunities of the physically disabled, the following vocational crafts are chosen:-

A. Commercial (A Little Skilled)

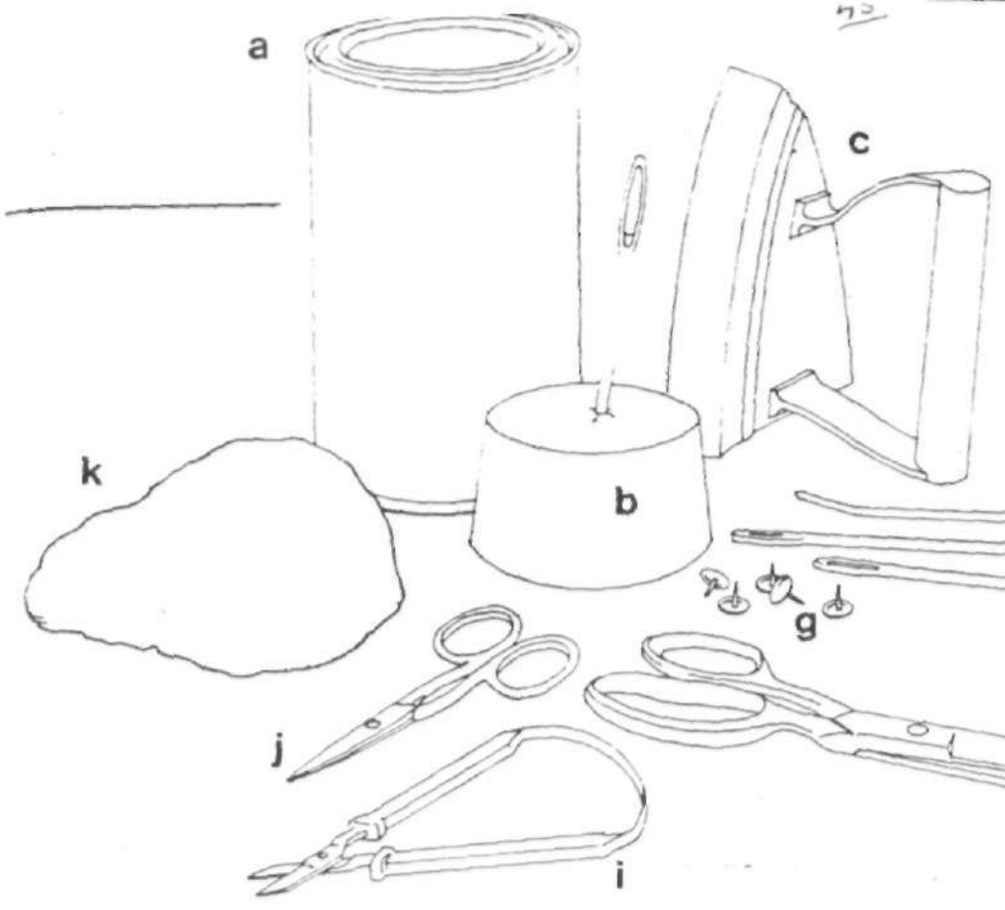
1. Cashiers/Financial clerks
2. Sales Clerks
3. Receptionist
4. Typist
5. Telephone operators.

B. Metal and Electronic Works

1. Welding and Fabrication
2. Bicycle Repairs
3. Radio and Television Repairs
4. Blacksmith
5. Watch Repairs.

C. Semi-skilled and Unskilled Crafts

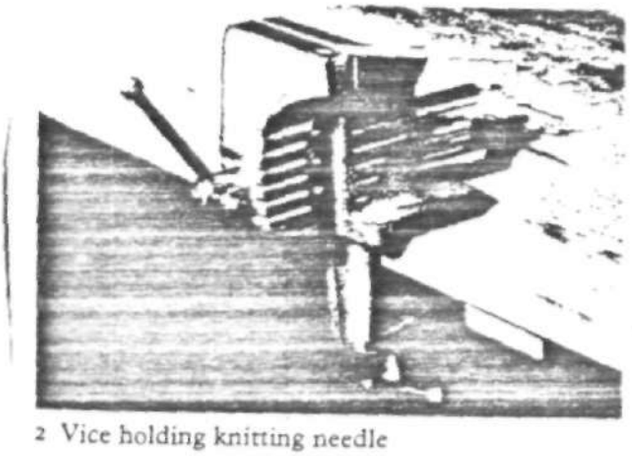
1. Hand embroidery and ornament on dresses
2. Door mat making
3. Rope carpet making
4. Car floor mat making
5. Wood works
6. Leather works
7. Basket works
8. Painting
9. Ceramics
10. Weaving/Dying
11. Chair canning
12. Soft toys making.



2

equipment

a A tin filled with sand or pebbles used as a weigh
b A piece of cork used to a needle while threadin with one hand
c An old flat-iron used as a weight
d A raffia needle
e A rug needle useful for large size
f Filed down sack needle useful for its large size
g Drawing pins to hold ca to frame
h Large shears for cutting canvas (it is also possibl obtain left-handed sciss
i Stirex scissors require li pressure to operate
j Fine-pointed embroider scissors
k A large stone used as a

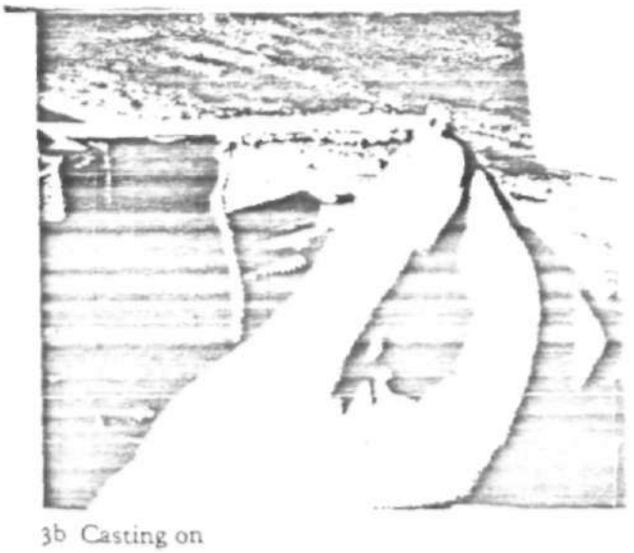


2 Vice holding knitting needle

EQUIPMENT



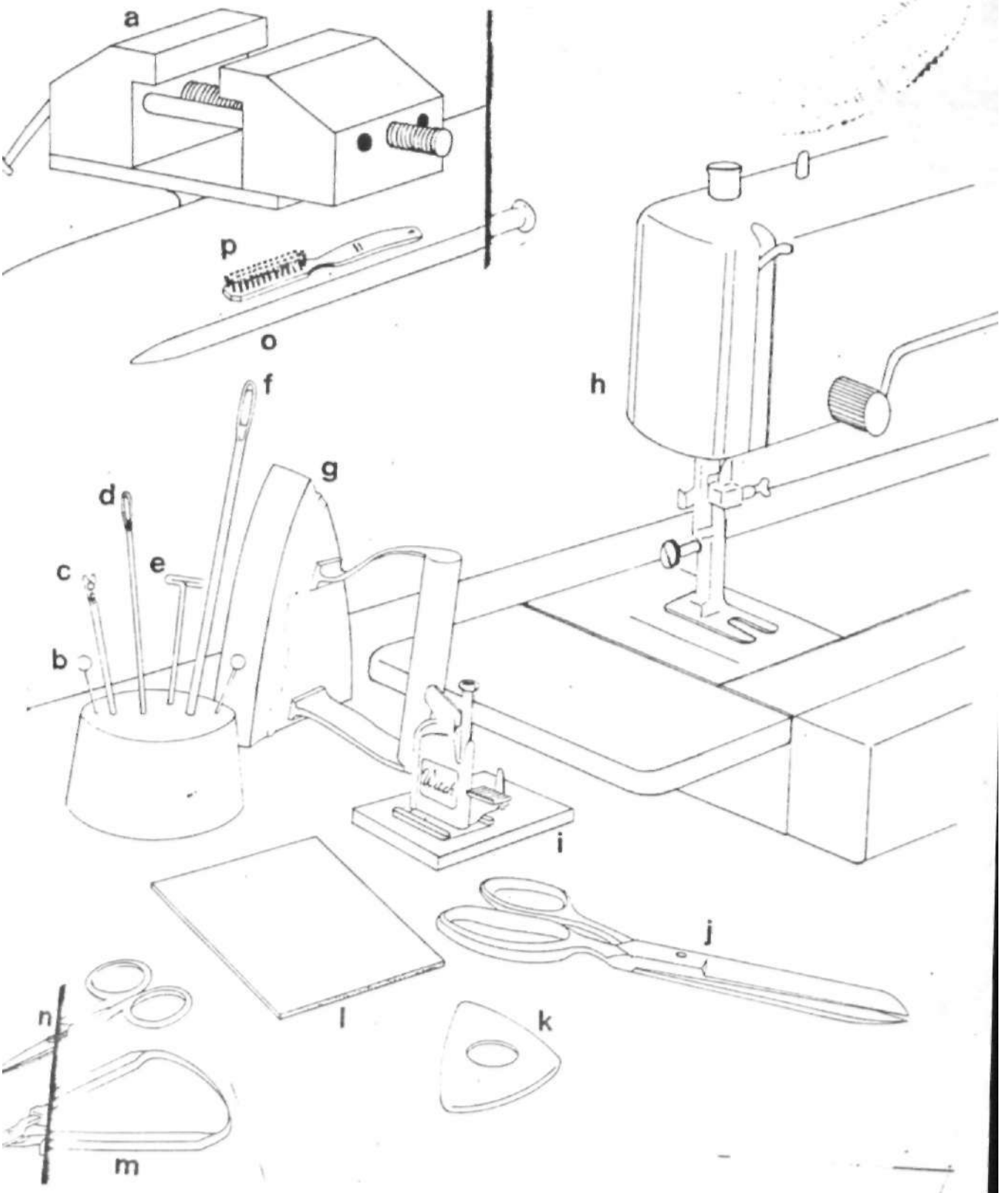
3a Casting on



3b Casting on



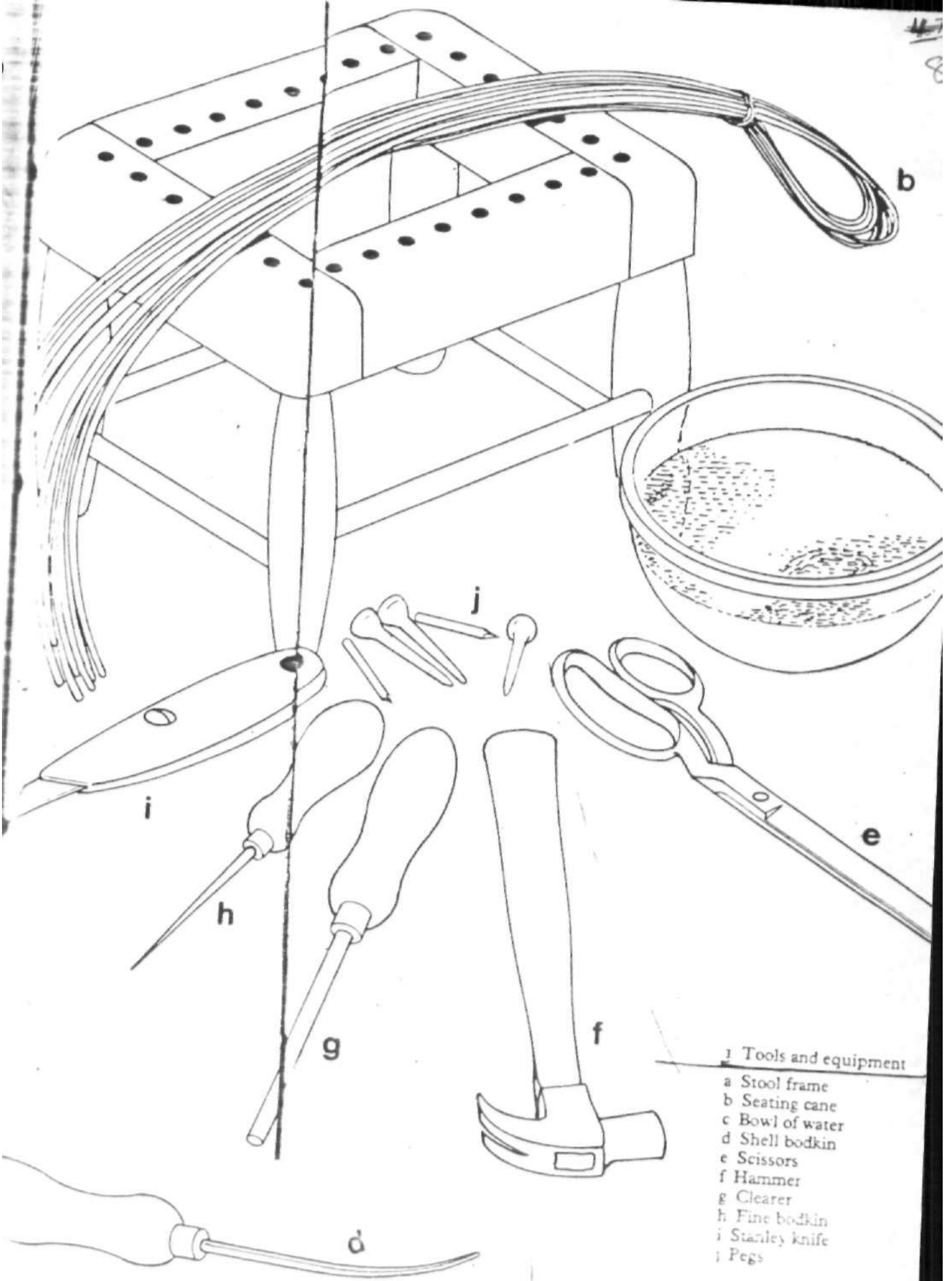
Knitting a row



OOLS AND EQUIPMENT

1 Some useful tools and equipment

a A vice
b Glass-headed pins
c Self-threading needle
d Darning needle
e T pin
f Toymaker's needle is like the darning needle but is 6 in (15 cm) long
g Flat iron used as a weight
h A sewing machine
i Witch needle threader
j Cutting-out shears
k Tailor's chalk
l Dycem non-slip mat
m Stirex scissors
n Small, pointed scissors
o Large wooden knitting needle
p Suede brush



1 Tools and equipment

a Stool frame
b Seating cane
c Bowl of water
d Shell bodkin
e Scissors
f Hammer
g Clearer
h Fine bodkin
i Stanley knife
j Pegs

FIG 4.2.

There is no doubt that any physically disabled graduating from this centre, could become self employed at any place with a little capital.

6.4 Workshop Classification

The workshops are classified from workshops I-VI according to different vocational trades and specialisations expected to be operated in each of them.

Workshop I

This workshop deals with metal works

e.g.

Bedmaking and repairs

Blacksmitting

Bicycle repairs

Welding.

Workshop II

This workshop deals with woodwork

e.g.

Carving

Furniture and upholstery

Carpentry.

Workshops I & II deals with much heavy works.

Workshop III

This workshop deals with Arts and Crafts e.g.

Ceramics

Leather works

Painting/art design

Cap making

Car floor making

Tailoring

Basketery

Dying.

Workshop IV

This workshop could be called a looming workshop. The crafts learned in it includes the following:-

Canvas embroidery

Soft toys making

Knitting and crocket

Chair canning and coils

Door mat making.

Workshop V

This is the repairs work. It harbours:-

Watch repairs

Shoe repairs

Radio/TV repairs

Workshop VI

This is the commercial workshop. The training in the following specialisations are taking place in it.

Typist

Cashiers/Finance Clerks

Receptionists

Sales Clerks.

The classification of workshops is based on different space and environmental requirement and also the relationship or similarities of the various trades.

Chapter 7

DESIGN CONSIDERATIONS

Designing a comprehensive rehabilitation centre for the physically disabled, calls for a special design, which will take into account the problems of the users (physically disabled).

Throughout the design of this rehabilitation centre, international standards were taken into account and used.

In designing for the physically handicapped, one should not be deceived by the standards set down for able-bodied. It is the responsibility of the designer (Architect) to consider the user of the project, his abilities or otherwise. Based on these considerations, he will then find out what standards he will use in order to bring out, a design that could conveniently satisfy the users requirement.

In any position people with physical disabilities cannot use buildings if they are treated in the same way as able bodied people. Hence the design, has to be in such away that the physically disabled can use the building independently without much or any help from any person. Therefore all the disabled has to do is to gain access and use the facilities and equipments independently. This means, he has to be able to approach the building without effort, move his wheelchair around without being obstructed by any obstacle.

7.1 Design Criteria
Building Elements and Finishes

(A) External Elements

(1) Footways: Dimensional data

To allow for wheelchair users, footways and pavements should not be less than 1.2m wide.

To allow wheelchair to pass each other, or wheelchairs to pass attendants with prams, footways should not be less than 2.000 wide.

(2) Footways:- Surfaces.

For external pedstrian surfaces, the primary requirement is a non-slip surface which will minimize hazards to ambulant disabled people, rather than a smooth in situ surface which might be prefered by wheelchair users.

Pavements, footways and footpaths should be of fixed and firm materials.

Suitable surfacings are bitumen, macadam, tarmacadam and asphalt. Unsealed gravel surfaces must be accorded.

Where precast paving slabs or comparable block materials are used, slabs must be careful laid with flush joints. For ambulant disabled people liable to trip and fall, uneven paved surfaces are a constant hazard. For chairbound people, they can disturb the travel of wheelchair castors and cause the chair to shift direction. Paving slabs where used should have

a carborundum or slightly corrugated finish to give a non-slip surface. Quartzite slabs are recommended. An insist pattern can give an attractive non-slip surface.

Ramps:- General Consideration

For wheelchair users, the entrance to any buidling must be levelled or ramped.

A levelled or ramped access is also advantageous to elderly people, mothers with prams, furniture removers and undertakers.

The building regulations require that handrails are provided to ramps, except where the sides are formed by fixed seating.

Irrespective of the purpose group or compartment

(a) any ramp with a total rise of more than 0.600m shall be provided with a handrail.

(i) on each side, if the width of the ramp is 1.000m or more; and

(ii) on at least one side in any other case; and

(b) any such handrail shall

(i) be so designed as to afford adequate means of support to persons using ramp.

(ii) be continuous for the length of the ramp.

(iii) be securely fixed at a height of not less than 0.840 nor, more than 1.000m (measured vertically above the top surface of the ramp) and

(iv) be terminated by a scroll or other suitable means.

(B) Ramps: Gradient:-

1:12 is preferred as the maximum gradient.

Although a maximum gradient of 1:12 for general purpose ramps is preferred, it should be recognised that, there is no such thing as the 'right' gradient for a ramp for wheelchair users. The only right gradient is no gradient at all. Equally, although 1:12 is the prefered maximum, no absolute maximum is given.

For general purposes a maximum ramp gradient of 1:12 is suggested for the following reasons:-

(i) Some independent wheelchair users, including probably the majority of those who use buildings intensively, can climb a 1:12 ramp over a limited distance.

(ii) A 1:12 gradient is as steep as an independent wheelchair user can descend without the fear of tipping over forwards; and without having to balance the chair on its rear wheel.

(iii) People who push loaded wheelchairs can as a rule negotiate a 1:12 gradient without difficulty, but may find a steeper ramp is exhausting or impossible to manage.

(iv) Ambulant handicapped people can as a rule walk up or down a 1:12 gradient without difficulty, but may find a steeper gradient hazardous.

(C) Ramps: Dimensional Data

Width

For general purpose ramps which allow wheelchair to pass other wheelchairs, prams or pedestrians, the preferred minimum width is 1.500m.

For short ramps where there are alternative steps and no passing traffic, the width should be not less than 1.200m.

Rest Platforms

In long ramps for use by disabled people, for example storey - height ramps, rest platforms may be incorporated.

A suggested guideline is that a rest platform is provided for each 10.00m length of ramp or each 0.800m vertical rise.

The length of the rest platform should be not less than 1.800m.

(D) Handraw:- General Consideration

Handrails and balustrades must be securely fixed.

Handrails should be provided to each side of any staircase or ramp.

Handrails should be continuous and not broken at landings.

In residential homes or institutions for old or handicapped people, handrails may be provided to each side of any corridor.

Handrails:- Design Data

Handrails must be easy to grip. A circular section having a diametre of 0.045 or 0.050 is most satisfactory.

Rails with sharp edges or which are more than 0.055 wide or 0.050 deep are difficult for people with weak or anthritic hands to grip.

Wall fixed handrails - The preferred clear dimension between the inner edge of handrails and the vertical wall surface alongside is 45mm.

In public buildings where a handrail projecting clear of the wall surface may be undesirable for safety reasons, the wall should be chased and the handrail recessed.

Brackets to wall handrails, whether recessed or projecting should be fixed to the underside of rails.

Support Rails for Baths and Wc's.

Support rails are used basically either for (i) pushing the body up. (ii) pulling the body up (iii) steadying the body when its being lowered (iv) steadying the body when transfering from one position to another.

Horizontal rails are generally indicated for lowering the body and for pushing up to a standing

position, and vertical rails for pulling up to a standing position. For transferring position horizontally, vertical rails may be appropriate according to individual circumstances.

For majority of crippled people, its much easier to push up to a standing position than to pull up and the primary need is therefore for horizontal or near horizontal rails for pushing.

Where a pushing rail is fixed to a side wall it can be helpfull if it is slightly inclined to support the arm, allowing the arm from elbow to hand and not merely hand only, to carry weight when the body is being pushed up.

Dimensions

Support rails should have a diametre between 0.030 and 0.065 with a preferred dimension of 0.050.

The clearance between support rails and the adhacent wall surface should be between 0.040 and 0.065 with a preferred dimension of 0.050.

Materials and Fixing

Plastic-covered rails are prefered to chromium plated rails to give a secure grip when hands are wet a slightly corrugated plastic surface is suggested.

Support rails must be securely fixed to wall surfaces.

(E) Threshold

At entrances to buildings where special provision is made for wheelchair users, raised threshold sills whould be accorded.

Raised thresholds can be hazardous to ambulant disabled and elderly people and are obstacle to wheelchairs.

Where provision is made for disabled people and for reasons of containing rain water, it is necessary to have a low sill, the height of the sill should be not more than 0.025.

Internal doorsteps should be ordered without thresholds.

(F) Windows

In buildings for disabled people window transomes should not be installed inside the zone between 0.900 and 1.200m above floor level.

Side hung windows and louvres windown are suitable for the crippled.

(G) Doors

Where provision is made for disabled people, careful attention must be given to the placing and specification of doors.

For non-disabled people matters such as width and weight of doors, whether they open in or out, and whether they are hinged in the corner or away

from the corner are not significant account for disabled people, particularly wheelchair users, these matters can be critical.

In-opening doors to bathrooms and Wc's are not recommended.

In public buidlings doors opening out into circulation areas may be a hazard.

Doors opening out into passageways may be recessed to avoid accident hazard.

Doors should not be planned in such away that door swings conflict.

Doorsets

Where disabled people are to be catered for, only three doorset sizes are possible, namely 1.000, 0.900, and 0.800.

The 1.000 doorset gives a door leaf of 0.926 and a clear opening width of 0.875, the 0.900 doorset gives a doorleaf of 0.826 and an opening width of 0.775 and 0.800 doorset gives a doorleaf of 0.0726 and an opening width of 0.675.

Side hung doors are preferred to sliding doors, for people with hand or arm impairment.

Sliding doors are easier to manipulate and negotiate for wheelchair users.

For wheelchair users to be able to close the doors (side hung doors) behind them, fixing of an auxilliary horizontal rail D handle close to the door hinge will help.

Sliding Doors

Sliding doors are recommended for the workshop and theatre. Projecting handles are fixed to both sides of the sliding door, for easy opening and closing by the rehabilatees.

Lever Handles

Lever handles are preferred to knob handles, knob handles do not provide an adequate grip for people with hand impairments. A lever handle can usually be operated with one or more fingers only, whereas a knob handle cannot easily be operated without the use of the thumb.

Door Protection

To protect doors against wheelchair footrests, a kicking plate should be fixed on the trailing face of the door at a height of 0.400m above floor level.

A kicking plate is superflous on the leading face of the door; the plate should be fixed only on the side the wheelchair user will kick against when he pushes open the door.

To protect against all damages, including by cheelchair handles, protection will be needed to a approx 1.000 above floor level.

(H) Internal Walls

Apart from normal loadbearing duties, such as carrying wash basins, sinks, cupboards and book-shelves, internal walls in buildings catering for

disabled people may need to be suitable for fixing of personal support rails.

These rails will be used by handicapped people to transfer for example from a standing to a seated position or vice-versa, or to or from a wheelchair. In some situations where the person using them has paralyzed lower limbs, they may need to carry the full weight of the body.

The support rails should be fixed so as to be capable of carrying an applied load of 150 kg; this allows for a person weighing 100 kg. with an allowance of 50% for thrust.

Internal Walls -Materials

Internal walls and partitions are generally either of prefabricated dry or wet fixed construction.

Partitions of wet fixed construction, for example bricks or concrete blocks are recommended because they permit fixing at pointon the surface.

Bricks or blocks should have a thickness of not less than 0.075.

Prefabrication/prefabricated partitions without extra reinforcement are generally not suitable, since stability or thickness is likely to be inadequate.

Domestic sandwich partitions, for example, with a core of plastic board, flax board, polystrene or glass fibre and a facing of asbestos

wall board, hard board, woodvencer or PVC fabric are not satisfactory and should be avoided where possible.

Wall Protection

In buildings for disabled people, the wall surface should be protected against damage from wheelchairs. Damage can therefore be caused at any level up to about 1.000m, though it must frequently occurs at level between 0.100 and 0.450 above floor level.

Owing to the virtual impossibility of protecting surfaces against all contingencies, the fitting of renewable protective panels to vulnerable areas is recommended; self adhesive laminated plastic sheeting is suggested. The use of buffer rails to prevent damage to wall surfaces is not recommended.

Corners

Exposed wall angles should be protected. Where corners are liable to be damaged by wheelchair the insertion of a metal plaster head to a height of 0.600m above floor level is suggested.

Wood domes at the foot of corners are not recommended.

Floor Finishes

Requirements for disabled people regarding the characteristics of floor finishes are frequently conflicting. Generalizations about the preferability

of one type of surface versus another are hazardous.

However, in any building planned for use of disabled people, a primary requirement is that the floor should be slip-resistant. The floor should also be resistant to marks and identations by wheechairs.

Carpets

Carpets have excellent non-slip characteristics, which is primary importance to ambulant handicapped people. If falls occur, less injury is likely to be caused where a carpet is fitted than with any other floor surface. Carpets are also suitable for wheelchair users, provided that deep pile material is avoided.

Carpets should be well fitted and secured to the floor.

Wall-to-wall carpeting is recommended to guide against tripping.

To facilitate the cleaning of incontinence stains, carpets where installed should be of non-absorptive nylon, acrylic or polyester fibres.

Needlepunch polypropylene or nylon textile flooring bound with acrylic resin is also suitable.

7.2 Services Installations

(A) Water Services

Use of Taps

For people with weak or anthritic hands conventional screw-down tap fitting may be difficult to use.

The leicesteshire survey provides data about the use of taps by wheelchair users. Among 378 people responding to question, 45 percent said they could use screw-down taps with either hands easily, 11 percent said with either hands with difficulty, 21 percent said with one hand with difficulty, and 12 percent said they could not manage taps at all. Others said they had not tried.

From the aforementioned statistical survey, it becomes clear, that an easy form of tap operation has to be specified for the disabled.

Specification of Taps

(1) Toggle Action Taps

A Toggle action self closing tap may be suitable for people with anthritic hands or poor coordination. Taps with non-concussive valves should be specified.

Large ball heads which require only a slight forward movement to operate the valve

are suggested (Figure 5.0). Tonggle action valves are also available with extended levers and insulated handles.

(2) Screw-down Taps.

Screw-down fittings where installed should have a head which allow a secure grip.

Owing to the variability of manual handicap among disabled people, there is no particulr kind of head which will always be satisfactory. The type of fitting shown in (Figure 5.1a) will usually be preferred to that shown in (Figure 5.1b).

Where screw down taps are installed, a fitting having a plastic thread requires less effort to open and close than a conventional metal thread. A fitting with a broad dome head, for example as shown in (Figure 5.2) may be comfortably operated by handicapped person using the palm of the head.

(3) Lever Action Taps.

For people with weak hands a lever action fitting is preferred to a screw-down valve. A valve where the return of the lever is retarded to avoid concussion, should be specified. (Fig. 5.3).

Location of Taps

For basin and sink taps, there should be a clear dimension of not less than 0.035m between the tap handle and any adjacent vertical surface. (figure 5.4).

Vertical bid and pillar tap spindles should be centred not less than 0.070m from any adjoining wall surface.

Waste Out-lets

Where provision is made at a basin or sink for wheelchair users, it is important that the waste out-let trap does not obstruct knee access.

The outlet should be positioned towards the rear of the fixture.

For fixtures where the outlet cannot be set back, it may be possible to avoid an obstruction trap by incorporating a simple bend below the outlet and placing the trap against the rear wall as shown in figure 5.4.

(B) Electrical Services

Location of Light Switches

All switches must be conveniently located.

Switches by the door should be horizontally alligned with door handles.

Fixing Height:-

The recommended fixing height of light switches is 1.040m above floor level.

This recommendation applies equally to ambulant handicapped people, elderly people, wheelchair users and able-bodied people. The level of 1.040m is fixed by the position on all standard doors of the lock/latch.

Knob pulls for ceilling switch cords should be at 1.00m above floor level.

Where for any special reason a higher position is prefered, the pull should be at a maximum of 1.200m for wheelchair users and 1.500m for ambulant disabled people.

Cieling switch cords beside walls should pass through a screw-eye.

Disabled people may have difficulty catching hold of a swinging knob pull, particularly in the dark.

Specification of Light Switches

For people with finger or hand impairment and for disabled people generally, rocker action switches are recommended.

To provide easy manipulations, switches should be as wide as possible, a width of not less than 0.010 across the dolly is suggested.

For people with severe hand impairments or lack of coordination, a switch where the whole plate operates as a rocker is recommended.

Socket Outlet Location:-

Sockets outlets in low positions are different to reach by wheelchair users. It should be at the same level as light switches and door handles i.e. approximately 1.040 above the floor level.

Socket outlet height above a worktable is approximately 20cm.

7.3 General Spaces

(A) Kitchen

In a kitchen provided for the disabled, the working area should be free of interference from other areas.

Doors:-

The number of doors serving the kitchen should be kept to a minimum.

Where space in the kitchen is limited an out opening door is preferred.

Where the swing of an out-opening door makes wheelchair access awkward a sliding door may be advisable.

Window:-

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The kitchen window may be over the sink. The disabled may spend more time at the sink than elsewhere in the kitchen and may need to watch people coming to the door and also to oversee children playing.

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Dinning Provision:-

Allowance should be made for at least two people to act in the kitchen. In small kitchens the dinning provision may be a pull-out board below one of the working surfaces.

For disabled people whose mobility is limited it is important that dinning space is available in the kitchen. Where no allowance is made it is probable that an inconvenient or inadequate eating position will be improvised.

(B) Dinning Areas

The planning of dinning areas for the disabled should assume the use of small tables for four or six people, rather than the use of long bench tables.

Some severely disabled people, for example rheumatoid arthritics, may not be able to use conventional tables and may require individual tables adjustable in height.

To allow wheelchair users to pass behind wheelchairs at a dinning table, there should be a clear dimension of 1.600m (fig.6.0).

Dinning Tables:-

For ambulant people the surface of the dinning table should be approximately 0.700 above floor level.

Assuming a chair seat 0.430 above floor level the construction of table should give an unobstructed height minimum 0.640 to allow for thigh access.

Any table which allows for clearance over wheelchair armrests will be too high to use comfortably; for this reasons, thigh access only is advised. Low-level crossing-bars to dinning tables must be avoided.

Table Dimensions:-

To allow wheelchair users to sit facing each other, dinning tables should be minimum 0.900m wide (figure 6.1a) and preferably 1.050 wide (figure 6.1b).

Because the reaching ability of wheelchair users is limited, tables wider than 1.050m are not advisable.

For tables for six people, dimensions 1.650 x 1.050 are suggested. (figure 6.1c).

(C) Bedrooms

Bedrooms for the physically disabled should allow space for wheelchair manouvre and for access to dressing tables, wadrobes etc.

Windows:-

Bedrooms should be planned so that there is a choice of bed positions, at least one of which allows for a view through the window to be obtained.

To avoid glare it should be possible for beds to be placed parallel with and not opposite to a window.

In small rooms this recommendation may not be practicable.

Window sills should be at a level so that a person in bed can see out.

The mean eye height of a person in bed is approximately 0.660m and of a person seated in bed is 0.890.

Bed Sizes:-

In determining room sizes single beds of 0.900 wide x 2.000m long and double beds of 1.500m x 2.00m long were used.

Bed Making:-

To allow for bed making from a wheelchair, substantial extra space is required in bedrooms.

For a single bed, it could be made without much difficulty.

However, to permit bed making from a wheelchair on a double bed, the clear space to either side of the bed should not be less than 1.100m.

A space of 1.100m wide will permit the wheelchair user to work parallel to the bed or diagonally to it.

Transfer from Wheelchair to Bed

Where bedrooms allow for access only, the clear dimension at the side of the bed should preferably be not less than 1.100m (figure 7.1a).

The assumption here is in line with the principle of mobility housing (1707). It said that, the handicapped person will be able to stand to transfer from his wheelchair, it need be with someone to help. In circumstances where space in bedroom is limited it is possible for transfer to be achieved with the wheelchair parallel to the bed.

Where bedrooms are planned for wheelchair use, the clear dimension to the side of the bed should be not less than 1.200m (figure 7.1b).

Bedroom Storage

Storage accommodation for disabled people should be available by the bed.

Allowance may need to be made for the storage of prosthetics etc. in addition to the storage of clothes.

Wall hooks for the hanging of sticks etc. may be fixed to the wall adjacent to the bed. A drop down shelf may be provided for the temporary placing of clothes.

A drawer unit for storage of clothes etc. may be built-in below the bed frame (figure 7.2.)

(D) WCs

The standard Wc compartment size 2 x 1.5m is recommended. It allows for transfer either (i) laterally, accross one side of the wheelchair

(ii) frontally or obliquely (figure 8.0).

This plan arrangement permits an assistant to stand on front or to one side of the disabled person being helped to or from wheelchair. It also allows sufficient space for a man in a wheelchair to manouvre and position himself. So that the fixture is used as a urinal.

Doors should open outward.

Height of Wc Seat:-

The seat should be between 46cm and 50cm above floor level. (the seat of wheelchair height is between 47-49cm).

Sanitary chair is used by severely disabled people. Or a disabled who is yet to know how to transfer to the Wc (figure 8.6).

Bowl Urinal:-

A bowl urinal is suitable for chairbound people where the rim is low and the fixture project sufficiently far from the wall, to allow for access below by wheelchair footress. The preferred height oa a rim above the floor level is 38cm. The projection should not be less than 38cm.

(E) Bath

Bath Dimension:-

The preferred dimension of bath and associated platform is 2.10 x 0.80m. This ensures overall space for wheelchair use.

Frontal transfer to bath is prefeferred by a wheel-chair users. Hence, the clear dimension in front of the bath should not be less than 1.400m (figure 9.1).

(F) Shower (Figure 11.0)

In a shower compartment the wheelchair is left in the dressing area while a shower is being taken. The compartment should have a blench seat.

Wheelchair transfer is facilitated where the bench is on the approach side.

The preferred depth of the compartment is 1.10m. The dressing space outside the compartment should be minimum 1.3 x 1.2m.

The suggested height of the shower seat is o.400cm and depth is 0.350m. The seat should be hinged so that it can be folded against the wall when not in use.

(G) Mirrors

For ambulant people the head of wall fixed mirror ought not be lower then 1.800m above the floor level. The base ought not bc higher than 1.300m

For wheelchair users the base of the mirror should not be higher than 0.900m above floor level, and preferably at approximately 0.75cm. The head of the mirror should be at a convenient height for ambulant people.

(H) Wash Basins

Wider basins are suggested.

The water source should preferably be positioned not less than 10cm clear of any obstructions, and approximately 10cm above basin rim, to allow room for hand rinsing.

For convenient wheelchair access to the basin, the clear utilization space in front of the basin should be minimum 1.15m x 1.05m. (fig. 10.0)

Wash basin height, 0.750m is suggested for convenience of chairbound and amubulant people.

(I) Parking

To allow for assisted wheelchair users, the suggested width of spaces allocated for crippled driver is 3.6m, minimum 3.2m.

7.4 Population of Rehabilitatees

The proposed comprehehsive rehabilitation centre for physically disabled, will be for both treatment and rehabilitation. Although, the rehabilitation centre will serve both in and out petients. The intention is for the in-patients to receive a thorough medical, physiotherapy, occupational, and vocational therapies, together with all other related treatments. However, out-patients are mostly concern with remedial treatments.

The function of centre as treatment and rehabilitation venue, coupled with the complex nature of the disabled people will make the control of the centre difficult. Therefore, a number of 200 patients will be adequate for a start with 50 females and 150 males.

7.5 Anthrophometrics

The design of spaces and fittings are based on anthropometric data edited by Gold Smith, in her book Design for Disabled people.

Duration:-

The rehabilitatees will spend the first 3 months in the centre to undergo the medical therapy care. They are then trained in all forms of vocational trades for 12 months. They put their knowledge unto production in the sheltered workshop for 6 months, after which they are either discharged or retained in the workshop.



41.1 Toggle action ball head tap

FIG. 5.0



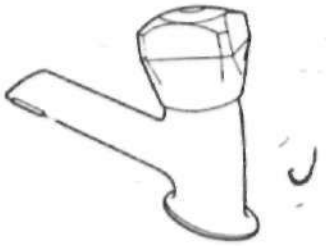
a



b

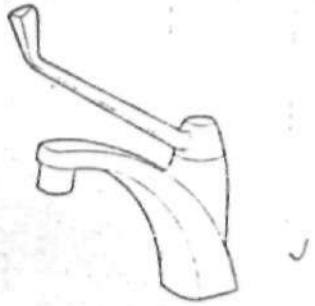
41.2 Screw-down taps

FIG 5.1



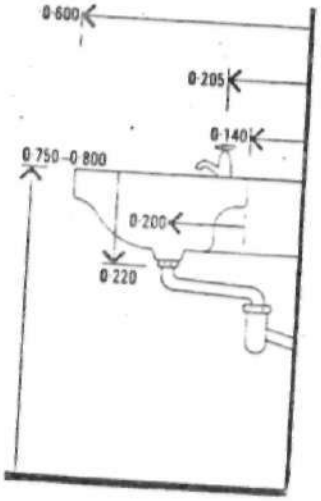
41.3 Dome head tap

FIG. 5.2.

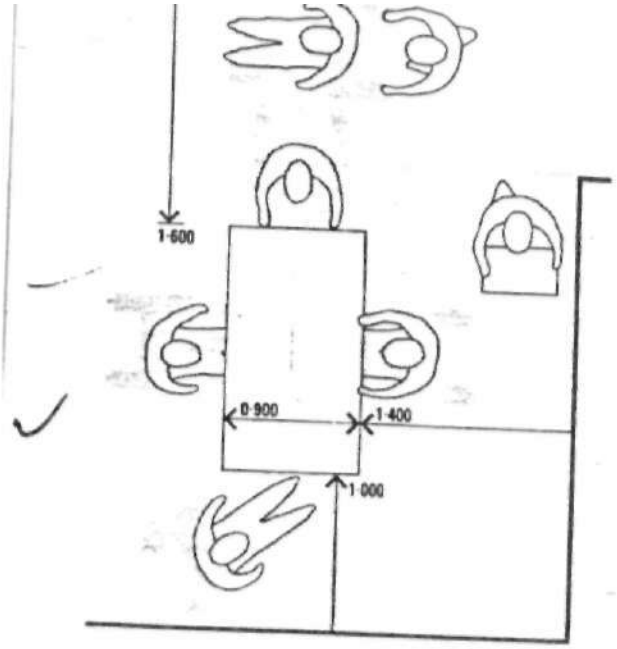


41.4 Single lever action tap

FIG 5.3

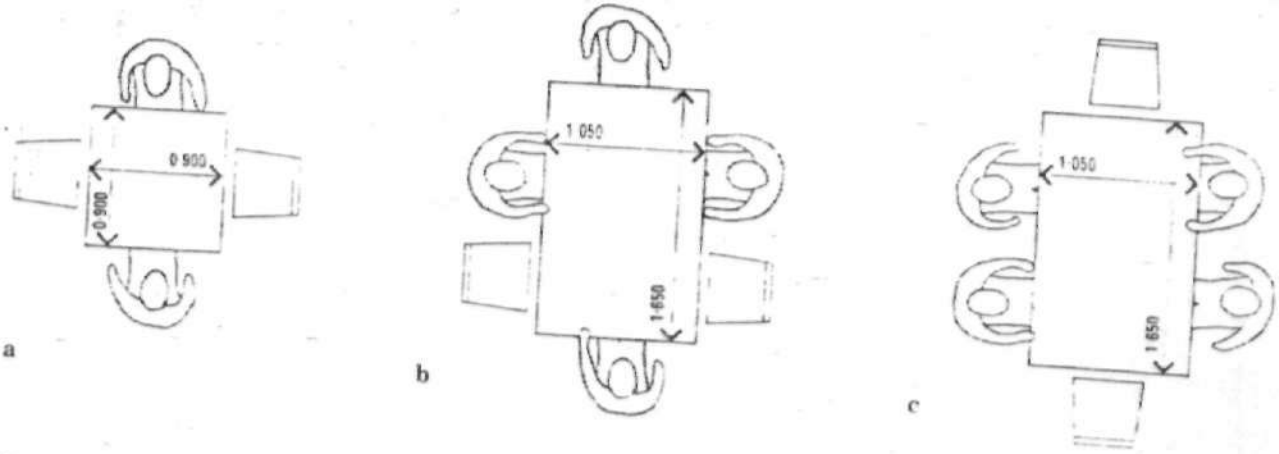


41.9 Waste outlet to wash basin: Provision for wheelchair access (1:20)

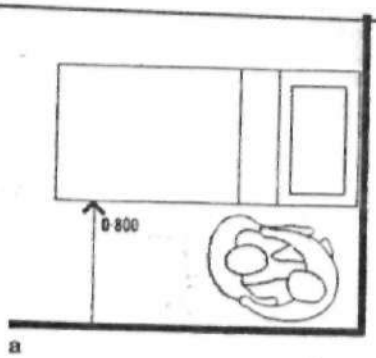


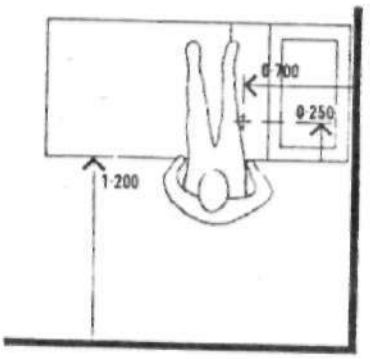
52.1 Dining areas: Space requirements (1:50)

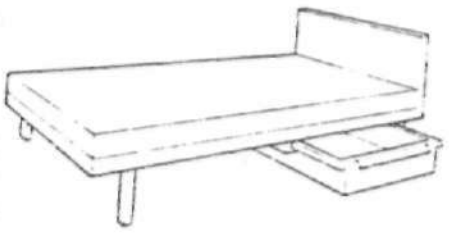
F16 - 6.0



F16 - 6.1

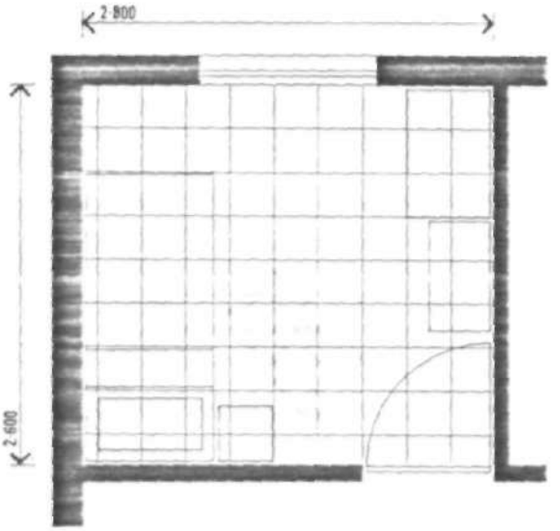




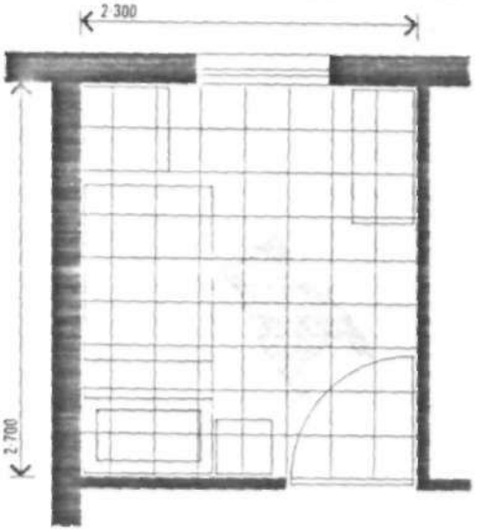


53.10 Bed with storage drawer

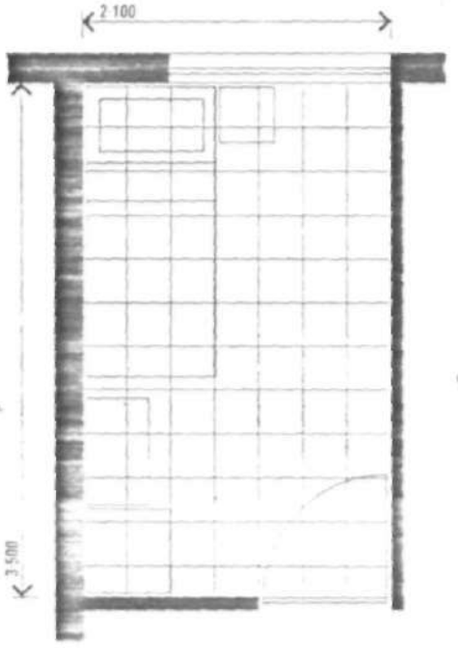
7.2.



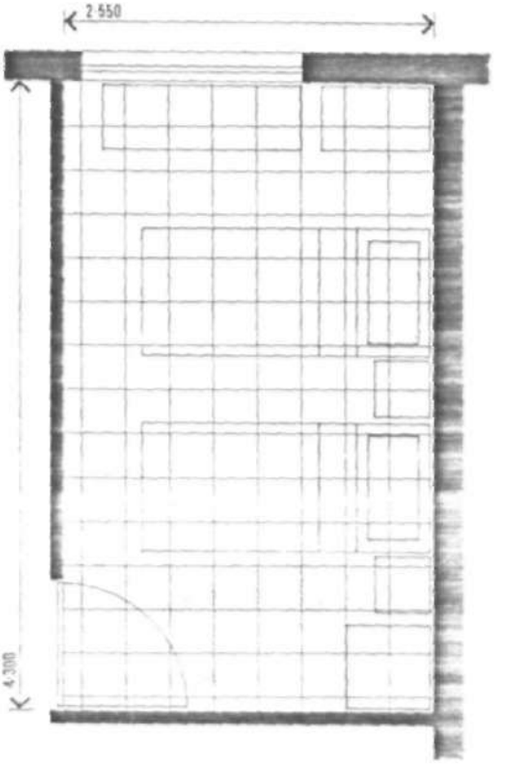
53.1 Bedroom planning: Single bed, wheelchair use (1:50)



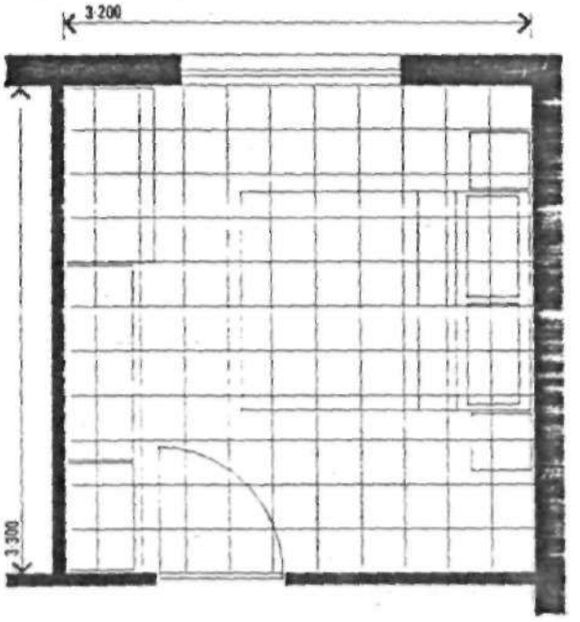
53.3 Bedroom planning: Single bed, wheelchair access (1:50)



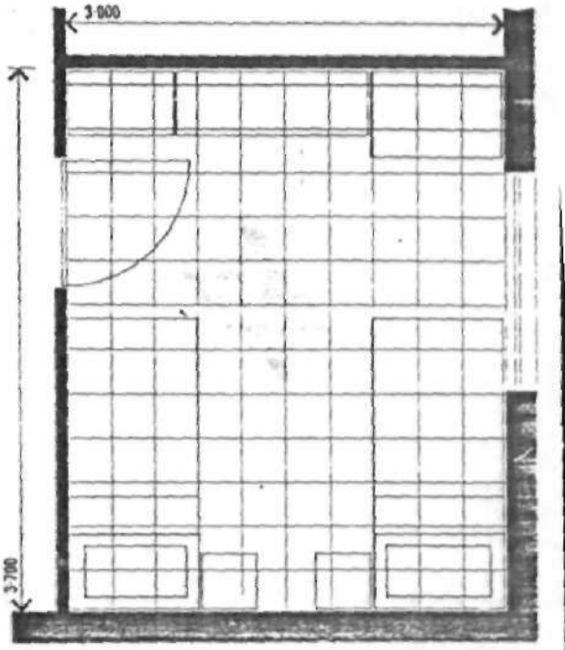
53.2 Bedroom planning: Single bed, wheelchair use (1:50)



53.4 Bedroom planning: Two single beds, wheelchair access (1:50)



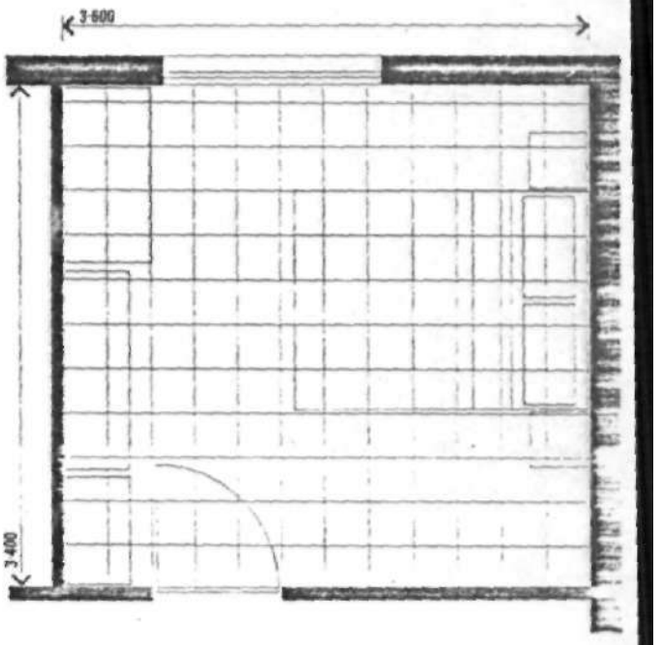
53.5 Bedroom planning: Double bed, wheelchair access (1:50)



53.7 Bedroom planning: Two single beds, wheelchair use (1:50)

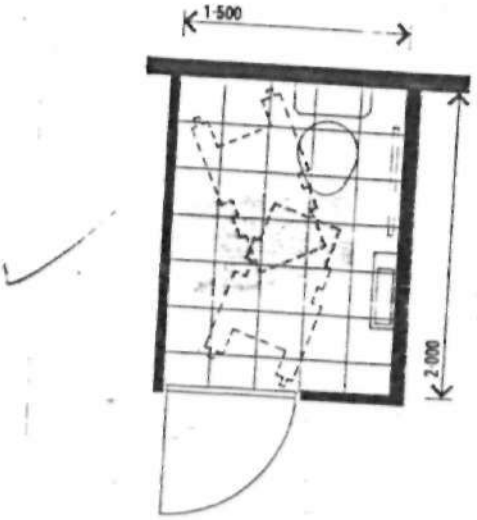


53.6 Bedroom planning: Two single beds, wheelchair use (1:50)



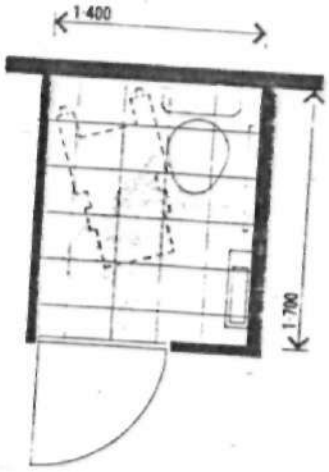
53.8 Bedroom planning: Double bed, wheelchair use (1:50)

Fig 7.4



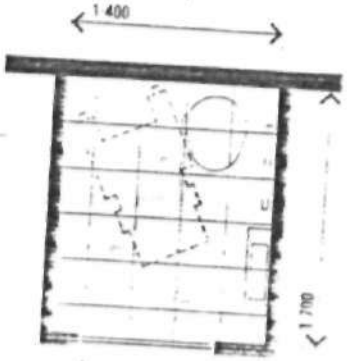
54.7 Standard wc compartment for wheelchair users (1:50)

FIG 8.0



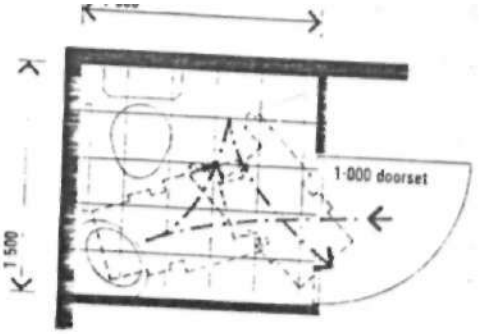
54.8 Small wc compartment for wheelchair users, internal cistern (1:50)

FIG 8.1



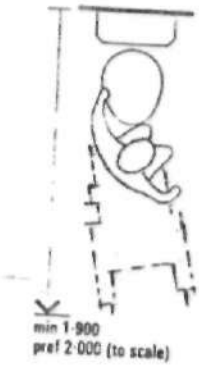
54.9 Small wc compartment for wheelchair users, external cistern (1:50)

FIG 8.2

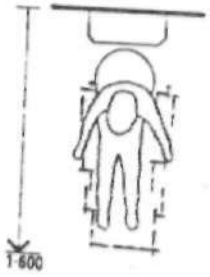


54.10 Small wc compartment for wheelchair
Alternative plan (1:50)

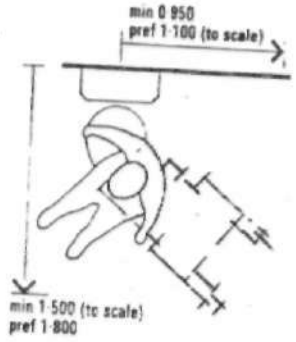
FIG 8.3



a Frontal transfer



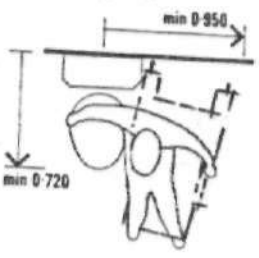
d Transfer throug
back of chair



b Oblique transfer

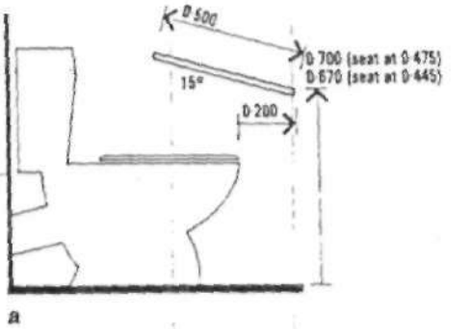


e Attendant-assist
transfer

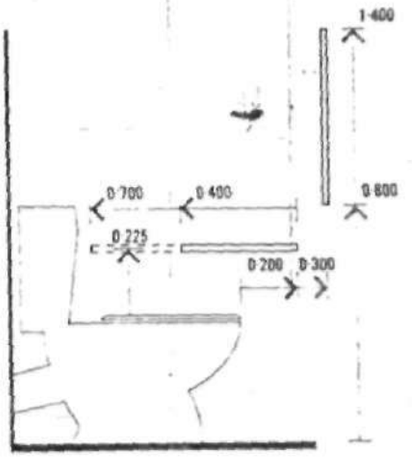


c Lateral transfer

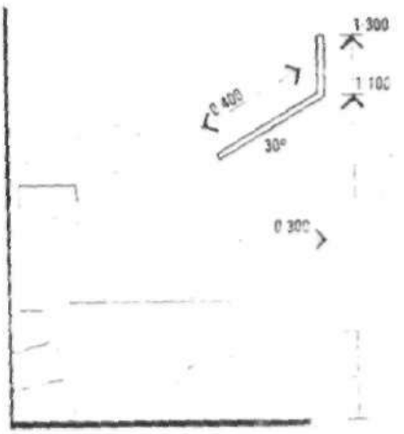
FIG 8.9



a



b



c

54.29 Support rails to side wall by wc (1:25)

Fig 8·5



54.28 Sanitary chair

Fig 8·6

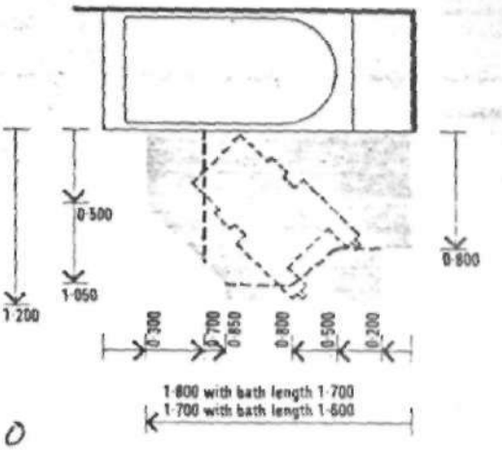


Fig 9·0

54.51 Bath: Wheelchair utilization space (1:50)

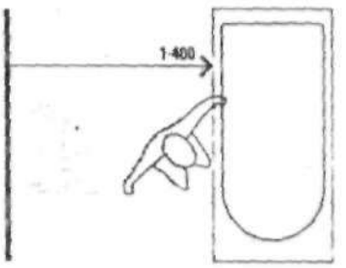


Fig 9·1

54.52 Direct frontal transfer to bath (1:50)

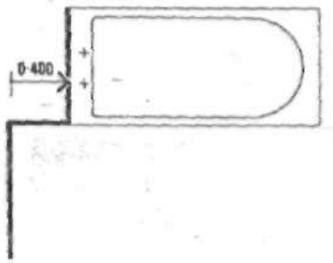
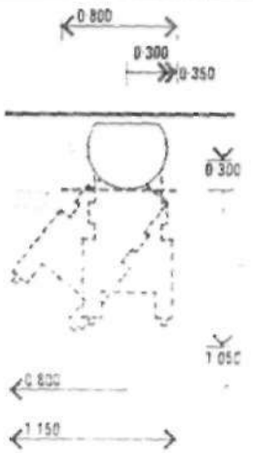


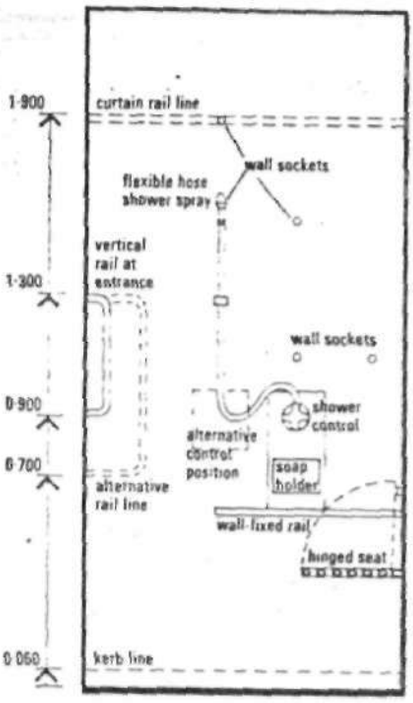
Fig 9·2

54.53 Access to bath taps by chairbound person (1:50)

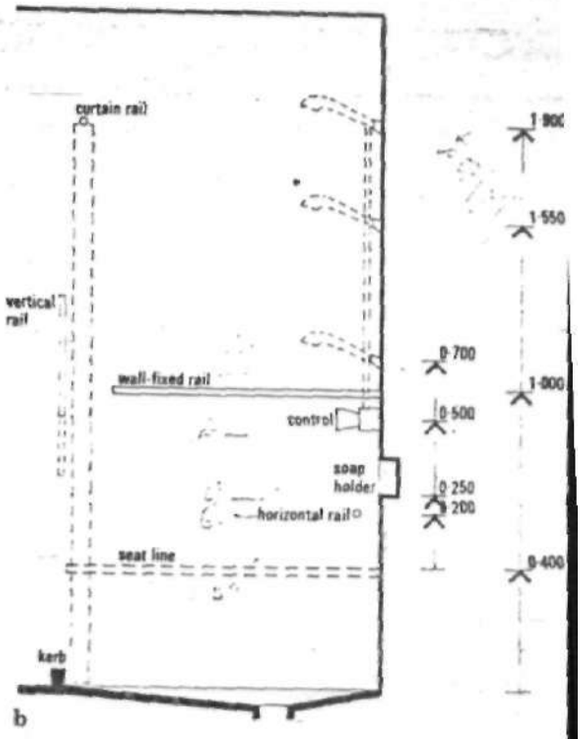


54.54 Wash basin: Wheelchair utilization space (1:50)

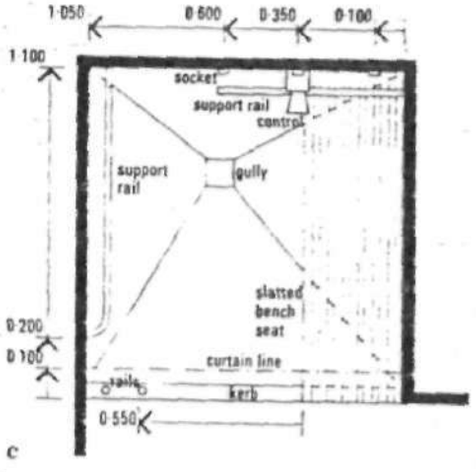
Fig 10·0



a

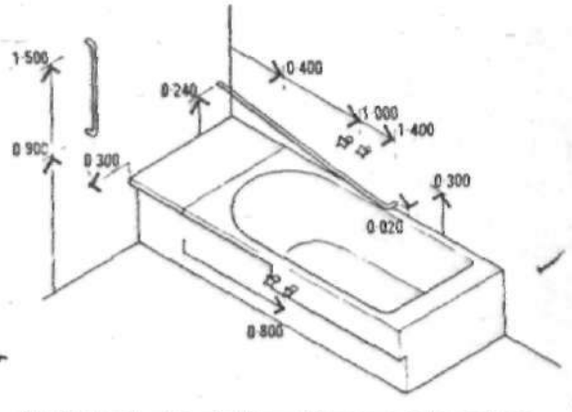


b

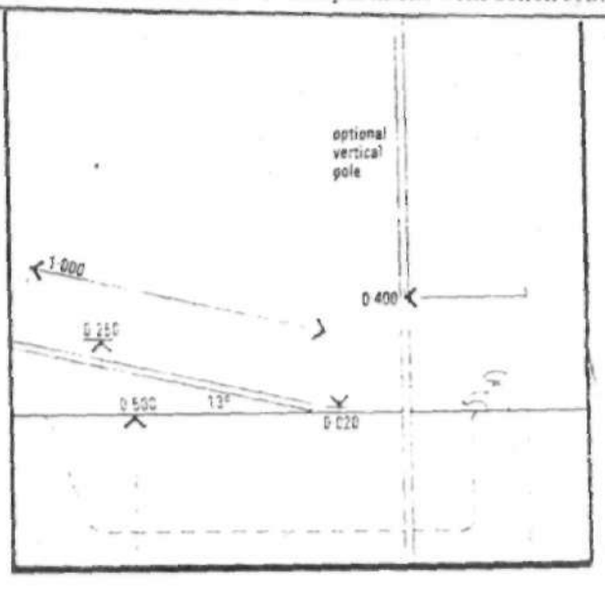


c

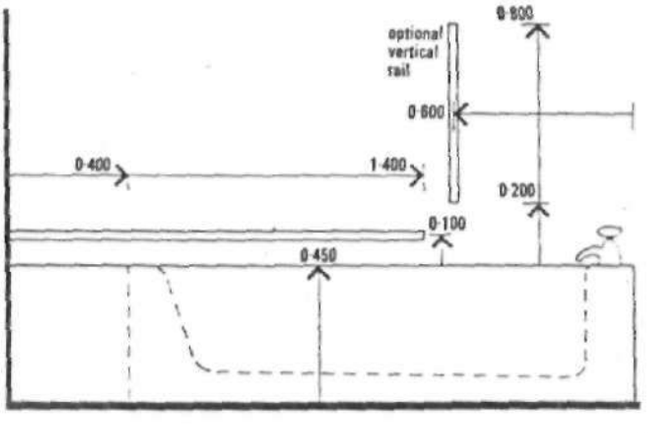
54.90 Shower compartment with bench seat (1:25

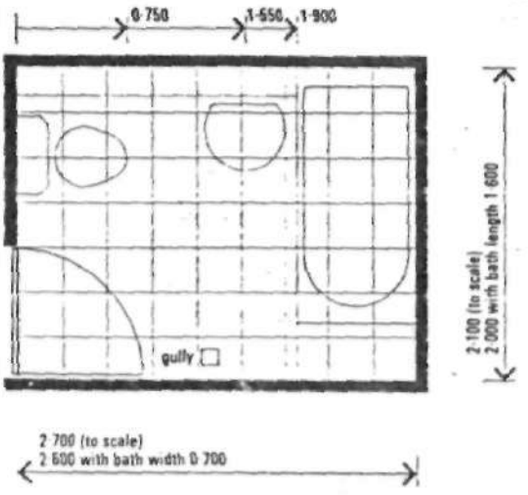


54.75 Bath with platform: Support rails and tap location (1:50)

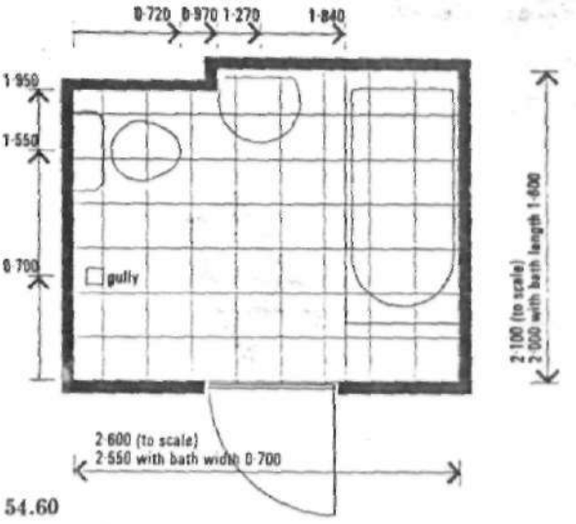


54.77 Bath without platform: Inclined rail and

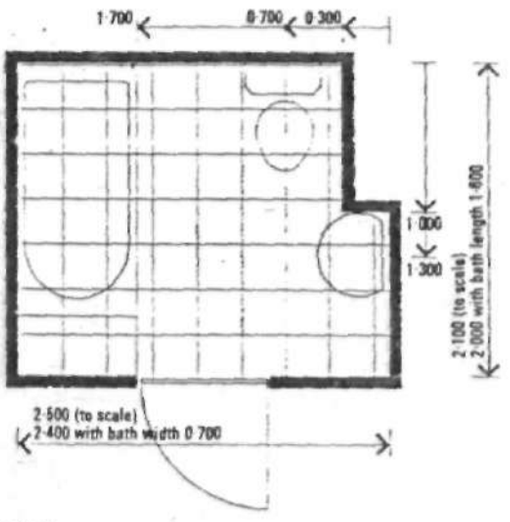




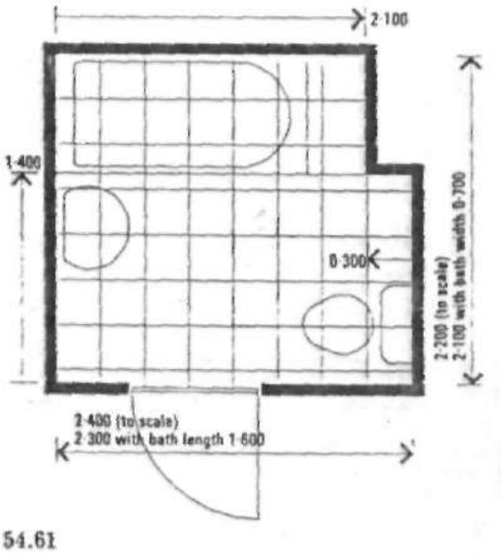
54.57



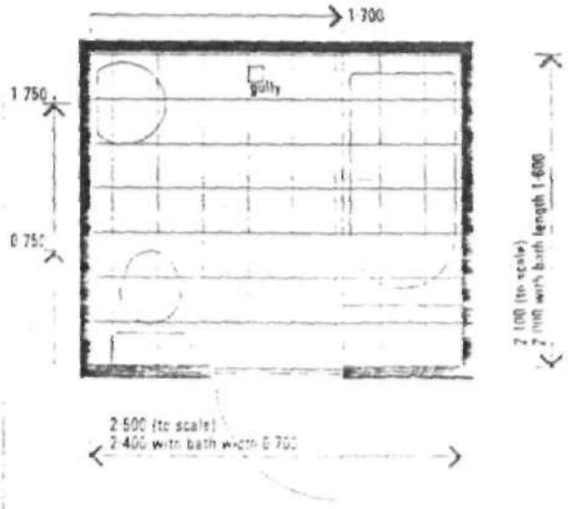
54.60



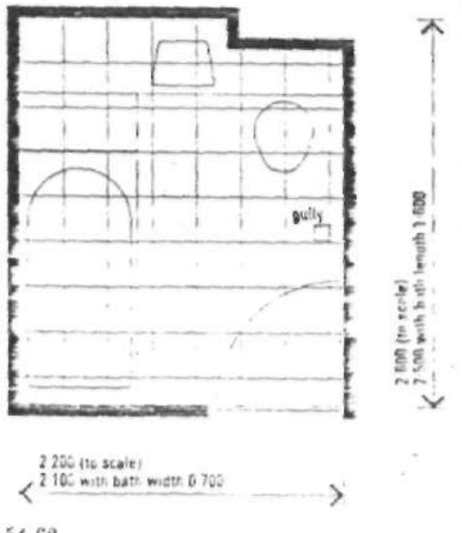
54.58



54.61

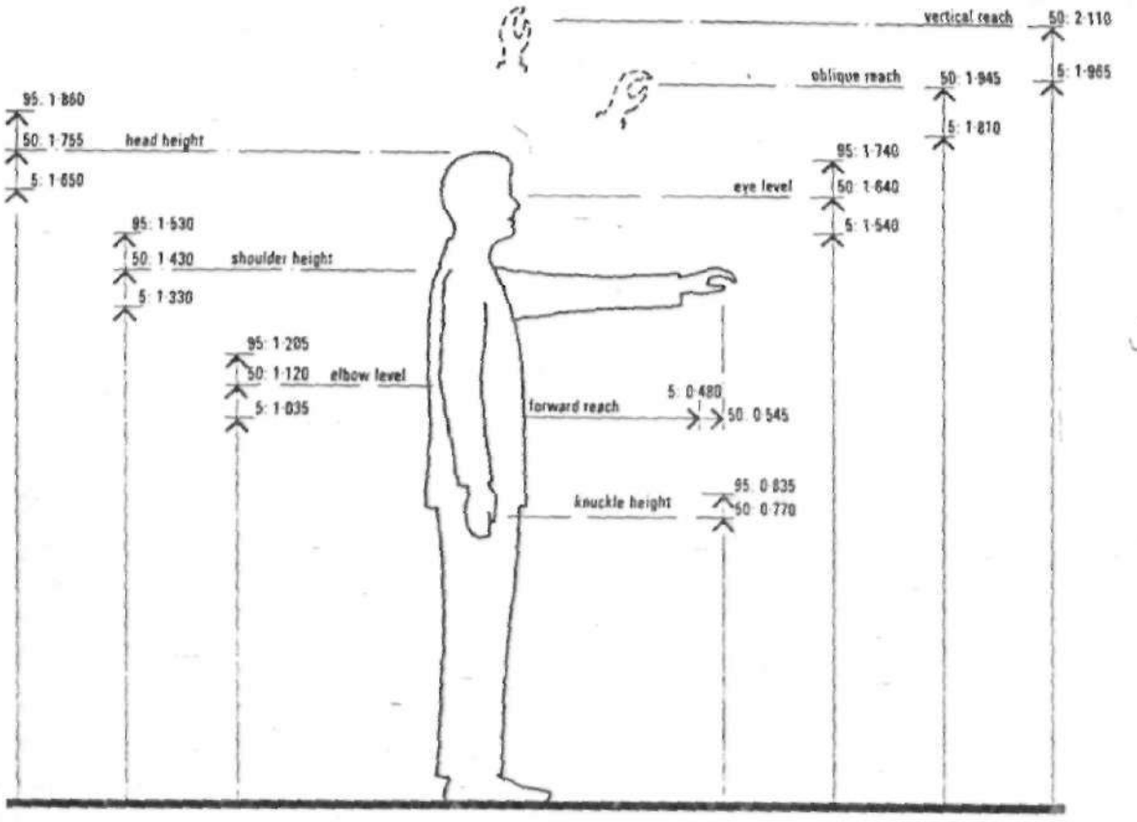


54.59

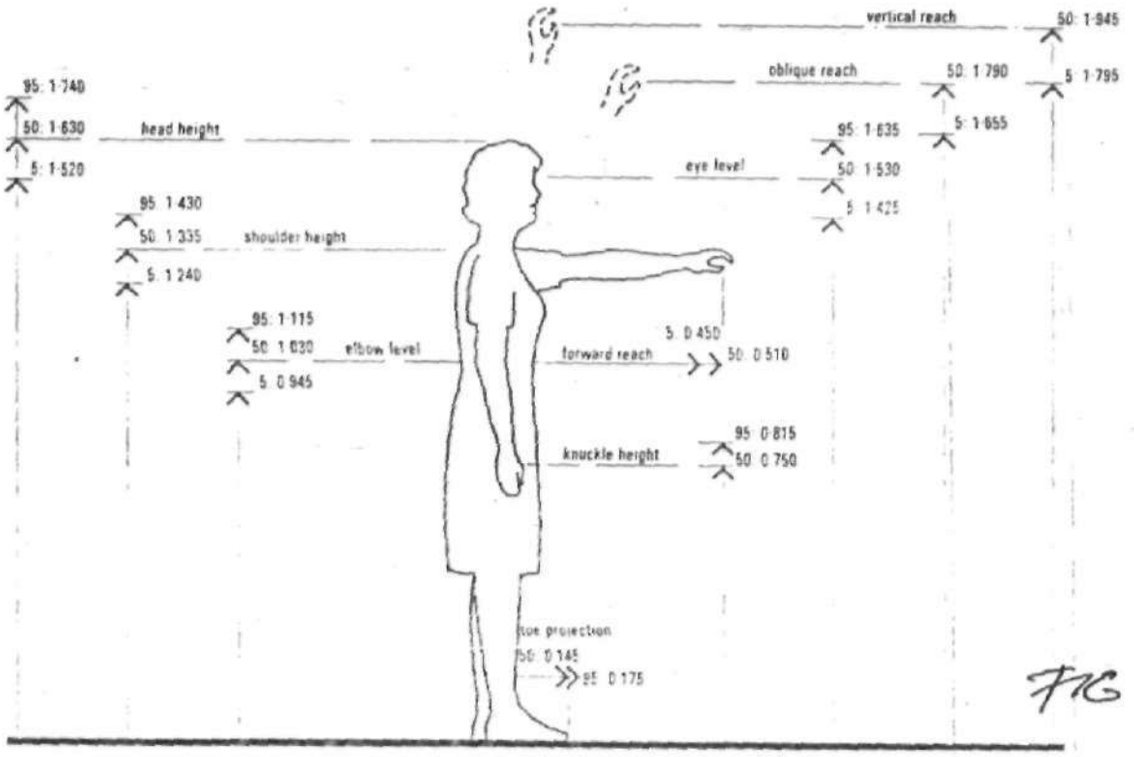


~~54.62~~

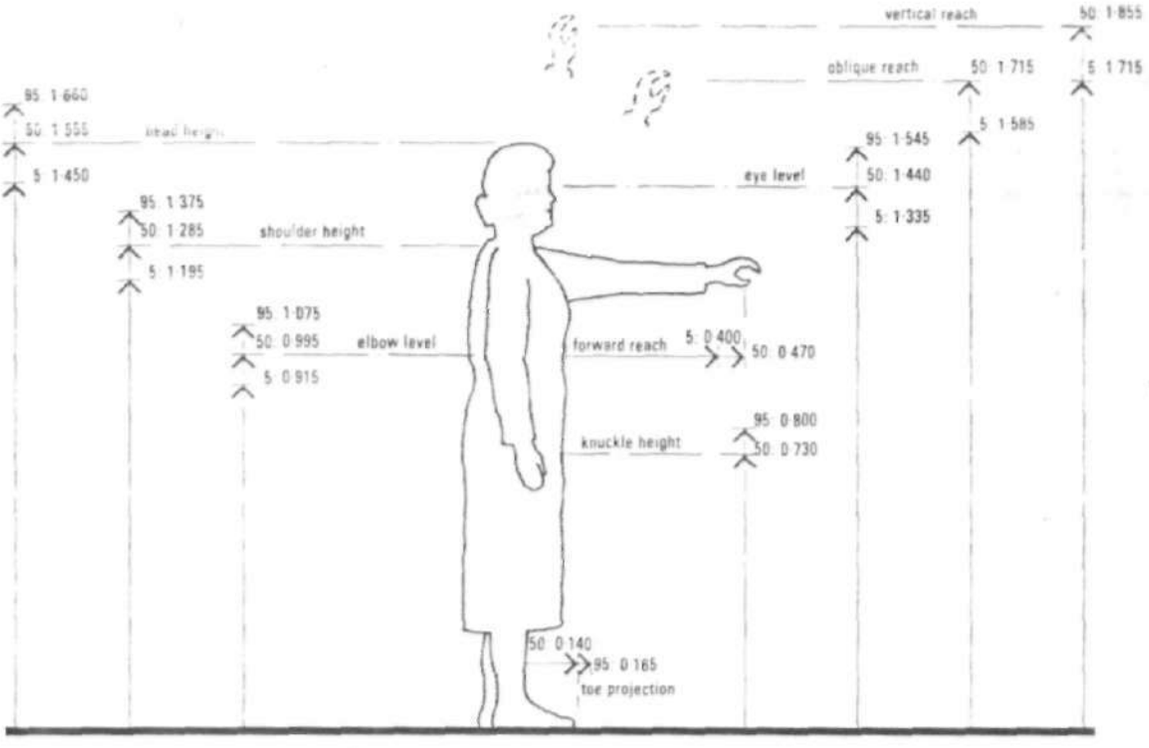
Fig 12·3



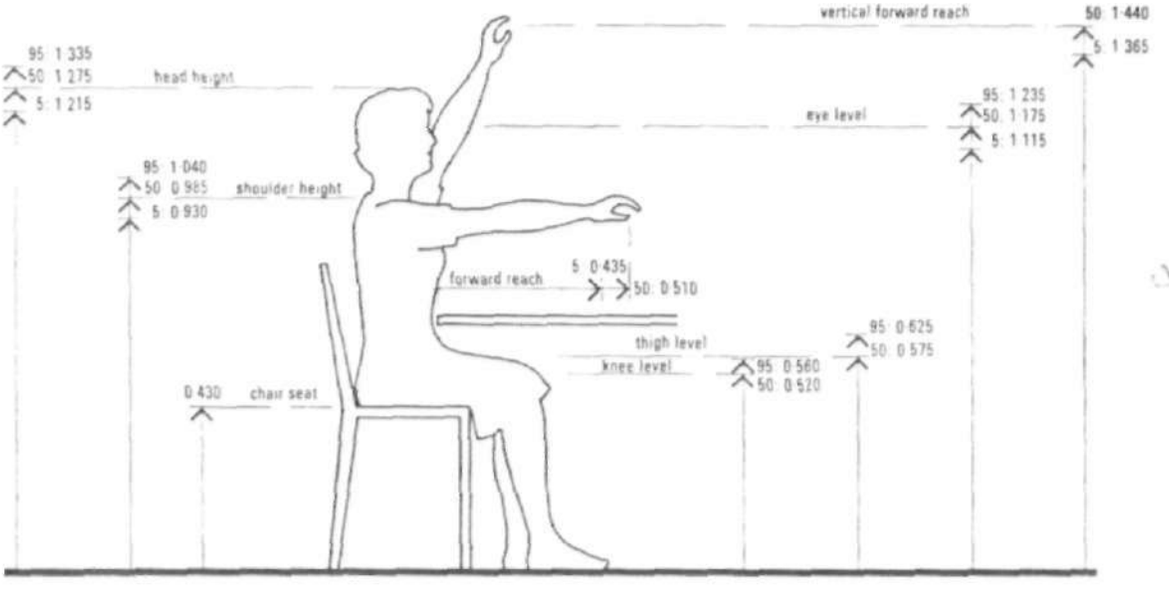
20.2 Anthropometrics: Ambulant men (1:20)



20.3 Anthropometrics: Ambulant women aged 18–60 (1:20)



20.4 Anthropometrics: Ambulant women aged 60+ (1:20)



20.5 Anthropometrics: Seated women aged 18–60 (1:20)

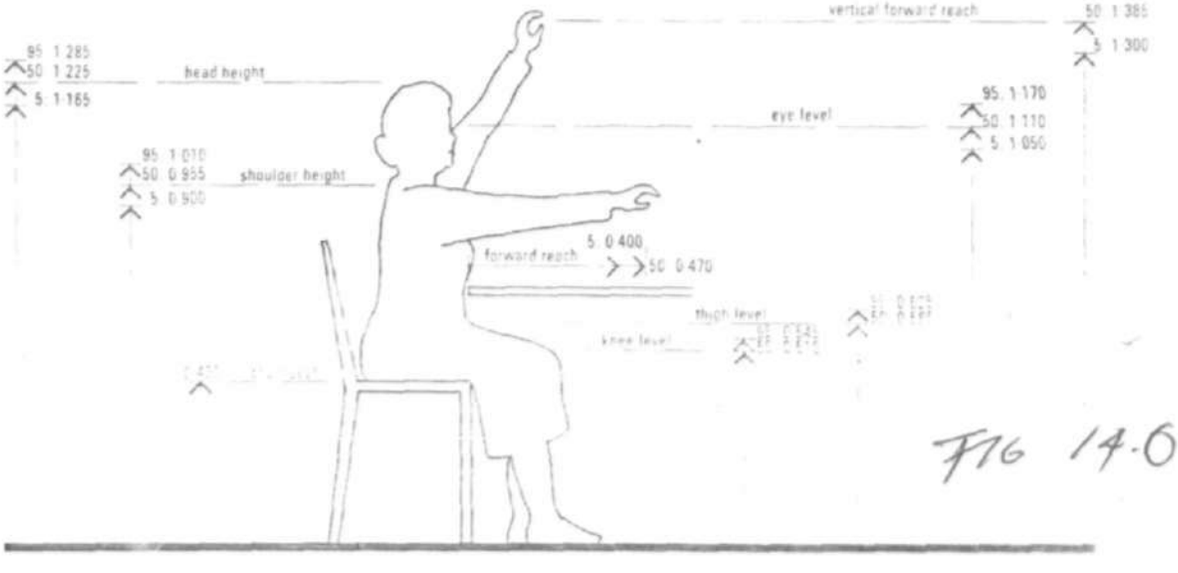


FIG 14.6

20.6 Anthropometrics: Seated women aged 60– (1:20)

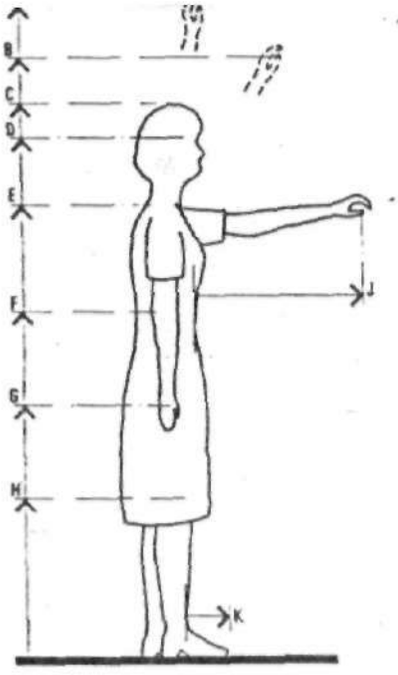
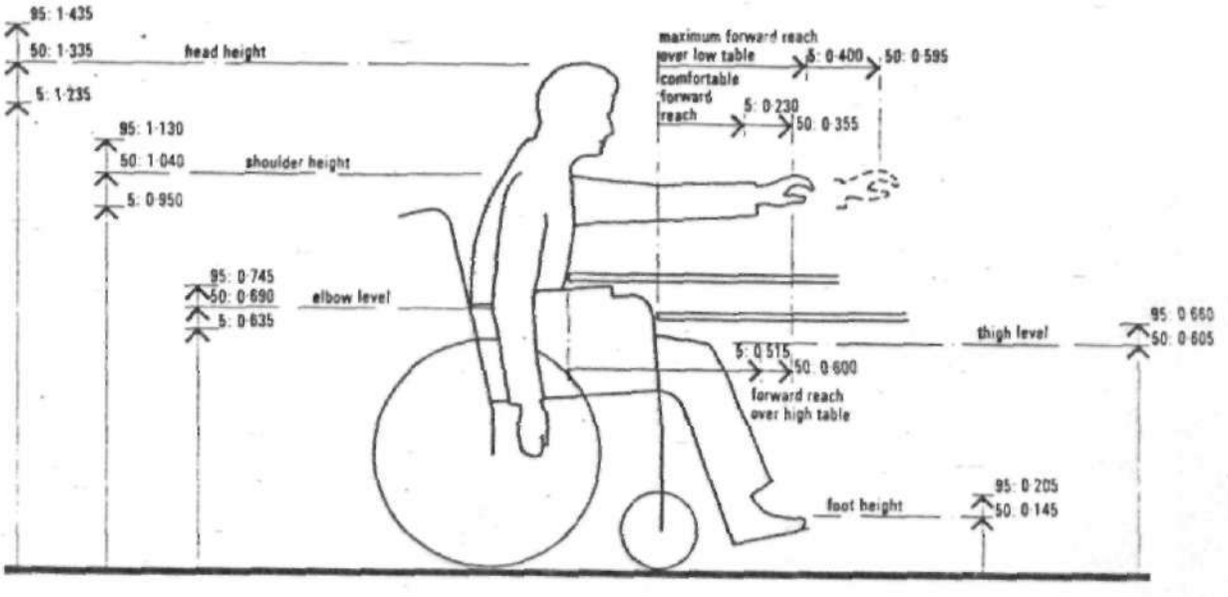


FIG 15

21.1a Measurement data: Standing person.



20.7 Anthropometrics: Chairbound men (1:20)

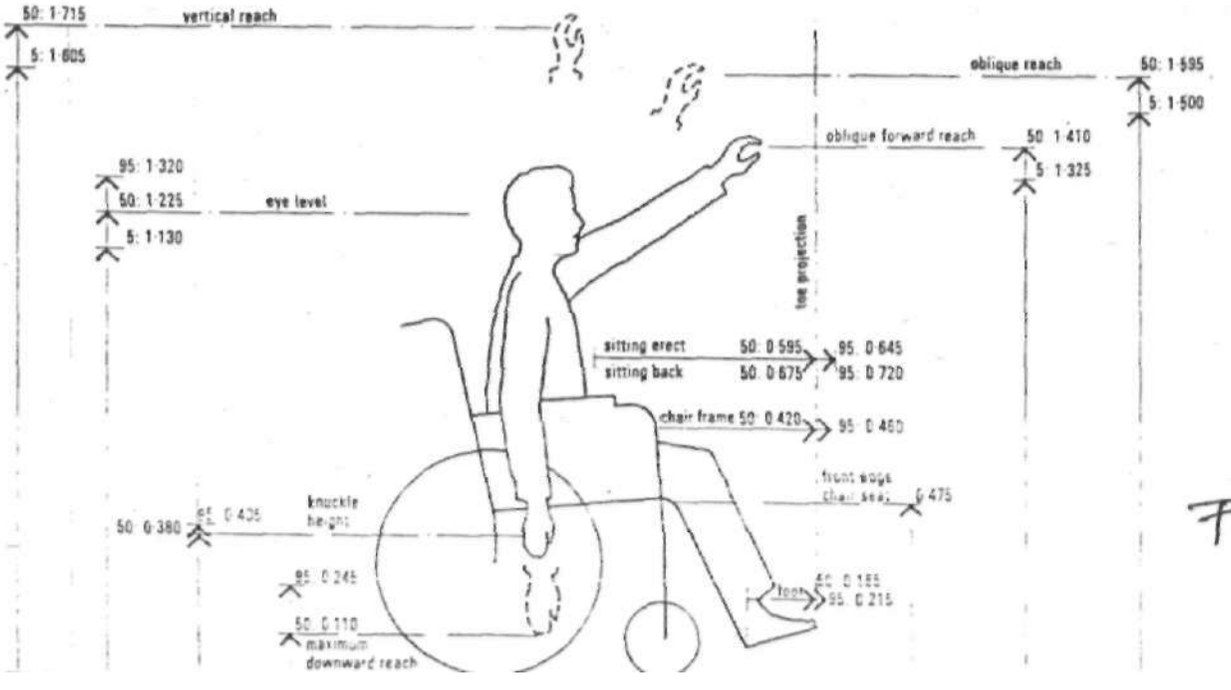
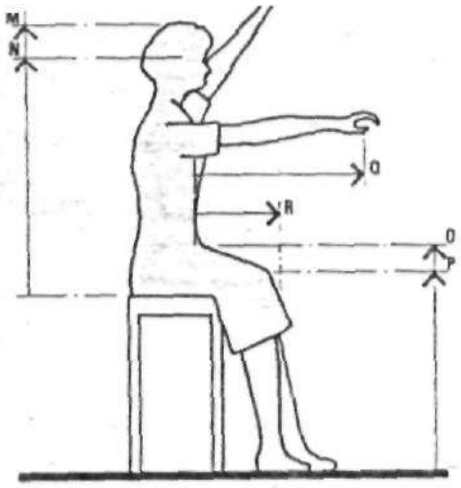


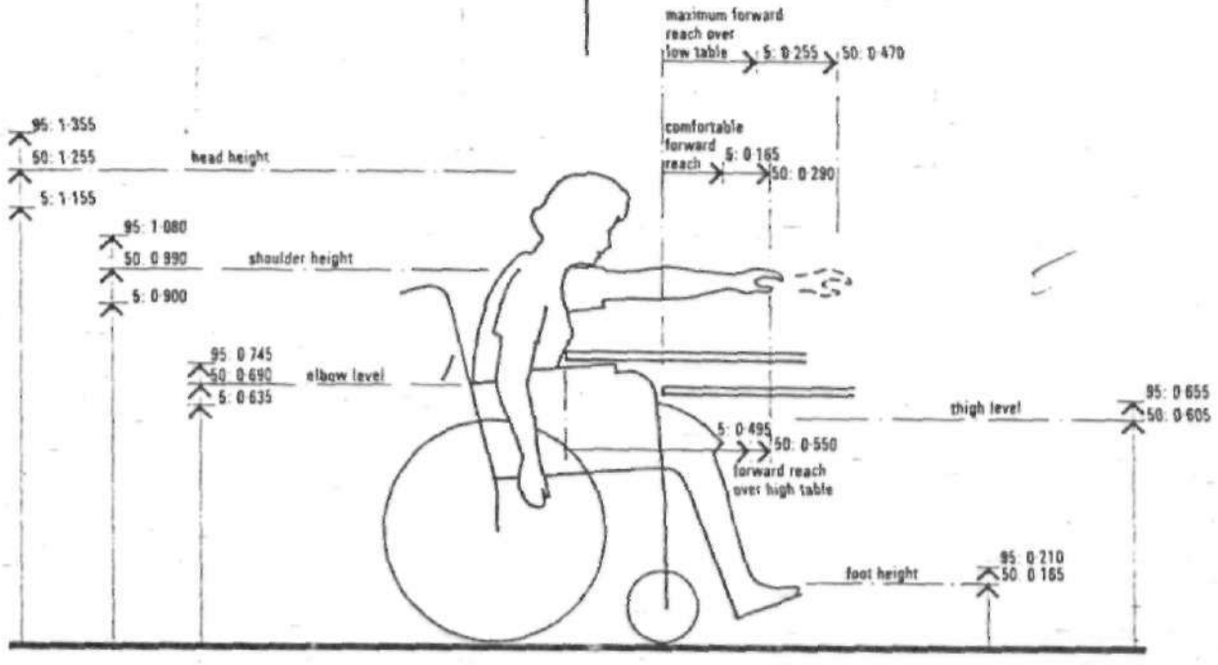
FIG 16



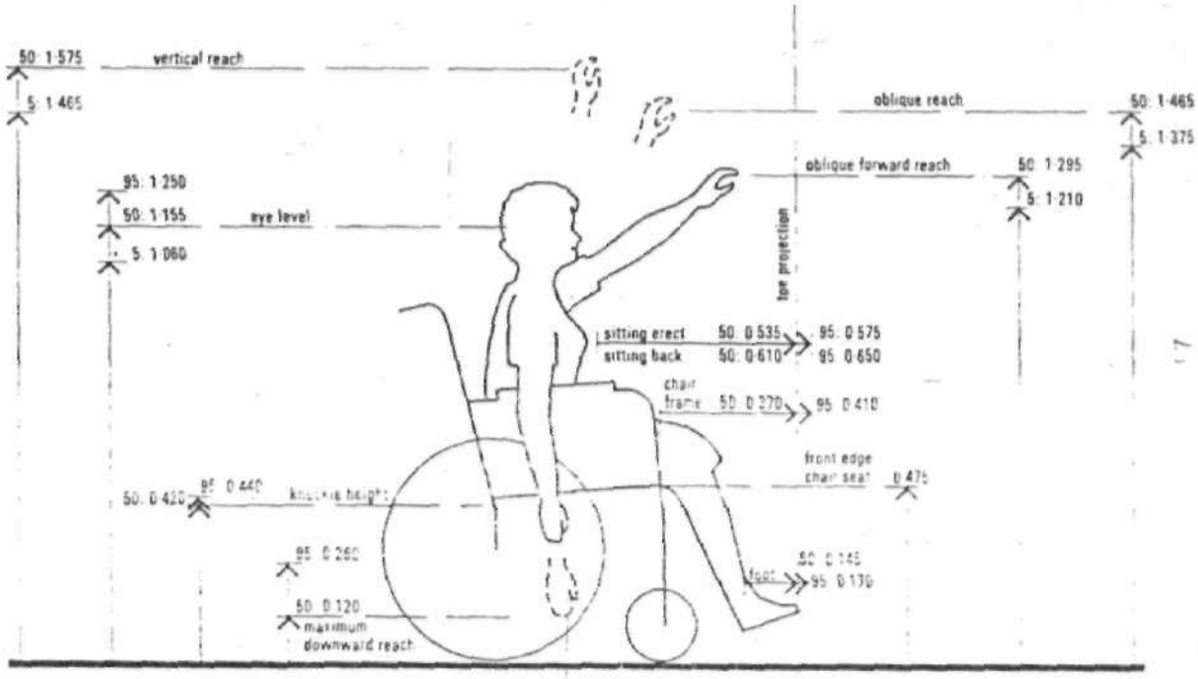
21.1b Measurement data: Seated person. FIG 17



22.2 Measurement data: Chairbound person. FIG 18



20.9 Anthropometrics: Chairbound women (1:20)



20.10 Anthropometrics: Chairbound women (1:20)

FIG 19.

7.6 Accommodation Schedule

Administration:-

Director's Office	-	$30m^2$
Assistant Director	-	$30m^2$
Personnel Secretary	-	$20m^2$
Secretary/Waiting	-	$24m^2$
Matron's Office	-	$16m^2$
Welfare Officer	-	$16m^2$
General Office	-	$48m^2$
Conference Room	-	$80m^2$
Accountant	-	$20m^2$
Account's Office	-	$25m^2$
Administrator's Office	-	$20m^2$

Ancialiary Spaces:-

Record Room	-	$36m^2$
Staff Common Room	-	$20m^2$

Diagnosis - X-Ray Room

Patient Waiting	-	$18m^2$
Dressing Cubicle	-	$6m^2$
X-ray Room	-	$20m^2$
Dark Room	-	$9m^2$
Light Room	-	$8m^2$
Radiologist	-	$12m^2$

Pharmacy

Drug Preparation	-	$6m^2$
Store	-	$10m^2$
Dispensing Area	-	$15m^2$

Social Adjustment

Social Study Office	-	$20m^2$
Psychologist	-	$20m^2$
Social Worker's Office	-	$25m^2$
Waiting Area	-	$60m^2$

Physical Therapy:-

Exercise Area

Area Required per Person - $3.5m^2$

25% of the rated bed capacity are treated at a time

$\therefore$ 25/100 x 200 = 50

Hence Area =

500 x $3.5m^2$ = $175m^2$

Anciliary Areas:-

Waiting Area	-	$60m^2$
Examination room	-	$12m^2$
Consultation room	-	$12m^2$ (5 in no.)
Head of Department	-	$30m^2$
Secretary/Waiting	-	$15m^2$
Message Treatment	-	2x2.5 (6 in no.)

Hydrotheraphy

Whirlpool Room	-	$4m^2$ (4 in no.)
Hubbard Tank Room	-	$6m^2$ (2 in no.)
Therapy treatment pool	-	2 x $2.8m^2$
Patients Changing Room	-	

2 Shower + 1 Wc = 4 x 8m

Staff Changing Room

1 Shower +/Wc = $8m^2$

Occupational Therapy

Workshop

Area per person - $4m^2$

30% of rated bed capacity is the maximum number to be attended at a time.

30/100 x 200 = 60

60 x 4 = $240m^2$

∴ Workshop Area = $240m^2$

Activities of Daily Living

Living/Dinning Room	-	$25m^2$
Kitchen/Store	-	$12m^2$
Bedroom/Changing Room	-	$18m^2$
Bathroom/Wc	-	$6m^2$
Shower Room	-	$4.5m^2$
Attendant Station/Changing Room	-	$18m^2$
Staff room/Changing Room	-	$18m^2$
Head of Department Secretary	-	$36m^2$

Prosthetic/Orthetic Appliances Shop

Store	-	$10m^2$
Fitting Room	-	$4m^2$
Shop	-	$42m^2$

Vocational Training

Six Training Workshops each	-	$80m^2$
Special Educational Hall	-	$36m^2$
General Store	-	$18m^2$
Refuse Store	-	$8m^2$
Junior Staff/Rehabilitatees Common Room	-	$32m^2$
Counsellor's Office, each	-	$16m^2$
Waiting Area	-	$40m^2$
Evaluator's Office, each	-	$12m^2$
Conference Room	-	$32m^2$
Director's Office	-	$30m^2$
Secretary/Waiting	-	$15m^2$

Sheltered Workshop

Six Workshops, each	-	$168m^2$
Finished Goods Store	-	$36m^2$
Delivery Clerk's	-	$6m^2$
Sales Shop	-	$100m^2$
Exhibition	-	$120m^2$
Senior/Junior Staff Canteen	-	$120m^2$

Workshop Administration

Production Manager	-	$16m^2$
Manager	-	$35m^2$
Sales Manager	-	$20m^2$
Secretary/Waiting	-	$15m^2$
General Office	-	$24m^2$

Accountant - $20m^2$

Conference - $56m^2$

Assistant Manager - $25m^2$

Service Department

Dinning Hall

- 40% of the Rehabilitatees is expected to eat at the same time

∴ 40/100 x 200 = 80 patients

Area needed for wheelchair patient plus circulation - $3m^2$

Therefore Area of the Dinning Hall

= 80 x 3

= $240m^2$

Kitchen

- 1/3 Area of the dinning hall is used for kitchen = 1/3 x 240

= $80m^2$

- Kitchen Store

The space required for storage of food for 30 days is approximately half of the kitchen Area.

Therefore ½ x 80 = $40m^2$

Central General Store - $80m^2$

Maintenance Services - $80m^2$

Laundry Room - $30m^2$

Workers Changing Room - $60m^2$

Staff Canteen - $84m^2$

Administration - $30m^2$

Accomodation

Bedrooms

Two persons per Bedroom

Common Room - $30m^2$

Toilet Facilities - $36m^2$

Recreation Hall - $240m^2$

Mosque - $145m^2$

7.7 Site Selection Criteria

A rehabilitation centre deserves the best possible setting. Indoor-outdoor relationships are important, therefore, the site for the centre must be chosen carefully and developed advantagoeausly. Site selection is a major consideration, but its by no means an isolated aspect of planning. Looking ahead to the completed project, three basic factors are neccessary for successful operation. These are land, building, and people. Good centres result when the first is developed in such away that the second becomes most usable to the third.

The following factors, climate, popography, vegetation, and soil affects the site and therefore the building and its people.

The main considerations normally taken before selecting a site for a rehabilitation centre included the following:-

(A) Relationship to the Community

The site should be near these related facilities

i) hospitals

ii) light industry

iiii) housing

iv) recreation

v) public transportation

Isolation also increases the problems of transportation and housing; in-patient facilities will be required for those who might otherwise be out-patient.

(B) Size and Shape of Lot

The programme of activities will the size of the lot. The lot should be in excess of present needs to allow for expansion.

The lot should be large enough to provide space for activities beyond the building proper, off-street parking, survice areas, outdoor recreation and outdoor therapy.

An oversized lot is economical in long range planning. Avoid the selection of odd-shaped lots; portions of the lot are not usable.

(C) Topography

Although comparatively level sites present fewer planning problems, a sloping site with level areas permits a more compact building, with the possibility of grade level entrances at each fllor level.

Chapter 8

DESIGN REPORT

8.1 The Site Plan

The concept of site planning was based on two basic considerations; noise level and interelationship of one unit or department to another.

Services department, vocational training and sheltered workshop are considered the most noisy areas of the centre. They are hence zoned near the road.

The therapy unit consisting of occupational therapy, physiotherapy, hydrotherapy/electrotherapy are moderately noisy areas hence they are zoned next to the noisy therapy unit.

Noisy level zoning system is considered inadequate to form the guiding principle of the site planning. Another very important consideration for planning of rehabilitation centre of this nature is the principle of expansion and of interalation of the different unit and or departments.

Service Route: Service department, vocational training department and sheltered workshop need service road for bringing in and out materials and goods for production. These departments are therefore zoned on a common axis for easy service route.

Expansions: From the analysis of the various space requirement of various departments and their supceptibility to expansion; the sheltered workshop and the hostels are found to be most proned to. This therefore dictated for their positioning to both sides of the site, for that they can easily expand without any hinderance.

Roads

A single access road is tapped from a main road (Gombe road) into the centre. It terminates at the visitors and staff. The services road is however tapped from a distributory road by the western side of the centre.

Parking

The centre contains three parking areas. The first parking is provided at the approach or the medical unit of the centre. This parking is meant for the administrative, medical and visitors. The second parking is provided at the sheltered workshop unit. However, its placed close to the exhibition and sales shop for eacy inspection and purchasing for interested individuals. The third parking is located close to the accommodation unit; this parking is provided for the visitors to the rehabilitatees. A parking space, to rehabilitatees ratio of one parking space, to five rehabilitatees is provided. It is also important to note that a service yard is provided close to general store and finished goods store for easy delivery and collection.

Rehabilitation Yard: The site is planned with two big courtyards. One is situated at the middle of medical/ rehabilitation unit. This is named rehabilitation yard. This yard is well landscaped with beautiful trees and shades, also provided is recreation track, which allows the rehabilitations to play wheelchair race, by running with them on the track. The second large courtyard is provided at the accommodation section. This contains almost all that is provided at the rehabilitation yrard. The only difference being, that the rehabilitation yard is expected to serve as an extension of the physical/ hydrotherapy unit, while the second court is purely recreational.

Walk Ways:

All Walkways leading to different sections of the centre are covered and they are wide enough for three people (two wheelchairs and a person) to pass each other at a time.

8.2 General Planning

One of the most basic planning principles is organisation:- the best organisation for the purpose intended. When that purpose is rehabilitation, one must take into account the limited mobility and acute sensitivity to physical environment of thse for whom the building is intended (the physically disabled).

With limited mobility of the physically disabled, the wheelchair becomes the basic unit of consideration in the design. The range of dimension of a standard wheelchair

was kept in mind. The design is governed not only by these basic dimensions, but also by the dimensions of the park of action of the chair. The variable limits of manoeuvring due to variations in a physical disability was also recognised in the development of the planning data.

8.21 Medical Area

The medical area of the rehabilitation centre provides the following services: medical evaluation, performed by the physician and his staff; physical therapy, including hydrotherapy, occupational therapy; speech and hearing therapy. It also furnishes the services of a prosthetic and for orthetic appliance shop.

The medical area provides the basis for the patients' total programme at the centre. It must be accessible to all other areas and be well integrated with the administration and admission services.

This section will contain much specialized examination, treatment, and therapy equipment. Since the records for all sections of this area are extensive, adequate storage is provided for them.

Medical diagnosis is the basis for development of the patients successful rehabilitation programme, this unit is of paramount importance to the centre.

On admission, a patient goes through consultation and examination. From here, the patient is either referred to the theatre, or for X-ray, or to the therapy units; depending upon the doctor's findings.

The laboratory and pharmacy units are adjacent to the doctors to complete the diagnosis and to dispense medicine respectively.

Location Within Building:

As all patients receive medial evaluation, the physician's unit should be near the centre's main entrance.

For purposes of admission, and for the keeping of records, location of the unit near the administrative department is provided.

8.22 Location Within Building

This shop is where all orthetic and prosthetic applicances are provided for the rehabilitatees, or sold to the outsiders who may need such appliances are provided for the rehabilitatees, or sold to the outsiders who may need such appliances, such as walking aids, wheelchairs, peg-legs, artificial legs and hands, braces and crutches.

The shop contains a measurement and fitting space so as to provide the patient an accurate size of his/her requirement.

Location Within Building: As prescriptions from the doctor determines the type of appliance to be issued to patient, the shop is almost opposite the diagnosis unit, so that a patient moves directly to the shop, after the doctor's examination and prescription.

As the shop will serve out patients reuiring minor adjustments or repairs to their devices, or a non-rehabilitatee physically disabled wanting to buy wheelchairs or other appliances, the unit is located with direct access from the entrance hall.

8,23 The Therapy

The therapy contains two major treatment areas, dry and wet. The dry area includes the exercise room or gymnasium and treatment cubicles; whereas the wet area includes all hydrotherapy treatment.

Hydrotherapy:

Hydrotherapy equipment is grouped in one area, separate from but adjacent and accessible to other treatment areas.

The space for hydro-therapy is frequently the most expensive area of the centre. It contains such equipments as wheelpool-tanks for arms, foot, hip, and leg immersion. Almost all exercises and treatments can be conducted with Hubbard tanks and therapy swimming pool.

All hydrotherapy activities require linen tool storage. Changing rooms with showers and toilet facilities are provided for staff and patients.

The tanks and pool areas are big enough for wheelchair, crutches and stretchers storage.

Floors of unglazed ceramic tile with drains for spilled water and tank overflow.

As equipment is heavy when filled with water, the structure is designed for these additional loads.

Overhead monorails with lifts mechanism are provided for efficient use of Hubbard tanks a and therapeutic pool. Ceiling is 4.5m high from the floor level.

Phsio-Therapy:

Exercise area/gymnasium:- This area is so planned that there is flexibility and clear space for individual and group exercise activities.

The most frequently used items of equupment are, Exercise mats, shoulder overhead and wall weights, shoulder latter, steps, curbs, ramps, stall bars, paralled bars, posture mirror, stationary bicycle, parallel bars, counter-balanced and individual weights, sand bags, etc. The posture mirror is placed 1.27 m from the end of the parallel bars.

Doors to the exercise area are wide enough to accommodate not only patients but also equipments. Double doors each 90 cm aside are specified.

Vinyl wall covering to a minimum height of 1.5m protects walls and ease maintenance.

It has a ceiling height of 4.5 m and timber floor to minimise the effect of fall during exercise.

Location Within Building

The place for physical and occupational therapy as well as for activities of daily living, has being placed in close proximity, as many patients will receive treatment and training in all three areas.

Arrangement has been made such that scheduled patients may proceed directly to physical therapy without interfering with circulation to other departments.

Also, as physical therapy may take advantage of certain outdoor activity, the gymnasium has been placed near the rehabilitation yard.

B.3 Rehabilitation Section:

Like the medical section, all the rehabilitation units are zoned together and hence work together as a unit.

The training workshops all surround the vocational administratife block with beautiful courtyards in between.

Each workshop contains, a store and supervisory station. A general store is provided for the whole workshop big enough to contain materials for one month's use.

A common room is also provided for relaxing after the training period.

Six different types of vocational trades are provided for the training, hence six workshops exists in the vocational department.

A patient whose performance is satisfactory in the medical unit, comes to the vocational section, where he is first counselled and evaluated before placement on a particular job for training.

Vocational Counselling: Provides opportunity for patient to obtain an understanding of his vocational abilities and potentials and to learn the scope of their possible application.

Vocational Evaluation: Is the process of collecting and appraising data on the patients interest, aptitudes and ability in work situations.

8.31 Sheltered Workshop

The sheltered workshops consists of six workshops each with a store and supervisor station. It has a big general store capable of storing raw materials up to a month's use, and a finished goods store where

finished goods are stored before the owners or buyers collects them.

A common room with a kiosk is provided for the rehabilitatees for adequate relaxation after work.

The loading and off-loading by the stores are so planned that they are hidden from the front centre; so that a neat and moderate elevation is provided by the centre at all times.

The exhibition area serves as an avenue for advertising the ability, capability and talent of the rehabilitatees, so that public could appreciate the goodness of the physically disabled.

8.32 Accommodations

The design of the accommodation unit is done with the full intention of maintaining the traditional living environment of the rehabilitatees into the centre. Hence the rooms are designed round internal couryards.

Each unit has eight bedrooms with two occupants per room, one bedroom for two caretakers, laundry and toilet facilities which contains two showers, two baths and two Wc's.

Each unit also has a common room. This common serve as a meeting room for the rehabilitatees. The common rooms are to be provided with electronics gadgets like televisions, radio sets and some indoor games equipments.

Three units make a cluster; and they are arranged with male hostel separate from females.

Conclusion:

The final design of this rehabilitation centre, came up with an aesthetically appealing structures. This particular final result is cautiously attempted inorder to divert from the hitherto ugly conglemerations of carelessly arranged boxes referred to as rehabilitation centre. It should be borne in our minds, that the physically disabled appreciate beauty first as any other person does. It should also be realised that creating nice environment could be a pull factory to the rehabilitatees.

Though aesthetic factor is given a little consideration during the design, it does not temper with the fragile point of economy.

Throughout the planning and design of the rehabilitation, simple column and beam structures were used for ease of construction; and expansion

purposes. The roofings consists of either steel pitch frusses or much simpler lean-to structures with asbestos roof coverings.

All the walk ways and corridors are of asbestos roofs.

On the functional planning of the rehabilitation centre; the centre is concern with the rehabilitation of the physically disabled in one hand, and normalizing their disability on the other hand. The thesis is also concerned with designing every fabric of the buildings, so that the physically disabled people are not handicapped in their use of the building facilities.

The rehabilitation center is expected to cater for a total number of 200 rehabilitatees; 150 males and 50 females. This could be described as the initial capacity of the centre.

It is expected that, the physically disabled perion (once regarded as a beggar/destitute), on graduation from this centre could learn a vocational trade suitable to his disability, hence, becomes a useful and pround member of the society.

BIBLIOGRAPHY

1. ANONYMOUS (1974): Special Schools for the physically handicapped. (Richard Clardesley School and Lonsdale School) Architects' Journal, 12 June, 1974: 1323-1340.

2. ARCHITECTS JOURNAL - 7th October, 1970.

3. BREWER, G.D. and KKAKALIN, J.S. (1979). Handicapped Children - Strategies for improving Services. McGraw-Hill, Book Company - New York.

4. DATTNER, R. (1969): Design for play. Van Nostrand Reinhold Company.

5. GREATER LONDON COUNCIL (1969): Special Schools for the physically handicapped (Bromley Hall School) Architect's Journal 27th August, 1969: 505-522.

6. HOWKER, M. (1970): Return to mobility, Exercises for Stroke partners: The chest, Heart and stroke Association, Tavistock House, North Tavistock Square, London.

7. Goldsmith, S. (1967): Designing for the Disabled, 2nd edition RIBA, 66 Portland Palace, London, Wi London.

8. HENDERSON, P. Disability in childhood and youth.

9. LIFCHEZ, R. AND WINSLOW, B. (1979): Design for independent living - The environment and physically disabled people. Watson- Cuptill Publication N.Y.

10. LORING, J. and Brown, C. (1976). Integration of Handicapped children in society. Routledge and Kegan Paul Limited, London.

11. MILLA, E.D. (1978): Planning: Buildings for Health, Welfare and Religion 9th edition.

12. NUEFERT, E. (1970): Architect Data, 1st edition, Granda Publishing Limited, Germany.

13. NUEFERT, E. (1980): Architect's Data, Granada Publishing Limited, Germany.

14. REDSTONE, L.G. (1980): Institutional Buildings - Architecture of the controlled environment. An Architectural Record Book, McGra-Hill Book Company, New York.

15. SALMON, F.C. and SALMON, C.F. Rehabilitation Centre Planning: The Pensylavania State University Press, University Park, Pennsylvania.

16. SHEATER, A. (1981): DISABILITY: Whose Handicap. Basil Blackwell Publishers, England.

17. STTENFERN, E. SCHREEDER, S. BISHOP, M. ,U.S. Department of Housing and Urban Development and Research. Adaptable Dwelling. U.S. Government Printing Office, Washingtom D.C.

18. STEMSHORN, A. (1974): Buildings for the Handicapped and aged. Bauen Fuir Behenderte and Betagle.

19. UNITED NATIONS PRODUCTION (1972): Rehabilitation of the Disabled. United National Office of Public Information OPI/460 - 04723 - March 1972.

20. WEHMAN, P. (1979): Recreation programming for Developmentally Disabled person. University Park Press, Battimore.

21. Rehabilitation of beggars in Nigeria (1972), Ibadan University,Press.

22. State Governments programmes for rehabilitation in third National Development Plan (1975-80).

23. ZAKKA, S.A. (1982): Rehanilitation Centre for Disabled, Unpublished M.Sc. thesis, A.B.U., Zaria, Nigeria.

24. ZUBAIR, H.O. (1983): Medical rehabilitation Centre for the crippled, Zaria, unpublished M.Sc. thesis, A.B.U., Zaria, Nigeria.

25. MOHAMMED, S.O. (Miss): Centre for Physically Disabled Children, Kaduna, unpublished M.Sc. thesis, A.B.U., Zaria, Nigeria.