

DOCUMENT RESUME

ED 239 464

EC 161 801

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TITLE Designing with Care. A Guide to Adaptation of the Built Environment for Disabled Persons.
INSTITUTION Swedish International Development Authority (SIDA); United Nations, New York, N.Y.
PUB DATE Jan 83
NOTE 103p.; Support also provided by the United Nations Centre for Human Development.
PUB TYPE Guides - Non-Classroom Use. (055)
EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS *Accessibility (for Disabled); Building Design; Design Requirements; *Developing Nations; *Disabilities; *Environmental Standards; *Structural Elements (Construction)

ABSTRACT

Developed as part of the International Year of Disabled Persons, the guide is intended to help planners, architects, and designers to accommodate the built environment of developing regions for disabled persons. Guidelines focus on public building in urban or village settings and emphasize simple solutions to common problems. Following an introductory section which provides background information, a second section examines such general considerations as six categories of disabled persons (and dimensional data for wheel-chair use). Environmental considerations are addressed in the third section with information on prevention, basic physical requirements, identification of such problems as difficulties in entering buildings, and design requirements. A fourth section contains a series of recommendations regarding commonly used design features of infrastructures (transportation systems, pedestrian routes, footpaths and roads, street furniture, and sign posts) as well as of building elements (entrances, doors; ramps, staircases and steps, handrails, windows, lifts, sanitary and electrical controls, signs, and areas such as passageways and bathrooms). Two final sections cover statutory and financial considerations. Among nine appendixes are a 39-item annotated bibliography and a list of pertinent United Nations resolutions. (CL)

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DESIGNING WITH CARE

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UNITED NATIONS

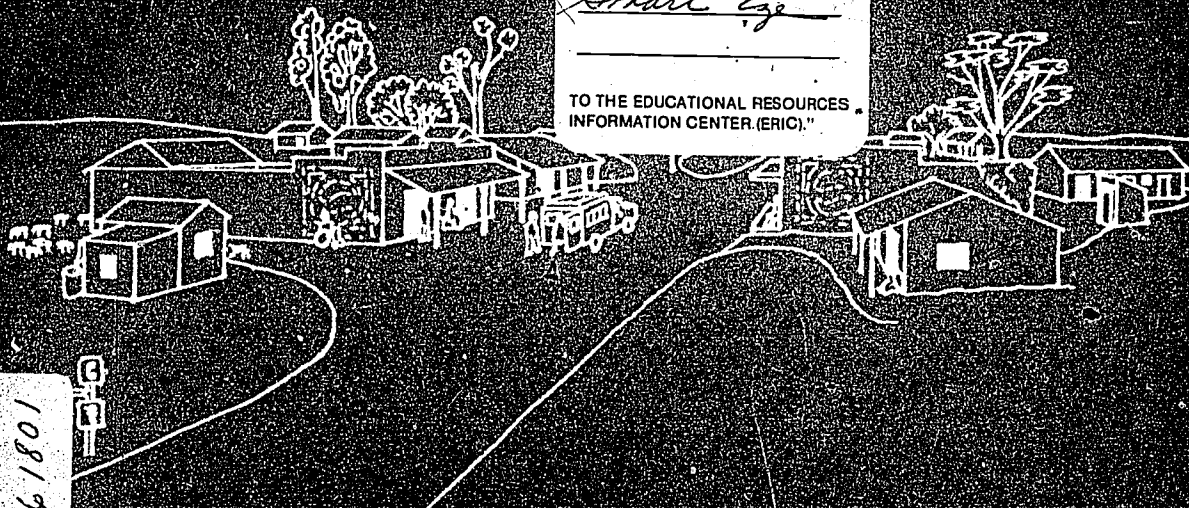
ADAPTATION OF THE BUILT ENVIRONMENT FOR DISABLED PERSONS

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PREFACE

The year 1981 was proclaimed by the United Nations' General Assembly as the International Year of Disabled Persons. The theme: *full participation and equality* was adopted with the task of encouraging the rehabilitation of the world's estimated 450 million people who have some form of physical or mental impairment.

This Guide has been prepared as a result of the implementation of the Plan of Action of the International Year of Disabled Persons which, as indicated in the Appendix 5:0 page 100, calls for the preparation of a series of Manuals covering different aspects of barrier free environment for disabled persons. In order to respond to the immediate needs in this field of all countries, and in particular the developing countries, and in order to avoid possible duplication of efforts, it has been decided to combine the subject of the above mentioned series of manuals into one manual and to entrust its preparation to a consultant contracted by the United Nations.

This Guide is the result of the joint co-operation between the Swedish International Development Authority (SIDA), the United Nations and the United Nations Centre for Human Settlements (HABITAT).

It was compiled by the Swedish consultant firm of White & Partners AB, Architects and Planners. The principal contributor was Ms Lisa Hanson with active support from Mr Kurt Axelsson and Mr Sten Söderström, all architects, members of SAR.

Illustrations were by Ms Birgitta Algesten and Mr Hans Grönlund.

The project was financed by SIDA, the United Nations and UNCHS.

The parallel production of an educational slide series illustrating many of the points made in the guide has been prepared by Mr Bo-Erik Gyberg, audiovisual producer for United Nations Centre for Human Settlements in collaboration with SIDA.

Note

The publication reflects the views of the consultants that have been entered with its preparation, and do not necessarily represent an official position of the United Nations.

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Abbreviations and Definitions

According to WHO:

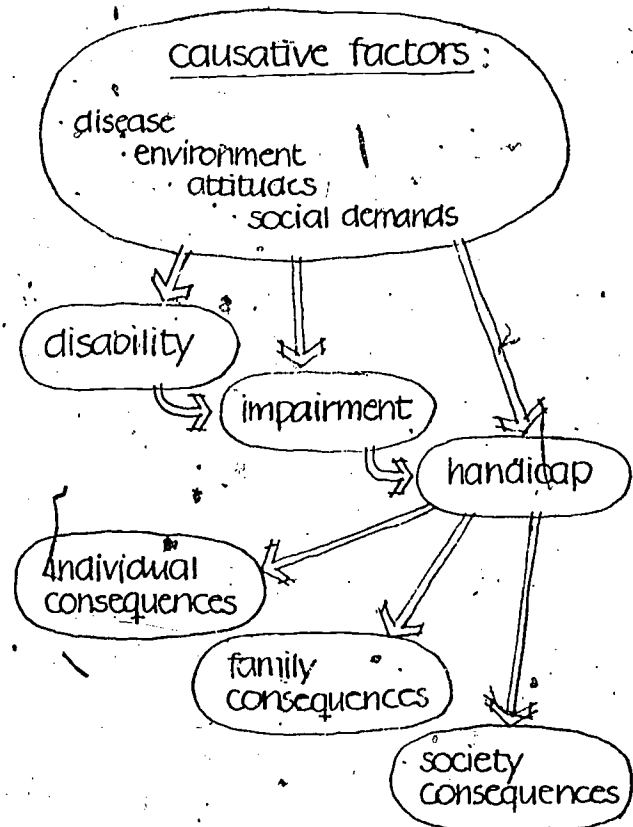
An *impairment* is any loss or abnormality of psychological, physiological or anatomical structure or function.

A *disability* is any restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being (resulting from an impairment).

A *handicap* is a disadvantage for a given individual, resulting from an impairment or a disability that limits or prevents the fulfillment of a role that is normal (depending upon age, sex and social or cultural factors) for that individual.

Another definition by DPI:

Handicap is the loss or limitation of opportunities to take part in the normal life of the community on an equal level with others.



INTRODUCTION

Background

Disability such as limited mobility caused by age, illness or accident, may restrict the opportunities for the person concerned and his or her family, to fully participate in the life of the community.

An estimate of the magnitude of the disability problem in developing regions is that at least one child in ten is born with, or acquires, a physical, sensory or mental impairment. The estimate can rise by 15 or 20 % depending on the definition of disability and the conditions.

One estimate of the world incidence of disability from UNICEF in 1980 (UNICEF News, Issue 105) gives a total of 514 millions. The tentative distribution of this incidence is shown in the adjacent pie diagram.

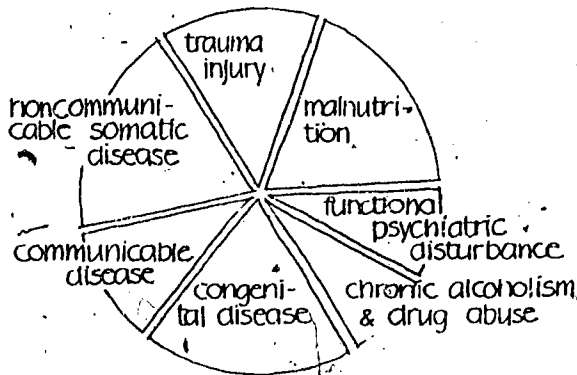
In 1975 the number of people throughout the world affected by all types and degrees of disability was estimated at 12.3 percent of the world population*. By the year 2000, their number is anticipated to reach an estimated 13.5 percent.

While these statistics in themselves are alarming, the geographical distribution of cases illustrates the need for urgent attention in developing regions.

Disabled persons in developing as well as industrialized countries find barriers in the planned environment which restrict their independence.

The problem is how to integrate disabled persons in the economic and social life from which they have so far been excluded by both cultural and physical barriers.

It is important, therefore, that those who develop policies for both building design and urban planning should take account of the needs of disabled persons.



* Source: John H Noble Jr "Population and Development Problems Relating to Disability Prevention and Rehabilitation, 1981"

INTRODUCTION

The Problem

Basic Requirements:
reach
enter
use

The population structure in the developing world is not the same as in the developed. The number of elderly people in developed countries is large when compared with that in the developing world. However, with improved health care and better nutrition it is anticipated that this situation will change.

The resultant increase in the number of disabled and elderly persons in developing countries, coupled to changing life styles, emphasizes the need for greater accessibility to public facilities than at present.

In some parts of the world substantial experience of planning with consideration for the disabled has been gained. Some of this experience has been used as the basis for this Guide.

Recognizing that there will be varying economic, social and cultural situations prevailing in the developing countries, and that building laws and regulations will vary, it is suggested that the basic physical requirements governing provision for the disabled should be similar. These requirements have been formulated in the Guide (page 2†).

Many of the features that make the built environment accessible to, and convenient for use by disabled persons, will also make it more manageable for others.

Many physical barriers in the environment can be avoided at little or no cost if they are considered at the planning stage, while others can be removed without difficulty during remodelling and renovation works, although some may be extremely costly.

It is important to avoid expensive alterations in a complete building. In areas with limited financial resources this is even more important. Measures to ensure accessibility for disabled persons should therefore be taken during the planning and design stages.

INTRODUCTION

The Problem

The principle of current handicap policy is that disabled persons should not be segregated from the rest of the population but assimilated as much as possible. To facilitate this, the built environment should be made accessible for those who rely on personal or technical aids in order to participate fully in any social life.

Mobility is one of the most crucial factors in the rehabilitation of disabled persons.

However, in order to get people mobile, indigenous technical aids such as crutches, carts, wheel-chairs, cycles, and sticks based on appropriate local technology are required. Nevertheless it is probable that support from family members, helpers or others will continue to be required for the foreseeable future.

By making it an expressed requirement that the built environment should be accessible to everybody disabled persons will become increasingly accepted in society.

INTRODUCTION

The Scope of the Guide

A physical environment which satisfies the demands imposed by different groups of disabled people, will not only meet the needs of these people, but the needs of all people.

This Guide assesses the physical environmental requirements for disabled persons.

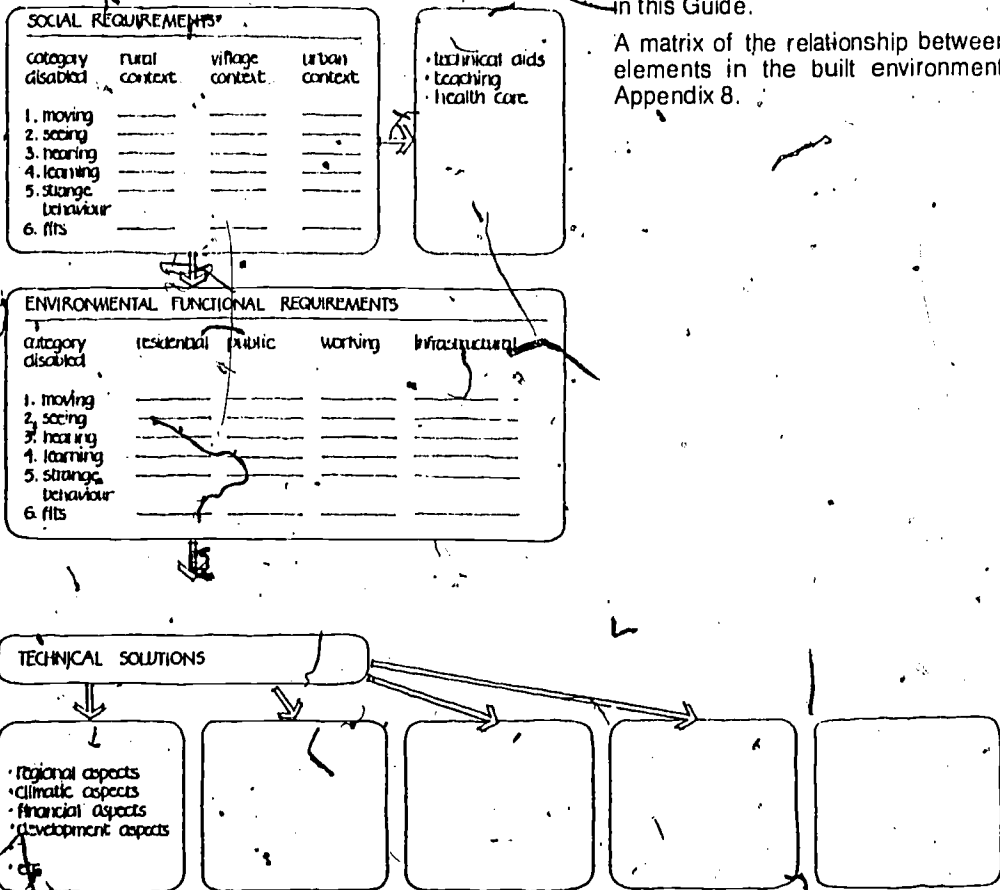
It seeks to ensure that the future built environment will be adapted to the needs of disabled persons.

However, it is clear that a more comprehensive approach to the entire disability problem, including the present social and environmental situation is necessary if continuity, and the goal of full participation by disabled persons, is to be achieved. Such an approach is outside the scope of this Guide.

The Guide does, however, deal with a series of specific components in the built environment. The adjacent diagram illustrates the place of these "Environmental Functional Requirements" in the overall problem.

Further more, the detailed technical solutions to the problem is not included but should be solved for each specific situation by the local architect or planner, considering the design recommendations formulated in this Guide.

A matrix of the relationship between disabilities and elements in the built environment is included in Appendix 8.



INTRODUCTION

The Aim of the Guide

The aim of the Guide is to facilitate the work of planners, architects, and designers, as well as others who are engaged in public and private building projects in developing regions.

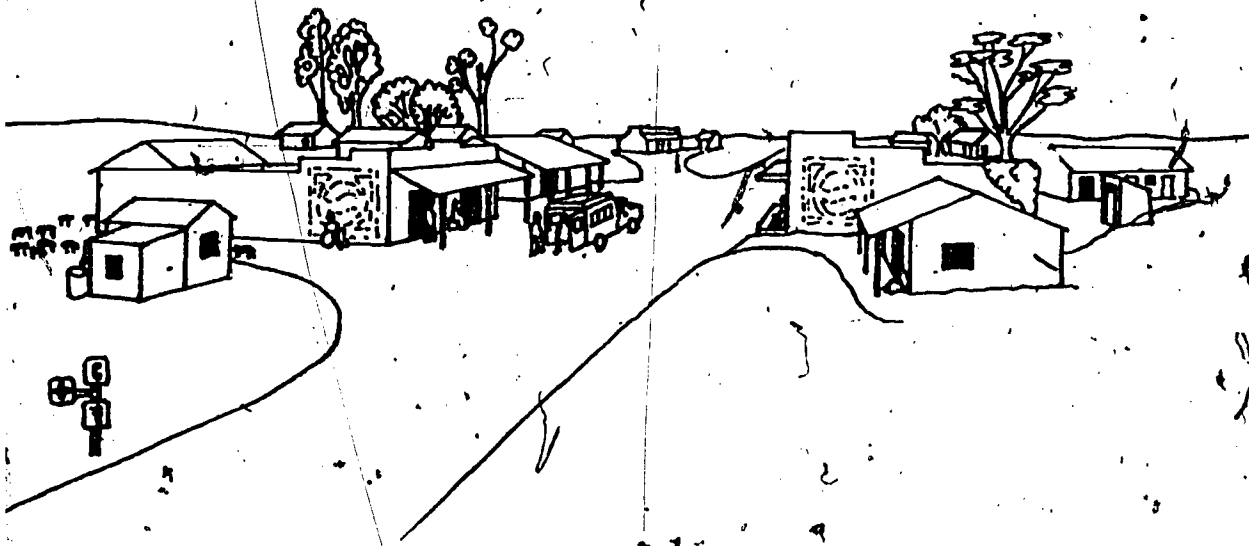
The Guide is also directed to decision makers and donor organisations to help them evaluate projects in these areas.

Experience has shown that buildings can often be made accessible to disabled persons at little or no extra cost if the problem is considered at the planning stage.

The Guide refers primarily to public buildings at urban or village level. Particular attention has been given to urban areas where building activities are most extensive, but the recommendations should also be applicable for building in rural areas.

The Guide attempts to present simple solutions to frequently occurring practical problems, in order to make public buildings and the entire urban environment usable for various groups of disabled persons.

The Guide illustrates planning and design recommendations for public and other buildings and concentrates on the problems of developing regions. Furthermore, for practical reasons, illustrations and examples refer to conditions pertaining to Eastern and Central Africa.



INTRODUCTION

The Form of the Guide

The Guide is organised into three main sections.

The introductory chapter presents background information and is followed by a chapter providing basic information on disabled persons, their requirements, and an analysis of their problems.

These chapters which should describe the problem are followed by comprehensive design recommendations, dimensions, and design criteria.

The Guide is completed by two chapters dealing with legislative and financial considerations.

The Appendices to the Guide contain reference material including bibliographies, a list of existing norms, relevant UN documents and regulations prevailing in some selected countries.

The design recommendations given in this Guide aim at making both buildings and the physical environment generally adapted to the specific needs of the disabled population.

The recommendations relate to the design of buildings such as schools, health facilities, local administration offices, recreational facilities, places of worship, transportation facilities, etc, built by local contractors or through direct labour, and which may be the responsibility of any local Authority. However, it is also anticipated that many of the recommendations shown in this Guide can be applied to private buildings, traditional dwellings, and local settlements where financial resources are limited.

These recommendations may be applied in technically advanced buildings such as multi-storey structures, but in respect of sophisticated systems and certain specific details, the architect and contractor should refer to the current international regulations and published advisory notes.

GENERAL CONSIDERATIONS

Categories of Disabled Persons

Six categories of handicapped persons are referred to by WHO in the report "Training the disabled in the community" published in 1980, see appendix 2, annotated bibliography page 73. These categories are defined to the following:

- persons who have moving difficulties
- persons who have seeing difficulties
- persons who have hearing and/or speech difficulties
- persons who have learning difficulties
- persons who have strange behaviour
- persons who have fits

Within these principal categories there is a wide variation in the degree of disability occurring.

Multiple disabilities should also be considered e.g by means of combination of recommended measurements.

Persons who have allergies are not included in the definitions but should of course still be considered for their specific problems.

These categories of disabled persons experience different problems with the environment and therefore require a wide variety of different measures to be taken.

The categories of disabled persons dealt with in the Guide are described in order of their functional limitations and the causes of the disability.

GENERAL CONSIDERATIONS

Categories of Disabled Persons

Persons who have moving difficulties. This is the group to which most planning and design guidelines refer. Two sub-groups may be distinguished, those who rely on walking aids or other technical supports and those who are confined to wheel-chairs.

In the developing countries wheel-chairs are few in number and their use is strictly limited for economic as well as environmental reasons. The built environment should therefore facilitate the use of wheelchairs as well as moving around with the help of various technical aids.

Ambulant disabled people may walk unsteadily, relying on a stick or crutches for support. In addition, they may only be able to walk short distances and may have difficulties in climbing stairs.

The needs of persons confined to wheel-chairs are related to the problems of moving around in a wheel-chair, or working from it. Many requirements are therefore associated with the dimensions and characteristics of wheel-chairs. This is especially true for recommended dimensions given as planning guidelines in the majority of industrialized countries.

For the developing countries, a combined handdriven tricycle/wheel-chair has been developed which should be suitable for local manufacture in developing countries and which requires specific dimensions for access.

Difficulty in moving may be caused by a number of factors, including congenital accident, disease and geriatric reasons. Some diseases such as polio and leprosy, which are common in developing areas, will also inhibit movement if not properly treated.

Persons who have seeing difficulties. These persons have problems with orientation and mobility. Reading difficulties may increase orientation difficulties. However orientation can for some people be aided through the use of colour, illumination, and in certain cases the texture of material. Building design and layout which are simple and straight forward may increase the orientation possibility.

Blindness or acute seeing difficulties may be caused by disease, accidents, or by congenital factors. It should also be remembered that visual acuity is usually related to age. Diseases such as measles, trachoma, cataracts, etc, may cause blindness if not treated properly and in time. Other conditions such as river blindness, caused by a parasite, and which is common in the tropics may lead to blindness. Lack of vitamin A in a child's diet may cause blindness.

In the developing regions blind people are usually dependent on a helper, often a young member of the family.

Persons who have hearing and/or speech difficulties. These persons are seriously affected by the environment without showing any outward signs of their disability.

GENERAL CONSIDERATIONS

Categories of Disabled Persons

Since persons with hearing difficulties have difficulty in comprehending sounds or words in noisy environments, rooms should be acoustically well designed and insulated.

People with impaired hearing may rely on lip reading for communication, a technique which is helped by good general lighting.

Loud-speaker systems in public buildings should not only be adjusted so as to be clearly audible, but supplementary visual information should be provided.

Deafness may be caused by diseases such as otitis, and mastoiditis which if not treated properly, will lead to hearing difficulties.

Persons who have learning difficulties. It is always essential that the built environment and buildings are organized in a simple layout so that one can easily orientate oneself in them and this is especially important for persons who have learning difficulties.

Learning difficulties may have genetical or medical origins, or may be the consequence of malnutrition.

Persons who have strange behaviour. These persons do not impose any other requirements with respect to the physical environment than those already made by other groups.

Persons who have fits. These are many in developing regions and most of them are children.

People who have fits have a tendency to fall and injure themselves so to avoid the risk of severe injury as many sharp edges and corners as possible should be avoided.

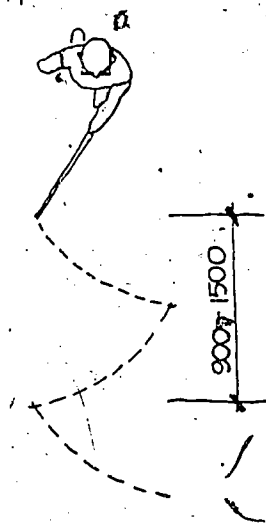
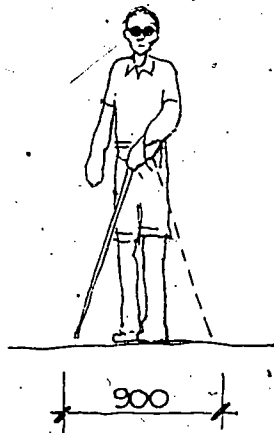
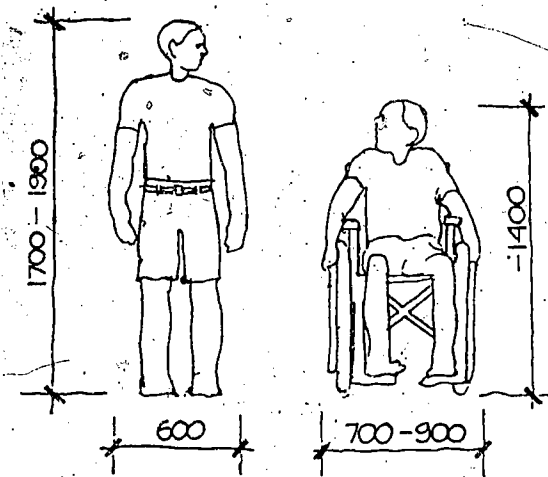
In many traditional houses open fire-places constitute a risk for epileptic persons who may fall into the fire and receive severe burns.

Fits are generally caused by epilepsy, which is a symptom of electrical disorder in the brain, and may be associated with a number of different conditions (e.g. head-injury, stroke, brain tumour, loss of oxygen during birth). The prevalence of epilepsy in industrialized countries is about 0.5 per cent which means that in a population of 1000, 5 persons have attacks during one year. It is far more common in Africa and has been estimated at between 1.4–14.7 per cent in different studies, partly depending on what conditions are included.

In addition to the six main categories **persons who have allergies** may be considered. Presently it is considered to be a small group in developing regions, but one can assume that this group is increasing. Albinos may be dealt with in the same category. Persons who have allergies may be sensitive to dust, mite, mildew, pollen, animal hair, formalin, turpentine, etc. Some people are sensitive to contact with substances and materials as nickel, chromium, and rubber.

GENERAL CONSIDERATIONS

Dimensional Data



Currently wheel-chairs are not widely available to, or used by disabled persons in developing countries. Nevertheless it is anticipated that wheel-chairs and other mechanical aids will become more generally available in the future.

By applying even at this stage, dimensional criteria from developed countries which take account of wheel-chair use, the built environment will be progressively adapted to this expected development.

Adequate space to allow for manoeuvring of wheel-chairs will generally ensure adequate space for disabled persons with other technical aids or with an assistant.

Dimensional data for designing with regard to the requirements of the disabled must refer to the scale of both people with and without mobility aids. In the industrialized countries these dimensions refer mostly to persons confined to wheel-chairs.

Wheel-chair dimensions and space requirements are of particular importance in buildings with respect to circulation spaces, passageways, etc.

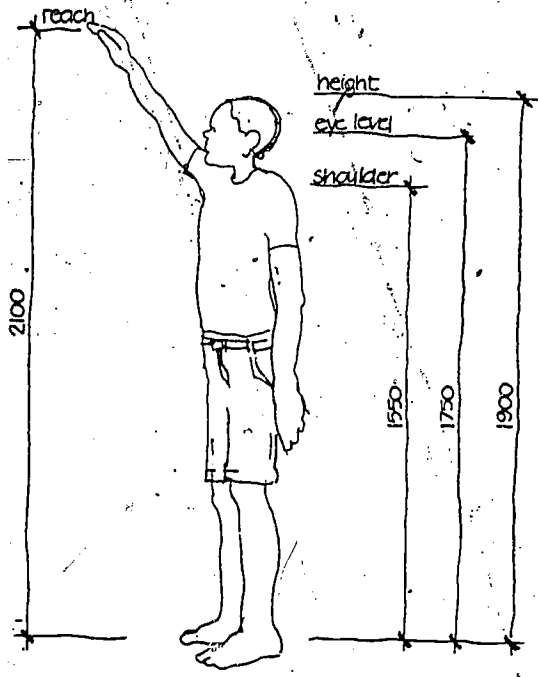
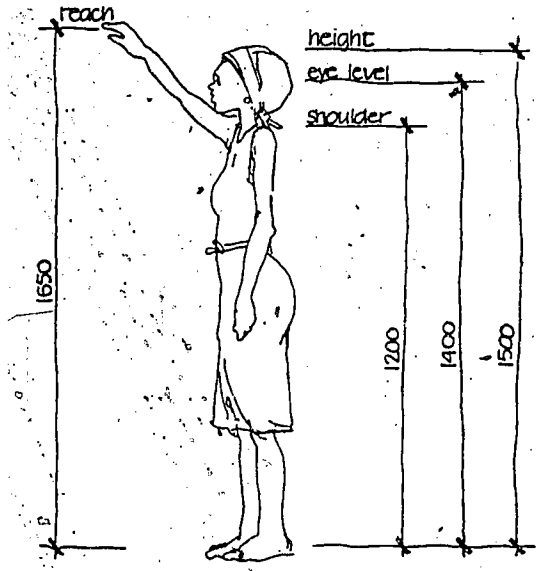
The length of wheel-chairs is generally between 1100 and 1200 mm.

The width of wheel-chairs is generally between 600 and 700 mm.

The comfortable reach of persons confined to a wheel-chair is restricted to a zone between 700-1200 mm above floor level and not less than 400 mm from room corners.

GENERAL CONSIDERATIONS

Dimensional Data



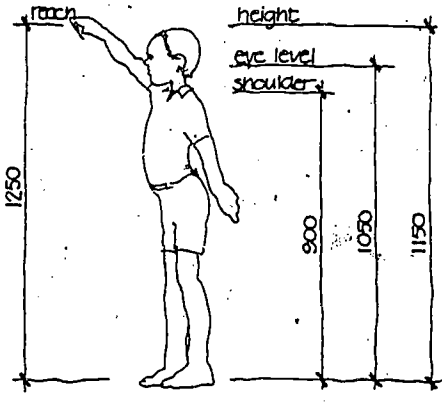
Requirements for manoeuvring space are always related to the activities to be performed. Different users perform activities in different ways, depending on individual performance and the type of wheel-chair used.

When planning buildings to cater for wheel-chair turning space, a circle of 1500 mm diameter is a suitable guideline.

For developing regions, it is proposed that dimensional data should reflect the standards being adopted in many developed countries which are based on wheel-chair use. This will ensure adequate space for the disabled person being supported by an assistant or using simple walking aids.

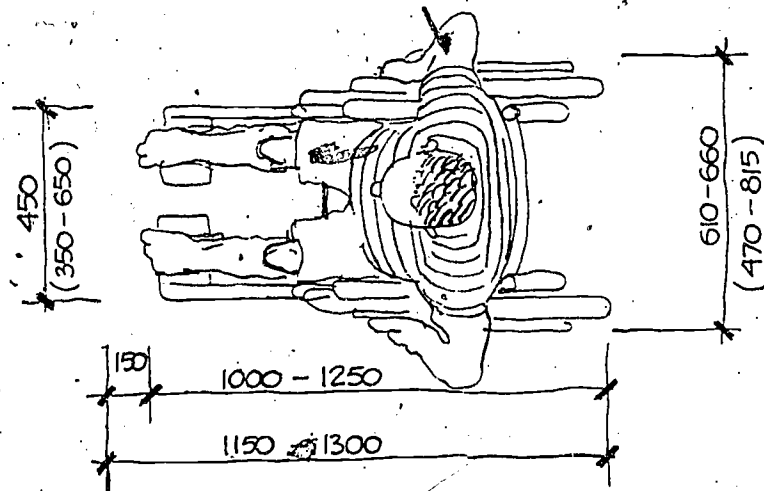
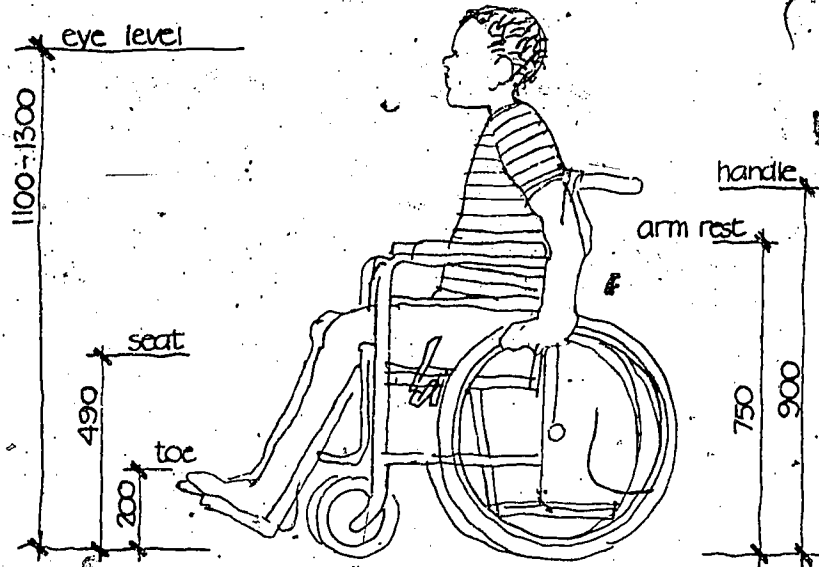
Consideration must be given to the fact that people vary in size and stature. Measures given here refer to average persons according to current international literature. It should be remembered, though, that people vary in size individually as well as regionally - for example the Masai people of Kenya, the pygmies of Central Zaire, or even the Japanese.

Design Guidelines for the adaptation of the built environment to disabled persons are currently being prepared in a number of countries, including Japan, where studies are being conducted by the Department of Rehabilitation at the School of Medicine, University of Tokyo and by Australian Council for Rehabilitation of Disabled, International Commission on Technical Aids. (See annotated bibliography page 79).



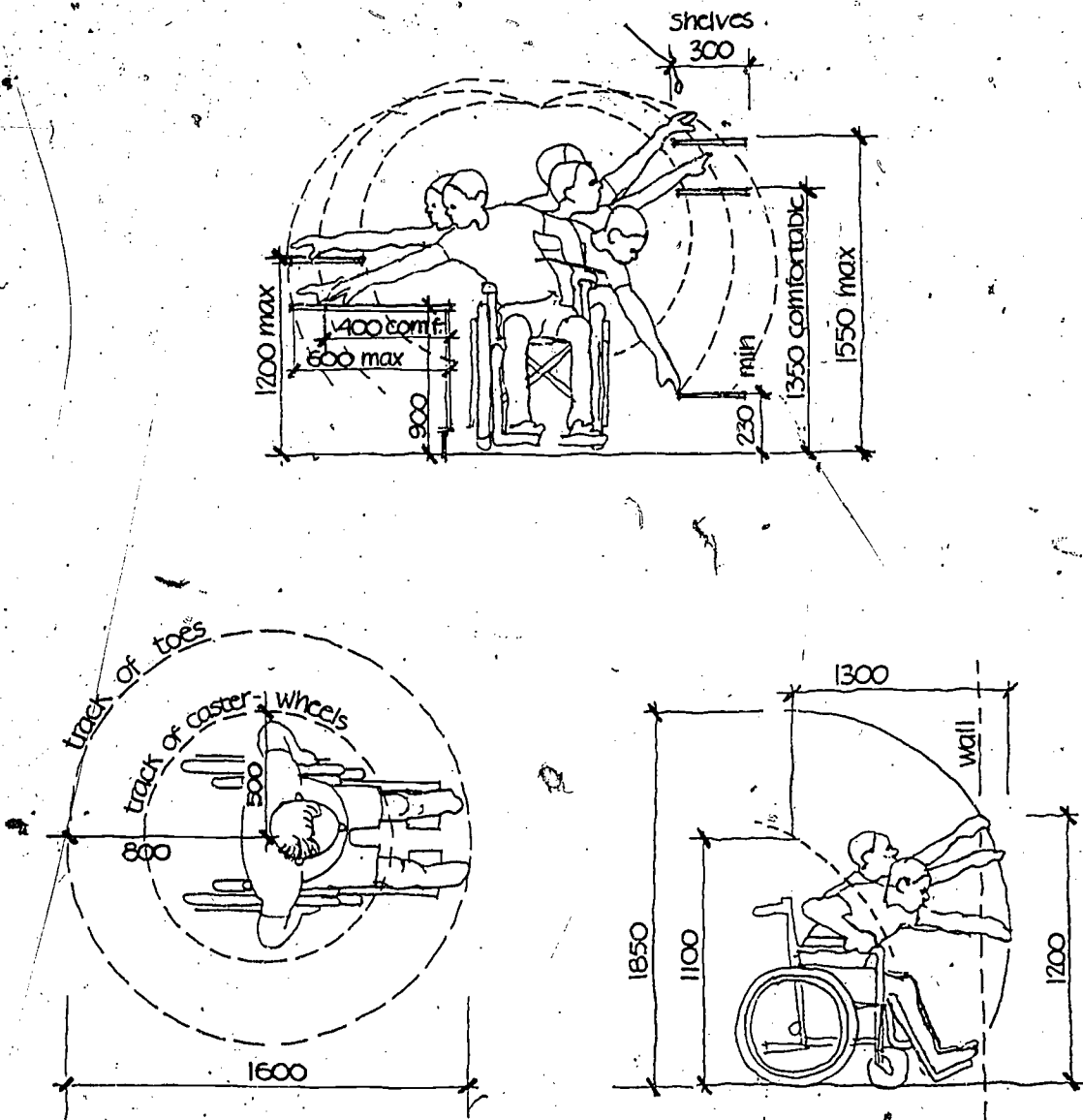
GENERAL CONSIDERATIONS

Dimensional Data



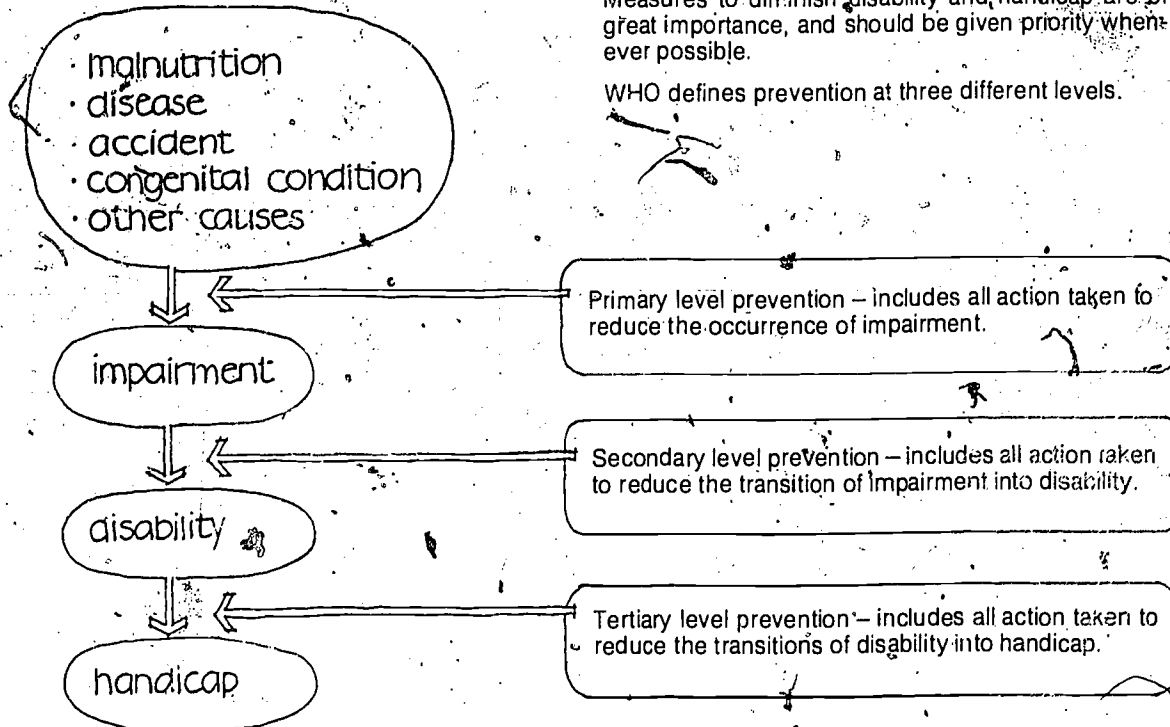
GENERAL CONSIDERATIONS

Dimensional Data



GENERAL CONSIDERATIONS

Prevention



The environmental approach to the prevention of disability is of great importance.

Measures to diminish disability and handicap are of great importance, and should be given priority whenever possible.

WHO defines prevention at three different levels.

Primary level prevention - includes all action taken to reduce the occurrence of impairment.

Secondary level prevention - includes all action taken to reduce the transition of impairment into disability.

Tertiary level prevention - includes all action taken to reduce the transition of disability into handicap.

It is at the primary level that prevention is perhaps most important and beneficial.

While the population will always contain a proportion of disabled persons, every effort should be made to ensure that impairments do not occur in the first place.

The WHO publication "Training the Disabled in the Community" provides a summary of the most important measures to prevent disability. This publication shows how design of the physical environment plays an important contributory role in preventing impairment and avoiding disabilities.

A summary of the most important measures to prevent disability as defined by WHO is given in Appendix 4, page 85.

The implementation of preventive measures may often be seen as the responsibility of "society". In developing regions the traditional "extended family" is likely to remain the basis for economic, social, and cultural life.

ENVIRONMENTAL CONSIDERATIONS

Basic Physical Requirements

reach
enter
use

The UN goal "full participation and equality" implies that no part of the built environment shall be designed in a manner which excludes certain groups of people by virtue of their disability.

To achieve a good environment there is a number of guiding principles which are recognisable. Reference to these throughout the planning and design process will ensure a high degree of adaptation. These basic principles can be formulated as follows:

It should be possible to reach all places and public buildings;

It should be possible to enter all public buildings; and

It should be possible to make use of all public facilities and environmental arrangements.

These basic guiding principles may be interpreted into a series of five or six general requirements which should be considered in the physical planning and design. These general requirements may be summarized as follows:

- **accessibility** – the built environment shall be designed so that it is accessible for all people
- **reachability** – provision shall be made in the built environment so that as many places and buildings as possible can be reached by everybody
- **usability** – the built environment shall be designed so that it can be used and enjoyed by all people
- **orientation** – the built environment shall be designed so that it is easy to orientate and find one's way in
- **safety** – the built environment shall be designed so that people can move around without undue hazard to life and health.
- **workability** – places of work – both offices and industrial premises – should be designed to allow participation and contributions by disabled people.

Constant reference to these basic requirements during the planning and design process will help ensure that the possibilities of creating a good environment will be substantial.

A good environment which satisfies these requirements, can be obtained in a variety of ways. These include the removal and avoidance of physical barriers, unnecessary changes of level and steps, the provision of adequately dimensioned entrances and doorways, sufficient circulation space, and by simple layouts and careful design.

ENVIRONMENTAL CONSIDERATIONS

Problem Identification and Design Requirements

In order to provide a basis for the formulation of suitable design criteria, attention is given in this section to prevailing problems in the built environment and to the difficulties facing disabled persons.

Attention is put on common problems which arise for disabled persons in the built environment.

The illustrated examples of problems have been grouped according to their relative position in the built environment, namely:

- **moving about, the space between buildings**
- **entering buildings**
- **internal communications, horizontal and vertical**
- **individual rooms.**

The groups of examples of problems have been organized from the "whole" of the built environment down to individual "parts". The examples of physical barriers which illustrate general problems are given as a background to the formulation of general design criteria. These criteria provide a basis for design of the environment in such a manner that obstacles and barriers are avoided.

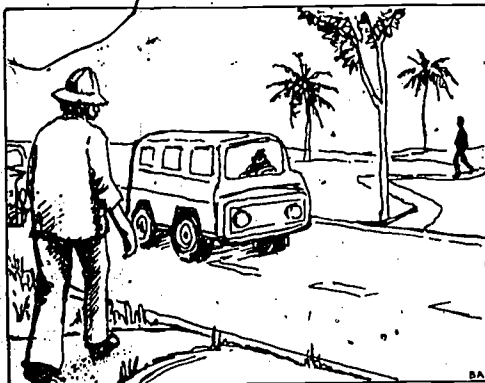
ENVIRONMENTAL CONSIDERATIONS

Problem Identification

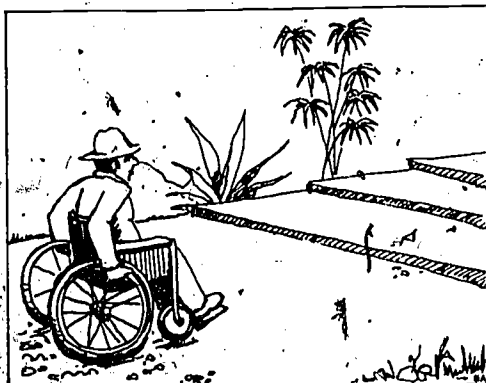
Obstacles which cause difficulties to movement between different parts of the outdoor environment constitute a conflict with the basic requirement of orientation and accessibility. The problems which arise are often associated with movement between buildings on roads, paths, footways, etc.



Oriental difficulties



Interruptions in foot paths



Differences in level

Oriental difficulties – such as finding the entrance to a building – cause delays, irritation, and exhaustion for the able-bodied as well as for the disabled persons. For a person with moving difficulties, finding one's way quickly and directly, without mistake or detours, is often a major problem. For persons with hearing difficulties, or those who are unable to ask the way, it is irritating.

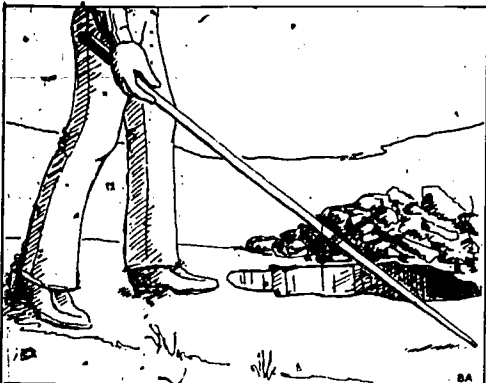
Interruptions in the pedestrian foot path network are both an inconvenience and a danger, especially if it means that pedestrians are forced to use the roadway instead. Such interruptions are common where roads cross a river or railway on a narrow bridge. For persons who rely on wheel-chairs or other mechanical aids, an incomplete pedestrian footpath makes further travel extremely difficult without substantial help. Having to compete for space on a road with vehicular traffic involves danger, with the risk of accident and injury.

Differences in level on roads and foot paths are virtually impossible to avoid even in relatively flat terrain. The use of steps to bridge a change of level makes access impossible for persons confined to wheel-chairs. The situation is nearly as bad for persons using bicycles or any form of wheeled transport. In order to promote a segregation between motor vehicles and pedestrian traffic, pedestrian systems with suitably graded ramps should supplement flights of steps.

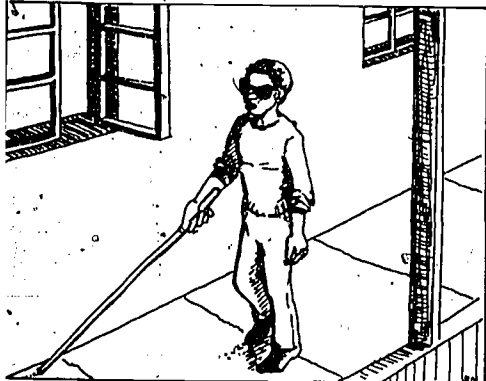
ENVIRONMENTAL CONSIDERATIONS



Uneven surface



Obstacles and holes



Projecting building elements

Uneven surfaces, or paths full of ruts or holes are difficult to walk on even for normal persons. For disabled persons uneven surfaces make movement even more difficult. Pushing or pulling any form of wheeled transport, such as a wheel-chair, will involve large effort and cause slow progress. For visually disabled persons uneven surfaces will be an extra hazard, while slippery surfaces are extremely difficult for persons relying on crutches or using a walking-stick.

Obstacles on the ground can be of a temporary or a permanent nature, and may be considered as interruptions in the road or pedestrian network. Climatic conditions, e.g. heavy rains, may increase the problem. For those with moving difficulties obstacles will mean an irritating detour. For the blind or visually impaired obstacles will pose a further hazard over which they can stumble and hurt themselves.

Obstacles such as projecting building elements are a further safety hazard in the built environment. Examples of such obstacles are projecting signboards at low level, low doorways, open staircases, balconies and windows or shutters which do not open 180°.

Design Requirements

Pedestrian routes in the built environment shall be designed in a manner which makes them possible to use when moving from any one entrance to another. This means that communication routes should be easy to find, continuous, easy to use, free from unexpected obstacles, have a firm surface and be properly dimensioned.

ENVIRONMENTAL CONSIDERATIONS

Problem Identification

A variety of problems connected with entering a building or a vehicle can be readily observed. Problems associated with entering a building can be related to those of orientation and those of accessibility.



No distinct entrance

Difficulties in finding the entrance may be caused by confusing or illogical design, excessive repetition of similar design elements, or a lack of adequate sign-posting.

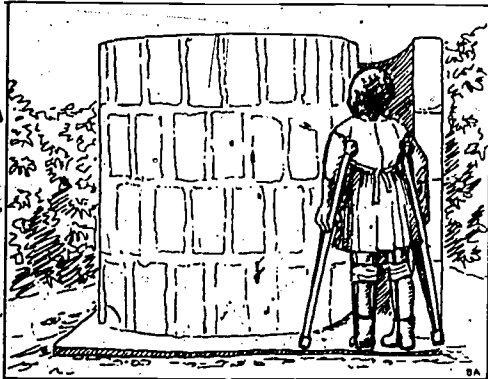


Difference between outdoor and indoor levels

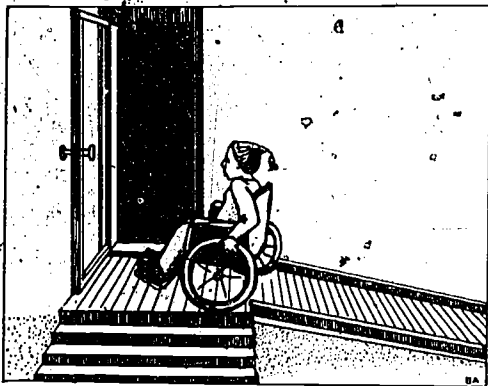
Differences between external ground levels and internal floor levels are common, and frequently there are entrance steps in front of public buildings.

Reasons for raising the ground-floor of the building may vary from pure architectural aesthetics to practical avoidance of seasonal floodwater. However, with regard to accessibility for disabled people such a difference in level is a complication.

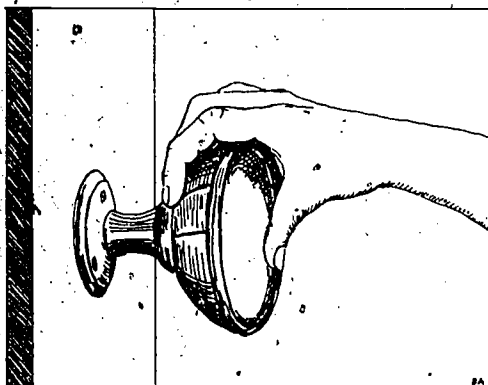
ENVIRONMENTAL CONSIDERATIONS



Narrow entrance



Inadequate space in front of door



Poorly designed door handle

With regard to functional dimensions, narrow entrances to buildings or vehicles can make access for wheel-chairs impossible, and cause difficulties for persons relying on crutches, or being assisted by a second person.

Inadequate space in front of doors. The unobstructed circulation space in front of, or behind a door, is sometimes too small to allow manoeuvring of a wheel-chair or to accommodate a person with other walking aids. Wrongly hung doors or opening direction may further encroach on this limited free area.

Poorly designed and wrongly located door handles are a further problem for many disabled persons when alone.

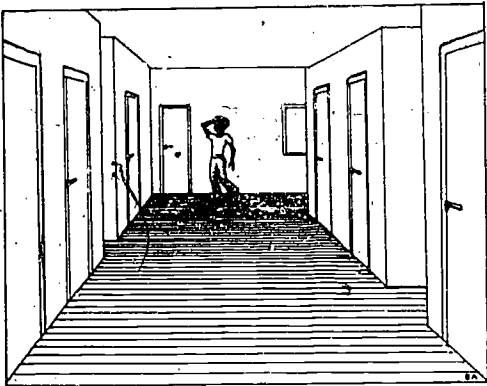
Design Requirements

At least one entrance to every building shall be easy to find and easy to use by any persons irrespective of whether they have impaired movement or seeing difficulties.

ENVIRONMENTAL CONSIDERATIONS

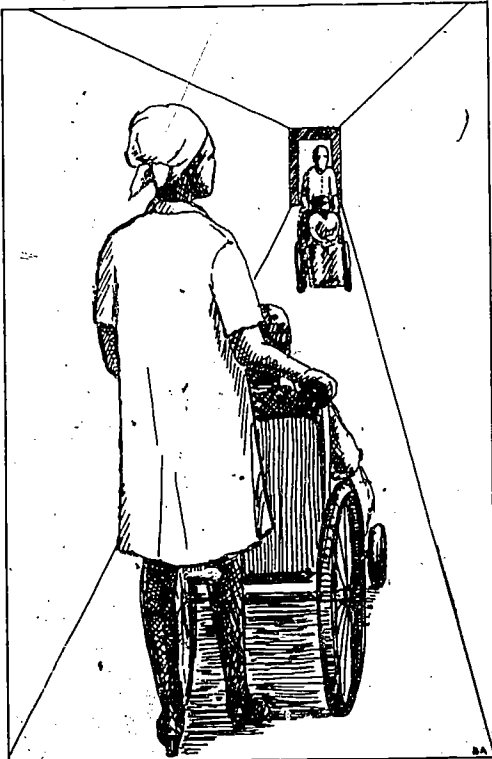
Problem Identification

Moving from the entrance area of a building to the various rooms may be difficult or even impossible for some disabled persons. If the building is not properly designed, problems of orientation, accessibility and/or usability may easily occur.



Lack of proper labelling

A lack of labelling or room identification can cause immediate problems for a new visitor to find the way. In buildings where blind visitors can be expected, direction signs and room labels with embossed (raised) letters or braille text should be used.



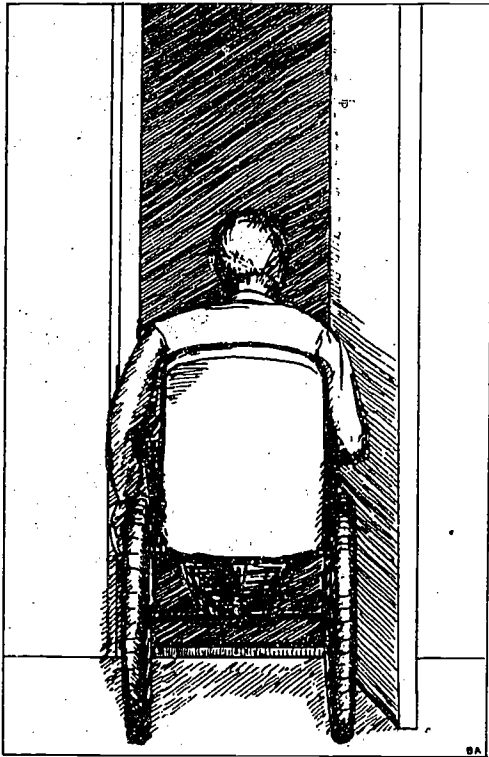
Long and narrow corridor

Long monotonous corridors may create just as many orientation difficulties as winding corridors where no outdoor reference points can be recognised from windows.

Poor lighting tends to increase people's orientation problems. Excessive contrast of light and shade, such as through windows placed at the ends of corridors may cause dazzle. Low levels of illumination, or windowless corridors, may cause orientation and seeing difficulties, especially for persons coming into the building from bright sunlight.

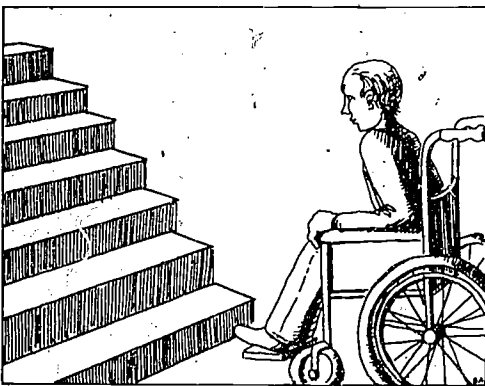
Narrow passageways are an obstacle to persons confined to wheel-chairs and those who rely on assistance from a second person.

ENVIRONMENTAL CONSIDERATIONS



Narrow doorway

Narrow doorways, restricted openings, and doors hinged on the wrong side or opening the wrong way can make accessibility impossible for persons confined to wheel-chairs.



Stairs

Different levels within a building are often unnecessary. These changes of level make unhindered accessibility impossible for some categories of disabled persons, and are a hazard for others.

Design Requirements

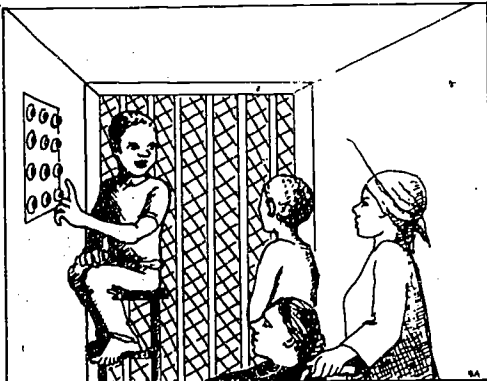
Indoor communications linking the entrance area with the various parts of a building shall be easy to find and follow, be well dimensioned, and have a good standard of lighting. Differences in levels should be clearly marked and adequately dimensioned.

Doorways shall be dimensioned to facilitate use by a wheel-chair or other moving aids.

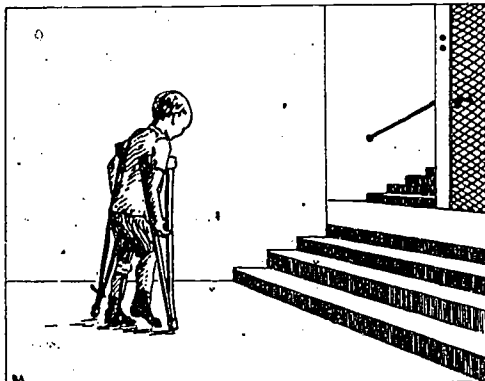
ENVIRONMENTAL CONSIDERATIONS

Problem Identification

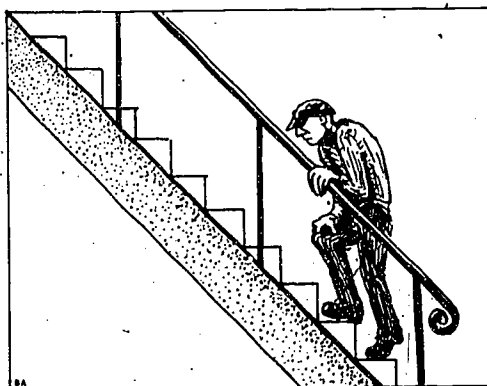
The problem of moving from one floor to another can be acute for persons confined to wheel-chairs. Stairs, ramps, and lifts are the only conventional means of linking together different floor levels in a building.



High position of control panel



Steps to reach the lift



Steep staircase

Lifts are an accepted method of reaching other floor levels than the ground or entrance floor. However, consideration must be given to the fact that lifts become inoperative in the event of a fire or electrical power-cut, when the only means of movement between floors is by the staircases.

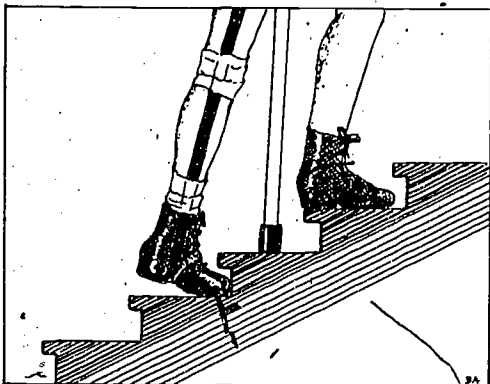
Lifts of inadequate size, or with too narrow doorways are no help to persons confined to wheel-chairs. Even badly positioned control buttons or door-handles can make independent travel by disabled persons impossible.

A building design which involves the use of steps in front of the lift's stopping point makes the lift impossible to use by many disabled persons. Sometimes lifts are designed to stop at a landing or mezzanine floor between two principal floor levels. The reason for this design principle is to halve the number of possible lift stopping points and thereby speed-up vertical communications in high-rise building. Such an arrangement does not allow use of the building by disabled persons. For many others the design principle is unsafe and awkward.

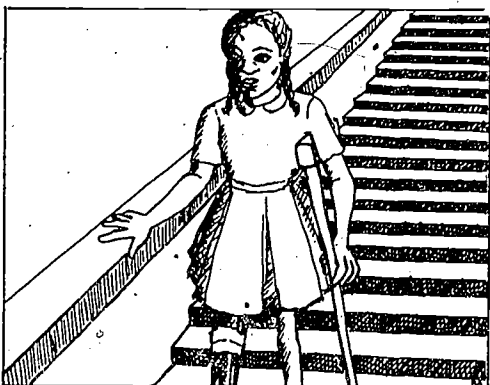
Badly designed staircases, including those which are too steep or have irregular steps, are a hazard to all people.

Winding staircases or stairs with varying levels of illumination may make some people feel dizzy. This phenomenon would be extremely hazardous for that group of persons which is liable to have fits.

ENVIRONMENTAL CONSIDERATIONS



Steps which hinder the tool



Handrail which is impossible to grip

Badly designed steps, wrongly proportioned treads and risers, steps with projecting nosings, sloping treads, and slippery steps are both difficult and dangerous for many people to use, and may be impossible for use by disabled persons.

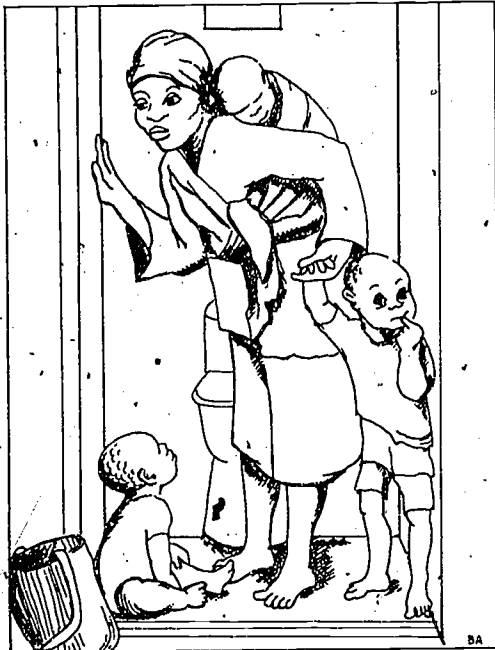
The absence of handrails, or badly designed or wrongly positioned handrails adds to the problems of use.

Design Requirements

When lifts are installed, at least one of these shall be designed so as to be accessible to, and usable by, a disabled person.

Staircases shall be designed so as to be safe, well dimensioned, adequately lighted and equipped with suitable handrails.

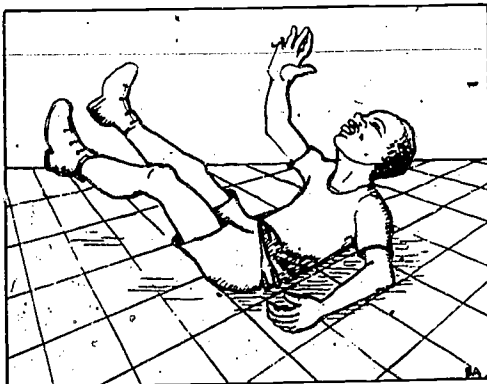
ENVIRONMENTAL CONSIDERATIONS



Inadequate space



Noisy environment



Slippery floor

Problem Identification

The problem of use of rooms is related to room dimensions, equipment and fixtures as well as to acoustics and illumination.

Badly designed or badly located room features such as light switches, taps, door and window handles or catches, supplementary controls, etc, may counteract the benefits of an otherwise good room design. As a result a part of a building may become unusable for some people:

The absence of information boards, signs or labels may cause confusion, delay, and irritation.

Space, especially in small rooms such as wash-rooms, toilets, telephone cubicles, etc, may be crucial in determining whether facilities can be used by disabled persons or not. This is particularly true where there is insufficient space for a wheel-chair to enter and manoeuvre, or for a mother with several children to use the room.

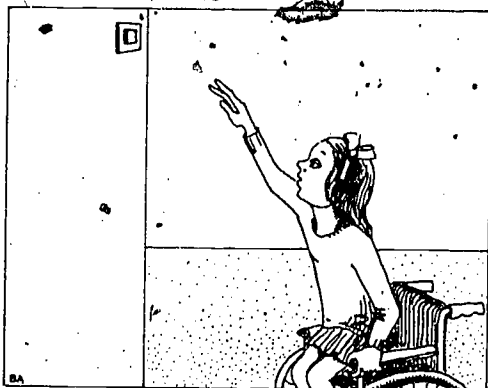
Equipment, fixtures or furniture of inappropriate design or placing may make an otherwise good room layout or plan arrangement unusable.

The acoustics of a room are also important, especially for persons with hearing difficulties or using simple hearing-aids. Any irrelevant sound from outside or from adjacent parts of the building may make it impossible to hear a speaker.

Poor room acoustics with echo effects can also make listening to and understanding conversations unnecessarily difficult.

Polished surfaces can be extremely slippery and hazardous.

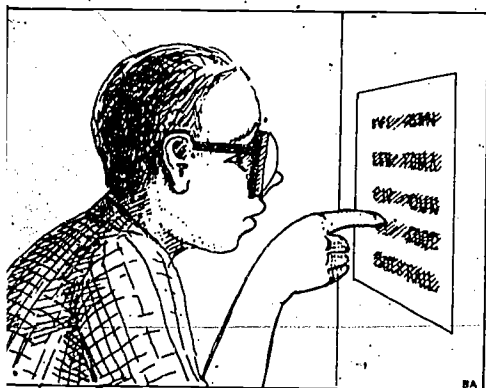
ENVIRONMENTAL CONSIDERATIONS



Unreachable switch button



Tap which is difficult to grip



Sign which is difficult to read

Illumination levels in rooms and corridors are an important consideration both for persons with seeing difficulties as well as for effective work by persons with normal sight. Inadequate or poorly positioned lighting fittings can cause reflections as well as poor illumination.

Switches, buttons, taps, handles, etc which are difficult to find and/or reach are a common obstacle for disabled persons.

Poorly designed switches, taps, and handles may be stiff or difficult to operate, especially for persons who have retarded movement, little strength and precision. In addition, taps and other controls which are located in the corners of rooms or near walls, may be difficult or even impossible for some disabled persons to reach.

Poor equipment may also limit the use of certain rooms and building areas. The absence of grab rails for persons who cannot stand unaided may make an otherwise adequate toilet arrangement, involving a WC or pit latrine, impossible to use.

Incomplete or unclear signs can cause more confusion than no sign.

For persons who cannot read, informative symbols may be required.

The absence or poor design of signs, inadequate size of lettering, poor positioning, or confusing colours, etc, will pose problems for all visitors. Such conditions will only make it more difficult for disabled persons.

Design Requirements

In order that rooms can be used by everybody they should be dimensioned so that there is sufficient space for a wheel-chair, a person using crutches, or a person relying on an assistant. All fixtures and fittings should be appropriately designed and correctly positioned. Good illumination and appropriate acoustics should always be aimed at

Signposted information of different kinds improves accessibility and usability, and assesses orientation.

DESIGN RECOMMENDATIONS

INFRASTRUCTURAL FACILITIES

Transport Systems
 Pedestrian Network
 Footpaths and Roads
 Street Furniture
 Sign Posts

BUILDING ELEMENTS

Entrances
 Doors
 Ramps
 Staircases and Steps
 Handrails
 Lifts
 Windows
 Sanitary & Electrical controls
 Signs
 Certain Areas

This chapter of the Guide contains a series of recommendations regarding the most commonly used and evaluated design features in respect of dimensions and proposed technical solutions. If applied with care, these design recommendations can greatly assist the architect or planner in creating an environment which encourages mobility and participation of disabled persons in society.

The appropriate level of adaptation is determined by the likely use of the building. Public facilities should be adapted to a certain basic level of accessibility by disabled persons. Larger housing developments should ensure that a proportion of the dwellings, most appropriately those at ground level, are adapted to the needs of disabled persons.

When designing a new building, or adapting an existing one, it should be determined whether the building is to be used by a particular category of disabled persons to which special attention should be given, such as schools for deaf children or other specific facilities. For each specific project it should also be borne in mind that the performance and mobility of disabled persons varies. Variations also occur in the average size of people in different parts of the world.

Forethought and design adaptation in new buildings can often ensure that design recommendations for disabled persons can be achieved without special effort or extra cost.

Design recommendations for disabled persons should therefore be treated by the architect, planner or engineer in the same way as attention is already paid to fire regulations, structural standards, or climatic adaptation.

DESIGN RECOMMENDATIONS

Transportation Systems

Public and private transport systems are, for many disabled persons, of great importance for moving around between various parts of the environment and participating in society. Access to, and the possibility of using transport systems is therefore extremely important.

Buses and bus-stops

Buses should preferably be designed to allow disabled persons to enter them without undue difficulty.

Technically advanced solutions with low-level bus floors are not yet practicable. Bus-stop waiting areas may be built up slightly to reduce the stepping distance into the bus. However, even this measure requires precise positioning by the busdriver and can involve a dangerously high kerb. There is also the need of a sloping approach to the bus stop which can be difficult to accommodate in confined urban streets.

The width of at least one of the bus doorways should be 1.0 m to allow access by persons in wheel-chairs or using crutches. No central grab handle should block this entrance. All door openings should be provided with adequate grab bars on both sides so that disabled persons can help or steady themselves when entering or leaving the bus.

All buses should include at least one seat close to the entrance especially allocated to disabled persons. This seat should be 0.40 m above floor level and have extra space in front. Extra grab bars and/or handles should be provided.

The destination of buses should be clearly marked on the bus in addition to any route number. This will assist persons with hearing or speaking difficulties who cannot ask the way.

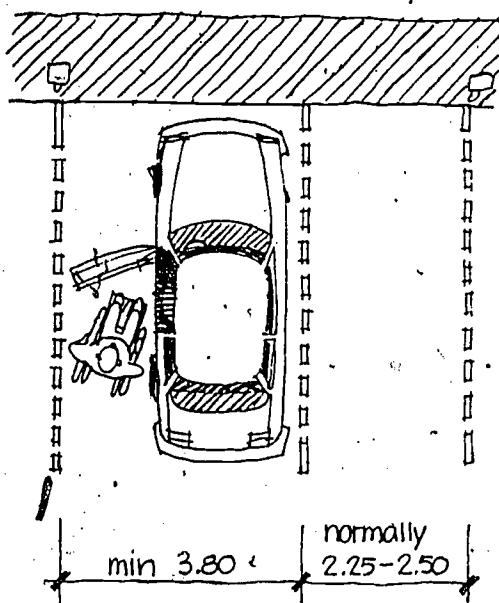
Taped announcements for next stops may also be considered.

To aid blind people, or those who have severe seeing difficulties, the bus-stop waiting area should be laid out logically and safely. Queuing positions and the end of any waiting platform should be clearly recognisable with a stick.

Route maps, time-tables, and other bus information should be prominently displayed as well as being clear, concise, and well designed (see also Signs).

DESIGN RECOMMENDATIONS

Transportation Systems



Trains

There may be technical reasons for the almost universal difference in level between train and bus floors, and platforms.

These differences should, however, be avoided as much as possible. This can often be attained in new train systems if attention to this problem is being paid straight from the planning stage.

Similar criteria as applied for buses should be used for trains. Platform levels should correspond as well as possible with the floors of carriages or entry steps. Special seats close to carriage doors should be designated for disabled persons.

At stations where public address systems are used, loudspeakers should be mounted and oriented so that they can be clearly heard.

Car Parking

A disabled person can achieve considerable independence by driving his or her own car. In order to obtain the greatest benefit from this independence it is required that special parking spaces for disabled persons are reserved as close as possible to each building entrance and other public facilities. Ideally such parking spaces should be adjacent to the main entrance and at the same level so that access is not limited by steps.

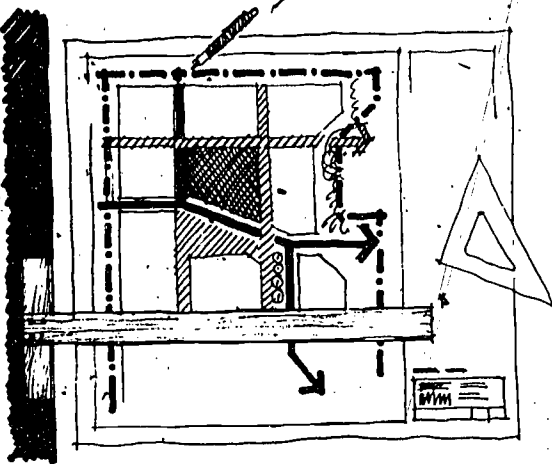
There should be a clear space on one side of a parking space reserved for persons confined to wheelchairs or other walking aids.

Provisions should preferably be made to shelter parking spaces reserved for disabled persons from the sun and rain.

DESIGN RECOMMENDATIONS

Pedestrian Routes

A continuous pedestrian network, usable for all groups of people, is necessary to ensure that the urban area is accessible to everyone.



Master Plan

Consideration must be given at the initial master plan stage of how pedestrians are to move about and move between different parts of the urban area. If a continuous and separate pedestrian network system can be created, connecting the more important destinations in an urban area this provides good conditions for the creation of safe pedestrian routes for all people at the later detailed planning stage.

A comprehensive pedestrian system which is adapted to the needs of disabled persons should be constructed in such a way that it connects with local footpath networks and public transport systems.

Only at certain strategic points should the pedestrian system meet the road network so that disabled persons can enter and leave motor vehicles directly from the footways.

Footways and footpaths should form a network for pedestrian movement between all major points in an urban area. Special attention should be paid to providing effective pedestrian links with bus and rail terminals, as well as nodal-interchange points such as bus-stops, car-parks, ferry terminals, etc.

A generally accepted ambition is that the pedestrian network should be segregated from vehicular traffic as much as possible. Such segregation can usually be accomplished horizontally, but at points where pedestrian ways cross-major traffic routes consideration should be given to the possibility of vertical segregation.

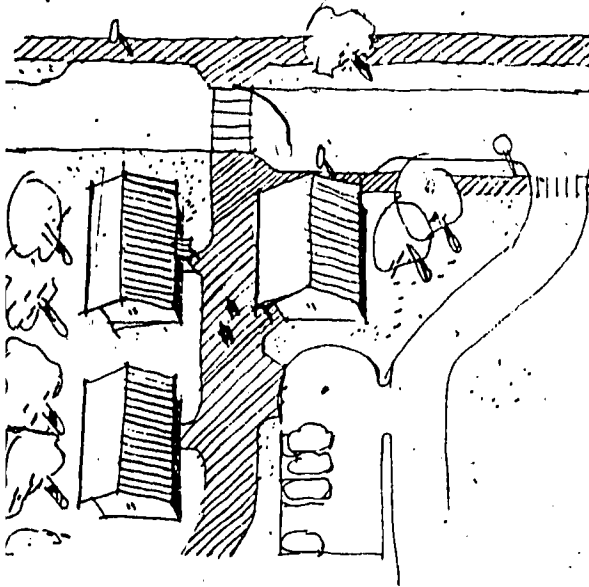
Wherever possible pedestrian ways should take the shortest and most level route as it is difficult to use ramps without assistance.

DESIGN RECOMMENDATIONS

Pedestrian Routes

Local plans

In drafting local plans and traffic schemes it is necessary to carefully investigate how the pedestrian network system can be designed to give all people the possibilities to reach all buildings and their entrances.



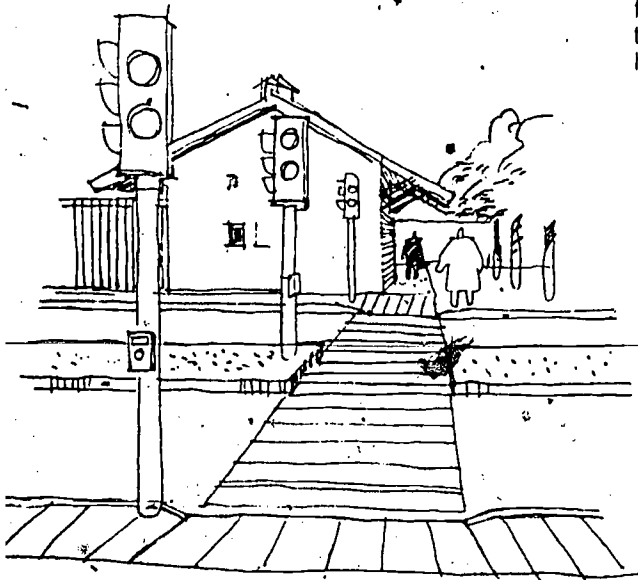
Unnecessary interruptions in the pedestrian network should be avoided. Where possible, vehicular traffic and pedestrian traffic should be separated from each other horizontally or vertically where site conditions and economic considerations allow.

When drafting detailed "action area" plans it is important to provide good orientation for pedestrians. This can be achieved for instance by:

- footpaths leading directly to destinations without unnecessary detours or changes in level
- footpaths which follow buildings, vegetation, etc and make it easier for people with impaired vision to orientate themselves and identify where they are.

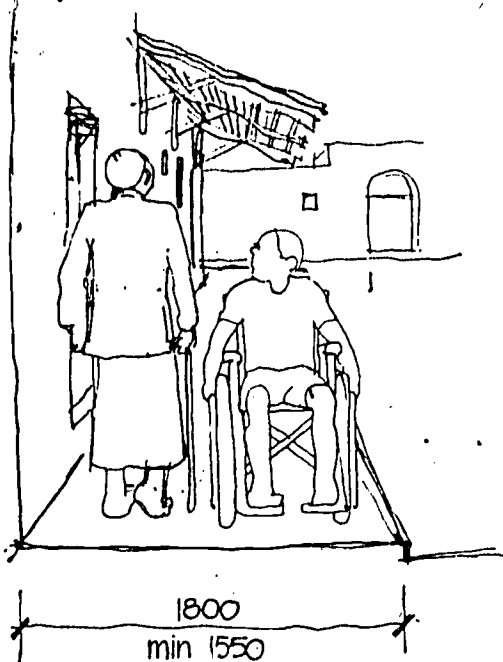
Layout plans

Within a specific site area it should be considered that traffic flows are separate for pedestrians and vehicular traffic. It should further be considered that person flows are effective with the regard to the function of the site facilities, eg well organized patient flows at health care facilities.



DESIGN RECOMMENDATIONS

Footpaths and Roads



The design of footpaths and roads determines whether or not it is possible for disabled persons – in the first hand those with impaired mobility or vision – to move about freely from one place to another.

Footpaths and dimensions

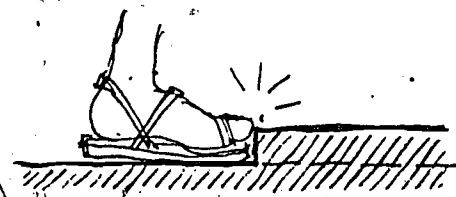
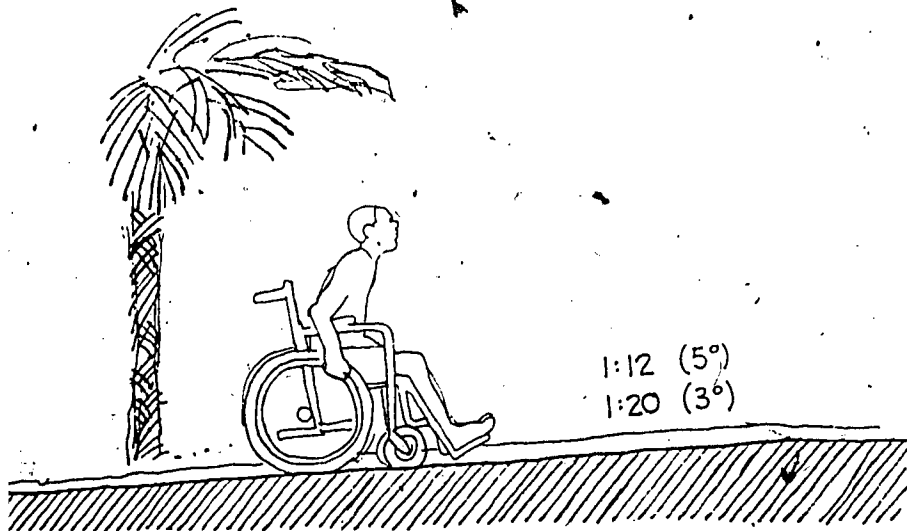
To enable two wheel-chair users, to pass on a footpath, an unobstructed width of 1.80 m is required. This width is also recommended as the minimum width of footpaths and walkways.

To be effectively usable, footways should be almost level in cross-section, have a firm and even surface, be of adequate width, and not involve undue changes in level.

Gradients

Gradients on footways should not be steeper than 1:20 (approximately 3°) or a maximum of 1:12 (approximately 5°) for short distances. The provision of handrails can be extremely helpful for disabled persons (see RAMPS).

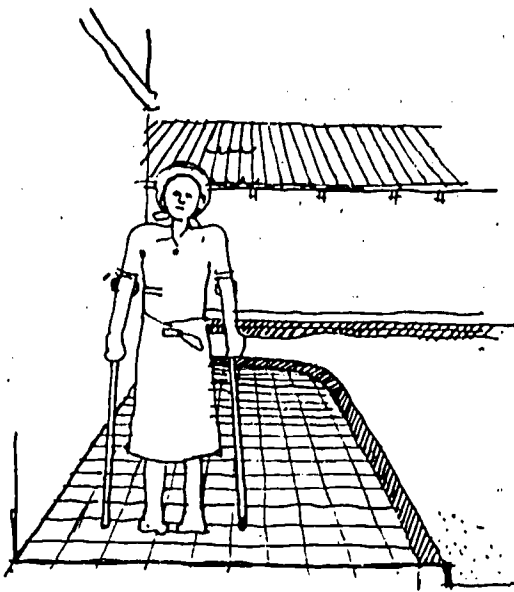
Long slopes should be divided into stages by incorporating level resting areas at approximately 50 m intervals.



To minimize the risk of stumbling or falling, single isolated steps to take up small differences in levels along footpaths should be avoided. Graded ramps are preferable instead of such steps. An complementary alternative is a ramp built next to the step.

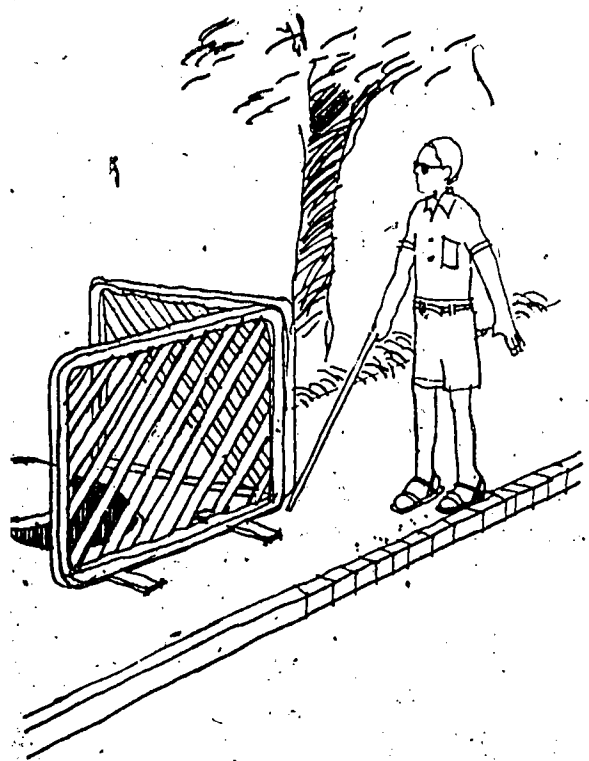
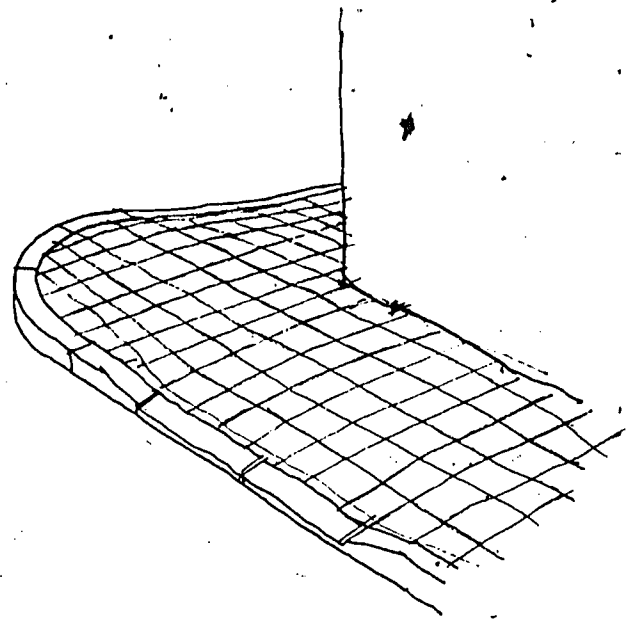
DESIGN RECOMMENDATIONS

Footpaths and Roads



Surfaces

All footpath surfaces should be firm, even, and slip-resistant. If possible, different materials, colours, etc may be used on footpaths to assist recognition and orientation by people with impaired vision.



Kerbs

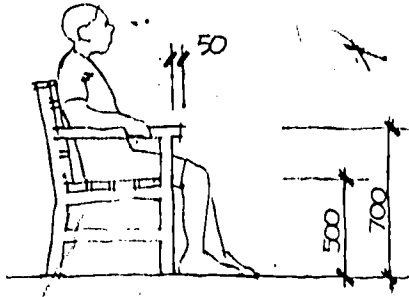
Kerb stones can be used to prevent vehicles from driving up onto pavements and causing an unexpected obstacle. At points where footpaths are specifically designed to cross heavily used roads, kerb stones should be avoided or dropped kerbs used with a maximum height of about 40 mm, which is sufficient for blind persons to recognize the pavement.

Obstacles

All unnecessary obstacles should naturally be avoided. At temporary obstacles (such as road works, etc) secure arrangements must be made to minimize the risk of people injuring themselves. Such arrangements should include warning signs, barriers, and lighting. A person with impaired vision must be able to register the presence of the obstacle with his stick in good time.

DESIGN RECOMMENDATIONS

Street Furniture



The term "Street furniture" embraces a wide range of components in the outdoor environment including bus stops, benches, and sofas, post boxes, lamp-posts, signboards, telephone cubicles, public toilets, newspaper kiosks, and planting tubs.

Street furniture should generally be placed where it is likely to be required, and accessible from, but without intruding into the pedestrian network. Location of street furniture should always allow free passage and the safe use of site amenities.

Resting Facilities

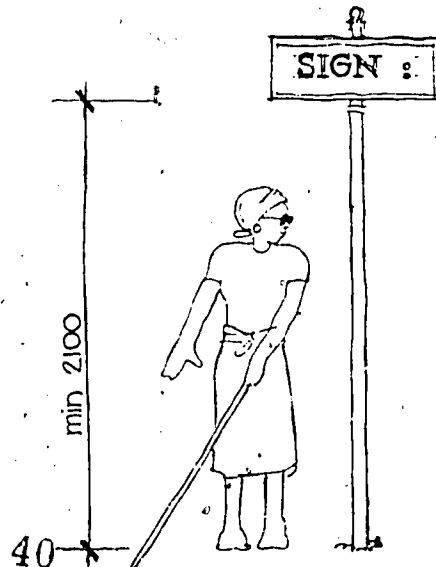
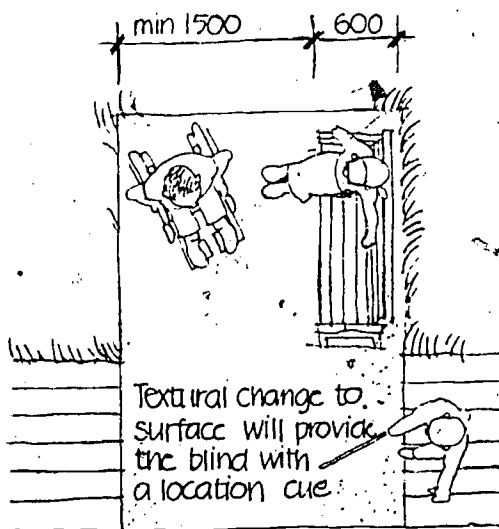
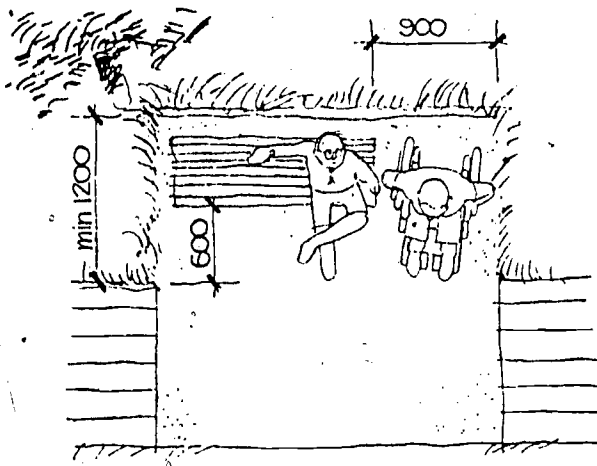
To assist the aged and the disabled, resting facilities at central points, bus stops, and stations are recommended.

Seats of benches and chairs should be approximately 450 mm above floor level to make them easy to use for ambulant disabled persons. Benches and chairs should have armrests at approximately 700 mm above floor level.

The position of rest benches should be indicated in the footpath surface by the use of a different surface treatment which can be felt with the foot.

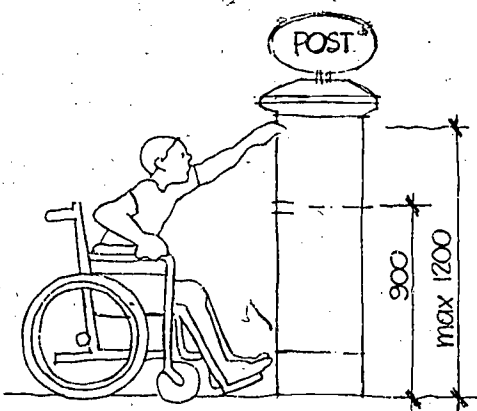
Signs

Signboards should have a text with letters at least 30 mm high to allow for reading at normal walking distance. For further details, see SIGNS.



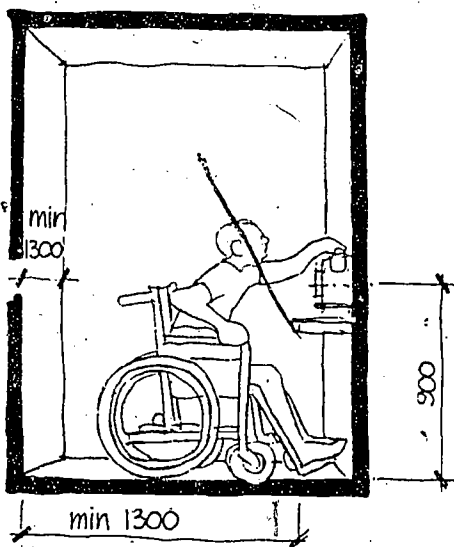
DESIGN RECOMMENDATIONS

Street Furniture



Letter boxes

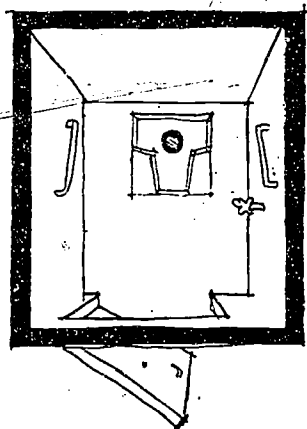
Letter boxes should be mounted with the letter slot approximately 900 mm above the floor for comfortable reach by wheel-chaired persons. However in most cases, the height 1 200 mm, will be accepted.



Telephones

Telephones for disabled persons should be placed so that noise from surrounding areas does not cause undue disturbance. The minimum depth under the telephone counter should be 600 mm. The outer part of the counter should be designed as a handrail.

In front of the telephone counter there should be a minimum unobstructed floor area of not less than 1,300 × 1,300 mm.



Toilets

Public toilets should have a minimum dimension of 1.70 × 1.70 m. Where squatting type toilets are used, these should have wide enough doors and be equipped with secure fitted grab rails. A water tap, reachable from the toilet, should always be provided.

Other items

Lamposts should be located so as not to interfere with footpaths or pedestrian walkways.

The use of planting strips allows street furniture to be located outside the limits of the pedestrian footpath system.

Pedestrian gates and turnstiles should meet the requirements as specified in ENTRANCES.

DESIGN RECOMMENDATIONS

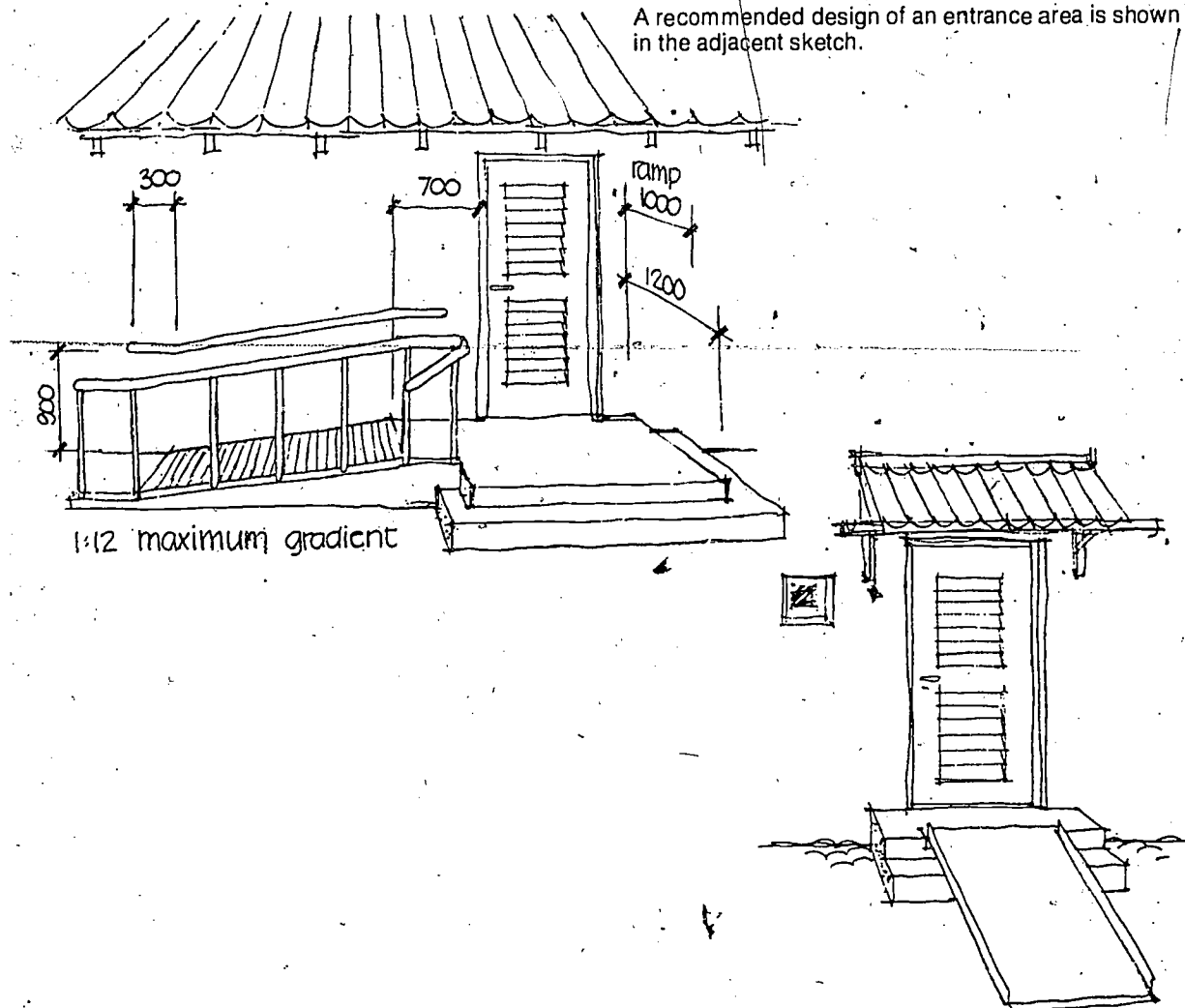
Entrances

Main entrances should be clearly recognizable, easy to open and simple to pass through. An inappropriate entrance of wrong dimensions may exclude many people, or make it difficult for others to enter the building without assistance.

Differences between external ground and internal floor levels should be avoided as far as possible.

Where different levels are necessary, the entrance (or in buildings with many entrances at least one entrance) should be designed with a ramp complete with handrails along both sides. This will ensure good accessibility for people with impaired mobility. Steps should be provided in addition to a ramp. Door thresholds higher than 20 mm should be avoided. Thresholds should be in a contrasting colour to the floor.

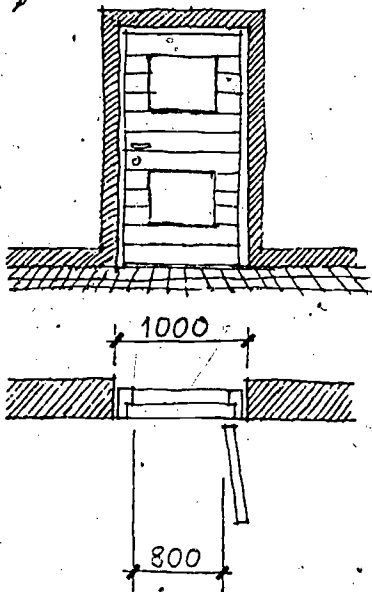
A recommended design of an entrance area is shown in the adjacent sketch.



For occasional or temporary use, a portable ramp with a more simple design may be used.

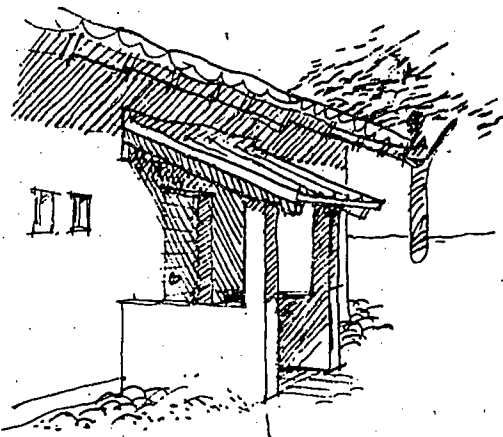
DESIGN RECOMMENDATIONS

Entrances



Entrance doors should have a structural opening of 1.00 m. Entrance doors which are not constantly open during visiting hours should preferably be glazed, but not lower than 0.30 m above floor level. A pull handle is recommended.

To facilitate identification of entrances for people with impaired vision, the door or door frame should be painted in a contrasting colour to the adjoining wall.



Canopies, porches, or other arrangements can make it easier to identify the entrance from the rest of the building.

DESIGN RECOMMENDATIONS

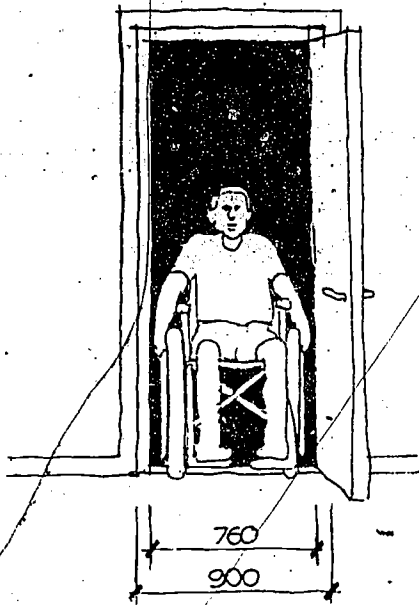
Doors

The design of doors and the space associated with them determines whether a room is accessible to wheel-chair users and others with impaired movement.

Door width

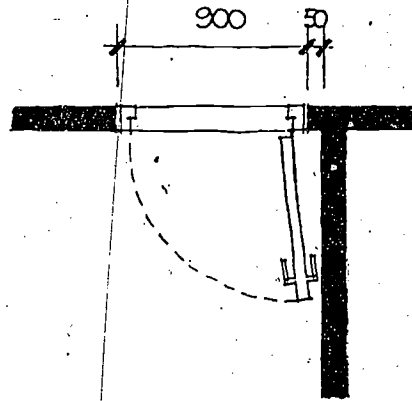
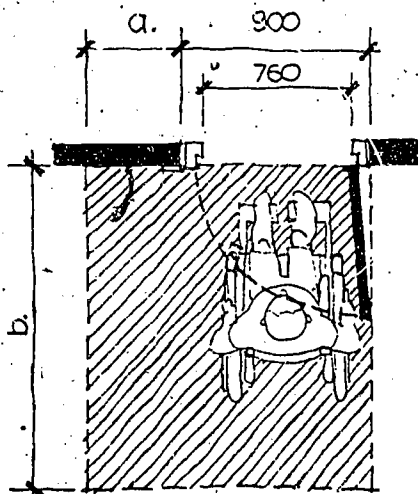
To enable wheel-chair users to pass through a doorway, the minimum width should be 760 mm, i.e. a 9M door. M is the modular unit of 100 mm.

Doors placed in or close to the corner of a room should be hung with the hinges nearest the corner.



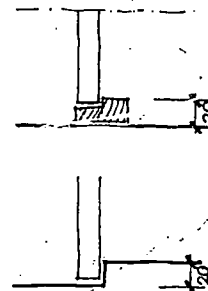
Wheel-chair manoeuvring space

In order for wheel-chair users to approach doors, adequate manoeuvring space is needed. If the door is unduly heavy (e.g. an entrance or self-closing door) there must be sufficient space for the entire wheel-chair to park beside the door. In restricted spaces sliding doors may be preferable if these are not too heavy.



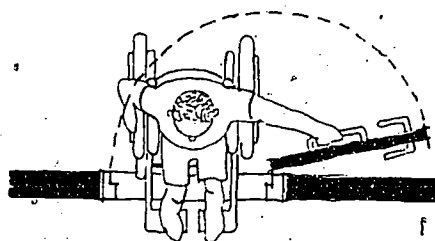
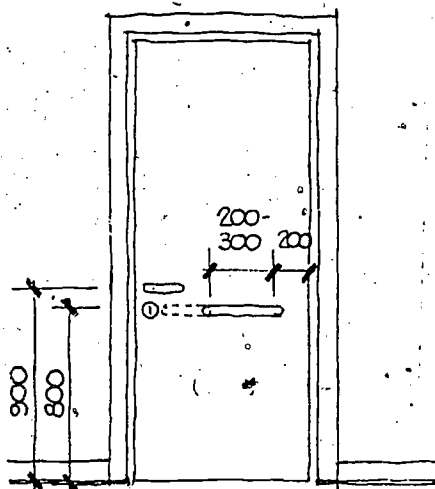
Door details

To facilitate the use of wheel-chairs, thresholds should be omitted wherever possible, or have a maximum height of 20 mm. In some situations a pneumatic rubber threshold may be an alternative to ordinary thresholds.



DESIGN RECOMMENDATIONS

Doors



Door handles and locks should be easy to manipulate. To facilitate the closing of doors by people confined to wheel-chairs (for example in a WC compartment), the door handle should be mounted approximately 800–900 mm above floor level to permit easy manoeuvring from both sitting and standing positions. A door fitted with spring closers should be equipped with an easily gripped vertically-mounted pull handle with a length of at least 300 mm, and with the lower end approximately 800 mm above floor level. For many people, and especially those with seeing and/or moving difficulties, it is helpful to make clear whether doors are to be pulled or pushed.

Locks on entrance doors should be mounted not higher than 1.0 m above floor level.

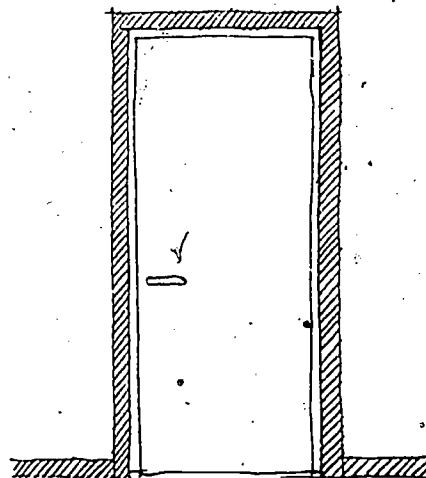
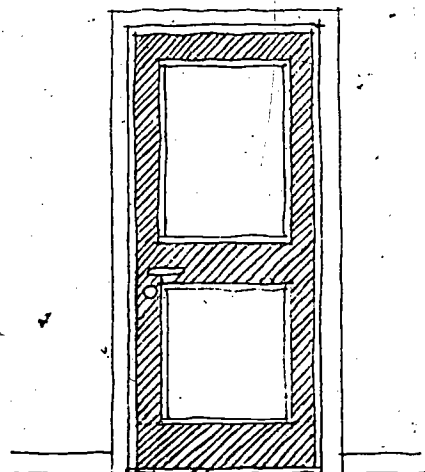
Entrance doors to public buildings should preferably be equipped with pull handles.

Door Identification

To facilitate identification of doors for people with impaired vision, the door or door frame should be in a contrasting colour to the adjoining wall. Glass or glazed doors should be marked a little below normal eye-level with a coloured band or line.

However, unless specially marked and protected, glazed doors and wall-panels should be avoided in buildings frequented by persons with sight impairment.

Doors fitted with automatic closers should take account of the limited strength and other problems experienced by persons relying on some form of mechanical aid.



DESIGN RECOMMENDATIONS

Ramps

In order to meet the basic needs of accessibility for the disabled, ramps will often be required to take up changes in level.

Persons with difficulties in moving, but who have the opportunity to use wheel-chairs, and persons pushing a trolley or a pram, are dependent on an uninterrupted access. In certain circumstances ambulant disabled people may prefer to use a ramp instead of steps.

Applications

External ramps are usually required in order to reach the entrances to public buildings such as local administrative centres, health centres, schools, and offices.

Ramps are also frequently used for linking together different building units, following covered ways or open concrete paths.

Internal ramps may be required to take up minor changes in level. To take up larger differences in level, such as between two floors, lifts are usually the only alternative.

Ramps connecting different floors of a building will occupy considerable space.

Steps or stairs should in addition to ramps, also be provided to reach elevated entrance floors (see ENTRANCE).



DESIGN RECOMMENDATIONS

Ramps

Ramp gradient

For general purposes a ramp gradient of 1:20 is preferred. The maximum gradient should not exceed 1:12; but for practical purposes a steeper gradient of 1:8, or even 1:6, can be accepted as a better solution than no ramp at all.

Ramp length

The length of ramps should not exceed 6 m if the gradient is 1:12. When longer ramps are required, they should be separated by landings with a minimum length of 1.5 m.

A level area of not less than 1.8 m should always be provided at the top and bottom of any ramp.

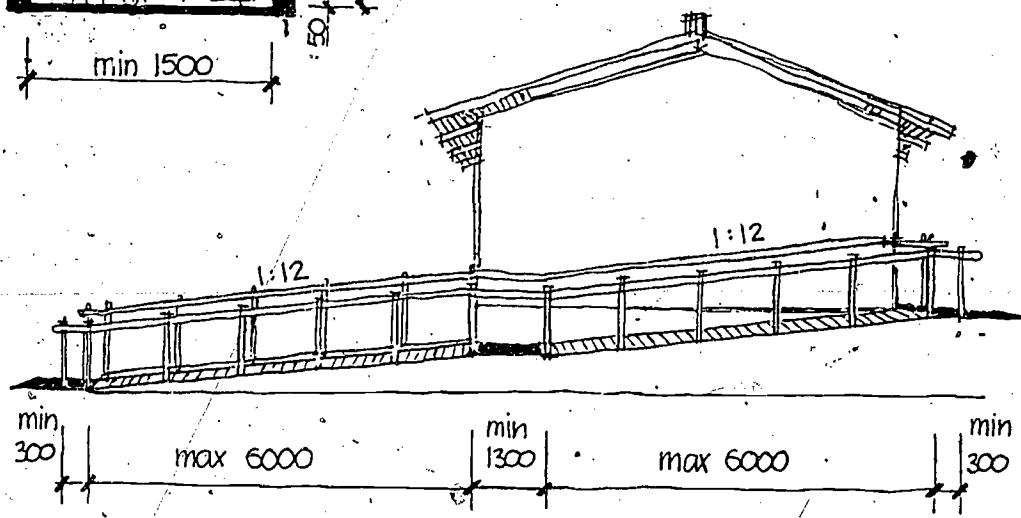
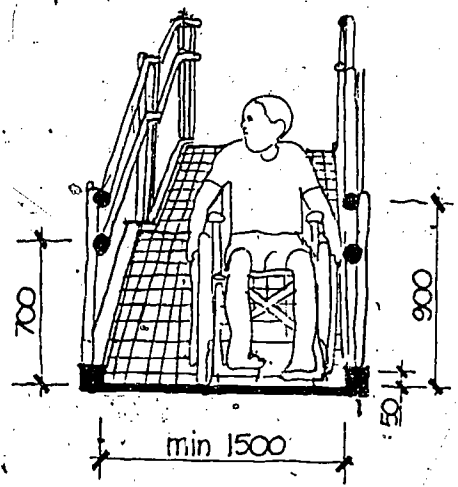
Ramp design

To minimize accident risks to wheel-chair users, ramps should be equipped with kerbs (approximately 50 mm high) on exposed edges.

For ambulant disabled people, ramps should be provided with handrails on both sides (see HANDRAILS), and floor surfaces should be firm, even, and slip-resistant.

Recommended ramp gradients:

	length of ramp		
	0-3 m	3-6 m	more than 6 m
ambulant disabled people	1:9	1:12	1:12
independent wheel-chair users	1:10	1:16	1:20
wheel-chairs pushed by attendants	1:9	1:12	1:20



DESIGN RECOMMENDATIONS

Staircases and Steps

In many buildings stairways are the only means of moving between floors. A badly designed stairway can impair the possibilities for many persons to reach floors other than the entrance floor. It is therefore important that stairways are designed in a manner that allows their use by disabled people.

Stairways can be divided into three different types:

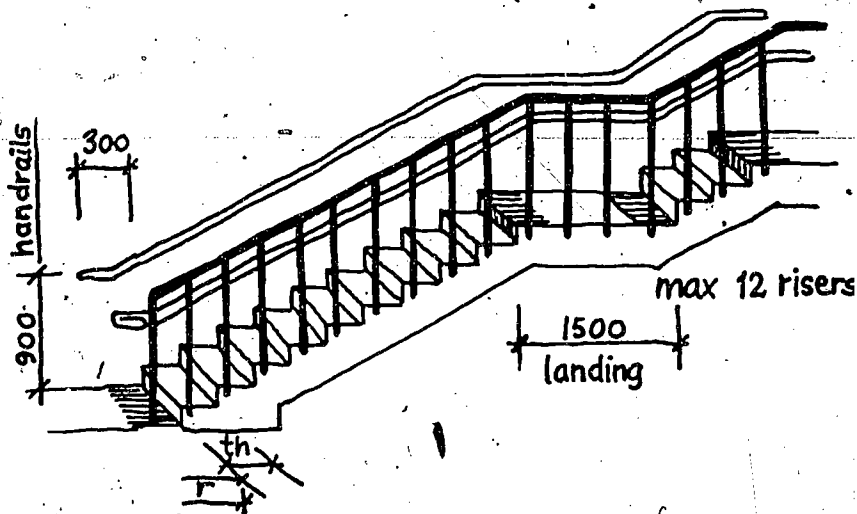
- stairways in institutional buildings
- common stairways serving two or more dwellings,
- stairways within dwellings.
- stairways outdoors

Different requirements apply to each type of stairway (see adjacent table).

Recommended stairway dimensions

	width of stairway in metres	size of threads and risers in metres
stairways in institutional buildings	1.20	th = 0.30 r = 0.15
common stairways serving two or more dwellings	1.00	th = min 0.25 r = max 0.18
stairways within dwellings	0.80	th = min 0.22 r = max 0.22
stairways outdoors	1.30	th = min 0.30 r = max 0.15

The maximum number of risers per flight of steps should be limited to 12. Where longer staircases are needed, a landing should be used. The landing should have the same width as the adjoining stairway.



DESIGN RECOMMENDATIONS

Staircases and Steps

Projecting step nosings and open stairs should be avoided in order to minimize the risk of stumbling. Open stairs are also hazardous for elderly people and others prone to dizziness.

Tread surfaces should be of a non-slip material, and carpets should be securely fixed.

The recommended dimensions for a common stairway in a block of flats are shown in the adjacent sketch.

Small changes in level should be avoided. Where they are unavoidable graded ramps are preferable to steps.

Handrails should always be provided on both sides of any stairway. To facilitate use by disabled persons, the rail should be continuous and extend not less than 300 mm beyond the top and bottom step. It should be avoided that handrails protrude into a free area. (For detailed information on the designing of the handrail, see HANDRAILS.)

To assist people with impaired vision, there should be a contrast in colour between landings and the top and bottom steps of a staircase. In addition, the front edge of each step should be in a contrasting colour.

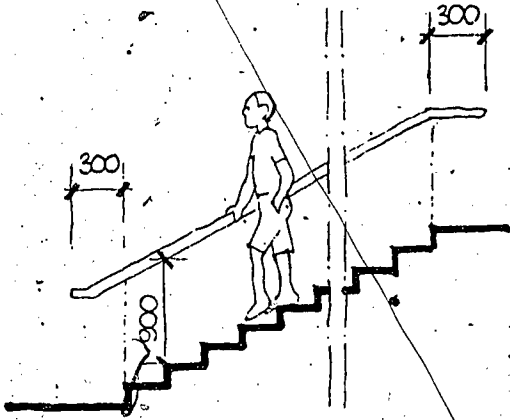
DESIGN RECOMMENDATIONS

Handrails

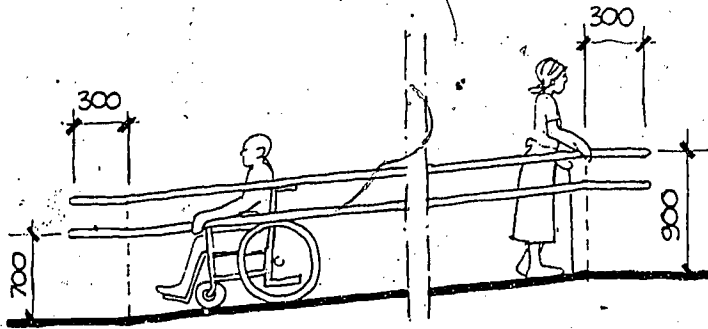
To assist people with impaired mobility, grab rails should be fitted whenever they are likely to assist disabled persons, for example alongside baths and WCs.

Grab rails are also essential at the entrances to buses or trains.

For some disabled persons, climbing a narrow stairway (say 0.7 m) will be possible if handrails are securely fitted on both sides of the stair.

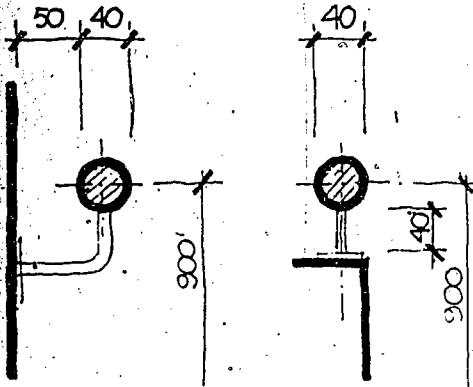


Handrails should always be securely fitted to the wall and the ends of handrails should turn in towards the wall at both ends and not protrude in the free space.



DESIGN RECOMMENDATIONS

Handrails



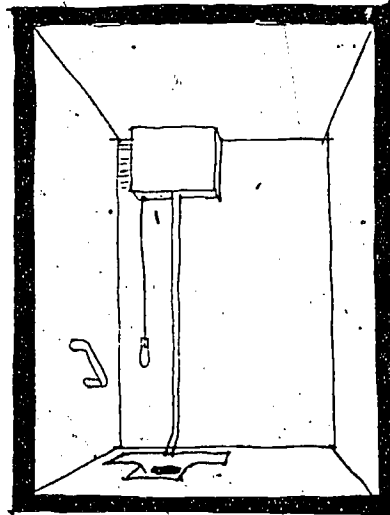
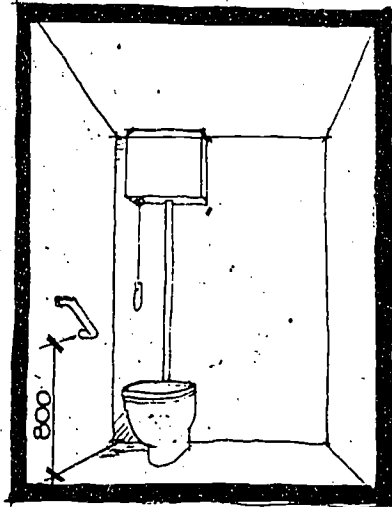
A handrail should be easy to grip, and preferably have a circular section with a diameter of approximately 40 mm.

A number of alternative cross-sections are also suitable.

To aid identification, handrails should be painted in a contrasting colour to the wall behind.

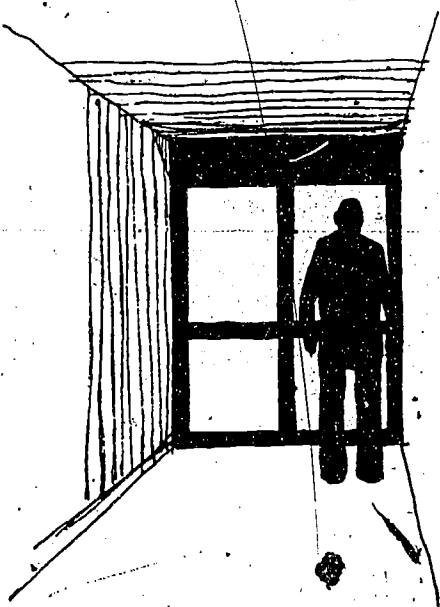
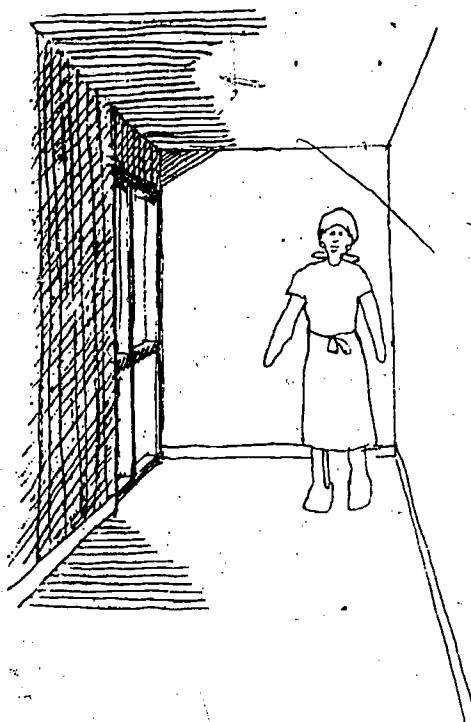
Horizontal handrails in circulation areas or on ramps should be mounted approximately 900 mm above floor level to facilitate use by ambulant persons. To facilitate use by people confined to wheel-chairs, a mounting height of 700 mm above floor level is suitable.

Grab rails mounted around the walls in toilet facilities with squatting type closets are a help to disabled persons.



DESIGN RECOMMENDATIONS

Windows



Windows are primarily incorporated into a building for ventilation purposes and to let daylight into individual rooms. The placing and design of windows will determine how satisfactory daylighting conditions will be in each room. This affects the possibility by persons with impaired vision to orientate themselves, and to identify persons and things in a room. The location and relative height of windows is also important so that wheel-chair users can look out of and open windows.

Window furniture should be chosen with particular regard to the problems associated with opening and closing.

Placing of windows

Windows should be placed so as to avoid glare which can be a problem for people with impaired vision.

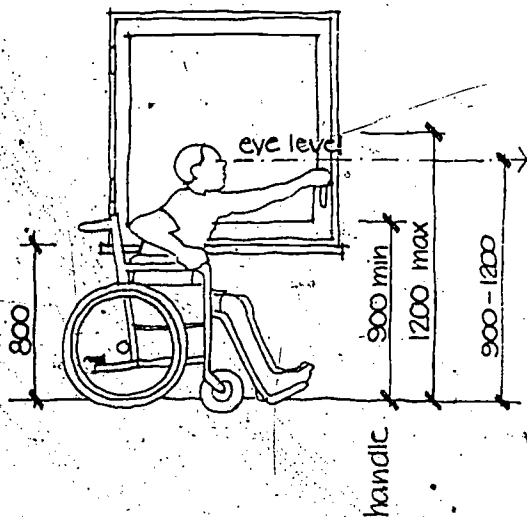
Large windows should be avoided at the ends of corridors. Excessive contrast in lighting should also be avoided if pale wall colours are used beside the window or supplementary artificial lighting is employed.

Large glazed areas adjacent to circulation spaces may be marked with a coloured band or line a little below normal eye level.

It is recommended that each window unit should have a maximum width of 0.6 m and be sidehung for easy opening.

DESIGN RECOMMENDATIONS

Windows



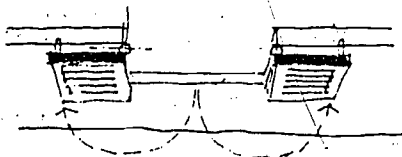
Window positioning height

To enable persons confined to wheel-chairs to look out through windows, the sill should not be higher than 800 mm above floor level.

Handles (Controls)

Windows should be easy to open and close. To facilitate this, controls should be located in a zone between 900 mm and 1,200 mm above floor level.

To minimize the risk for allergies from skin contact with chrome and nickel these materials should be avoided in the window controls.

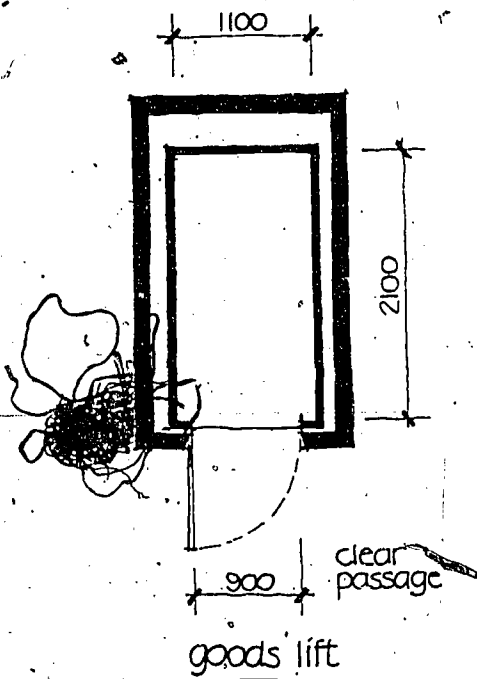
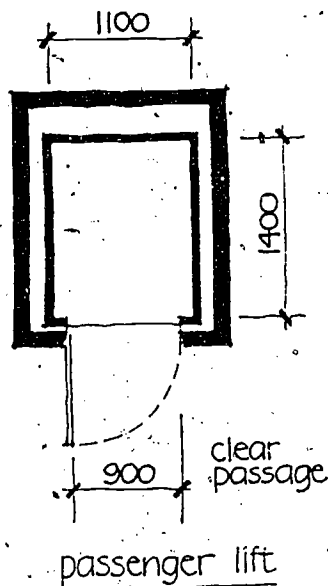


Shutters

Shutters should be designed so that they can always be fastened securely and flush with the wall, irrespective of whether they are in the open or closed position.

DESIGN RECOMMENDATIONS

Lifts



Lifts are often the only possible way for many people to reach by themselves the various floors in a building other than the entrance floor. In buildings accommodating public facilities on the upper floors, lifts are essential to give disabled persons access. Access is necessary in order that disabled persons can be employed.

Location of lifts

The lift or lifts should be located near the main entrance of a building and be clearly marked. The lift should ascend to each floor at a central point from where it is possible to easily orientate oneself. It should be possible to reach the lift at every floor without having to go up or down steps.

Lift-car area

A lift-car should have sufficient space to allow access and operation by persons confined to wheel-chairs. A lift of the dimensions shown in the adjacent diagram fulfils these requirements. However, the minimum width of 800 mm for liftdoors may be accepted in accordance with ISO specifications, although a width of 900 mm is preferred.

For dimensions regarding the unobstructed area in front of manually operated lift doors and for the proper design of lift doors, see DOORS. For lifts with automatic doors, the unobstructed space may be reduced.

In high-rise or commercial buildings a larger goods lift may be installed. This lift may provide an alternative or a complement to the smaller passenger lift(s).

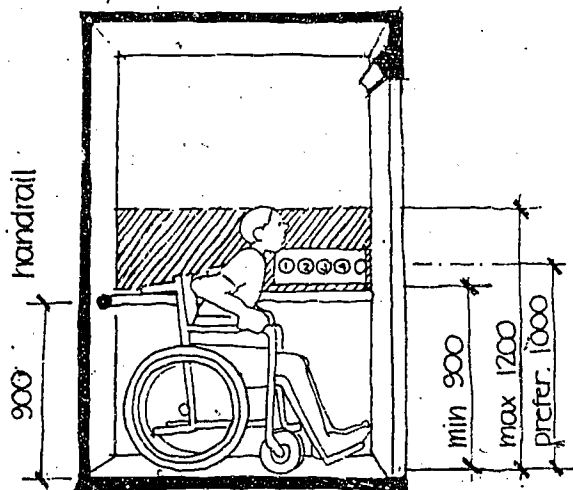
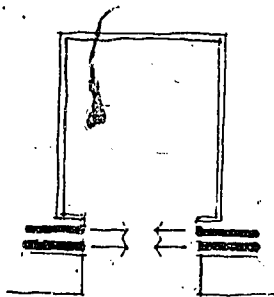
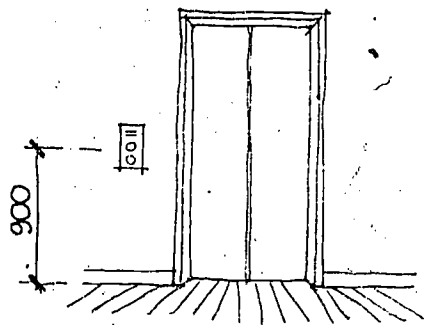
Signs and Controls

Signs and lift controls should be placed so that they are easy to reach and use (see SIGNS). They should be placed at a level which is also reachable both by short people and persons confined to wheel-chairs.

These lift dimensions and criteria are also appropriate for bed and stretcher transport in hospitals.

DESIGN RECOMMENDATIONS

Lifts



Control panels should be mounted centrally in the lift-cars – minimum 25 mm from adjoining wall.

Lift-cars with automatic sliding doors should be equipped with a floor indicator over doorway.

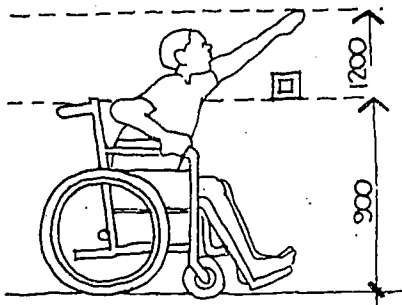
Lift-cars with a simple hinged door should indicate the floor on the inside of the door in raised lettering mounted 1.40–1.60 m above the floor.

The destination button for the principal pedestrian level should be of a different colour and shape (for example black on light colours, or protruding an extra 5 mm).

DESIGN RECOMMENDATIONS

Sanitary and Electrical Controls

- The location and design of all switches and controls is especially important for people with impaired mobility and/or vision. Control buttons in lifts, bell pushes, telephones, door handles, window catches, washbasin taps, light switches, and similar controls shall be so designed and located that they can be used by any person. Water taps should be easy to open and close. They should also be located in a way that make them easy to reach and operate.

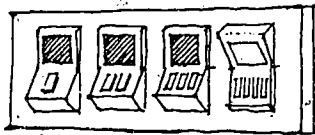
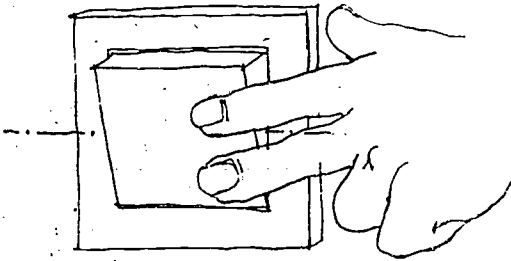


Switches, Controls

Switches, wall sockets and supplementary controls should be positioned so that they are reachable by non-handicapped people irrespective of their height, as well as by disabled persons. To achieve this, controls should be mounted within the recommended height limits, 0.9–1.2 m above floor level. At doors, switches should preferably be at the same height as the door handle and on the adjacent wall to the handle.

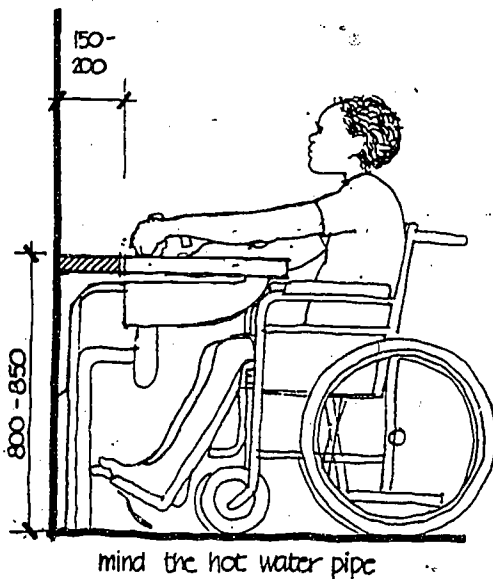
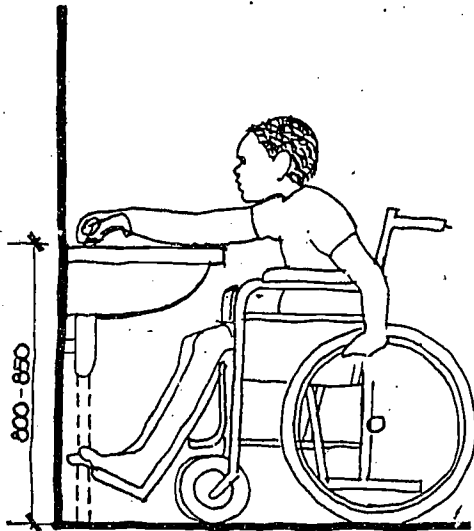
Switches and controls should be large. Controls can sometimes be complemented with embossed symbols to assist people with impaired vision. This method is recommended for buttons in lifts.

In certain circumstances and at certain special locations, instructions in braille should be considered as a helpful addition.



DESIGN RECOMMENDATIONS

Sanitary and Electrical Controls



Water Closets

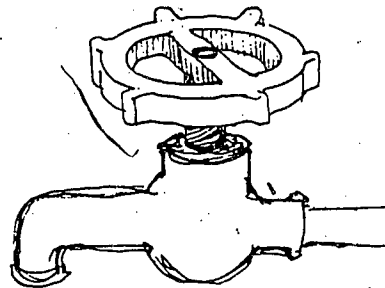
Low-level type toilets and pit latrines should be complemented with vertical grabrails placed at the side and slightly ahead of the toilet.

To facilitate use by disabled persons, WCs should preferably have a seat at 0.5 m above floor level, and grab-rails fixed adjacent to the WC at 0.7 m above floor level. Swing-up supports are often considered to be a practical solution.

Wash-basins

Wash-basins should be located at a height of 800–850 mm above the floor. Where special consideration is to be given to the disabled, the basin may be drawn forward 150–200 mm. Walls and the fixing of wash-basins and supports must be strong enough to cope with the considerable pressure. The foul water outlet should be set back into or through the wall where possible.

There should be a clear space of not less than 35 mm between the tap grip on the wash-basin and any adjacent vertical surface. If two taps are installed, the clear width between them should preferably be at least 200 mm.



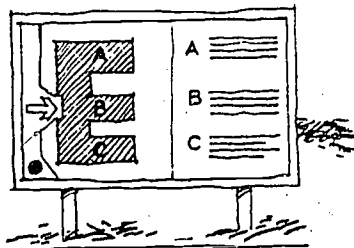
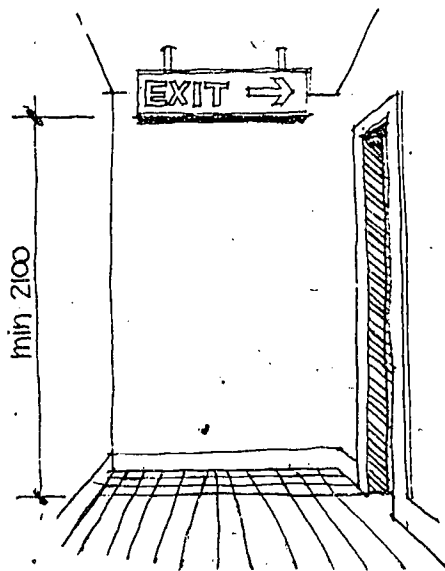
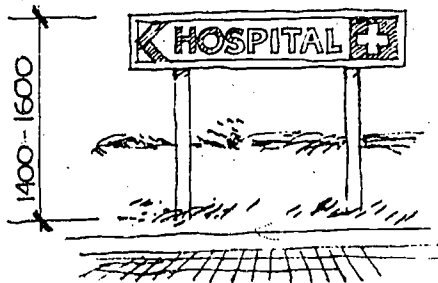
Where two taps are used, the left one should be connected to the hot water supply.

Taps should be easy to grip. Screw-down taps with a broad domed head are suitable.

As an alternative, taps where a single lever action controls both temperature and flow of water, may be recommended for certain groups of disabled persons.

DESIGN RECOMMENDATIONS

Signs



Properly located signs of good design is of great importance for people to find their way both in the outdoor environment and in buildings. The design and location are especially important for people with impaired vision and hearing but also for children.

Signs, symbols, and informative texts must be presented in a manner which renders them easy to read and understand. In buildings likely to be visited by persons with seeing difficulties, complementary texts in braille may be used.

Location

Outdoor signposts should generally be placed so that the lower edge of the information symbol is a minimum of 2.1 m above the ground.

Signposts on pedestrian footpaths should be fixed at 1.40–1.60 m above the ground and close to the path.

Indoor location signs and at doorways should be placed on the wall on the same side of the door as the door handle. The height above floor level should be 1.40–1.60 m.

Signs suspended from ceilings in corridors, etc should allow for clearance of at least 2.1 m.

Signs should always be located in a way that will not cause injury. If they intrude on circulation areas, the clearance above the floor should be at least 2.10 m.

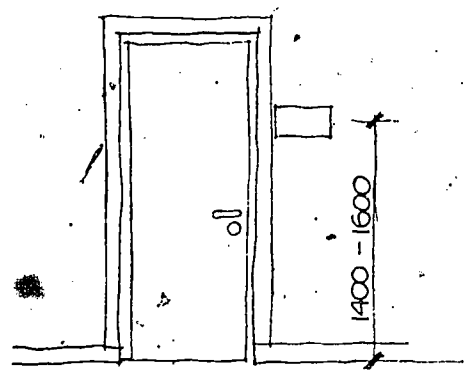
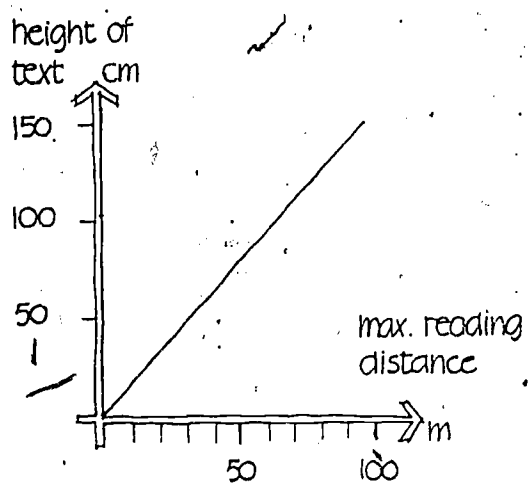
A signboard at the entrance to a building complex with an orientation map of the building is a helpful guide for all visitors. Such orientation maps though, must be clear and easy to understand. It is also helpful if the position of the signboard is marked on the map, and the map repeated at various points around the building.

Lettering on signs and instruction boards shall be clearly legible and embossed or in braille to allow reading by persons with seeing difficulties.

The shape of a signboard should also respect the information it is designed to convey.

DESIGN RECOMMENDATIONS

Signs



A rectangular signboard should give "information".
 A triangular signboard should indicate a "warning".
 A circular signboard should indicate a "prohibition".

The text on signboards should be of such dimensions that people with a visual acuity of more than 6/60 which is normal sight should be able to read it at the intended distance.

The size of capital letters as a relation of the reading distance is shown in the adjacent diagram.

The vertical components of letters should have a thickness which is 1/5 of the height of the letter.

Door name-plates should be fixed to the wall on the opening side of the door. Text and symbols may be mixed within the same sign or sign layout.

Informative text and symbols should contrast with the background. Special colours should be used for different purposes.

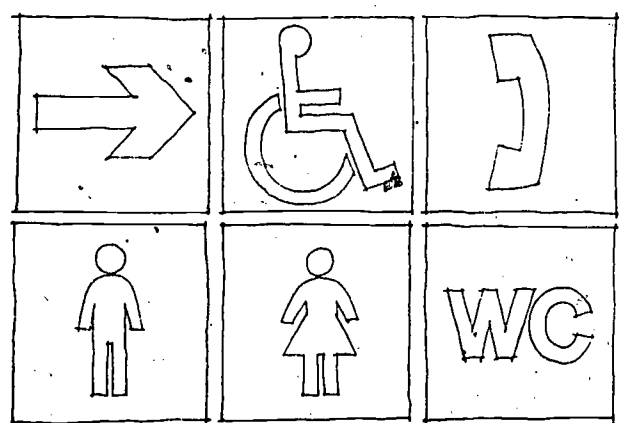
"Green" on a signboard should indicate "clear".
 "Red" should indicate "not clear".
 "Yellow" should indicate a "risk".

yellow	red	green
risk	emergency	safety
<ul style="list-style-type: none"> • warning • projecting objects • mobile part of a machine 	<ul style="list-style-type: none"> • flammable material • emergency stop • stop-sign 	<ul style="list-style-type: none"> • emergency exit • first aid

Letters and symbols should preferably be raised from the background (at least 1 mm) in order to enable blind persons to "read" the information using the tips of their fingers. Engraved letters are simpler to produce and are also accepted. The size of the letters should be at least 15 mm to enable tactile reading.

Pictograms

The adjacent pictograms are internationally known.



DESIGN RECOMMENDATIONS

Certain Areas

Spatial requirements for rooms, waiting areas and passageways should be based on human dimensions, space utilization, furniture, equipment, and the expected type of occupancy. Dimensional criteria for some functional areas are given below.

The size of rooms as well as the layout of furniture should pay special heed to the needs of disabled persons. Consideration should be given to circulation space between pieces of furniture. However well rooms are planned and designed to take account of accessibility by disabled persons, the functional efficiency of rooms is dependent upon the design, size, and layout of the interior furnishings and fittings.

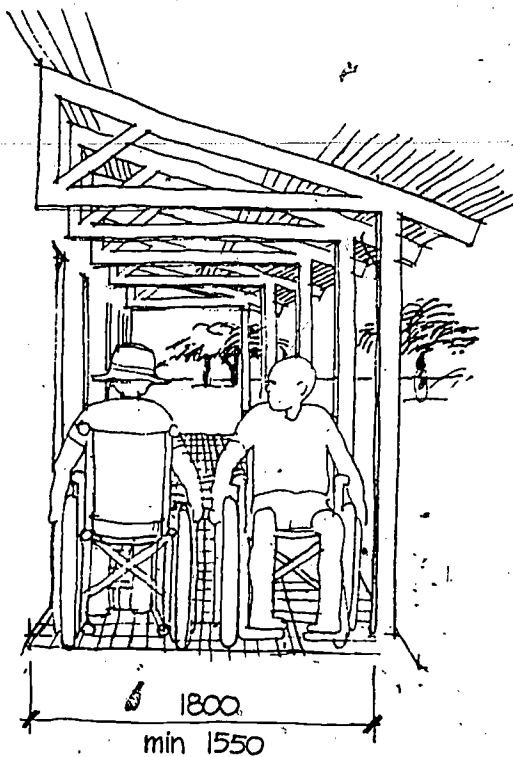
Passageways

Internal passageways should have a minimum clear width of 1.50 m. Doors, information signs, cupboards, benches, etc should not encroach on this minimum clearance. Passing places with a minimum width of 1.95 m should be provided at least every ten metres where frequent pedestrian flow can be expected. At supermarket checkouts, gates to public transport facilities, etc, there should be at least one with a width of minimum 0.85 m.

Internal corridor widths should not be less than 1.50 m. The minimum clear width which allows a walking person to meet and pass a person in a wheel-chair is 1.20 m. However, provision must also be made to allow for the movement of stretchers or furniture through doorways out into the corridor.

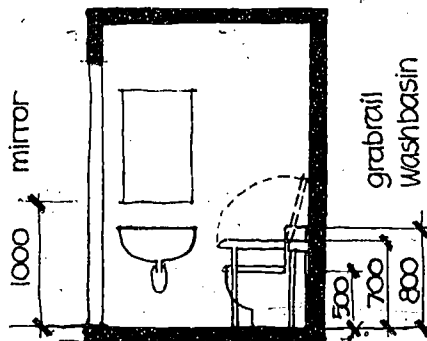
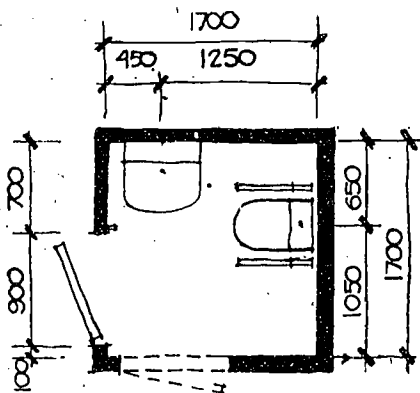
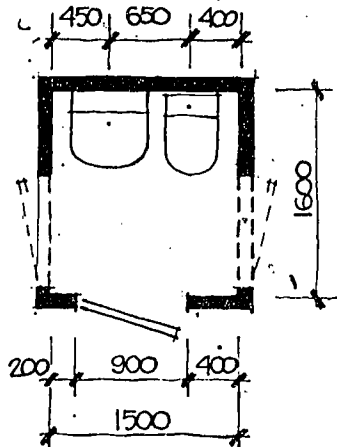
The common arrangement in the tropics with verandahs along the outside of buildings, which are used for both communications and for waiting and sitting, must be taken account of. This is especially the case at many health centres in developing regions where patients and visitors are waiting in corridors and on verandah communication areas. To ensure smooth pedestrian flows in such areas, the width should not be less than 1.80 m.

If corridor lengths must be excessive, resting and passing areas should be incorporated at regular intervals of about 30 m along these corridors and pathways, where possible seating should be provided.



DESIGN RECOMMENDATIONS

Certain Areas



Lavatories

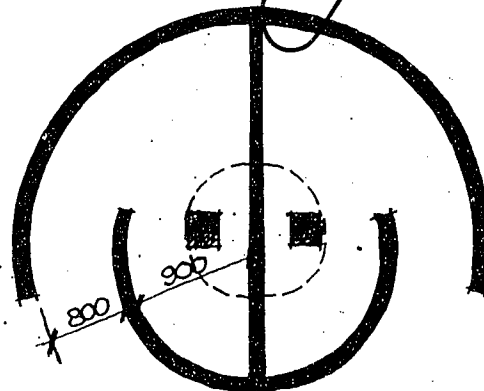
The space requirements for toilets for disabled persons in developing areas should not necessarily be based on the same functional space requirements as for persons confined to wheel-chairs. However, where adequate space for a wheel-chair is provided, there is also likely to be sufficient space for disabled persons using crutches or other technical supports, or for people assisted by a second person. This extra space will also be well suited for mothers with children, who constitute a large proportion of the visitors to many public buildings.

The minimum size of a toilet room for use by disabled persons using an ordinary wheel-chair is 1.70×1.70 m with the possible arrangement of sanitary equipment as shown in the adjacent sketch. The washbasin may be located outside the toilet area. It is an advantage, however, if a disabled person can wash his or her hands while seated.

Equipment, such as supporting rails, toilet paper holders, etc should be firmly fixed and reachable from a seated position.

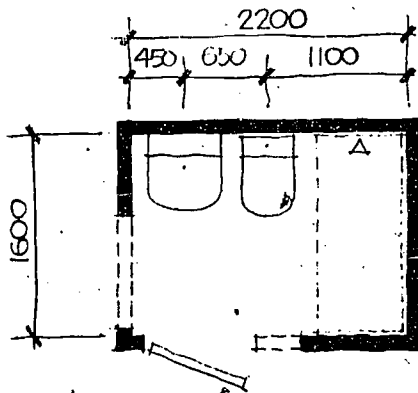
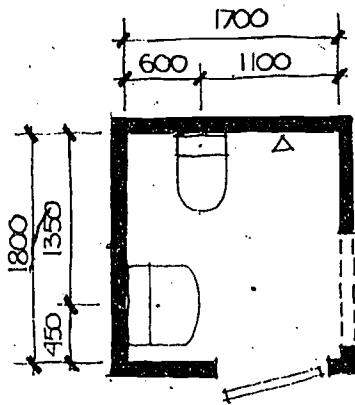
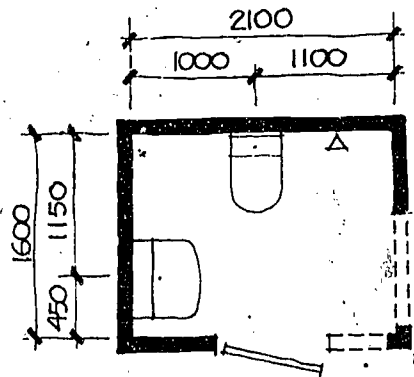
The same dimensions are valid for the more common low-level type of toilet and for simple washing arrangements. However, it should be remembered that physically disabled persons cannot squat. The low type of toilet may therefore not be suitable for use where disabled persons are likely to visit.

With regard to these criteria the suitability of the common pit latrine for disabled persons may be questioned. However, there is often no alternative. Consequently firm fixed grab rails, suitably placed, will definitely improve the utilization of this type of facility.



DESIGN RECOMMENDATIONS

Certain Areas



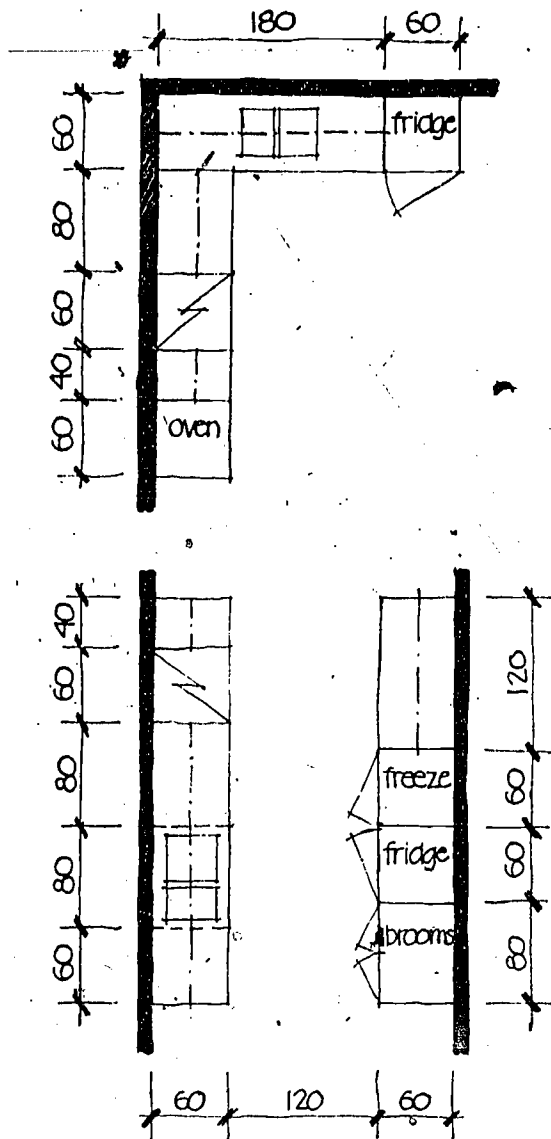
Bathrooms

The same criteria as for toilets should be applicable for bathrooms. Generally, a shower is easier to use than a bath for a person with moving difficulties. It is even possible for a disabled person to take a shower seated on a stool. A space of 0.90 m square is required if the shower is situated beside the WC or a washbasin. If bounded by a wall, bath or other object, the shower space should be increased to 1.00 m square.

The position of taps should be carefully considered. These should be placed so that they can be reached from outside the shower.

DESIGN RECOMMENDATIONS

Certain Areas

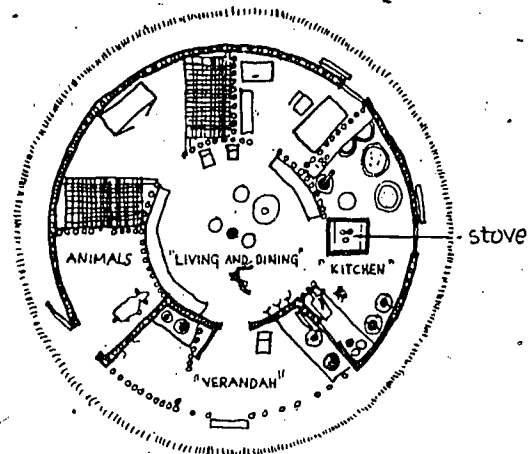
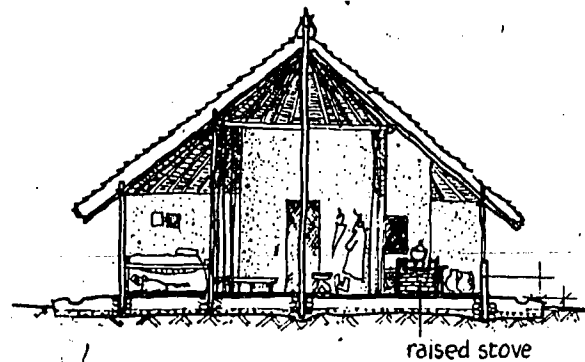


Kitchen

Examples of fitting arrangements for western type kitchens which are adaptable to wheel-chair users are shown.

Space under worktops should be unobstructed. The dimensions of worktops should be 0.80×0.60 m with a height of $0.75-0.85$ m above floor level depending on the type of wheel-chair in use. A wheel-chair requires a clear space at least 0.75 m wide at a dining table, and at least 0.50 m deep under it.

The cooking facilities in a traditional house especially in rural areas is usually limited to a simple stove or open fireplace on the floor. Protective arrangements around the fire should be considered in order to avoid burns. Facilities for the escape of smoke should be arranged in order to avoid respiratory and eye problems.



from Rural Housing in Chilalo, Ethiopia by Elisabet Hanson, Cadu Publication.1973

STATUTORY CONSIDERATIONS

Statutory considerations concern the intentions and the means of control and implementation of a Government's policy towards the disabled persons.

In most countries, it is the planning law and its supporting legislation which determines how new building and reconstruction works are to be carried out. The Government and the Legislature, by way of Acts of Parliament, thereby decide the level of control that shall be applied, and the pace at which changes shall take place. In this respect there has been advance to different points in different parts of the world.

The details of Governmental policies can be presented in a number of ways. To many the use of Statutory Instruments will be familiar, while to others, Bye-laws, Regulations, Norms and Standards will perform the function.

In the case of the disabled persons, a wide range of such details have been published by most industrialized countries. In the United States these are frequently specified in publications by the American Standards Association. In Britain, details are drafted in for example the Building Regulations or in one of the many British Standards or Codes of Practice.

British Standards and Codes of Practice, for example, are an internationally known and respected source of codes of practice, preferred sizes, dimensions, safety specifications, etc. Consequently, there is considerable cross-reference and agreement on many corresponding international standards on many subjects.

In Sweden, details are defined in two publications – the Swedish Building Code (SBN) – and the International Standards Committee's reference volumes (SIS).

A list of applicable international regulations and norms is included in Appendix 3, Standards Bibliography.

As a complement to the type of mandatory means of control set out above, there are also non-mandatory recommendations.

Recommendations may be issued by official organisations, or public or private agencies, but their application and status will vary depending upon the standing of the issuing agency.

This Guide is one example of recommendations for adaption of the built environment to the needs of disabled persons.

The application of these guidelines may be expected to form the basis for determining the approval of grants, loans, and other funds offered to developing countries for projects sponsored by the UN and SIDA. It is to be hoped that other donor organisations will follow suit.

It is also to be hoped that many Governments in developing countries will adopt appropriate recommendations for the disabled persons.

STATUTORY CONSIDERATIONS

Such actions would be in line with the UN Commission on Human Settlement meeting in Manila which urged Governments to give special consideration to the legitimate needs of the disabled persons in their human settlement programmes and policies. The full text of Resolution 4/8 is included in Appendix 3.

As an example of one industrialized country's method of accounting for the disabled, the Swedish legislation can be referred to. The Swedish Building Regulations contain a special paragraph (§ 42a) which enumerates the terms governing the adaptation of the built environment to the requirements of the disabled persons. The main part of the paragraph is formulated as follows:

"Dwellings intended for purposes other than leisure-time activities and parts of buildings open to the general public, or which are used as a place of work, shall be designed so that they are accessible to and can be utilized by people who are disabled or whose ability to orient themselves is defective as a result of age, handicap or medical reason."

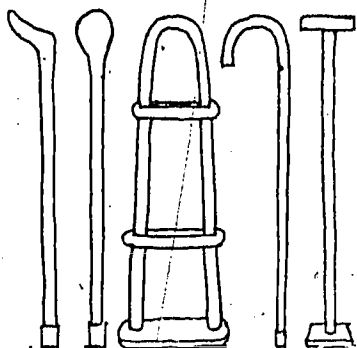
As a result of this paragraph, the avoidance of unnecessary steps and the provision of doorways wide enough to facilitate a wheel-chair can be recognized. Both these changes are simple and effective measures which cost very little, yet immediately make parts of the built environment more useful for everybody.

Several countries have followed Sweden's example, by choosing a form of legislation which ensures the possibilities for participation by disabled persons. Other countries have chosen, instead, to issue mandatory standards which ensure conditions for a more accessible society. A comparison of detailed recommendations for the physical environment is given in the Appendix 1 to this Guide.

Considerable differences exist in respect of the physical conditions pertaining in various countries. Consequently, building regulations and standards should be carefully adapted to suit the prevailing conditions, requirements, financial resources, and cultural habits of the country in question.

In the prevention of disability, legislation can play an extremely valuable role in ensuring conditions at home, at work, or on the road which helps reduce accidents and thus the incidence of disablement. However, to be effective, legislation requires an efficient monitoring and enforcement system.

FINANCIAL CONSIDERATIONS.



The financial consequences of disablement can be considered in two parts – firstly the financial situation of the disabled person, and secondly the costs to society of a person's disability.

Disability will involve serious financial consequences for an individual and his or her family. The financial consequences for society of the disability problem are also considerable, and a cost-benefit analysis of the problem may be appropriate. However, such a study will never be able to take full account of the disabled person's losses.

The large number of disabled persons which are prevented from performing productive work or other activities must be taken into account. However, the wastage of human resources caused by disablement is impossible to estimate in financial terms.

Calculations of the costs and benefits of various forms of intervention often assume, unfortunately, that doing nothing incurs no cost. The fallacy, however, does not take account of lost productivity, wasted potential, or "spin-off" problems generated by a disabled population. Estimates are possible of the total costs of treatment and rehabilitation and the adaptation of the built environment for the disabled.

Measures to avoid handicap can be taken in a variety of ways, which can be grouped into six main stages.

- prevention
- early detection
- treatment
- training
- rehabilitation
- adaptation of the environment

Prevention. Preventive measures may encompass primary health-care programmes, training and education, laws, and statutory controls, as well as the proper design of the built environment and the provision of effective infrastructure.

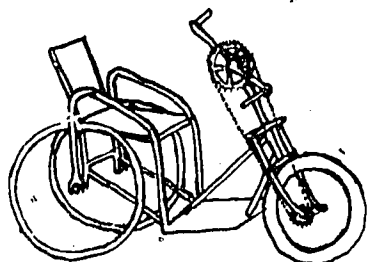
Design, construction, and maintenance of all elements in the built environment are important factors in the context of disability prevention.

Buildings and infrastructural services should be constructed to adequate tolerances. It is essential, for example, that the buildings we live in and work in are as safe as possible. The level of safety, however, has to be adapted to a country's economic as well as its technical ability. The design and maintenance of water-supply and sewerage system is of particular importance for the avoidance of diseases, especially in tropical countries.

Early Detection of a disease or condition which may lead to disability if not treated in time may be considered a secondary form of prevention of disability.

Treatment is the third but equally important stage in the fight against disablement. Treatment is necessary

FINANCIAL CONSIDERATIONS



to prevent impairments becoming disablements, and disablements from becoming handicaps. Treatment includes medical care.

Training may be considered a form of treatment or rehabilitation. Training can help the disabled person to reduce the disability and overcome the handicap.

Rehabilitation. To have to resort to this fifth stage may be seen as a failure – a failure to prevent, detect, and a failure to treat a situation which has led to disablement. Rehabilitation after an accident or an operation, however, is of course not a failure in that sense.

Rehabilitation is the aspect of disablement which is most readily associated with the need of training and the provision of technical aids.

Many countries have earlier considered it appropriate to institutionalise persons with disabilities. The policy is now being reversed and efforts are being made to integrate disabled persons into society. Adaptation of the built environment to the needs of the disabled is one important lead in this programme.

Getting disabled people mobile is probably the measure which gives the disabled person greatest benefit. The provision of suitably converted vehicles and technical supports for disabled people to get about in and on is therefore an important aspect of rehabilitation. There are many excellent examples of simple aids and appliances which can be made at low cost and without special skills or equipment.

Adaptation. The sixth and complementary stage is adaptation of the built environment to the needs of the disabled.

Complete adaptation may not be realistic. Various degrees of adaptation must be recognised.

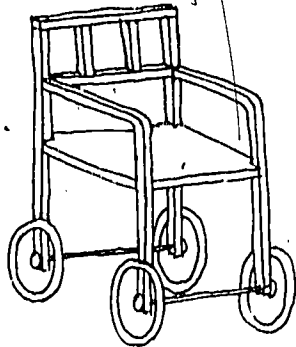
Primarily, all new buildings should conform to certain minimum standards, *basic adaptation*.

Adaptation is one important measure to **prevention**. Thereby all measures in the fight against handicap are linked with each other and the adjacent circle is closed.

Adaptation of the built environment to the needs of the disabled persons will ensure that the environment is convenient for everybody. Making the environment more accessible means that the environment becomes safer and adapted to the needs of all, which in turn can be considered as a preventive measure. A safer environment is likely to lead to fewer accidents and consequently a reduced incidence of disablement.

This Guide has already stated that many improvements can be made at little or no extra cost provided they are undertaken in the early design stage. Adaptation and prevention are cheaper measures than treatment and rehabilitation.

FINANCIAL CONSIDERATIONS



planning and designing with care for the disabled is less expensive than rebuilding for adaptation to the demands of the aged and disabled

In developing countries, with limited technical and financial resources, the degree of adaptation of the built environment for disabled persons must be kept at a realistic level. This level may vary and while it can be restricted today, the future may offer greater opportunities. It is therefore important that restricted measures taken today do not make further improvements impossible in the future.

Alterations to existing structures to facilitate use by disabled persons have shown to be extremely expensive. Yet these costs could have been saved if the needs of the disabled persons had been taken account of at the planning and design stages.

Many environmental features which are of particular importance for the disabled are in fact not very elaborate. Many involve little or no extra cost if considered and undertaken from the beginning.

The United Nations' Commission of Human Settlements' meeting in Manila not only recognized the legitimate right of the disabled to full participation in the development of the societies in which they live, but affirmed that it is technically and economically feasible to design and adjust human settlements to meet the needs of disabled persons. A copy of the full text of Resolution 4/8 is included in Appendix 5.

The report of the UN Expert Group Report on Barrier-Free Design in 1975, concluded that:

"The extra cost of barrier-free design in public buildings and facilities is a mere fraction of the overall cost. If the comparison of costs between barrier-free design resulting from independence and employment of the handicapped and the cost of segregating this section of society, forcing them to be dependent on the community, were made known, politicians as well as planners would opt for complete integration by means of barrier-free design."

APPENDICES

- 1 Comparative scheme, Norms
- 2 Annotated bibliography
- 3 Standards, bibliography
- 4 Summary of the most important measures to prevent disability
- 5 UN resolutions
- 6 Other resolutions
- 7 IYDP 1981, Objectives of the year
- 8 Functional requirements in the physical environment, scheme
- 9 Abbreviations

1 Comparative scheme, Norms

COMPARISON BETWEEN RECOMMENDED MEASUREMENTS AND DIMENSIONS FOR SOME SELECTED ITEMS.

	AUSTRALIA	BELGIUM	CANADA	DENMARK	FINLAND
NORM, RECOMMENDATION ETC (for detailed information, see appendix 3)	Australian Standard, Code of Practice for Design, rules for access by the disabled AS 1428-1977	Recommendation de 1966 et 1969 Projets de loi du mai 1972 Recommandations du 19 juin 1973 Règlement communal du 21 juin 1973 Avis relatif aux mesures à prendre 27 juin 1973 Extrait de l'Ar rêté Royal du 27 juillet 1973	National Building Code of Canada, Supplement no 5. Building Standards for the Handicapped, 1970	Circular no 49, 23.3.1972 Mandatory norms for all new state buildings and grant-aided buildings, residential properties excluded Building regulations for towns and countryside	RT kortit: v 69-70 Eliminating the obstacles of the disabled RT 096.0, RT 196.1, RT 096.2, RT 096.80, RT PRO 98 Internal Regulation concerning planning with regard to the physically handicapped
WALKWAY, width			1.65	1.30	1.30, 1.50
CORRIDOR, width	1.20	2.00	1.10	1.30 (1.40)	1.30
DOORS, free width	0.76	0.83	0.80 × 0.90	0.83	0.80-0.90
INCLINATION OF RAMPS	1:12	1:20	1:8, 1:12, 1:20	1:12	1:12 (1:14)
LANDING (ramp, stairs)	1.20 × 1.50 (2.00)	1.30	length 1.5 width = ramp)		1.20, 1.30, 2.00
HANDRAILS, height above floor	0.85-0.90 Ø 0.40-0.060		0.71, 0.90-1.10		0.90 Ø 0.03-0.05
LENGTH OF LANDINGS at top and bottom of ramps and stairs	0.60 0.30		0.43 0.43		0.30 0.30
STEPS, dimensions, risers and runs	0.15-0.165 0.26-0.30		0.100-0.200 0.300	0.18 0.25	0.16 0.30
SWITCHES, HANDLES AND CONTROLS height above floor			1.06-1.15	0.90-1.20	0.90-1.20
LIFTCAR, size width × depth	× 1.80	1.10-1.20 × 1.30-2.30	min 1.10-1.20		1.10 × 1.40
LIFTCAR, doorwidth	0.80	0.80	0.775		
HAND WASH BASIN, height	0.80	0.80	0.86		0.85
WC-ROOM, measurements width × depth	1.80 × 1.60	1.35 × 1.80	1.47 × 1.65	2.20 × 1.80	1.40 × 2.10
TELEPHONE, height above floor			1.32		0.90-1.10

There are a number of problems in making comparisons between the detailed regulations prevailing in different countries and which pertain to the built environment. This is partly due to the different units of measurement employed, for example the decimal and the imperial systems, and partly the result of different judgements made by each country, often with respect to circumstances prevailing in the built environment. It is also a fact that people vary in size in various parts of

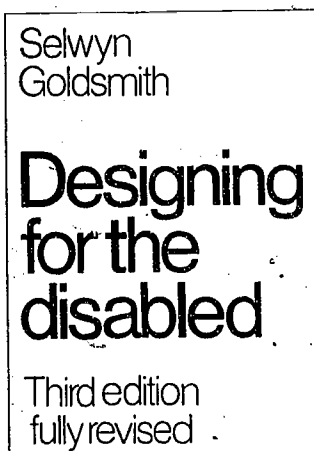
the world. Difficulties quite naturally also occur in the editorial and physical possibilities of accommodating as much important information as possible within a limited space.

The aim with this Scheme of comparisons is primarily an attempt to define basic determinant information such as the basic module which could provide a standard unit of measurement or the basic module which could provide for basic adaptation in the built environment.

FRANCE	GREAT BRITAIN	THE NETHERLANDS	NEW ZEALAND	SWEDEN	SWITZERLAND	USA
NF P 91-201, Construction handicapés physiques, juillet 1978 (l'Association Française de Normalisation)	British Standard Code of Practice, CP 96: Part 1, 1967 Access for the disabled to buildings Part 1: General recommendations	Central building regulations Geboden Toegang, Ned. Ver voor Revalidatie, 1973, revised 1979:	New Zealand Standard NZS 4121 Code of Practice for Access by Handicapped Persons Part 1: Public Buildings and Facilities, 1971	Byggnadsstädgan, the Swedish Building Ordinance the Swedish Building Code § 42 a. SBN, handikappanpassning Commentaries to the Code	Normblatt SNV 521 500 Wohnungen für Gehbehinderte, Sep 1967 Richtlinien über bauliche Vorkehrungen für Behinderte, Nov 1970 Revidierte, neue Norm SNV 521 500 Bauliche Massnahmen für Gebehinderte, 1974	Public law 90-480 Aug 12, 1968 A NSI A117, 1-1-50 American National Standard Recommendation from the International Conference of Building Officials Ordinance no 5475-73
1.50			1.22	1.30		1.22
1.20	1.22		1.22	1.30	1.20 min	1.05
0.80	(0.785) 0.80	0.80		0.80	0.80-0.90	0.81
1:20	1:12	1:12	1:12	1:12		1:12
1.60 x 1.40	1.22 x 1.22	1.50 x 1.50	1.50	1.30	1.20 x 1.20	1.52
0.91 Ø 0.045-0.051	Ø 0.051 max	0.90 Ø = 0.04	0.91 Ø = 0.05	0.90	0.80-0.85 Ø = 0.04	
	0.30 0.30	0.45 0.45	0.45 0.45		0.30 0.30	0.30 0.30-0.28
0.16 0.28	0.15 0.28	0.14 0.32	0.16 0.25		0.18 0.27	runs 0.28
1.10-1.20	(1.07 max) (liftcar 0.91-1.37)	0.90-1.20	1.14 max	0.90-1.20	1.0	1.20
1.10 x 1.40	1.345-1.75 x 1.09-1.12	1.10 x 1.40		1.10 x 1.40	1.10 x 1.40	1.73 x 1.37
		0.80		0.80	0.80 min	0.91
0.80-0.85	0.81	0.85			0.85	
1.35 x 1.78	1.37-1.52 x 1.67-1.75	1.55 x 2.25 1.90 x 1.90 2.25 x 2.25	1.37 x 1.83	1.55 x 2.25 1.90 x 1.90 2.25 x 2.25	1.40-1.60 x 1.40-2.20	1.65 x 2.00
	0.91		1.14 max	0.90	0.80-0.90	0.85 min 1.37 max



2 Annotated bibliography

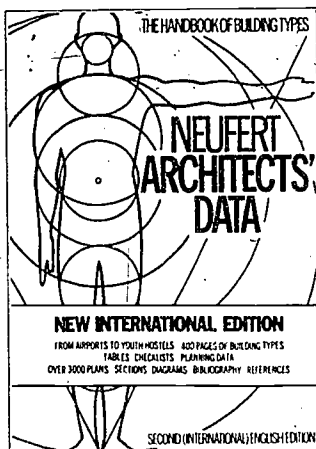


Goldsmith, Selwyn
DESIGNING FOR THE DISABLED

1976, 525 p Third edition
London, RIBA Publication Limited

Abstract:

A catalogue of design recommendations for architects and concerned with the planning and management of buildings used by handicapped people. Accepted internationally as the definitive work on the subject.



Neufert, Ernst
ARCHITECT'S DATA. THE HANDBOOK OF BUILDING TYPES

Second (international) English edition
1980, 400 p

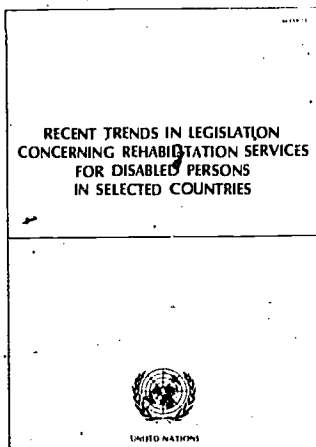
Published by Granada, P O Box 9, St Albans, Herts AL2 2NF, England

Abstract:

From airports to youth hostels, 400 pages of different building type studies. Tables, checklists, planning data. Over 300 plans, sections, diagrams, bibliography references

Sections re disabled

- doors and windows
- corridors, stairs, elevators.



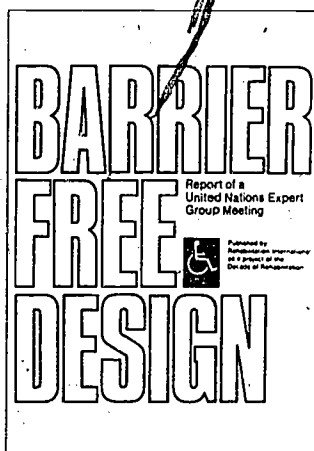
Department of Economic and Social Affairs, United Nations
RECENT TRENDS IN LEGISLATION CONCERNING REHABILITATION SERVICE FOR DISABLED PERSONS IN SELECTED COUNTRIES

1977, 31 p
New York

Abstract:

Various rehabilitation programs which provide for those disabled persons who are excluded from the ordinary social services. Examples are given from countries in both the developing world as well as industrialized countries.

Appendix 2

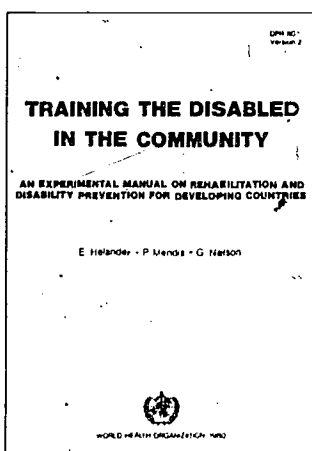


United Nations expert group meeting
BARRIER FREE DESIGN

1975, 35 p
Published by Rehabilitation International

Abstract:

The designing of areas suitable for disabled persons. Layouts and removal of obstacles in and around buildings. Examples of co-ordinated activities undertaken in a few countries. With illustrations.



Helander E, Mendis P, Nelson G
TRAINING THE DISABLED IN THE COMMUNITY
Subtitle: An experimental Manual on Rehabilitation and Disability Prevention for Developing Countries.

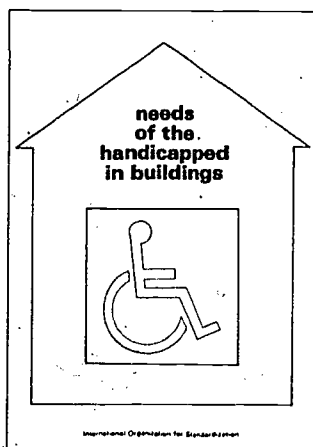
WHO 1980, 1078 p
(DPR/80.1 Version 2)
Published by WHO, Geneva, Switzerland

Abstract:

The manual contains:

1. Training packages
2. Six booklets, one each for training of the six categories of disabled persons
3. Four Guides: for policymakers and planners; for local supervisors; for community leaders; for teachers.

With illustrations.



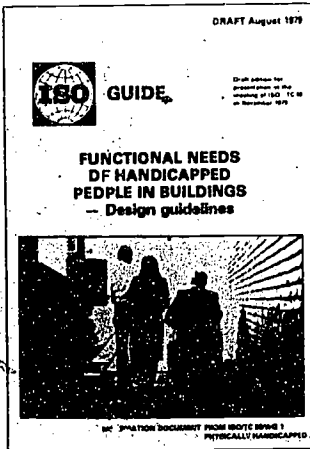
International Organization for Standardization, ISO
NEEDS OF THE HANDICAPPED IN BUILDINGS

1981, 15 p
A declaration of ISO/TC 59/WG1
(ISO's Technical Committee 59, Working Group 1)

Abstract:

Brief design recommendations with illustrations.

Appendix 2



ISO Guide FUNCTIONAL NEEDS OF HANDICAPPED PEOPLE IN BUILDINGS, DESIGN GUIDELINES

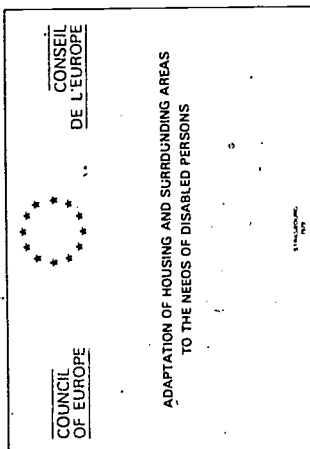
1979, 15 p

Information document from ISO/TC 59/WG1 published by Byggnadsstandardiseringsen, Drottning Kristinas Väg 73, S-114 28 STOCKHOLM

Abstract:

Basic advice to designers for internal and external environments for the handicapped including the needs of handicapped persons in buildings.

With illustrations.



Council of Europe ADAPTATION OF HOUSING AND SURROUNDING AREAS TO THE NEEDS OF DISABLED PERSONS

1979, 45 p

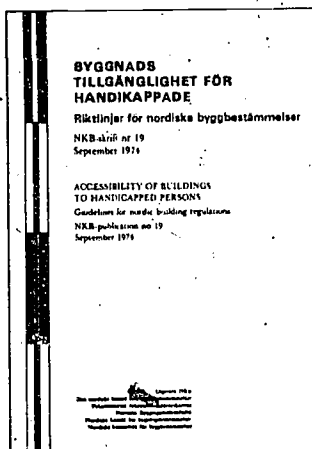
Strasbourg (P-SG (79)4)

The resolution was adopted by the Committee of Ministers in November 1977.

The report was prepared in 1977, revised 1978, by the Joint Committee on the Rehabilitation and Resettlement of the Disabled.

Abstract:

The functional basis for persons confined to wheel-chairs including the adoption of houses, cars, etc for their need. Planning criteria and their usefulness.



The Nordic Committee on Building Regulations, NKB ACCESSIBILITY OF BUILDINGS TO HANDICAPPED PERSONS Subtitle: Guidelines for Nordic Building Regulations

1974, 30 p

(NKB publication no 19) UDK:721.011:362.4

Abstract:

Guidelines for Nordic building regulations concerning the handicapped people. Co-ordinated rules pertaining in the Nordic countries.

Appendix 2

Document D9:1972

**Accessible towns —
workable homes**

**National Swedish
Building Research**

National Swedish Building Research
ACCESSIBLE TOWNS – WORKABLE HOMES

Document D9:1972

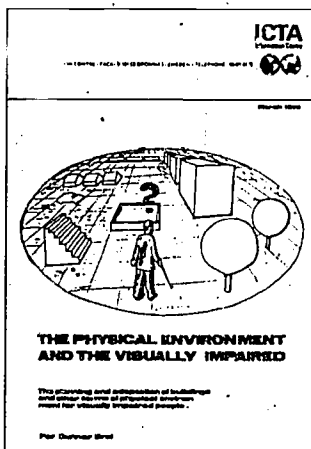
(Distribution: Svensk Byggtjänst, Box 1403,
S-111 84 STOCKHOLM)

UDK 711.4:362.4
728.1:362.4

SfB A
ISBN 91-540-2044-1

Abstract:

Swedish planning criteria for housing adapted to disabled persons.
Use of standard dwellings and adaptation to the urban environment.



Bruf, P-G

THE PHYSICAL ENVIRONMENT AND THE VISUALLY IMPAIRED
(The Planning and adaptation of buildings and other forms of physical
environment for visually impaired people)

1974, 34 p
ICTA Information Centre

Abstract:

A handbook for planning and forming the physical environment in
such a way that it is suitable for persons with impaired vision but also
makes daily life easier for everybody.
With illustrations.



Noble, C Wycliffe
GUIDELINES FOR IMPROVING ACCESS FOR DISABLED PEOPLE

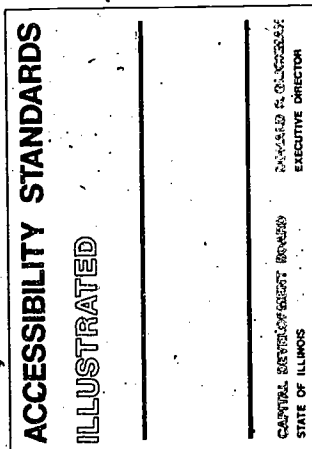
Publication by:
The Royal Association for Disability and Rehabilitation (RADAR). Not
yet published.

On behalf of:
International Commission on Technical Aids (ICTA): Housing and
Transportation of Rehabilitation International (RI).

Abstract:

The publication will alert those who are responsible for setting up
strategic plans for the erection of buildings open to the public in urban
and city developments in developing countries. In many situations,
consortia from industrialised countries is used and often the needs of
disabled people are not provided in the solutions that are being
offered.

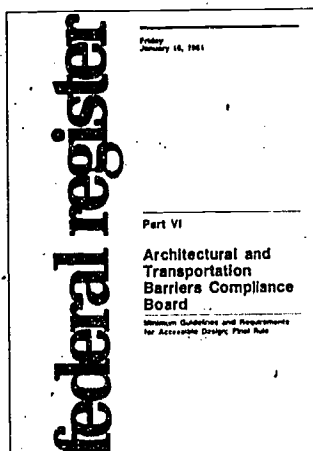
Appendix 2



Jones, Michael A
ACCESSIBILITY STANDARDS ILLUSTRATED

Editor:
Donald S Glickman, Capital Development Board, State of Illinois, USA.
1978, 217 p

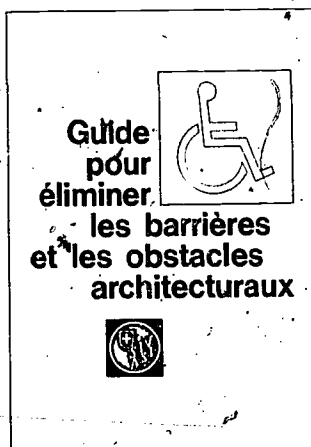
Abstract:
A comprehensive handbook. Illustrated with photographs and sketches. US examples of the adaptation of the interior of buildings and the outdoor environment to various types of handicapped persons. Hazards are pointed out.



Federal Register, USA
Architectural and Transportation Barriers Compliance Board, Part VI
MINIMUM GUIDELINES AND REQUIREMENTS FOR ACCESSIBLE
DESIGN; FINAL RULE

1981, 34 p
(36 CFR Part 1190: Federal Register, Vol 46 no 11)

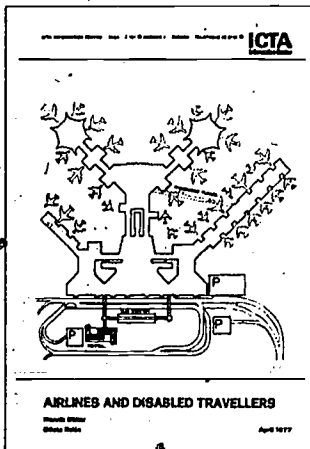
Abstract:
US rules for the removal of obstacles to disabled persons using the physical environment. Planning criteria.



Association Suisse des Invalides
GUIDE POUR ELIMINER LES BARRIERES ET LES OBSTACLES
ARCHITECTURAUX

1976, 63 p
Abstract:
Guidelines for architects with illustrations. Planning criteria for disabled persons' accessibility in outdoor environments and buildings. Issued in Switzerland.

Appendix 2

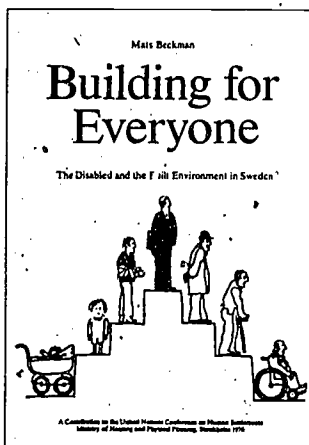


Müller, Henrik and Rolén, Gösta
AIRLINES AND DISABLED TRAVELLERS

1977, 54 p
 ICTA Information Centre, Stockholm, Sweden

Abstract:

An analysis of the situation for disabled persons using airtravel facilities including various obstacles of a physical and organizational nature. Proposals are included of suitable measures to be taken. With illustrations.

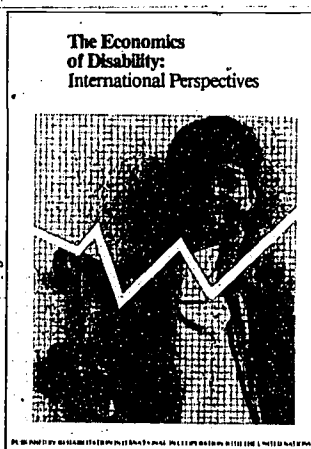


Beckman, Mats
BUILDING FOR EVERYONE

1976, 108 p
 Ministry of Housing and Physical Planning, Stockholm, Sweden.

Abstract:

Building for Everyone, a Review.
 The Disabled and the Built Environment in Sweden. Contribution to the United Nation's Conference on Human Settlements. A description of the conditions in Sweden, problems, measures for security, regulations and examples of physical environments adapted to the disabled. With illustrations.



Rehabilitation International in cooperation with the United Nations
THE ECONOMICS OF DISABILITY: INTERNATIONAL PERSPECTIVES

1981, 237 p
 Rehabilitation International, 432 Park Avenue, South, New York, New York 10016, USA.

Abstract:

The financial situation for both the disabled and the agencies helping them. With illustrations.

Appendix 2



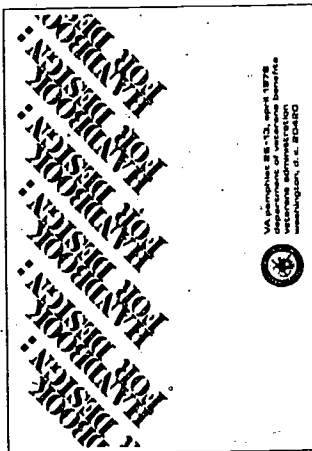
Belgium Association National pour le Logements des Handicapés
ARCHITECTURE ET ACCESSIBILITE, documents techniques 1

12 p

Abstract:

Belgian rules for adoption of the wheel-chairs confined to indoor and outdoor environment. Special attention is paid to the dimensions wheel-chair movements require.

With illustrations.



Department of Veterans Benefits, Veterans Administration, Washington, USA

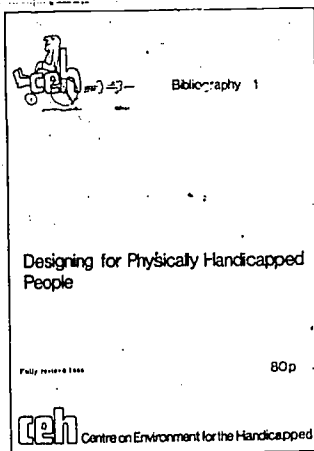
HANDBOOK FOR DESIGN: SPECIALLY ADAPTED HOUSING

1978, 79 p (VA pamphlet 26-73)

Department of Veterans Benefits, Veterans Administration, Washington DC 20420, USA

Abstract:

A design manual for adaptation of housing in USA to the requirements of physically disabled persons.



ceh, Centre on Environment for the Handicapped
BIBLIOGRAPHY, 1: DESIGN FOR PHYSICALLY HANDICAPPED PEOPLE

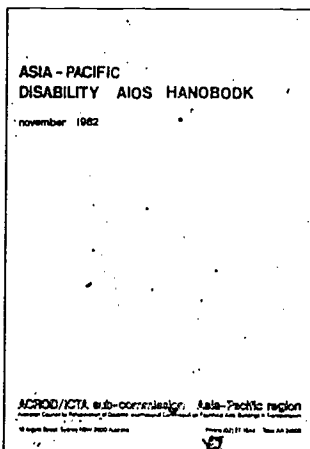
1980, 44 p

London, ceh, 126 Albert Street, London NW1 7NF, England

Abstract:

A comprehensive annotated bibliography. The bibliography directs readers to the relevant design guidance, legislation and government circulars and to books, reports, and periodical articles to increase understanding of the needs of handicapped people. The bibliography mainly concerns the conditions in Great Britain.

Appendix 2



ACROD/ICTA, sub-commission Asia-Pacific Region
ASIA PACIFIC DISABILITY AIDS HANDBOOK 1982

Australian Council for Rehabilitation of Disabled International Commission on Technical Aids, Buildings and Transportation
18 Argyle Street, Sydney, NSW, 2000, Australia

Abstract:

The handbook is a compilation of information regarding appropriate indigenous technical aids and appliances for people with disabilities collected from within the Asia Pacific region. The information is presented in the form of individual data sheets for each aid or appliance with a diagram and details of designer and/or manufacturer.

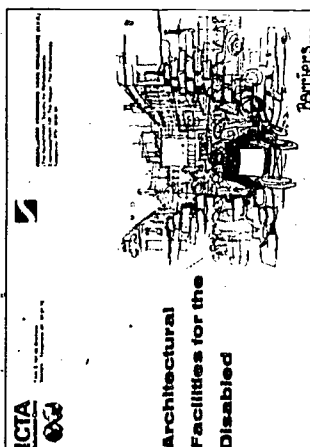


Rehabilitation International
INTERNATIONAL STATEMENTS ON DISABILITY POLICY
1981

Published by Rehabilitation International

Abstract:

A selection of key policy statements. The major policy documents of the United Nations' system and several from the most representative of the non-governmental organisations.



NVR, Nederlandse Vereniging voor Revalidatie
ARCHITECTURAL FACILITIES FOR THE DISABLED

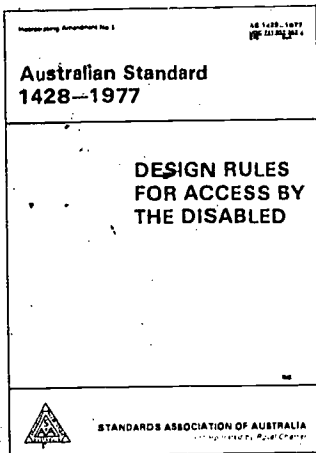
1973

Published by ICTA, Bromma, Sweden

Abstract:

A compilation of information from various countries has formed a basis for assessing some directions for requirements enabling handicapped persons to function in society. The publication concentrates on the requirements of physically handicapped persons and the basic data for freedom of movement can be obtained from the sketches containing information on dimensions of wheel-chair and reaching zones of handicapped persons.

3. Standards, bibliography



Standards Association of Australia
DESIGN RULES FOR ACCESS BY THE DISABLED
 (Australian Standard 1428-1977)

1979. 36 p

UDC 721.052.362.4

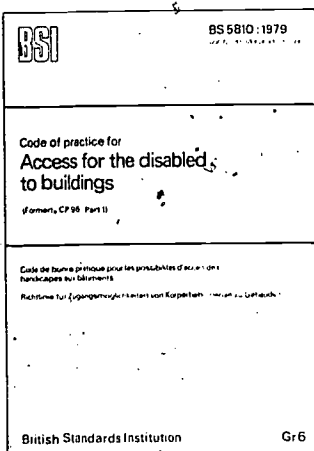
SfB Ba4

ISBN 07262 1283.0

Abstract:

Australian Standard. Code of Practice concerning design rules for access by the disabled.

AS-1428-1977 including an annotated bibliography.



British Standards Institution

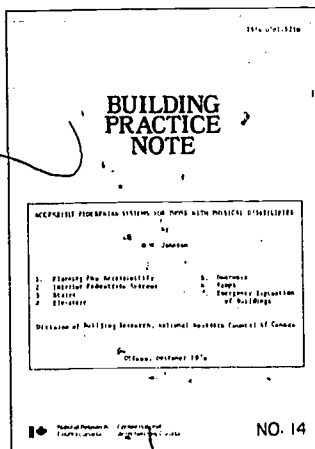
BS 5619

CODE OF PRACTICE FOR DESIGN OF HOUSING FOR THE CONVENIENCE OF DISABLED PEOPLE

1978

Abstract:

Recommendations are given for ramps, lifts, car parking, paths, doors, circulation spaces, floors, windows, kitchens, bedrooms, WCs, bathrooms, stairs, and services.



Canada, Building Practice Note No 14, Johnson, B M

ACCESSIBLE PEDESTRIAN SYSTEMS FOR THOSE WITH PHYSICAL DISABILITIES

1979, 47 p

(National Research Council, Canada)

ISSN 0701-5216.

Abstract:

The note describes the general planning of pedestrian circulation systems and the design requirements for internal pedestrian facilities with emphasis on the needs of the elderly or persons with physical disabilities.

1. Planning for Accessibility; 2. Interior Pedestrian Systems; 3. Stairs; 4. Elevators; 5. Doorways; 6. Ramps; 7. Emergency Evacuation of Building

With illustrations and including an annotated bibliography

Appendix 3



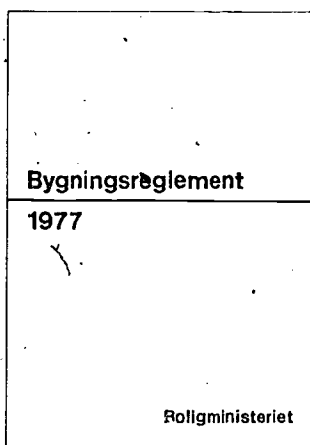
National Research Council of Canada, Ottawa
BUILDING STANDARDS FOR THE HANDICAPPED

(National Building Code of Canada, Supplement no 5, NRC No 11430)

1970, revised in 1980, 24 p

Abstract:

Canadian Building Standards for the Handicapped including an annotated bibliography.

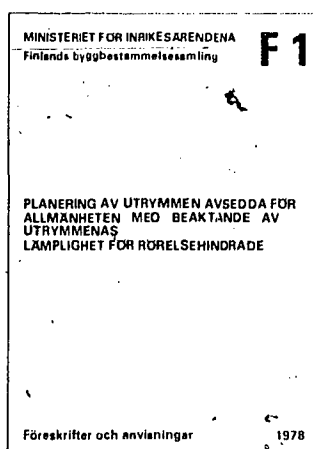


Denmark, Ministry of Housing
BUILDING REGULATIONS

1977

Abstract:

The publication presents Danish Norms. Chapters 4 and 5, pp 48, 49, 50, concern moving and orientation difficulties for disabled persons.



Finland, Ministry of Home Affairs

THE PLANNING OF FLOOR SPACE FOR USE BY THE GENERAL
PUBLIC WITH SPECIAL CONSIDERATION TO THEIR SUITABILITY
FOR PERSONS WITH IMPAIRED MOBILITY

(Finland's Building Regulations)

1978, 7 p.

Abstract:

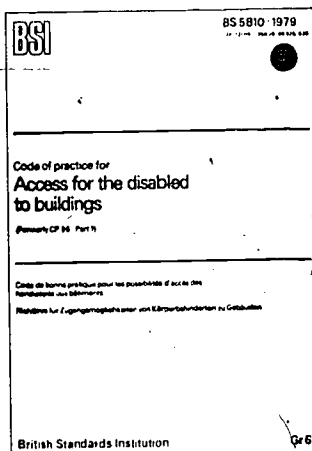
1. Presents the regulations concerning the dimensions of doorways and entrances with principal regard to general aspects of safety.
2. Regulations issued during the autumn of 1973, with explanations in an official letter. § 85a proposal for a regulation: Buildings and facilities used by the public should be accessible to persons whose mobility or orientational capacity is handicapped by age, invalidity or sickness.

Appendix 3

The French Association for Normalisation, Paris, (AFNOR)
BUILDING FOR THE PHYSICALLY HANDICAPPED

1978. 26 p
 (NF P 91-201) NOT

Abstract:
 Building for the physically handicapped.



British Standards Institution (BSI)
 Code of Practice for
ACCESS FOR THE DISABLED TO BUILDINGS

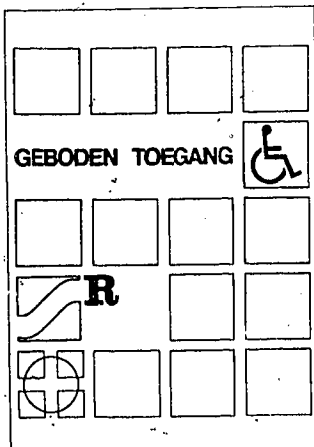
BS 5810:1979

UDC 721.051-056.26:69.026/028

Abstract:

The code concentrates on the essential provisions that need to be incorporated in buildings to ensure that they are conveniently usable by disabled people.

In the case of certain building types which are financed in the UK from public funds, for example health, welfare and educational buildings, the government departments concerned recommend standards of provision and design including those for disabled people.



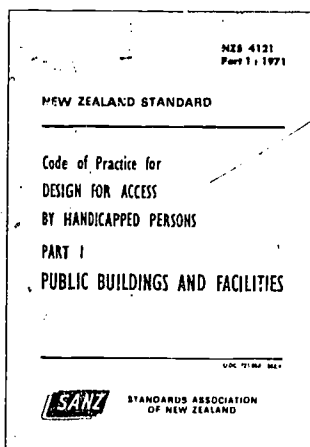
Holland, Nederlandse Vereniging voor Revalidatie (NVR)
GEBODEN TOEGANG

1973, revised in 1979, 134 p

Abstract:

Recommendations. Including an annotated bibliography. The recommendations are systematically laid down in sketches.

Appendix 3



Standards Association of New Zealand, Wellington
CODE OF PRACTICE FOR DESIGN FOR ACCESS BY HANDICAPPED PERSONS, PART 1: PUBLIC BUILDINGS AND FACILITIES

1971, 28 p

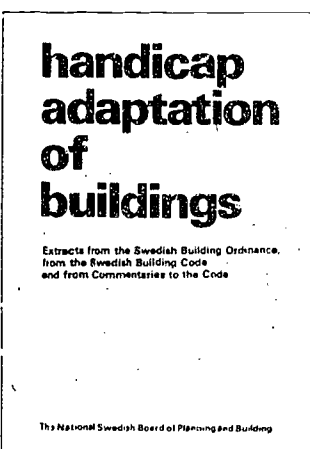
(New Zealand Standard NZS 4121, part 1, 1971)

UDC 721.052:362.4

Abstract:

Code of Practice for Design for Access by Handicapped Persons. Part 1: Public Buildings and Facilities, August 1971. Including an annotated bibliography.

(Mandatory when adopted by a local authority.)



The National Swedish Board of Planning and Building
HANDICAP ADAPTATION OF BUILDINGS

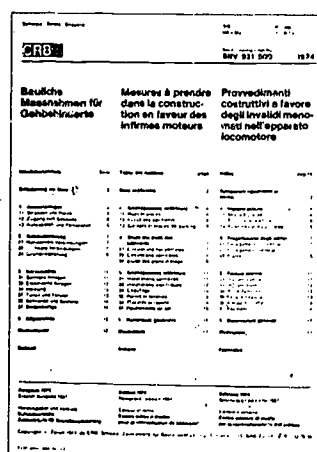
1981

Liber Förlag, Stockholm, Sweden

ISBN 91-38-06626-2

Abstract:

Extracts from the Swedish Building Ordinance, from the Swedish Building Code and from Commentaries to the Code.



MEASURES TO BE APPLIED IN BUILDINGS TO FACILITATE FOR DISABLED PERSONS

1974, 23 p

Norme SNV 521 500 1974

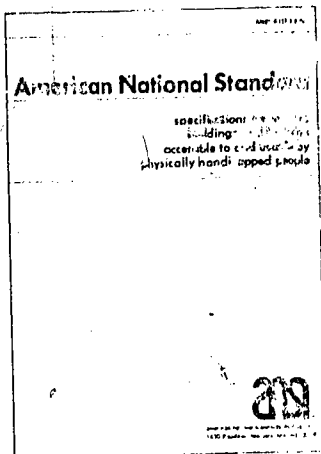
SfB (9) -- (98)

DK/CDU 721.362.4

Abstract:

Norm.

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American National Standards Institute Inc, New York ANSI
 SPECIFICATIONS FOR MAKING BUILDINGS AND FACILITIES ACCESSIBLE TO AND USABLE BY PHYSICALLY HANDICAPPED PEOPLE

1980, 67 p

(ANSI A117-1 - 1980)

Abstract:

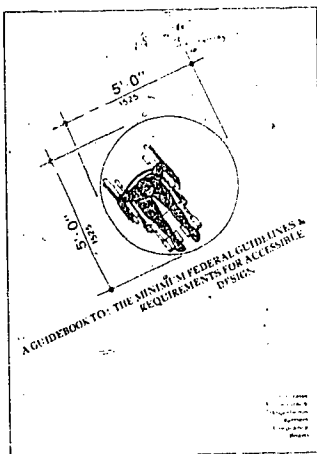
American National Standard, including an annotated bibliography. Specifications for making buildings and facilities accessible to and usable by the physically handicapped.

The Senate and the House of Representatives of the United States of America
 PUBLIC LAW 90-480

August 12, 1968

Abstract:

An act to insure that certain buildings financed with federal funds are so designed and constructed as to be accessible to the physically handicapped.



United States Architectural and Transportation Barriers Compliance Board
 A GUIDE BOOK TO: THE MINIMUM FEDERAL GUIDELINES AND REQUIREMENTS FOR ACCESSIBLE DESIGN.

USA January 1981

Abstract:

The guidelines and requirements provide a basis for the issuance of consistent and improved accessibility and usability standards by some US authorities including the Federal Standard Setting Agencies. The booklet is printed in a format which should be readily usable by building officials and building managers. Illustrated.

4 Summary of the most important measures to prevent disability

GENERAL

Nutrition

Improved agriculture to increase and diversify output, improve distribution of foodstuffs, the provision of fertilizers and training of rural population in appropriate agricultural techniques, irrigation, etc, public education to improve composition of meals and cooking habits, better control of gastrointestinal infections, and supplementary feeding, e.g. vitamins and iodine.

ENVIRONMENTAL

Communicable diseases

Provision of proper water and sewage systems, public education to improve hygiene and avoid transmission of disease, vaccination programmes.

Road accidents

Public education for drivers and pedestrians, better education and supervision of children at accident-prone age, technically improved roads and regular checks of vehicle roadworthiness, and legislation and improved enforcement of traffic regulations, etc.

Home accidents

Community education, better supervision of children, improvement of housing and home installations, (e.g. cooking, stoves, and use of dangerous fuel), legislation and enforcement of rules to prevent accidents.

Occupational accidents and diseases

Education of workers, improved tools and machinery (including agriculture), monitoring of accidents and environmental hazards, use of safety devices, (e.g. when climbing houses and trees), legislation to protect against hazardous agents, and the formation of safety committees.

SOCIAL

Child neglect and abuse

Community education, improved level of schooling, legislation and law enforcement.

Alcohol and drug abuse

Legislation and law enforcement to reduce supply and accessibility, and public education to understand the consequences of abuse.

SOCIO-MEDICAL

Genetic disorders

Counselling to discourage consanguineous marriages, child spacing to reduce natality in high risk families. Contraception, pregnancy termination, sterilization, if culturally acceptable.

MEDICAL

Perinatal diseases (e.g. cerebral palsy and brain damage)

Improved perinatal care

Impairments caused by medicines

Better control of drug import and manufacture, testing, legislation to prohibit hazardous drugs.

Source: Training for the Disabled – WHO (with minor amendments)

5 UN Resolutions

- 3447 (XXX) Declaration on the Rights of Disabled Persons.
2433rd plenary meeting, 9 December 1975.
- 31/123 International Year for Disabled Persons.
102nd plenary meeting, 16 December 1976.
General Assembly A/34/158/Add 1, 21 November 1979.
- Thirty-fourth session Agenda items 79 and 98.
International Year for Disabled Persons. Proposed Programme Budget for the Biennium 1980-1981.
I. Introduction, 1, 2, 36, 37.
General Assembly A/RES/34/154, 30 January 1980.
- Thirty-fourth session Agenda item 79.
Resolution adopted by the General Assembly (on the report of the Third Committee A34/782)
34/154 International Year of Disabled Persons.
105th plenary meeting, 17 December 1979.
General Assembly A/RES/35/133, 27 January 1981.
- Thirty-fifth session Agenda item 79.
Resolution adopted by the General Assembly (on the report of the Third Committee A46/638)
35/133 International Year of Disabled Persons.
92nd plenary meeting, 11 December 1980.
- 4/8 Human Settlements and the International Year of Disabled Persons.
The Commission on Human Settlements.
6th plenary meeting, 6 May 1981.
General Assembly A/36/37, 3 December 1981.
Thirty-sixth session Agenda item 30.
International Year of Disabled Persons.

Reference should also be made to the following resolutions.

- WHO (World Health Organisation)
World Health Assembly.
Resolution WHA 29.68.
Adopted May 20, 1976.
DISABILITY PREVENTION AND REHABILITATION.
The text is given in Rehabilitation International's publication, International Statements on Disability, Policy, see annexed annotated bibliography.
- ILO (International Labour Organisation)
The General Conference.
Recommendation 99, Geneva 1955.
RECOMMENDATIONS CONCERNING VOCATIONAL REHABILITATION OF THE DISABLED.
The text is given in Rehabilitation International's publication International Statements on Disability, Policy, see annexed annotated bibliography.

Appendix 5

UN Declaration on the Rights of Disabled Persons

Resolution 3447 – XXX – 09 December 1975

The General Assembly,

Mindful of the pledge made by Member States, under the Charter of the United Nations, to take joint and separate action in co-operation with the Organization to promote higher standards of living, full employment and conditions of economic and social progress and development.

Reaffirming its faith in human rights and fundamental freedoms in the principles of peace, of the dignity and worth of the human person and of social justice proclaimed in the Charter.

Recalling the principles of the Universal Declaration of Human Rights, the International Covenants on Human Rights, the Declaration on the Rights of Children and the Declaration on the Rights of Mentally Retarded Persons, as well as the standards already set for social progress in the constitutions, conventions, recommendations and solutions of the International Labour Organization, the United Nations Educational, Scientific and Cultural Organization, the World Health Organization, the United Nations Children's Fund and other organizations concerned.

Recalling also Economic and Social Council resolution (LVIII) of 06 May 1975 on the prevention of disability and the rehabilitation of disabled persons.

Emphasizing that the Declaration on Social Progress and Development has proclaimed the necessity of protecting the rights and assuring the welfare and rehabilitation of the physically and mentally disadvantaged.

Bearing in mind the necessity of preventing physical and mental disabilities and of assisting disabled persons to develop their abilities in the most varied fields of activities and/or promoting their integrations as far as possible in normal life.

Aware that certain countries, at their present stage of development, can devote only limited efforts to this end.

Proclaims this Declaration on the Rights of Disabled Persons and calls for national and international action to ensure that it will be used as a common basis and frame of reference for the protection of these rights:

1. The term "DISABLED PERSON" means person unable to ensure by himself or herself, wholly or partly, the necessities of a normal individual and/or social life, as a result of a deficiency, either congenital or not, in his or her physical or mental capabilities.
2. Disabled persons shall enjoy all rights set forth in this Declaration. These rights shall be granted to all disabled persons without any exception whatsoever and without distinction or discrimination on the basis of race, colour, sex, language, religion, political or other opinions, national or social origin, state of wealth, birth or any other situation applying either to the disabled person himself or herself or to his or her family.
3. Disabled persons have the inherent right to respect for their human dignity. Disabled persons, whatever the origin, nature and seriousness of their handicaps and disabilities, have the same fundamental rights as their fellow-citizens of the same age, which implies first and foremost the right to enjoy a decent life, as normal and full as possible.
4. Disabled persons have the same civil and political rights as other human beings; paragraph 7 of the Declaration on the Rights of Mentally Retarded Persons applies to any possible limitation or suppression of those rights for mentally disabled persons.
5. Disabled persons are entitled to the measures designed to enable them to become as self-reliant as possible.
6. Disabled persons have the right to medical, psychological and functional treatment, including prosthetic and orthetic appliances, to medical and social rehabilitation, education, vocational training and rehabilitation, aid, counselling, placement services and other services which will enable them to develop their capabilities and skills to the maximum and will hasten the process of their social integration or reintegration.
7. Disabled persons have the right to economic and social security and to a decent level of living. They have the right, according to their capabilities; to secure and retain employment or to engage in a useful, productive and remunerative occupation and to join trade unions.
8. Disabled persons are entitled to have their special needs taken into consideration at all stages of economic and social planning.
9. Disabled persons have the rights to live with their families or with foster parents and to participate in all social, creative or recreational

Appendix 5

activities. No disabled person shall be subjected, as far as his or her residence is concerned, to differential treatment other than that required by his or her condition or by the improvement which he or she may derive therefrom. If the stay of a disabled person in a specialized establishment is indispensable, the environment and living conditions therein shall be as close as possible to those of the normal life of a person of his or her age.

10. Disabled persons shall be protected against all exploitation, all regulations and all treatment of a discriminatory, abusive or degrading nature.
11. Disabled persons shall be able to avail themselves of qualified legal aid when such aid proves indispensable for the protection of their persons and property. If judicial proceedings are instituted against them, the legal procedure applied shall take their physical and mental condition fully into account.
12. Organizations of disabled persons may be usefully consulted in all matters regarding the rights of disabled persons.
13. Disabled persons, their families and committees shall be fully informed, by all appropriate means, of the rights contained in this Declaration.

Appendix 5

31/123 *International Year for Disabled Persons*

The General Assembly,

Reaffirming its deep-rooted faith in human rights and fundamental freedoms, the principles of peace, the dignity and worth of the human persons and the promotion of social justice, as proclaimed by the Charter of the United Nations,

Recalling its resolution 2856 (XXVI) of 20 December 1971 proclaiming the Declaration on the Rights of Mentally Retarded Persons,

Recalling its resolution 3447 (XXX) of 9 December 1975 proclaiming the Declaration on the Rights of disabled persons,

Recalling its resolution 31/82 of 13 December 1975 on the implementation of the Declaration on the Rights of Disabled Persons,

1. Proclaims the year 1981 International Year for Disabled Persons with the theme "full participation";
2. Decides to devote that year to the realization of a set of objectives including:
 - (a) Helping disabled persons in their physical and psychological adjustment to society;
 - (b) Promoting all national and international efforts to provide disabled persons with proper assistance, care and guidance, to make available to them opportunities for suitable work and to ensure their full integration in society;
 - (c) Encouraging study and research projects designed to facilitate the practical participation of disabled persons in daily life, for example by improving their access to public buildings and transportation systems;
 - (d) Educating and informing the public of the rights of disabled persons to participate in and contribute to various aspects of economic, social and political life;
 - (e) Promoting effective measures for the prevention of disability and for the rehabilitation of disabled persons;
3. Invites all Member States and the organizations concerned to give their attention to the establishment of measures and programmes to implement the objectives of the International Year for Disabled Persons;
4. Requests the Secretary-General to elaborate, in consultation with Member States, specialized agencies and the organizations concerned, and to submit to the General Assembly at its thirty-second session a draft programme for the International Year for Disabled Persons;

5. Decides to include in the provisional agenda of its thirty-second session an item entitled "International Year for Disabled Persons".

102nd plenary meeting
16 December 1976

Appendix 5

INTERNATIONAL YEAR FOR DISABLED
PERSONS
PROPOSED PROGRAMME BUDGET FOR THE
BIENNIUM 1980-1981
*Report of the Secretary-General
Addendum*

INTRODUCTION

1. In paragraph 13 of his report on the International Year for Disabled Persons (A/32/288), submitted to the General Assembly at its thirty-second session, the Secretary-General provided a provisional outline of the estimated costs for the 1980-1981 biennium relating to the celebration of the Year. In paragraph 8 of the related statement of administrative and financial implications on that subject (A/C.5/32/89), it was indicated that these estimates would be reviewed at a later stage of the preparatory process for the Year and that more precise estimates of the costs would be included in the proposed programme budget for the biennium 1980-1981 as a non-recurrent item related to the celebration of the Year.

Manuals on architectural barriers

36. In paragraph 74 (n) of its report, the Advisory Committee recommended that a series of manuals should be prepared covering:
- (a) Modification of architectural and other man-made barriers, to be carried out by the people themselves within community development programmes and co-operatives of disabled persons;
 - (b) Model projects for the organization of residential and other physical facilities for disabled persons;
 - (c) Systems and methods in development aid projects to eliminate existing barriers and to avoid the creation of new ones;
 - (d) Criteria for training national and local rehabilitation personnel in order that they may identify architectural and man-made barriers that could be eliminated or altered as part of general community improvement programmes;
 - (e) Development of a series of indicators for assessing the level or degree of accessibility of existing buildings and facilities intended for general use.

Appendix 5

RESOLUTION ADOPTED BY THE GENERAL ASSEMBLY

/on the report of the Third Committee
(A/34/782)/

34/154. International Year of Disabled Persons

The General Assembly

Recalling its resolution 31/123 of 16 December 1975, by which it proclaimed the year 1981 International Year for Disabled Persons.

Recalling also its resolutions 32/133 of 16 December 1977, by which it established the Advisory Committee for the International Year of Disabled Persons, and 33/170 of 20 December 1978.

Recognizing that the International Year of Disabled Persons should promote the realization of the right of disabled persons to participate fully in the social life and development of the societies in which they live and their enjoyment of living conditions equal to those of other citizens, as well as an equal share in the improvements in living conditions resulting from social and economic development.

Recognizing also that the International Year of Disabled Persons should enhance the contributions disabled persons can make as full members of society.

Acknowledging that disability should be viewed as a relationship between an individual and his or her environment.

Convinced that the International Year of Disabled Persons should result in societies responding more fully to the special difficulties which disabled persons may encounter in developing their human potential.

Convinced also that, since a large number of disabled persons are victims of war and other forms of violence, the International Year of Disabled Persons could be appropriately used as an occasion to emphasize the need for continued and reinforced co-operation among nations for world peace.

Stressing the importance of following up the activities of the International Year of Disabled Persons through a long-term programme of action.

Noting that the Secretary-General will appoint an Executive Secretary for the International Year of Disabled Persons.

Noting also the relevant parts of the 1978 report on the world social situation.

Taking note of the report of the Advisory Committee for the International Year of Disabled Persons in its first session held from 19 to 23 March 1979.

1. *Decides* to expand the theme of the International Year of Disabled Persons to "Full participation and equality".
2. *Approves* the recommendations made by the Advisory Committee for the International Year of Disabled Persons at its first session, contained in the report of the Secretary-General, and adopts them as the Plan of Action for the International Year of Disabled Persons.
3. *Stresses* the pragmatic orientation of the activities of the International Year of Disabled Persons.
4. *Affirms* that the major focus of the International Year of Disabled Persons is at the national level, with supporting activities at the regional and international levels.
5. *Invites* Member States to consider activities at the national level along the lines of the Plan of action and in ways that are in conformity with the culture, customs and traditions of each country.
6. *Also invites* the relevant specialized agencies and the concerned United Nations bodies to devote special attention to the implementation of the Plan of Action.
7. *Affirms further* that, in the implementation of the Plan of Action, special attention should be given to the disabled in developing countries through the provision of technical assistance, both multilateral and bilateral, for the prevention of disabilities and for rehabilitation.
8. *Requests* the Secretary-General in this regard, to accord priority to the organization of an action-oriented international symposium of experts on technical assistance in the field of disability and technical co-operation among developing countries, as recommended by the Advisory Committee.
9. *Requests* the Secretary General to explore the possibilities of continuing the activities of the International Institute for the Rehabilitation of Disabled Persons in Developing Countries and to submit a report in this respect to the General Assembly at its thirty-fifth session.
10. *Invites* the Chairman of the Advisory Committee to participate in promoting the observance of the International Year of Disabled Persons, and requests the Secretary-General to provide every means to assist him in this regard, including liaison functions at Headquarters.
11. *Requests* the Secretary-General to provide the secretariat of the International Year of Disabled Persons with all necessary resources needed to follow up the implementation of the

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Plan of Action, including the public information activities.

12. *Requests* the Secretary-General to convene a meeting of the Advisory Committee in 1980 to examine the implementation of the Plan of Action and to begin the consideration of a long-term programme of action.
13. *Requests* the Secretary-General to take urgent steps to publicize fully the International Year of Disabled Persons and, in this connexion, to choose an emblem for the Year at the end of 1979.
14. *Requests* the specialized agencies and other United Nations bodies concerned to prepare concrete and co-ordinated plans for the International Year of Disabled Persons, to be submitted to the Advisory Committee at its session in 1980.
15. *Invites* the regional commissions of the United Nations and other regional intergovernmental organizations to formulate, as early as possible, their contributions to the activities of the International Year of Disabled Persons.
16. *Stresses* the importance of the active participation of non-governmental organizations, especially organizations of disabled persons themselves, at both the national and international levels, in support of the International Year of Disabled Persons.
17. *Welcomes* the voluntary contributions already made by some Governments to the International Year of Disabled Persons and appeals for further voluntary contributions for the Year.
18. *Invites* Member States to submit national reports to the Secretary-General on their implementation of the Plan of Action and, in particular, to consider elaborating, on the basis of their experiences, national long-term programmes of action in the field of disability.
19. *Decides* to include in the provisional agenda of its thirty-fifth session an item entitled "International Year of Disabled Persons" and requests the Secretary-General to report on the implementation of the present resolution.

*105th plenary meeting
17 December 1979*

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RESOLUTION ADOPTED BY THE GENERAL ASSEMBLY

On the report of the Third Committee (A/35/638)

35/133. International Year for Disabled Persons

The General Assembly

Recalling its resolution 31/123 of 16 December 1976, by which it proclaimed the year 1981 International Year for Disabled Persons.

Recalling also its resolutions 32/133 of 16 December 1977, by which it established the Advisory Committee for the International Year of Disabled Persons, 33/170 of 20 December 1978 and 34/154 of 17 December 1979.

Recalling further resolution 2 entitled "Improving the situation of disabled women of all ages", adopted by the World Conference of the United Nations Decade for Women: Equality, Development and Peace.

Recognizing that the International Year of Disabled Persons should promote the realization of the right of disabled persons to participate fully in the social life and development of their societies and to enjoy living conditions equal to those of other citizens, as well as an equal share in the improvements in living conditions resulting from social and economic development.

Bearing in mind the importance of coordination at the national, regional and international levels in the programming for the prevention of disability and the rehabilitation of disabled persons.

Convinced that the International Year of Disabled Persons should give the impulse for the establishment of a long-term world plan of action to follow up the activities of the Year.

Recognizing that the International Year of Disabled Persons should contribute to a greater awareness of the magnitude and complexity of the incidence of physical, sensorial and mental disabilities through, *inter alia*, effective public information activities.

Having considered the offer of the Government of Argentina to act as host to the action-oriented international symposium of experts on technical assistance in the field of disability and technical co-operation among developing countries, to be convened during the International Year of Disabled Persons.

Concerned about the need to provide the secretariat of the International Year of Disabled Persons with the resources necessary for the implementation of the Plan of Action for the Year and its follow-up.

1. *Notes with satisfaction* the steps already taken in the implementation of the Plan of Action for the International Year of Disabled Persons by Member States, organs, organizations and bodies of the United Nations system and non-governmental organizations, and encourages them to intensify their action and coordination during the Year.
2. *Recommends* that, in their efforts to promote the full participation of disabled persons in all aspects of life, Member States and organs, organizations and bodies of the United Nations systems should pay particular attention to the participation of disabled persons themselves and of their organizations in the activities undertaken in connexion with the International Year of Disabled Persons and its follow-up.
3. *Invites* Member States which have not yet done so to establish national committees or similar bodies for the International Year of Disabled Persons.
4. *Urges* Member States to give higher priority to development assistance projects in developing countries in the fields of rehabilitation services, technical aids and training of appropriate personnel, including disabled persons themselves.
5. *Welcomes* the voluntary contributions made by Governments to the International Year of Disabled Persons and appeals for further voluntary contributions to the Year.
6. *Decides* to accept the offer of the Government of Argentina to act as host in 1981 to the action-oriented international symposium of experts on technical assistance in the field of disability and technical co-operation among developing countries, to be held in conformity with the Plan of Action for the International Year of Disabled Persons.
7. *Requests* the regional commissions to formulate appropriate programmes for implementing the recommendations contained in the Plan of Action for the International Year of Disabled Persons.

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8. *Requests* the Secretary-General to examine the question of access to United Nations buildings, documents and information for persons with sensorial disabilities.
9. *Further requests* the Secretary-General to strengthen the information activities and to provide the secretariat of the International Year of Disabled Persons with all the resources and personnel necessary for carrying out its work.
10. *Welcomes* the progress already made in the drafting of a long-term world plan of action and approves the procedure and time-scale for its adoption proposed by the Advisory Committee for the International Year of Disabled Persons at its second session.
11. *Requests* the Secretary-General to convene a session of the Advisory Committee in 1981.
12. *Requests* the Advisory Committee to examine the possibilities of continuing the activities of the International Institute for the Rehabilitation of Disabled Persons in Developing Countries in the light of the experience of the International Year of Disabled Persons.
13. *Invites* all heads of State or Government, the President of the thirty-fifth session of the General Assembly and the Secretary-General to issue special messages at the beginning of the International Year of Disabled Persons.
14. *Decides* to include in the provisional agenda of its thirty-sixth session the item entitled "International Year of Disabled Persons" and, in view of its importance, recommends that this item should be considered by the General Assembly in plenary meeting, in observance of the Year.
15. *Requests* the Secretary-General to report to the General Assembly at its thirty-sixth session on the implementation of the present resolution.

92nd plenary meeting
11 December 1980

UN RESOLUTION 4/8
HUMAN SETTLEMENTS AND THE
INTERNATIONAL YEAR OF DISABLED PERSONS

The Commission on Human Settlements

Recalling General Assembly resolution 31/123 of 16 December 1976 by which 1981 was proclaimed the International Year of Disabled Persons,

Further recalling General Assembly resolution 3447 (XXX) of 9 December 1975 on the Declaration on the Rights of Disabled Persons,

Recognizing the legitimate right of the disabled to full participation in the development of the societies in which they live,

Further recognizing that it is in human settlements that obstacles preventing the full participation of disabled persons are most apparent and tangible,

Affirming that it is technically and economically feasible to design and adjust human settlements to meet the needs of disabled persons,

1. *Urges* Governments to give special consideration to the legitimate needs of the disabled in their human settlements programmes and policies;
2. *Further urges* Governments and the United Nations system to support and assist national and international endeavours to diminish or eliminate barriers in human settlements that prevent the full participation of the disabled in social development;
3. *Requests* the Executive Director of the United Nations Centre for Human Settlements (Habitat) to give due consideration to the needs of disabled persons in human settlements in the work programme of the Centre.

6th plenary meeting
6 May 1981
in Manila

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RESOLUTION ADOPTED BY THE GENERAL ASSEMBLY

/on the report of the Third Committee
(A/36/37)/
International Year of Disabled Persons.

The General Assembly,

Recalling its resolution 31/123 of 16 December 1976, by which it proclaimed the year 1981 International Year of Disabled Persons,

Recalling also its resolution 32/133 of 16 December 1977, by which it established the Advisory Committee for the International Year of Disabled Persons, 33/170 of 20 December 1978, 34/154 of 17 December 1979, in which it, *inter alia*, decided to expand the theme of the International Year of Disabled Persons to "Full participation and equality", and 35/133 of 13 December 1980,

Deeply concerned that no less than five hundred million persons are estimated to suffer from disability of one form or another, of whom four hundred million are estimated to be in the developing countries,

Reiterating the continuing need to promote the realization of the right of disabled persons to participate fully in the social life and development of their societies and to enjoy living conditions equal to those of other citizens, as well as an equal share in the improvements in living conditions resulting from social and economic development,

Recognizing the observance of the International Year of Disabled Persons has contributed to the attainment of these objectives,

Recognizing also that a large number of disabled persons are victims of war and other forms of violence, and that the International Year of Disabled Persons has contributed towards the reaffirmation of the need for continued and reinforced co-operation among nations for world peace,

Believing that the activities undertaken by the international community in observing the International Year of Disabled Persons constitute a first essential step towards the achievement of the objectives of the Year,

Convinced that the timely and significant impetus generated by the activities of the International Year of Disabled Persons should be maintained and reinforced with appropriate follow-up action at all levels,

Taking note of the efforts of Member States during the International Year of Disabled Persons to improve the conditions and well-being of the disabled,

Expresses its satisfaction at the convening of the World Symposium of Experts on Technical Co-operation among Developing Countries and Technical Assistance in Disability Prevention and Rehabilitation, at Vienna, Austria, from 12 to 23 October 1981,

Expresses also its satisfaction at the convening of the World Conference on Actions and Strategies for Education, Prevention and Integration, at Torremolinos, Spain, from 2 to 7 November 1981, organized by the United Nations Educational, Scientific and Cultural Organization in observance of the Year

Takes note with appreciation of the progress made in the elaboration of a World Programme of Action concerning Disabled Persons,

Having considered the report of the Secretary-General 77/ on the implementation of resolution 35/133,

Having also considered the report of the Advisory Committee for the International Year of Disabled Persons 78/ on its third session,

1. *Expresses its satisfaction* to all Member States which elaborated national policies and programmes for the implementation of the objectives of the International Year of Disabled Persons;
2. *Takes note* of the activities undertaken by organizations of the United Nations system and the relevant non-governmental organizations in the observance of the International Year of Disabled Persons;
3. *Urges* Member States to make every effort to consolidate and build further on the results of the International Year of Disabled Persons in order to secure prevention of disability, rehabilitation and full integration of the disabled in the society and, in this respect, to consider maintaining, where appropriate, the national committees or similar bodies established for the Year;
4. *Again invites* Member States to submit national reports to the Secretary-General on their implementation of the Plan of Action for the International Year of Disabled Persons and, in particular, to consider elaborating, on the basis of their experiences, national long-term programmes of action in the field of disability;
5. *Requests* the Secretary-General to convene in 1982 a meeting of the Advisory Committee of the International Year of Disabled Persons to finalize the draft World Programme of Action concerning Disabled Persons, in the light of comments by Member States, international

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- organizations and relevant non-governmental organizations, with a view to its adoption by the General Assembly at its thirty-seventh session;
6. *Requests* the Advisory Committee to consider at its fourth session the advisability of proclaiming the period 1983-1992 as the United Nations Decade of Disabled Persons and to submit its views to the General Assembly at its thirty-seventh session;
 7. *Requests* the Advisory Committee to study the possibility of creating an optional international identity card for disabled persons with the purpose of facilitating the international travel of disabled persons;
 8. *Urges* the Secretary-General to take the necessary measures to assure the successful follow-up of the International Year of Disabled Persons, in particular the finalization of the World Programme of Action concerning Disabled Persons;
 9. *Also requests* the Secretary-General and heads of specialized agencies and other relevant organizations of the United Nations system to ensure necessary co-operation and co-ordination of their activities relating to the disabled;
 10. *Further requests* the regional commissions to give high priority to the formulation and implementation of regional programmes related to equalization of opportunities for disabled persons, as well as prevention and rehabilitation, and urges the specialized agencies and relevant organs of the United Nations system to continue the implementation of such programmes;
 11. *Invites* relevant non-governmental organizations to continue and expand their programmes related to the disabled in order to maintain the momentum given by the International Year of Disabled Persons;
 12. *Welcomes* the contributions made by Governments and private sources to the United Nations Trust Fund for the International Year of Disabled Persons and appeals for further voluntary contributions which would facilitate the follow-up of the Year;
 13. *Calls upon* the Secretary-General to use an appropriate portion of those voluntary contributions to support and strengthen activities in the developing countries related to International Year of Disabled Persons, including the strengthening of organizations of disabled persons;
 14. *Urges* the Secretary-General, the specialized agencies and other United Nations bodies and organizations to undertake or expedite the measures already under way to improve employment opportunities for disabled persons within these bodies at all levels and to improve access to their buildings and facilities and to their information sources;
 15. *Invites* Member States to promote close and effective co-operation between developed and developing countries through a transfer of technology and of the results of research and exchanges of information on the prevention of disability and the rehabilitation of disabled persons;
 16. *Also calls upon* the Secretary-General and the heads of the specialized agencies to take all necessary measures to strengthen and expand technical co-operation activities in developing countries relating to the disabled, especially in the areas of prevention of disability, rehabilitation and integration of disabled in their societies, with particular emphasis on the need to develop and strengthen indigenous capacities and capabilities;
 17. *Stresses* the importance of strengthening support services for the exchange of technical information and transfer of technology and know-how, as well as other activities for the development of technical co-operation in the fields of prevention, rehabilitation and equalization of opportunities in developing countries, and notes with appreciation the offer of the Government of Yugoslavia 79/ to contribute in this direction;
 18. *Invites*, as a matter of priority, Member States, organizations and bodies of the United Nations system, as well as governmental and non-governmental organizations concerned and mass media, to continue to undertake public information programmes, including the continuation of the present information activities of the Centre for Social Development and Humanitarian Affairs for the national committees, with a view to making all sections of the population increasingly aware of issues relating to the disabled;
 19. *Decides* to include in the provisional agenda of its thirty-seventh session an item entitled "World Programme of Action concerning Disabled Persons" and requests the Secretary-General to report to the General Assembly at that session on the implementation of the present resolution.

79/A/36/711.

6 Other resolutions

The International Conference "Handicapped in the City" on the adaptation of the physical environment for full participation of the Disabled has made the following formulation as part of their resolution.

"Legislation must be introduced that guarantees:

- a. access for the disabled people to all events and facilities which are available to the community at large.
- b. systematic removal of physical barriers to ensure adequate access to a choice of housing, education, employment, recreation and transportation.
- c. financial support at international, national, regional and local levels to ensure the availability of these programmes."

The Conference was arranged by the International Federation of Pedestrians (IFP) in cooperation with the Swedish Trade Fair Foundation and the General Committee on National Associations of the Handicapped in Sweden (HCK).

The resolution was accepted by the delegates at the Conclusion Session May 7, 1980.

7 IYDP 1981, objectives of the year

"The year 1981 was proclaimed by a resolution of the UN General Assembly in 1976 as the International Year for Disabled Persons, with the keynote theme: "full participation and equality". The aim of the Year is to encourage the rehabilitation of the estimated 450 million people on earth who suffer from some form of physical or mental impairment. Five principal objectives for the Year were set out in the General Assembly resolution:

- Helping disabled persons in their physical and psychological adjustment to society.
- Promoting all national and international efforts to provide disabled persons with proper assistance, training, care and guidance, to make available opportunities for suitable work and to ensure their full integration in society
- Encouraging study and research projects designed to facilitate the practical participation of disabled persons in daily life, for example by improving their access to public buildings and transportation systems
- Educating and informing the public of the rights of disabled persons to participate in and contribute to various aspects of economic, social and political life
- Promoting effective measures for the prevention of disability and for the rehabilitation of disabled persons.

8 Functional requirements in the physical environment

CATEGORY OF DISABLED PERSONS	RESIDENTIAL BUILDINGS					PUBLIC	
	Rural Traditional Houses	Detached Houses	Low-rise Houses	High-rise Houses	Houses for the disabled	Educational Facilities	Health Facilities
PERSONS WHO HAVE MOVING DIFFICULTIES	Entrance Supporting handrails	Entrance Doors	Entrance Doors	Entrance Doors Lifts	Entrance Doors	Entrances Doors Ramps Steps Stairs Handrails Surfaces Lavatories Corridors	Entrances Doors Corridors Lavatories Steps Stairs Ramps Surfaces Handrails
PERSONS WHO HAVE SEEING DIFFICULTIES	Projecting components Open fire-place	Projecting components Fireplace	Stairs Handrails	Stairs Handrails	Stairs Handrails Colour Signals Light	Entrances Doors Steps Handrails Windows Signs Surfaces Light Colour	Entrances Doors Steps Handrails Signs Surfaces Light Colour
PERSONS WHO HAVE HEARING DIFFICULTIES			Signs	Signs	Signs	Signs Light Acoustics	Signs Light Acoustics
PERSONS WHO HAVE LEARNING DIFFICULTIES	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions	(helpers) Simple layouts	(helpers) Simple layouts
PERSONS WHO HAVE STRANGE BEHAVIOUR	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions
PERSONS WHO HAVE FITS	Open fire-place	Fireplace	Fireplace			Edges Corners	Edges Corners

scheme

It is unrealistic to include all the publications and references regarding recommended provisions for disabled persons. However, this annotated bibliography should give an extensive list of the principal works covering the disabled in the built environment.

BUILDINGS			PLACES OF WORK		INFRASTRUCTURAL BUILDINGS			
Administrative Facilities	Recreational Facilities	Sports Facilities	Offices	Industrial Premises	Pedestrian Routes	Transport Systems	Street Furniture	Vehicular Access
Entrances Doors Ramps Steps Stairs Handrails Corridors Lavatories Lifts	Doors Ramps Steps Stairs Corridors Lifts Lavatories Floors Switches Handrails Baths	Doors Ramps Steps Stairs Corridors Lavatories Baths Surfaces Switches Handrails	Doors Ramps Steps Stairs Corridors Lavatories Floors Switches Handrails	Doors Ramps Steps Stairs Corridors Lavatories Baths Floors Switches Handrails	Rails Steps Ramps Pavements Crossings	Bus stops Railway stations Ramps Steps Entrances Buses Lifts	Doors Steps Handrails	Handrails Parking space
Entrances Doors Steps Handrails Signs Surfaces Light Colour	Entrances Signs Steps Handrails Signs Surfaces Colour	Entrances Ramps Steps Stairs Windows Handrails Signs Surfaces	Entrances Doors Signs Handrails Surfaces Light Colour	Entrances Doors Signs Handrails Surfaces Light Colour	Footpaths Signposts Signals Surfaces Steps Handrails Projecting components	Signs Signals Steps Loud-speaking system Handrails Handles	Doors Handrails Steps Signs Colour	
Signs Light Acoustics	Signs	Signs	Signs Light	Signs Light	Signs Signals	Signs Signals Information boards		
(helpers) Simple layouts	Simple layouts	Simple layouts	Simple layouts	Simple layouts	Simplicity in plans Recognizable features	Simplicity in plans Recognizable features	Recognizable features	Recognizable features
Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions	Simple layouts Uncomplicated solutions
Edges Corners	Edges Corners	Edges Corners	Edges Corners	Edges Corners				



9 Abbreviations

AB	Limited Company, Sweden
AMREF	African Medical Research Foundation
CEH	Centre on Environment for the Handicapped
DPI	Disabled People's International
FAO	Food and Agriculture Organization
HCK	National Associations of the Handicapped in Sweden
ICTA	International Commission on Technical Aids
IFP	International Federation of Pedestrians
ILO	International Labour Organization
ISO	International Organization for Standardization
IYDP(s)	International Year of Disabled Persons (secretariat)
MARU	Medical Architecture Research Unit (The Polytechnic of North London)
RADAR	The Royal Association for Disability and Rehabilitation
RI	Rehabilitation International
RIBA	Royal Institute of British Architects
SAR	National Association of Swedish Architects
SHIA	Swedish Handicap Organisations' International Aid Foundation
SIDA	Swedish International Development Authority
UN	United Nations
UNCHS	United Nations Centre for Human Settlements (Habitat)
WHO	World Health Organization

Front cover illustration by Hugh Rigby.

Printed in Austria
V.82-35229—January 1983—6,500

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