

DESIGN MANUAL

BARRIER FREE ACCESS

1997

BUILDING AUTHORITY

HONG KONG

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## **CHAPTER 1**

### **FOREWORD**

- 1.1** This Design Manual is an updated version of the "Design Manual : Access for the Disabled 1984".
- 1.2** Since 1984, there have been changes in the building technology, the quality of life of the general public and the attitudes of the community towards persons with a disability. The current exercise is carried out to ensure that the requirements for providing proper access and facilities for persons with a disability reflect all these changes. As in the case of the 1984 exercise, the publication of this Manual rests on the belief that persons with a disability should have the same rights as any other individuals - the rights to medical and rehabilitative services, education, housing, employment, transport, cultural, sports and leisure activities which will hasten the process of his or her social integration or reintegration (U.N. Declaration on Rights of Disabled Persons, December 1975).
- 1.3** The "barrier-free" design requirements included in this Manual will help considerably towards greater independence of not only persons with a disability, but also the elderly, pregnant women, and indeed a broad spectrum of the community. (This is the reason why we have changed the title of this Manual to "Design Manual : Barrier Free Access"). Of course, this Manual should never be seen as a limit to the creativity and forethought of the architects, and our care of the well being of the persons with a disability. We believe facilities of a reasonable standard, whether included in this Manual or not, should always be provided for the use of persons with a disability, whenever practicable.
- 1.4** The Disability Discrimination Ordinance was enacted in August 1995. It prohibits, among other things, discrimination against persons with a disability by failing to provide means of access to any premises that the public or a section of the public is entitled or allowed to enter or use, or by refusing to provide appropriate facilities. However, there is no discrimination in relation to the provision of access to premises if the premises are so designed or constructed as to be inaccessible to persons with a disability and any alteration to the premises to provide such access would impose unjustifiable hardship on the person who would have to provide it. A person who believes he or she has been discriminated against in relation to access to premises or the provision of facilities may lodge a complaint with the Equal Opportunities Commission or may institute legal proceedings in the court. We believe the Equal Opportunities Commission may refer to this Manual as it sees fit in considering whether it is reasonable to require the provision of such access or facilities.

- 1.5** For a new building or for the alterations or additions to an existing building, section 84 of the Disability Discrimination Ordinance stipulates that -

**“84. Building approvals**

(1) Notwithstanding any provision in any other Ordinance (whether enacted before or after the commencement of this Ordinance) but subject to subsection (3), a public authority which has the power to approve building works shall not, in respect of those works, approve building plans, whether for a new building or for the alterations or additions to an existing building unless the person seeking approval satisfies the public authority that such access as is reasonable in the circumstances to the building or premises will be provided for persons with a disability.

(2) In considering whether reasonable access will be provided under subsection (1), the public authority may take into account -

- (a) whether it is practicable to provide such access within the curtilage of the building, bearing in mind the physical location and immediate environs of the building; and
- (b) whether providing such access would impose unjustifiable hardship on the person seeking approval or on any other person.

(3) Subsection (1) has no application to -

- (a) buildings of 13 m or less in height above ground level which are used, or intended to be used, for occupation by a single family; or
- (b) temporary buildings or contractor's sheds referred to in Part VII of the Building (Planning) Regulations (Cap. 123 sub. leg.).

(4) In this section, “public authority” (公共主管當局) includes -

- (a) the Director of Lands;
- (b) the Building Authority;
- (c) the Housing Authority;
- (d) the Director of Architectural Services.”

- 1.6** This Manual will apply to newly constructed or substantially altered private buildings. Relevant Government authorities and departments will also refer to it in the design and construction of government and public buildings.

## CHAPTER 2

### INTRODUCTION

- 2.1** This Design Manual aims to set out design requirements for providing proper access to and appropriate facilities in a building for persons with a disability and other sectors of the population, who do at times require the same provisions as persons with a disability.
- 2.2** The types of disabilities for which this Manual caters are -
- (a) locomotory disabilities;
  - (b) sensory disabilities which include
    - i) visual impairment
      - low vision
      - totally blind, and
    - ii) hearing impairment.
- 2.3** For the purpose of this Manual, the following terms are defined as -
- (a) "**Persons with a disability**" means persons who on account of injury, disease, or congenital deformity, are impaired in vision, hearing or locomotion.
  - (b) "**Locomotory disabilities**" affect mobility, i.e. impairment of the trunk, lower limbs, or the trunk and lower limbs. Persons who have impaired function in one or both upper limbs are manipulatory impaired. Many persons with impaired lower limbs also have impaired upper limbs. To satisfy the requirements of such persons, account should be taken simultaneously of the limitation imposed by both upper and lower limbs impairment.
  - (c) "**The wheelchair users**" are those persons who, except when using mechanised transport, depend solely on a wheelchair for mobility.
  - (d) "**The ambulant disabled persons**" are those who are able, either with or without assistance, to walk on the level and negotiate suitably graded steps with or without the aid of devices such as crutches, sticks, braces or walking frames.

- (e) **"Buildings intended to be used by the public"** means a building where the whole or any part of which the public or a section of the public has or may reasonably be expected to have access. Examples include hospitals, all types of transport termini and stations, banks, retail and wholesale shops and shopping complexes, markets, schools and any kind of educational institutes, sports facilities, places of public entertainment, places for worship and all government buildings.
- (f) **"Common areas"** are those areas of a building intended for the common use and benefit of the owners or occupants or visitors of the building as a whole and not only for the use and benefit of the owners or occupants or visitors of any particular unit.
- (g) **"Place of public entertainment"** means a place of public entertainment within the meaning of the Places of Public Entertainment Ordinance (Cap. 172)
- (h) **"Access"** is means to enable persons with or without a disability to approach, enter and leave a building, and to reach and use its facilities without assistance and undue difficulties.

## CHAPTER 3

### APPLICATION, EXEMPTIONS AND ENFORCEMENT

#### APPLICATION AND EXEMPTIONS

**3.1** Recognising the distinct physical characteristics of each building and to avoid imposing unjustifiable hardship on building owners, the requirements set out in this Manual are classified into -

(a) Obligatory design requirements

- All requirements falling within this category shall be complied with, unless the building owner is able to prove that any of them, individually or jointly, will impose unjustifiable hardship on him or her; and

(b) Recommended design requirements

- These requirements are included for the reference of building owners and professionals who intend to provide access and/or special facilities that are enhanced from the obligatory design requirements for the use by persons with a disability.

**3.2** Subject to **3.3 and 3.4**, a new building or any alterations or additions to an existing building shall be designed in accordance with the obligatory design requirements set out in this Manual.

**3.3** The means of access and facilities stipulated in the obligatory design requirements may be provided to the categories of buildings specified in the first column of the following table only to the extent specified in the second column thereof -

Category of  
buildings

Extent of the application  
of this Manual

1. Domestic buildings	<ul style="list-style-type: none"> <li>- All common areas of buildings of more than 4 storeys.</li> <li>- Main entrance and common area of the ground floor and means of access thereto for buildings which do not exceed 4 storeys.</li> </ul>
2. Composite buildings	<ul style="list-style-type: none"> <li>- Non domestic parts of such building.</li> <li>- All common areas of the domestic parts of such buildings, if the domestic parts exceed 4 storeys.</li> <li>- Main entrance and common area of the ground floor and means of access thereto, if the domestic parts do not exceed 4 storeys.</li> </ul>
3. Buildings which are places of public entertainment	<ul style="list-style-type: none"> <li>- The area of the main foyer;</li> <li>- The spectator level in the auditorium provided in accordance with 3.5 and means of access thereto;</li> <li>- Toilets for the use of the public.</li> </ul>
4. Public swimming pools, gymnasia, games halls and sport stadia	Areas include any swimming pools, changing rooms, toilets and other facilities open to the public, and the means of access thereto.
5. Hotels	<ul style="list-style-type: none"> <li>- Public areas and means of access thereto;</li> <li>- Rooms for persons with a disability provided in accordance with 3.6 and means of access thereto.</li> </ul>

**3.4** The obligatory design requirements shall not apply to -

- (a) buildings of 13m or less in height above ground level which are used, or intended to be used, for occupation by a single family; or
- (b) temporary buildings or contractor's sheds referred to in Part VII of the Building (Planning) Regulations (Cap.123 sub.leg.).

**3.5 AUDITORIUM**

**3.5.1 Obligatory Design Requirements**

There shall be provided in the auditorium of every building which is a place of public entertainment a spectator level with unobstructed line of vision, a minimum of four wheelchair spaces. Two wheelchair spaces shall be provided for every 400 fixed seats and any part thereof. (For example, a total of six wheelchair spaces shall be provided if there are 900 fixed seats.) The spaces shall be grouped into a number of not less than four and also not separated from the seats for other audiences. For the purpose of this section a wheelchair space is a rectangle of 800 mm x 1300 mm with the side of 800 mm facing toward the stage podium or screen (see **Figure 1**).



### 3.5.2 Recommended Design Requirements

The stage of an auditorium and the back-of-stage facilities such as changing rooms, rehearsal rooms etc. should be accessible to wheelchair users by a ramp or a vertical lift.

## 3.6 HOTELS

### Obligatory Design Requirements

A minimum of two guest rooms with full facilities for persons with a disability shall be provided to a hotel. Two such rooms shall be provided for every 100 guest rooms and any part thereof. (For example, a total of four such rooms shall be provided if there are 150 guest rooms.) For the purpose of this section, hotel includes hostel and guesthouse. A typical bathroom and shower compartment are shown in **Figure 2**.

## ENFORCEMENT

- 3.7 To ensure effective enforcement, the following obligatory design requirements are put into the following legislation -

Legislation	Obligatory Design Requirements
Building (Planning) Regulations	3.5.1 for auditorium; 3.6 for hotels; 4.1.1 for access; 4.2.1 for ramps; 4.3.1 for dropped kerbs; 4.4.1 for steps and staircases; 4.5.1 for handrails; 4.6.1 for corridors, lobbies and paths; 4.7.1 for doors; 4.8.1 for W.C. cubicles; 4.9.1 and 4.9.2 for signs; 4.10.1 for public service counters 5.4.1 for emergency call bell in disabled toilets; 5.6.1 for induction loop system 5.7 and 5.7.1 (a), (c), (d) and (e) and 5.8.1 for lifts.

For those obligatory design requirements which are not put into legislation, we intend to incorporate them into the following codes of practice -

Code of Practice	Obligatory Design Requirements
COP for Minimum Fire Service Installations and Equipment and Inspection and Testing of Installations and Equipment deemed to satisfy the requirements of the Director of Fire Services for the purpose of complying with Section 16(1)(b) of the Buildings Ordinance (Cap.123)	5.3.1 for fire alarm system in buildings intended to be used by the public.
COP on the Design and Construction of Lifts and Escalators and on the Examination, Testing and Maintenance of Lifts and Escalators deemed to satisfy Lifts and Escalators (Safety) Ordinance (Cap. 327)	5.7.1 (b), (f) and (g) for lifts provided for persons with a disability.

## **CHAPTER 4**

### **DESIGN REQUIREMENTS FOR PERSONS WITH A DISABILITY**

#### **4.1 ACCESS**

This section aims to ensure that proper access to buildings is provided for the public and persons with a disability.

##### **4.1.1. Obligatory Design Requirements**

- (a) Access shall be provided from a point or points on the lot boundary, which is accessible to a public street or pedestrian way, directly to at least one entrance which is commonly used by the public or to a point directly adjacent to one entrance which is commonly used by the public and to a lift.
- (b) When car parking is provided, at least one car parking space shall be reserved for persons with a disability and accessible to at least one entrance and to a lift.
- (c) Such access shall be free from steps, kerbs other than dropped kerbs, steep ramps, doors or doorways which will impede the passage of a wheelchair, or other form of barrier which will prevent access by persons with a disability.

##### **4.1.2. Recommended Design Requirements**

- (a) Specific car parking spaces should be reserved for persons with a disability and be accessible from the spaces to a lift.

#### **4.2 RAMPS**

At changes in level other than when served by a lift or at kerbs, there shall be a ramp. Persons with a disability, particularly those using crutches, will find steep ramps difficult to negotiate. Wheelchair users will find steep and/or long ramps difficult to negotiate if there are not sufficient number of intermediate landings for them to take rest.

#### **4.2.1 Obligatory Design Requirements**

- (a) Ramps shall not be less than 1.05 m in width.
- (b) A space of not less than 1.5 m x 1.5 m shall be provided at the head and foot of every ramp.
- (c) No ramp shall be at a gradient steeper than 1 in 12.
- (d) Where a ramp is at a gradient of 1 in 20 or steeper (but not steeper than 1 in 12), a landing of not less than 1.2 m long shall be provided for each 10 m length of horizontal run or part thereof.
- (e) Any ramp with a rise greater than 200 mm, leading down towards an area where vehicular traffic is possible, shall have a railing or barrier across the full width of its lower end, not less than 1.5 m from the foot of the ramp.
- (f) All ramps shall be provided with handrails on both sides.
- (g) Raised directional signs shall be provided on handrails mentioned in subsection (f) in places where directional signs exist.
- (h) Tactile warning strips shall be provided at the head and foot of a ramp (see **Figure 3**).
- (i) The floor and wall along ramps shall be in contrasting colours.
- (j) No appliances, fixtures and fittings shall project beyond 90 mm from the surface of any wall below a level of 2 m above the ramp level unless they are unavoidable, in which case they shall also be extended downwards to the ramp level or be guided by tactile flooring materials.

#### **4.2.2 Recommended Design Requirements**

- (a) Width should be at least 1.2 m to enable a wheelchair to turn or preferably at least 1.5 m to allow 2 wheelchairs to pass.
- (b) Slopes should be reduced to a gradient not steeper than 1 in 20.
- (c) A kerb at least 100 mm high, or a rail 200 mm above ramp level should be provided to prevent wheelchairs from slipping over the edge.
- (d) Ramps should have non-slip surfaces. Raised traction strips should be avoided.

### 4.3 DROPPED KERBS

It is difficult for persons using wheelchairs or crutches to overcome sudden rises or falls at pavement where changes in level occur. For this reason, these sudden rises or falls should be minimized by providing dropped kerbs as set out below.

#### 4.3.1 Obligatory Design Requirements

- (a) Changes in level at kerbs shall be by a dropped kerb. Dropped kerbs shall be provided at pedestrian crossings and at each end of the footpaths of a private street or access road. Kerbs separating footpaths or ramps from vehicular areas shall also be dropped kerbs. Dropped kerbs shall be constructed as follows:
  - i) dropped kerbs shall be not less than 1.2 m in length and 1.28 m in width;
  - ii) dropped kerbs shall be ramped at a gradient not steeper than 1 in 6 and there shall be a space of not less than 800 mm long behind the dropped kerbs;
  - iii) kerbs adjoining dropped kerbs shall be ramped at a gradient not steeper than 1 in 6;
  - iv) a 10 mm level change shall be provided at every interface of dropped kerbs and vehicular areas.

The layout of dropped kerbs shall comply with **Figure 4**.

#### 4.3.2 Recommended Design Requirements

- (a) Dropped kerbs should be so located to enable users to have an unobstructed view of traffic approaching from any direction.
- (b) Dropped kerbs should be provided where necessary and in conjunction with pedestrian crossings, which should include visible, audible and tactile crossing devices with traffic lights.
- (c) Dropped kerbs should have non-slip surfaces and be cued by texture and colour contrasts. Raised traction strips should be avoided.

## **4.4 STEPS AND STAIRCASES**

This section sets out the minimum requirements to help the ambulant disabled persons and persons with visual impairment to negotiate steps and staircases.

### **4.4.1 Obligatory Design Requirements**

- (a) Staircases of a building shall:
  - i) be constructed with treads not less than 225 mm in width (measured at the centre of the flight) from the face of one riser to the face of the next riser and with risers not exceeding 175 mm in height;
  - ii) have not more than 16 steps in any flight without the introduction of a landing;
  - iii) be provided on at least one side with properly fitted handrails which comply with section 4.5; and
  - iv) be provided with non-slip nosing in contrasting colour.
- (b) Tactile warning strips shall be provided at landings and at both bottom and top ends of a staircase (see **Figure 5**).
- (c) Treads and walls of a staircase shall be in contrasting colours.
- (d) No appliances, fixtures and fittings shall project beyond 90 mm from the surface of any wall in a staircase below a level of 2 m above the treads of the staircase unless they are unavoidable, in which case they shall also be extended downwards to the level of the treads or be guided by tactile flooring materials.
- (e) Raised directional signs shall be provided on handrails mentioned in subsection (a)(iii) in places where directional signs exist.

### **4.4.2. Recommended Design Requirements**

- (a) Risers should be vertical or with a receding face not exceeding 15 mm from the vertical, without a projecting nosing. Open risers should be avoided.
- (b) Risers should be reduced to 150 mm high and treads be increased to 280 mm wide for greater ease of use.

- (c) Individual flights should not exceed 1800 mm total rise or 12 risers.
- (d) Winders and splayed steps should be avoided.
- (e) The top nosing of any flight should not be less than 300 mm from the point at which the adjoining wall returns (see **Figure 6**).
- (f) All steps and staircases should have continuous handrails on both sides.
- (g) Both natural and artificial lighting should throw light towards and not down to staircases. The full tread should be lit to a minimum level of 120 lux.

## **4.5 HANDRAILS**

Handrails help persons with a disability to use staircases, to pull themselves up inclines and check themselves on declines and to assist them in sitting down or getting up. Therefore, handrails should be of the correct size, strength and shapes and be conveniently located so that they can provide secure hand-grips for persons to take their entire weight when required.

### **4.5.1 Obligatory Design Requirements**

- (a) Handrails to ramps and steps shall be fixed not less than 30 mm and not more than 50 mm clear of walls and with a clear height of 70 mm from the top of the bracket to the top of the handrail.
- (b) The top of handrails shall be at a height of not less than 850 mm and not more than 950 mm above any nosing, floor or landing.
- (c) Handrails shall extend horizontally not less than 300 mm beyond the first and last nosing of every flight of steps or beyond the ends of a ramp (see **Figure 7**).
- (d) Handrails shall be installed to resist a load of not less than 1.3 kN applied vertically or horizontally.
- (e) Handrails shall not rotate within their fixing fittings.

- (f) Handrails shall be :
- i) tubular, not less than 32 mm and not greater than 40 mm in external diameter; and
  - ii) or any other case, such as to afford to the user a grip analogous to that specified in the case of tubular handrails.

Typical handrail sections are shown in **Figure 8**.

## **4.6 CORRIDORS, LOBBIES, PATHS**

The object of this section is to enable persons with a disability to have the same freedom of movement as ordinary persons within a building or on external paths.

### **4.6.1 Obligatory Design Requirements**

- (a) Space shall be allowed for manoeuvring wheelchairs in corridors, lobbies, paths and similar areas as follows :
  - i) areas shall have a clear width of not less than 1.05 m;
  - ii) a space not less than 1.5 m x 1.5 m shall be provided at or within 3.5 m of every dead end;
  - iii) any lobby in a corridor shall not be less than 1.2 m long, excluding space for door swings; and
  - iv) a level area, extending not less than 1.2 m beyond the swings of the doors and not less than 1.5 m in width shall be provided on both sides of every entrance of a building.

Provided that these items shall not apply to lobbies which lead only to staircases.

For the purpose of this section, "dead end" is a corridor, lobby or path where the means of exit for persons with a disability is in one direction only.

- (b) On footpaths, covers to a channel shall be flush with the surface of the footpath. Any hole in such cover or between such covers shall have a dimension not more than 20 mm.



- (c) No appliances, fixtures and fittings shall project beyond 90 mm from the surface of any wall in corridors, paths and lobbies below a level of 2 m above the finished floor level unless they are unavoidable, in which case they shall also be extended downwards to the finished floor level or guided by tactile flooring materials.
- (d) For turnstile controlled passages accessible to the public, there shall be at least one turnstile which is of minimum 800 mm in width for the use by wheelchair users and clearly marked as such, unless an alternative passage is provided.

#### **4.6.2 Recommended Design Requirements**

- (a) Width should be at least 1200 mm to enable a wheelchair to turn or preferably at least 1500 mm to allow 2 wheelchairs to pass. At right angle turns, inside corners should be splayed or rounded to at least 300 mm radius. These would allow a wheelchair user to pass anyone who is on the same path or to turn in a corridor easily.
- (b) All corridors should have non-slip surfaces.
- (c) Soft loose surfaces, such as gravel or stone, are hazardous and should be avoided.
- (d) Hazards on floors, caused, for instance, by unnecessary projections or by unexpected changes in level should be avoided.

### **4.7 DOORS**

This section sets out the requirements to enable persons with a disability, the wheelchair users in particular, to enter and leave any room unaided and without undue difficulties.

#### **4.7.1 Obligatory Design Requirements (see Figure 9)**

- (a) Doors, including one leaf of a pair of a double doors, shall have a clear width of not less than 750 mm between the open door and opposite jamb or the other leaf.
- (b) The unobstructed area adjacent to the door handle on the leading face of a single door shall not be less than 380 mm in width.
- (c) Doors, if less than 380 mm from the corner of a room, shall swing from the side nearer that corner.
- (d) Double-action self-closing doors shall have a check mechanism to prevent the doors swinging beyond the closed position and a transparent vision-panel with a bottom edge not more than 1 m and the top edge not less than 1.5 m above the finished floor level.
- (e) Door handles shall not be less than 950 mm and not more than 1.05 m above the finished floor level, measured from the top surface of the grip.
- (f) Door thresholds shall not exceed 25 mm in height and shall be bevelled to facilitate passage of wheelchairs.
- (g) Door closing devices shall be designed to allow exterior and interior doors to be opened with forces of not more than 30 N and 22 N respectively. Closers for interior doors shall have a closing period of at least 3 seconds measured from an open position of 70° to a point 75 mm from the closed position measured from the leading edge of the door. Door closing devices include door closers, spring hinges and floor hinges.
- (h) In buildings intended to be used by the public, no frameless glass doors should be used unless unavoidable, in which case they shall be prominently marked so as to make them visible.

#### **4.7.2 Recommended Design Requirements**

- (a) External doors should be single-action and open outwards (to obviate high tension in spring closers in sustaining wind pressure).
- (b) Where doors are latched, lever-type handles should be used.

- (c) All doors which allow the passage of wheelchairs should have kickplates not less than 200 mm high fitted on the face which swings away.

## **4.8 TOILET AND W.C. CUBICLES**

This section explains the requirements to enable wheelchair users to use as normally as possible the facilities provided in a w.c. cubicle without any assistance from others. The space requirements are set to enable a wheelchair user to turn and manoeuvre into position for frontal, side or diagonal transfer to and from the w.c. seat. A typical cubicle is shown in **Figure 10**.

### **4.8.1 Obligatory Design Requirements**

#### Number of Water Closet Cubicles

- (a) The minimum number of water closet cubicles for use by persons with a disability on each floor, or in that part of a floor designed for access by those persons, shall be one where the total number of water closets provided on that floor or in that part of a floor is 20 or less, or two where the number of water closets exceeds 20. This item shall not apply to domestic buildings and the domestic parts of composite buildings.
- (b) When water closet cubicles for use by persons with a disability are accessible through a room with multiple cubicles, the minimum number of such cubicles for each sex shall be based on the number of water closets for each sex on that floor or in that part of a floor designed for access by persons with a disability.
- (c) The water closet cubicles required by this Manual shall be deemed to be included in the number of soil fitments required under the Buildings (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulations (Cap.123 sub.leg.) and Part VII of the Education Regulations (Cap.279 sub.leg.).

#### Location of Water Closet Cubicles

- (d) Water closet cubicles shall be accessible -
  - i) directly from a public corridor which complies with 4.6; and
  - ii) when situated within a room containing other water closet cubicles, through a clear space not less than 1.5 m x 1.5 m immediately in front of the cubicle to allow manoeuvrability or by direct approach where no turning of the wheelchair is necessary.

#### Design of Water Closet Cubicles

- (e) The water closet cubicle for persons with a disability shall not be less than 1.5 m x 1.75 m in area and -
  - i) the cubicle shall have in it a water closet at a height not less than 450 mm and not more than 475 mm, measured to the top of the toilet seat. Water closets shall be equipped with a back support such as a seat lid and seats shall not be spring-actuated;
  - ii) flushing controls shall be mounted on the wide side of the cubicle at a height between 600 mm to 1050 mm above the finished floor level and shall be hand-operated or automatic. Hand-operated controls shall be capable of being operated with one hand and shall not require tight grasping, pinching or twisting of the wrist. The force required shall not be greater than 22 N;
  - iii) the cubicle shall be provided with a wash basin mounted with the rim not higher than 750 mm above the finished floor level. A clearance of 550 mm shall be maintained from the finished floor level to the bottom of the apron; and
  - iv) taps for wash basins shall be automatic or of lever control type without spring loading, subject to the approval of the Water Authority. Taps shall not require tight grasping, pinching or twisting of the wrist. The operating force required shall not be greater than 22 N.
- (f) No coin box shall be affixed to the door of the cubicle.
- (g) Any door fastening shall be capable of being operated from the outside in the event of an emergency.

- (h) There shall be at least 2 handrails which shall not be less than 32 mm and not more than 40 mm in external diameter and shall be fixed on the wall leaving a grip space of not less than 30 mm clear of that wall.
- (i) There shall be one handrail which shall not be less than 32 mm and not more than 40 mm in external diameter and shall be fixed on the surface of the door of the cubicle which faces the inside of the cubicle and leaving a grip space of not less than 30 mm clear of that surface.
- (j) There shall be one folding rail on the wide side of the cubicle adjacent to the water closet at a height of 750 mm above the finished floor level when lowered from the wall. The handrails, folding rail and wash basin shall be capable of carrying a static load of 150 kg.
- (k) An emergency call bell shall be provided in the cubicle in accordance with 5.4.

#### **4.8.2. Recommended Design Requirements**

- (a) W.C. cubicles should where possible be accessible from a corridor so that they can be used by either sex with assistance from members of the opposite sex if necessary.
- (b) Steps should be avoided for urinals. Wall hung urinals with a front rim not high than 400 mm should be provided. Vertical grab rails of 600 mm length should also be provided at a height of 1200 mm above the finished floor level for the use of the ambulant disabled.

### **4.9 SIGNS**

The facilities provided for persons with a disability will serve no useful purpose if their existence and locations are not clearly shown. It is therefore essential that suitable signs are erected at prominent positions within and/or outside a building.

#### **4.9.1 Obligatory Design Requirements**

- (a) Signs shall be erected to indicate clearly the exact locations of facilities available for use by persons with a disability. They shall be identified by the international symbol for access for persons with a disability. The symbols shall be white on a blue background and be used for the purposes of identifying/advertising/signifying :
  - i) accessible entrance(s) to the building;
  - ii) accessible exit(s) from the building;

- iii) reserved car parking facilities; and
- iv) the location of disabled toilets.

For illustration, see **Figures 12 and 13**.

- (b) Signs shall be not less than the following sizes

Height	60 mm for doors
	110 mm for corridors
	200 mm for external use

Length to be in multiple units of height

- (c) Visual (such as LED) display boards shall be provided in buildings intended to be used by the public where there is an announcer to regularly inform persons inside of matters relating to the purpose of their entry. The board shall be able to display the essence of the information so announced. Examples include display boards to inform travellers of the arrival and destination of the MTR train.

#### **4.9.2 Special Obligatory Design Requirements to Assist Persons with Visual/Hearing Impairment in Buildings intended to be used by the Public**

- (a) Braille and tactile layout plan showing the main entrance(s), toilets and major common facilities shall be provided in a conspicuous place in that building where layout plans for the use of the public are provided.
- (b) Tactile guide path to lift zones and functional areas shall be provided.
- (c) International signs shall be provided to indicate the provision of an inductive loop system for persons with hearing impairment, if any (see **Figure 11**).
- (d) Tactile signs indicating whether the toilet is for male or female shall be installed either on the toilet door or on the adjacent wall.

#### **4.9.3. Recommended Design Requirements**

- (a) Signs should be erected to indicate clearly the locations of the following facilities in a building :

- i) accessible routes through the building;
  - ii) usable vertical circulation facilities;
  - iii) usable cloakroom facilities; and
  - iv) the availability of special services in the building.
- (b) Lettering should be legible, e.g. Helvetica (medium) using lower case letters except for initial capitals.
  - (c) Corners of signs should be rounded.
  - (d) Chinese characters should be legible e.g. "Haak Tai" style.
  - (e) Signs should be of contrasting tone to its background.
  - (f) Signs should be in raised characters.
  - (g) Clear and consistent system of signs should be used.

#### **4.10 MISCELLANEOUS DESIGN REQUIREMENTS**

In addition to Sections 4.1 to 4.9, other miscellaneous design requirements are set out below.

##### **4.10.1 Obligatory Design Requirements**

- (a) At least one of the public service counters in a building intended to be used by the public, if such counters are provided, shall not be higher than 750 mm above the finished floor level.

##### **4.10.2 Recommended Design Requirements**

- (a) Manually operated gear (e.g. for windows) should be located not lower than 1100 mm and not higher than 1.2 m above the finished floor level.
- (b) Building finishes should be glare resistant.

## **CHAPTER 5**

### **BUILDING SERVICES**

#### **5.1 SWITCHES AND CONTROLS**

##### **5.1.1 Recommended Design Requirements**

- (a) Except as otherwise provided in 5.7 for lifts, the controls for the operation of building services or safety devices including electrical switches, light switches, thermostats and intercom switches which are intended to be accessible to the public should be located not higher than 1.1 m above the finished floor level.
- (b) Electric sockets should be located not lower than 500 mm above the finished floor level.
- (c) Light switches and socket outlets should have good contrasting colours to indicate their location against their background.

#### **5.2 ILLUMINATION**

##### **5.2.1 Recommended Design Requirements**

- (a) Common areas of a building should have an illumination level of not less than 120 lux measured at the finished floor level.

#### **5.3 FIRE ALARM SYSTEM**

##### **5.3.1 Obligatory Design Requirements**

- (a) In buildings intended to be used by the public, visual alarm signals shall be provided to form part of the fire alarm system. The visual alarm signal shall be in the form of a flashing red light, labelled "Fire Alarm" (in both English and Chinese), and be located at a prominent location in places which are intended to be accessible to the public to ensure that it can be seen from anywhere in those areas when the fire alarm is activated.



- (b) The fire alarm call points or actuation controls, e.g. breakglass units, in places which are intended to be accessible to wheelchair users, shall not be located higher than 1.2 m above the finished floor level.

## **5.4 EMERGENCY CALL BELL IN DISABLED TOILETS**

### **5.4.1 Obligatory Design Requirements**

An emergency call bell shall be equipped with a waterproof push button for activating the bell.

The emergency call bell push button shall be conveniently accessible and located at a height of 600 mm above the finished floor level. The call annunciation shall be provided by a call bell outside the toilet or a buzzer in the caretaker's office, where appropriate. A notice "*Emergency Call*" (in both English and Chinese) shall be fitted next to the emergency call bell push button.

## **5.5 TELEPHONES**

### **5.5.1 Recommended Design Requirements**

Where public telephones are provided in a building, one on each floor accessible to the public should have its dial and handset not higher than 900 mm above the finished floor level and should be easily accessible to wheelchair users.

## **5.6 INDUCTION LOOP SYSTEM**

### **5.6.1 Obligatory Design Requirements**

- (a) An induction loop system shall be provided :
  - i) at at least one of the information counters, if any, in a building intended to be used by the public;
  - ii) in the public hall, if any, of such a building; and
  - iii) in the auditorium, if any, of such a building.

- (b) For the purpose of this section, induction loop system is a system which enables a person, who is standing within the loop area and using a hearing-aid device, to pick up sound from a sound source, by means of an induction loop amplifier, without being disturbed by the noise from the surroundings.
- (c) For the purpose of this section, an information counter in a building intended to be used by the public is any part in such building :
  - i) where the public or a section of the public is likely to approach to seek information; and
  - ii) where such information is expected to be provided in an audible form.

## **5.7 LIFTS (EXCEPT INDICATION AND NOTIFICATION FOR LIFTS)**

Access shall be provided to every floor of the building by at least one lift which shall comply with the obligatory design requirements as stipulated in this section.

### **5.7.1 Obligatory Requirements**

#### Lift Car

- (a) A lift shall have minimum internal car dimensions of 1.2 m x 1.1 m wide, with a minimum clear door width 750 mm, and shall have handrails extending to within 150 mm of the corners at the rear and sides of the car, which are suitable for use by persons with a disability.

#### Lift Doors

- (b) A detection device shall be provided to initiate re-opening of the lift doors in the event of a person who is about to be struck, and the detection device shall be positioned at a height of not less than 500 mm above the floor of the car and not more than 600 mm above the floor of the car.

#### Lift Control Buttons

- (c) Essential lift control buttons (i.e. emergency alarm push button, controls to activate intercom, and door opening push button) in the lift car and the lift call buttons at the lift hall shall not be less than 900 mm and not more than 1.2 m above the floor of the car or the finished floor level of the lift hall, where appropriate.

- (d) Braille and tactile markings shall be placed either on or to the left of the control buttons. Such markings shall be Arabic numerals and/or symbols. Tactile markings shall have a minimum dimension of 15 mm high and be raised 1 mm minimum.
- (e) The emergency alarm push button shall be in tactile bell shape.

#### Emergency Call in Lifts

- (f) An emergency alarm push button together with a buzzer, an indication light for acknowledgement and an intercom shall be provided in the lift car and be connected to the building management office or the caretaker's office. The building management office or the caretaker's office shall be equipped with a buzzer, an indication light and an intercom connected to the lift car(s).
- (g) The indication light for acknowledgement shall be in the form of a blinking light adjacent to the intercom speaker and a notice "When light blinks, please speak or press alarm button again" (in English and Chinese) shall be provided next to the blinking light. This system shall be backed up by an emergency electricity supply.

### **5.7.2 Recommended Requirements**

#### Lift Car

- (a) To allow a wheelchair to turn inside a lift, the minimum internal car dimensions should be 1500 mm x 1400 mm wide with a clear minimum door width of 850 mm.
- (b) Where the number of lifts in a building exceeds three, access should be provided to every floor by at least one lift having minimum internal car dimensions of 1500 mm x 1400 mm wide with a clear minimum door width of 850 mm.

#### Lift Door

- (c) Lift car doors and landing doors should be of the horizontally sliding type, power-operated and automatically controlled.
- (d) An audible signal should be provided to signify the closing action of the doors to alert persons.

### Lift Control Buttons

- (e) The graphics for tactile markings for open-door and close-door push buttons, emergency alarm button, and main entrance level are shown in **Figure 14** for reference.
- (f) All lift control buttons should have a minimum dimension of 20 mm.
- (g) Tactile markings should be of high contrasting colour background.

## **5.8 INDICATION AND NOTIFICATION FOR LIFTS COMPLYING WITH 5.7**

### **5.8.1 Obligatory Design Requirements**

#### Lift Entrance/Hall

- (a) An illuminated visual indicator and an audible signal shall be provided at the lift entrance to indicate the lift car arrival and its direction of travel. The audible signal shall sound once for UP direction and twice for DOWN direction, and shall activate before the arrival of the lift.
- (b) Tactile and braille floor designations shall be provided on the jambs on both sides of each lift entrance, by means of Arabic numerals, minimum 60 mm high, raised 1 mm, and at 1200 mm above the finished floor level.

#### Lift Car

- (c) Illuminated visual indicators shall be provided to indicate the direction of travel and the car position. Characters on the position indicator shall have a minimum dimension of 50 mm high.
- (d) A verbal annunciation (in Cantonese and English) shall be provided to indicate the stopping floor.

#### Identification of Lifts in Lift Lobby

- (e) Where a building contains some lifts that do not comply with this Manual, each of those lifts that do comply shall be identified at each landing served, by not fewer than one international symbol for access for persons with a disability.

- (f) Where all the lifts in a building comply with this Manual (including a building with only one lift), at least one international symbol for access for persons with a disability shall be provided at each lift lobby where entry to the building can be gained.

## **5.8.2 Recommended Design Requirements**

- (a) The illumination level for lift landings and lift car interiors should not be less than 150 lux at floor level.

## **5.9 ESCALATORS**

### **5.9.1 Recommended Design Requirements**

- (a) For escalators, clear signals or indications for going up/down shall be provided, e.g. consistent clear sounds or signals.

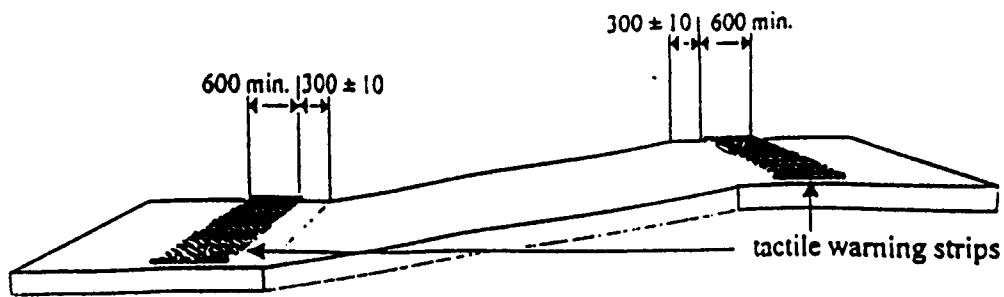
## **5.10 REMOTE SIGNAGE SYSTEM**

### **5.10.1 Recommended Design Requirements**

- (a) A remote signage system such as using infra-red “ signs” carrying a voice message detectable only by persons with visual impairment in the form of the “Talking Sign” should be provided for those buildings intended to be used by the public.

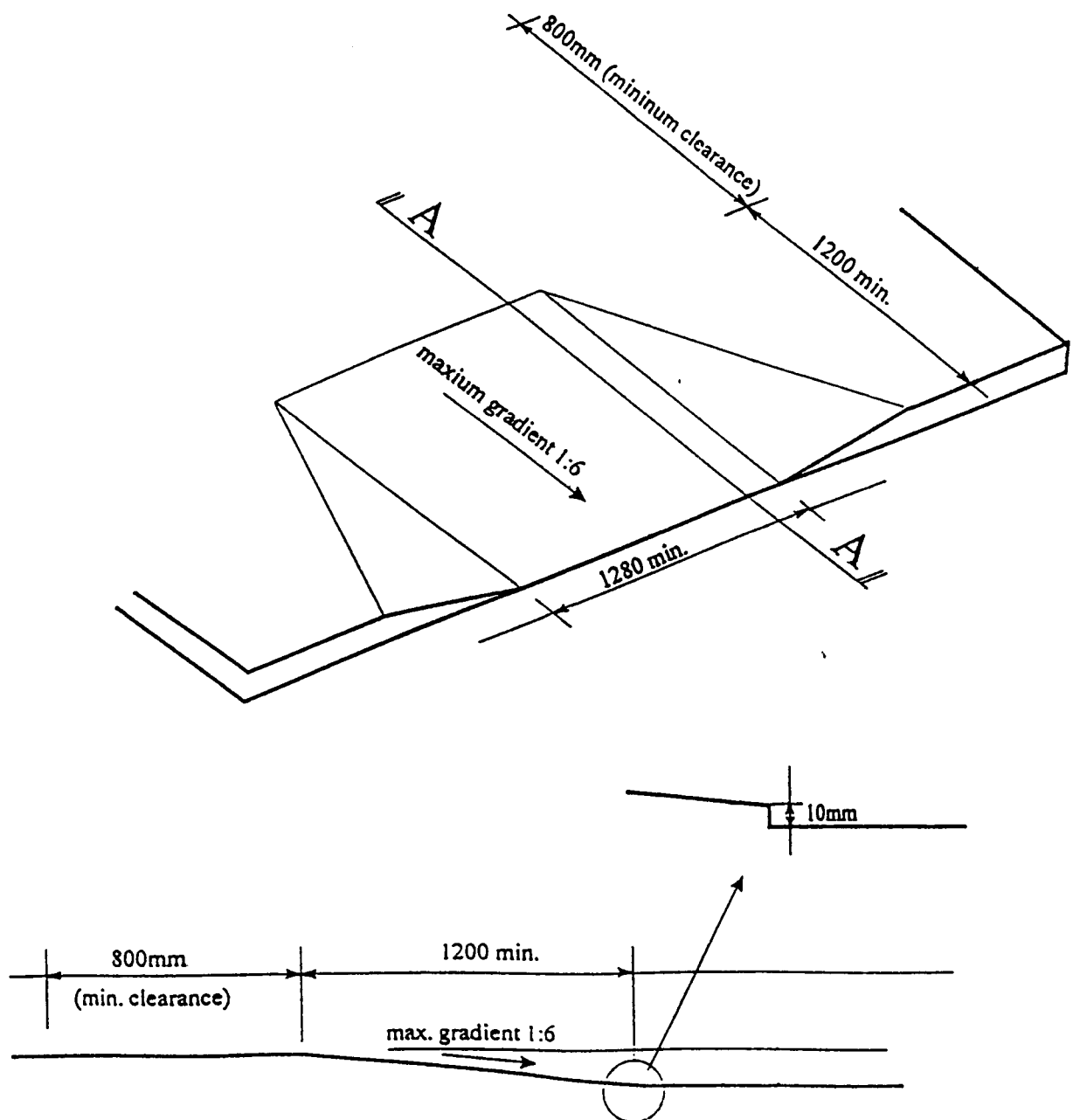






Side view of installation at a ramp

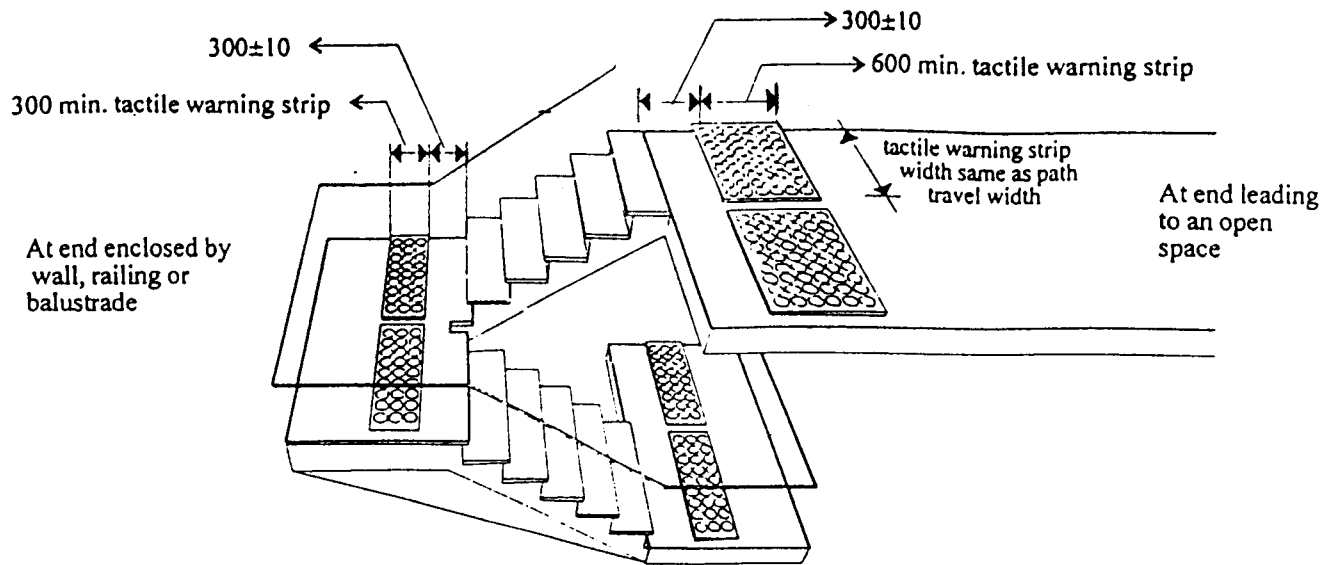
Fig.3 TACTILE WARNING STRIP FOR RAMPS



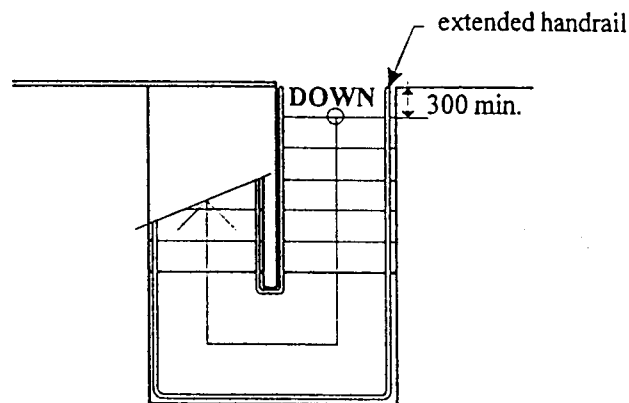
Section A-A

Fig.4 SUITABLE METHOD OF BLENDING PAVEMENT AND ROAD WAY SURFACES

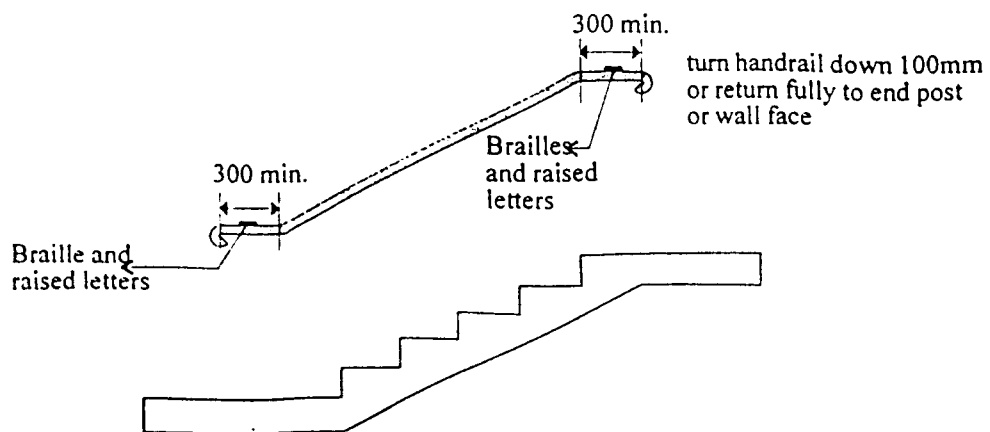




**Fig.5 TACTILE WARNING STRIP FOR STAIRCASES**



**Fig.6 EXAMPLE OF STAIRCASE PLAN FOR AMBULANT DISABLED**



Side view

**Fig.7 HANDRAILS OF STAIRCASES**

\* ALL DIMENSIONS IN MM

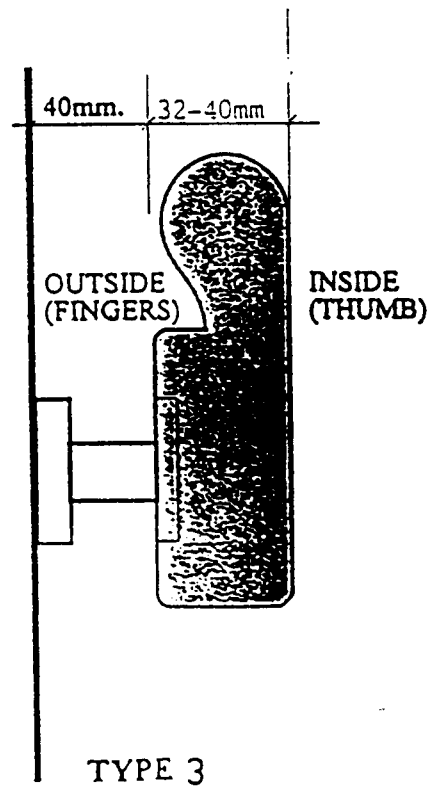
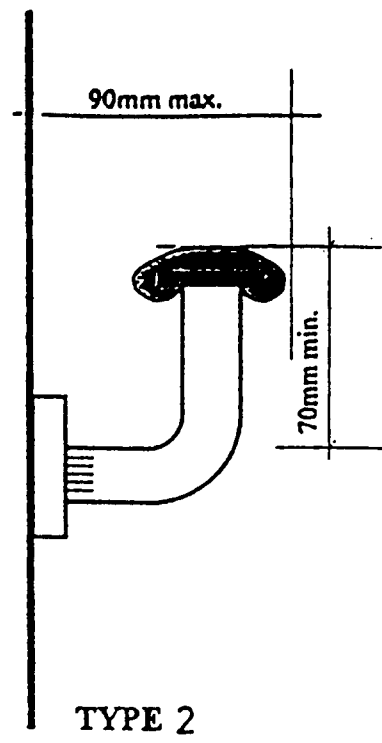
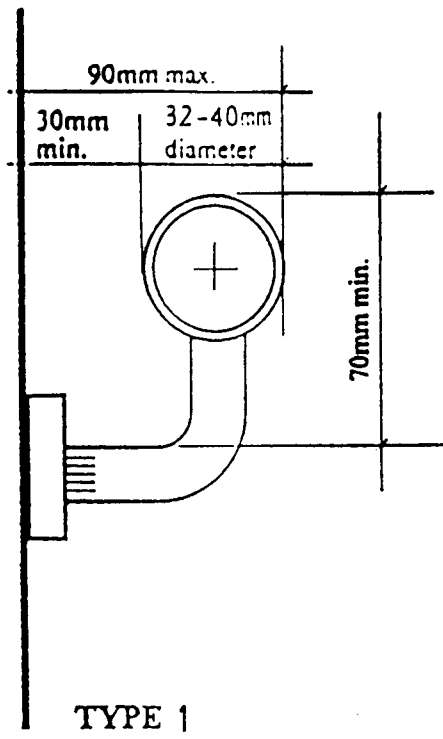
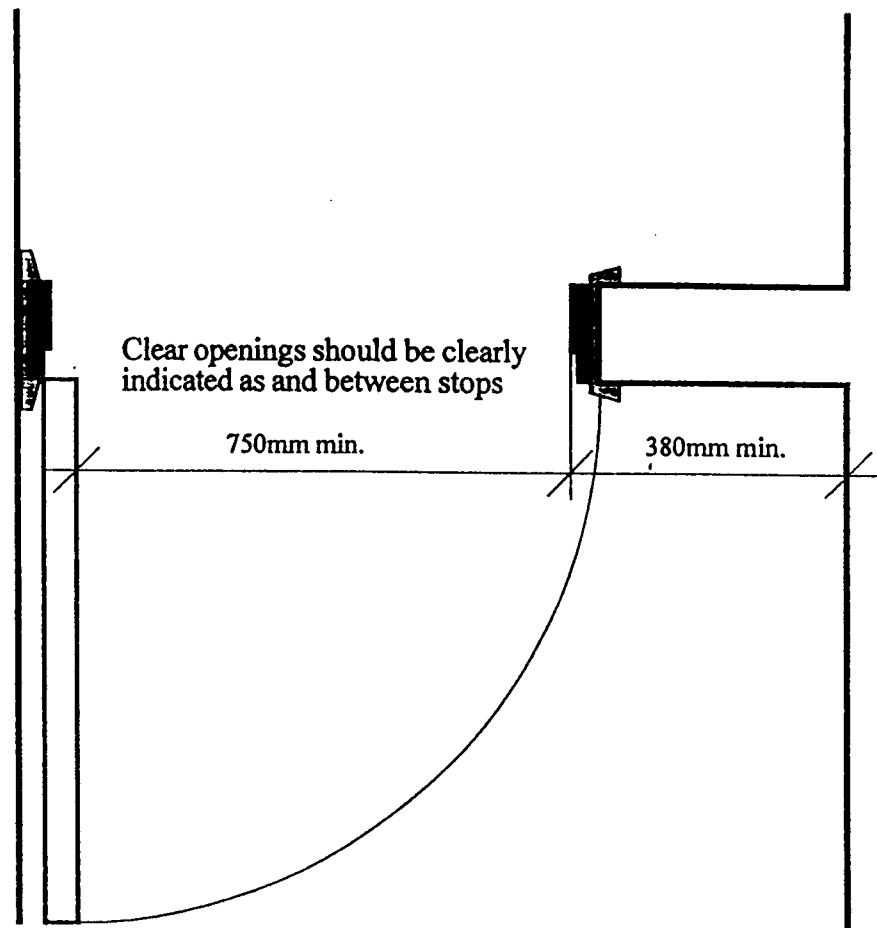
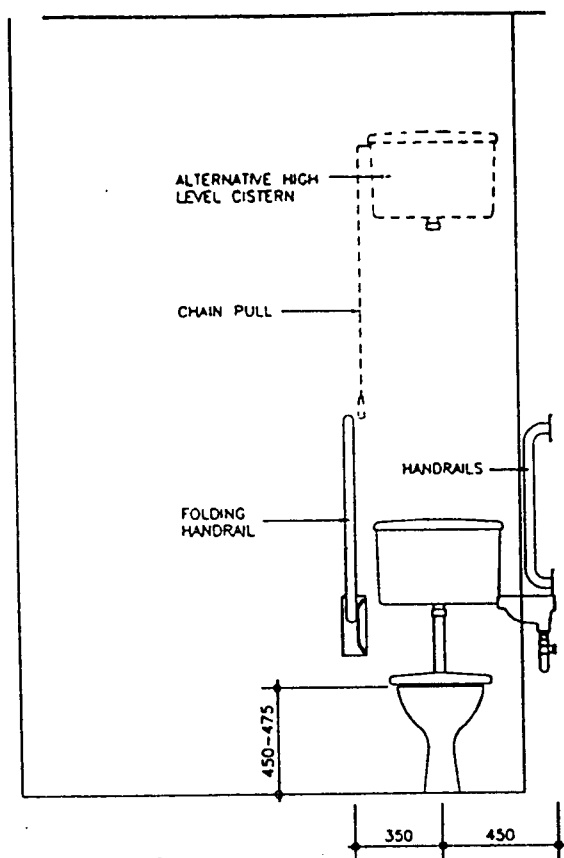


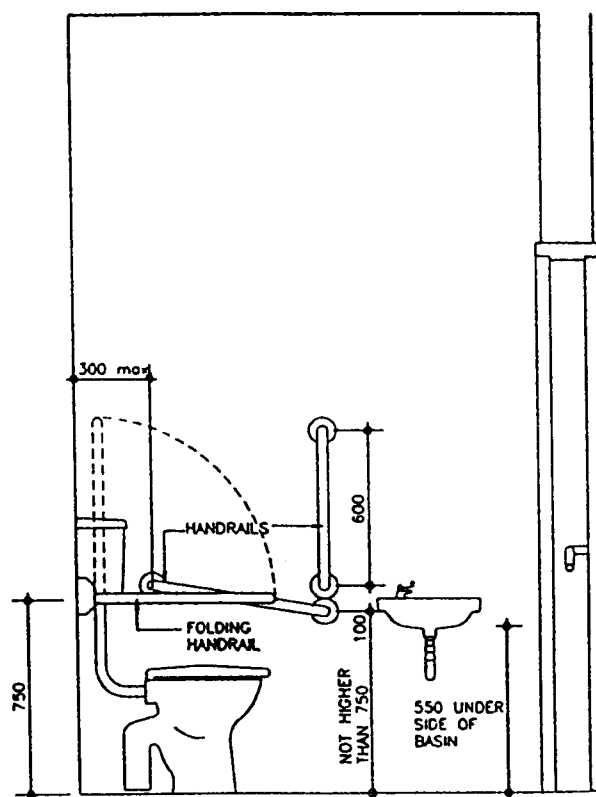
Fig.8 HANDRAILS



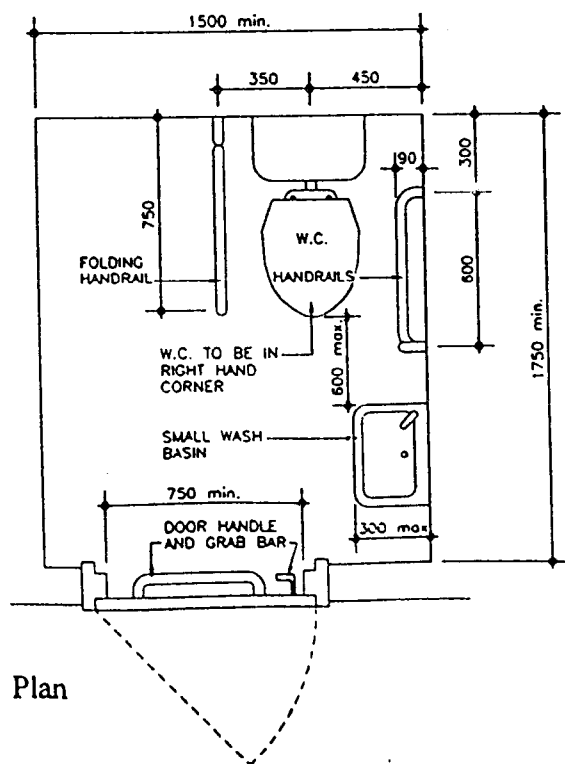
**Fig.9 PLAN OF DOORS SUITABLE FOR WHEELCHAIR USERS**



Cross Section



Long Section



Plan

**Fig.10 W.C. COMPARTMENT FOR PEOPLE WITH A DISABILITY**

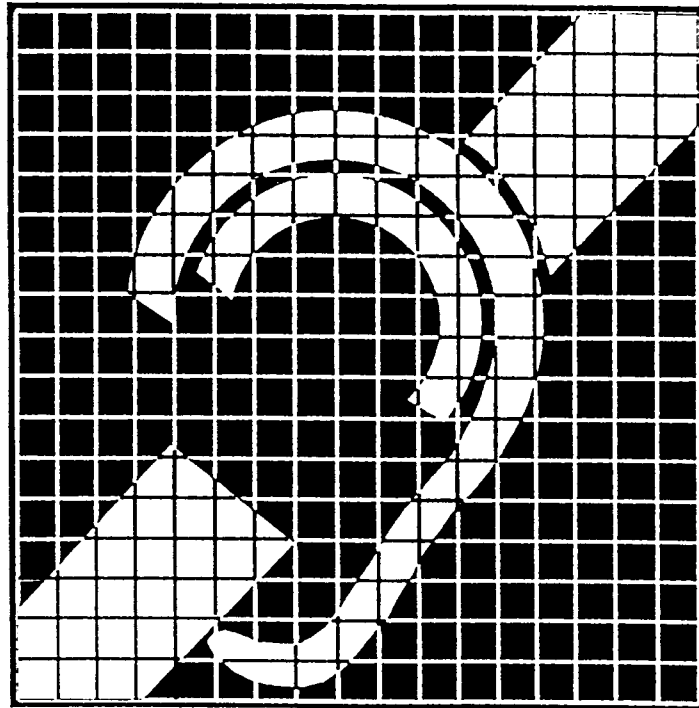
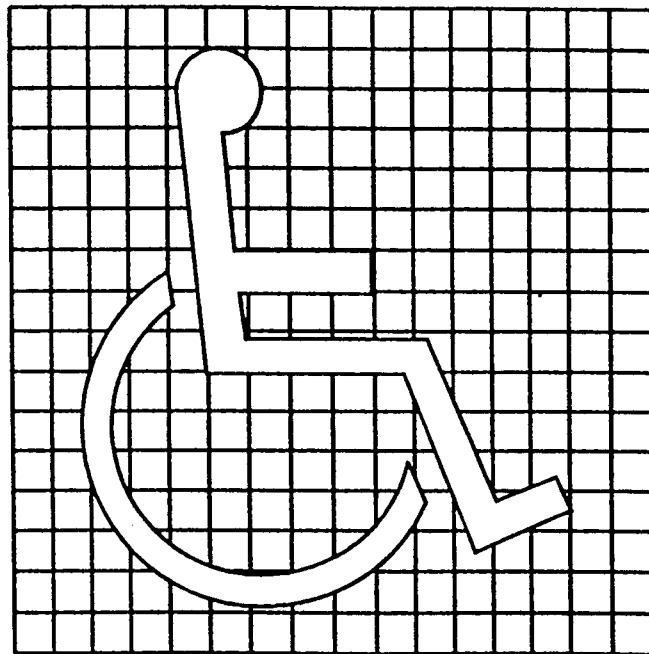
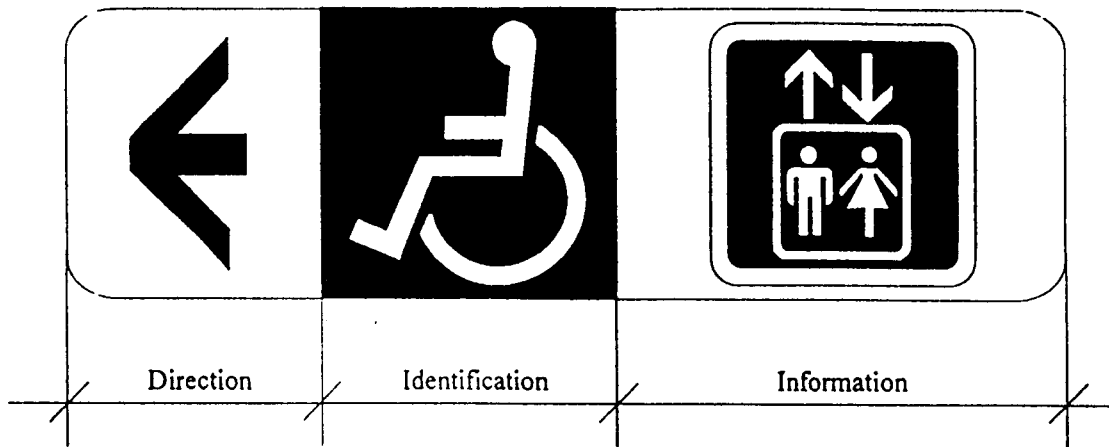


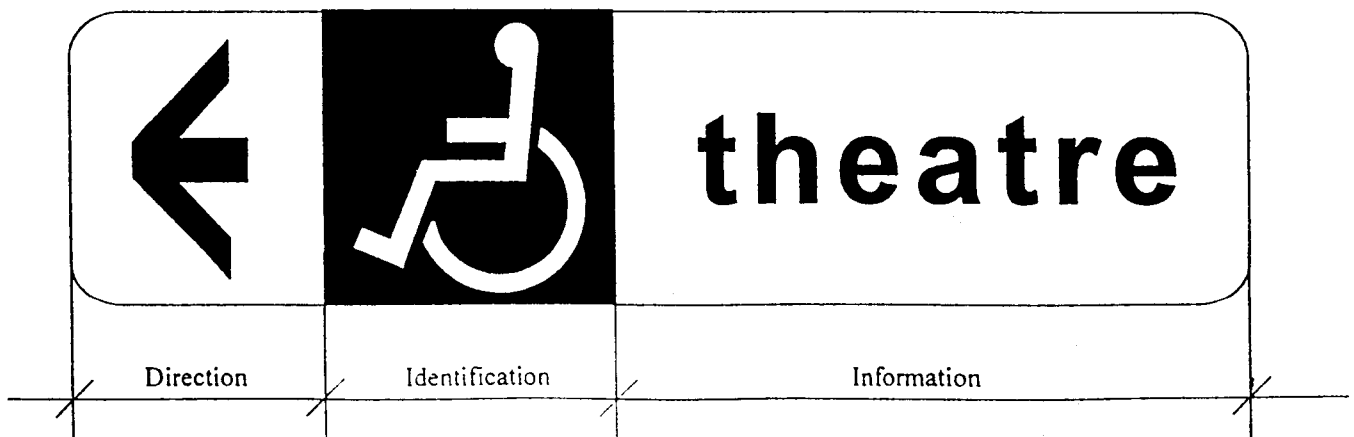
Fig.11 PROPORTIONAL LAYOUT FOR  
INTERNATIONAL SYMBOL FOR DEAFNESS



**Fig.12 PROPORTIONAL GEOMETRICAL LAYOUT FOR  
INTERNATIONAL SYMBOL FOR THE DISABLED**

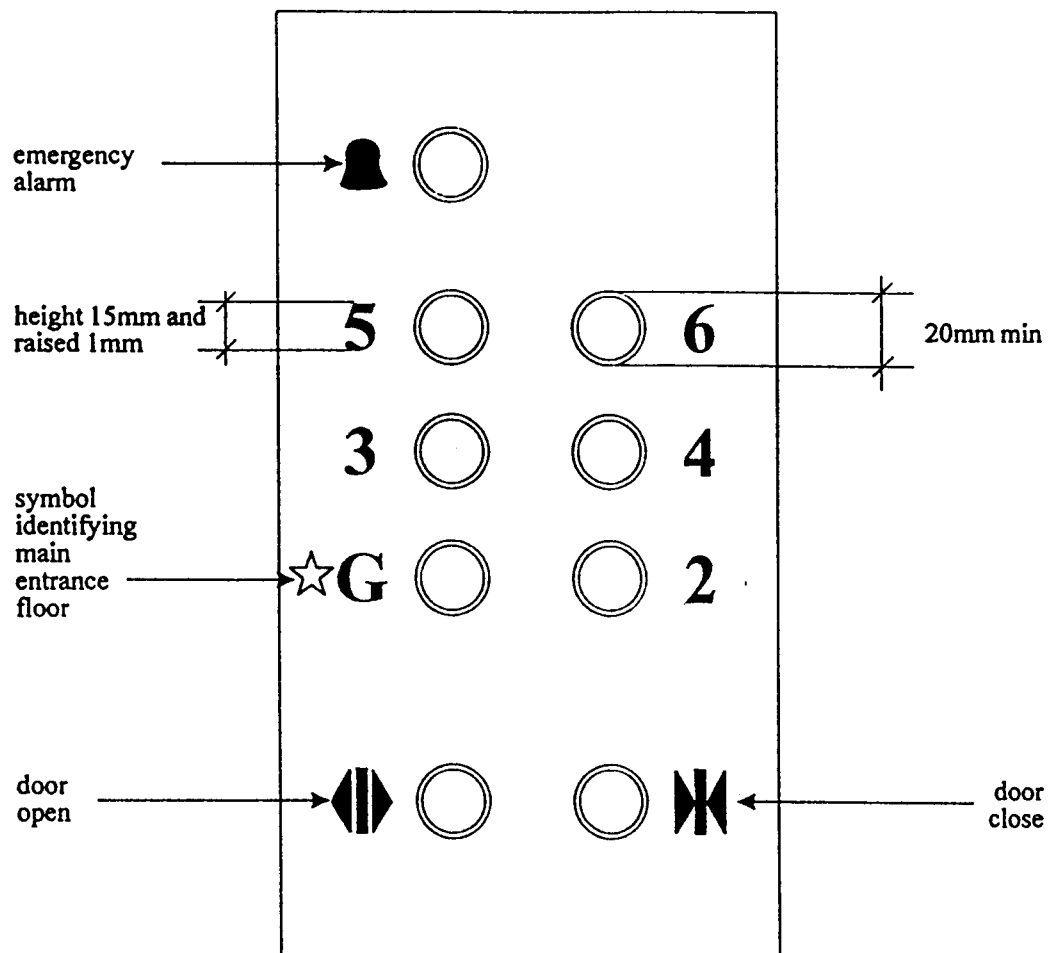


**(a) Example of a sign identifying a facility and indicating its direction using a standard symbol (lift)**



**(b) Example of a sign identifying a facility and indicating its direction using word**

**Fig.13 SIGNS**



**Fig.14 TACTILE GRAPHICS FOR LIFT CONTROL BUTTONS**