

**CODE ON BARRIER-FREE  
ACCESSIBILITY IN  
BUILDINGS, 1990**



**PUBLIC WORKS DEPARTMENT  
BUILDING CONTROL DIVISION**

# PREFACE

Before the Building Control Act 1989 and Building Control Regulations 1989 came into force, few buildings in Singapore had been designed with special provisions to serve the elderly and the physically handicapped. To create an environment for a more caring society, a new requirement on the provisions for the elderly and the physically handicapped has been incorporated into the new Building Control Regulations 1989. The new Regulations require certain minimum facilities to be provided in all new buildings to which the elderly and the physically handicapped are reasonably expected to have access.

This code, which is drawn up in pursuance of the Building Control Regulations 1989, provides detailed guidelines to help developers, architects and engineers in planning and designing the various special facilities in their building projects to cater to the needs of the elderly and the physically handicapped. The systematic introduction of the code's requirements into new buildings and existing ones going through major retrofitting exercises will make our building stock more friendly to the elderly and the physically handicapped.

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# CHAPTER 1

## SCOPE AND DEFINITIONS

1 (1) The access provisions and facilities recommended in this Code are intended primarily to apply to the wheelchair bound. Such provisions would also cater to the ambulant disabled. However, where possible and practicable, optional access provisions and facilities are recommended to serve the needs of the ambulant disabled. Such provisions when taken as a whole would also greatly benefit the elderly and the infirm. Scope

(2) This Code does not apply to areas outside the boundaries of a development.

2 In this Code, unless the context otherwise requires – Definitions

“access” means the point of entry into a building available to the disabled person.

“ambulant disabled” means a person who is able, either with or without personal assistance, to walk on the level or negotiate suitable graded steps provided that convenient handrails are available.

“disabled person” means a person who, as a consequence of physical disability or impairment, is either ambulant disabled or wheelchair bound.

“ramp” means an inclined way connecting one level to another.

“wheelchair bound” means a person who is unable to walk, either with or without assistance, and who, except when using mechanised transport, depends on a wheelchair for mobility.

“width” means the clear width from one finished surface to another.

## CHAPTER 2

### PROVISIONS FOR DISABLED PERSONS

3 In addition to the requirements specified in the Table in regulation 36(2) of the Building Control Regulations, 1989 suitable provisions for the disabled shall be made in the types of buildings as given in the Table below –

Provision of facilities

**TABLE**  
Provisions for the Disabled Persons

Type of Building	Minimum Provisions
Banks	At least one service counter shall be provided.
Shophouses and first-storey shops	The shopping area shall be made accessible in accordance with this Code.
Hotels	At least one guestroom shall be provided for every 200 guestrooms or part thereof.
Concert halls, cinemas, theatres, stadia or other places of public resort where permanent seating arrangement is provided	At least one wheelchair space shall be provided for every 400 seats or part thereof.
Religious buildings	The main area of worship shall be made accessible in accordance with this Code.
Hostels, halls of residence or dormitories	At least one level, preferably the access level, shall be provided with facilities in accordance with this Code.
Hawker or Food Centres	At least one table without any fixed stools or chairs for every 10 tables or part thereof shall be reserved for use by disabled persons or at least two tables, whichever is the greater.
Car Parks (surface car parks or multi-storey car park buildings)	At least one car parking lot shall be reserved where the total number of car parking lots is not more than 50 or at least two car parking lots shall be reserved where the total number of car parking lots is more than 50.
Others: (Large departmental stores, supermarkets, foyers of places of public resort, public concourses)	Seats, possibly of the tip-up type, shall be provided for disabled persons who are unable to stand for a long period. An empty space to accommodate a wheelchair shall also be provided.

(2) In the case of residential buildings or factories and workshops up to 4 storeys in height if, in the opinion of the Building Authority, the development is fairly extensive or substantial, he may exercise his discretion under regulation 36(3) of the Building Control Regulations, 1989 to require facilities to be provided in accordance with this Code. Consultants are therefore advised to seek the advice of the Building Authority in such cases early in the design stage so that, if required, such facilities could be incorporated in the design.

# CHAPTER 3

## GENERAL DESIGN REQUIREMENTS

4 The floor surface of every area accessible to disabled persons shall be level and without any projections, depressions, drops or unexpected variations in level. Such floor surface shall also be made non-slip.

Floor surface

5 (1) All two-way swing doors shall be provided with vision panels and the bottom edge of the vision panel must not be more than 1000 mm above the floor level.

Doors

(2) Wherever possible and practicable, automatic doors, swing or sliding type, should be provided in lieu of doors which are to be manually opened. Heavy or revolving doors should be avoided.

(3) Where spring closers are provided, they shall be of a type which allows the spring tension to be adjusted to a lower level.

(4) Door handles shall be easy to manipulate and lever handles are preferred to door knobs. The door handle shall be fixed at not higher than 1100 mm above the floor level. Horizontal or vertical rails, where provided, should not be less than 25 mm and not more than 50 mm in diameter.

6 Where a door opens against the direction of approach, a minimum space of 500 mm wide which is clear of any obstruction shall be provided on the side where the door handle is located as illustrated in Figure 1. This requirement need not apply to two-way swing doors.

Approach to doors

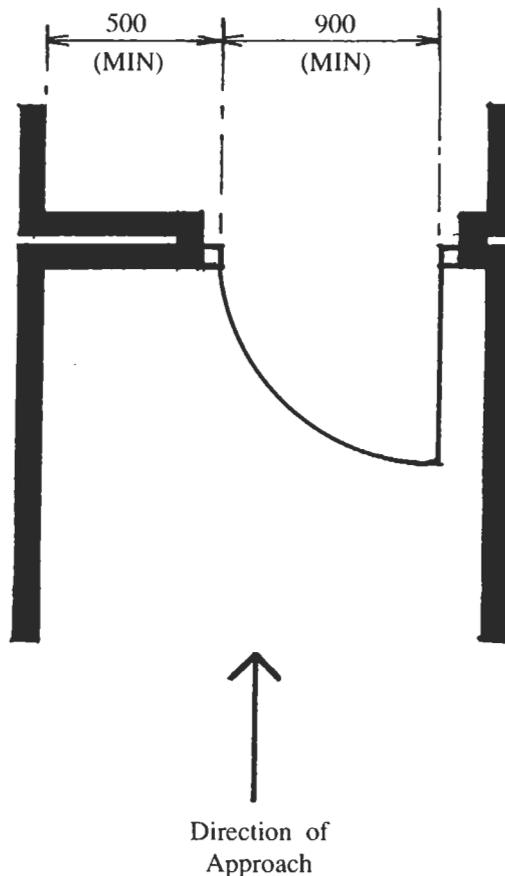


FIGURE 1: APPROACH TO DOOR

7 Emergency exits which open directly to the external of a building should, where possible or practicable, be made accessible to disabled persons.

Emergency exits

8 (1) Handrails shall be provided at both sides of any steps, staircases or ramps and should be easy to grip.

Handrails

(2) Circular handrails shall have a diameter of not less than 25 mm and not more than 50 mm. A clearance of at least 40 mm shall be provided between the handrail and the wall to which it is fastened.

(3) Figure 2 shows the recommended dimensions for handrails and Figure 3 shows the preferred detail for handrails.

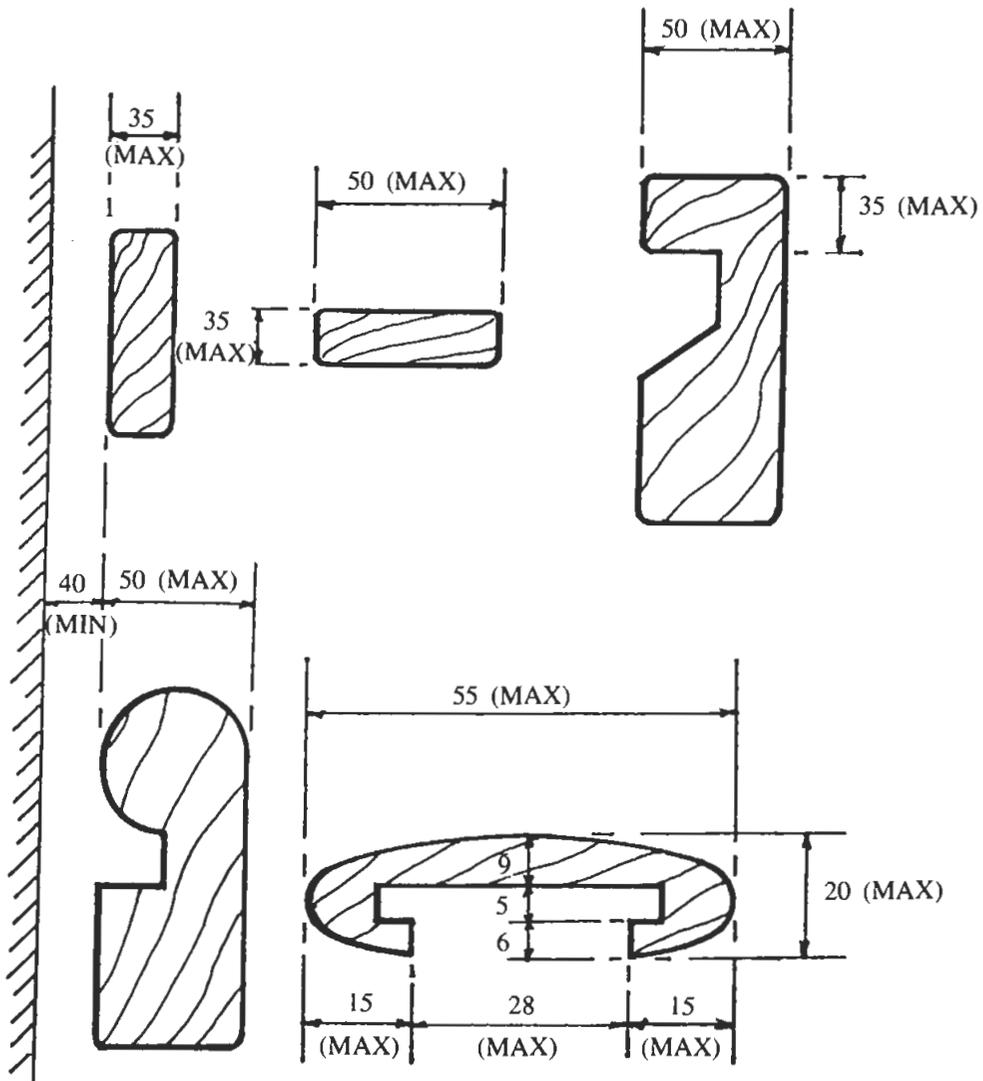
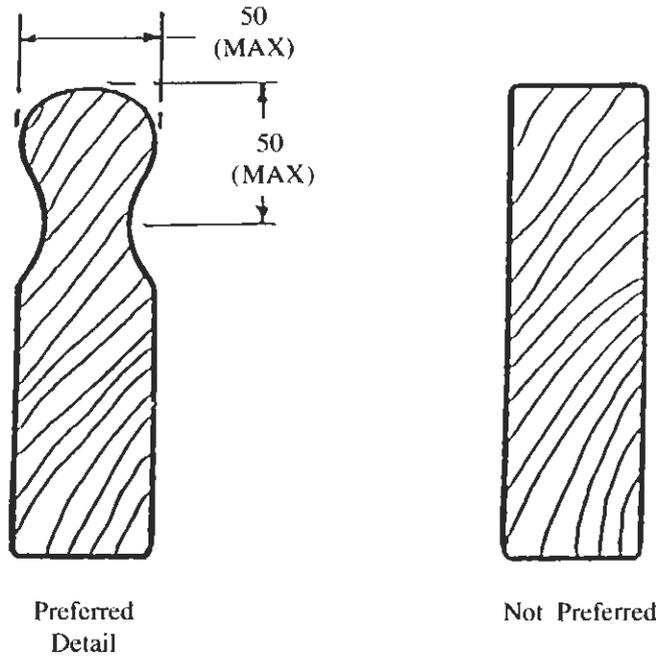


FIGURE 2: RECOMMENDED DIMENSIONS FOR HANDRAILS



**FIGURE 3: PREFERRED DETAIL FOR HANDRAILS**

- |  |                              |
|--|------------------------------|
| <p>9 Switches and controls for lights, air-conditioning and mechanical ventilation systems or fire protection systems shall be located at not more than 1 500 mm and not less than 1 000 mm above the floor level. Such switches and controls shall be easy to manipulate.</p>   | <p>Switches and controls</p> |
| <p>10 Where transfer has to be made from a vehicular surface to a pedestrian surface, the internal driveway and pavement surfaces shall be blended to a common level, or the height of the kerb shall be reduced to not more than 20 mm above the adjacent driveway level. The gradient of any ramped surface shall not be steeper than 1:10.</p>                              | <p>Pavements</p>             |
| <p>11 (1) All parking lots reserved for disabled persons shall be of a minimum size of 4 800 mm long × 3 300 mm wide.</p> <p>(2) Such parking lots shall be located adjacent to an entrance ramp or exit and preferably be at the approach and access level.</p> <p>(3) Open or surface car parks reserved for disabled persons shall not be provided with aeration slabs.</p> | <p>Car parks</p>             |
| <p>12 (1) Where writing or service counters are provided for disabled persons, such counters shall not be more than 800 mm above the floor level.</p> <p>(2) There shall be a clear space measuring approximately 900 mm × 500 mm deep × 715 mm high below the counters for the wheelchair.</p>  | <p>Counters</p>              |

# CHAPTER 4

## APPROACH AND ACCESS

### Part I — Approach to Building

13 A layby bay should, where possible, be provided at the level of approach for the disabled to alight from or board a vehicle.

Layby bay

14 (1) Where transfer has to be made from a vehicular surface to a pedestrian surface, the driveway and pavement or footway surfaces shall be blended to a common level or ramped as illustrated in Figures 4, 5 and 6.

Approach at pavement level

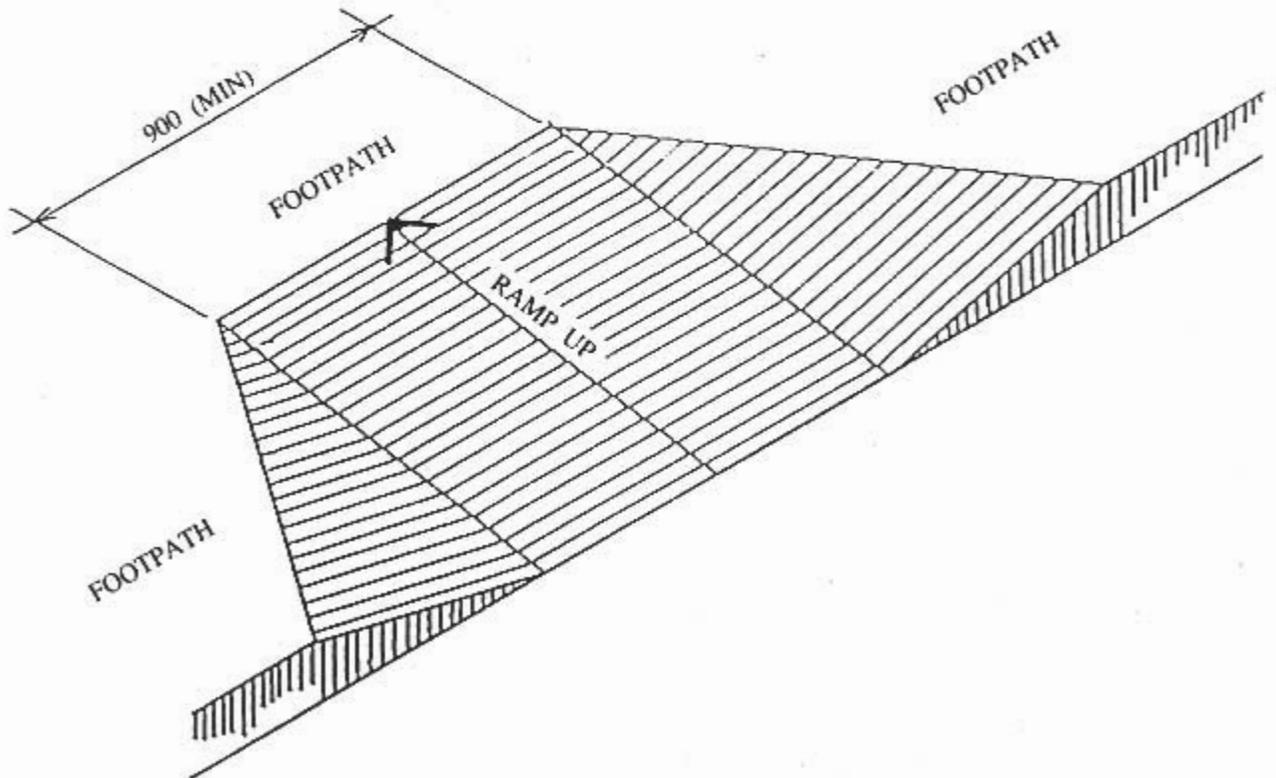


FIGURE 4: ISOMETRIC VIEW OF FLARED RAMP

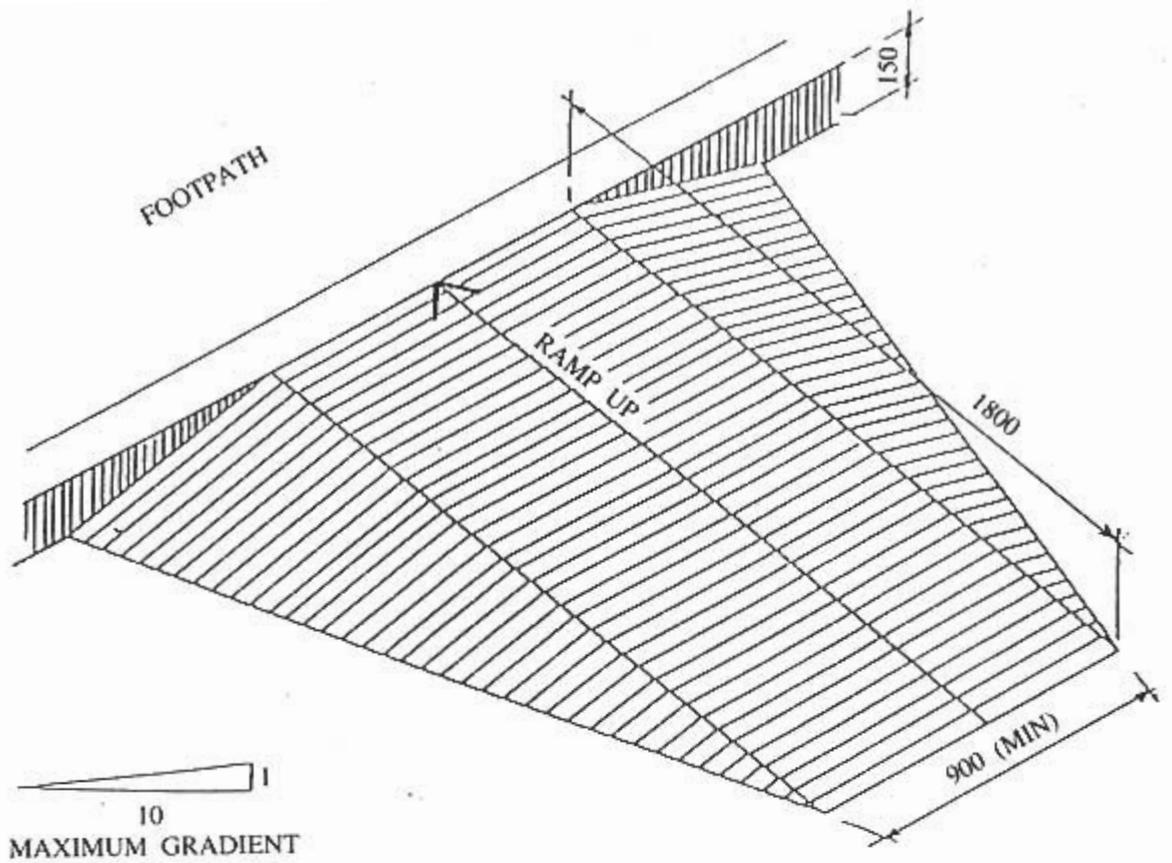


FIGURE 5: ISOMETRIC VIEW OF EXTENDED RAMP

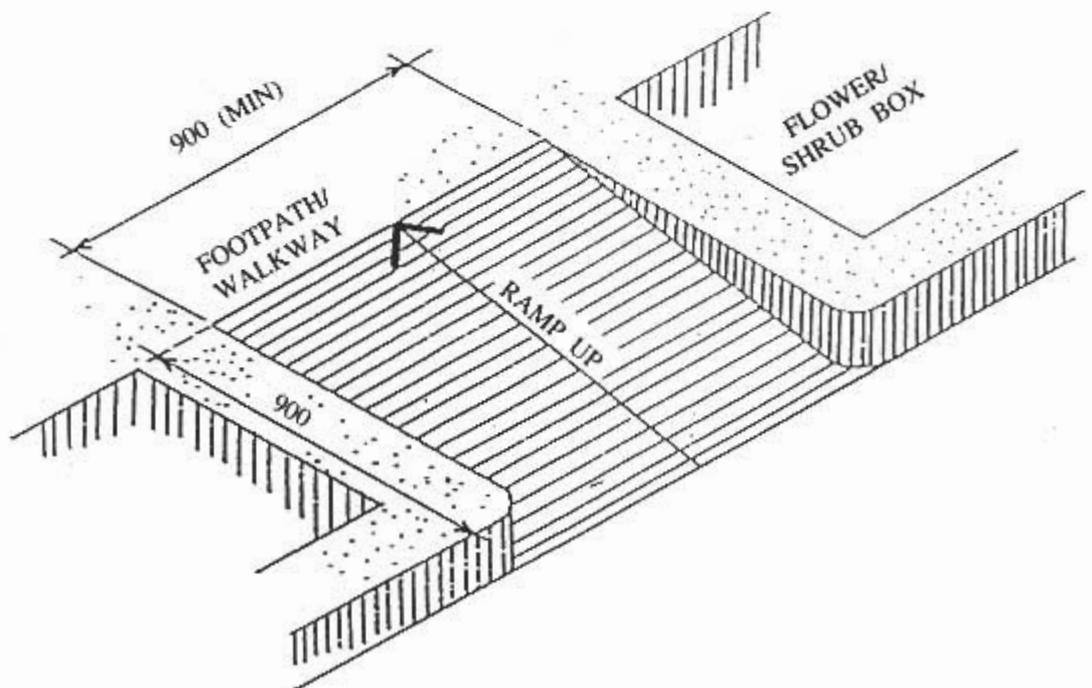


FIGURE 6: ISOMETRIC VIEW OF RAMP WITH CONTINUOUS CURB

(2) Differences in level between the driveway and the pavement or footway level shall be avoided. Where the difference in level is not possible to avoid then such drop shall not be more than 20 mm in height.

(3) The gradient of the ramped surface shall not be steeper than 1:10.

15 (1) The approach from an adjacent driveway or car parking area to at least one entrance to a building shall either be levelled or ramped.

Approach to entrance

(2) Obstacles, projections or other protrusions shall be avoided in the entire approach space.

16 (1) Where the approach is to be ramped, the following shall apply –

Requirements for ramps

(a) The gradient of the ramp shall not be steeper than 1:10;

(b) The width of the ramp shall not be less than 1 200 mm;

(c) The horizontal run of any ramp shall not exceed 9 000 mm. Where it exceeds 9 000 mm, landings of at least 2 000 mm in horizontal area shall be provided at regular intervals of not more than 9 000 mm of every horizontal run;

(d) Except for horizontal runs of not more than 400 mm or where space is restricted, short ramps of steeper gradient may be permitted at the discretion of the Building Authority. The gradient of such ramps shall comply with the requirements as given in the Table below:

**TABLE**  
Gradient of Ramp

<b>Horizontal run of ramp (mm)</b>	<b>Maximum permissible gradient</b>
25–100	1:5
101–400	1:8
Exceeding 400	1:10

(2) Where the horizontal run of a ramp exceeds 400 mm, handrails shall be provided at both sides. The handrails shall be placed at a height of 900 mm above the floor level and shall be extended 500 mm beyond the upper and the lower end of the ramp.

Handrails

(3) Figures 7 and 8 illustrate the details of such ramps.

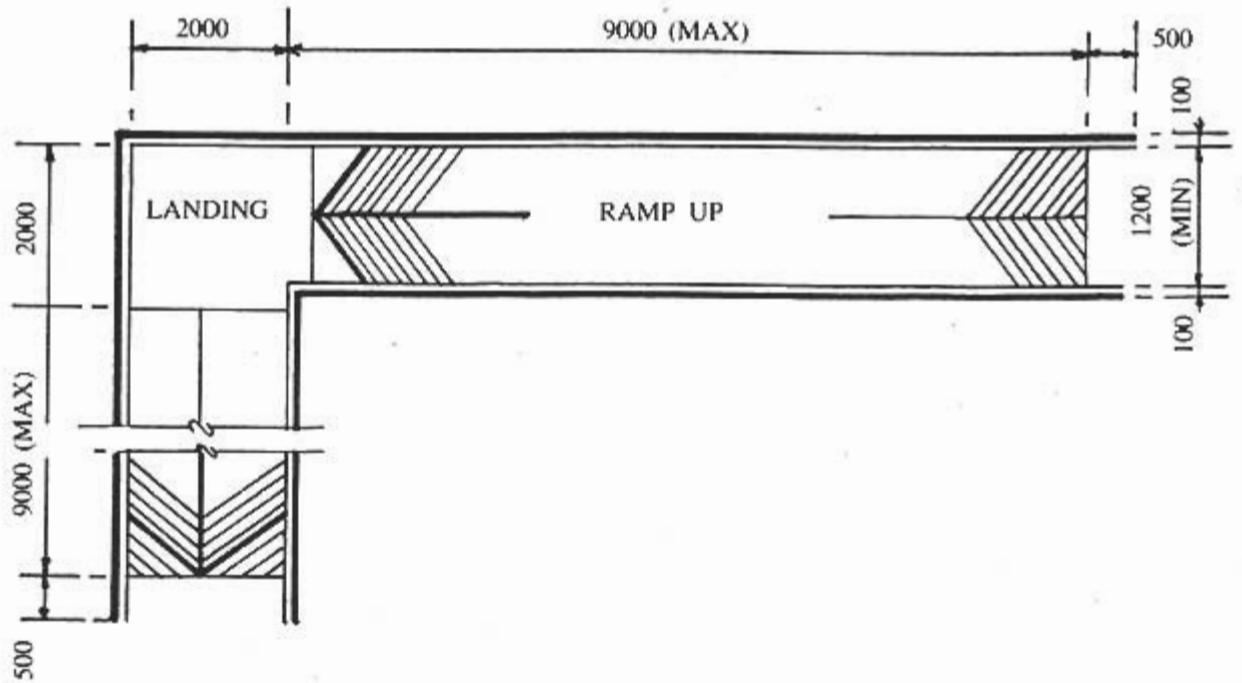


FIGURE 7: PLAN OF RAMP WITH ANGLED LANDING

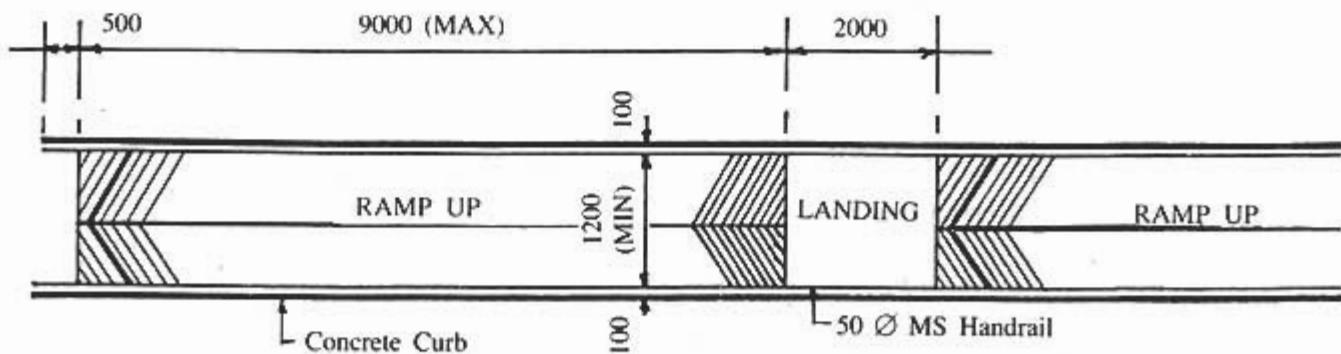


FIGURE 8: PLAN OF OUTDOOR RAMP

17 (1) Where the horizontal run of the approach ramp exceeds 9 000 mm an alternative stepped approach, in addition to the approach ramp, may be provided for the ambulant disabled.

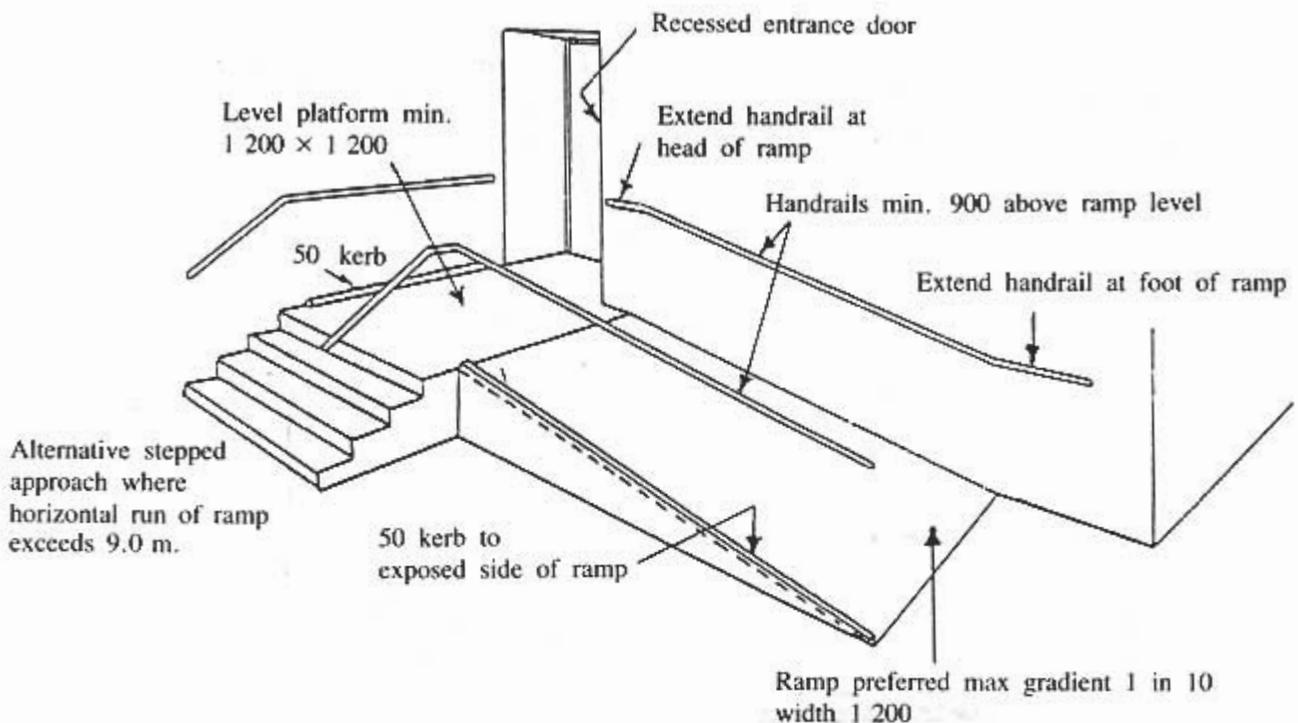
Alternative stepped approach

(2) The stepped approach, if provided, shall comply with the following –

- (a) The riser shall not be higher than 150 mm;
- (b) The size of the tread shall be not less than 300 mm;
- (c) Open risers as shown in Figure 14 shall not be used in such steps;

- (d) A landing shall be provided at the upper-most step;
- (e) Handrails at both sides of the steps shall be provided in accordance with clause 20(e); and
- (f) The total rise of any flight of steps shall not exceed 1 200 mm.

(3) Figure 9 illustrates the alternative stepped approach.



**FIGURE 9: ALTERNATIVE STEPPED APPROACH**

## Part II — Access to Building

18 (1) The buildings specified in the Table to regulation 36 shall be provided with at least one entrance door served by an approach complying with Part I.

Entrance door

(2) The access should preferably be through the main entrance of the building.

(3) The width of the entrance door shall be not less than 900 mm and the width of the corridors or passageways leading to and from such access door shall be not less than 1 200 mm.

## CHAPTER 5

### INTERNAL CIRCULATION

19 (1) Where lifts are provided in a building pursuant to the Building Control Regulations, 1989, at least one lift shall be made accessible from the entrance level for internal vertical circulation.

Lifts for internal vertical circulation

(2) The lift shall serve all the levels intended for access by disabled persons.

(3) The minimum size of the lift shall be 1 100 mm in width and 1 400 mm in depth. The lift opening shall be not less than 900 mm wide.

(4) The panel for the lift control buttons shall be positioned between 1 200 mm and 1 500 mm from the floor level. Grip rails shall be fixed on the sides and the rear of the lift car and shall be positioned not more than 900 mm above the floor of the lift.

(5) Details of the lift are illustrated in Figures 10 and 11.

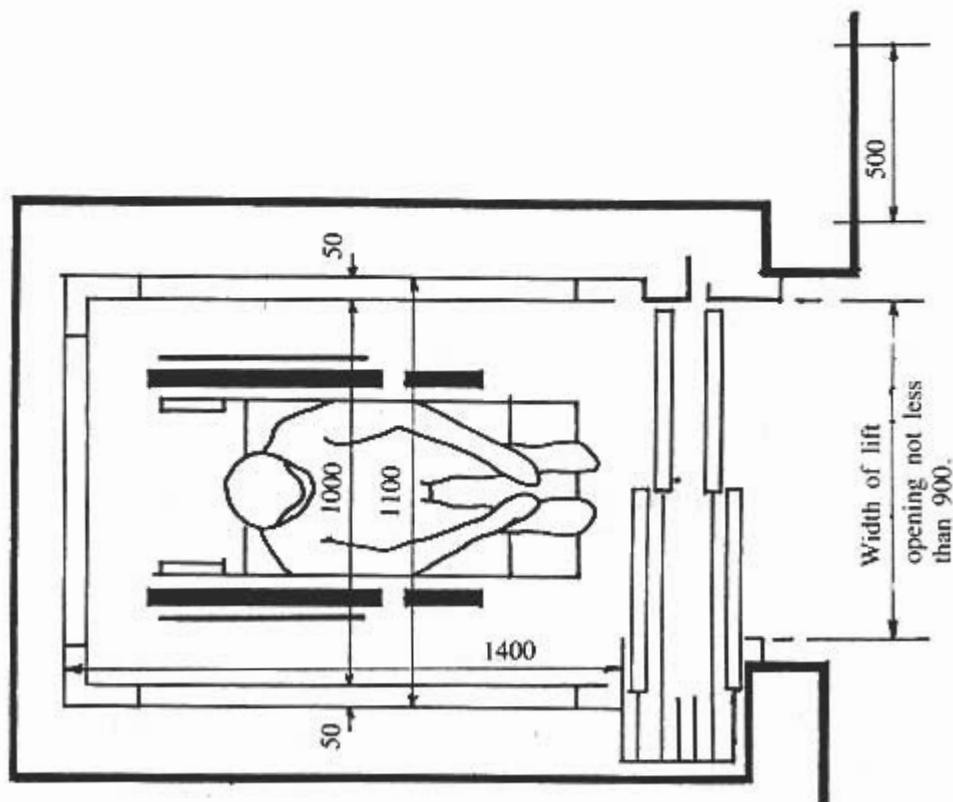
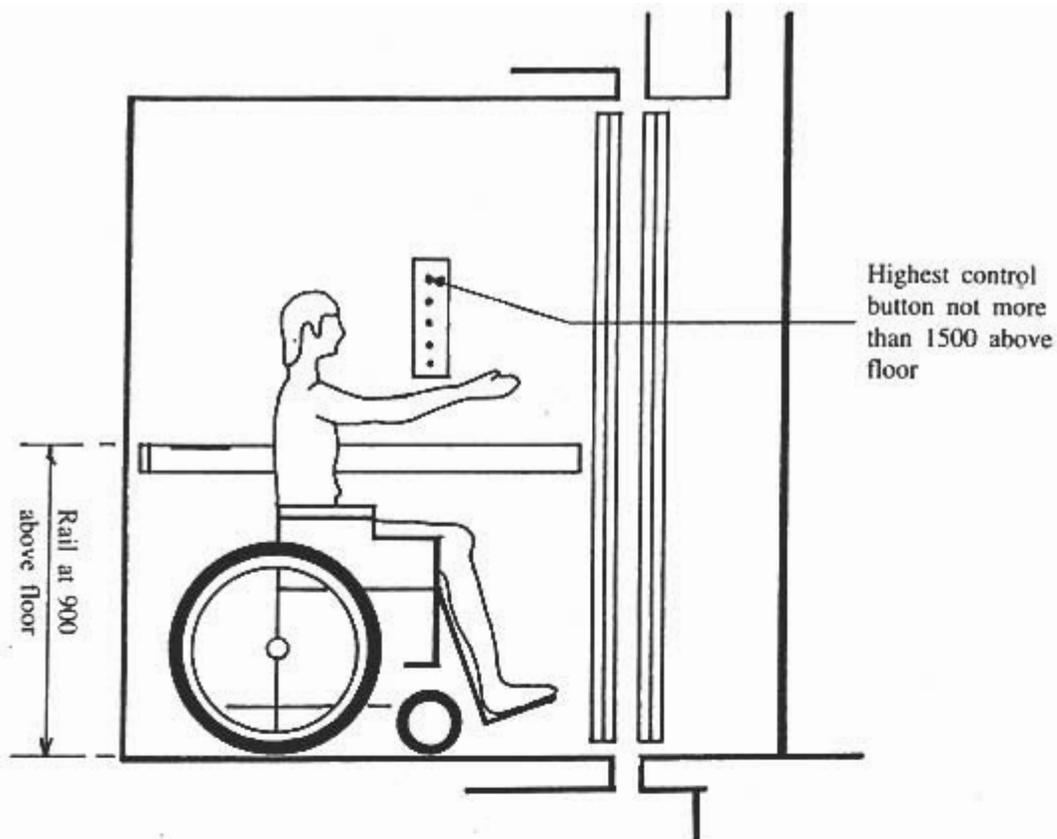


FIGURE 10: PLAN OF LIFT COMPARTMENT FOR THE WHEELCHAIR BOUND



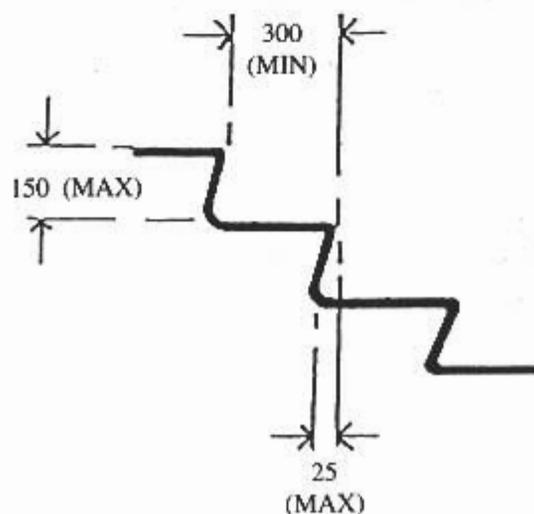
**FIGURE 11: SECTION OF LIFT COMPARTMENT FOR THE WHEELCHAIR BOUND**

20 Where vertical circulation involves the negotiation of steps by the ambulant disabled, the accessible area shall be served by at least one staircase complying with the following:

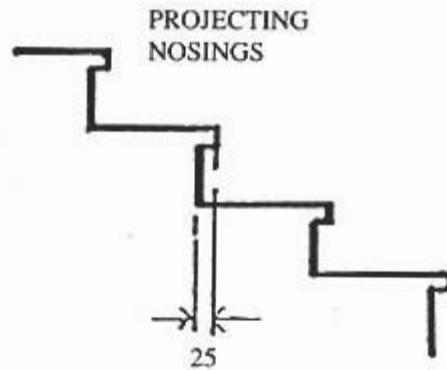
Staircases

- (a) The riser should not be more than 150 mm and the size of tread shall not be less than 300 mm. The treads and risers shall be of uniform depth and height and constant throughout the entire flight of the staircase.
- (b) The nosing should not project more than 25 mm over the back edge of the step as shown in Figures 12 and 13.

Treads and risers



**FIGURE 12: TREADS AND RISERS**



**FIGURE 13: PROJECTING NOSINGS NOT MORE THAN 25 MM**

- (c) Open risers as illustrated in Figure 14 shall not be used.



**FIGURE 14: OPEN RISERS NOT PERMITTED**

- (d) The width of the staircase shall not be less than 900 mm. Width
- (e) Handrails shall be provided at both sides of the staircase. Such handrails shall be continuous throughout their entire length and extended at least 300 mm beyond the top and bottom steps as illustrated in Figure 15. Handrails

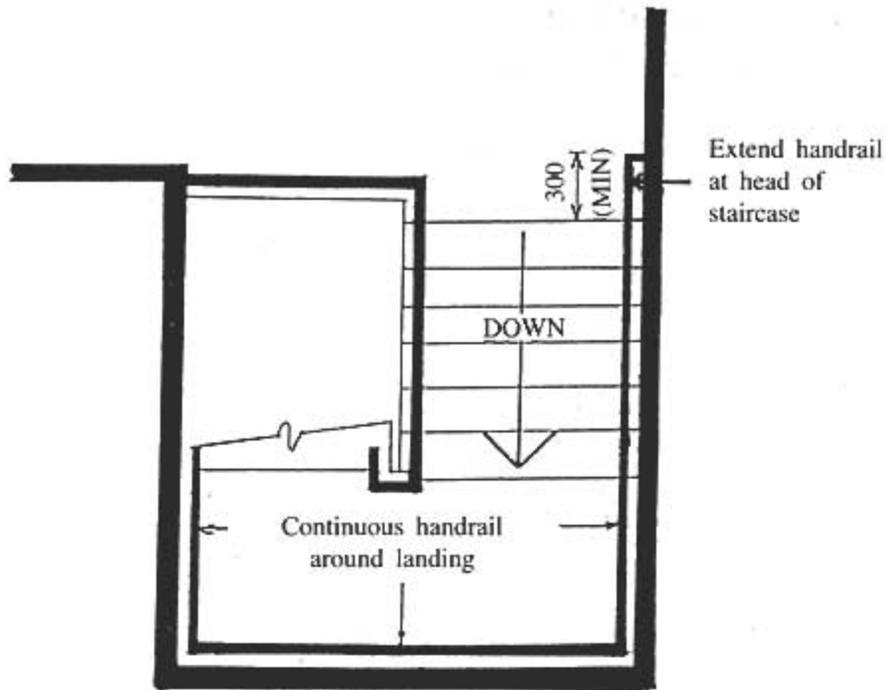


FIGURE 15: EXAMPLE OF STAIRCASE PLAN

21 Corridors or passageways which are accessible to disabled persons and which form part of the internal circulation shall be at least 1 200 mm wide. Where required by the Building Authority or at strategic locations where wheelchairs are expected to pass one another, the width of such corridors or passageways shall be at least 1 800 mm.

Width of corridors or passageways

22 (1) All areas for internal circulation by wheelchair bound disabled persons shall generally be level.

Level of the floors

(2) Where variations in level are unavoidable, a ramp complying with the requirements of clause 16 shall be incorporated.

# CHAPTER 6

## SANITARY PROVISIONS

### Part I — General Provisions

23 (1) At least one water closet compartment for the wheelchair bound shall be provided in both the male and female toilets at the floor level intended for access. Alternatively, one separate water closet compartment for the wheelchair bound may be provided at the floor level intended for access to serve both the male and female.

WC compartment

(2) Where possible, a water closet compartment for the ambulant disabled should be provided and it should be provided in addition to clause 23(1).

24 (1) Where a urinal is provided for disabled persons, such urinal shall have grip rails as illustrated in Figures 16 and 17.

Urinal

(2) The urinal is recommended to be provided with sensor flush valve.

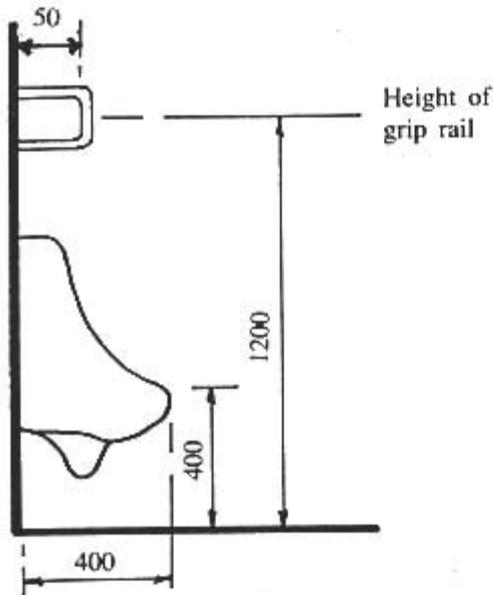


FIGURE 16: WALL HUNG URINAL

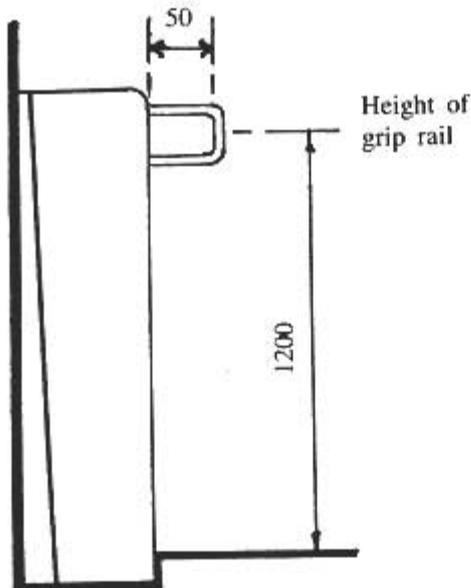


FIGURE 17: STALL URINAL

25 The top of at least one wash hand basin in the toilet shall be fixed at a height of not more than 750 mm above the level of the floor.

Wash hand basin

### Part II — Sanitary Accommodation for the Wheelchair Bound

26 (1) The water closet compartment required to be provided under clause 23(1) shall be designed as illustrated in Figures 18 and 19. The water closet compartment as illustrated in Figures 21 and 22 could be suitable for wheelchair users provided that the depth of the compartment is not less than 1 750 mm.

WC for wheelchair bound

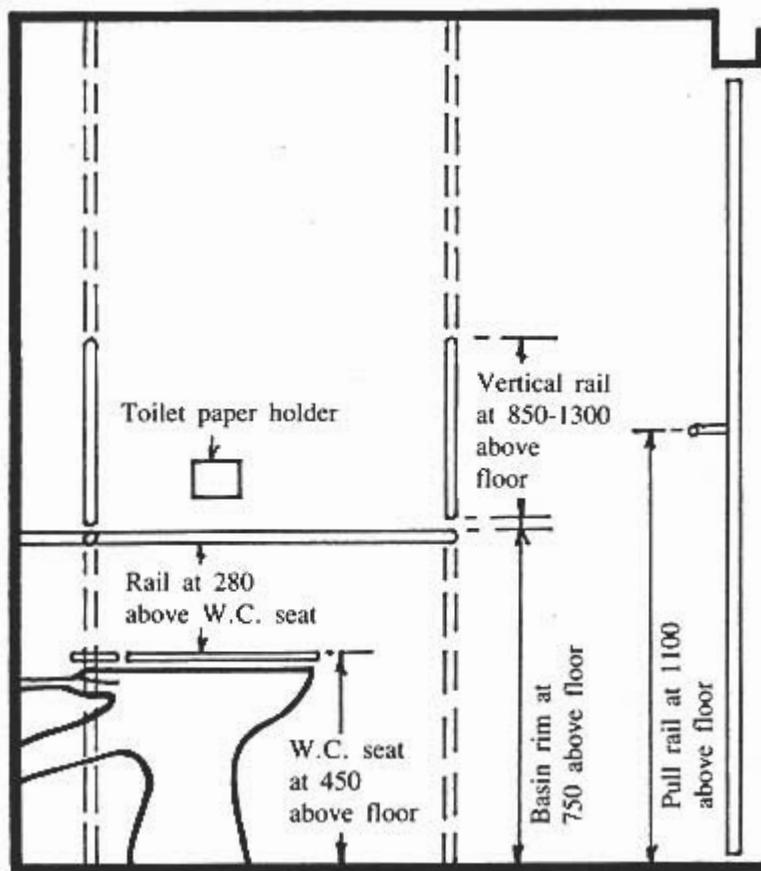
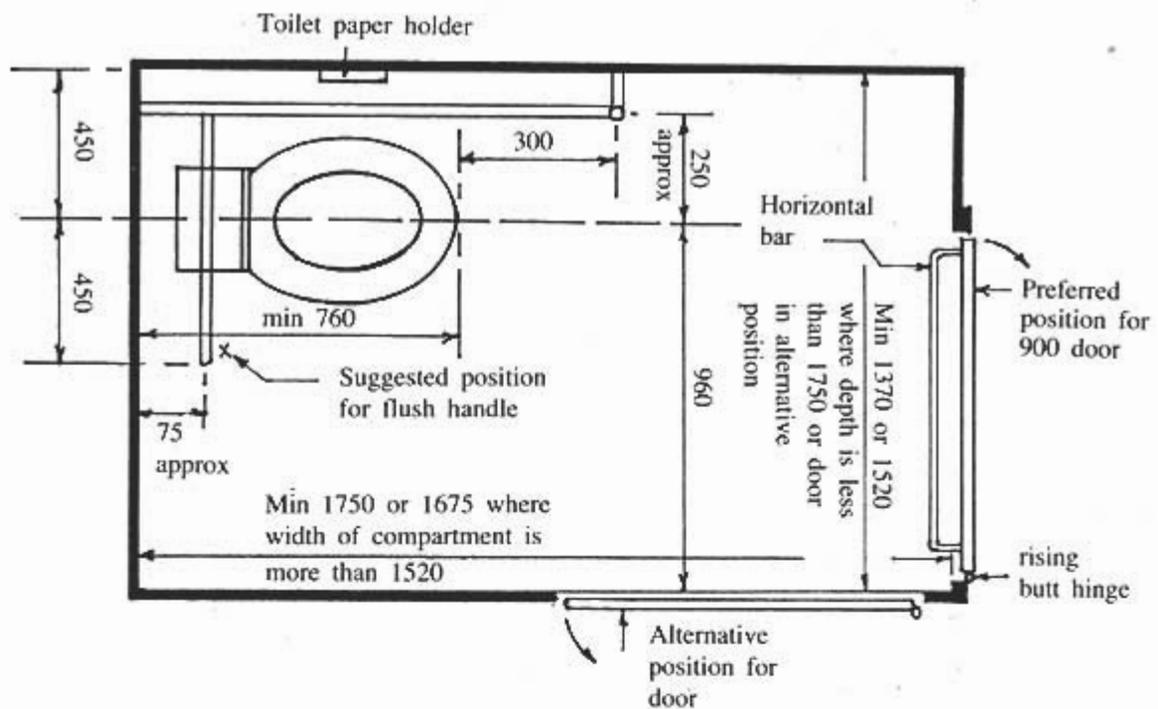


FIGURE 18: SECTION OF W.C. COMPARTMENT FOR THE WHEELCHAIR BOUND.



**FIGURE 19: PLAN OF W.C. COMPARTMENT FOR THE WHEELCHAIR BOUND**

- (2) The approach to the water closet compartment shall have a minimum turning space of 1 200 mm × 1 200 mm for wheelchairs. Approach to WC
- (3) The upper surface of the water closet seat shall be at 450 mm above the floor level. WC seat
- (4) The distance from the front edge of the water closet seat to the rear wall or the nearest obstruction shall not be less than 760 mm. Dimensions of WC
- (5) The distance from the centre line of the water closet to the further side wall shall not be less than 960 mm.
- (6) The minimum size of the compartment shall be 1 750 mm long by 1 370 mm wide. Alternatively, where the width of the compartment is 1 520 mm, the length may be reduced to 1 675 mm.
- 27 (1) Horizontal and vertical grip rails shall be provided in the water closet compartment. Grip rails shall have a diameter of not less than 25 mm and not more than 50 mm.
- (2) A horizontal rail shall be fixed to the side wall at a level 280 mm above the water closet seat extending from the rear wall to a point not less than 300 mm in front of the water closet. A second horizontal rail shall be fixed behind and at right angles to the water closet extending from the junction with the first rail to a point not less than 450 mm measured from the centre line of the water closet towards the further side wall.
- 28 (1) A vertical grip rail shall be fixed at a point 300 mm in front of the water closet and approximately 250 mm from the centre line of the water closet. A second vertical rail shall be fixed at a point 450 mm from the centre line of the water closet towards the further side wall. Vertical grip rails

(2) Vertical grip rails shall extend from a height of 850 mm above the floor level to a height of 1 300 mm or such rails may extend from the floor to the ceiling.

29 (1) The door to the water closet compartment shall be not less than 900 mm wide and shall open in the outward direction.

Door to WC

(2) There shall be a horizontal pull rail fixed on the internal face of the door at 1 100 mm above the floor level.

(3) The door shall be suitably positioned so that the disabled person could enter the compartment, close the door and transfer to the pedestal pan from either the front or lateral position.

30 (1) A wash hand basin may be provided in the water closet compartment as illustrated in Figure 20 or located just outside and adjacent to it.

Wash-hand-basin and dispensers

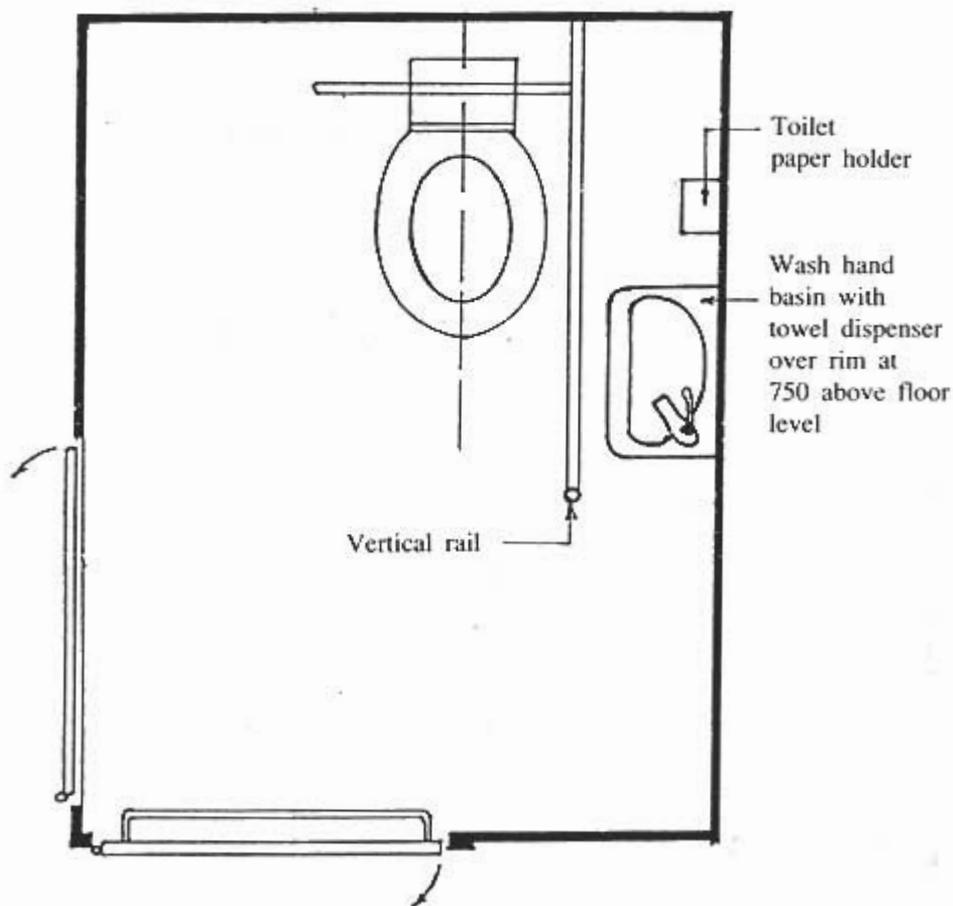


FIGURE 20: PROVISION OF WASH-HAND-BASIN

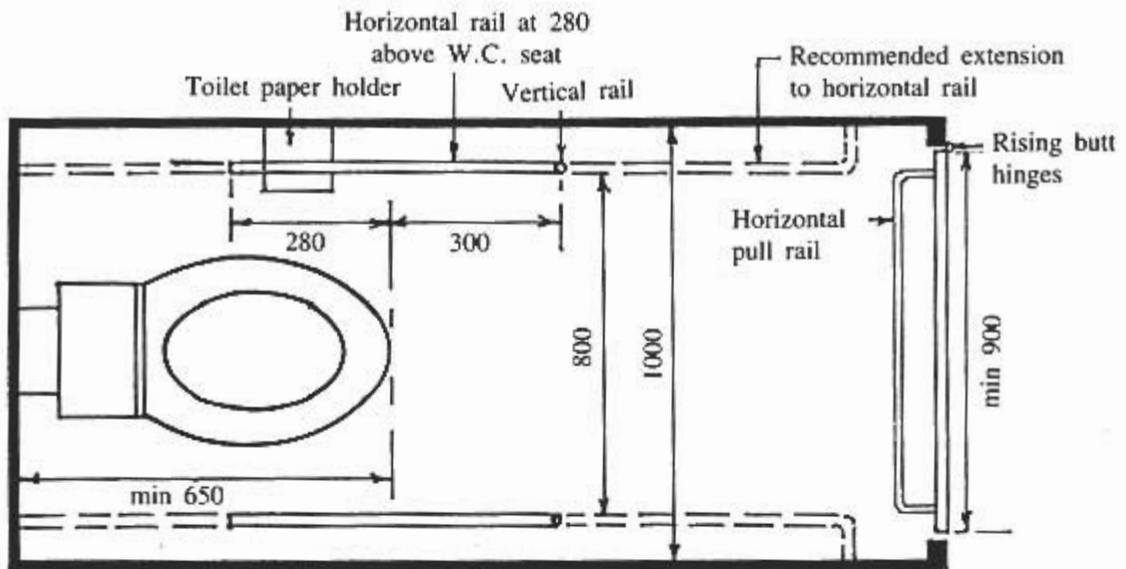
(2) The delayed-action and self-closing type of faucets are not recommended for these wash hand basins.

(3) Every water closet compartment and wash-hand-basin for the wheelchair bound should be provided with a paper/towel dispenser and a soap holder within easy reach of the wheelchair bound.

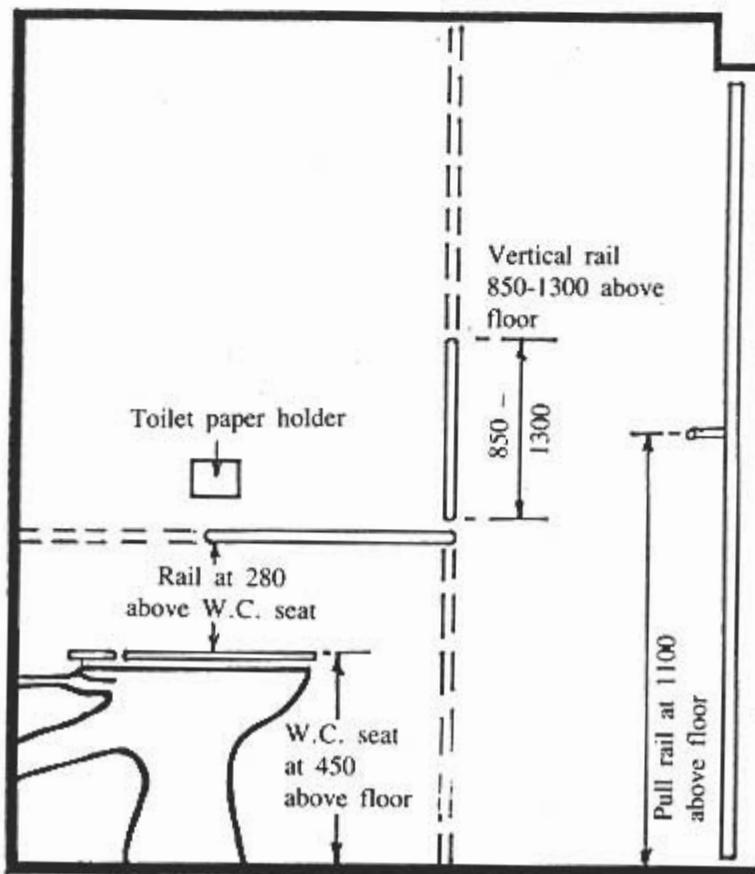
**Part III — Sanitary Accommodation for  
the Ambulant Disabled**

31 (1) Where a water closet compartment is to be provided for the ambulant disabled in addition to the one for wheelchair bound, it shall be provided as illustrated in Figures 21 and 22.

WC for ambulant disabled



**FIGURE 21: PLAN OF W.C. COMPARTMENT FOR THE  
AMBULANT DISABLED**



**FIGURE 22: SECTION OF W.C. COMPARTMENT FOR THE  
AMBULANT DISABLED**

(2) The width of the compartment shall be not less than 1 000 mm and the clear width between the grip rails shall be not less than 800 mm.

Size of WC compartment

32 (1) Horizontal and vertical grip rails shall be not less than 25 mm and not more than 50 mm in diameter.

Grip rails

(2) Horizontal grip rails shall be fixed to the side walls at a level 280 mm above the water closet seat extending from a point not less than 280 mm behind the front edge of the water closet to a point not less than 300 mm in front of the water closet. The horizontal rail may extend from the rear of the compartment to the horizontal bar at the door.

(3) Vertical grip rails shall be fixed at a point 300 mm in front of the water closet extending from a height of 850 mm above the floor level to a height of 1 300 mm or from the floor to the ceiling.

(4) Where the length of the compartment is approximately 1 400 mm – 1 500 mm and the width is 900 mm, vertical grip rails may be omitted if a length of horizontal grip rail 700 mm long is inclined at an angle between 30° to 45° as illustrated in Figure 23.

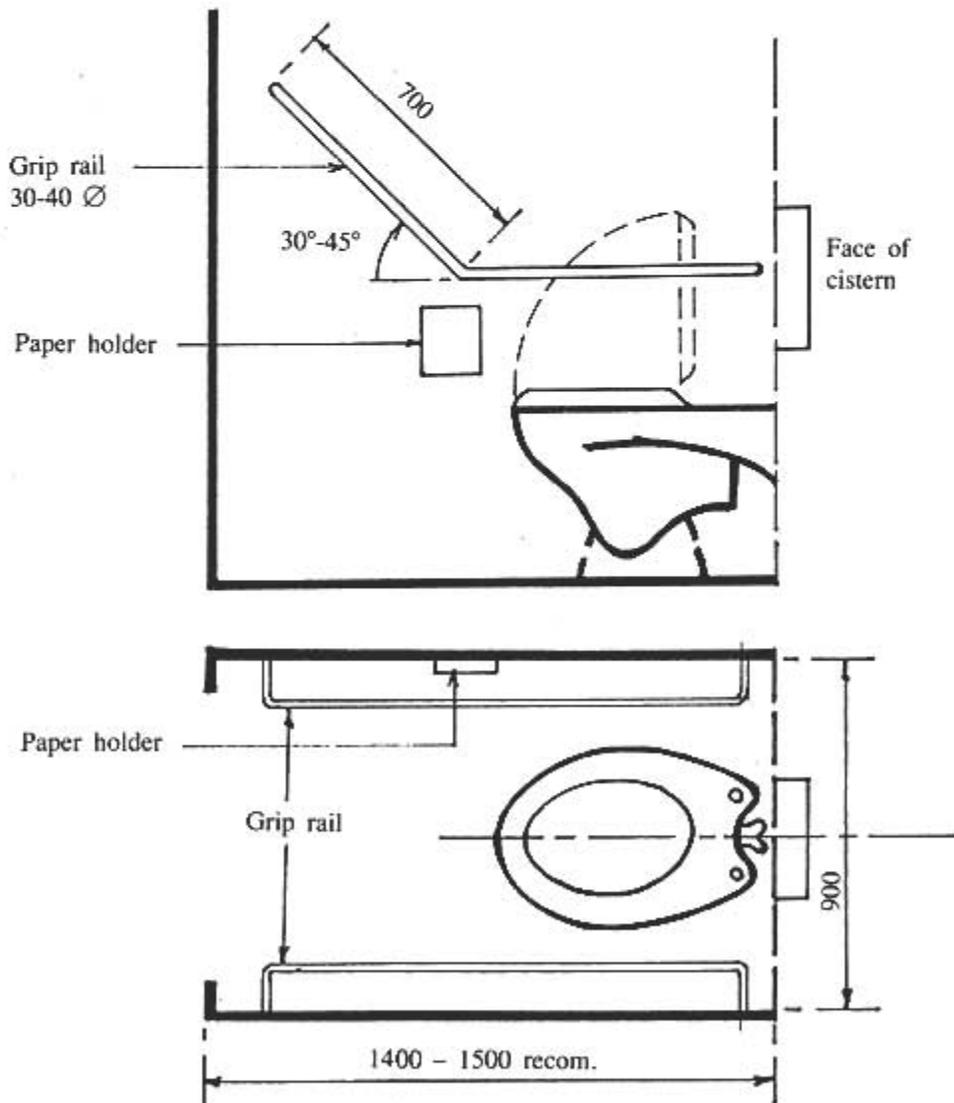


FIGURE 23: ALTERNATIVE W.C. COMPARTMENT FOR THE AMBULANT DISABLED

(5) Horizontal grip rails may be extended to the rear of the compartment and vertical grip rails may be extended from the floor to the ceiling as illustrated in Figure 22.

(6) Other design and installation details in relation to water closet seat, obstruction behind water closet and door shall comply with the relevant provisions of part II of Chapter 6.

## CHAPTER 7

### SYMBOL FOR THE DISABLED

33 Where a building is designed in compliance with this Code, the attention of all users shall be drawn to the facilities available in order that disabled persons are made aware of the existence of suitable provisions for them. The International symbol of Access for the Disabled Person (herein referred to as "the Symbol") as shown in Figure 24 is to be used and shall be permanently and conspicuously displayed to indicate the location of the various facilities in the building.

Awareness of facilities



**FIGURE 24: SYMBOL OF ACCESS FOR THE DISABLED PERSON.**

34 The size of the symbol should be determined according to the following Table.

Size of symbol

**TABLE**  
Size of Symbol

Viewing Distances (m)	Size (mm)
Up to 7.0	60 × 60
7.0 – 18.0	110 × 110
Above 18.0	200 × 200 to 450 × 450

35 The colour of the symbol shall be white on a blue background.

Colour of symbol

36 (1) The symbol shall be displayed –

- (a) outside the building to identify buildings with accessible facilities;
- (b) at main lobbies or main traffic routes to indicate the location of the facilities in the building; or
- (c) at specified areas of the building that are totally accessible and not only at specially designed toilets.

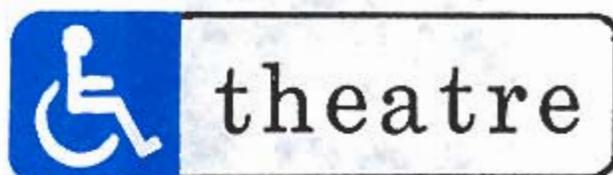
Display of symbol and signs

(2) Directional signs as shown in Figure 25 shall be displayed at places where there is a change of direction or at points of decision to direct disabled persons to the various facilities.



**FIGURE 25: SIGN FOR DIRECTING TO FACILITIES**

(3) The sign as shown in Figure 26 shall be used to identify a particular facility at its destination.



**FIGURE 26: SIGN FOR IDENTIFYING PARTICULAR FACILITY AT ITS DESTINATION**

37 The height of letters in the signs under clauses 36(2) and (3) for varying viewing distances shall be determined in accordance with the Table in this clause –

**TABLE**  
Height of Letters

Required viewing distance (m)	Minimum height of letters (mm)
2	6
3	12
6	20
8	25
12	40
15	50
25	80
35	100
40	130
50	150

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