THE BUILDING REGULATION & FACILITIES FOR THE DISABLED
UNITED ARAB EMIRATES CODE
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Preface

Praise be to Allah and prayers and peace be upon the Messenger of Allah, his family and companions and all those guided by his guidance.

UAE is considered amongst the leading countries providing great consideration to people of special needs which stems from the firm belief of its wise leadership -represented by his Highness Sheikh Khalifah Bin Zayed Al Nahayan the president of UAE (may Allah preserve him), and his brother his Highness Sheikh Mohammed bin Rashid Al Maktoum, vice president of UAE Prime minister and Ruler of Dubai (may Allah protect him)- in the necessity to support them through knowledge, financial support, specialists, means, various facilities, care centers and special clubs for the purpose of fully integrating people of special needs into the society and benefiting from their capabilities in building the society and becoming active individuals in it. This has been enthroned by the issuance of the Federal Law No. (29) Of the year 2006 regarding the rights of those people with special needs.

On that basis, we have decided that the Ministry would contribute little effort by preparing the technical specifications of the buildings and establishments that are suitable for people of special needs to activate the integration between the various areas in the country in order to achieve the vision and objectives of our wise leadership in upgrading the standard of living, guaranteeing a better quality of life and applying justice and equality to all the country citizens and residents on this good land.

Hamdan Bin Mubarak Al Nahayan.
Chapter 1

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1 Obstruction:

1. Problem Identification
   - Obstacles and protruding elements in the path of travel.
   - Low overhanging signs
   - Lack of warning signs around obstructions.

2. Planning Principle
   - To design a barrier-free path for the safety and independence of disabled people especially the sightless.

3. Design Consideration

3/1 General

1. Obstruction include street furniture, traffic Road marking, Bollards, plants tree’s, shop awning and advertising signs... etc.
2. Obstructions should be placed outside the path of travel where ever possible.
3. Obstruction in the pathway should be easy to detect, and if possible, should be placed along one continuous line.
4. The minimum width of clear unobstructed path should be (90cm).
5. Protruding elements should be avoided.

3/2 Obstructions on the pathway surface

- Obstructions on the pathway surface should have the following design features in order to be detected by the case of a sightless person.
1. A straight shape rising from the path way surface (fig 1)
2. A. (10 cm) raised platform (fig 2)
3. Tactile warning marking on the ground around the obstruction. The warning marking should extend over a width of at least (50-cm) outside the projected area at the base of the obstacle (fig 3).
3/3 Overhanging Obstruction
1. Overhanging signs in accessible pathway should be mounted at a minimum clear height of (200 cm) to allow a sightless person to pass safely (Fig. 4).
2. Overhanging vegetation should be clipped to a minimum clear height of (200 cm) (Fig. 5).
3. Undetectable obstacles mounted lower than (200 cm) may project a maximum distance of (10 cm) in to the path way. Otherwise they should be recessed or covered (Fig 6).

3/4 Fixed Poles
Fixed poles should have contrasting durable color strips of at least (30 cm) in length, placed with the center line at a height between (140 cm and 160), to warn pedestrians with limited vision (Fig 7).

3/5 Garbage bins
Garbage bins attached to lampposts should not face the pedestrian flow so as to minimize collision’s and should be painted in a contrasting color so that people with limited vision may easily identify them (Fig “7”).

3/6 Space below ramps and stairs
Space below ramps and stairs (less than 200 cm) should be locked out completely by protective rails or raised curb or marked with a tactile surface (Fig “8”).

3/7 Bicycle stands
Bicycle stands should be located on a raised platform.

3/8 Stabilizing wires
Stabilizing wires and wire netting should be painted in contrasting colors or blacked out.

3/9 Bollards
Bollards should be painted in a contrasting color or in colored stripes. The distance between guiding posts should be around 120 cm (Fig 9).

3/10 Road Works
- Road Works from temporary obstructions within the route of travel. They should be protected easily detected continuous barriers scaffolding and fences for safety reasons.
- Barriers should be identified by striped color markings and should be lit at night.
- The barrier height should be between (75-95 cm) The distance between the bottom of the barrier and the pathway surface should not exceed (10cm).

4. Existing Constructions
Existing obstructions within the path of travel should be redesigned to confirm to all the above requirements.

2. Signage
1. Problem Identification
   - Orientation difficulties resulting from directional sign, street names and numbering and/or the lack of them.
   - Pedestrian accidents due to badly positional signs.
   - Hazards due to lack of warning and traffic signals.
   - Non identification of access routes and accessible facilities.

2. Planning Principle
   To facilitate orientation for the disabled (Fig 10).

3. Design Considerations
3/1 General
   - Signage includes direction signs, signs of locality, street names and numbering, information signs....
   - All type of signs should be visible, clear, simple, easy to read and properly lit at night.
   - In general, signs should not be placed behind glass because of possible reflection.
   - Signage placed on the pedestrian path of travel are considered obstructions, thus they should be detectable.

3/2 International symbol of accessibility
   - Accessible spaces and facilities should be identified by the international symbol of accessibility (Fig. 11)
- The symbol is composed of a wheel chair figure with either a square background or square border.
- Contrasting colors should be used.
- The commonly employed colors are white for the figure and blue for the back ground.
- The wheel chair figure should always be seen from drawing facing right.
- For completely accessible building its enough to have one explanatory sign at the entrance.

3/3 Direction Signs
- Graphic or written directions should be used indicate clearly the type and location of the available facility.
- Directional signs need not be excessive in number, but they should be placed at main entrances and doors in places where changes in direction.

3/4 Street Names
- Fixed signs indicating street names should be placed at a maximum height of (250 cm) Fig (12).

3/5 House Numbers
- Fixed sign indicating house numbers should be placed at a maximum height (200 cm). Fig (13)

3/6 Maps and Information Panels
- Maps and Information Panels at building entrances, along roads and on public buildings should be placed at height between 90cm and 180 cm (Fig 14).

3/7 Installation
- Signs can be wall-mounted suspended or pole-mounted.
- Wall-mounted signs, such as those indicating room numbers, should be placed with the center line at a height between (140 - 160)cm from the finished floor level.
- Over hanging signs should allow a minimum clearance of (200) cm.
- Pole-mounted signs (See obstruction)

3/8 Shape of Sign boards
- Information sign boards should be rectangular.
- Warming sign boards should be triangular
3/9 Color of Signs
- The color of signs should contrast with the surrounding surface so as to be clearly distinguishable. The commonly used colors are: White, Black, Yellow, Red, Blue and Green.
- The color combination red/green and yellow/blue not be used in order to avoid confusing color-blind persons.

3/10 Sign Surface
- The Sign surface should be processed to prevent glare.
- Engraved texts should be avoided unless they are colored.
- Key Plans, orientation signs and push buttons in lift must have a text in Braille or in relief.

3/11 Size of lettering
The size of letters should be in proportion to the reading distance (Fig 15)

4. Existing Constructions
- The international symbol of accessibility should be added to mark accessible spaces and facilities.
- Directional signs should be added to indicate clearly the location and function of accessible space and facilities.
- Signs that do not comply with the above design requirement should be modified or replaced.

3. Street Furniture
1. Problem Identification
- Lack of improper design of street Furniture
- Obstructed Pathways
- Inaccessible street facilities

2. Planning Principle
To design accessible amenities convenient to all people without obstructing the free passage of pedestrians along travel routes.
3. Design Considerations

3/1 General
- Street Furniture includes bus stops, benches, mail boxes, lampposts, signboards, telephone booths, public toilets, news paper kiosks. Planting tubs, garbage bins etc.

3/2 Location
- Street Furniture should be located so as to allow for free passage of all people without creating hazards.
- Textural changes in the footpath surface help sightless people to identify the location of public amenities (See Obstructions)

3/3 Resting Facilities
- Level rest areas with seats are helpful for all pedestrians, especially for those with mobility problem.
- Resting facilities should be placed outside the main circulation path in public in front of accessible entrances and exists and wherever necessary.
- Resting facilities should be provided at regular intervals between 10,000 cm and 20,000 cm (Fig 17)
- Some seating accommodations should be placed close to public toilets, telephones etc...,
- Resting spaces with benches should allow a minimum of (120cm) of adjoining space for a wheel chair.
- Public seats and benches should be approximately (45cm) above floor level, with backrests at approximately (70cm) above floor lever (Fig 19).
- The height of table should be between (750-90) cm and the minimum depth under the table should be (70cm) in order to fit a wheelchair under all sides (Fig 20).

3/4 Public Telephone Booths
- At Public telephone booths, one telephone should be accessible to wheelchair user (Fig 21).
- Telephone for the hearing impaired should be equipped with hearing aid devices and amplifiers.
- A push button telephone numbering system, with raised letters, which can also be read by touch, should be used for the convenience of sightless users.
- A folding seat should be provided in accessible telephone booths for the convenience of people with mobility problems.
- The minimum unobstructed area in front of the telephone counter should be (120 X 85) cm allowing either a parallel or a frontal approach. (Fig 21)
- The coin slot should be mounted at an accessible comfortable height between (90-120) cm.
- The telephone card length should be at least (75) cm.
- Accessible public telephone should worked work by appropriate signs.

3/5 Mail Boxes
Mailbox slot should be mounted at an accessible height between 90-120 cm (Fig/ 22)
- Drinking fountains spouts should be located at an approximate height of 90 cm.
- Drinking fountains can have two spout’s located at different heights, one convenient to wheelchair users at approximately 85 cm and one at approximately 95 cm for non-disabled people.

4 Path ways
1. Problem identification
   - Uneven curbs with obstructions and holes
   - Inconvenient or dangerous interruptions in the path of travel.
   - Insufficient width
   - Change in level

2. Planning principle
   To provide clear, obstruction free level and wide pathways for the convenience of all users especially for the sightless and the people with mobility problems.

3. Design Consideration
3/1 General
   - Street pavements. Pedestrian passages in open spaces and recreational areas, Pedestrian under passes and over passes are all considered pathway or ramps.
   - Pedestrian routes in recreational areas and open spaces should be broken regularly by detectable obstructions such as plants and / or by changing the alignment to discharge bicyclists.
3/2 Guide - Strips
A guide strip is a line means constructed in or on the road surface to facilitate orientation for sightless pedestrians in the following manner:-
- To replace missing natural guidelines or to fill gaps of more than (1000 cm) in guide strip (Fig 24).
- To guide to pedestrian crossings (Fig 25).
- Guide strips should be laid in a simple and logical manner and should not be located close to manholes or drains to avoid confusing sightless people.
- Guide strips should have a color which contrasts with the surrounding surface for the benefit of people with sight problems.
- The guide strips ridge profile should be parallel to main direction of movement and should be flush with the top layer of the adjacent road surface.
- When travel route change direction there should be a gradual change in the direction of the direction of the guiding strip. (Fig 26).

3/3 Tactile marking
Tactile tiling on the pedestrian route of travel should be placed at the following locations:
- On a guide strip where alternative routes exist or at junction of guide strips (Fig 27).
- At a pedestrian crossing (See curb ramps).
- Around obstructions which are difficult for the sightless to detect.
- A tactile guiding area, preferably of rubber tiles with minimum dimensions of (90X90) cm should be constructed in a guide strip at cross pathways where the route branches off in several directions (Fig 27).

3/4 Curb
- The height of a curb should be between (10-15)cm
- Stepped curbs should be avoided, as they are hazardous to all pedestrian.

3/5 Curb Ramps
- Curb should not obstruct the free passage of physically disabled people mainly wheel chair users (See curb ramps).

3/6 Width (Pathway)
- The minimum width of an unobstructed pathway should be (90)cm. (Fig/28)
- The minimum width of a two-way wheelchair traffic passage is 150 cm. The preferable width is 180 cm. (Fig 28)

3/7 Slope Pathways
- The slope of an accessible path should not exceed 1:20 pathways.
- The slope across a path should not exceed 1:50.

3/8 Surface Pathways
- The surface of an accessible pathway should be smooth, continuous non-slip and even.
- Pathways which are level and even with adjacent surfaces should be given different texture and color finish differentiation.
- Intersecting pathways should blend at one common level.

3/9 Gratings
- Gratings can be hazardous to wheelchair users, parents with prams.
- Manholes, drains and gratings should generally be placed outside the pedestrian pathway.
- Grating should be flush with the pathway surface and should have narrow patterns of not more than 1.3 cm.
- Elongated grating openings should be perpendicular to the pedestrian travel path. (Fig 29).
- Guards with a minimum height of 1.5 cm should be used to separate pathways from planting areas (Fig 30).
- The edges of the pathway should be beveled wherever changes in level between 0.6 and 1.3 cm exist between the pathway and the surrounding area. (Fig 31).

4. Existing Construction
- Textured rubber adhesive tiles can be applied to existing pavement to avoid slipping and to warn sightless people.
- Existing curbs that obstruct the pedestrian flow should be ramped.
- Existing pathways with steps, stairs or steep slopes need not to be modified if an alternative accessible route exists.
5 Curb Ramps

1. Problem Identification
   Improperly designed transition or no transition at all between the curb and the street at the pedestrian crossing.

2. Planning Principle
   To overcome changes in level between the pavement and the road surface and also on the pavement itself.

3. Design Consideration

   3/1 General
   - Curb ramps are used wherever there is a difference in level on pedestrian paths or cross paths.
   - To avoid confusing sighted curb ramps should be positioned out of the usual line of pedestrian flow.
   - Curb ramps should be located away from places where water accumulates.

   3/2 Types of Curbs
   - Standard curb ramp Cut back into the pavement with flared sides providing transition in three direction (Fig 32).
   - Returned curb ramps Providing slope in one direction this could be dangerous measure if the sides are not protected.
   - Built-up curb ramps usually with flared edges.

   3/3 Application
   - All each quadrant of each street intersection.
   - At each pedestrian crossing on opposite of the street (Fig 35).
   - At drop-off zones near building entrances (Fig 36).
   - Between accessible parking areas and pathways (Fig 37)

3/4 Curb ramp at Intersections
   At Intersection, curb ramps can be installed in any of following ways
   - Directly in the path of travel (Fig 35)
- Diagonally across the corner (Fig 38).
- Continuously wrapped around the corner (Fig 39).

3/5 Guide Strips
- Where the construction of curb ramps would affect the width of travel route, the whole pavement should be lowered at a maximum slope of 1:12 to provide the necessary level transition (Fig 40).
- For narrow pavements lowered at a corner, the tactile tiling indicating the location of the pedestrian crossing could be constructed as indicated in (Fig 41).

3/6 Width of Curb
The minimum width of curb ramp should be between (90 -120) cm (Fig42).

3/7 Slope of Curb
- The Maximum slope of curb ramp should be 1:12 (Fig/ 42).
- The minimum slope of flares should be 1:12 (Fig/42).
- Level transfer is recommended between the curb ramp and the surface of a pathway a lip not exceeding (15mm) can be used.

3/8 Guide Strips
A guide stripe painted in contrasting colour should be constructed to guide sightless and partially sighted pedestrians to the location of the curb ramp (Fig 42).

3/9 Surface and Colour
- Curb ramps including flares should be rough texture or ground pattern to make them detectable and slip-resistant.
- The surface colour should be distinct and should contrast with the surrounding surfaces to guide pedestrians with limited vision.

4 Existing Constructions
- The minimum allowable slope for a curb ramp should not be more than (1:10).
- If the Existing curb ramps do not comply with the above-mentioned they should be modified.
- For narrow pavements more than (1.5cm) height, where the construction of curb ramps would obstruct the free passage of pedestrians.
- The pavement can be lowered to the road (Fig 41).
- Built-up curb ramp can be constructed if they would not obstruct the required width of the road.
- Built-up curb ramps are accepted only as remedial to overcome existing barriers, but not on public streets or pathways.

6 Pedestrian Crossing

1. Problem Identification
   - Uneven road surface
   - Lack of guide strips
   - Lack of warning marking for crossing
   - Gratings on the road surface

2. Planning Principle
   To facilitate the safe and independent crossing of disabled people.

3. Design Considerations
   3/1 General
   - Pedestrian Crossing should be equipped with traffic control signals.
   - Low traffic crossings frequently used by disabled people can be controlled by pedestrian pushbutton system.
   - Constructing traffic Islands to reduce the length of the crossing is recommended for the safety of all road users.

3/2 Guide Strips
   - Guide strips should be constructed to indicate the position of pedestrian crossing for the benefit of sightless pedestrian. (Fig/ 43)
   - A guide strip should lead to pedestrian light poles with push buttons

3/3 Traffic Signals
   - Pedestrian traffic lights should be provided with clearly audible signals for the benefit of visually disabled.
   - A caution devices should be installed on a pole at the point of origin of crossing and not at the point of destination.

FIGURE : 43
3/4 Push Buttons
Push buttons should be easy to locate and operate and should be placed between (90cm and 120cm) of the ground for the benefit of wheel chair users.

3/5 Traffic Islands
- The traffic Island depth should not be less than (150cm)
- The width of a traffic Island should not be less than (150cm)
- A colored tactile marking strip at least (60cm) wide should mark the beginning and the end of a traffic Island to guide pedestrian with impaired vision to its location.

3/6 Road Hump
The road surface at pedestrian crossings can be raised to the same level as the pathway. So that wheel chair users do not have to overcome differences in height (Fig 44).

3/7 The Road Surface
The road surface should be firm, well-drained non-slip.

7 Parking
1. Problem Identification
   - Poor parking facilities
   - Insufficient width of the parking aisle.
   - No allocation of parking space for the disabled

2. Planning Principle
   To provide accessible parking facilities as close as possible to the point of destination.

3. Design Consideration
3/1 General
   - Accessible parking provisions apply to both outdoor and underground facilities.
   - For multi-story indoor parking facilities, at least one level should be served by an accessible elevator.
3/2 Number for parking
- For parking facilities of less than 50 cars, at least one accessible parking space should be provided in every parking facility.
- For parking in every facilities of a maximum number of 400 spaces, accessible spaces should at least be provided in the ratio of (1:30).
- For parking facilities of more than 400 spaces, at least 8 accessible parking spaces should be provided plus (1) space for each additional increment of (100) cars over 400.

3/3 Parking Locations
- For outdoors parking accessible parking spaces should be located not more than (3000 cm) from accessible building entrances.
- For indoor parking accessible parking spaces should be located right next to accessible elevators, or as close as possible to exits.
- The end of rows is preferable for vans with lifts for wheel chair users.

3/4 Dimensions for accessible Parking
- The minimum width of space is (360cm). The recommended width is (390cm) (Fig \ 45).
- An access aisle (120cm) wide can be located between two ordinary parking spaces (Fig 46).
- For indoor parking the minimum height clearance for vans with hydraulic lifts is (240cm).
- Where parking spaces are angled, the extra space at the end of a row can be used as parking aisle for disable persons. (Fig 47).

3/5 Parking Curb
- If a curb exists, curb ramps should be provided to link accessible pat ways.
- If no curb exists a textured surface at least (60cm) wide is needed to separate the pathway from the vehicular area. Precast wheel stops can be used to set a part a passage at least (90cm) wide (Fig 48), (Fig 49).

3/6 Curb side Parking
Curbside parking is dangerous for disabled people unless it is designed as an accessible drop-off area.
3/7 Drop-off Area
- Drop-off area beneficial for parking up and dropping off people with physical limitations, parents with children.
- Drop-off zones should be provided at public transport stops such as bus stops and not more than (3000 cm) from accessible building entrance.
- The drop-off area should be at least (360cm) wide and incorporate an aisle (120cm) wide to allow for maneuvering. The length should accommodate at least two cars.
- Appropriate curb ramps should be provided to facilitate circulation over paved surfaces.
- Where no curb exists to mark the separation between pedestrian and vehicle zones, the installation of a cue is necessary to guide sightless pedestrians:
  a) Bollards may be used
  b) A tactile marking strip at least (60cm) wide.
  c) A protected shelter or canopy with seating facilities is recommended design feature at passengers loading zones.
  d) Signs should be installed to identify a drop-off zone and prevent its misuse as parking space.

3/8 Surface of Parking
- The surface of parking facility should be uniform and smooth.
- The slope of parking ramp should not exceed (1:20).

3/9 Signs of Parking
Accessible parking areas should be marked by the international symbol of accessibility (Fig 50).
Chapter 2

Architectural Design Considerations

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      3/5 Floor identifiers
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   4. Existing construction

3. Platform Lifts
   1. Problem Identification.
   3. Design Consideration.
      3/1 General
      3/2 Vertical movement platform lifts
      3/3 Inclined movement platform lifts
      3/4 Lifts size
   4. Existing construction

4. Stairs
   1. Problem Identification.
   3. Design Consideration.
      3/1 General
      3/2 Width of stairs
      3/3 Landing
      3/4 Non-slip
      3/5 Hand rail
      3/6 Tactile marking
      3/7 Surface stairs
      3/8 Emergency stairs
      3/9 Mechanical stairs / escalator
   4. Existing construction

5. Railings and Handrails
   1. Problem Identification.
   3. Design Consideration.
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      3/3 Mounting
      3/4 Form
   4. Existing construction

6. Entrances
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      3/2 Door types
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      3/6 Threshold
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THE BUILDING REGULATION & FACILITIES FOR THE DISABLED
UNITED ARAB EMIRATES CODE
1. Ramps

1. Problem Identification
   - In accessible building entrances due to difference between indoor and outdoor levels.
   - In accessible routes due to differences in level.
   - Lack of or improper design of ramps.
   - Very steep and/or long ramps with no resting landing.

2. Planning Principle
   To provide ramps wherever stairs obstruct the free passage of pedestrians, mainly wheel chair users and people with mobility problems.

3. Design Consideration

3.1 General
   - An exterior location is preferred for ramps. Indoor ramps are not recommended because they take up a great deal of space.
   - Ideally, the entrance to a ramp should be immediately adjacent to the stairs.

3.2 Ramp Configuration
   Ramp can have one of the following configurations:
   a) Straight run (Fig/1)
   b) (90°) turn (Fig/2)
   c) Switch back or (180°) turn (Fig/3)

3.3 Width of Ramps
   - Width varies according to use configuration and slope.
   - The minimum width should be (90cm).
3/4 Slope of Ramps

The minimum recommendation of ramps is (1:20) steeper slopes may be allowed in special cases depending on the length to be covered (Fig 5/6).

<table>
<thead>
<tr>
<th>Maximum Slope</th>
<th>Maximum length</th>
<th>Maximum Rise</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:20 i.e. 5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:16 i.e. 6%</td>
<td>8m</td>
<td>0.50m</td>
</tr>
<tr>
<td>1:14 i.e. 7%</td>
<td>5m</td>
<td>0.35m</td>
</tr>
<tr>
<td>1:12 i.e. 8%</td>
<td>2m</td>
<td>0.15m</td>
</tr>
<tr>
<td>1:10 i.e. 10%</td>
<td>1.25m</td>
<td>0.12m</td>
</tr>
<tr>
<td>1:08 i.e. 12%</td>
<td>0.5m</td>
<td>0.06m</td>
</tr>
</tbody>
</table>

- Ramps should have no transverse slope (Fig/4).
- The Plan of the ramp slope should follow the path of travel (Fig/5).

3/5 Landings

- Ramps should be provided with landings for resting maneuvering and avoiding excessive speed (Fig/ 5/6).
- Landing should be provided every (1000 cm) at every change of direction and at the top and bottom of every ramp (Fig/ 5).
- The landing should have a minimum length of (120 cm) and minimum width equal to that of the ramp (Fig/6).

3/6 Handrail

- A protective handrail at least (40cm) height must be placed along the full length of ramps (Fig/ 8).
- For ramps more than (300 cm) wide an intermediate handrail could be installed (fig/ 5).
- The distance between handrails when both sides are used for gripping should be between (90 and 140cm).
3/7 Surface of Ramp
- The ramp surface should be hard and non-slip (Fig/7/9).
- Carpets should be avoided (Fig/10).

3/8 Tactile Marking
- A coloured textural indication at the top and bottom of the ramp should be placed (Fig/8) to alert sightless people as to the location of the ramp.
- The marking strip width should not be less than (60 cm).

3/9 Drainage
Adequate drainage should be provided to avoid accumulation of water.

3/10 Obstacles
The same clearance considerations that apply to pathways apply to ramps (see abstraction).

3/11 Mechanical Ramps
- Mechanical ramps can be used in large public buildings but are not recommended for use by persons with physical impairments.
- If the ramp is to be used by a wheel chair confined person, the slope should not exceed 1:12.
- The maximum width should be (100 cm) to avoid slipping (Fig/11).

4 Existing Construction
- If the topography or structure of the existing building is restrictive, minor variations of gradient are allowed as a function of the ramp length.

<table>
<thead>
<tr>
<th>Maximum Slope</th>
<th>Maximum length</th>
<th>Maximum Rise</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:20 i.e. 5%</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>1:16 i.e. 6%</td>
<td>8m</td>
<td>0.50m</td>
</tr>
<tr>
<td>1:14 i.e. 7%</td>
<td>5m</td>
<td>0.35m</td>
</tr>
<tr>
<td>1:12 i.e. 8%</td>
<td>2m</td>
<td>0.15m</td>
</tr>
<tr>
<td>1:10 i.e. 10%</td>
<td>1.25m</td>
<td>0.12m</td>
</tr>
<tr>
<td>1:08 i.e. 12%</td>
<td>0.5m</td>
<td>0.06m</td>
</tr>
</tbody>
</table>

A non-slip surface finish should be added to slippery ramps.
2 Elevators

1. Problem Identification
   - Inadequate space inside the elevator cab.
   - High position of switches buttons and control panel.
   - Narrow entry doors.
   - Insufficient opening time interval

2. Planning Principle
   To Provide well dimensioned elevators that disabled people can use conveniently.

3. Design Considerations

3/1 General
   - The accessible elevator should serve all floors normally reached by the public.
   - Key operated elevators should be used only in private facilities or when an elevator operator is present.
   - Wide elevator cabs are preferable to long ones.

3/2 Elevator Cab
   - The minimum interval elevators dimensions, allowing for one wheelchair passenger alone are (100 x 130 cm.) (Fig 13/14.)
   - The door inside of the elevator should have a hand rail on three sides mounted (80 to 85 cm) from the floor (Fig. 13/14.)
   - The maximum difference allowed between the ground and elevator floor while landing should be 0.2 cm.
   - The maximum tolerance for stop precision should be (0.20 cm)

3/3 Control Panel
   - The control panel can be mounted at one of the alternative locations.
   - For ease of reach the control panel should be mounted (90 cm to 120 cm) from the floor.
   - Control buttons should be in accessible location and illuminated. The diameter should be not smaller than (0.20 cm.)
   - The numerals on the floor selector buttons should be embossed so as to be easily identifiable by touch.
3/4 Call Buttons
For ease of reach, call buttons should be mounted (90 cm to 120 cm) from the floor (Fig/14).

3/5 Floor Identifiers
Tactile number should be placed on both sides of the door jambs at approximate height of (150 cm) to help alone sightless passenger to identify the floor reached (Fig. 15/16.)

3/6 Hall Signal
The elevator hall signal should be placed at an approximate height of (180 cm) (Fig/15)

3/7 Door Reopening Activators
The door-opening interval should be no less than five second. Re-opening activators should be provided.

3/8 Audiovisual Signals
The elevator should signal arrival at each floor by means of a bell and a light alert sightless and hearing impaired passengers simultaneously.

3/9 Floor Surface
The floor of the elevator and the area in front of the elevator on each floor should have a non-skid resilient surface or a low pile fixed carpet.

3/10 Colors
The colors of the elevator door should contrast with the surrounding surface so as to be easily distinguishable by persons with visual impairments.

4. Existing Construction
- The minimum acceptable size of an existing elevator cab, allowing for a single wheelchair passenger is (95 cm x 120 cm)
- The minimum acceptable width of an existing elevator door opening is (75 cm)
- Call buttons and control panels mounted higher than the recommended height may be left in place if they are within (140 cm) of the door, this being the maximum reach of the wheelchair user.
- Control mounted higher than 1.40m should be replaced.
- Where there are two identical control panels only one need be replaced (Fig/17).
3. Platform Lifts

1. Problem Identification
   - Changes in level between indoor and outdoor areas.
   - Changes in level inside a building.
   - In sufficient space for ramps.

2. Planning Principle
   To allow people with mobility problems to have free vertical access between different levels (Fig/18).

3. Design Consideration

3/1 General
   - Platform lifts are special passenger elevating devices for the disabled.
   - Platform lifts can have either a vertical or an inclined movement.

3/2 Vertical Movement Platform Lift
   - For maximum level changes of (250 cm), vertical movement platform lifts may be installed adjacent to stairs (Fig/19).
   - For level changes of more than (120 cm), the lift should be placed in a closed structure with doors at the different accessible level (Fig/20).
3/3 Inclined movement platform lifts

- Inclined movement platform lifts consist of three elements: a railing, an electric generator, and a moving platform or seat.
- The operating system of the lift can be either lateral or suspended (Fig/22/23).
- Inclined movement platform lifts can be installed along the stair wall, as long as they do not obstruct the required width of the exit. The seat or platform can be folded when not in use.
- The minimum width of the stairs should be (90 cm) to allow installation of a lift (Fig/24).
- Platform lifts can be installed on all types of stairs including switch back stairs i.e. those with a relation angle of 180 and spiral staircases (Fig/ 25/23).

3/4 Lift Size
The minimum width of the lift platform should be (90 cm) and the minimum length should be (120cm) (Fig/21).

4. Existing Constructions
- Platform lifts can provide access to existing building where it would be difficult or infeasible to install a ramp or elevator.
- Inclined movement platform lifts are usually used to connect one or more floors or to overcome split-levels in existing buildings. In buildings that are or would be frequently used by persons with mobility problems such devices should not be utilized.

4 Stairs
1. Problem Identification
- Steep stair cases
- Poorly designed steps that hinder foot movement.

2. Planning Principle
To provide safe and well dimensioned staircases for the comfort of all people, especially those with mobility problems.
3. Design Consideration

3/1 General
- Differences in level should be illuminated or minimized as much as possible for the comfort of disabled people (Fig/ 27).
- A complementary ramped route elevator or lift should be provided where there are steps in another user accessible path (Fig/ 28).
- All steps should be uniform circular stairs and stepped landing should be avoided.
- Avoid using open and round stairs.
- Open risers are not recommended.

3/2 Width of Stairs
- The minimum width of stairway should be (90 cm) for one way traffic and (150 cm) for two way traffic.
- For indoor stairs the riser should be between (12 cm and 18 cm), and the tread between 28cm and 35cm.
- For outdoor stairs the maximum riser should be (15 cm) and the minimum tread should be (30 cm).

3/3 Landing
- An intermediate landing should be provided when the stairs cover a difference in level of more than (250 cm).
- The length of landing should be at least (120 cm) extending along the full width of the stairs.

3/4 Nosing
- Sharp edges and overhanging nosing should not be used for tread.
- Nosing should be flush or rounded and not project more than (4 cm).
3.5 Hand rails
- Handrails must be installed on both sides of the stairs and around the landing for gripping (Fig 30).
- For stairs more than (300 cm) wide one or more intermediate handrails could be provided.
- The distance between the handrails when both sides are used for gripping should be between (90 cm and 140 cm) (Fig 31).
- Handrails must extend a distance between (30 cm and 45 cm) at the top and bottom of the stairs (Fig 30).

3.6 Tactile Marking
- A textural marking strip should be placed at the top and bottom of the stairs and at intermediate landing to alert sightless people as to the location of the stairs.
- The tactile marking strip should be at least (60 cm) wide and should extend over the full width of the stairs.
- To guide users with poor vision the colour of the strip should contrast with the surrounding surface.

3.7 Surface of Stairs
- Landing tread and nosing should be slip resistant and free of projection (Fig 31).
- Exterior stairs should be pitched forward at 1 cm per meter to drain surface water.
- Slip resistance stair nosing should be used to fix carpet on stairs.

3.8 Emergency Stairs
Emergency stairs should be identified by tactile markings.

3.9 Mechanical Stairs (Escalators)
- Mechanical stairs can be provided with an adaptable tread at least (120 cm) long if they are to be used by persons confined to wheelchairs (Fig 33).
- Slip resistant strip should be 4 cm wide and should not extend more than (0-1 cm) above the tread surface.
- The edges of escalators should be painted in a contrasting colour for the benefit of poor sighted users.
4. Existing Construction
- When the configuration of the nosing cannot be modified, slip-resistant strip could be applied to the nosing as an alternative solution (Fig/32).
- Slip-resistant strips should be (4cm) wide and should not extend more than (0.1cm) above the tread surface.
- To guide people with sightless problem the color of the strip should contrast with that of the stairs.

5 Railings and Handrails
1. Problem Identification
- Unsafe railing
- Hard to grip handrails
- No railings or handrails

2 Planning Principles
To install adequate railing, wherever needed for the comfort and safety of all people especially those with mobility problems.

3. Design Consideration
3/1 General
- Safety guards railings should be installed around hazardous areas, stairs, ramps, accessible roofs, mezzanines galleries, balconies and raised platforms more than (40cm) high (Fig/ 34/35).
- On stairways windows positioned less than (100cm) from the landing should have railings.
- Handrails should be installed to assist disabled persons in bathrooms and toilet (Fig/ 36).
- Spacing between the vertical and horizontal bars or railings should be narrow for the safety of children.
- Handrails should not obstruct the path of travel.
3/2 Height
- To facilitate use by ambulant disabled and elderly people, handrails should be mounted between (85cm and 95cm) above the finished floor level.
- For the benefit of wheelchair users, a second handrail can be mounted between (70 cm and 75 cm) from the floor.
- To facilitate use by children and short people, a third handrail can be mounted at height at (60 cm).
- To guide sightless people using a long cane, a rail should be mounted at a height between (10cm and 15cm) (Fig.37) or a low curb should be installed at a height between (5cm and 7.5 cm) (Fig.38) low curbs act as wheel stops.

3/3 Mounting
- Railing should be securely attached to the wall or to a supporting structure so as to with stand heavy loads.
- Railing should not end abruptly but extend to the floor or blend into the wall so as not to create hazard for sightless people.

3/4 Form
- Handrails should allow a firm and easy grip.
- Circular cross sections with a diameter of 4cm are preferable.
- Sharp edges should be avoided.
- Change direction suddenly should be avoided.

3/5 Handrails for ramps and stairs
- Handrails should continue unbroken on both sides and around the landing (Fig 34).
- Handrails should extend horizontally for a distance between 30 cm and 45cm at the top and bottom of stairs and ramps, except in places where extensions could obstruct the pedestrian flow (Fig/35).
- For stairs or ramps more than 3.00m wide, a continuous intermediate handrail could be provided (See ramps, Stairs).

3/6 Wall Mounted Handrails
- The space between the handrail and wall should be between 4 cm and 5cm for smooth walls, and 60mm for rough textured walls (Fig/39).
- Where handrails are fully recessed into walls, a space of at least (15cm) should be allowed between the top of the rail and the top of the recess (Fig. 39).

3/7 Tactile Marking

For emergency exits stairs or ramps, a contrasting tactile strip at least (90cm) long should be applied to the top and bottom edges of the handrail to alert the partially sighted.

3/8 Color

A contrasting color is recommended for handrails to alert people with sight problems.

4 Existing Construction

If existing railings and handrails do not comply with the above requirements, they should be modified or replaced.

6 Entrances

1. Problem Identification

   - No distinct accessible entrance
   - Inadequate space in front of the entrance.

2. Planning Principle

   To provide accessible and easy to find building entrance.

3. Design Considerations

3/1 General

   - For new accessible constructions all main public entrance should be accessible to an ambulant-disabled person.
   - At least one entrance per facility should be accessible to wheelchair user. In new buildings the accessible entrance should be the main entrance intended for use by the general public.
   - Each accessible entrance should be connected by accessible pathway to accessible indoor or outdoor parking areas, local public transit stops and drop-off area (Fig. 40) should connect each accessible entrance.
   - In multi-story buildings the accessible entrance should permit access to conveniently located accessible elevator or lift.
3/2 Signs
- Accessible entrances should be clearly identified using the international symbol of accessibility including alternate locations of accessible entrance (Fig. 41/42).
- No signs are needed if the whole building is accessible.

3/3 Entrance Landing
- Where the entrance door opens outward, the minimum landing dimensions should comply with Fig. (44).
- Where the entrance door opens inward, the minimum landing dimensions should comply with Fig. (43).
- The surface of landing should have a slope of 2% for drainage.
- The finish material should be non-slippery.
- Just doormat should be avoided when used, however the upper surface of the mat should be level with the floor finish (Fig/45).
- Sheltered buildings are preferable.

3/4 Threshold
Threshold should be removed wherever possible (See doors).

3/5 Colors
The color of the entrance door should contrast with the surrounding surface so as to be distinguishable by people with sight problems.

3/6 Entrance vestibules
See vestibules

3/7 Entrance Doors
See Doors

4. Existing Construction
- Public buildings should have at least one accessible entrance. Wherever possible, this should be the main entrance intended for use by the general public (See building types).
7 Vestibules

1. Problem Identification
   Narrow doorways and vestibules.

2. Planning Principle
   To provide sufficient space to maneuver a wheelchair between two set of doors.

3. Design Consideration

3/1 General
   - Vestibule entrance doors can be either the sliding type or the swinging type.
   - For swinging doors, the door mechanism should allow the maximum opening swing.

3/2 Layout
   The layout of two swinging doors in a series can be one of the following:
   - Outward - swinging (Fig/46)
   - Double - swinging (Fig/48)
   - Swinging in the same direction (Fig/50)
   - Inward - swinging (Fig/47)

4. Existing Construction
   - For narrow vestibules either of the following solution can be employed.
   - Replace swinging door with sliding doors.
   - Change the direction of the door swing so that both doors can be made to swing outwards if possible. (Fig/49).
- Install double swinging doors for small exit vestibules with a minimum width of 1.20m.
- Remove the inside or Second door.
- Enlarge the existing vestibules if possible.

8 Doors

1. Problem Identification
   - Narrow doorways.
   - Door hinged on the wrong side thus hindering accessibility
   - Doorways with high thresholds.
   - Heavy and hard to operate door leaves.

2. Planning Principle
   To facilitate the passage of wheelchair users through doors.

3. Design Considerations

3/1 General
   - Accessible doors should be designed to permit operation by one person in a single motion with little effort.
   - Power operated doors are the best for people with disabilities. The active system should be automatic.
   - An accessible door should have the following features:
     a- a sign
     b- a door handle
     c- an extra pull handle
     d- Glazing and kick plate.

3/2 Door Types
   a) Automatic doors:
     - Can be of the sliding or swinging type in general sliding or swinging type. In general sliding doors are preferable to swinging doors (Fig 52/53).
     - Automatic doors are useful when traffic is heavy.

FIGURE : 51

FIGURE : 52

FIGURE : 53
- Automatic doors should have adequate opening interval.
- Guard rails can be installed near double-swinging doors to indicate a door opening area and to prevent people from being hit by the door.

b) Revolving Doors
- Revolving doors are not suitable for the use of disabled people or people with prams.
- Wherever these are revolving doors, an adjacent accessible swinging or sliding door should be provided (Fig/54)
- Auxiliary gates should be provided next to turnstiles (Fig/54)

c) Pivoted doors
- Pivoted doors should swing away from the direction of travel whenever possible.
- Pivoted doors in series are considered as vestibules (See vestibules).

d) Sliding and folding doors
- Manual sliding and folding doors are recommended for narrow spaces not heavily used by the public (Fig/56).

3/3 Door Opening
- For exterior doors the minimum opening is 90cm when the door is open (Fig/55).
- For interior doors the minimum opening is 80 cm when the door is open.
- The minimum door width of rest rooms should be 0.75m.
- For doors installed in an opening more than 60cm in depth, the clear door opening should be at least 90cm (Fig/55).
- For double leaf doors at least one leaf should have a minimum clear width of 80cm (Fig/57).
3/4 Manual Door Hardware
Operational devices on doors such as handles, ells, arches and locks should be easy to grasp with one hand. (Fig/59).

a) Handles
- Lever type handles push plates or pull handles are recommended for swinging doors because they are easy to open. Round knobs are not recommended.
- Door handles should be located at a comfortable height between 90cm and 100cm from the floor surface.

b) Locks
Locks on entrance doors should be mounted at comfortable height between 90cm and 100cm from the floor.

c) Extra pull handle
To facilitate closing a door fitted with spring closers should be equipped with an extra pull handle approximately 30cm in length located between 20cm and 30cm from the hinged side the door and mounted between 90cm and 120cm from the floor.

3/5 Automatic Door Hardware
Automatic doors can be activated by:-
- Push buttons located at a comfortable height between (90cm and 120cm).
- Activating mat, which can also serve as a location cue (Fig/53).
- A card insert switch
- Remote control

3/6 Threshold
- Threshold should be omitted where ever possible weather stripping at the door bottom is preferred to threshold.
- The threshold should not be more than 0.20cm higher than the finished floor level.
- Threshold higher than (0.6cm) should be beveled or have sloped edges to facilitate the passage of wheelchair.

3/7 Exit door landing
The exit landing should not be lower than finished floor level by more than 0.20cm.
3/8 Lazing and Glazed doors
- Outward swinging doors and doors in public corridors should have low windows to enable users to see incoming traffic. The bottom edge of the window should not be higher than (100cm) from the finish floor level.
- Completely glazed doors should be avoided in buildings frequented by people with visual impairments.
- Glazed doors should be clearly marked with clotted band or mark placed for the benefit of all users at height between 140cm and 160cm (Fig/59).

3/9 Kick Plates
Kick plates are useful in protecting the finish on the lower part of the door. Kick plates should be between 0.30m and 0.40m in height (Fig/59)

3/10 Signage
- In public buildings the function or room number incorporating international symbols should be identified at eye level between 140cm and 160cm (Fig/59).
- Room number should be placed on door frames and not on doors themselves so that the room number invisible even when the door is open.

3/11 Color
The door or the door frame can be painted in a colour that contrasts with adjoining wall to facilitate its identification by people with visual impairments.

4. Existing Construction
- It is recommended that automatic doors replace heavy, hard to open swinging doors.
- Door Opening narrower than (75cm) should be widened, a swing clear hinged door may be used to slightly enlarge an opening.
9 Corridors

1. Problem Identification
   A long narrow corridors creating orientation difficulties.

2. Planning Principle
   To provide well dimensioned corridors to facilitate the passage and maneuvering of wheel-
   chair.

3. Design Consideration
   3.1 General
   Wide corridors are useful for wheelchair users service equipment, high traffic areas etc.

   3.2 Width
   - The unobstructed width of a low traffic corridor should not be less than 90cm, this also
     allows maneuverability in 90 turns (Fig/ 60).
   - The unobstructed width of public corridor should not be less than 150cm. The recom-
     mended width is 180cm (Fig/61).
   - To allow maneuverability in 120cm turns. The minimum circulation space should be as
     shown in (Fig/62).
   - The corridor width should allow maneuverability thru the doors located along its
     length (Fig/62).

   3.3 Obstructions
   - Obstructs protruding into the corridor such, as drinking fountains or public telephones
     should be placed outside the circulation path in alcoves or cul-
     de-sacs (Fig/63).
   - Overhanging signs and obstructs should be mounted as least 200cm height (Fig/64).

3.4 Surface Level
   - Changes in surface level of more than 13m should be ramped.
   - Floor surface should be non-slip and even carpet should be securely fastened.

FIGURE: 60
FIGURE: 61
FIGURE: 62
FIGURE: 63
FIGURE: 64
4. Existing Construction
- Narrow corridors should be widened along their full length, otherwise passing areas should be located at appropriate intervals along the corridor length.
- The minimum width of the passing area should be 150cm and the minimum length should be 240cm.
- In highly restricted spaces the height of an obstacle or sign can be dropped to 195cm. (Fig/65).

10 Rest Rooms
1. Problem Identification
- Insufficient space inside a rest room
- A poor design and positioning of fixtures and fittings.
- Taps that are difficult to grip.

2. Planning Principle
To provide sufficient accessible space inside rest room with all fixtures and fittings being within easy reach.

3. Design Consideration
3/1 General
- Turning circles of 150cm diameter are recommended inside the rest room to allow full turning maneuvering of wheelchairs.
- To ease of transferring from wheel chair to a toilet seat on the approach. In general there are:
  a. The parallel approach, which is easiest (Fig/66).
  b. The diagonal approach, which is difficult (Fig/67).
  c. The perpendicular approach, which is also difficult (Fig/68).
  d. The frontal approach, which is the most difficult and needs particular care (Fig/68)

3/2 Public Rest Rooms
- In any public rest room at least one compartment for each sex should be accessible to an ambulant disabled person.
- In any public rest room at least one unisex compartment should be accessible to a wheelchair user.
- Accessible rest rooms should be marked with the international symbol of accessibility. No indication is needed if all rest rooms are accessible.
- Pirate doors should open outward unless sufficient space is provided in the toilet stall.

3/3 Special Public Rest Room
- Installation of separate unisex unit is always desirable in public buildings even when all rest rooms are accessible, so as to allow a disabled person to be assisted by an attendant of the opposite sex.
- Special rest rooms should be marked with the international symbol of accessibility should not be the only accessible rest rooms.
- The size and layout of special rest rooms should comply with the minimum requirements.
- A water closet and a lavatory should be provided with in special rest rooms.

3/4 Residential Rest Rooms
- Residential rest rooms include those in private residences, health facilities, dormitories and other residential institutional settings.
- Residential bathrooms are usually equipped with a toilet, a bidet, a wash basin and bath tub or showers.
- In multiple rest room arrangements (such as dormitories):
  a) Only one wash basin per rest room needs to be accessible.
  b) At least one shower stall and one toilet stall should be designed for a wheelchair user.
- To save space in private occupancies:
  a) The tiled floor area adjacent to the tub can be used as shower space.
  b) The wash basin seat might be used as a seat during the use of the wash basin.
- The size and layout of residential rest rooms should comply with minimum requirements (Fig/70).

FIGURE: 69

FIGURE: 70
3/5 Residential Rest Fixture

3/5/1 Water closets

- The size and layout of water closets and toilet stalls should comply with the minimum requirement (Fig. 73/75). The height of the toilet seat should be between 45cm and 50cm from the finished floor level.
- The distance between the center-line of the toilet seat and the adjacent wall, if provided with a grip bar, should be between 45cm and 50cm.
- Grab bars should be mounted on the wall behind the water closet, if it is of the tankless type and on the side wall closet to the water closet or mounted on the floor at the edges of the seat.
- Grab bars should be mounted at a height between 85cm and 95cm from the floor.
- Finishing arrangement and toilet papers should be placed within reach at a height 30cm and 120cm.
- Accessible hand operated flushing controls located on the open side of the water closet are recommended.
- Wall mounted water closets are recommended.
3/5/2 Lavatories
- The dimensions of lavatories should comply with minimum requirements (Fig 74/75/76/77/78).
- The distance between the center line of the wash basin and the adjacent side wall should be at least 45cm.
- The wash basin may be drain forward from the wall, a distance between 15cm and 20cm.
- No shelves must be located above the wash basin.

3/5/3 Bath Tub
- In general bath tubs are difficult to use by those confined to a wheel chair without the help of an attendant.
- The dimensions of bath tubs should comply with minimum requirements (Fig 76).
- The minimum dimensions of the bath tub, should be 160cm x 70cm.
- The height of the tub should be between 45cm and 50cm from finish floor level.
- And in tub seat or seat at same height of the tube should be provided at the head side of the tube.
- A grab bar should be mounted on the wall between 85cm and 95cm from the finish floor level.

3/5/4 Showers
- The dimensions of showers should comply with the minimum requirement (Fig 76/77/78/79).
- The shower should have a seat conveniently positioned for the shower head at height 45cm and 50cm.
- The shower seat should be of the hinged pull down or removed type not spring loaded.
- Drain openings should be placed in a corner of the stall so that the slip resistant rubber mats can be used.
- The floor of the shower stall should not be more than 0.20cm below the level of the surrounding floor area.
- The shower stall should have a beveled threshold not exceeding 13mm above the finish floor.

FIGURE : 76
FIGURE : 77
FIGURE : 78
FIGURE : 79
3/5/8 Bidet
- The minimum dimensions of bidets should comply with the minimum requirements.
- The upper edge of the bidet should be between 45cm and 50cm from the finish floor level.
- The distance between the center line of the bidet and the adjacent wall should be at least (45cm).
- Wall mounted bidets are recommended.

3/5/6 Urinals
- At least one accessible urinal should be provided in public rest rooms.
- Urinals should have a clear space on both sides.
- A full-length urinal is the most accessible.
- Urinals with a protruding lip should be mounted at a height of 45cm from the finish floor level. (Fig/77).

3/5/7 Rest Room Door
- The clear floor opening should be at least (75cm).
- The door should have possibility opening from outside in any emergency situation.

3/5/8 Accessories
All accessories such as soap, towel and toilet paper dispensers should be placed at a height between 50cm and 120cm from the finish floor level (Fig/80).

3/5/9 Grab Bars
- Grab bars should be installed in water closets bath tubs and showers to assist disabled persons to use the facilities safety and easily (Fig/80).
- Grab bars should have a diameter of (30mm - 40mm).
- Wall mounted grab bars should extend between 3.5cm and 4.5cm.
- Grab bars should be firmly fixed with stand loads and should have non-slip surfaces.

3/5/10 Mirrors
- Mirrors should be suitable for use by both standing and seated persons. Low mirrors or downward tilted mirrors can be used.
- The bottom edge of mirrors should be located at a maximum height of 100cm from the finished floor level (Fig/74).
3/5/11 Faucets
- Single lever mixing type faucets, which are easily operated by hand or elbow, are recommended faucets with push buttons are also convenient.
- The clearance between the grip of the tap and any adjacent vertical surface should not be less than 3.5 cm.
- The left tap should be connected to the hot water supply.
- The fixture fixtures with a cord at least 150 cm long are recommended for use is showers and bath tubs. These can be hand held or fixed at an adjustable height between 120 cm and 180 cm from the floor to suit all users.

3/5/12 Flooring
- Rest rooms must not have door steps. The gradient of the floor should be as low as possible.
- Threshold should be avoided when inevitable the maximum threshold height should be 0.20 cm. "See Doors".
- Floor materials should be skid proof and easy to clean.
- The floor should be well drained and provided with adequate water proofing.

3/5/13 Alarms
Rest room should be equipped with an alarm system.

3/5/14 Pipes
- All exposed hot water pipes should be insulated or covered.
- It is preferable that pipes be fitted in the wall.

4/3 Urinals
- Existing high urinals need not be replaced if accessible toilet fixtures are available.
- One urinal per rest room can be lowered.

4/4 Rest Room Vestibules
- For narrow vestibules replace doors with automatic door openers or use swing clear hinges.
- Doors that restrict maneuvering space should be removed so long as this does not inhibit privacy.

4/5 Grab Bars
If the grab bars are not provided in the initial construction, walls should be reinforced to withstand loads.

4/6 Accessories
Rest room accessories located at a maximum height of 140 cm need not be modified if they are accessible.

4/7 Mirrors
If existing mirrors are too high, they can be tilted or a full-length mirror can be installed on another wall.
Chapter 3

Building Types

1. Problem Identification
2. Planning Principle
3. Design Consideration
   3/1 General
   3/2 Residential Building
   3/3 Office Building
   3/4 Commercial uses
   3/5 Assembly Hall
   3/6 Cafeterias and Restaurants
   3/7 Hotels
   3/8 Hospitals and health facilties
   3/9 Educational Building
   3/10 Libraries
   3/11 Sports Buildings
   3/12 Public Transit Buildings
   3/13 Industrial Buildings
4. Existing Constructions
5. Historic Buildings
Building types

1. Problem Identification
   Lack of special provisions for the disabled regarding accessible building and facilities.

2. Planning Principle
   To design to the extent possible, public buildings accessible to all.

3. Design Consideration
   3/1 General
   - Building that have to comply with accessibility requirements for the disabled include:
     1) All public building
     2) Residential building
     3) Commercial building
     4) Health facilities
     5) Educational
     6) Public transit building
     7) Recreational facilities
     8) Sports facilities
     9) Religions building
     10) Libraries facilities
     11) Office building
     12) Industrial facilities
     - Except as special below only building for private use such as private residence, clubs, offices or studios etc., need not to comply with requirements for accessibility.

     - For accessible building at least one entrance per facility should be accessible to wheelchair user. For new buildings, the accessible entrance should be the main entrance intended for use by the general public.

     - Wherever waiting area, coffee shops, display area, merchandising department, service areas, ticket counters, refreshment stands etc., are provided for public use these facilities should be accessible to disabled people mainly to wheelchair users.

     - All work area in which physically disabled persons may be employed should be accessible.

3/2 Residential Building
   - Private residence may be left in accessible to a wheelchair user. However it is desirable to consider a minimum of accessibility requirements so as to accommodate disabled guests.

   - In new apartment buildings constructed for rent or sale, provision for disable persons to considered. The number of wheelchair housing units should be provided at a rate of one unit for a typical population of 1000.

3/3 Office Building
   - New office buildings should be accessible as possible so as to accommodate all persons and not hinder employment of disable persons.

   - New low-rise office blocks with no elevators need not be accessible to a wheelchair user. Office space at ground lever, if any, should be accessible.

   - For small office buildings where the floor area limits the provision of accessible rest rooms on each floor one accessible rest room could be provided to serve the entire building.

   - Where an office building in subdivided among various tenants, wheelchair rest rooms should be provided on each floor.

3/4 Commercial Uses
   - Accessibility requirements for wheelchair users should be applied to all new large specialty shops having a sales area of 10000cm or more. In small shops provisions for wheelchair users should be applied wheelchair possible.

   - In large multi-storey’s department stores and supermarkets, accessible elevators should be installed to provide access to lower and / or upper levels for the benefit of wheelchair users and people with mobility problems.

   - Merchandise display areas in accessible shops should be as conveniently located as possible to wheelchair users angled mirrors can be placed above high shelves for visibility.

   - In accessible clothes shops at least one changing room should allow for full 360 turn of wheelchair.
3/5 Assembly Halls
- Under this category full movie theaters, lecture halls, secular seating in sports centers and other assembly halls with fixed seating.
- The number of spaces designated for wheel chair users in seating area can be estimated according to the following table :

<table>
<thead>
<tr>
<th>Number of seats in seating area</th>
<th>Number of required spaces for wheel chair users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 600</td>
<td>6 i.e. 1/100</td>
</tr>
<tr>
<td>Up to 1000</td>
<td>6+2</td>
</tr>
<tr>
<td>Over 1000</td>
<td>8+1 (for each additional increment of 1000 seats)</td>
</tr>
</tbody>
</table>

- Some seats with removable or flip-up arm rests should be provided at row be ends to accommodate a wheel chair user or a person with limited ambulatory mobility.
- A level floor area for wheel chair users should be placed at row ends and should be scattered on different levels so as to have a variety of seating and viewing location (Fig/1).

3/6 Cafeterias and Restaurants
- New Restaurants or parts of new restaurants and eating spaces should be as accessible as possible to a wheel chair user.
- In self-service restaurants tray slides and counters should be mounted approximately (90cm) from the floor. Food shelves should be mounted at maximum height of (120cm) (Fig/2).
- Cantilevered tables or tables with straight legs at each corner one preferable to central pedestals that might restrict wheel chair access.
- Stools and high tables are not suitable for wheel chair users. Low tables should be provided as well.

3/7 Hotels
- At least one room per new hotel or motel should be accessible by a wheel chair user. Bathrooms connected to these rooms have to be fully equipped to the layout should allow a lateral transfer to the toilet seat.
- Rooms designated for wheel chair users should where possible be placed at ground level so as to have a direct means of escape in case of fire.
3/8 Hospitals and Health facilities
- All entrances should be accessible to a wheel chair user.
- All rooms should be accessible for the benefit of patients, disabled visitors and disabled staff members.
- All clinic on all floors should be accessible.
- All Patients rest rooms should be accessible to wheel chair user.
- All administrative departments should be accessible to staff members confined to wheel chairs.

3/9 Educational Building
- All teaching, administrative and common areas should be accessible to a wheel chair user.
- Suitable arrangements should be made for stepped lecture halls or auditoriums (Fig/1 & 2).
- At least one accessible unisex rest room should be provided in each building other than student dormitories and residential accommodations.
- All recreational facilities should be usable by disabled people to the extent possible.
- Colleges for physical education police or military training and other activities requiring full physical abilities need not be accessible to disabled people. However provisions should be made for disabled administrative staff members.

3/10 Libraries
- All open book stacks should be accessible.
- All library facilities and equipment should be accessible.
- A special room should be provided for sightless and for hearing impaired who need assistance while reading.

3/11 Sports Building
- Sports halls should be as accessible as possible to a wheel chair user.
- At least one shower room one rest room and one changing room per facility should be accessible to a wheel chair user.
- Spectrers seating areas should be provided for wheel chair users as specified (See table above).

3/12 Public transit Building
- All public areas used by passengers such as baggage halls, booking halls, waiting areas inquiry offices etc., should be accessible to a wheel chair user wherever possible.
- In bus, air and sea terminals adjoining spaces rest to seating facilities should be provided for wheel chair users.

3/13 Industrial Building
- Arrangement for disabled employees are directly related to the type of work they perform arrangements for disabled people need not to be considered in heavy manufacturing factories.
- Arrangements for all disabled people should be incorporated into the design of new height manufacturing factories where disabled may be employed.

4. Existing Constructions
The highest of accessibility to all people should be provided to the extent possible in accordance with the requirements mentioned above.

5. Historic Building
For historic buildings impossible to adapt to suit the requirements of disabled people without affecting the historic character the challenge is to find alternative solutions or other innovative methods that do not conflict with preservation requirements. However under all circumstances the character of a historical building should be preserved, any modification that seriously harms character, material, features or spaces is prohibited.

- Text in Italic refers to existing construction only.
Chapter 4

Implementation Checklists Accessibility for the disabled:

1. Obstructions
2. Signage
3. Street Furnitures
   - 3/1 Resting facilities
   - 3/2 Public Telephones
   - 3/3 Mail Boxes
   - 3/4 Water fountains
4. Path ways
5. Curb ramps
6. Pedestrian Crossings
7. Parking
8. Ramps
9. Elevators
10. Plant form lifts
11. Stairs
12. Railings and Handrails
13. Vestibules
14. Doors
### 1 Obstruction

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Can all protruding objects within the path of travel be detected by sightless person with care?</td>
<td>* Remove or block out protruding parts. Place tactile marking in an area extending at least (60cm) beyond the projection are at the obstruction.</td>
</tr>
<tr>
<td>* Are all overhanging obstructions mounted at a minimum height of (250cm) (195cm)?</td>
<td>* Construct a raised platform (10cm) high a round the obstacle.</td>
</tr>
</tbody>
</table>
| * Can all obstacles within the path of travel be easily identified by a person with partial sight? | * Place an objects easily detectable with a care on the ground or floor beneath low-mounted overhanging obstructions.  
  * Park obstruction at eye level with contrasting color marking strips at least (30cm) long in contrast colors |

### 2 Signage

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
</table>
| * Are accessible spaces identified by the international symbol of accessibility? | * Mark accessible with the international symbol of accessibility.  
  * Provided direction signs. |
| * Are there directional signs indicating the location of accessible facilities? | * Adjust the height of signs mounted too high or too low.  
  * Use contrasting colors tıes.  
  * Provide a non-gloss surfaces.  
  * Add a text in embossed letters or in Braille.  
  * Change the lettering size. |
| * Are Maps information panels and wall-mounted signs placed at height between (90cm) and (180cm)? | * Are the color of sign clearly distinguishable?  
  * Is the surface of the signs processed so as to prevent glare?  
  * Is the sign supplement by a text in embossed letters or in Braille available next to information signs?  
  * In the lettering size proportional to the reading distance? |

### 3 Street Furniture

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Does the location of street furniture obstruct the free passage of pedestrians?</td>
<td>* Change the location of street furniture with tactile marking</td>
</tr>
</tbody>
</table>

#### 3/1 Resting facilities

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
</table>
| * Are resting facilities provided at regular intervals? | * Provide seating facilities at regular intervals between (10000cm) and 20000cm.  
  * Rearrange the layout of seats to allow an adjoining space of at least 120cm.  
  * Modify or replace seats and tables that are too low or too high. |
| * Is there an adjoining space for a wheelchair next to benches and public seats? | * Are public seats between (45cm) and (50cm) height?  
  * Is it comfortable are knee spaces at accessible tables at least 70cm high, 85cm wide and 60cm deep? |

#### 3/2 Public Telephones

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
</table>
| * Is there at least one telephone accessible to a wheelchair user? | * Enlarge or adjust one telephone booth  
  * Install volume controls and induction loops.  
  * Install push buttons with raised numerals.  
  * Reduce the mounting height. |
| * Is there at least one telephone equipped with hearing aids? | * Are the numerals on the telephone raised to allow identification by touch?  
  * Is the coin slot mounted at a maximum height of (120cm) (140cm)?  
  * Are accessible facilities identified?  
  * Add signage. |
### 3/3 Mail boxes

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are mail box slots mounted at a maximum height of (120cm) (140cm)?</td>
<td>Modify the height of the letter slot.</td>
</tr>
</tbody>
</table>

### 3/4 Water fountains

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are water fountain spouts mounted at an approximate height of (90cm)?</td>
<td>Modify the high drink in fountains</td>
</tr>
<tr>
<td>Are controls easy to operate with one closed first?</td>
<td>Replaced controls</td>
</tr>
</tbody>
</table>

### 4 Path ways

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the path way clear of obstructions?</td>
<td>Remove or relocate obstructions.</td>
</tr>
<tr>
<td>Is the path of travel free of steps or stairs?</td>
<td>Mark obstructions with tactile marking.</td>
</tr>
<tr>
<td>Is the path of travel easy to detect?</td>
<td>Provide an alternative accessible path ways construct ramp.</td>
</tr>
<tr>
<td>Is the path way at least (90cm) wide</td>
<td>Continue normal guide lines</td>
</tr>
<tr>
<td>Is the surface, level, smooth and non slip?</td>
<td>Construct guides strips.</td>
</tr>
<tr>
<td>Does the path way have a different color and texture than the adjacent surface?</td>
<td>Provide tactile marking area of at least 90cm X 90cm at changes pathway direction.</td>
</tr>
<tr>
<td>Are manholes placed outside the pedestrian path of travel?</td>
<td>Construct tactile marking to indicate the location of curb ramps, stairs and obstructions.</td>
</tr>
<tr>
<td>Is grating flush with the surface of the path way?</td>
<td>Widen the path way.</td>
</tr>
<tr>
<td>Are the grating openings narrow not more than (1.3cm)?</td>
<td>Remove obstructions and land scape features that limit the pathway width.</td>
</tr>
<tr>
<td>Are the edges of raised pathways protected?</td>
<td>Replace gravel with a surface of uniform texture.</td>
</tr>
<tr>
<td>Are there barriers separating the pathway from planting area pods and other landscape features?</td>
<td>Repair holes and uneven paving.</td>
</tr>
<tr>
<td>Are the plant varieties used obstructive to the pathway?</td>
<td>Apply textured rubber stick on tiles to slippery paving.</td>
</tr>
<tr>
<td>Are the plant varieties used harmful?</td>
<td>Relocate grating out side the path of travel.</td>
</tr>
<tr>
<td>Are the plant varieties used harmful to the surface of the pathway?</td>
<td>Make grating flush with the pathway surface.</td>
</tr>
</tbody>
</table>

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### 5 Curb Ramps

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are curb ramps provided to overcome in level between the road surface and pathways level at:</td>
<td>* Install curb ramps</td>
</tr>
<tr>
<td>1. Pedestrian crossing?</td>
<td>* Slope narrow pavements to street level</td>
</tr>
<tr>
<td>2. Drop off zones?</td>
<td></td>
</tr>
<tr>
<td>3. Accessible parking spaces?</td>
<td></td>
</tr>
<tr>
<td>4. Building entrances?</td>
<td></td>
</tr>
<tr>
<td>* Are curb ramp located at each corner of each street intersection?</td>
<td>* Install curb ramps.</td>
</tr>
<tr>
<td>* Is every curb ramp faced by another curb ramp on the opposite side of the street?</td>
<td>* Apply a colored texture to the surface of the curb ramp.</td>
</tr>
<tr>
<td>* Are curb ramps easy to identify?</td>
<td>* Construct guide lines to direct pedestrians to the location of curb ramps.</td>
</tr>
<tr>
<td>* Are curb ramps placed outside pedestrian flow?</td>
<td>* Widen pathway</td>
</tr>
<tr>
<td>* Is the maximum slop of a curb (1:2) (1:10)?</td>
<td>* Add small built-up curb ramps.</td>
</tr>
</tbody>
</table>

### 6 Pedestrian Crossings

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Is the road surface even and slip resistant at pedestrian crossings?</td>
<td>* Add slip-resistant surface</td>
</tr>
<tr>
<td>* Is the road surface at pedestrian crossings easy to identify?</td>
<td>* Mark the pedestrian crossing area on the road surface with colored strips.</td>
</tr>
<tr>
<td>* Are pedestrian traffic lights installed?</td>
<td>* Install traffic lights.</td>
</tr>
<tr>
<td>* Is the minimum time interval for crossing adapted to slowest personal?</td>
<td>* Delay the crossing time interval.</td>
</tr>
<tr>
<td>* Are the push buttons located at a maximum height of (120cm)?</td>
<td>* Install push buttons at a maximum height of (120cm).</td>
</tr>
<tr>
<td>* Do traffic islands have street level pathways cut through them?</td>
<td>* Cut a level area at least (150 cm) wide through traffic Islands.</td>
</tr>
<tr>
<td>* Is the maximum width of the cut (150cm)?</td>
<td></td>
</tr>
</tbody>
</table>
### 7 Parking

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there accessible parking facilities?</td>
<td>Re-strip to required number of spaces.</td>
</tr>
<tr>
<td>Is the number of accessible parking spaces sufficient?</td>
<td>Combine two parking spaces to obtain one accessibility space.</td>
</tr>
<tr>
<td>Are the design space wide enough?</td>
<td>Combine three parking spaces to obtain two accessible spaces.</td>
</tr>
<tr>
<td>Are accessible parking spaces within 5000cm of building entrance?</td>
<td>Construct accessible parking spaces close to the accessible entrance.</td>
</tr>
<tr>
<td>Are accessible indoor parking spaces located closest to accessible elevators or lifts?</td>
<td>Provide a drop-off zone near the accessible entrance.</td>
</tr>
<tr>
<td>Is the minimum height (240cm) clearance in indoor parking?</td>
<td>Located accessible parking space close to accessible elevators.</td>
</tr>
<tr>
<td>Do curb ramps connect accessible parking spaces with side curbs?</td>
<td>Modify the parking slab height.</td>
</tr>
<tr>
<td>If there are no curbs, can the parking space be differentiated from the pedestrian path?</td>
<td>Provide alternative outdoor provisions for disabled people's vans.</td>
</tr>
<tr>
<td>Are accessible parking spaces marked by the international symbol of accessibility?</td>
<td>Construct curb ramps.</td>
</tr>
<tr>
<td>Are there enforcement procedures to ensure that accessible parking spaces are not misused or used by non-disabled people?</td>
<td>Provide at tactile marking at least 60cm wide to separate the pathway from the vehicular area.</td>
</tr>
<tr>
<td>Is there a (360cm) wide drop-off area with in (300cm) accessible entrance?</td>
<td>Use pre-cast wheel steps.</td>
</tr>
<tr>
<td>If the drop-off area has a curb, is there a curb ramp leading to the pathways?</td>
<td>Use Bollards.</td>
</tr>
<tr>
<td>If there drop-off area has no curb, is there a warning to sightless people?</td>
<td>Add signage.</td>
</tr>
</tbody>
</table>

### 8 Ramps

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there a complementary ramped route next to stairs or steps?</td>
<td>Construct a ramp</td>
</tr>
<tr>
<td>Is the ramp slope not greater than (1:20)?</td>
<td>Redesign or relocate ramp.</td>
</tr>
<tr>
<td>Do steeper ramps comply with requirements?</td>
<td>Length ramp to reduce slope.</td>
</tr>
<tr>
<td>Is there a landing of at least (120cm). Length at 10.00m intervals, at every change in direction and at the top and bottom of every ramp?</td>
<td>Redesign or relocate ramp.</td>
</tr>
<tr>
<td>Are ramps with rise of (45cm) or more protected on both sides?</td>
<td>Add rail.</td>
</tr>
<tr>
<td>Are wide ramps (more than 300cm) provided with an intermediate hand rail?</td>
<td>Add intermediate hand rail where necessary.</td>
</tr>
<tr>
<td>Is the width of the ramp at least (90cm)?</td>
<td>Widen the ramp.</td>
</tr>
<tr>
<td>Is the surface of the ramp non-slip?</td>
<td>Add non-slip surface material.</td>
</tr>
<tr>
<td>Is the ramp surface clear of obstruction?</td>
<td>Remove obstruction</td>
</tr>
<tr>
<td>Is the location of the ramp clearly identifiable?</td>
<td>Construct colored tactile marking strips at least (0.60m) wide at the top and bottom of the landing and at every change of direction.</td>
</tr>
</tbody>
</table>
### 9 Elevators

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Is there an accessible path leading to the elevator?</td>
<td>* Add a ramp or platform lift if stairs exist</td>
</tr>
<tr>
<td>* Are all levels generally used by the public accessible?</td>
<td>* Enlarge the elevator dimensions</td>
</tr>
<tr>
<td>* Are the minimum internal dimension of a residential elevator cab no less than 100cm x 120m (90cm x 125cm)?</td>
<td>* Enlarge the door opening</td>
</tr>
<tr>
<td>* Is clear door opening no less than 80cm (75cm)?</td>
<td>* Install new doors</td>
</tr>
<tr>
<td>* Is the elevators cab provided with handrails on three sides?</td>
<td>* Install handrails.</td>
</tr>
<tr>
<td>* Is the maximum tolerance for stop precision 2cm?</td>
<td>* Adjust the stop precision.</td>
</tr>
<tr>
<td>* Is the control panel mounted at a height between (90cm) and (120cm) (not exceeding 140cm)?</td>
<td>* Modify the height of control panels.</td>
</tr>
<tr>
<td>* Are control buttons large and provided with embossed numerals?</td>
<td>* Change control panel</td>
</tr>
<tr>
<td>* Are lobby call buttons placed at a height between (90cm) and (120cm) (not exceeding 140cm)?</td>
<td>* Numerals next to buttons.</td>
</tr>
<tr>
<td>* Is the elevator provided with audible and visual warning signals indicating arrival at a floor?</td>
<td>* Adjust the position of call buttons.</td>
</tr>
<tr>
<td>* Is the finish of the elevator cab non- skid resistant?</td>
<td>* Add bells and flashing light signals.</td>
</tr>
<tr>
<td>* Is the elevator door easy to identify?</td>
<td>* Change finish.</td>
</tr>
<tr>
<td>* Is the emergency intercom usable without voice communication?</td>
<td>* Change the colour of the elevator door frame.</td>
</tr>
<tr>
<td>* Are there tactile or Braille instruction for the communication?</td>
<td>* Replace the communication system.</td>
</tr>
<tr>
<td>* Is the door opening/closing interval long enough?</td>
<td>* Add simple tactile instructions.</td>
</tr>
<tr>
<td>* Is there a sign on the jamb or the elevator door identifying the floor number in raised or Braille letters?</td>
<td>* Install devices to delay the motion of the door.</td>
</tr>
</tbody>
</table>

### 10 Platform Lifts

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Can a lift use without assistance?</td>
<td>* Post clear instructions for use of the lift at each stopping level</td>
</tr>
<tr>
<td>* When vertical movement platform lifts are installed, is the maximum level change (250cm)?</td>
<td>* Provide a call button.</td>
</tr>
<tr>
<td>* Is the lift placed within a closed structure for level changes of (120cm) or more?</td>
<td>* Replace the special platform lift with an elevator.</td>
</tr>
<tr>
<td>* Where inclined movement platform lifts are installed is the minimum width of the stairs (90cm)?</td>
<td>* Place the lift within an enclosed structure.</td>
</tr>
<tr>
<td>* Is the minimum lift size (90cm x 120cm)?</td>
<td>* Widen the stairs.</td>
</tr>
<tr>
<td>* Are the control placed at a height not exceeding (120cm) (140cm)?</td>
<td>* Replace the lift</td>
</tr>
<tr>
<td></td>
<td>* Lower the controls.</td>
</tr>
</tbody>
</table>
### 11 Stairs

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Is the minimum width of stairs (90cm)?</td>
<td>* Widen the stairs</td>
</tr>
<tr>
<td>* Is an intermediate handrail installed for stairs (300cm) wide or more?</td>
<td>* Install an intermediate handrail where necessary.</td>
</tr>
<tr>
<td>* Is there an intermediate landing with a length not less than (120cm), when the stairs cover a difference in level of more than (90cm)?</td>
<td>* Remodel the stairs.</td>
</tr>
<tr>
<td>* Is the landing length at the top and bottom of the stairs not less than (120cm)?</td>
<td>* Enlarge the landing space.</td>
</tr>
<tr>
<td>* Do the stairs have flush or rounded nosing?</td>
<td>* Remodel nosing.</td>
</tr>
<tr>
<td>* Do treads have a non-slip surface?</td>
<td>* Add slip-resistant strips to nosing</td>
</tr>
<tr>
<td>* Is the location of the stairs clearly identifiable?</td>
<td>* Change finishing material.</td>
</tr>
<tr>
<td>* Construct colored tactile marking strips at least (60cm) wide at the top and bottom of the stairs and intermediate landings of each stairs.</td>
<td>* Identify emergency stairs with signage.</td>
</tr>
</tbody>
</table>

### 12 Railing & Handrails

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Are safety guards or railings installed around all hazardous areas and raised platforms more than 40cm high?</td>
<td>* Install safety guards or railings</td>
</tr>
<tr>
<td>* Is the spacing between the vertical and horizontal elements of railing around dangerous areas narrow?</td>
<td>* Change hand rails</td>
</tr>
<tr>
<td>* Are handrails easy to grip?</td>
<td>* Change handrails</td>
</tr>
<tr>
<td>* Are railings securely attached?</td>
<td>* Reinforce the fixtures</td>
</tr>
<tr>
<td>* Do handrails extend horizontally between (30cm) and 45cm at the top and bottom of every staircase or ramp?</td>
<td>* Add or replace railings.</td>
</tr>
<tr>
<td>* Are handrails continuous throughout the full length of ramps and stairs?</td>
<td>* Continue or replace handrails</td>
</tr>
<tr>
<td>* Are handrails continuous throughout the landing of ramps and stairs except when interrupted by doorways?</td>
<td>* Install railings</td>
</tr>
<tr>
<td>* Are low positioned windows at landings protected by railings?</td>
<td>* Adjust the location of the handrail</td>
</tr>
<tr>
<td>* Is the space between the handrail and wall no less than (40cm) for smooth walls, and 60cm for rough textured walls?</td>
<td>* Paint the handrail in a contrasting color.</td>
</tr>
<tr>
<td>* For fully recessed handrails, is the distance between the top of the rail and the top of the recess no less than (15cm)?</td>
<td>* Provide a tactile strip indication for emergency stairs.</td>
</tr>
<tr>
<td>* Are handrails easy to identify?</td>
<td></td>
</tr>
</tbody>
</table>
### 13 Vestibules

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
</table>
| Is there enough space to maneuver between two sets of doors? | Enlarge the vestibule space  
Install automatic sliding doors  
Install double swinging doors  
Remove the inside or second set of doors  
Change the direction of swing of the door |

### 14 Doors

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Solutions</th>
</tr>
</thead>
</table>
| Can doors be opened without much effort? | Install lighter doors  
Install power assisted door openers  
Adjust the door interval |
| Do automatic doors have a sufficiently long opening interval? | Lower the height of buttons  
Move the door  
Move or remove obstruction partitioning  
Install adjacent sliding or pivoting doors |
| Are push buttons for automatic doors located at a maximum height of (120cm) (not exceeding 140cm)? | |
| Is there sufficient space beside the latch side of the door? |  
Are accessible doors placed adjacent to revolving doors and turnstiles? |
| Are glazed doors marked with a colored band at eye level? | Add a colored band  
Enlarge door opening  
Install off set or swing clear hinges  
Install lever type handles easy to operate with a closet fist  
Install power assisted door openers  
Install an extra pull handle  
Adjust the height of the door hardware |
| Is the clear width of straight access interior doors at least (75cm)? | Replace or remove mats  
Secure mats at edges  
Remove high thresholds  
Reroll bath sides |
| Is the minimum clear width of interior doors at least (80cm)? |  
For double leaf doors, is the width of one of the leaves at least (80cm)? |
| Do door handles have a shape that is easy to grasp with one hand? |  
Do bath rooms doors and doors fitted with spring closers have an extra pull handle? |
| Is manual door hardware (handles, locks, pulls etc.) located no higher than (120cm) (not exceeding 140cm)? |  
Are door mats flush with the floor surface and secured to the floor at all edges? |
| Is the threshold no more than (0.20cm) high and beveled? |  
Replace or remove mats  
Secure mats at edges  
Remove high thresholds  
Reroll bath sides |