

3 Best Practices and Guidelines



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3.1 Access Route

3.1.1 Introduction

Accessibility is one of the most important factors to consider when designing a built environment. If a space is to serve the widest spectrum of users, it must be accessible to everyone. Therefore it is vital that an access strategy is formulated in the early stages of the design and accessibility considerations are incorporated into the overall planning.

In the design of external spaces, all the elements encountered along a travel path must be carefully considered such that all users, regardless of their abilities, can travel on their journey safely and independently. The various nodes, points of interest, facilities and services that are designed along that travel path should also be accessible. An early development of an access plan is therefore essential to identify the accessibility requirements along the travel path.

For guidelines on developing an access plan, refer to *Section 6.1.3 of “Universal Accessibility — Best Practices and Guidelines”*.

3.1.2 Design Considerations

3.1.2.1 Dimension

- (a) An access route should be wide enough to allow at least two wheelchair users to pass through, i.e., at least 1500mm wide. For best practice, a minimum width of 2000mm is recommended for walkways in open spaces such as parks, gardens, and squares (3.1.1a).
- (b) A clear height of at least 2200mm should be maintained along the walkway.
- (c) A clearance space of at least 600mm should be allowed next to tactile guide paths or other detectable cues for cane users to manoeuvre safely along the path (3.1.1b).



3.1.1a Access route with soft landscaping on both sides



3.1.1b Clear access route free of obstructions and provided with tactile guide path

3.1.2.2 Layout

- (a) A clear and simple layout with well-defined routes, zones, and special nodes should be adopted where possible. This would allow users to find their way and travel along the access route more easily. A highly complex layout, even with signage provided, may confuse the users.
- (b) The entire access route should be kept unobstructed and well lit. Street furniture should be setback and kept outside the travel path. Overhangs, tree branches, planters, etc. in parks and gardens should be properly maintained such that they do not encroach onto the travel path (3.1.2.2a).
- (c) An access route should be levelled as far as possible. Where changes in levels are unavoidable, such changes should be clearly identified to alert the users (3.1.2.2b). Refer to Section 3.6 — Detectable Surfaces.

3.1.2.3 Travel Path

- (a) In large open spaces, where there may be many travel path options, adequate signage, tactile guide paths and/or other detectable cues should at least be provided for:
 - the major access route(s);
 - route(s) leading to the main entrance and exit;
 - route(s) leading to important facilities and reference points within the open space.(3.1.2.3a and 3.1.2.3b)
- (b) Tactile guide path and/or other detectable cues such as handrails, kerbs, planters, fences, flowerbeds, hedges, raised lawns, etc. help to define the travel path for users in open spaces (3.1.2.3c). Such cues should be detectable by canes to facilitate use by the visually impaired.
- (c) If there are different levels of access options, for example, pathways especially designed for the elderly or people with disabilities, then adequate signage should be provided suggesting the access route options available.



3.1.2.2a Street furniture setback from the access route



3.1.2.2b Change in levels clearly identified with tactile warning strips



3.1.2.3a Tactile guide path leading to a directory at the park entrance



3.1.2.3b Tactile guide path continuing along the main travel path



3.1.2.3c Levelled floor surface with kerbs along the pathway to define the access route



3.1.2.3d Access route with cover and tactile guide path

- (d) Cover along an access path is a provision welcome by most users, especially in hot and rainy weather conditions. It is also a very effective means of connecting spaces and buildings and is quite useful for way finding (3.1.2.3d and 3.1.2.3e).

3.1.2.4 Safety

Safety along the entire travel journey is of great importance to all users. This aspect should be carefully considered when developing the access plan. The following are some points to pay attention to:

- (a) Obstructions e.g., bollards, street hydrants, should be positioned so that they do not encroach onto the travel path. Such obstructions should have colour contrast with the surroundings.
- (b) Manholes, gratings, drains, should be securely fixed and flush with the ground surface.
- (c) Tree grilles at ground surface level should be covered with suitable materials and fixed flush with adjacent ground surface. Raised tree pits should

be cane detectable and preferably be provided with appropriate warning (3.1.2.4a).

- (d) Furniture and fixtures should not protrude onto the access route and should be recessed from the path of travel (3.1.2.4b).
- (e) Hazards along the walkway, e.g., construction sites, must be properly cordoned off by protective barriers with colour contrast to the surroundings. The base of the barrier should be cane detectable. Where diversion of travel path is necessary, proper signage should be provided to guide users to the alternative passage.
- (f) Change in levels should be clearly identified by visual and tactile warnings.
- (g) Protective barriers should be provided if there is a vertical drop next to the travel path (3.1.2.4c).
- (h) Adequate lighting should be provided along the entire travel path. However, lamp poles should not obstruct the access route (3.1.2.4d). There should not be any drastic change in illumination levels between different areas. Refer to Section 3.8 — Lighting.



3.1.2.3e Tactile guide path together with handrail provided along access route



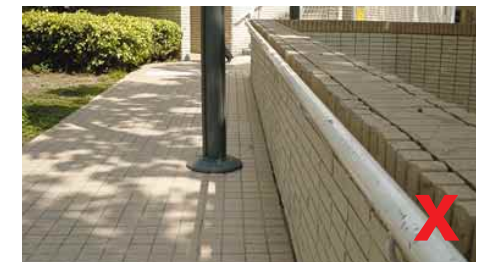
3.1.2.4a Tactile warning strips around planter along the access route



3.1.2.4c Protective barrier at vertical drop next to travel path



3.1.2.4b Entrance gate recessed into the wall at park entrance providing clear and unobstructed access



3.1.2.4d Lamp pole obstructing the access route is hazardous to users, particularly for those using the handrail

3.1.3 Surface Treatment

3.1.3.1 Surface Treatment and Material

- (a) The floor surface must be firm and slip-resistant in both dry and wet weather conditions. It must be properly sloped for effective rainwater drainage.
- (b) The surface should be generally levelled. For cross slope gradients, refer to *Section 6.2.2 of “Universal Accessibility — Best Practices and Guidelines”*.
- (c) Any services on the ground, such as manholes, covered channels, and the like, should be flush with the floor surface (3.1.3.1a, 3.1.3.1b and 3.1.3.1c).
- (d) Expansion joints and gaps on the surface should be less than 13mm wide to avoid trapping wheelchairs and canes.
- (e) For a comparison of various external floor materials, refer to *Section 3.9 — Safety*.

3.1.3.2 Difference in Flooring Materials

- (a) The use of different floor surface materials can help in detecting and identifying the different access paths and zones within a large external space. For example, various floor materials with different colours and textures can be used to delineate walkways, resting areas, and recreational areas (3.1.3.2a). However, for the purpose of detection and identification, there should not be an excess of different surface materials. The different surface treatments should be designed consistently; otherwise it would not serve the intended purpose.
- (b) Where necessary, clear information should be provided at locations where there is a change in materials to alert users of such change.



3.1.3.1a Channel cover levelled with floor surface and gaps at the gratings are less than 13mm wide



3.1.3.1b Narrower channel grating slots provided at pedestrian crossing



3.1.3.1c Manhole covers levelled with the floor surface



3.1.3.2a Use of different floor surface materials to identify different zones in open areas

3.1.4 Surface Drainage

3.1.3.3 Pavement Markings

- (a) Markings on a pavement, such as warning strips at change in levels, should have colour contrast with the pavement (3.1.3.3a). Attention should be made to the suitability and durability of the pavement marking material for the particular pavement surface. The markings should be properly maintained and should be repaired or replaced immediately when damaged (3.1.3.3b).
- (b) Markings on pavements should not be excessive.
- (c) Pavement markings must not form a tripping hazard to users.
- (d) For detectable surfaces or tactile guide paths on pavement, refer to Section 3.6 — Detectable Surfaces.

3.1.4.1 Effective Drainage on Walkways

- (a) In an external space, the effective drainage of rainwater on the ground surface is crucial. Water accumulation on the walkway surface is not only a nuisance but is also a serious hazard.
- (b) Surface channels and drains on walkways should be positioned away from tactile guide paths and other essential markings on the walkway surface so that they do not obstruct each other (3.1.4.1a).
- (c) Attention should be paid to the drainage fall direction to avoid water ponding near tactile guide paths and/or other detectable cues (3.1.4.1b).



3.1.3.3a Painted warning with colour contrast to adjacent floor finishes at road kerb



3.1.3.3b Markings should be properly maintained, worn-out markings should be repaired or replaced immediately



3.1.4.1a Drainage channels positioned along edge of the walkway, away from tactile guide path



3.1.4.1b Water ponding along tactile cue on walkway is hazardous to users

3.1.4.2 Surface Channels

- (a) Channel covers must be securely fixed, flush with the adjacent walkway surface, and be made of non-slip material (3.1.4.2a).
- (b) The slots in the channel cover gratings as well as the gap between grating segments should be less than 13mm wide so as to avoid trapping wheelchairs and canes.
- (c) Cover grating slots should run perpendicular to the dominant direction of travel (3.1.4.2b).
- (d) Uncovered surface channels and open dish channels should be avoided on accessible walkways (3.1.4.2c).
- (e) Attention should be paid to the location of channels on the walkway. The surface channel should preferably be located to the side of the walkway, levelled with the floor surface, and not be located in the centre of the path, as it will be hazardous to users (3.1.4.2d).

3.1.4.3 Floor Drains

- (a) Floor drains are often used for external drainage. However, attention should be made to the surface cross slope for drainage fall; there should not be any sudden ground surface warping and the ground surface should generally remain levelled (3.1.4.3a).
- (b) The drain covers must be flush with the walkway surface and be made of non-slip materials (3.1.4.3b).
- (c) Similar to slots in channel cover gratings, the slots or holes in drain covers should be less than 13mm.



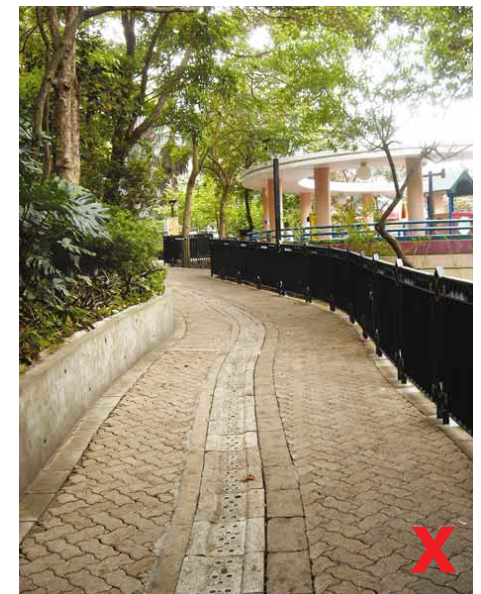
3.1.4.2a Channel covers flush with adjacent floor surfaces with slots less than 13mm wide



3.1.4.2b Slots of channel cover grating perpendicular to direction of travel



3.1.4.2c Uncovered surface channels on accessible routes are hazardous and should be avoided



3.1.4.2d Surface channels should be levelled with the adjacent floor surface. Uneven floor surface in the centre of a walkway is hazardous to users

3.1.4.4 Raised Flooring/Decking

- (a) Raised flooring whereby surface water is collected by a drainage system underneath the raised floor can be an effective means of surface water disposal. Channels and drains are hidden underneath the raised floor allowing the top surface to have a uniformly levelled appearance (3.1.4.4a).
- (b) The system can facilitate access between external and internal spaces by allowing the raised floor surface to be flush with the floor of the internal space.
- (c) The raised floor, including any access panels, should be firm and securely fixed.
- (d) The raised floor panels/planks should be of adequate size and configuration such that water would not accumulate on it (3.1.4.4b).
- (e) Slots on the raised floor to allow water discharge to the drainage floor underneath should not be more than 13mm wide so as to avoid trapping heels, wheelchairs, and canes.



3.1.4.3a Floor drains near the planter for external floor drainage. Ground surface should remain generally levelled



3.1.4.3b Floor drains covers flush with adjacent floor surfaces with slots less than 13mm wide



3.1.4.4a Uniformly levelled raised flooring system with drainage underneath



3.1.4.4b Raised flooring with thin slots perpendicular to the travel path to allow surface water to drain underneath

3.1.5 Sensory and Psychological Needs

Sensory cues along a travel path can make the journey more interesting and can enrich the users' overall experience of the open space (3.1.5a). They can also serve as useful reference points and help users in way finding and orientation.

help users find their way and identify points of reference within an open space (3.1.5.2a and 3.1.5.2b).

3.1.5.1 Visual

- (a) Use rich combinations of colours and forms, together with carefully selected soft landscaping (3.1.5.1a).
- (b) Provide elements with visual contrast to facilitate identification and way finding (3.1.5.1b).
- (c) The entire travel path should be well lit and inviting to all users, such that they would feel safe even travelling at night time.

3.1.5.2 Auditory

- (a) Provide sound-generating elements such as water features and wind chimes along the travel path to

3.1.5.3 Olfactory

- (a) Provide soft landscaping along the travel path with different species that give off various scents to enrich the journey (3.1.5.3a).

3.1.5.4 Tactile

- (a) Provide signs, tactile models, sculptures, and interactive displays that can be approached and touched (3.1.5.4a). Such provisions are particularly useful to visually impaired users in formulating a mental map of their surroundings.



3.1.5a Accessible route enhanced by different species of planting



3.1.5.1a Soft landscaping along travel routes can create visual and textural contrasts to the hard surfaces



3.1.5.1b Visual signage on the pavement can add interest to the travel path



3.1.5.2a Sculpture capturing the sound of falling rain



3.1.5.2b Wind chimes integrated into architectural features



3.1.5.3a Seasonal planting and foliage along the access path can enrich the travel experience



3.1.5.4a Three-dimensional tactile directory led by tactile guide path and audio signals

3.1.6 Elements along a Travel Path

3.1.6.1 Access Elements along a Travel Path

Access elements encountered along a travel path should facilitate access to all users instead of hindering it. Such elements should therefore be properly designed to incorporate the best practices, or at the very least designed to statutory requirements. All the provisions can be easily incorporated at the design stage, but if

they are not considered at an early stage, costly additions and/or abortive works may result.

Some provisions that are considered essential by users with disabilities, but are commonly found missing, are listed below for designers' attention.

Access Elements

Walkways

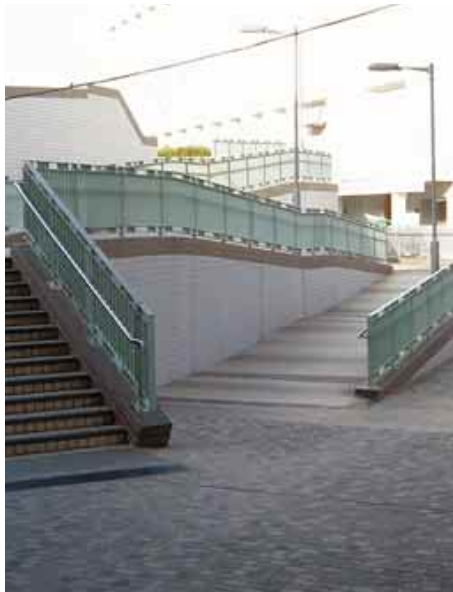
(3.1.6.1a)

Stairs and steps

(3.1.6.1b, 3.1.6.1c and 3.1.6.1d)

Commonly Missed Provisions

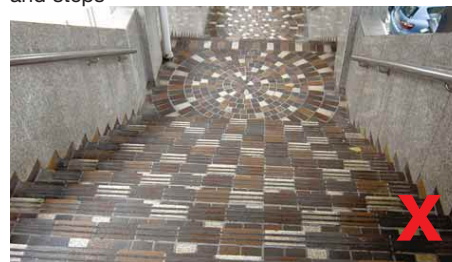
- accessible ramp at change in levels
- tactile guide path with colour contrast
- proper protection where there are obstructions
- railing of the required diameter on both sides
- Braille on railing for direction purpose
- 300mm horizontal extension at ends of handrail
- tactile warning at the top and bottom of the flight of steps
- nosings with colour contrast
- colour contrast between the steps and the wall along the steps



3.1.6.1a An accessible route should be provided where there is a change in levels



3.1.6.1b Adequate railings and nosing with colour contrast should be provided at stairs and steps



3.1.6.1c The steps should be provided with nosings with colour contrast



3.1.6.1d Staircase with tactile warning strips, railings on both sides and Braille on the railing horizontal extension

Ramps (3.1.6.1e)

- colour contrast between the ramp surface and the wall along the ramp
- railing of the required diameter on both sides
- Braille on railing for direction purpose,
- tactile warning at head and foot of the ramp
- required clear space at head and foot of ramp

Dropped kerbs (3.1.6.1f)

- tactile warning
- colour contrast

Lifts and platform lifts (3.1.6.1g)

- arrival gong (different signals indicating up/down directions)
- audible signal inside lift car
- tactiles leading to lift

Escalators and travelators (3.1.6.1h)

- tactiles at top and bottom
- audible signal indicating access direction
- colour contrast at edge of steps

Railings & handrails

- height of handrail between 850mm to 950mm

Signage (3.1.6.1i)

- clear signage indicating an accessible barrier free entrance
- tactile map/directory
- international symbol in white on blue background for accessible facilities



3.1.6.1e Ramp with tactile warning strips, railings on both sides, and colour contrast between the ramp surface and the surrounding walls



3.1.6.1f Dropped kerb having colour contrast with the adjacent pavement



3.1.6.1h Tactile warning strips and audible signals at escalators



3.1.6.1g Signage and tactile strips leading to an accessible lift



3.1.6.1i Accessible building entrance clearly identified by the international symbol of accessibility