

3.6 Detectable Surfaces

3.6.1 Introduction

Detectable surfaces serve the purpose of way finding and hazard warning. Such provision is essential in allowing people with visual impairment to move about a space safely and independently. In large external areas and connecting spaces where access for the visually impaired can be rather challenging, tactile guide paths and detectable cues are particularly useful to facilitate orientation and way finding.

In general, the requirements on tactile warning strips and tactile guide path are as follows:

- (a) Directional tile (3.6.2.1a):
 - 34mm wide parallel raised bars
 - each module 300mm x 300mm, with 4 bars per tile
 - laid along the direction of travel path
- (b) Hazard warning tile (3.6.2.1b):
 - 35mm diameter raised dots arranged in square grid parallel to the sides of the tile
 - each module 300mm x 300mm
 - nominal width of 600mm (300mm wide at staircase landings)
 - laid perpendicular to direction of travel
- (c) Positional tile (3.6.2.1c):
 - 23mm diameter raised dots arranged in staggered position
 - each module 300mm x 300mm
 - overall 600mm x 600mm
 - laid at change in travel direction
- (d) Height of the raised bars and dots
 - 5mm

3.6.2 Tactile Guide Path — Design Considerations

3.6.2.1 Dimension

The Design Manual for Barrier Free Access published by the Buildings Department in 1997 stipulates some requirements on the provision of tactile warning strips and tactile guide path.



3.6.2.1a Directional tile with parallel raised bars laid along the travel direction



3.6.2.1b Hazard warning tile with raised dots arranged in square grid parallel to the sides of the tile, laid perpendicular to travel direction



3.6.2.1c Positional tile with staggered dots positioned at junction of tactile guide path to indicate change in travel direction

3.6.2.2 Location

(a) Directional tile

- along the intended travel path parallel to the direction of travel

(b) Hazard warning tile

- at change in levels, e.g., top and bottom of stairs, ramps, escalators, etc.
- at dropped kerbs, pedestrian crossings, etc., perpendicular to the direction of travel and across the whole width
- at entrance(s)/exit(s) to building and open space
- in front of directories, maps, information/reception counters, doorways, lift call buttons and lift doors, etc.

(c) Positional tile

- at junction of tactile guide path to indicate possible change in travel direction

The tactile guide path should not be placed close to any obstructions or building edges. A safety buffer zone of minimum 600mm wide should be allowed (3.6.2.2a and 3.6.2.2b).



3.6.2.2a Tactile guide path at external areas leading to various areas such as main building entrance and directory



3.6.2.3a Tactile warning strips across the whole width of travel path at change in levels



3.6.2.3c Tactile warning strips at stair landings



3.6.2.3e Tactiles at dropped kerb at pedestrian crossing



3.6.2.2b Tactile guide path positioned away from building edge and obstructions



3.6.2.3b Tactile warning strips at stairways



3.6.2.3d Tactile warning strips at ramp



3.6.2.3f Tactile guide path on pavement

3.6.2.3 Application

In general, detectable surfaces should be provided to the following areas for hazard warning and to facilitate way finding:

- Change in levels (3.6.2.3a)
- Stairways and steps (3.6.2.3b and 3.6.2.3c)
- Ramps (3.6.2.3d)
- Dropped kerbs & pedestrian crossings (3.6.2.3e)
- Walkways (3.6.2.3f and 3.6.2.3g)
- Escalators (3.6.2.3h)
- Lifts (3.6.2.3i)
- Entrances of buildings and facilities (3.6.2.3j)
- Tactile directories and maps (3.6.2.3k)
- Information and services counters (3.6.2.3k)
- Hazards and obstructions (3.6.2.3m)
- Handrails (3.6.2.3n)
- Transport facilities (3.6.2.3p)



3.6.2.3g Tactile guide path along walkway with lay-by for wheelchairs



3.6.2.3h Tactile warning strips across whole width of escalators



3.6.2.3i Tactiles leading to accessible lift



3.6.2.3j Tactiles leading to a tactile directory near the facility entrance



3.6.2.3k Tactiles leading to an information counter



3.6.2.3m Tactiles at dropped kerb and tactiles around bollards for warning against obstructions



3.6.2.3n Braille information provided on handrail to facilitate way finding

3.6.2.4 Material

- (a) The material used for tactile guide path should be slip-resistant and durable in both dry and wet weather conditions. Non-metallic materials are preferable since materials such as stainless steel are very slippery, especially when wet, and pose a hazard to users. Any materials used for a tactile path must be properly and regularly maintained to allow it to serve its intended purpose.
- (b) The tactile guide path material should have contrast in colour and texture to its surrounding floor material such that it could be easily detected (3.6.2.4a).
- (c) Tactiles incorporating small built-in lights to highlight key points or junctions can be considered for darker areas, such as tunnels, to facilitate visually impaired users to find their way under such conditions (3.6.2.4b and 3.6.2.4c).

3.6.3 Other Detectable Elements/ Cues

The installation of tactile guide path along an entire travel path at external areas is not always feasible. In such case, other detectable elements or sensory cues should be provided to give persons with different abilities, particularly the visually impaired, an alternative means of way finding at those locations without tactile guide paths.

3.6.3.1 Detectable Elements

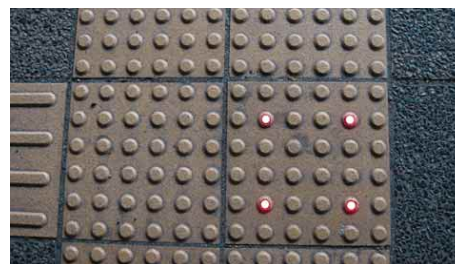
- (a) Other detectable elements such as kerbs, fences, walls, handrails, planted hedges, tactile objects, etc., when designed appropriately, can help to guide users along a travel path (3.6.3.1a, 3.6.3.1b and 3.6.3.1c). They can also help to define the perimeter of an external area for the user.



3.6.2.3p Tactiles leading to accessible transport facilities



3.6.2.4a Tactiles in contrasting colour and texture to the surrounding floor finish



3.6.2.4b Tactiles with built-in lights to draw users' attention at key junctions



3.6.2.4c Tactiles with built-in lights inside a pedestrian subway



3.6.3.1a Tactiles leading to kerbs as detectable cue, users should be adequately alerted to such change in detectable surface



3.6.3.2 Sensory Cues

- (b) Where there is a change in the provision of detectable cues, adequate notice should be provided to users to signal such change (3.6.3.1d). For example, way finding information could be included in a facility's introductory leaflets to inform users beforehand of the different way finding tools available. Such information could also be indicated on a directory/map at the entrance to a facility to alert users.
 - (c) Detectable elements should be easily identifiable, logically arranged, and the chain of detectable information should be continuous so that users can make use of them in way finding. The base of these elements should be detectable by a cane. Pliant materials such as cables, chains, ropes, etc. should be avoided, as they are not readily detectable.
- (a) Detectable cues that stimulate users' sense of touch can be useful in establishing reference points within an external space. Detection of sensory elements such as those described in Section 3.5 — *Way finding, Orientation and Signage*, can help users, especially the visually impaired, to find their way.
 - (b) In addition to facilitating way finding, tactile artwork such as sculptures, murals, and bas-reliefs, pebble walks, etc. can allow users to engage more closely with their surroundings by having direct contact (3.6.3.2a). This in turn enriches their overall experience of the place.
 - (c) The material used for sensory elements should be carefully considered to ensure safety. For example, materials that are too rough or have any sharp edges should not be used; and materials used externally should not be too hot or too cold to the touch (3.6.3.2b).



3.6.3.1b Tactiles leading to planter wall as detectable cue, users should be adequately alerted to such change in detectable surface



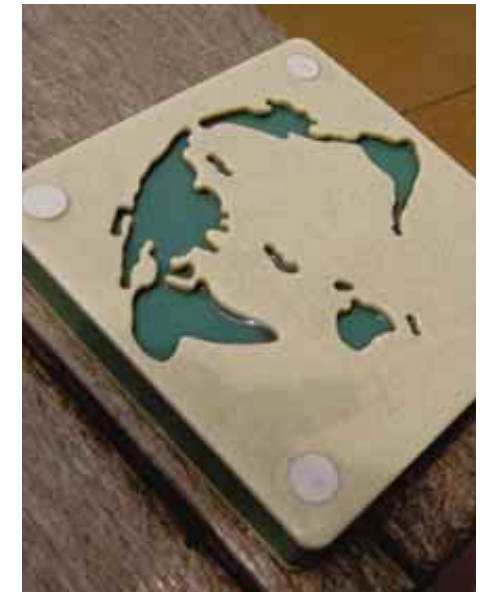
3.6.3.1c Handrails can help users to travel along a pathway



3.6.3.1d Change of detectable cues from tactile guide path to detectable strip at directory/map



3.6.3.2a Tactile elements such as pebble walks allow users to engage closely with their environment



3.6.3.2b Tactile cue (world map) with smooth contours and edges made of molded plastic

3.6.3.3 Difference in Materials

In external areas, use of different floor surface materials with different texture and pattern can help users, especially the visually impaired, to detect and identify the different zones within the external space (3.6.3.3a). For example, to distinguish between passive and active areas of an outdoor resting area, the floor of the seating areas and that of the access routes can be treated differently. This will help the visually impaired to identify the different areas by stepping onto them.

3.6.3.4 Tactile Door Opener

Access to building entrances sometimes require a lot of effort due to the size, weight, and configuration of the doors. A tactile door opener to automatic doors can facilitate users to access buildings more easily. A tactile guide path should be provided to lead to such door access (3.6.3.4a).

3.6.4 Detectable Information — Tactile Map and Sign, Tactile Model, Braille

3.6.4.1 Tactile Map/Directory, Tactile Sign, and Tactile Model

Maps, directories and signs with tactile and Braille information allow a visually impaired user to develop a mental map in his mind and enhance his general understanding of the spatial organization of the surroundings. This can be very useful in facilitating orientation and way finding in large open spaces and urban environments. Maps and signs fitted with audible signals and/or RFID can further enhance the communication (3.6.4.1a).



3.6.3.3a Difference in flooring materials as detectable cue to distinguish between different areas



3.6.3.4a Foot or hand operable tactile door opener led by tactile guide path



3.6.4.1a Interactive tactile map with Braille text

A tactile map/directory is not limited to serving visually impaired users exclusively. A directory can be designed to serve a wide spectrum of users such that all users are able to access information from the same source. A comprehensive multi-media tactile directory can eliminate the need of providing separate directories for different users (3.6.4.1b, 3.6.4.1c).

Where detectable information such as a tactile map is provided, a tactile guide path or other detectable cues should be provided to lead the visually impaired user to that information. A stand-alone tactile map or model will serve little or no purpose if there is no guidance leading visually impaired users to it.

Similarly, detectable cues should be provided to lead users to wall-mount tactile signs. This can be accomplished, for example, by providing warning tactiles at the location where the wall-mount tactile sign is located, e.g., at doorways. Another way to alert a user to the tactile information provided on the wall is by having a Braille message on the handrail along that wall.



3.6.4.1b Tactile map with Braille text



3.6.4.1c Tactile map with relief model of the facility

3.6.4.2 General Requirements for Tactile Map/ Directory, Tactile Sign and Tactile Model

- (a) Located near the major entrance(s) of the facility and readily accessible and approachable.
- (b) Allow user interaction and facilitate tactile exploration.
- (c) Led by tactile guide path or other detectable cue.
- (d) Not encroach onto the travel path.
- (e) Placed at 900mm to 1000mm above the finished floor level on a horizontal surface or at an angle less than 45 degrees from the horizontal.
- (f) Show the major routes, major points of interest, and amenities within the space.
- (g) Colour contrast between the map background and the raised text/diagram information.
- (h) Colour contrast with the surroundings.
- (i) Provision of Braille text.
- (j) Use materials that are pleasing to touch, durable, and weather-resistant if located outdoors.
- (k) Provide adequate lighting.
- (l) Provide audible signal, where appropriate.

- (m) Allow a distance 300mm between the tactile guide path/warning strip and the tactile sign itself.
- (n) The orientation of the information shown on the tactile sign should be in the same orientation that the user is facing.

3.6.4.3 Braille

Braille is a valuable means of conveying information to the visually impaired and the blind. It should be incorporated along with the corresponding text/diagram in all signage meant to be used by the visually impaired. A tactile map that is not supplemented with Braille text serves very little or no purpose to the visually impaired as the information is incomplete.

Braille on the ends of handrails is also very useful in providing way finding information to visually impaired persons (3.6.4.3a and 3.6.4.3b).



3.6.4.3a Braille on staircase handrail can identify the location as well as give information on travel directions



3.6.4.3b Handrail fitted with sensor giving both tactile (Braille) and audible (taped message) information when the hand is placed on it