

Deep pile carpet should not be used for the surface of a ramp.

*NOTE 2 The resistance of deep pile carpet increases the effort needed to propel a wheelchair.*

Tactile warning surfaces should not be used at the top and bottom of ramps.

The use of shiny, polished surface materials that cause glare should be avoided.

*NOTE 3 Highly patterned surface finishes can be misleading and cause confusion, particularly for people who are blind and partially sighted and people with sensory/neurological processing difficulties.*

### 10.2.7 Lighting

*NOTE General recommendations for lighting are given in [Clause 14](#).*

Care should be exercised in the location and orientation of a ramp to avoid, where possible, glare and cross-shadows which can prevent people who are blind or partially sighted distinguishing changes in gradient.

Artificial lighting to a ramp should be evenly distributed, with an illuminance at ramp and landing level of at least 100 lux.

### 10.2.8 Temporary ramps

Temporary ramps that are fixed in place to provide a temporary solution until it is possible to provide a permanent ramp, e.g. during building works, should be designed in accordance with [10.2.1](#) to [10.2.7](#).

### 10.2.9 Portable ramps

Portable ramps should be used only for existing buildings in exceptional circumstances, e.g. if an entrance door opens directly onto the back of a footpath. They should be positioned, their presence identified and an alternative route provided and appropriately guarded so that they do not constitute a hazard to passers-by.

Portable ramps should have a surface width not less than the effective clear width of the doorway served, a drainable, slip-resistant surface, and upstands at least 100 mm high to prevent wheelchair tyres veering off the edge.

*NOTE 1 Attention is drawn to the minimum widths for accessible entrances given in [Table 2](#). In existing buildings where these dimensions cannot be achieved, a portable ramp might benefit some people but this is not considered to be an accessible entrance.*

Gradients of portable ramps should as far as practicable meet the recommendations in [10.2.2](#) and [Table 3](#).

*NOTE 2 Portable two-channel ramps are not suitable.*

*NOTE 3 Portable ramps can have implications for fire evacuation procedures.*

## 10.3 Handrails to ramped and stepped access

### COMMENTARY ON 10.3

*Wheelchair users do not normally need to use handrails to negotiate a ramp. However, in slippery conditions on long and/or steep ramps, handrails can help wheelchair users to steady themselves.*

*Some people with an ambulant mobility impairment might be weaker on one side and, therefore, a handrail on each side of the flight is essential for support, for ascending and descending ramps, steps or stairs.*

*Many people find it easier to negotiate a flight of steps than a ramp and, for them, the presence of handrails for support is essential.*

*The division of wide flights of ramps or steps into separate channels allows an individual who might have less strength on one side or the other to be within easy reach of support. This is particularly important when many other people are using the ramp, steps or stairs at the same time.*

### 10.3.1 Handrail and balustrade provision

A handrail should be provided on each side of a ramp or stair flight, throughout its length (including intermediate landings where this does not obstruct the use of adjoining access routes). The top surface of the handrail should be between 900 mm and 1 000 mm from the surface of the ramp or pitch line of a stair and between 900 mm and 1 100 mm from the landing.

*NOTE 1 The height of 1 100 mm above landings allows for a situation where the handrail is the top rail of balustrading and forms part of guarding. Alternatively, the handrail may be separate from but supported from the guarding.*

Where appropriate guarding is available, such as a wall or a glass barrier, a second handrail should be provided in buildings used by the general public. The top surface of the second handrail should be 600 mm above the ramp surface or pitch line of a stair.

Balustrades should be designed in accordance with BS 6180:2011, Clause 5 and Clause 6, and should be strong enough to withstand inadvertent impact from an electrically powered wheelchair or electric mobility scooter. Warning signs should be placed in suitable locations, restricting vehicle speed to 4 mph on all pedestrian walkways providing access to members of the public where guarding or balustrades are required.

*NOTE 2 BS 6180:2011 gives calculation methods for pedestrian and vehicle impact on barriers. For impact by mobility scooters, professional advice is likely to be needed. DfT web guidance at <https://www.gov.uk/mobility-scooters-and-powered-wheelchairs-rules/rules-for-class-3-invalid-carriages> gives additional details of maximum permitted design parameters for mobility vehicles.*

### 10.3.2 Handrail design

#### COMMENTARY ON 10.3.2

*A non-circular handrail with a broad horizontal face is as easy to grip as a circular handrail and gives better hand and forearm support. The spacing of the handrail from the adjacent wall and the positioning of the handrail support are important in achieving the uninterrupted use of the handrail and avoiding shock through the hand hitting the support.*

*The horizontal extension of a handrail beyond the ramp flight or the first and last steps allows an individual to steady or to brace themselves before ascending or descending. For a person who is blind or partially sighted, the change in slope of the handrail and its return into a wall signals the start or finish of the flight.*

A handrail should be:

- a) easy and comfortable to grip with no sharp edges, but able to provide adequate resistance to hand slippage;

*NOTE 1 An external perimeter of between 100 mm and 160 mm is the optimum size to provide a power grip around a handrail. Suitable profiles include circular or oval. A flatter profile gives better forearm support.*

- b) continuously graspable along its entire length without obstruction;

*NOTE 2 Well-spaced handrail supports are not considered an obstruction (see 10.3.3).*

- c) finished so as to provide visual contrast with the surroundings against which it is seen;

*NOTE 3 Annex B gives guidance on how to achieve visual contrast.*

- d) terminated to include a minimum 300 mm long section in the horizontal plane beyond the start and finish of the ramp or the last nosing of a stair, at both top and bottom;

*NOTE 4* Increasing the length of termination of the handrail at the top and bottom of a flight can be advantageous in certain situations, e.g. where large crowds are anticipated.

- e) terminated in a way that reduces the risk of clothing being caught;

*NOTE 5* It is preferable for this to be achieved by returning the handrail to the wall or floor. Where this is not possible, e.g. where the handrail extends beyond balustrading, the handrail may be terminated back to the nearest vertical support in such a way as to eliminate the risk of clothing being caught.

- f) strong enough to support users and fixed to the structure in a way that supports the required loading.

### 10.3.3 Handrail dimensions and spacings

A handrail with an oval profile should have dimensions of 50 mm wide and 39 mm deep. The profile should have rounded edges with a radius of at least 15 mm.

Any circular handrail should have a diameter of between 32 mm and 50 mm.

There should be a clearance of between 50 mm and 75 mm between a handrail and any adjacent wall surface, and any handrail support should meet the handrail, centrally, on its underside. The clearance between the bottom of the rail and any cranked support, or continuous balustrade, should be at least 50 mm to minimize the risk of the handrail supports interrupting the smooth running of a person's hand along the rail.

*NOTE* Where a 50 mm diameter circular handrail is used, a 50 mm spacing from a wall allows the handrail to project not more than 100 mm into the width of the stair.

The inside edge of the handrail (the edge nearest to the walking line) should be not more than 50 mm outside the surface width of the stair.

### 10.3.4 Handrail and balustrade fixings

Handrail and balustrade fixings should be designed to meet the loading requirements specified in BS EN 1991-1-1. Care should be taken to ensure that the strength of fixings, attachments or anchorages that secure the handrail to the substrate are adequate for the required loading, taking into account the material of the substrate, the spacing between fixings and, where the substrate is concrete, the position of the reinforcement. If there is any uncertainty as to the strength of any component in the fixing system, the design load should be increased by 50%. Reliance on the pull-out capacity of a single fixing should be avoided (see BS 6180:2011, 6.5).

*NOTE* It is advisable to discuss suitable fixings with a specialist fixings supplier.

## 10.4 Hazard protection beneath stairs and ramps

Where possible, areas below stairs or ramps should be enclosed where the soffit is less than 2.1 m from finished floor level.

At any point where the clear height is less than 2.1 m, and the area below the soffit is not enclosed, the risk of people colliding with the underside of a ramp or stair should be limited by providing:

- a) a protective guardrail and low-level cane detection; or
- b) a continuous barrier.

*NOTE* Tapping rails or low kerbs can be a tripping hazard and are to be avoided beneath free-standing stairs.