

standard

4.4

mandatory

Every *building* must be designed and *constructed* in such a way that every sudden change of level that is accessible in, or around, the *building* is guarded by the provision of pedestrian protective barriers.

Limitation:

This standard does not apply where the provision of pedestrian protective barriers would obstruct the use of areas so guarded.

4.4.0 Introduction

Protective barriers are necessary to prevent people in and around *buildings* from an accidental fall at an unguarded change of level.

In assessing the type of barrier to be used, the likely hazards, the use of the *building* and the risks to the people that may be present, should all be considered. Any barrier should minimise the risk of persons falling or slipping through gaps in the barrier.

The height and form of a barrier are both important, particularly to prevent a fall resulting from an intentional act, such as climbing. Young children are often adept at climbing anything within their reach. Therefore, unless children are precluded from a *building*, protective barriers should be designed to minimise potential hand and footholds.

Existing Buildings

It is acknowledged that some existing non-domestic buildings have protective barriers that were designed or constructed with gaps large enough that a child could pass through. Those responsible for these buildings may wish to consider assessing whether there is a need for these wide gaps. Where children could be in the *building* the assessment should consider what risk reduction measures are required. Further information on the assessment of existing protective barriers is provided in the guidance leaflet 'Are Your Barriers Safe' which is available to view or download at www.scotland.gov.uk/bsd.

Conversions

In the case of *conversions*, as specified in regulation 4, the *building* as *converted* shall meet the requirements of this standard in so far as is *reasonably practicable*, and in no case be worse than before the *conversion* (regulation 12, schedule 6).

4.4.1 Location of pedestrian protective barriers

In the interests of safety, protective barriers should be provided where there is a sudden change in level and the possibility of severe injury from a fall.

At a change of direction on an access route, a drop of any height can be a hazard, particularly to a wheelchair user or a person with a visual impairment. A protective barrier should be provided both where a significant drop occurs and in locations where a smaller change of level may increase the risk of injury.

It is not practical to provide a barrier at every change in level, but a protective barrier for pedestrians should be provided at the edge of:

- a. every floor, stair, ramp, landing, raised floor or other raised area to which people have access, where there is a difference in level of 600 mm or more; and
- b. any change in direction on an access or circulation route which is raised above the level of the surrounding surfaces.

However there is no need to provide a protective barrier in a location which would block an intended access route or be incompatible with the normal use of an area, such as to the edge of a loading bay or theatre stage.

A wall, partition or area of fixed glazing, *constructed* in accordance with the recommendations of clause 4.4.2, may act as an appropriate barrier.

To ensure a person can be aware of the presence of a protective barrier it should, unless forming part of a wall or partition, contrast visually with surrounding surfaces. If a barrier is principally *glazed*, the recommendations for marking given in clause 4.8.2 should be followed.

4.4.2 Design of pedestrian protective barriers

In and around *non-domestic buildings* gaps in any protective barrier should not be large enough to permit a child to pass through. To ensure this, openings in a protective barrier should prevent the passage of a 100 mm diameter sphere.

The likelihood of children being present should be accepted for all *non-domestic buildings* other than where their presence within the *building*, or part thereof, is precluded for valid reasons such as health and safety restrictions. In these *buildings*, where there are valid reasons for the preclusion of children, the above guidance on openings within protective barriers need not apply.

Typical examples of *buildings* where access for children may be precluded are within agricultural, industrial and warehouse *buildings*. Children may also only be precluded from specific parts of *buildings*, for example, where access is solely to or within a plant room forming part of an office *building*.

In all *buildings*, openings may be more than 100 mm between a rise in a stair and the lowest edge of a protective barrier, provided the lowest edge of the barrier is not more than 50 mm above, and parallel to, the pitch line of the stair.

Historic Buildings

In certain cases, *buildings* may be of historic interest, listed (under planning legislation) or may be located in a conservation area. Alterations to these *buildings* may impact on the architecture or character of the building. In these circumstances, where a protective barrier has to be altered to protect

children, it may be necessary to adopt a solution that is sympathetic to the character of the *building*. Guidance on this matter is contained within the 'Guide for practitioners 6 - Conversion of traditional buildings' issued by Historic Scotland.

Height of pedestrian protective barriers

Location	Minimum height (mm) [1]
at the edge of a floor in front of walls, partitions or fixed <i>glazing</i> incapable of withstanding the loads specified in BS 6399: Part 1: 1996	800
in front of an openable window	800 [2]
on a stair or ramp <i>flight</i>	900 [3]
directly in front of, or behind fixed seating	800 [4]
all other locations	1100

Notes:

1. A handrail provided in accordance with clauses 4.3.13 and 4.3.14 may form the top of a protective barrier if the heights in this table are met.
2. Protective barriers should be installed where the opening window has:
 - a. a sill that is less than 800 mm above finished floor level; and
 - b. an operation that will allow the possibility of falling out; and
 - c. a difference in level between the floor level and the ground level of more than 600 mm.

At 2 storeys or more above ground level, reference should be made to clause 4.8.4 where external *glazing* is cleanable from within the *building*.
3. Where a handrail forming the top of a protective barrier to a *flight* meets a protective barrier to a landing, the height of the latter may be reduced for a distance not more than 300 mm to permit a smooth junction.
4. Barrier height may be reduced to 750 mm where it has an overall width at the top of at least 250 mm. At the foot of a gangway leading to fixed seating, the height of a protective barrier should be 1.1 m.

4.4.3 Guarding to the edge of ramps

Where there is not a continuous pedestrian protective barrier to the edge of a ramp *flight*, a kerb upstand of at least 100 mm high should be provided to any open side of the *flight* where there is a drop of any height. However the use of an upstand kerb alone in open landscaping is not recommended as it may present a potential trip hazard.

Alternatively, an external ramp *flight* may be provided with a landscaped margin, level with the edge or the ramp for a distance of 600 mm before any grading.