



## Guarding

Barriers, in and about buildings, include balustrades and full height barriers, which protect people from falling where there are stairs, ramps, floors and balconies. The purpose of barriers may be to guard people from harm and at the same time retain, stop or guide safely about the building.

In residential applications, guarding should be capable of preventing people from being injured by falling from a height of more than 600mm. In commercial applications, guarding is to be provided that protects people from falling where there is a change of level of 380mm or the equivalent of two stair risers.

In all buildings, where glass barriers protect a change in level and the glass finishes within 800mm from finished floor level, the strength of the glass must be adequate to provide containment. Further guidance on the design and use of barriers may be found in BS 6180.

## Design Criteria

The requirement for glass barriers in buildings is specified in the relevant Building Regulations for England, Wales, Scotland and Northern Ireland. The necessity for, and the type of protective barrier to be provided are determined by the intended use of the building and the potential risks to its users and occupants.

The design height of the barrier is always taken at 1100mm. Glazing can be considered as providing containment when the glass is wholly or partially within the barrier height, providing;

- It is a safety glass in accordance with BS 6262-4. (In an insulating glass unit, only the loaded pane need comply).
- The glass is designed not to break when subjected to the appropriate loads and is limited to a maximum deflection of 25mm or L/25, whichever is the larger.
- The method of fixing the glass is capable of retaining the glass when subject to the appropriate loads.
- The frame is capable of resisting the transferred loads, through the glass, with deformation or permanent damage.

Where a building has several different uses, either more than one type of balustrade should be provided or the design must encompass the most onerous scenario.

## Resistance to loads

Glass barriers should be designed to withstand loads imposed in the most extreme circumstances without deflecting beyond the permitted limit, when subject to the following three design loads;

- A horizontal uniform load, also known as a line load, where pressure is exerted on the glass in a horizontal line, 1100mm from finished floor level.
- A uniformly distributed load (UDL), exerted over the entire area of the panel below the design height.
- A point load, or concentrated load, which exerts pressure in a concentrated area.

The glass must resist the loads without breaking. In the case of an infill panel barrier, the line load is applied to the handrail.

Design loads should be determined by the building use, which are detailed in EN 1991-1-1 together with its UK National Annex and PD 6688-1-1.