3.4 HANDRAILS AND GUARDING

THIS SECTION DEALS WITH THE DESIGN, LOCATION AND PROVISION OF HANDRAILS AND GUARDING TO EXTERNAL RAMPED AND STEPPED ACCESS.

PERFORMANCE OBJECTIVE

Handrails shall be provided in locations where users require support (physical and visual) to negotiate changes in level via ramps, steps or stairs. Handrails shall be positioned at heights that are appropriate for the users and shall have profiles that are easy to grip and comfortable to use. Balustrades or guarding shall be provided in all locations where falling from ramps, steps or stairs is a hazard and shall be sufficiently robust to withstand both static and dynamic loads.

3.4.1 MANDATORY PROVISIONS

The design of handrails and guarding will satisfy the performance objectives if:

1. Handrails are continuous along all step flights, ramp slopes and around intermediate landings. Handrails extend 300mm beyond the top and bottom of a ramp or stair flight.
2. Handrails are mounted at a height of between 900mm to 1000mm above the pitch line of the stair or ramp and from the surface of landings.
3. Where the ramp or stair is accessible to the general public and / or children a lower handrail mounted 600mm above the pitch line of the stair or ramp is provided.
4. All guarding within the public realm and where a ramp or stair is accessible by children under 5 years of age the guarding prevents children from easily climbing the guarding and will prevent a 100mm sphere passing through any openings in the guarding.
5. Handrail fixings allow hand contact to be maintained for the full length of the handrail.
6. Handrails are easy to grip and comfortable to use and have a profile shown in Figure 19.
7. Handrail materials are slip-resistant and do not become excessively hot or cold to the touch.
8. The end of the handrail is finished in a manner that minimises the risk of clothing being caught.
9. Handrails contrast visually with the background against which it is seen but is not highly reflective.
10. Guarding is provided up to a height of 900mm above the pitch line of a ramp or stair and 1100mm above landing finished floor levels. Guarding can resist, as a minimum, the loads given in BS EN 1991-1-1:2002 with its UK National Annex and PD 6688-1-1.

    The guarding manufacturer to confirm that their products are compliant with the BS Standard or equivalent.
11. The handrail offset does not reduce the minimum required width of the ramp of stair for means of escape purposes.

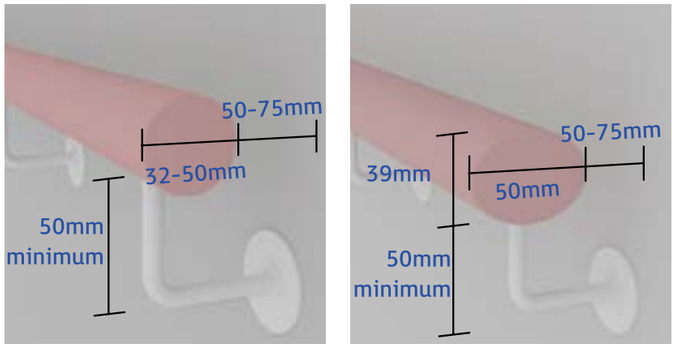

Figure 19 / Handrails

3.4.2 MANDATORY DESIGN OBJECTIVES

GENERAL

1. Handrails are multi-functional in that they provide support to people negotiating changes in level, provide visual and tactile indicators of changes in level and provide directional guidance.
2. Provision of a handrail is pointless if it is not usable and therefore mounting heights, profiles and materials are important design considerations. In hot climates the material selected should have low thermal conductivity to avoid handrails becoming too hot to touch.
3. Handrail fixings should be robust enough to enable users to rely on handrails for support.

3.5 SHADING

THIS SECTION DEALS WITH THE PROVISION AND DESIGN OF SHADING IN THE PUBLIC REALM.

PERFORMANCE OBJECTIVE

The public realm shall be designed to provide a comfortable environment that encourages the use of the public realm throughout the year and is supportive of pedestrians and non-motorised vehicle users. The public realm shall incorporate shading and cooling methods that are supportive of this objective. Shading shall be provided along all principle pedestrian routes, either through the provision of natural shading or through shading structures. Shading shall also be provided to external car parks, seating areas in amenity spaces, setting down points and areas where people will naturally congregate.

3.5.1 MANDATORY PROVISIONS

The provision of shading (see figure 20) will satisfy the performance objectives if:

1. 50% of principal pedestrian routes, 50% of all car parking areas and 100% of all seating areas are shaded where the Sky View Factor (SVF) is greater than 0.25.
2. Shade canopy is a key consideration in the selection of tree species such that at three year maturity the canopy will block 75% of sunlight.
3. Trees have a clear stem height of at least 2.3m on pedestrian paths and 2.5m on cycle routes and shared use paths. Tree guards and tree grates are clearly distinguishable from the adjacent paving and do not impinge on the clear zone (see Section 2.2).
4. Architectural shade structures have a minimum clear height of 2.4m for the full width of the pedestrian route.
5. Where colonnades are used to provide shading they are designed as part of the public realm and not as a private area.
6. The provision of shading is integrated into the overall design and reflects the architectural character of the development in terms of form and material.
7. Where shading devices are used they are integrated into the streetscape, contributing to its identity and aiding wayfinding.
8. Shading measures are used in conjunction with wind capture, planting and the careful selection of surface materials (See Section 4.4).
9. Shading devices do not hide the location of main building entrances.
10. Adequate artificial lighting is provided under shade structures so pedestrian feel safe at night.

3.5.2 MANDATORY DESIGN OBJECTIVES

GENERAL

1. Modification of the external environment in order to provide a more comfortable environment for all users is critical to promoting an increase in the use of the public realm by a wider range of users. This is part of the objective to make streets more family friendly and facilitate inclusiveness. However, establishing comfort levels is dependent on a number of factors and is not always directly linked to direct sun exposure. The tolerance of outdoor thermal environments varies greatly based on whether you are considering local residents or visitors from colder or similar climates. However, the objective is to increase the thermal comfort period over the whole year for as many users as possible.
2. Shading is just one of several mechanisms that can be used to provide thermal comfort and should form part of an overall strategy for environmental modification. Likewise activity and the time spent in the sun can have a big impact on comfort levels. For those with mobility impairments the time it takes to travel walkable distances increases and therefore the