

# ACCESSIBLE ENVIRONMENT 3

## DIFFERENCES IN ELEVATION

### Overview

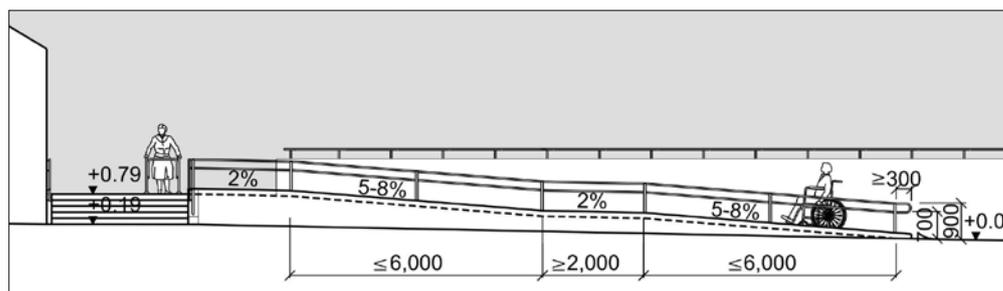
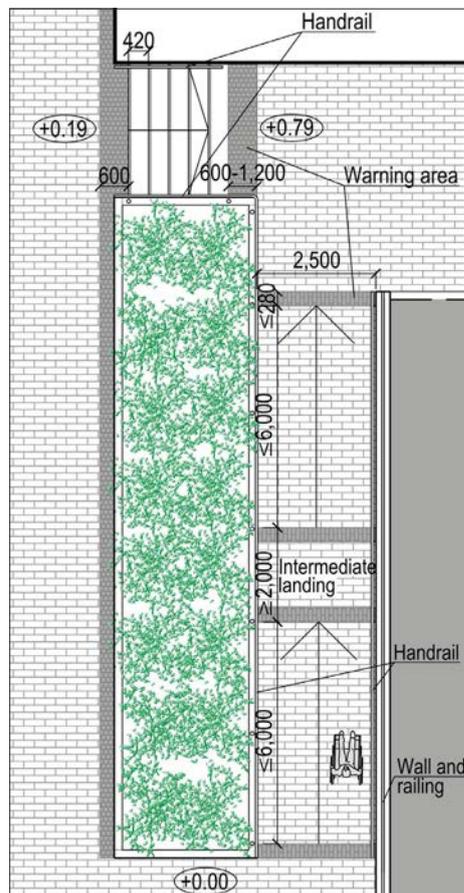
A ramp is the primary alternative when the height difference is 1 m or less. Alternative stairless access should be available alongside the staircase, and a ramp should always be accompanied by a staircase. If the difference in elevation makes the ramps excessively long, access to the upper level should be available by means of a lift.

Ramps and staircases should be safely accessible, easy to find, and distinctly identifiable. Unnecessary changes of direction in designated routes should be avoided and the change of direction points should be marked distinctly. Ramps and staircases should run straight with no turns or curves. Maintenance requirements should be borne in mind during the planning phase in order to ensure the functionality of the different levels under all conditions. The lighting of the ramps and staircases should be even, sufficiently strong, and glare-free. For the special level of accessibility the minimum lighting requirement for ramps is 30 lux, and for staircases 50 lux. The surface materials should be rough and non-slippery, even in wet conditions.

### Ramps

The minimum width of ramps maintained by machine is 2,300 mm. The minimum clear width for two wheelchairs meeting is 1,800 mm. The minimum width of ramps is 900 mm, but the recommended minimum width is 1,200 mm, which is enough for persons needing an assistant or a guide dog. The minimum size of the landing at the turning point of the ramp is 1,150 x 1,150 mm. The minimum diameter of the turning circle for a manual wheelchair is 1,500 mm; an electric wheelchair needs 2,500 mm. An ice and snow melting system or roof is recommended.

The recommended inclination for ramps is 5% or less; the maximum is 8%. Long ramps with an inclination of over 5% should have a straight intermediate landing (min. length 2 m) every 6



*SuRaKu Cards contain guidelines for planning, construction and maintenance of accessible, public outdoor areas.*

*The model designs outlined in the cards are examples of designs for an accessible environment. However, further advances in the quality of the environment and accessibility can be achieved by continued product and design development.*

*The instructions and specifications in the cards are based on the accessibility criteria established for the SuRaKu Project, and on the model designs.*

*Two levels of accessibility have been defined for the areas in question. The requirements for the basic level of accessibility apply to all areas. More stringent requirements for the special level of accessibility apply to the following areas:*

- *Pedestrian street milieus*
- *City centre areas with public facilities and services*
- *Areas surrounding institutions providing health care and services for the elderly and persons with a disability*
- *Areas with a lot of housing targeted at the elderly and persons with a disability*
- *Public transport terminals and areas surrounding public bus stops*
- *Sports areas and playgrounds catering to all types of users*
- *Accessible routes in recreational areas, etc.*

## Lifts

The lift car size should be at least 1,100 x 1,400 mm to enable a person to turn around with a rollator. The clear width of the doorway should be at least 900 mm. The minimum clear space in front of the lift should equal the turning circle of an electric wheelchair (min. diameter 2,500 mm); the absolute minimum is 1,500 mm.

### Applicable rules and regulations

RakMK F1 (Specifications for accessible building construction), RakMK F2 (Safety specifications for buildings)

### Other instructions

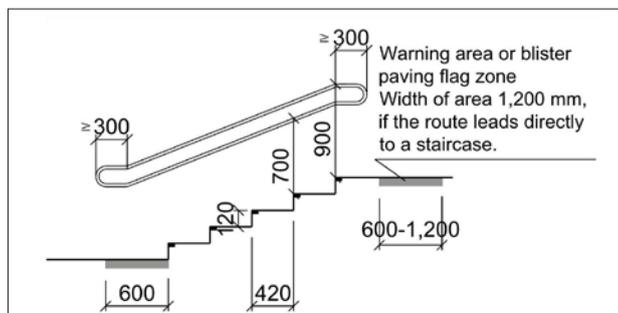
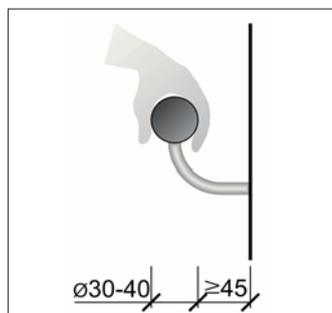
Finnish Standards Association European Standard EN 81-70: Accessibility to lifts for persons including persons with a disability  
RT Building Information Cards 09-10884, 98-10607, 88-10777  
KT-02 (General Working Instructions for Municipal Engineering)  
Instructions of the Finnish Association of People with Mobility Disabilities:  
[www.eesteeton.fi](http://www.eesteeton.fi)

### SuRaKu Instruction Cards

- 1 Pedestrian crossings and pavements
- 2 Pedestrian street milieus and squares
- 3 Differences in elevation
- 4 Public courtyards
- 5 Park paths and resting places
- 6 Public playgrounds
- 7 Public bus stop areas
- 8 Temporary traffic arrangements

### SuRaKu Accessibility Criteria Tables

Kerbstones at pedestrian crossings, Outdoor staircases, Ramps, Guidance paving flags, Demarcation strips, Loading islands, Gutters and gullies, Walking surfaces, Pedestrian crossing markings, Handrails, Railings, Push-button poles, Pedestrian crossing signs, Seating, Bollards, Pedestrian refuge islands, Tactile maps and information signboards, Warning areas.  
For SuRaKu Instruction Cards and Accessibility Criteria in PDF format, see [www.hel.fi/helsinki/katukiljeily/](http://www.hel.fi/helsinki/katukiljeily/)



metres. For the special level of accessibility, the maximum allowable lateral inclination is 2%. The maximum allowable deviation from level is 5 mm. The maximum allowable width of tile joints is also 5 mm. In the absence of a wall or other solid barrier at the edge of the ramp, the ramp should have a protective edge (min. height 50 mm), unless it is level with the surrounding terrain.

## Staircases

To avoid the risk of falling, it is recommended that staircases be placed at the side of the route. The edge of the staircase should run parallel to or perpendicular to the direction of travel. The staircase should not have open steps or protruding edges, and the steps should be identical. Walking under an open staircase should be prevented by means of a railing or kerb and a change of surface material. An ice and snow melting system or roof is recommended.

The minimum width of the staircase is 1,200 mm. The rise should be 120 mm, which is low enough for persons with rheumatic complaints, etc. The recommended sizing for outdoor staircases is  $2 \times \text{rise} + \text{tread} = 660 \text{ mm}$ . In covered and heated staircases, recommended measurements for indoor staircases apply ( $2 \times \text{rise} + \text{tread} = 630 \text{ mm}$ ). Intermediate landings are recommended to be spaced at intervals of 10-15 steps. For added safety, the edge of steps should have a colour/contrast strip, which is either a two-colour structural solution or grout filling in a cut groove. Paint is not durable enough on granite steps. For the basic level of accessibility, marking of the edges of the top and bottom step only is permissible.

## Handrails and railings

For the special level of accessibility, the requirements for staircases and ramps call for full-length handrails at two heights on both sides, intermediate landings included. For the basic level of accessibility with limited traffic, handrails at one height only are permissible. In wide staircases, handrails are recommended to be spaced at intervals of 2,400 mm. Pram slopes should be separated from the staircases by handrails. Handrails should extend at least 300 mm past both ends of the staircase or ramp. A safety railing is required always when the difference in elevation exceeds 500 mm. If it is under 500 mm, an open railing is permissible. An open railing is also permissible in the middle of the staircase.

## Guidance paving flags and warning areas

For the special level of accessibility, guidance paving flags and warning areas are used to mark the route, and to indicate pedestrian crossings, staircases, ramps or other differences in elevation. (For information on guidance paving flags, see Instruction Card 1, "Pedestrian Crossings and Pavements".) Correspondingly, warning areas are used for the basic level of accessibility to indicate pedestrian crossings, staircases or other differences in elevation. Rough surfaces should be used in warning areas. (For further information, see the accessibility criteria table for "Warning Areas".) A colour or contrast that is readily distinguishable from the pavement surface should be used in guidance paving flags and warning areas (contrast requirement: difference between medium grey and black/white).