HIKLU

Design and implementation of emergency access roads

Use: For use by external customers and the rescue department

Area of use: City of Helsinki, areas of the rescue departments of Eastern Uusimaa, Central Uusimaa and Western Uusimaa

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HIKLU OE Steering Group	HIKLU Structural fire safety	23 April 2024	1.3

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1 Objective and regulatory basis of the guideline

This guideline has been prepared in cooperation between the Helsinki City Rescue Department, the Eastern Uusimaa Rescue Department, the Central Uusimaa Rescue Department and the Western Uusimaa Rescue Department. The aim of the guideline is to demonstrate the arrangements by which the requirements for extinguishing a fire and rescuing persons in the building and its vicinity are appropriately ensured from the perspective of the Rescue Act.

The design, implementation and maintenance of emergency access roads must comply with the provisions set out in Chapters 2 and 3 of the Rescue Act (379/2011). The primary obligations are set out in the following sections:

- § 4 Duty of care
- § 9 Fire and evacuation safety of buildings
- § 10 Building exits
- § 11 Emergency access routes for properties
- § 14 Independent preparedness

Section 117b of the Land Use and Building Act (132/1999) defines the fire and evacuation safety requirements for a building. Chapter 6 of the decree of the Ministry of the Environment on the fire safety of buildings (848/2017) defines the building requirements related to evacuation safety in more detail, including emergency road requirements. Section 40 of the decree of the Ministry of the Environment on the fire safety of buildings (848/2017) defines the requirements for rescue and firefighting work. According to the Land Use and Building Act (132/1999) and the decree of the Ministry of the Environment on the fire safety of buildings (848/2017), the competent authority is the municipal building supervision authority according to section 130 of the Land Use and Building Act (132/1999).

2 Emergency access road

An emergency access road is a driveway or another connection that allows rescue vehicles to get sufficiently close to the building and fire extinguishing water outlets in the event of a fire or another emergency. The requirements for extinguishing a fire and rescuing people in and around the building must be taken into account in the design. The fire and rescue equipment must be able to get sufficiently close to the building (emergency access road). (Decree of the Ministry of the Environment on the Fire Safety of Buildings 848/2017, § 40)

2.1 Securing rescue operations on the site

Emergency access routes and lifting points are needed to rescue people with lifting platform units, usually from secondary residential roads. The evacuation arrangements of residential buildings have often been implemented as an intervention of the Rescue Department from the apartment's secondary road, through balconies or windows. The secondary roads of residential buildings can also be carried out independently, in which case lifting platform units do not need to have access to the vicinity of the auxiliary roads of the apartments. (Decree of the Ministry of the Environment on the Fire Safety of Buildings 848/2017, § 33)

To secure rescue operations, emergency care units, i.e. ambulances, must be able to reach a distance of at least 10 metres from the exits of a three-storey or taller building; in a single-family house area, at least 25 metres from the exits. For example, if several exterior doors lead to the exit stairwell of the apartment building, it is enough that the emergency care unit can reach a distance of at least 10 metres from one of these exterior doors.

2.2 Securing firefighting operations on the site

An emergency access road is also needed to secure firefighting operations on the site in the event of a building fire. For firefighting operations, an emergency access road and a lifting point must be planned for lifting platform units at least 10 metres from a three-storey or taller building. Lifting platform units are used in roof fires to carry fire-fighting equipment and rescuers, for example

The rescue units must be able to reach a distance of at least 10 metres from the exits and fire extinguishing routes of a three-storey or higher building. In a single-family housing area, rescue units must usually reach a distance of at least 50 metres from the exits. For example, if several exterior doors lead to the exit stairwell of an apartment building, it is enough for the rescue unit to reach a distance of at least 10 metres from one of these exterior doors. In addition, the rescue units must be able to reach at least 10 metres from the supply points of firefighting water and firefighting water pipes, as well as the fire alarm, sprinkler or smoke extraction centres. From the location to which the rescue unit can be driven, there must be winter-maintained and easy access to such exits, fire extinguishing routes, firefighting water and firefighting water pipe supply points, as well as to the fire alarm, sprinkler or smoke extraction centres.

3 Emergency access plan

The emergency access plan must be based on the planned and existing situation of the relevant streets and public areas, which must be presented as part of the plan. The emergency access plan must also demonstrate the street area and the fixed structures of the public area that restrict or prevent rescue access. A document (e.g. email) must be submitted as an attachment to the emergency access plan, which verifies that the plan is in harmony with the general areas of the city. Emergency access road arrangements must also be considered in the yard plan.

The property's emergency access routes and lifting points, as well as the matters required in this guideline, are presented in the building permit documents, the emergency access plan (1:200/1:500) or the site plan (see APPENDIX 1 Template for an emergency access plan). The plan is presented and approved by the building supervision authority and the rescue authority if necessary and attached to the building’s operating and maintenance manual.

The emergency access plan must set out:

- Plans for relevant streets and public areas and the existing situation
- A vehicle access route from the streets surrounding the plot
- Vehicle lanes and turning radii

- Backup windows and balconies
- Dimensions in the direction of secondary roads
- Maximum rescue heights
- Load capacities, especially for deck areas
- Slopes at lifting points in length and width in percentages
- Slopes on the emergency access roads of the plot, lengthwise and parallel, in percentages; also take kerbstones and elevation differences in street areas into account, for example
- Location of plot signage and other traffic signs on the plot and in public street areas
- Extinguishing unit access to exits and extinguishing routes
- Emergency care unit access to the exits

4 Design of an emergency rescue road

4.1 Dimensioning of a lifting platform unit

Vehicle access routes to lifting points and the lifting points themselves must be designed so that the rescue department's equipment can be driven nose-first onto the site.

The design of the lifting platform unit is based on the AutoTurn lane model, where the inner arch is 5.5 m, and the outer arch 12.5 m. The travel range is 0.4 m, and the travel range of the boom is 1.0 m. The lane model is available from the rescue department.

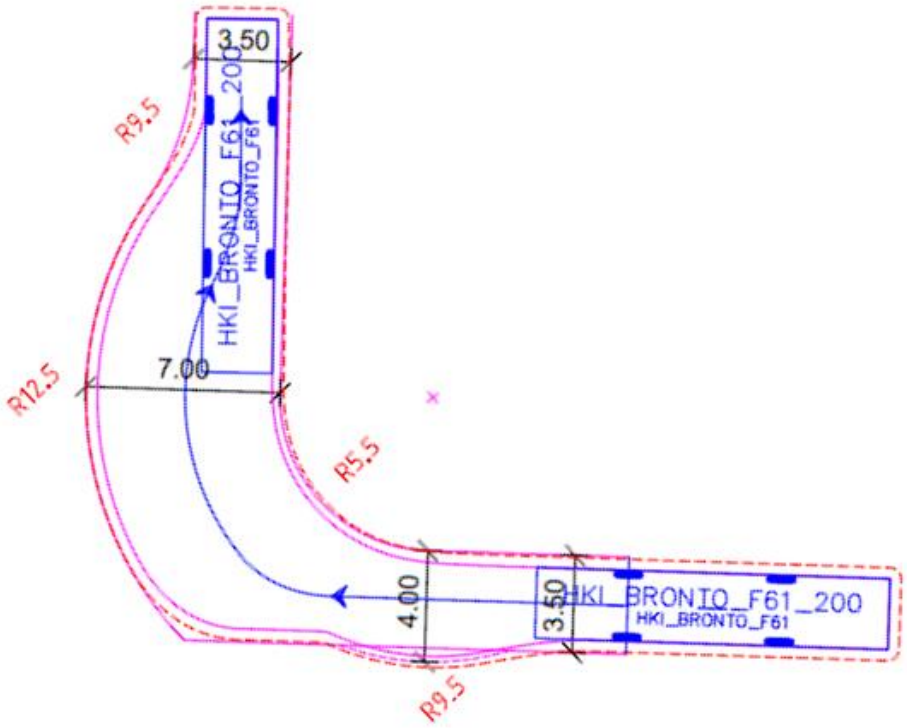


Photo 1. Lane model for a lifting platform unit.

Turn radius-based emergency access road dimensioning

Width of lane:	3.5 m
Free height:	4.2 m
Turn radius outer:	12.5 m
Turn radius inner:	5.5 m

Also consider the plot's:

Maximum slope, parallel:	3%
Maximum slope, lengthwise:	8%

Dimensions of the lifting point

Load capacity:	32 t
Axle load:	9 t
Support leg pressure, with washer:	215 kN / support leg (min. 750 mm x 750 mm)
Minimum width:	6 m
Ideal width:	8 m
Length:	13 m
Target distance of lifting point from wall to centreline:	6 m
Maximum slope, parallel:	3%
Maximum slope, lengthwise decline	8%
Maximum slope, lengthwise incline	6%

Dimension at max. 15 m height

Reach to side:	18 m
Reach up:	15 m

Dimension at max. 27 m height

Reach to side:	16 m
Reach up:	27 m

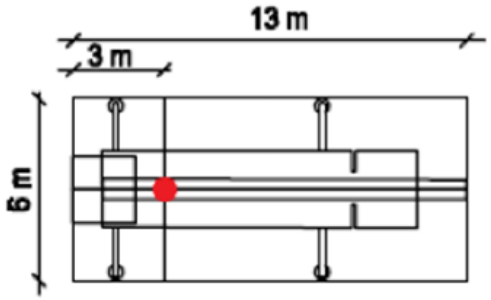


Figure 2. Dimensions of the lifting point, as well as the dimensioning point of the reach.

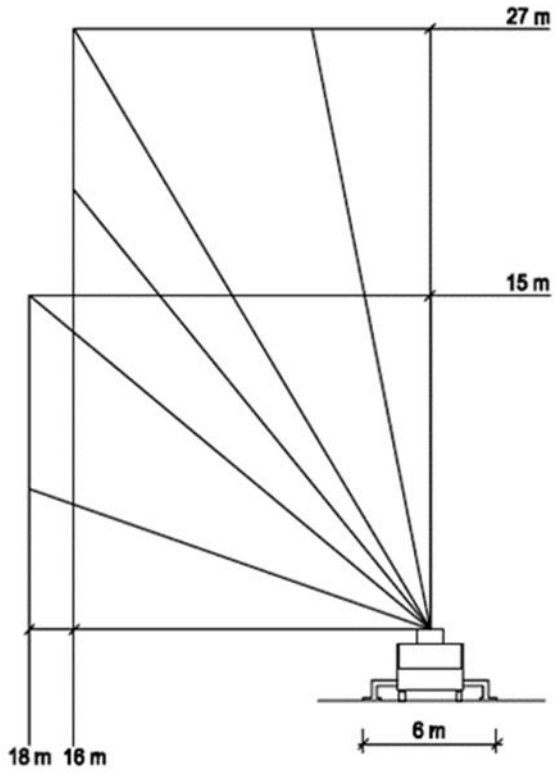


Figure 3. Dimensions of the lifting platform unit.

4.2 Dimensioning of the rescue unit

The design of the rescue unit is based on the AutoTurn lane model, where the inner arch is 5 m, and the outer arch 10.5 m. The travel range is 0.4 m. The lane model is available from the rescue department.

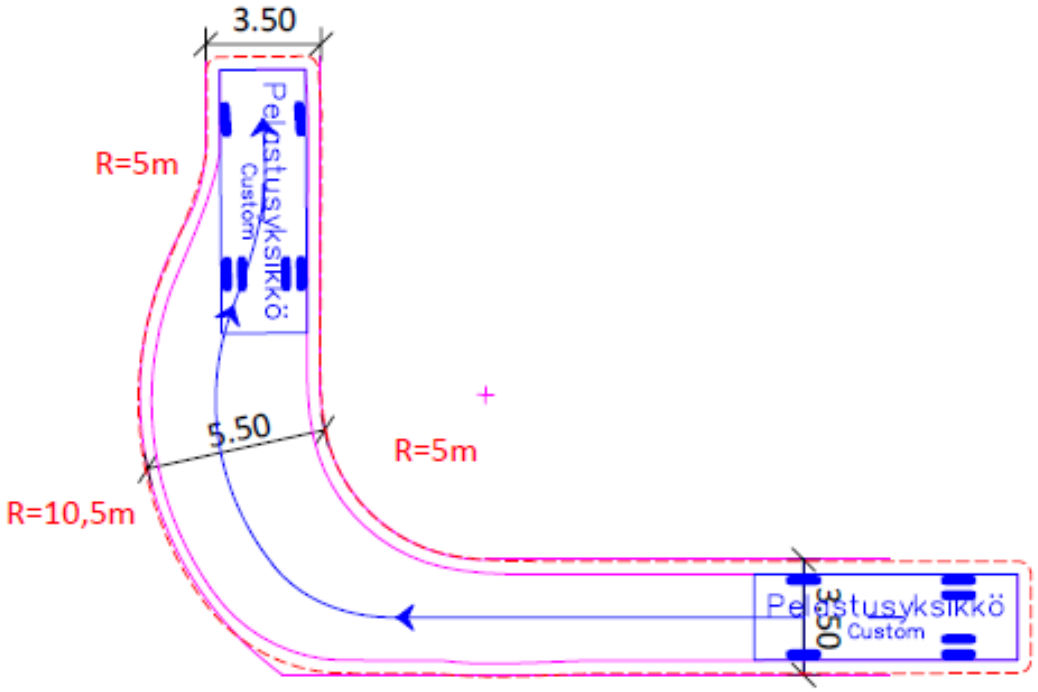


Figure 4. Lane model for rescue units.

Turn radius-based dimensioning for rescue unit routes

Width of lane:	3.5 m
Free height:	4.2 m
Turn radius outer:	10.5 m
Turn radius inner:	5 m

Also consider the plot's:

Maximum slope, parallel:	3%
Maximum slope, lengthwise:	8%
Load capacity:	20 t

4.3 Dimensions of the emergency care unit

The dimensions of the emergency care unit are based on the AutoTurn lane model, in which the inner arch is
4 m, and the outer arch is 8.5 m. The travel range is 0.4 m. The lane model is available from the rescue department.

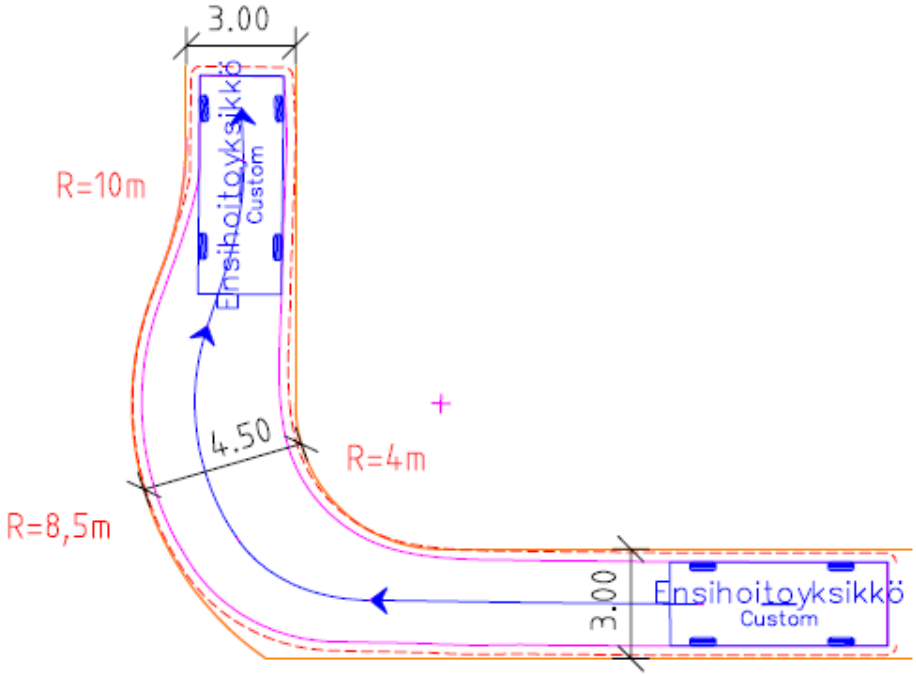


Figure 5. Lane model for emergency care units.

Turn radius-based route dimensioning for emergency care units

Width of lane:	3 m
Free height:	3 m
Turn radius (outer):	8.5 m
Turn radius (inner):	4 m

Also consider the plot's:	
Maximum slope, parallel:	3%
Maximum slope, lengthwise:	8%
Load capacity:	4 t

5 Matters to consider in the design

Ramps and gates on the escape route must have the features required of emergency access roads. The features of the emergency access road and lifting point surface must meet the requirements for emergency access roads. The emergency access road and lifting point surface can be pavement, asphalt, concrete, grass block pavers or stone ash.

The lifting point can be partly located on both a pavement or bike path and on the roadway when the height difference between the kerb supports of the different parts does not exceed 12 cm. In a plot connection that only serves as a connection from an emergency rescue road, the maximum height of the edge support may be 12 cm.

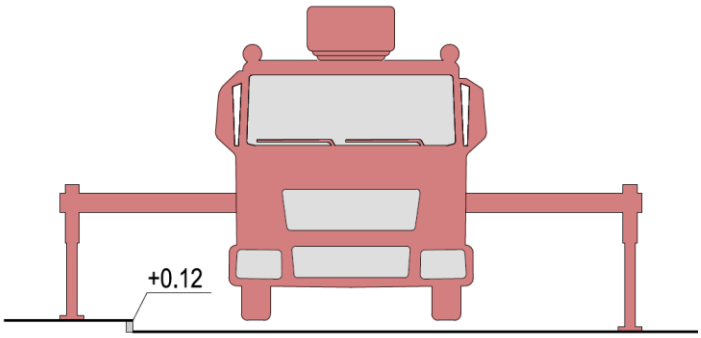


Figure 6. Lifting point partly on the road and sidewalk or cycle path, with a maximum of 12 cm edge support in between.

Parking spaces or other obstructions may not be assigned to the emergency exit or lifting point. Rubbish collection points, car shelters, planters, snow collection sites, fences, gates, bicycle racks, drying racks, light poles, traffic signs, etc. must be positioned to maintain emergency vehicle access to the emergency access road. On the plot, pits, manhole covers or geothermal pits on the emergency access road or lifting point must meet the required carrying capacity of the emergency access road. The lifting point must be accessible in its entirety, as the sizes of the rescue units and, for example, the location of the support legs in the vehicles vary.

Woody vegetation should not be planted in the emergency access road, lifting point, or in the area between the lifting point and the secondary road balconies and windows, which would complicate or prevent the use of the emergency access road. The yard plan must also take the effects of the future growth of plantings on the functioning of the emergency access road into account.

If the emergency access road or lifting point is to be implemented on an adjacent plot, an easement is required between the properties and the emergency access road and lifting point.

5.1 Maintenance of the emergency access road and lifting point

For their part, the property owner and the operator must ensure that the emergency access roads and lifting points are kept roadworthy and accessible at all times of the year (Rescue Act 379/2011, § 11). In the winter maintenance of emergency access roads and lifting points, it must be ensured that the emergency access road and lifting points are kept clear of snow and accessible in all respects. Adequate snow collection sites must be planned and implemented in the yard area so that the emergency access roads and lifting points can be kept clear of snow in the winter.

5.2 Lifting points in public street areas or parks

If the emergency access road or lifting point is to be located in a public street or park area, cooperation with the road operator or owner of the area is required to determine whether the public area in question is suitable for use as an emergency access road or lifting point. Suspended lighting or other obstacles that complicate rescue operations must not be located above the lifting point. The owner of the building is responsible for the additional costs arising from the construction of the lifting point in the public area. The owner of the building is responsible for the winter maintenance of emergency access roads located in the park area. The owner of the building is also responsible for the maintenance of the emergency access road and lifting point located in a public street area insofar as the maintenance need exceeds the city's normal maintenance obligations.

5.3 Tram overhead lines at a lifting point

Tramway overhead lines may prevent a lifting point from being set up in a street area. Tram overhead lines or related suspension wires must not be located above the lifting point. Tramway overhead lines must not be located between the lifting point and the secondary roads or the building because for safety reasons, the basket cannot be operated above the overhead lines. In practice, the lifting point can be limited at most to the outermost rail of the tramway, in which case the lifting point is not located under the overhead lines. The surface material of the tramway must be suitable as surface material for an emergency access road and lifting point.

6 Test run for an emergency access road

If necessary, the functionality of the rescue road is tested with the rescue department's equipment well in advance of the building supervision authority's commissioning inspection; as a rule, in connection with an inspection carried out during the rescue authority's construction project. A city representative responsible for public areas must also be invited to participate in the emergency access road test. If necessary, the functionality of the emergency access road can also be tested with the equipment of the rescue service for a building that is in use.

7 Construction site emergency access road

The emergency access road and lifting points must be available throughout the life cycle of the building. Arrangements made during the construction or alteration of a street area or another property must ensure that the arrangements do not weaken the requirements for rescue or firefighting operations; the accessibility of emergency access roads and lifting points must be taken into account.

If a building under renovation remains in use, or modification work is carried out on the plot of an operational building, the construction site plan must take the property's secondary road and emergency access road arrangements into account. The functionality of the emergency access roads and secondary roads must always be ensured, including during the construction site’s working hours

regarding a building in normal use. If necessary, onsite emergency access road and secondary road arrangements must be agreed with the rescue authority.

8 Indication of an emergency access road

An emergency access road marked on a building permit document referred to in the decree of the Ministry of the Environment on construction plans and reports (216/2015) must be indicated in the plot with a supplementary text sign in accordance with § 82 and Annex 3.8 of the Road Traffic Act (729/2018) as follows: Pelastustie Räddningsväg. (Decree of the Ministry of the Interior on the marking of emergency access roads 1384/2003)

The sign is used on the plot as such or as an additional sign below the traffic sign. If necessary, the emergency access road sign is supplemented with a parking prohibited or no motor vehicle access sign. Only an emergency access road that has been approved by the authorities and meets the dimensions can be marked with an official emergency access road sign. In addition, all vehicle-access deck structures must be marked with the necessary weight limit signs.

Figure 7. Emergency access road sign, weight limit sign, no area parking sign and lifting point sign.

If necessary, a lifting point on the plot must be marked with a sign affixed to a traffic sign post, which indicates the lifting point and, in addition, an arrow indicating the direction in which the lifting point continues. If necessary, the signs are supplemented with no vehicle access or no parking signs.

The dimensioning of traffic signs and additional signs is based on the Road Traffic Act (729/2018) and more detailed regulations on the colours, structure and dimensioning of traffic control devices issued by the Finnish Transport Agency under the Road Traffic Act (TRAFICOM/417533/03.04.03.00/2020). On the plot, signs and other emergency access road markings installed in connection with the entrances to the emergency access roads must be installed by the commissioning inspection of the building or a part thereof.

An access road that only meets the dimensions of an emergency care unit or rescue unit is not marked with an emergency access road sign; these routes are marked only on the plot's signboard.

9 Road booms on emergency access roads

If there is a need to place booms or barriers on an emergency escape road, they must be planned and included in the emergency access road plan at the planning stage of the building. When it is necessary to place a boom on the emergency access road of an existing building plot, to comply with this guideline, the property owner must ensure that the boom does not prevent or complicate the use of the emergency access road by narrowing the rescue road or the turning room of a lifting platform unit, for example. The installation of a boom on an emergency access road does not need to be notified separately to the rescue authority if it meets the requirements of this emergency access road guideline.

Only spring-loaded booms or a barrier that can be opened with a triangular key may be placed on an emergency access road. The following is an example image of a boom placed on an emergency access road, as well as an image of a triangle key and its lock housing requirements. The lock must not be placed deep in the lock housing, but the lock must be level with the surrounding enclosure. Barriers that can be driven over, such as bending or descending bollards, are unsuitable for emergency access roads, as they can damage rescue vehicles and cause a delay in rescue operations. In addition, it is difficult to keep these bollards in working condition, especially during winter.

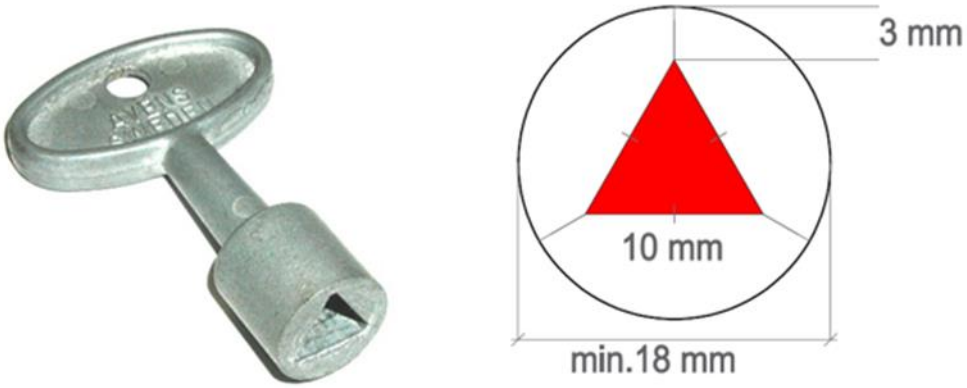


Figure 8. Triangle key, sides 10 mm and triangle key lock requirements.

Figure 9. Example of a boom placed on an emergency access road.

10 Guide board

Plots must have a guide board when there are several buildings on the plot, and not all buildings are limited to the street or its immediate vicinity. The plot must also be equipped with a guide board if the emergency access road arrangements of the plot are unusual or difficult to understand at a glance. The guide board must be placed at the beginning of the leading driveway of the plot, and it must be illuminated. If several driveways lead to the plot, they must all be equipped with a guide board. In a block, all buildings must be equipped with a guide board that explains the arrangements of the entire block.

The guide board must be sufficiently large so that the key matters are visible without getting out of the car; at least 700 mm x 700 mm. The size requirement of the guide board is affected by the placement of the guide board and the viewing distance from the road, for example. The font size on the guide board should be at least 100 mm. The guide board should be positioned according to the viewing rather than the cardinal direction.

The guide board must indicate the location of the buildings, street addresses, driveways, the viewer's location, stairwells, firefighting access to the basements, the routes for the emergency care unit, and emergency access roads and their lifting points. In addition, any weight restrictions on the driveways must be indicated. (See APPENDIX 2 Template of plot or block guide board)

The design of the guide board must be presented to the rescue authority before it is put into production.

11 Rescue Instructions for Apartments and Stairwell Safety Guide

It is recommended that residential apartments be equipped with rescue instructions. Rescue instructions are recommended, especially when the secondary road arrangements of the apartment differ from the usual arrangements. Rescue instructions are attached to each apartment in a place that makes them easily available in the event of an accident or hazard. The instructions can also be included in the apartment's tenant folder, for example.

It is recommended that stairwells be equipped with a stairway-specific safety guide, which demonstrates the building's emergency access routes and secondary route arrangements, among other things. The safety guide must be laminated and attached to a visible place near the entrance.

Figure 10. Example of Rescue Instructions for a Residential Apartment.

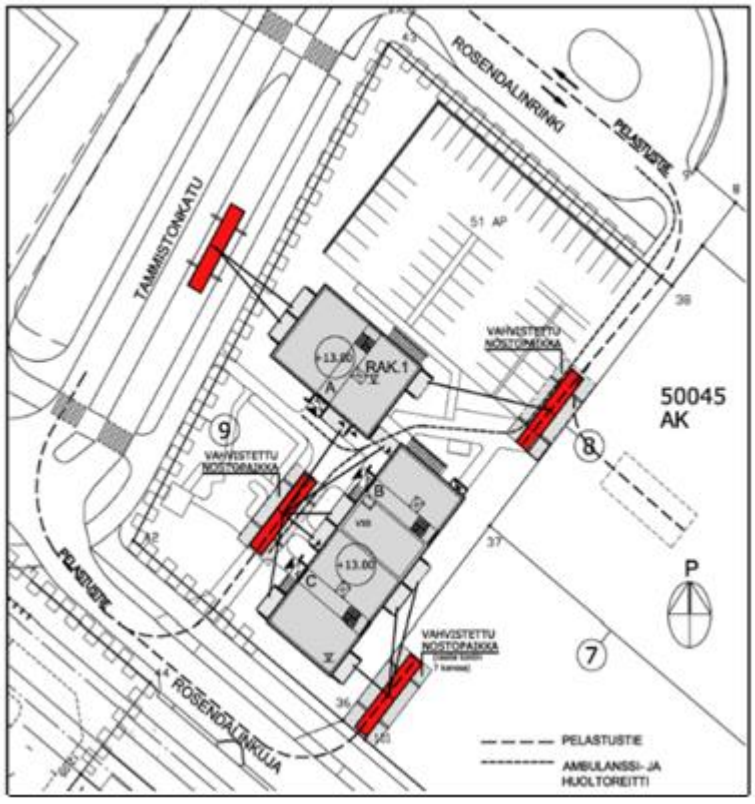
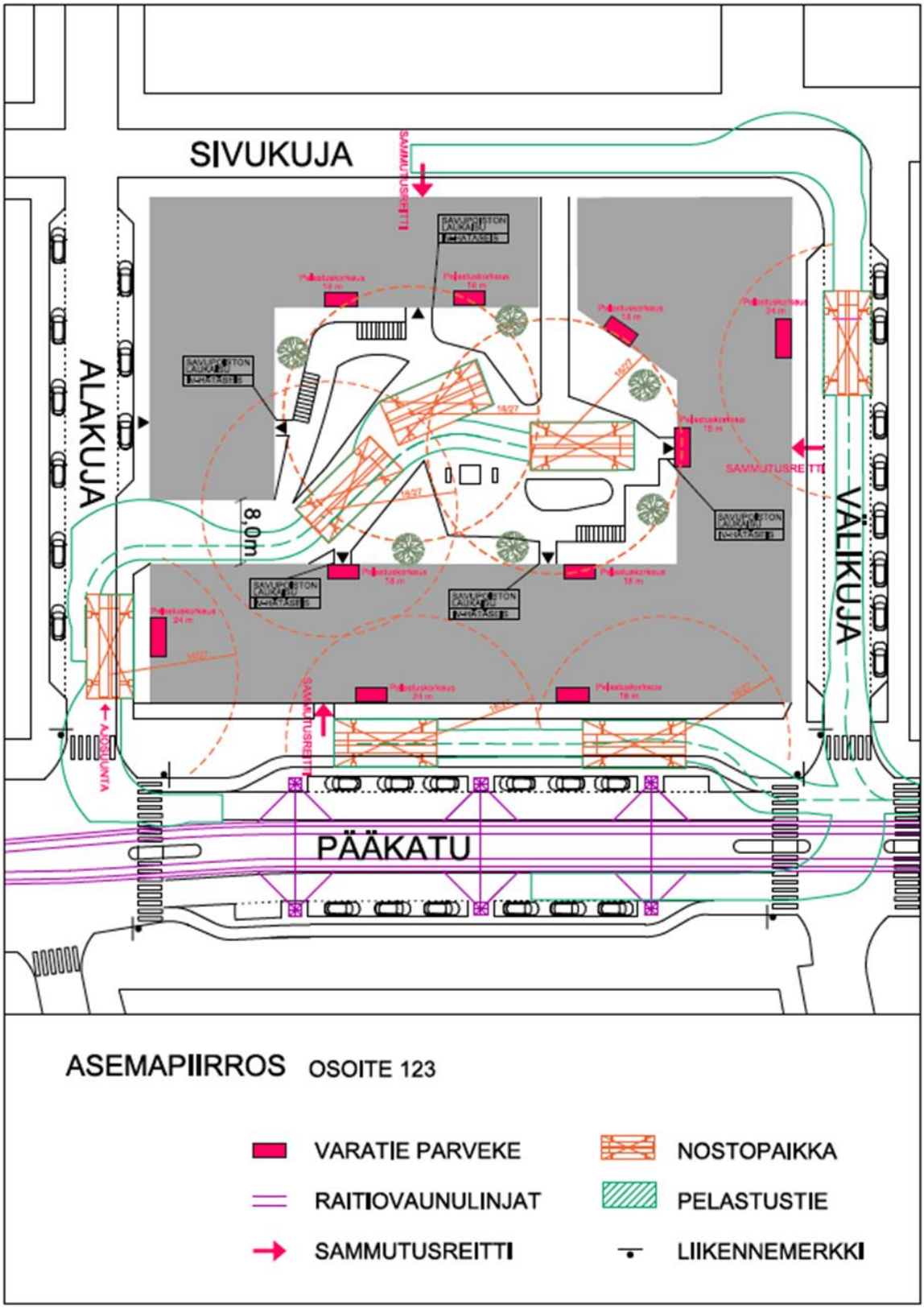


Figure 11. Example of safety instructions in the stairwell.

APPENDIX 1 Template for an emergency access plan



APPENDIX 2 Template of plot or block guide board