

## ANNEX 2

### NATIONAL ANNEX

### TO STANDARD

### SFS-EN 1991-1-1 EUROCODE 1: ACTIONS ON STRUCTURES

### Part 1–1: General actions. Densities, selfweight, imposed loads for buildings

#### Preface

This National Annex is used together with Standard SFS-EN 1991-1-1:2002.

This National Annex sets out:

- a) the national parameters for the following paragraphs in Standard SFS-EN 1991-1-1 where national selection is permitted:
  - 6.3.1.2(1)P (table 6.2)
  - 6.3.1.2(10) & (11)
  - 6.3.2.2(1)P (table 6.4)
  - 6.3.3.2(1) (table 6.8)
  - 6.3.4.2 (table 6.10) and
  - 6.4(1) (table 6.12).
- b) Guidance for the use of the informative annexes A and B.

### 6.3.1.2 Values of actions (residential, social, commercial and administration areas)

#### 6.3.1.2(1)P

Table 6.2 (FI) provides values to be used in Finland. When necessary, greater values than the minimum values given in Table 6.2 can be used. The loading area for local effects  $Q_k$  is  $50 \times 50 \text{ mm}^2$ , when  $Q_k \leq 2,0 \text{ kN}$ , else  $100 \times 100 \text{ mm}^2$ .

**Table 6.2 (FI)** Imposed loads on floors, balconies and stairs in buildings

Categories of loaded areas	$q_k$ [kN/m <sup>2</sup> ]	$Q_k$ [kN]
<b>Category A</b>		
– Floors	2,0	2,0
– Stairs	2,0	2,0
– Balconies	2,5	2,0
<b>Category B</b>	2,5	2,0
<b>Category C</b>		
– C1	2,5	3,0
– C2	3,0	3,0
– C3	4,0	4,0
– C4	5,0	4,0
– C5	6,0	4,0
<b>Category D</b>		
– D1	4,0	4,0
– D2	5,0	7,0

#### 6.3.1.2(10)

The reduction factor  $\alpha_A$  for categories A ... E is given by equation (6.1 FI):

$$\alpha_A = \frac{5}{7} \psi_0 + \frac{A_0}{A} \leq 1,0 \quad \text{with the restriction } \alpha_A \geq 0,7 \quad (6.1 \text{ FI})$$

where

$\psi_0$  is the factor according table A1.1 (FI) in the National Annex to standard EN 1990,

$A_0 = 10,0 \text{ m}^2$  and

$A$  is the loaded area

According to clause 6.2.1(4) the reduction factor  $\alpha_A$  can only be applied to floors, beams and roofs.

#### 6.3.1.2(11)

The reduction factor  $\alpha_n$  is given by equation (6.2 FI):

$$\alpha_n = \frac{2 + (n - 2)\psi_0}{n} \quad (6.2 \text{ FI})$$

where

$n$  is the number of storeys ( $> 2$ ) above the loaded structural elements from the same category.

$\psi_0$  is the factor according table A1.1 (FI) in the National Annex to standard EN 1990).

According to clause 6.2.2(2) the reduction factor  $\alpha_n$  can only be applied to columns and walls.

### 6.3.2.2 Values for actions (areas for storage and industrial activities)

6.3.2.2(1)P (Table 6.4)

Table 6.4 (FI) provides values to be used in Finland.

**Table 6.4 (FI)** Imposed loads on floors due to storage

Categories of loaded areas	$q_k$ [kN/m <sup>2</sup> ]	$Q_k$ [kN]
<b>Category E1</b>	7,5	7,0
Note: The value of storage load is shown by appropriately located clearly visible and permanent sign. In the sign the load is given as kg/m <sup>2</sup> .		

### 6.3.3.2 Values of actions (garages and vehicle traffic areas excluding bridges)

6.3.3.2(1) (Table 6.8)

Table 6.8 (FI) provides values to be used in Finland.

**Table 6.8 (FI)** Imposed loads on garages and vehicle traffic areas\*)

Categories of traffic areas	$q_k$ [kN/m <sup>2</sup> ]	$Q_k$ [kN]
<b>Category F</b> Gross vehicle weight: $\leq 30$ kN	2,5	20
<b>Category G</b> $30 \text{ kN} \leq \text{gross vehicle weight} \leq 160 \text{ kN}$	5,0	90
<p>*) According to clause 6.3.3.1(1)P areas designed to categories F and G should be posted with appropriate warning signs.</p> <p>If a sign I not posted, areas should be designed in addition to the axle load to an axle group load <math>Q_k</math>, equal to 190 kN. In an axle group load the minimum distance between axles can be taken as 1,2 metres. (The distribution of load <math>\frac{1}{2} Q_k</math> is <math>400 \times 400 \text{ mm}^2</math>).</p> <p>Adjacent parking and roof structures should when necessary be designed also to loads from fire-fighting and rescue vehicles as well as for the concentrated load of both hydraulic platform and extension ladder vehicles.</p>		

### 6.3.4.2 Values of actions (roofs)

6.3.4.2 (Table 6.10)

Table 6.10 (FI) provides values to be used in Finland.

**Table 6.10 (FI)** Imposed loads on roofs of category H

Roof	$q_k$ [kN/m <sup>2</sup> ]	$Q_k$ [kN]
<b>Category H</b>	0,4	1,0
Note: $q_k$ may be assumed to act on an area not greater than 10 m <sup>2</sup> .		

### 6.4 Horizontal loads on parapets and partition walls acting as barriers

6.4(1) (Table 6.12)

Table 6.12 (FI) provides values to be used in Finland.

**Table 6.12 (FI)** Horizontal loads on partition walls and parapets

Loaded areas	$q_k$ or $Q_k$
<b>Category A</b>	0,5 kN/m
<b>Categories B ja C1</b>	0,5 kN/m
<b>Categories C2 ... C4 and D</b>	1,0 kN/m
<b>Category C5</b>	3,0 kN/m
<b>Category E</b>	1,0 kN/m
<b>Category F</b>	see annex B *)
<b>Category G</b>	see annex B *)
Note: For areas of category E the horizontal loads depend on the occupancy. Therefore the value of $q_k$ is defined as a minimum value and should be checked for the specific occupancy. *) Substitute to method given in annex B for structures not functioning as barriers a equivalent static force can be used. This force in Category F should not be less than 5 kN and in Category G not less than 25 kN.	

## Annex A

### Tables for nominal density of construction materials, and nominal density and angles of repose for stored materials

In Finland the values to be used for nominal density of construction materials, and nominal density and angles of repose for stored materials are those corresponding to real values. Unless better evidence is available can, instead of values in Annex A, values given in EN 1992 to EN 1999 or values in EN product standards be used provided that values in these documents are given. Concerning timber materials product standards should not be used, instead for dry softwood and products made out of it by gluing (i.e. gluelam, laminated veneer lumber, veneer and laminboard) a value 5,0 kN/m<sup>3</sup> is used for density.

## **Annex B**

### **Vehicle barriers and parapets for car parks**

Annex B is used in Finland when designing structures for **impact barriers**.