Ministry of the Environment, Finland
Unofficial translation. Legally binding only in Finnish and Swedish

3/16

Ministry of the Environment Decree

concerning national choices for the basis of structural design, when applying standard SFS-EN 1990

By decision of the Ministry of the Environment, the following is laid down under section 117a of the Land Use and Building Act (132/1999), as it stands in Act 958/2012:

Section 1

Scope

This Decree is applied in the selection of the basis of structural design and is used in conjunction with the latest version of standard SFS-EN 1990.

Section 2

Combination factors for variable actions

The combination value of a variable action ψ_0, the frequent value of a variable action ψ_1, and/or the quasi-permanent value of a variable action ψ_2 for buildings where national choice is allowed in accordance with Annex A1, clause A.1.2.2, of the standard are:

1) Category C: congregation areas, the value of ψ_2 is 0.3 for the imposed load;
2) Categories F and G: imposed loads on traffic areas, the value of ψ_2 is 0 for traffic areas;
3) the value of ψ_1 is 0.4 for snow loads, if the characteristic value of snow loads on the ground is less than 2.75 kN/m^2. The value of the ψ_1 factor is 0.5, if the characteristic value of snow loads is at least 2.75 kN/m^2;
4) for outdoor terraces and balconies of residential, office, and traffic areas in Categories A, B, F and G, the combination value of the ψ_0 factor is 0 for snow loads;
5) when there are different categories of actions in a building that cannot clearly be separated into different groups, the values for the combination factors that give the most unfavourable effect should be used; and
6) for ice loads due to frost, freezing rain and sleet, the value of the ψ_0 factor is 0.7, the value of the ψ_1 factor is 0.3 and the value of the ψ_2 factor is 0.

Section 3

Design values of actions in persistent and transient design situations

Static equilibrium of buildings shall be verified by using equation 6.10 for determining the design value of actions, in accordance with clause A1.3.1(3) of the Annex to the standard.

The resistance of structural members where geotechnical actions have no effect shall be verified by using equations 6.10a and 6.10b for determining the design value of actions, in accordance with clause A1.3.1(4) of the Annex to the standard.

For the design of structures that are affected by geotechnical actions and load-bearing capability of the soil, resistance shall be verified by using Design Approach 2 and equations 6.10a and 6.10b, in accordance with Annex A1, clause A1.3.1(5), of the standard. Design Approach 3 and equation 6.10 are used for the design procedures for slopes and overall stability.

One way of achieving reliability differentiation is by distinguishing classes of KFI factors to be used in fundamental combinations for persistent and transient design situations, in accordance with Annex B, clause B3.3(1) of the standard. This factor is not used in accidental situations or in fatigue or limit state verification. The KFI factor depends on the reliability class according to Annex B. Reliability classes RC1, RC2 and RC3 may be associated with the consequences classes CC1, CC2 and CC3.

Section 4

Design values of actions in the accidental and seismic design situations

Design values of accidental actions shall be determined with equations 6.11a/b, in accordance with of A.1.3.2(1) of the standard. However, when the main variable action is something other than snow, ice or wind action, the quasi-permanent value of a variable action $\psi 2.1$ is used. When the main variable action is snow, ice or wind action, the value of the combination factor shall be taken as the frequent value of a variable action $\psi 1.1$.

The design values for seismic combinations of actions shall be determined with equations 6.12a/b. The seismic design situation may be used only when specified by the client.

Section 5

Management of structural reliability for construction works

Consequence class procedure and K_{FI} factors given in Table B3 of the standard is applied to management of structural reliability. K_{FI} factors cannot be improved by additional quality control or other means.

Section 6

Consequences classes for buildings and structures

Buildings and structures shall be classified to consequence classes CC1, CC2 and CC3 by considering the consequences of failure or malfunction of the structure.

Consequence class CC3 comprises buildings and structures with a high consequence for loss of human life or the economic, social or environmental consequences are very great.

Consequence class CC2 comprises buildings and structures with a medium consequence for loss of human life or the economic, social or environmental consequences are considerable. This class includes buildings and structures not included in classes CC3 or CC1.

Consequence class CC1 comprises buildings and structures with a low consequence for loss of human life or the economic, social or environmental consequences are small or negligible.

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This Decree enters into force on 1 January 2017.

This Decree shall apply to projects initiated after the Decree enters into force.

This Decree repeals the National Annex to standard SFS-EN 1990 concerning the application of Eurocodes in building construction, issued by the Ministry of the Environment on 5 November 2010.

In Helsinki on 7 November 2016

The Minister of Agriculture and the Environment Kimmo Tiilikainen

Senior Engineer Jukka Bergman