Translation from Finnish
Legally binding only in Finnish and Swedish

Decree of the Ministry of the Environment

on Load-bearing Structures

(477/2014)

Issued in Helsinki on this 17 day of June 2014

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By decision of the Ministry of the Environment, the following is enacted under section 117a, section 117b, section 117c and section 117d of the Land Use and Building Act (132/1999), as they stand in Act 958/2012:

Section 1

Scope of application

This Decree applies to the design and execution of load-bearing structures and bracing systems, to the repair and alteration of structures, and to the design and execution of the strengthening of structures. This Decree also applies to the design and execution of constructions and supplementary structures that are important for the users' safety, and to their repair and alteration, if damage to these structures might pose a danger to personal safety.

Section 2

Strength and stability of structures

A party engaging in a building project shall ensure that structures are designed and executed in such a way that the structures maintain sufficient strength and stability for the duration of their planned service life. During its use, the structure shall be sufficiently stable for its intended use and location with regard to harmful deformations, cracking, vibration, deflection and other harmful effects.

Section 3

Design and execution of load-bearing structures and bracing systems

The essential technical requirements for load-bearing structures and bracing are met if these are designed and executed in accordance with the Eurocodes and the relevant national choices issued as Ministry of the Environment decrees. In addition, the structural designer shall take into consideration the construction site conditions.

If design and execution systems other than those specified in subsection 1 are applied, the party engaging in a building project shall demonstrate to the building control authority, if so required by the authority, that the design and execution fulfil the essential technical requirements regarding the strength and stability of the structures, serviceability and service life.

Only one unified design and execution system may be used for new structures that function as one structural unit.

Section 4

Seriousness of consequences

The susceptibility of the building or structure to risk and any expected consequences of potential damage or defect shall be taken into consideration in the design and execution of structures.

Consequences are deemed severe if the potential damage or defect in a structure could cause significant personal injury or have extensive effects on society. Extremely demanding structures, specified in section 150d of the Land Use and Building Act (132/1999), and exceptionally demanding structures, specified in section 120d of the Act, are included in the severe consequences class. The terms extremely demanding structures and exceptionally demanding structures can be considered to refer to structures in relation to which the requirement for an exceptionally in-depth knowledge of the related theoretical principles and design methods is emphasised, and to innovative structures with regard to which no prior design experience is available. Consequences are medium if they are neither severe nor low. These are demanding structures where the design and dimensioning require good knowledge of the related theoretical principles. Consequences are low if the repercussions attributable to the potential damage or defect in a structure with regard to personal injury, or effects on society, are small or negligible.

In cases where the building or structures consist of structurally independent parts, the seriousness of consequences for each part may be determined separately.

Section 5

Structural design plans

The structural design plans shall show, as applicable to the design task, the following:

1) models describing the structural function and the bracing of the structural system;

2) the seriousness of consequences, requirements for execution or execution class, class describing the stress on the environment and, where applicable, the tolerance class;

3) loading and combinations of loads;

4) force variables;

5) requirements for construction product properties;

6) ultimate limit state and serviceability limit state design, and the appropriate accident design verification and fire design;

7) dimensions of structures and functional parts of structures, dimensions of fastenings and joints and the weight and centre of gravity of elements to be lifted;

8) durability and service life verification;

9) bracing and stability design for the duration of the execution and the finished structure;

10) structures to be restored and demolished during repair and alteration work;

11) data affecting the use and maintenance of new and restored structures.

(2) The execution class referred to above in subsection 1(2) is a set of classes of itemised execution requirements that may apply to the entire construction project or a specific detail.

Section 6

Execution documents for structures

The structural designer shall prepare the execution documents containing the technical specifications and requirements needed for the execution of the structures before the execution of the structure in concern is started. The execution documents include the calculations, drawings, work specification, a structural condition assessment and any other reports that may be required. If Eurocodes are applied in the design and execution process, the execution specification is considered to be an execution document.

When verification of the performance of the structure in accordance with structural plans requires inspections at certain intervals during the service life of the structure, the inspection locations and intervals shall be indicated in the plans and in the usage and maintenance instructions.

Section 7

Inspection plan for structural designs

The structural designer shall ensure the quality control of structural designs so that the structural plans are inspected before they are submitted to the building control authority. The quality control of the plans focuses on the calculations, drawings and text documents prepared by the structural designer, and on other design data provided by the structural designer.

The scope of the inspection plan for structural designs is determined on the basis of the consequences for the building or specific structural member, and on how demanding the design task is. In order to ensure the quality of the plans, an inspection plan for structural designs must be drawn up describing the plan inspection procedure, persons responsible for the inspection and the relationship of these persons to the project organisation of the design project, if the potential consequences for a building or specific structural member are severe or medium.

For severe consequences or design tasks classified as exceptionally demanding or extremely demanding, quality control shall, in accordance with the procedures of the design organisation, be carried out by a third party or a person assigned exclusively to quality control in the project and who has the qualifications for the competence class of the design task. For medium consequences or design tasks classified as demanding, quality control shall be carried out by a person who has the qualifications for the competence class of the design task.

Section 8

Planned service life

The structural designer shall define the planned service life of the structure, i.e. the period during which the structure or structural member is expected to be used for the planned purpose with the anticipated maintenance measures, and the stress categories representing exposure to environmental conditions.

A party engaged in a building project shall ensure that a structure is designed and executed so that the required properties laid down in the plans for the structure and for the building materials used are maintained throughout the entire planned service life.

Section 9

Work plan for the execution of structures

A party engaged in a building project shall ensure that a work plan for the execution of structures is drawn up and that the work plan contains sufficient data for the execution.

When the potential consequences of a defect or damage in a building or structure are severe or medium, a

quality control plan shall be prepared for the building as part of the work plan for the execution of the structure. This plan shall contain an assessment of the executing party's competence and resources in terms of the requirements that have been set, a description of the executing party's project organisation and its responsible persons, the principles of the inspection and responsibilities, and a plan for the quality control measures and records.

Section 10

Load-bearing capacity of structures in repair and alteration work and for changes in the intended use

In the planning and execution of building repair and alteration work and of changes in the intended use, the properties and conditions of a building and its structures shall be taken into account and, for special reasons, clarification of these shall be provided, and the possibility of an increase in loading on the structures shall be determined. For partial alteration of structures, it shall be ensured that the alterations to the structural system do not affect the fulfilment of requirements, in accordance with section 4 of this Decree.

When the repair and alteration work in buildings or changes in the intended use do not cause an increase in the loading on structures, but the condition of the structures is such that the strengthening of them is required, the regulations valid at the time of the construction of the building and the best building practices in effect at that time may be applied.

When the repair and alteration work in buildings or changes in the intended use do cause an increase in the loading on structures, sections 2 to 5 of this Decree shall apply in the design and execution of load-bearing structures with regard to new structures and structures to be strengthened.

Section 11

Construction products

The properties of construction products used shall meet the requirements presented in the respective design plans and the construction products shall be suitable for the construction site conditions.

The construction products selected shall enable the construction of the designed structure by following the execution documents and by applying the working methods according to the plans.

Construction products whose properties have remained unchanged regardless of their transfer, transport, storage or installation shall be used.
A party engaged in a building project shall ensure that the suitability of the construction products is checked prior to the execution of their use.

Section 12

Suitability of structures

A party engaged in a building project shall ensure that structures and construction products fulfil the requirements set on them.

Section 13

Entry into force

This Decree enters into force on 1 September 2014.

This Decree repeals the following parts of the National Building Code of Finland and decrees issued by the Ministry of the Environment:

1) B1 (1998) Structural safety and loads, Regulations

2) B2 (1990) Load-bearing Structures, Regulations

3) B4 (2005), Ministry of the Environment Decree on concrete structures

4) B5 (2007), Ministry of the Environment Decree on structures of lightweight concrete blocks
5) B6 (1989), Ministry of the Environment Decree on light gauge steel structures
6) B7 (1996), Ministry of the Environment Decree on steel structures
7) B8 (2007), Ministry of the Environment Decree on brick structures
8) B10 (2001), Ministry of the Environment Decree on timber structures

Any projects initiated before the entry into force of this Decree shall be subject to the provisions effective upon the entry into force of this Decree.