

(NB: Unofficial translation from Finnish)

Ministry of the Environment guidelines on the difficulty classes of design tasks

YM1/601/2015

The Ministry of the Environment issues the following instructions concerning the difficulty classes of building design tasks. The guidelines shall be valid until further notice.

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CONTENTS

	page
General instructions	3
Difficulty of building design tasks	4
Difficulty of design tasks for load-bearing structures	7
Difficulty of design tasks for foundation structures	10
Difficulty of ventilation design tasks	13
Difficulty of water supply and sewage design tasks	16
Difficulty of building physics design tasks and design tasks for repair work to moisture damage	19

Land Use and Building Act, Section 120 d(41/2014)

Difficulty classes of building design tasks

Design tasks are grouped into difficulty classes of difficult design task, conventional design task and minor design task.

The difficulty class is determined by the architectural, functional and technical requirements of the design task, the intended use of the building and the premises, the health effects and energy efficiency of the building, as well as the building physics properties, the size and protection of the building, the structural loads and fire loads, the design, calculation and dimensioning methods, the difficulty level of load-bearing structures and the environmental and site requirements.

In addition to the provisions in subsection 1 above, the difficulty class of a design task can be exceptionally difficult, if any of the requirements or characteristics referred to in subsection 2 are exceptional.

One building project can include design tasks that belong to different difficulty classes.

Further provisions on the determination of the difficulty class of a design task may be issued by government decree:

GENERAL INSTRUCTIONS

These guidelines are related to section 120 d of the Land Use and Building Act and the Government Decree on the determination of the difficulty classes of building design tasks issued under it. The Decree contains regulations on the determination of difficulty classes of design tasks in the construction of new buildings and in repair and alteration works in the main fields of design in construction:

- building design*
- design of load-bearing structures*
- design of foundation structures*
- ventilation design*
- water supply and sewage design*
- building physics design and the design of repair work to moisture damage.*

The structure of the guidelines follows the structure of the Decree:

- The Decree provides the difficulty classes of design tasks by design field, classifying them as minor, conventional, difficult or exceptionally difficult; the guidelines address the difficulty classes of each field separately.*
- The first subsection of each section and the related guidelines always concern the design tasks of new buildings, and the second subsection and guidelines concern the design of repair and alteration works.*

The provisions of the Decree (in the left-hand column of the table) are binding.

The guidelines (in the right-hand column of the table) are not binding.

The purpose of the guidelines and examples is to enable the harmonious application of the Decree.

The design tasks and difficulty classes can concern buildings or parts of buildings.

The design tasks in different fields within one project can belong to different difficulty classes.

Definitions

The references to buildings made in the guidelines shall also apply to structures.

A protected building refers to a building that is protected with a local detailed plan, master plan or regional plan issued under the Land Use and Building Act or by virtue of another Act or Decree. Buildings covered by an areal retention regulation issued in the local detailed plan (Ministry of the Environment 2003: Entries and regulations on local detailed plans, Guide 12, Chapter 8.2) are not protected buildings; the guidelines address such buildings separately.

A protected environment is an environment or a complex of buildings protected with land use plans issued under the Land Use and Building Act (132/1999) or by virtue of another Act or Decree.

Environments that have high townscape, cultural historical or landscape value are listed in the inventories of nationally important built cultural environments (RKY 2009) or nationally valuable landscapes (Government decision on landscape areas and the development of landscape management, 5 January 1995).

DIFFICULTY OF BUILDING DESIGN TASKS

Decree	Guideline
Minor building design task	
<p>Section 2.1 A building design task is considered minor if the building being designed is single storey, small and not intended for habitation or working, and if the environment or site of the building does not place special demands on the design.</p>	<p>The building being designed</p> <ul style="list-style-type: none"> • has one storey • is small, with a maximum size of 25 square metres • is not intended for habitation or working and • the environment or site of the building does not place special demands on the design. <p>Examples:</p> <ul style="list-style-type: none"> – shed, woodshed, small shelter.
<p>Section 2.2 A building design task is minor if the repair and alteration work that is being designed is a simple maintenance operation.</p>	<p>Regardless of the intended use or size of the building, a design task for repair and alteration work is always minor in the case of a simple maintenance operation that does not affect the technical or functional properties or the appearance of the building.</p>
Conventional building design task	
<p>Section 3.1 A building design task is conventional if the building being designed is single or two storey, smallish, its architectural, technical and functional requirements are conventional, and if the environment or site of the building does not place special demands on the design.</p>	<p>The building being designed</p> <ul style="list-style-type: none"> • has no more than two storeys, possibly with a basement floor and an attic in addition to this • is smallish, with a maximum floor area of 300 square metres • is conventional in terms of architectural, technical and functional requirements and • the environment or site of the building does not place special demands on the design. <p>Examples:</p> <ul style="list-style-type: none"> – a single family house or terraced house built in an environment or on a site that does not place special demands on the design, for example, on a spacious site with even ground, or outside population centres or areas covered by a local detailed plan – an industrial, warehouse or agricultural building – an individual recreational building or sauna.
<p>Section 3.2 The building design task for repair and alteration work is conventional if the architectural, technical and functional requirements of the repair and alteration work are conventional, and if the environment, site, intended use or a characteristic of the building does not place special demands on the design.</p>	<p>The repair and alteration work</p> <ul style="list-style-type: none"> • is subject to conventional architectural, technical and functional requirements and • the environment or site of the building does not place special demands on the design or • the intended use or a characteristic of the building does not place special demands on the design. <p>Examples:</p> <ul style="list-style-type: none"> – renovation or extension of a single-family house, semi-detached house or terraced house or an agricultural building – repair and alteration work of the interiors of an office building or another building – conventional repair or alteration work in a building covered by an areal retention regulation issued in the local detailed plan if the design does not affect the protected features – minor change of intended use.

Difficult building design task	
Decree	Guideline
<p>Section 4.1 A building design task is difficult if</p> <ol style="list-style-type: none"> 1) the building being designed has more than two storeys or it is large in other respects; 2) the building must meet strict architectural, technical or functional requirements because of its intended use or characteristics; 3) the environment of the building places special demands related to the adaptation of the building's architecture to the townscape or landscape; or 4) the site places special demands on the design. 	<p>The building being designed has more than two storeys, or it is large in size, usually more than 300 square metres.</p> <p style="text-align: center;">or</p> <p>The building being designed must meet strict architectural, technical or functional requirements because of its intended use or characteristics. Examples:</p> <ul style="list-style-type: none"> – residential apartment house, terraced house or so-called urban terraced house – business, accommodation or office building – school, day-care centre or health centre – library or sports centre – functionally or technically demanding production building – a building with more than one intended use. <p style="text-align: center;">or</p> <p>The building will be located in an environment that places special demands related to the adaptation of the building's architecture to the townscape or landscape. Examples:</p> <ul style="list-style-type: none"> – a densely populated area, such as the urban core of a population centre – an architecturally coherent area – a visible location in an open townscape or landscape, or the shore area of a population centre. <p style="text-align: center;">or</p> <p>The location of the building places special demands on the design, for example, due to</p> <ul style="list-style-type: none"> – uneven or otherwise demanding ground – severe noise or other environmental harm – high plot density – underground construction – areal retention regulation issued in the local detailed plan.
<p>Section 4.2 A building design task for repair and alteration work is difficult if the architectural, technical or functional requirements of the repair and alteration work are strict, and if the environment, site, intended use or a characteristic of the building places special demands on the design.</p>	<p>The architectural, technical and functional requirements of the repair and alteration work are strict. Examples:</p> <ul style="list-style-type: none"> – change of primary intended use, for example, from office to residential use or from production building to sports facility – high safety and health standards have a considerable effect on the design of the building, for example, the change of a residential building into a day-care centre. <p style="text-align: center;">or</p> <p>The environment or site of the building places special demands on the design, for example,</p> <ul style="list-style-type: none"> – a construction of an attic or other additional construction in a demanding townscape or landscape, or in a stylistically coherent area. <p style="text-align: center;">or</p> <p>The intended use or the characteristics of the building place special demands on the design. Examples:</p> <ul style="list-style-type: none"> – a renovation of a residential apartment house or office building which involves making changes to the space division or facade – a design task for repair and alteration work of a protected building, even if the repair or alteration work does not affect the protected features, such as making repair and alteration work to the interiors of a building that has a protected facade.

Exceptionally difficult building design task

Decree	Guideline
<p>Section 5.1 A building design task is exceptionally difficult if</p> <p>1) the building being designed must meet exceptionally strict architectural, technical or functional requirements because of its intended use or characteristics;</p> <p>2) the building being designed will be located in a protected environment, an environment with high townscape, cultural historical or landscape value, or an environment that is critical for the urban structure; or</p> <p>3) the design work requires the use of novel or otherwise highly demanding design, calculation or dimensioning methods.</p>	<p>The building being designed must meet exceptionally strict architectural, technical or functional requirements because of its intended use or characteristics. Examples:</p> <ul style="list-style-type: none"> – an important administrative, cultural or church building – a multidisciplinary hospital or university building – a large business, accommodation or congress centre – a nuclear power plant, shipyard or other industrial or production buildings that is built rarely – a building designed for users with special requirements, such as an activity centre for the blind – a building with more than 16 storeys. <p>or</p> <p>The building is located in a protected environment or in the immediate vicinity of a protected building, or the site is included in a national inventory scheme, which makes the design task exceptionally difficult despite the size and intended use of the building.</p> <p>or</p> <p>The building is located in an environment that has exceptionally high townscape, historical or landscape value or that is important for the urban structure. Examples:</p> <ul style="list-style-type: none"> – complementary construction of a city centre with coherent townscape – a building located on a square in the immediate city centre – a building that is notably taller than the surrounding buildings. <p>or</p> <p>The design work requires the use of novel or otherwise highly demanding design, calculation or dimensioning methods in an approach which is experimental or unique in other ways, and on which there is no experiential knowledge available. Examples:</p> <ul style="list-style-type: none"> – experimentations with construction materials, such as innovative timber construction – experimental zero or plus energy buildings – dimensioning based on potential fire development. <p>Please note! An originally novel and experimental design approach can become standard practice as more experience is gained, which might change the difficulty class of the design task in this respect.</p>

Section 5.2

A building design task for repair and alteration work is exceptionally difficult if the architectural, technical or functional requirements of the repair and alteration work are exceptionally strict, and if the valuable environment, intended use or characteristic of the building places special demands on the design.

The architectural, technical and functional requirements of the repair and alteration work of an important building are exceptionally strict, for example

- in the renovation or extension of a large cultural building.

or

The valuable environment of the building places exceptional demands on the design, for example, in an environment that is protected or of high value in other respects.

Examples:

- an extension of a building in a culturally and historically valuable environment
- repair or alteration work of windows, exterior wall materials or roof shape in an environment that has high townscape value.

or

Change of the primary intended use of the building or another technically of functionally important change that has a notable effect on the architectural solutions of the building. Examples:

- a change of an industrial building into a concert hall
- an experimental change of an office building into a plus energy building.

If the building subject to the repair or alteration work is protected, the building design task is exceptionally difficult if the change affects the protected properties. Examples:

- renovation of a building that has protected interiors
- pipeline renovation in a building that has protected staircases
- construction of an attic or other additional construction in a building that has a protected facade.

DIFFICULTY OF DESIGN TASKS FOR LOAD-BEARING STRUCTURES

Minor design task for load-bearing structures

Decree	Guideline
<p>Section 6.1 A design task of load-bearing structures is minor if the building being designed is single storey, small and not intended for habitation or working, and if the technical and functional requirements of the load-bearing structures are simple.</p>	<p>The building or the structure</p> <ul style="list-style-type: none"> • has one storey • is small in terms of its floor area and height and • is not intended for habitation or working and • The materials and approaches used in the structures are conventional and standard. <p>Examples:</p> <ul style="list-style-type: none"> – shed, woodshed, small shelter. <p>Because of the simplicity of the structures, no special design is usually required, instead the structures can be adequately shown in the building design.</p>
<p>Section 6.2 A design task for load-bearing structures is minor if the repair and alteration work that is being designed is a simple maintenance operation.</p>	<p>Regardless of the size or intended use of the building, a design task or load-bearing structures is always considered minor in the case of a simple maintenance operation that does not affect the technical or functional properties of the building.</p>

Conventional design task for load-bearing structures

Decree	Guideline
<p>Section 7.1 A design task for load-bearing structures is conventional if the building being designed has one or two storeys and is smallish, if the technical and functional requirements of the load-bearing structures are simple, and if generally accepted design guidelines and standard approaches can be used in the design.</p>	<p>Designing load-bearing structures for a building which</p> <ul style="list-style-type: none"> • has no more than two storeys, possibly with a basement floor and an attic • is smallish, with a maximum floor area of 300 square metres and • the span of the load-bearing structures does not exceed six metres and • contains load-bearing structures and joints that are typical for the materials being designed, which enables the use of generally accepted design guidelines.. <p>The span may exceed six metres when using prefabricated elements – the designer of which has had the appropriate competence for the task, however, the maximum span is 10 metres.</p> <p>Examples:</p> <ul style="list-style-type: none"> – a single-family house, semi-detached house or terraced house or a recreational building with conventional structures – an industrial, warehouse or agricultural building.
<p>Section 7.2 A design task for the repair and alteration work of load-bearing structures is conventional if the technical and functional requirements of the repair and alteration work are simple, if generally accepted design guidelines and standard approaches can be used in the design, and if the characteristics of the building do not place special demands on the design.</p>	<p>The technical and functional requirements of the repair and alteration work of load-bearing structures are simple</p> <ul style="list-style-type: none"> • in a conventional, smallish building that does not require particularly demanding construction site supporting. <p>Examples:</p> <ul style="list-style-type: none"> – repair and alteration work of the typical structures of a residential building or another building with a maximum of two storeys, using conventional methods and standard approaches.

Difficult design task for load-bearing structures

Decree	Guideline
<p>Section 8.1 A design task for load-bearing structures is difficult if 1) the building being designed has more than two storeys or it is large in other respects; or 2) the load-bearing structures must meet strict technical or functional requirements because of the size, structural loads or other characteristic of the building that is being designed.</p>	<p>Designing load-bearing and reinforcing structures in a building with more than two storeys, such as</p> <ul style="list-style-type: none"> – a building with a concrete, steel or composite structure which has 3–12 floor levels, including the basement floor – a building with 3–8 floor levels made of timber and, possibly, one or more basement floors. <p>or</p> <p>Designing load-bearing and reinforcing structures in a large building with 1–2 storeys, such as</p> <ul style="list-style-type: none"> – a building with a floor area of at least 300 square metres – a building with load-bearing structures spanning at least six metres – a hall-like building with a maximum span of 25 metres or a considerably high ceiling <p>or</p> <p>The load-bearing structures must meet strict technical or functional requirements because of the size, structural loads or other characteristic of the building that is being designed. Examples:</p> <ul style="list-style-type: none"> – the structure is subject to a heavy load and the point loads or dynamic loads are high – the structure is a standard prestressed structure, such as a serialised precast concrete – the structures are subject to special requirements regarding, for example, lightness, atypical form or the use of unusual materials – the structures must have special requirements because of architectural or building engineering solutions, or other requirements, such as energy efficiency, sound engineering or fire safety.
<p>Section 8.2 A design task for the repair and alteration work of a load-bearing structure is difficult if the technical or functional requirements of the repair and alteration work are strict, and if the characteristics of the building place special demands on the design.</p>	<p>The technical or functional requirements of the repair and alteration work are strict or the characteristics of the building place special demands on the design.</p> <p>Examples:</p> <ul style="list-style-type: none"> – renovation of load-bearing structures in buildings which have more than two storeys or which are large in other respects – the load of load-bearing structures increases due to repair and alteration work or change to the intended use – load-bearing structures are being dented or perforated, which will change the functioning of the structures as the stress increases, even if the load does not increase – the repair or alteration work requires significant construction site supporting – the repair and alteration work of load-bearing structures takes place in a protected building, with no effect on the protected features.

Exceptionally difficult design task for load-bearing structures

Decree	Guideline
<p>Section 9.1 A design task for load-bearing structures is exceptionally difficult if</p> <p>1) the load-bearing structures must meet exceptionally strict technical or functional requirements because of the size, structural loads or other characteristic of the building that is being designed;</p> <p>2) the design work requires the use of novel or otherwise highly demanding design, calculation or dimensioning methods; or</p> <p>3) a flaw or damage in the structure being designed might cause severe damage to people or the environment.</p>	<p>The technical or functional requirements of load-bearing and reinforcing structures are exceptionally strict if the building is very large, for example</p> <ul style="list-style-type: none"> - a building with a concrete, steel or composite structure which has over 12 floor levels, including the basement floors - a building with over 8 floor levels made of timber - a building with an exceptionally high floor level. <p>or</p> <p>The building is subject to exceptional loads or there is a prestressed special structure. Examples:</p> <ul style="list-style-type: none"> - the building, such as a stadium or ice stadium, has a large span, usually over 25 metres - the proportion of variable loads is high within the overall load - dynamic loads are particularly large - there is a prestressed, demanding special structure or a prefabricated component other than serialised precast concrete in the building. <p>or</p> <p>The designing of the load-bearing or and reinforcing structures is exceptionally difficult due to the architectural solutions or other special requirements of the building. Examples:</p> <ul style="list-style-type: none"> - the building is very slim (height / the length of the shorter side > 4) or the load-bearing frame of the building is diagonal or of unusual shape - a spatial structure or a domed structure with a long span - controlling the vibration of the structures is particularly demanding <p>or</p> <p>The load-bearing structure that is being designed is experimental or unique in other respects. There are no standard design guidelines or experimental knowledge available, thus a thorough command of the theoretical concepts of structural engineering is required. Examples:</p> <ul style="list-style-type: none"> - an exceptional composite or special structure - the design involves product development of load-bearing structures, components, joints of precast members or other novel, particularly demanding solutions. <p>Please note! An originally novel and experimental design approach can become standard practice as more experience is gained, which might change the difficulty class of the design task in this respect.</p> <p>or</p> <p>The building is frequented by large numbers of people simultaneously, or damage to the structures of the building might cause severe damage to the environment. Examples:</p> <ul style="list-style-type: none"> - a stadium, airport or port terminal, or another exceptionally large public building - a tall mast or tower in a built environment - a large container that contains environmentally detrimental substances.

<p>Section 9.2 A design task for the repair and alteration work of a load-bearing structure is exceptionally difficult if the technical or functional requirements of the repair and alteration work are exceptionally strict, or if the characteristics of the building place exceptional demands on the design.</p>	<p>The technical or functional requirements of the repair and alteration work are exceptionally strict. Examples:</p> <ul style="list-style-type: none">- making material changes to the static function of a difficult structure- the intended use of the building is changed, which increases the difficulty of the load-bearing structures considerably. For example, transforming an industrial building into a large public building- exceptionally difficult construction site supporting is required. <p>or</p> <p>The characteristics of the building place exceptional demands on the design, for example, in a protected building where the repair work affects the protected features of the building. Examples:</p> <ul style="list-style-type: none">- repair and alteration work of load-bearing structures in a building that has protected interiors- facade repair work in a building that has a protected facade.
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DIFFICULTY OF DESIGN TASKS FOR FOUNDATION STRUCTURES

Decree	Guideline
	No minor design task is specified for foundation structures.
Conventional design task of foundation structures	
Decree	Guideline
<p>Section 10.1 A foundation structure design task is conventional if the building being designed is smallish, the architectural, technical and functional requirements of its foundation structures are simple, and if the environment or site of the building does not place special demands on the design.</p>	<p>Foundation structures are being designed for</p> <ul style="list-style-type: none"> • a smallish building which usually has no more than two storeys and, possibly a conventional basement floor in addition to this and • the technical and functional requirements of the foundation structures are simple and the loads of the foundation structures are conventional and • the environment or site of the building does not place special demands on the design and the soil of the site is suitable for construction and • the building methods of the foundation structure are simple and standardised. <p>Examples:</p> <ul style="list-style-type: none"> – a single-family house, semi-detached house or terraced house or a recreational building, or a structurally similar building with a different intended use, when the building is located in a rock or moraine area, or an area with rough-grained soil types.
<p>Section 10.2 A design task for the repair and alteration work of foundation structures is conventional if the technical and functional requirements of the repair and alteration work are simple, and if the environment, site or characteristics of the building do not place special demands on the design.</p>	<p>The repair and alteration work</p> <ul style="list-style-type: none"> • is subject to simple architectural, technical and functional requirements and • the environment, site or characteristics of the building do not place special demands on the design and • the soil of the site is suitable for construction. <p>Examples:</p> <ul style="list-style-type: none"> – reinforcement or repair of the foundation of a smallish building, such as a single-family house, semi-detached house or terraced house, on soil that is suitable for construction.

Difficult design task for foundation structures

Decree	Guideline
<p>Section 11.1 A design task for foundation structures is difficult if 1) the foundation structures must meet strict technical or functional requirements because of the size of the building, structural loads, difficulty of the structure or other characteristic; or 2) the environment or site of the building being designed places special demands on the design.</p>	<p>The foundation structures must meet strict technical or functional requirements because of the size of the building, structural loads, difficulty of the structure or other characteristic. Examples:</p> <ul style="list-style-type: none"> – the building is large, usually with at least three storeys – the structures are subject to dynamic loads or other types of exceptional loads – there are notable underground facilities in the building which require watertight structures. <p>or</p> <p>Foundation structures are being designed for a building located in a demanding environment. Examples:</p> <ul style="list-style-type: none"> – a dense urban structure places special demands on the design – there is significant vibration. <p>or</p> <p>The site places special demands on the design, as the soil is not suitable for construction. Examples:</p> <ul style="list-style-type: none"> – the site is located in an area with fine-grained soils or on ballast – the soil of the site is organic – there is a collapse hazard on the site.
<p>Section 11.2 A design task for the repair and alteration work of a foundation structure is difficult if the technical or functional requirements of the repair and alteration work are strict, and if the environment, site or characteristics of the building cause special demands on the design.</p>	<p>The technical and functional requirements of the repair and alteration work are strict. Examples:</p> <ul style="list-style-type: none"> – the extension of the building requires the construction of new foundation structures alongside existing ones – making the basement deeper in a building founded on rock. <p>or</p> <p>The environment, site or characteristics of the building place special demands on the design. Examples:</p> <ul style="list-style-type: none"> – reinforcement or repair of the foundation of a residential apartment house on a soil that is unsuitable for construction – the load to the foundation increases because of a change to the intended use – the repair and alteration work of foundation structures takes place in a protected building, with no effect on the protected features.

Exceptionally difficult design task for foundation structures

Decree	Guideline
<p>Section 12.1 A design task for foundation structures is exceptionally difficult if 1) the foundation structures must meet exceptionally strict technical or functional requirements because of the size of the building, structural loads, difficulty of the structure or other characteristic; 2) the environment or site of the building being designed places exceptional demands on the design; 3) the design work requires the use of novel or otherwise highly demanding design, calculation or dimensioning methods; or 4) a flaw or damage in the structure being designed might cause severe damage to people or the environment.</p>	<p>The technical or functional requirements of the foundation structures are exceptionally strict. Examples:</p> <ul style="list-style-type: none"> – the structures are subject to particularly large dynamic loads or other types of large and exceptional loads – the building has notable underground facilities below groundwater or the foundations of the neighbouring building – a notable part of a large building is located underground. <p style="text-align: center;">or</p> <p>The environment of the building being designed places exceptional demands on the design. Examples:</p> <ul style="list-style-type: none"> – the foundation structures are subject to exceptionally strong vibration – the site is surrounded by a dense urban structure. <p style="text-align: center;">or</p> <p>The soil of the site is particularly unsuitable for construction. Examples:</p> <ul style="list-style-type: none"> – the construction requires piling on peat or silt soil – there is a collapse hazard on the site which is caused by exceptional reasons. <p style="text-align: center;">or</p> <p>The solution that is being designed is experimental or unique in other respects. There are no design guidelines or experimental knowledge available, thus a thorough command of the theoretical concepts of structural engineering is required. Examples:</p> <ul style="list-style-type: none"> – the foundation or load circumstances are highly unusual – special methods are used in the construction of the foundation structure – there are exceptional demands on the foundation structure – the exceptional nature of the construction requires further analyses and special actions that ensure the functioning of the foundation structure. <p>Please note! An originally novel and experimental design approach can become standard practice as more experience is gained, which might change the difficulty class of the design task in this respect.</p> <p style="text-align: center;">or</p> <p>The building is frequented by large numbers of people simultaneously, or damage to the foundation structures of the building might cause severe damage to the environment. Examples:</p> <ul style="list-style-type: none"> – a stadium, airport or port terminal, or another exceptionally large public building – a tall mast or tower in a built environment – a container that contains environmentally detrimental substances.
<p>Section 12.2 A design task for the repair and alteration work of foundation structures is exceptionally difficult if the technical or functional requirements of the repair and alteration work are exceptionally strict, or if the environment, site or characteristics of the building place exceptional demands on the design.</p>	<p>The technical or functional requirements of the repair and alteration work are exceptionally strict due to the environment, site or characteristics of the building. Examples:</p> <ul style="list-style-type: none"> – an exceptionally difficult reinforcement of foundations that are in poor condition – the materials and methods used in the repair of foundation structures are unconventional – a basement is being extended or deepened in a building that is founded on piles – repair and alteration work of the foundation structures in a protected building, affecting the protected features.

DIFFICULTY OF VENTILATION DESIGN TASKS

Minor ventilation design task

Decree	Guideline
<p>Section 13.1 A ventilation design task is minor if the building being designed is not intended for habitation or working, and if the technical and functional ventilation requirements are minor.</p>	<p>The building being designed</p> <ul style="list-style-type: none"> • is not intended for habitation or working and • the ventilation principle and the equipment being designed are simple. <p>No special designs are required because the ventilation of the building is functionally and technically simple enough to be adequately shown in the building design.</p>
<p>Section 13.2 A ventilation design task is minor if the repair and alteration work that is being designed is a simple maintenance operation.</p>	<p>Regardless of the characteristics of the building, a design task of repair and alteration work is always minor in the case of a simple maintenance operation that does not affect the technical or functional properties of the ventilation or the appearance of the building.</p>

Conventional ventilation design task

Decree	Guideline
<p>Section 14.1 A ventilation design task is conventional if the intended use or size of the building does not place special technical or functional requirements on the ventilation or the indoor air quality, and if generally accepted design guidelines and standard solutions can be used in the design.</p>	<p>Ventilation is being designed</p> <ul style="list-style-type: none"> • in a building the intended use or size of which does not place special technical or functional requirements on the ventilation or indoor air quality and • generally accepted design guidelines and standard approaches can be used in the design. <p>Examples:</p> <ul style="list-style-type: none"> – ventilation in a conventional residential building which does not usually have more than three storeys – ventilation in a building with a different intended use when the building has a maximum of two storeys.
<p>Section 14.2 A design task for ventilation repair and alteration work is conventional if the technical and functional requirements of the repair and alteration work are simple, if generally accepted design guidelines and standard approaches can be used in the design, and if the intended use or a characteristic of the building does not place special demands on the design.</p>	<p>The technical and functional requirements of the repair and alteration work are simple, generally accepted design guidelines and standard approaches can be used in the design, and the intended use or a characteristic of the building does not place special demands on the design. Examples:</p> <ul style="list-style-type: none"> – the ventilation principle is conventional and it remains unaltered – the repair and alteration work does not have a significant effect on the technical and functional properties of the ventilation or the architecture of the building.

Difficult ventilation design task

Decree	Guideline
<p>Section 15.1 A ventilation design task is difficult if the ventilation must meet strict technical or functional requirements because of the size, number of users, intended use or other characteristic of the building.</p>	<p>The ventilation must meet strict technical or functional requirements because of the size, number of users, intended use or other characteristic of the building. Examples:</p> <ul style="list-style-type: none"> – a demanding residential building, usually with more than three storeys – a business, office or industrial building or a building with multiple intended uses, with more than two storeys. <p>or</p> <p>The demands of the intended use of the building require special heat or moisture control or purified indoor air. Examples:</p> <ul style="list-style-type: none"> – a care facility, such as a medical institution or a home for the elderly – a production site used in the food industry. <p>or</p> <p>The ventilation must meet strict technical or functional requirements due to a characteristic of the building, for example</p> <ul style="list-style-type: none"> – the architectural or structural solutions or other requirements of the building, such as energy efficiency, sound engineering or fire safety – the location of the building leads to special requirements related to noise or airborne impurities.
<p>Section 15.2 A design task for ventilation repair and alteration work is difficult if the technical or functional requirements of the repair and alteration work are strict, or if the intended use or a characteristic of the building places special demands on the design.</p>	<p>The technical or functional requirements of the ventilation repair and alteration work are strict, or the intended use or a characteristic of the building places special demands on the design. Examples:</p> <ul style="list-style-type: none"> – the ventilation principle is changed – the intended use of the building is changed, which increases the difficulty of ventilation, for example, when transforming a residential building into an assembly facility – there is large-scale moisture or mould damage in the building – the ventilation repair and alteration work takes place in a protected building, with no effect on the protected features.

Exceptionally difficult ventilation design task

Decree	Guideline
<p>Section 16.1 A ventilation design task is exceptionally difficult if</p> <p>1) the ventilation must meet exceptionally strict technical or functional requirements because of the intended use of the building, target level for the indoor climate or other characteristic; or</p> <p>2) the design work requires the use of novel or otherwise highly demanding design, calculation or dimensioning methods.</p>	<p>The ventilation must meet exceptionally strict technical or functional requirements because of the intended use, target level for the indoor climate or another characteristic of the building.</p> <p>A special characteristic of the building places exceptional demands on heat and moisture control and indoor air quality. Examples:</p> <ul style="list-style-type: none"> – a large ice stadium or swimming centre – a specialty ward at a care facility – a building or a facility with particularly strict cleanliness requirements. <p>or</p> <p>The exceptionally strict ventilation system requirement can also concern safety, operational security, sound or equipment. Examples:</p> <ul style="list-style-type: none"> – a surgical ward at a hospital – a concert hall – an underground activity centre. <p>or</p> <p>The design requires the use of novel or otherwise highly demanding design, calculation or dimensioning methods in the designing of a unique ventilation solution for which no standard design guidelines or experimental knowledge is available, thus a thorough command of the theoretical concepts of ventilation technology is required.</p> <p>Please note! An originally novel and experimental design approach can become standard practice as more experience is gained, which might change the difficulty class of the design task in this respect.</p>
<p>Section 16.2 A design task for ventilation repair and alteration work is exceptionally difficult if the technical or functional requirements of the repair and alteration work are exceptionally strict, or if the intended use or a characteristic of the building places exceptional demands on the design.</p>	<p>The technical or functional requirements of the ventilation repair and alteration work are exceptionally strict. Examples:</p> <ul style="list-style-type: none"> – the repair of a difficult moisture or mould damage places exceptional demands on the ventilation. <p>or</p> <p>The intended use or a characteristic of the building places exceptional demands on ventilation design. Examples:</p> <ul style="list-style-type: none"> – change to the intended use places exceptional demands on heat and moisture control and indoor air quality within the building. <p>or</p> <p>Ventilation repair and alteration work in a protected building, affecting the protected features. Examples:</p> <ul style="list-style-type: none"> – ventilation repair and alteration work in protected interiors – alteration work to visible ventilation system components, such as condensers or engine rooms, in a building that has a protected facade and roof.

DIFFICULTY OF WATER SUPPLY AND SEWAGE DESIGN TASKS

Minor water supply and sewage design task

Decree	Guideline
<p>Section 17.1 A water supply and sewage design task is minor if the building being designed is not intended for habitation or working, and if the technical and functional requirements regarding the water supply and sewage system are minor.</p>	<p>The building being designed</p> <ul style="list-style-type: none"> • is not intended for habitation or working and • the technical and functional requirements regarding the water supply and sewage system are minor • the water supply and sewage system principle and the equipment being designed are simple. <p>No special designs are required because the water supply and sewage system of the building is functionally and technically simple, and the equipment and surface water supply method can be adequately shown in the building design.</p>
<p>Section 17.2 A water supply and sewage design task is minor if the repair and alteration work that is being designed is a simple maintenance operation.</p>	<p>Regardless of the characteristics of the building, a design task for water supply and sewage system repair and alteration work is always considered minor in the case of a simple maintenance operation which does not affect the technical or functional properties of the water supply and sewage system or the appearance of the building.</p>

Conventional water supply and sewage design task

Decree	Guideline
<p>Section 18.1 A water supply and sewage design task is conventional if the intended use and size of the building do not place special technical or functional requirements on the water supply and sewage system, and if generally accepted design guidelines and standard solutions can be used in the design.</p>	<p>A water supply and sewage system is being designed</p> <ul style="list-style-type: none"> • in a building the intended use or size of which does not place special technical or functional requirements on the water supply and sewage system and • generally accepted design guidelines and standard approaches can be used in the design. <p>Examples:</p> <ul style="list-style-type: none"> – water supply and sewage system in a conventional residential building which usually has no more than three storeys – water supply and sewage system in a building with a different intended use when the building has a maximum of two storeys.
<p>Section 18.2 A design task for water supply and sewage system repair and alteration work is conventional if the technical and functional requirements of the repair and alteration work are simple, if generally accepted design guidelines and standard approaches can be used in the design, and if the intended use or a characteristic of the building does not place special demands on the design.</p>	<p>The technical and functional requirements of the repair and alteration work are simple and generally accepted design guidelines and standard approaches can be used in the design. Examples:</p> <ul style="list-style-type: none"> – the operating principle of the system is conventional and remains unaltered after the repair and alteration work, for example, a pipeline renovation of a residential apartment building where most of the new pipes are installed in existing shafts – the repair or alteration work does not have a significant effect on the technical and functional properties of the water supply and sewage system, or the architecture of the building.

Difficult water supply and sewage design task

Decree	Guideline
<p>Section 19.1 A water supply and sewage design task is difficult if the water supply and sewage system must meet strict technical or functional requirements because of the size, number of users, intended use or other characteristic of the building.</p>	<p>The water supply and sewage system must meet strict technical or functional requirements because of the size, number of users, intended use or other characteristic of the building. Examples:</p> <ul style="list-style-type: none"> – a difficult residential building, usually with more than three storeys – a business, office or industrial building or a building with multiple intended uses, with more than two storeys. <p style="text-align: center;">or</p> <p>The water supply and sewage system must meet strict technical and functional requirements due to other characteristics. Examples:</p> <ul style="list-style-type: none"> – the architectural or structural solutions or other requirements of the building, such as energy efficiency, sound engineering or fire safety – the site, such as soil difficulties.
<p>Section 19.2 A design task for water supply and sewage system repair and alteration work is difficult if the technical or functional requirements of the repair and alteration work are strict, or if the intended use or a characteristic of the building places special demands on the design.</p>	<p>The technical or functional requirements of the water supply and sewage system repair and alteration work are strict, or the intended use or a characteristic of the building places special demands on the design. Examples:</p> <ul style="list-style-type: none"> – the water supply and sewage system principle is changed – the intended use of the building is changed, which increases the difficulty of water supply and sewage system. For example, transforming a warehouse building into an industrial building – the water supply and sewage system repair and alteration work takes place in a protected building, with no effect on the protected features.

Exceptionally difficult water supply and sewage design task

Decree	Guideline
<p>Section 20.1 A water supply and sewage design task is exceptionally difficult if</p> <p>1) the water supply and sewage system must meet exceptionally strict technical or functional requirements because of the intended use or a characteristic of the building;</p> <p>2) there are severe environmental risks related to the intended use of the building;</p> <p>or</p> <p>3) the design work requires the use of novel or otherwise highly demanding design, calculation or dimensioning methods.</p>	<p>The water supply and sewage system must meet exceptionally strict technical or functional requirements because of the intended use or another characteristic of the building.</p> <p>A special feature of the building causes exceptionally strict requirements for the safety, operational life, durability, operational security, energy efficiency, equipment or water treatment process of the water supply and sewage system. Examples:</p> <ul style="list-style-type: none"> – a surgical ward at a hospital – a production facility of a chemical or food industry building – a swimming centre. <p>or</p> <p>There are severe environmental risks related to the operation or location of the building being designed. Examples:</p> <ul style="list-style-type: none"> – a process industry building – a large water treatment plant. <p>or</p> <p>The design requires the use of novel or otherwise highly demanding design, calculation or dimensioning methods in the designing of a unique water supply and sewage system solution for which no standard design guidelines or experimental knowledge is available, thus a thorough command of the technical theoretical concepts related to water supply and sewage is required.</p> <p>Please note! An originally novel and experimental design approach can become standard practice as more experience is gained, which might change the difficulty class of the design task in this respect.</p>
<p>Section 20.2 A design task for a water supply and sewage system repair and alteration work is exceptionally difficult if the technical or functional requirements of the repair and alteration work are exceptionally strict, or if the intended use or a characteristic of the building places exceptional demands on the design.</p>	<p>The technical or functional requirements of the water supply and sewage system repair and alteration work are exceptionally strict.</p> <p>or</p> <p>The intended use or a characteristic of the building places exceptional demands on the design, for example</p> <ul style="list-style-type: none"> – a change to the intended use places exceptionally strict functional requirements on the water supply and sewage system. <p>or</p> <p>Water supply and sewage system repair and alteration work in a protected building, affecting the protected features. Examples:</p> <ul style="list-style-type: none"> – water supply and sewage system repair and alteration work in protected interiors – water supply and sewage system pipeline renovation in a building that has protected staircases when e.g. standpipes need to be installed in the staircase.

DIFFICULTY OF BUILDING PHYSICS DESIGN TASKS AND DESIGN TASKS FOR REPAIR WORK TO MOISTURE DAMAGE

No minor design task is specified for building physics or repair work to moisture damage.

Conventional building physics design task and design task for repair work to moisture damage

Decree	Guideline
<p>Section 21.1 A building physics design task is conventional if the technical and functional requirements of the building being designed are conventional, if generally accepted design guidelines and standard practices can be used in the design, and if the environment or site of the building does not place special demands on the design.</p>	<p>The building physics design</p> <ul style="list-style-type: none"> • is subject to conventional technical and functional requirements and • allows for using generally accepted design guidelines and standard approaches and • the environment or site of the building does not place special demands on the design. <p>Examples:</p> <ul style="list-style-type: none"> – the heat and moisture stress is conventional in the building – there are no special quality requirements regarding the sound environment, apart from the usual noise abatement requirements concerning yards, social areas and balconies.
<p>Section 21.2 A design task for building physics repair and alteration work is conventional if the technical and functional requirements of the repair and alteration work are simple, and if the environment, site, intended use or a characteristic of the building does not place special demands on the design.</p>	<p>The building physics repair and alteration work</p> <ul style="list-style-type: none"> • is subject to simple architectural, technical and functional requirements and • the environment, site, intended use or another characteristic of the building does not place special demands on building physics design. <p>Examples:</p> <ul style="list-style-type: none"> – the properties of the building that are being repaired can be clearly defined and the repair work does not affect the appearance of the building, for example, the improvement of the heat or sound insulation of a single-family house, semi-detached house or terraced house.
<p>Section 21.3 A design task for repair work to moisture damage is conventional if the moisture or mould damage can be clearly defined and restricted, and if the intended use or a characteristic of the building do not place special demands on the design.</p>	<p>The repair and alteration work to moisture damage</p> <ul style="list-style-type: none"> • concerns moisture or mould damage that can be clearly defined and restricted and • the intended use or a characteristic of the building does not place special demands on the design. <p>Examples:</p> <ul style="list-style-type: none"> – most of the damage is located on the surface, or any internal damage within the structures is within a clearly defined area, the damage can be identified with simple methods and the root cause is obvious, for example, water damage in a restricted area caused by pipe damage or inadequate moisture insulation.

Difficult building physics design task and design task for repair work to moisture damage

Decree	Guideline
<p>Section 22.1 A building physics design task is difficult if</p> <p>1) the building physics stress of the building being designed places special demands on the design; or</p> <p>2) the intended use or a characteristic of the building being designed places special demands on the building physics design.</p>	<p>A building physics stress to the building – such as an external heat or moisture stress – or strong or low frequency sound or vibration places special demands on the design.</p> <p>For example:</p> <ul style="list-style-type: none"> – the building is located near water, which causes major external moisture stress – the exposure of structures to water pressure or the shape of the building places special demands on water tightness design – architectural solutions, such as large windows, cause strong heat stress – the location of the building next to an arterial road, harbour or power plant causes strong external noise or vibration. <p>or</p> <p>The intended use or a characteristic of the building places special demands on building physics design. Examples:</p> <ul style="list-style-type: none"> – the building is subject to strong internal heat or moisture stress, or internal noise or vibration (refer to the footnote for decibel figures) – there are special quality requirements regarding the sound environment of the building, for example, for the purpose of musical performance, comfortable atmosphere, improved speech audibility or confidentiality – the demands are due to the architectural, structural or building engineering solutions of the building or other requirements for e.g. energy efficiency or fire safety.
<p>Section 22.2 A design task for building physics repair and alteration work is difficult if the technical or functional requirements of the repair and alteration work are strict, or if the environment, site, intended use or a characteristic of the building places special demands on the design.</p>	<p>The technical or functional requirements of the building physics repair and alteration work are strict. Examples:</p> <ul style="list-style-type: none"> – improving building physics, for example, in connection to repairing the facade of an apartment building – the repair requires making significant changes to building physics <p>or</p> <p>The environment, site, intended use or a characteristic of the building places special demands on the design. Examples:</p> <ul style="list-style-type: none"> – a change to the intended use increases the difficulty of building physics – a change to the intended use requires making significant improvements to the sound insulation of the building, for example, when transforming an office building into apartments – the building physics repair and alteration work takes place in a protected building, without affecting the protected features of the building. For example, internal repair and alteration work to improve acoustics and sound insulation in a building that has a protected facade.
<p>Section 22.3 A design task for repair work to moisture damage is difficult if the moisture or mould damage is extensive, or if repairing the damage requires making significant changes to the moisture physics of the structures.</p>	<p>There is extensive moisture or mould damage within structures, or repairing the damage requires making significant changes to the moisture physics of the structures. Examples:</p> <ul style="list-style-type: none"> – the facade, other structures and heat insulation need to be replaced due to an extensive moisture damage – there are detrimental elements in the structures which originate from the building materials or the use of the building – the analysis of the old structures of the building and the assessment of the feasibility of different building physics repair alternatives is difficult – the repair work to moisture damage takes place in a protected building, without affecting the protected features, for example, an extensive repair to moisture damage in the interiors of a building that has a protected facade.

Exceptionally difficult building physics design task and design task for repair work to moisture damage

Decree	Guideline
<p>Section 23.1 A building physics design task is exceptionally difficult if</p> <p>1) the severe building physics stress of the building being designed places exceptional demands on the design;</p> <p>2) the intended use, difficulty of the structures or another characteristic of the building being designed places exceptional demands on the building physics design; or</p> <p>3) the design work requires the use of novel or otherwise highly demanding design, calculation or dimensioning methods.</p>	<p>Strong building physics stress, such as exposure to severe weather, strong wind or wind-driven rain, places exceptional demands on the design. Examples:</p> <ul style="list-style-type: none"> – a particularly tall building that is located on the shore of a large water system – a building that is located fully or partly on water. <p>or</p> <p>The indoor climate causes structural stress to the building, which places exceptional demands on the design. Examples:</p> <ul style="list-style-type: none"> – special warehouses that are subject to exceptional moisture and temperature requirements – pressurised facilities. <p>or</p> <p>The water insulation of the building is exceptionally difficult, because of the exposure of the structures to water pressure or the unconventional shape of the building. Examples:</p> <ul style="list-style-type: none"> – the height of the areas of the building that are exposed to water pressure exceeds one floor level or four metres, or a leakage in the structures of the building that are exposed to water pressure would cause a severe risk of moisture damage – the exceptional diversity of the exterior of the building results in a large number of different joints, which places additional demands on the design of water insulation and water tightness. <p>or</p> <p>The intended use, difficulty of the structures or another characteristic of the building places exceptional demands on the design. Examples:</p> <ul style="list-style-type: none"> – an industrial plant or a swimming hall, the operation of which places exceptional chemical stress on the structures. <p>or</p> <p>The intended use of the building places exceptional demands on noise abatement, vibration prevention, sound insulation or acoustics on the facilities. Examples:</p> <ul style="list-style-type: none"> – a silent and vibration-free industrial site or research facility – a building subject to exceptionally strict quality requirements regarding the sound environment, for the purpose of improving music or speech audibility. <p>or</p> <p>The design requires the use of novel or otherwise highly demanding design, calculation or dimensioning methods in the designing of a unique building physics solution for which no standard design guidelines or experimental knowledge is available, thus a thorough command of the theoretical concepts of building physics is required. For example:</p> <ul style="list-style-type: none"> – the design involves the product development of novel structural approaches that are difficult from a building physics perspective. <p>Please note! An originally novel and experimental design approach can become standard practice as more experience is gained, which might change the difficulty class of the design task in this respect.</p>
<p>Section 23.2 A design task for building physics repair and alteration work is exceptionally difficult if the technical or functional requirements of the repair and alteration work are exceptionally strict, or if the environment, site, intended use or a characteristic of the</p>	<p>The technical or functional requirements of the building physics repair and alteration work are exceptionally strict. Examples:</p> <ul style="list-style-type: none"> – there are exceptionally strict noise and vibration prevention, sound insulation or acoustics requirements on the building. <p>or</p>

<p>building places exceptional demands on the design.</p>	<p>The environment, site, intended use or a characteristic of the building places exceptional demands on the design. Examples:</p> <ul style="list-style-type: none"> – significant changes are made to the intended use of the building, which increases the difficulty of building physics considerably, and the change places exceptional demands on the operation of the heat and moisture engineering of the building. <p>or</p> <p>Building physics repair and alteration work in a protected building, affecting the protected features. Examples:</p> <ul style="list-style-type: none"> – improving the heat insulation of the facade or sound insulation of windows in a building with a protected facade – sound engineering repair work in protected interiors, using special methods, if the old materials cannot be removed due to protection reasons.
<p>Section 23.3 A design task for repair work to moisture damage is exceptionally difficult if</p> <ol style="list-style-type: none"> 1) there is extensive internal moisture or mould damage in the building despite previous repair work; 2) special technical systems or methods are needed for ensuring the moisture physics of the structures; or 3) the intended use of the building, target level for the indoor climate or another characteristic places exceptional demands on the design. 	<p>There is extensive internal moisture or mould damage in the structures covered by the repair work to moisture damage, despite previous repair work. Examples:</p> <ul style="list-style-type: none"> – the cause of the extensive structural moisture and mould damage was not eliminated in the previous repair work, which results in the continuation of the problem. <p>or</p> <p>Special technical systems or methods are needed for ensuring the moisture physics of the structures. Examples:</p> <ul style="list-style-type: none"> – the repair work to moisture damage requires exceptionally difficult assessment of building physics and previous repairs – special technical systems are needed in the repair work to moisture damage, for example, to achieve demanding exhaust ventilation – damaged materials cannot be removed for building protection reasons. <p>or</p> <p>The intended use of the building, target level for the indoor climate or another characteristic places exceptional demands on the design. Examples:</p> <ul style="list-style-type: none"> – the intended use of the building places exceptionally strict requirements on purified indoor air or heat and moisture control, for example, in an extensive repair to moisture damage at a hospital – there are an exceptional number of detrimental elements in the structures, which originate from the building materials or the use of the building. <p>or</p> <p>Repair work to moisture damage in a protected building, affecting the protected features, for example</p> <ul style="list-style-type: none"> – repair work to a severe moisture damage in a building that has protected interiors, requiring demanding coordination of historical research, building and structural design and building engineering design.

Decibel figures (dB):

- External sound or vibration is considered strong if it exceeds the usual level of sound or vibration from road traffic or industrial production (over 75 dB or 0.30 mm/s).
- Internal sound stress is considered strong if it exceeds the noise levels provided in the reference values of noise levels (Government decision 993/92).
- Strong low-frequency sound refers to a sound exceeding 37 dB (external sound level) or 42 dB (internal sound level) on a frequency band of 20–200 Hz.